TIVERTON HIGH SCHOOL

KNOWLEDGE ORGANISER
YEAR 7
2024 - 2025

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Year 7: How to use your Knowledge Organiser book

This book contains **knowledge organisers** for all of your subjects.

Each knowledge organiser has the key information which needs to be memorised to help you master your subjects and be successful in lessons.

Self- quizzing this key information promotes **retrieval strength**. This is your ability to **quickly recall key facts** related to your subject or topic from your **long term memory**.

There are lots of different ways to learn the information in your knowledge organiser. You will be using your **class books** to complete homework and write down and learn the information. You **must** bring your **class books** to school **on each day you have the lesson timetabled** and so packing your school bag the evening before is important.

If you lose your knowledge organiser book you will need to talk to your Head of Year and order a new one at a cost of £1.

Year 7 Subject	Page
Introduction	2 - 6
Art	8-9
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THS Knowledge Organiser Homework

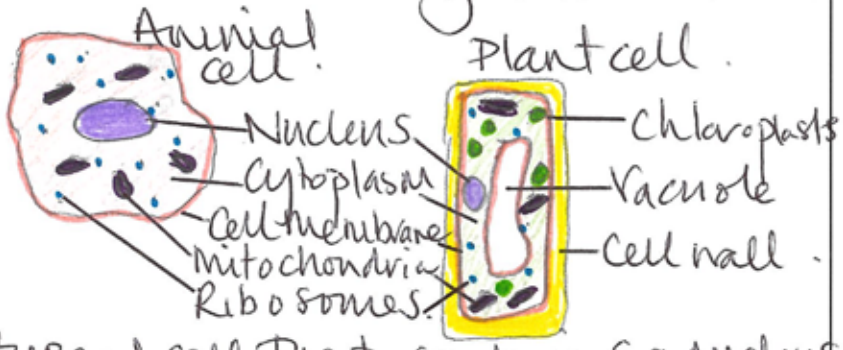
Subject: Science

Section of knowledge organiser for homework: 4.1.1

Key construct: cell structure

Task/s:

1. Read the knowledge organiser section 4.1.1.2 Animal and Plant Cells
2. Write bullet points in the note section
3. Copy and label the diagrams
4. Summarise all the information
5. Write five self-quiz questions

Notes from KO:	My notes from KO:
Sub-cellular Structures.	Structures Smaller than a cell that are found within it.
Nucleus	Contains the cells genetic materials
Animal cell	
Plant cell.	
Eukaryotic	A type of cell that contains a nucleus.

Summary: Animal cells have a nucleus, cytoplasm cell membrane, mitochondria and ribosomes. Plant cells contain the same parts but also contain chloroplasts, vacuole and a cell wall made of cellulose. This strengthens the cell. Vacuoles is full of cell sap.

Self Quiz:

1 What does the cell membrane do? it controls the movement of substances in and out of the cell.

2 What do plants cells have that Animal cells dont? chloroplast, vacuole, cell wall.

3 Where does aerobic respiration take place? mitochandria.

4 The cells genetic materials are contained where? Nucleus

5 What cell does not have a Nucleus? Prokaryotic cell.

CURRICULUM COMMAND WORDS

Knowing how to respond to a question, in any subject, is absolutely critical to successfully demonstrate your knowledge! Listed below, are the equally important but less frequent command words that you are likely to face from across your subjects. It is important to know that quite often, a single question can have multiple commands embedded—which will all need your attention in your work.

Command	How do I respond in my writing ?
Acknowledge	Music: To give credit for, recognise, and highlight something, such as a selected source or the work of others.
Apply	Music: To use knowledge, skills and understanding and to employ appropriate techniques when developing and progressing ideas.
Arrange	History: Put the factors in an order and then justify your choices
Change	Maths: Usually convert from one unit to another; either using known metric unit conversions or the use of a conversion graph.
Collate	Gather and organise your ideas logically
Comment	Write an informed opinion
Consider	To think through, review, reflect on, and respond to given information
Convert	Computing: change the form, character or function of something
Demonstrate	Music: To show, exhibit, prove or express such things as subject specific knowledge, understanding and skills.
Design	Computing: produce a plan, simulation or model
Determine	Science: Use given data or information to obtain an answer
Develop	Music: To take forward, change, improve or build on an idea, theme or starting point.
Draw	Produce a diagram or picture. Note: this command is often linked with 'label' or 'annotate'.
Estimate	Science: Assign an approximate value
Evidence	To show, prove, support and make clear or verify something.
Expand	Maths:Remove brackets
Expand and simplify	Maths: Remove brackets and the collect like terms.

Command	How do I respond in my writing ?
Explore	Music: To investigate, examine and look into with an open mind about what might be found and developed.
Express	Maths: Re-write in another form, some working may be needed.
Factorise	Maths: Insert brackets by taking out common factors.
Factorise fully	Maths: Insert brackets by taking out all the common factors.
Find	Maths: Some working will be needed to get to the final answer.
Give	Typically a very short, undeveloped answer Synonyms: state, name and identify.
Give a reason	Maths: Must be clear and accurate reasons. If the reasons are geometrical then make sure you: provide a reason for each stage of working (if required), use correct geometric terminology
How far do you agree...	History: Examine the evidence and form a detailed opinion
How important was...	History: Judge the importance of the factor and then compare relative to others
Identify	Provide an answer from a number of possibilities
Interpret	Dance: Translate information into recognisable form. Other subjects: examine information for patterns and causation
List	Provide the information in a list rather than continuous writing
Match	Link or pair-up a definition to the a key term
Plan	Science: Write a method used extended bullet point method—unique to writing in Science!
Predict	Science: Suggest the most likely outcome
Present	Music: To give a response to an idea, theme or starting point that shows a personal, meaningful and organised fulfilment of intentions.
Produce	D&T: Draw or design an isometric or orthographic drawing

Command	How do I respond in my writing ?
Produce	D&T: Draw or design an isometric or orthographic drawing
Prove	Maths: More formal than 'show', all steps must be present. In the case of a geometrical proof, reasons must be given.
Prove algebraically	Maths: Use algebra in the proof.
Realise	Music: To achieve, attain and/or accomplish your intentions.
Recommend	Put forward or suggest an answer that is suitable for the question
Record	Music: To document ideas, thoughts, insights and responses to starting points in visual and written annotated form.
Refine	Music: To improve, enhance and change elements of your work for the better.
Research	Music: To study in detail, discover and find information about.
Respond	Music: To produce personal work generated by a subject, theme, starting point, or design brief.
Review	Review is to explain/evaluate e.g. write about and assess the importance, quality or value of the topic
Show	Show structured steps or evidence or all workings needed to get to a given answer
Simplify	Maths: Simplify the given expression
Simplify fully	Maths: Simplify the given expression. Answer must be given in its simplest form
Solve	Maths: Find the solution of an equation or inequality. Computing: Obtain the answer(s) using algebraic/numeric/graphical methods.
State	Music: to express clearly and briefly your intentions.
Tick	Put a mark to indicate that something is correct
Use	Answer must be based on or include the information given within the question
What	Suggest a suitable idea

COMMON CURRICULUM COMMAND WORDS

TOP 20

Knowing how to respond to a question, in any subject, is absolutely critical to successfully demonstrate your knowledge. Responding in the correct way to a command word within a question makes the difference between accessing all the marks, or getting none at all! You must be secure in knowing how you should write according to these 'Top 20' highest frequency command words from across the curriculum. Almost all subjects have additional command words you must know too, so check the subject specific command word KOs for further advice on how to master responding to the full range of commands.

Command	How do I respond in my writing ?
Analyse	Systematically break down the theme of the question into parts and examine each in turn. You should include description, explanations and evidence to reach conclusions.
Annotate	Annotations are extended labels. When annotating, you should write brief descriptive or explanatory sentences linked to features referenced in the question.
Assess	Like analyse, assess means to break the theme of the question down into parts but offer your opinion on the successes ands failures to reach an informed judgement.
Calculate	You need to use the data (numbers) within the question, or resource that the question is based on, and apply a mathematical function to get your answer.
Compare	An effective comparison will make clear references to both similarities and differences between the items within the questions.
Complete	You are directed to use information available to you (a resource with the question or your knowledge) to finish a task. This is most commonly linked to cloze paragraphs (a.k.a. gap-fill) style questions.
Contrast	Writing to show contrast will make clear references to just differences between the items within the questions.
Define	Give a definition (precise meaning) of the feature or item referenced in the question., such as a word, phrase, concept or physical quantity.
Describe	Write details of what the feature/item or theme are like within the question. *Do not explain* as a description requires no explanation.
Discuss	Describe and explain a balance of the similarities and differences, or positives and negatives of whatever the question is about. Evidence is important to include—as is your opinion. Always add a conclusion to summarise your discussion.

Command	How do I respond in my writing ?
Evaluate	Systematically break down the theme of the question to make an informed judgement supported by evidence for the strengths, weaknesses (or limitations), opportunities to improve a way of working or concept, to reach conclusions.
Explain	Give reasons for **how** or **why** something is like it is. Write in a way that shows cause and effect. The words 'because', '...as a result', '...this is due to', 'consequently' should be in your writing.
Justify	Write a convincing argument to reach a conclusion supported by evidence.
Label	Labelling is simply naming features or parts of something; these are not sentences
Outline	Give a brief overview of the whole theme of the question. You can describe or explain just the main points in limited detail. The amount you write depends on the amount of content within the question.
Plot	Add data (results or values) onto a graph. Read the axis labels carefully to understand the units. If present, your plotted data should 'look' like the other data already present on the graph.
State	Give the name of a feature or item referenced in the question. *Synonyms are: give/name or identify.*
Study	This command will often be linked to a resource within a question such as a map, photo or diagram; you are being encouraged to look at and understanding this resource for inclusion in an answer.
Suggest	Explain a possible reason for theme of the question. 'Suggest' questions are asking you to put forward an idea you have.
To what extent	The question is asking how far you agree with something—from fully agree to totally disagree—often a statement or a quote for example. Give your opinion immediately and examine arguments that support and discount your opinion. Support with evidence to reach a conclusion.

QUESTION DECONSTRUCTION SKILLS

BUGS

Box around the command word

Underline the key words

Go over the question again

Spare a line/time for planning

Example of using BUGS:

Explain a valid reason — This means a method of working

Q: Suggest why using BUGS is a good technique for writing successful answers to exam-style questions (6)

Writing that demonstrates what I know suitable to the question — I only earn marks for writing in the appropriate way in exam questions

THE 'TRIPLE C' TECHNIQUE

The 'Triple C' technique for question deconstruction stands for '**C**olour **C**ode **C**omplex' questions. This technique is a more in-depth take on using BUGS, which is more effective for longer answer essay questions, or with more complex command words such as: evaluate, discuss, analyse and assess for example. Get your highlighters out and use a different colour for the different clauses and keyword phrases within the question. This will ensure you respond to all parts of the question and paragraph effectively to demonstrate your writing stamina.

Example of using 'TRIPLE C':

Two commands: Must use real examples, and must evaluate (judge something).

Judge the effectiveness by evaluating strengths, weaknesses and opportunities to change something

Q: Using examples you have studied, evaluate the effectiveness of using question deconstruction techniques to write successful answers (9)

A detailed, evaluative paragraph on each techniques : BUGS' and 'Triple C'

Conclude on the effectiveness of whether the technique makes for successful written answers

THS Tier 2 Vocabulary - 100 Word List

Tier 2 words are words that you wouldn't normally use in your everyday speech and aren't subject specific terminology. You are likely to find them when you are reading, or you might use them in your writing. Our THS 100 Word List is made up of 100 words that are often used in exam questions and texts. They are divided into sublists: sublist 1 has the most common words and sublist 10 has rarer words. Recognising these words will help you to understand the texts that you might be given in your different lessons and exams.

Sublist 1

1. process
2. individual
3. specific
4. source
5. identified
6. create
7. derived
8. factors
9. definition
10. interpretation
11. consistent
12. structure
13. analysis
14. indicate
15. response
16. context
17. significant

Sublist 2

1. community
2. relevant
3. impact
4. consequences
5. participation
6. cultural
7. affect
8. effect
9. complex

Sublist 3

1. convention
2. implies
3. dominant
4. constant
5. justification
6. alternative
7. initial
8. validity
9. sequence
10. corresponding
11. circumstances

Sublist 4

1. overall
2. emerged
3. approximate
4. implications
5. commitment
6. promote
7. access
8. contrast
9. resolution
10. adequate

Sublist 5

1. energy
2. symbolic
3. decline
4. facilitate
5. logic
6. sustainable
7. equivalent
8. generated
9. conflict

Sublist 6

1. presumption
2. enhanced
3. capable
4. revealed
5. explicit
6. underlying
7. exceed

Sublist 7

1. intervention
2. definite
3. ultimately
4. converted
5. hierarchical
6. comprehensive
7. eliminate
8. contrary
9. successive
10. prohibited

Sublist 8

1. eventually
2. exploitation
3. virtually
4. predominantly
5. implicit
6. ambiguous
7. conformity
8. contemporary
9. deviation
10. minimises
11. radical
12. inevitably
13. complement
14. manipulation

Sublist 9

1. commenced
2. anticipated
3. incompatible
4. integral
5. conversely
6. temporary
7. assurance
8. inherent
9. duration

Sublist 10

1. convinced
2. persistent
3. integrity
4. conceived

Most common → Least common

ART

Art Year 7 Skill

1. Sketching a line

Sketching.mp4 (sharepoint.com) – Plot out your shape lightly, use a feathery light line to get the accurate shape. Make the line darker when you are happy this is the best that you can produce.

2. Blind drawing

Blind drawing.mp4 (sharepoint.com)

When you are only looking at the object you are drawing and not looking at your drawing. The drawing will not look accurate but will show aspects of the object you will recognise.

3. Continuous line drawing

Continuous line.mp4 (sharepoint.co

Draw an object in pen without taking your pen off the paper. This drawing should be an accurate representation of the object but it will have trail lines.

4. Checklist for a successful drawing

Choice of object – In drawing this object you will be able to demonstrate your skills
Sharp pencil – To help you add accurate detail
Size – work large so you can fit in more visual information
Shape – ensure the shape is accurate
Sketching you have used a sketched line rather than a heavy solid line
Detail - from observations you have included every aspect of the object.

Experimenting

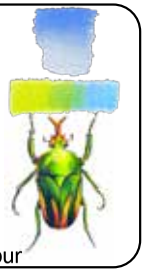
6. How to paint with ready mix

Start with the background, paint the whole space
Build up the tones in the back ground
Sketch the outline.
Start with the main body of the picture.
Add brush marks to create layers
Add the detail last.

7. Colour pencil

Colour pencil.mp4 (sharepoint.com)

Sketch the outline lightly in pencil
Bold colours – Apply pressure when colouring.
Layering (Lightest colours first)
Blending
Directional shading
Use different tones of the same colour



8. Oil Pastel

Sketch lightly in pencil first.
Blend colours using the pastels not your finger.
Paint with PVA glue to varnish.

9. Collage (Coloured paper/newspaper/magazines)

Use torn or cut paper depending on the quality of the edge you want.
Build up layers, large areas of colour first to details last.

Knowledge

10. Content- what the work is about/of

Process- How the work is made/created
Form- How have the artists used the basic elements?
Connections- How does the artist's work connect to your project?

11. Organic forms objects like seed pods, shells, bugs and butterflies…… These objects have curved edges……

12. Peter Randall- Page

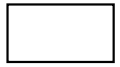
https://youtu.be/gtnDBXwQLD0

Content-He uses nature as inspiration, things like shells, seed pods, flowers, camouflage and dividing cells are starting points for his work .His work is often based on maths.
Form-His work is solid with a little texture on the surface.The shape is organic with smooth edges.
Process- Materials used, Limestone, granite and marble.Hammer and chisel with fine sanding tools.Cast in bronze.Clay
Connections- Natural forms, Greek and Roman art. Randall-Page uses direction shading to create the illusion that the drawing is 3d.

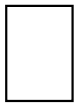
Creativity

13. Composition

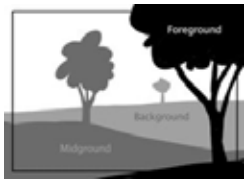
Landscape



Portrait



14. Foreground/Mid-ground/Background



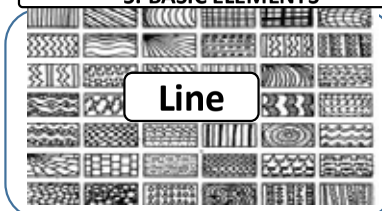
How the space in an image or picture is divided up to give a sense of depth.

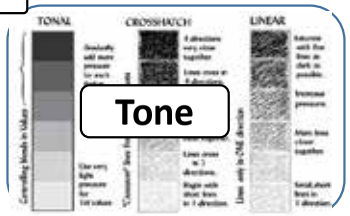
15.

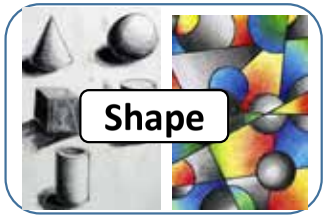
Rule of thirds

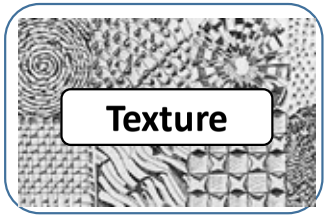
How the space in an image/ picture is divided up to create points of interest that draw the viewer's attention to certain objects or subjects within the composition.

5. BASIC ELEMENTS





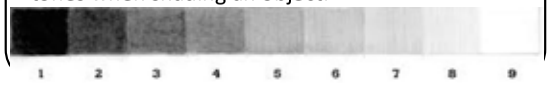




ART

Skill – Drawing/shading

16. Tone is the lightness or darkness of something. You would use a variety of different tones when shading an object.



17. Tone.mp4 (sharepoint.

Shading is used to show where the light and dark areas are on an object. This shows the 3D form of the object.

18. Shade (Directional Shading)

Directional line.mp4 (sharepoint.com) Is where you describe the object using line and tone. There are more lines to create the darker tones and less lines to create the illusion of light

19. Key words:

Observation -Looking and noticing all the detail
Mark making – using a variety of lines to describe texture
Shape - the outline of something
Form - 3 dimensional shape
Proportion – how the size of different parts of an object, thing or person relate to each other
Composition- how parts of a picture/image connect to each other
Perspective- how the height, width and depth of an image is shown.

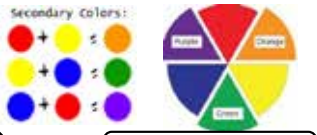
20. How to paint with water colour

Watercolour.mp4 (sharepoint.com)
Start with the background, paint the whole space
Build up the tones in the back ground
Sketch the outline
Start with the lightest tones
Add brush marks to create layers working from lightest through to darkest colours.
Add the detail last.

Colour

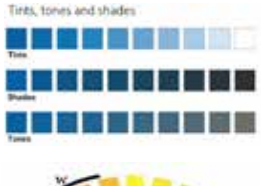
21.

Primary colours



Secondary colours

Complementary
Blue and orange
Red and green
Yellow and purple



Harmonious colours are colours that go well together. Warms are reds, oranges and yellows. Cool colours are blue, green and purple.

22. Cezanne has used the rule of thirds to create an effective composition. By dividing up his painting as a wall, a table and a table cloth.
The point of interest in this painting is the large bowl of fruit.
This is a still life painting by Cezanne.
The corner of the table is drawing your eye into the painting.

23. In the visual arts, **composition** is the placement or arrangement of visual elements or ingredients in a work of art. The term composition means 'putting together' and can apply to any work of art.

24. Using a camera to record.

- Put on the neck strap
- Turn it on
- Check the battery
- Check the mode (Auto or Auto without flash)
- Look through the viewfinder to decide your composition. Remember – Rule of thirds/Foreground/mid ground/background/landscape or portrait.
- Push the button down half way to focus
- Push the button fully down to take the picture.

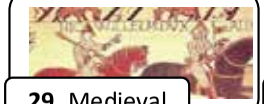
History of art movements

25. Prehistoric

26. Egyptian

27. Greek

28. Roman



29. Medieval

30. Renaissance

31. Impressionism

32. Modern

Tiverton High School Year 7 **Computing** **Autumn Term** Knowledge Organiser

How we use passwords | Key Construct 1: **Impact of Digital Technlogy**

Choose a password that **you** will be able to **remember**.

Don't make the password too short. Short passwords may be easier to guess.

Use a **mixture** of **different** kinds of **characters**:

capital letters **ABCDEFGHIJKLMNOPQRSTUVWXYZ**

lower-case letters **abcdefghijklmnopqrstuvwxyz**

digits 0123456789

other symbols $£@!

Examples: `Iquito$96` `br@mbleD0g` `SFpyram1d` `iqu1t0$96`

Remember...

Don't tell anyone your password.

Don't write it down because people could see it.

Don't let people watch you when you type it in.

Change your password if you think someone knows it.

Working with text | Key Construct 2: **Working with Software and Documents**

We use **Microsoft Word** to prepare most written documents. Microsoft Word is a **word-processor**.

A word-processor lets you add **pictures**, **tables**, **page numbers** and other things to your **writing**.

Always make it obvious what your document is about. Start your document with a large, bold **heading**.

Break your writing into different **sections**. Label each new section with a smaller **sub-heading**.

Choose a **font-face** that is easy to read, such as **Calibri** or **Arial**.

Use a consistent **font size** for the main text in your document. Try **10 pt** or **11 pt**.

Use **bold** or *italics* to make important parts of your text stand out and gain attention from the reader.

You can organize more complicated information using a **table**.

You can add special **scientific symbols** or characters that are used in **different languages**:

á **ç** **é** **ö** **∞** **Δ** **π** **√** **α** **β** **γ**

You can **raise** characters **above** the rest of your writing. This is called **super-script**:

cm^3 $y = x^2 + 5$

You can also **lower** characters **below** the rest of your writing. This is called **sub-script**:

O_2 **H_2O** **CO_2** **H_2SO_4**

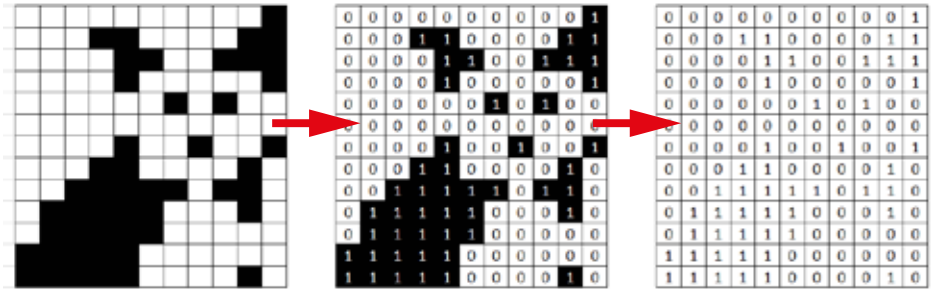
Working with pictures | Key Construct 2: **Working with Software and Documents**

Bitmap images are **pictures** that are made up of **pixels** (**picture elements**).

A **pixel** is a small coloured **dot** in a picture.

All of the pixels are arranged in a grid, a little bit like a mosaic.

The **colour** of each pixel is stored in the memory of the computer using a apattern of **binary digits**... **1**s and **0**s.



Working with numbers and data values | Key Construct 2: **Working with Software and Documents**

We use **Microsoft Excel** to perform **calculations**, produce **statistics** and plot **graphs** and **charts** from data values.
Microsoft Excel is a **spreadspreadsheet program**.
It can **multiply**, **divide**, **add**, **subtract** and work out **averages**. It can also make **decisions** about data.

A spreadsheet uses a grid of **cells**. A cell is like a "**box**".

Each cell can hold one **data value** - which is often either a **number** or a short piece of **text**.

A whole **vertical** line of cells is called a **column**.
A whole **horizontal** line of cells is called a **row**.

Column headers are labelled with **letters**.
Row headers are labelled with **numbers**.

Using the column letter and the row number you can find one cell. This is called a **cell reference**.
Cell **C5** is in **column C**, **row number 5**.
Cell **G23** is in **column G**, **row number 23**.

A spreadsheet can **calculate** things for you. Instead of typing in a data value into a cell, you can type in a **formula**.

A formula always begins with the **=** sign.
This sign tells the spreadsheet to **work something out for you**.

So the formula `=B5*2.2` would find what is in cell **B5** and then **multiply** it by **2.2** for you.

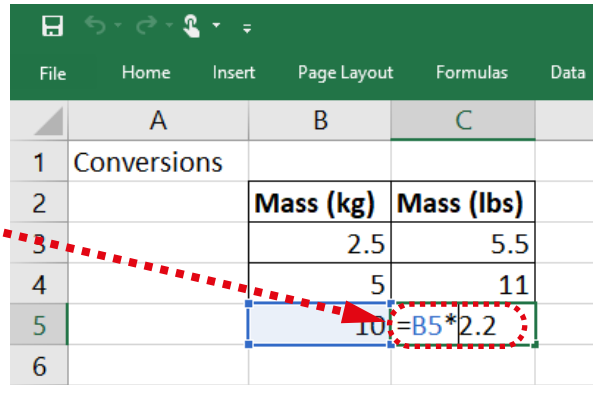
Remember: * means "**multiply**" / means "**divide**"

`=SUM(B3:B5)` would work out the **sum total** of all the numbers in the **block** of cells from **B3**, to **B5**.

`=AVERAGE(B3:B5)` would work out the **mean average** of all the numbers in the **block** of cells from **B3**, to **B5**.

`=MIN(B3:B5)` would find the **minimum value** (the **smallest** value) in the block of cells from **B3** to **B5**.

`=MAX(B3:B5)` would find the **maximum value** (the **largest** value) in the block of cells from **B3** to **B5**.



Tiverton High School Year 7 **Computing** **Spring Term** Knowledge Organiser

Hardware and software | Key Construct 3: **Computer Systems**

Hardware means the **physical components**, **devices** and **electronic circuitry** of the computer system.

Software means the **programs** that a computer uses. Software is not physical.

A **program** is a set of **instructions** that tells the computer **what to do**.

Without any software programs, the computer hardware would be **useless**.
The computer would not have any instructions to follow, so none of the circuits would activate.
An empty computer will not do anything when you switch on the power. It **needs** to have some software to tell it **what to do**.

Different kinds of software programs | Key Construct 2: **Working with Software and Documents**

An **operating system** is a program that makes your computer or your phone **easier to use**.

Examples of **operating systems** include:

- **Microsoft Windows** and **Ubuntu Linux** for **desktop PCs** and **laptops**;
- **Apple MacOS** for **Apple Mac computers** and **Macbook laptops**;
- **Google Android** for **Samsung phones** and **tablets**;
- **Apple iOS** for **Apple iPhones** and **iPad tablets**.

The operating system software **automatically** loads into your computer's memory as soon as you switch the computer on.
when the computer is loading the operating system, we say that the computer is "**booting up**" - it is getting ready for you to use.

Once the operating system has finished loading and it is running, the computer is ready to use. You can now load any program that you would like to use. Without an operating system, most computers would be too difficult to use because computers are **very** complicated machines.

Software applications are general purpose programs. They can be applied to solve many different kinds of problems.
Some examples of software applications include:

- **Word Processing** applications - to create text documents;
- **Spreadsheet** applications - to work with numbers, data, calculations, statistics, graphs and charts;
- **Databases** - to store and search through large amounts of information about people or things;
- **Graphics Packages**;- to create and edit photographs, illustrations and diagrams;
- **Audio and video editors** - to edit sounds, music, podcasts and video recordings.

Web-pages can be **displayed** or **viewed** in a program called a **web-browser**.
Examples of web-browsers include **Microsoft Edge**, **Apple Safari** and **Google Chrome**.

Devices and components | Key Construct 3: **Computer Systems**

A computer must always have special circuitry inside it called the **processor**.
The processor is also called the **Central Processing Unit** or **CPU**.
The processor **executes** or **carries out** each instruction in a **program** to make things happen.

RAM stands for **Random Access Memory**
The RAM inside a computer holds the program of instructions that the CPU needs to carry out.
RAM is **volatile… all data that was stored in RAM will be lost when the power is turned off**.

Input Devices transfer data **into** the computer
Examples: **keyboard**, **mouse**, **web-cam**, **microphone**, **image scanner**, **fingerprint sensor**.



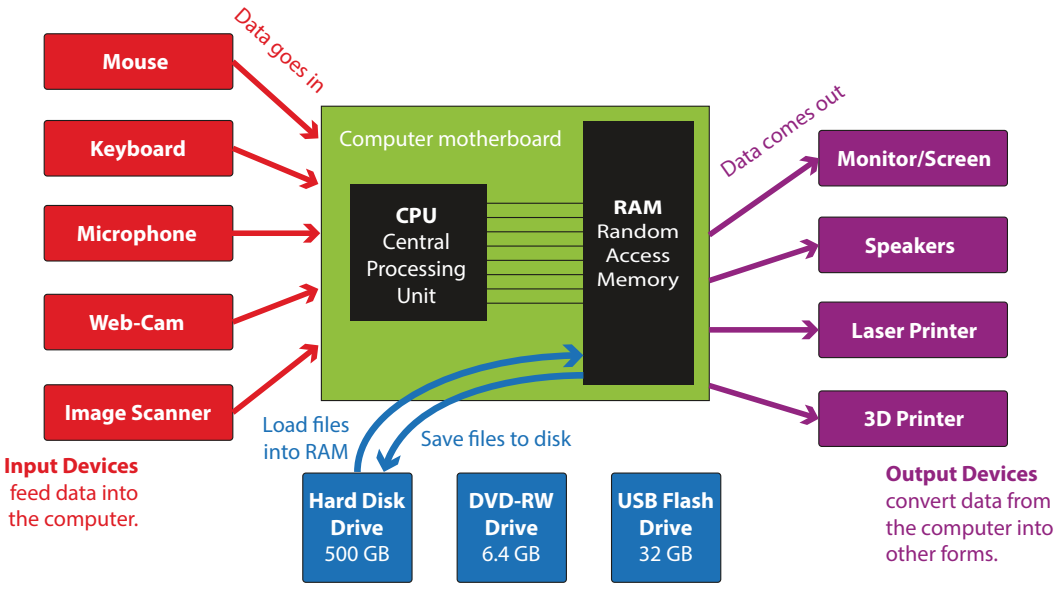

Output Devices transfer **out** of the computer for people to use.
Examples: **Screen/monitor**, **headphones**, **speakers**, **printer**, **3D printer**, **LED** lights.




Storage Devices store files even while the computer is off.
Examples: **Magnetic hard-disk drive**, **solid-state drive**, **USB flash-drive**, **CD-ROM drive**, **DVD-ROM drive**.




Hardware that makes up a computer system



Storage Devices hold data and programs, even when computer is switched off.

Tiverton High School Year 7 **Computing** **Summer Term** Knowledge Organiser

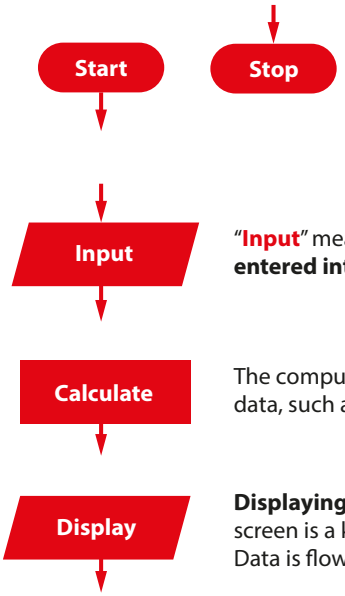
Planning solutions to problems | Key Construct 6: **Problem Solving and Programming**

A **program** is a sequence of **instructions** that the computer will carry out (**execute**).

An **algorithm** is a precise set of written steps that describe exactly **how to solve a problem**.

A **flowchart** is a **diagram** that shows how an algorithm works.

Flowchart Symbols

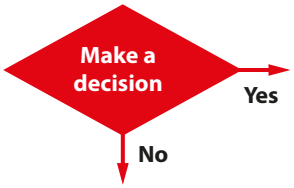


A flowchart always begins with a **"terminator"** shape to mark the **beginning** or **end** of the flowchart.

"**Input**" means **data is entered into the computer**.

The computer can **process** some data, such as use it in a **calculation**.

Displaying things on the screen is a kind of "**output**". Data is flowing **out** of the computer.



A **decision** diamond often has different routes coming out of it, such as "**Yes**" and "**No**"

Important programming ideas | Key Construct 6: **Problem Solving and Programming**

You can **create** software by writing new programs. You tell the computer what to do, step-by-step, giving it instructions that it will follow.

When you have finished making your program of instructions, you can **run** through them, asking the computer to carry the instructions out one-at-a-time in order. This is called **executing** a program.

You write the program instructions using a **programming language**. You can't just write your program instructions using ordinary english language because many sentences in the english language are too complex for a computer to break down.

There are lots of different programming languages that you can use to make a new program.
Each one has different advantages but some are more difficult to learn than others.

Small BASIC and **Python** are two programming languages that are quite easy to learn for beginners.

To write your program instructions for a new program, you must type them carefully into a **text editor**.

If you make a **mistake**, an instruction may not make sense to a computer. This is called a **syntax error**.

When you try to run your program, the computer can tell you if it finds a syntax error.
The computer may suggest which line in your program needs to be fixed. You can then look for mistakes in your typing.

Programming techniques you can use when writing programs | Key Construct 6: **Problem Solving and Programming**

Input means gathering some data from the keyboard or other input device and storing it in a **variable**.

Output often means **displaying** something on the **screen**.

You can display **words**, **numbers**, or the value of **variables** that are stored inside the computer's memory.
This is called **text output**.

Many programming languages can also be used to **draw lines** and **shapes** on the screen.
This is called **graphical output**.

A **sequence** is a group of program statements that are executed in the **correct order**, one after the other.

A **variable** is a **named value** that can **change** while your program is running e.g. **score**

Assignment means giving a **value** to a variable.

Iteration means repeatedly executing parts of the program **again and again**. This is sometimes called a **loop**.

Selection means making a **decision** to select which part of the program code should be executed.

When you tell the computer to calculate something, you need to use the correct symbol.
Programming languages sometimes use different symbols to those you usualy use in a Maths lesson.

Performing arithmetic and calculating

+ Addition **- Subtraction** *** Multiplication** **/ Division**

Symbols to help the computer make comparisons between things

< less than **> greater than** **<= less than** or **equal to** **>= greater than** or **equal to**

Writing simple programs in Small BASIC | Key Construct 6: **Problem Solving and Programming**

Assignment - storing a value in a variable inside the memory of the computer:

```
score = 10
password = "Cu5tArd"
```

Text values must always be enclosed between " **speech marks**), this shows the computer where the text begins and ends, even if the text contains spaces.

Input - gathering a new **number** or **text value** andstoring them using **variables**:

```
mynum = TextWindow.ReadNumber()
mytext = TextWindow.Read()
```

Output - displaying text messages or the value of a variable on the screen:

```
TextWindow.WriteLine("GAME OVER!")
TextWindow.WriteLine(mynum)
```

Iteration - repeatedly executing something a certain number of times:

```
For number = 0 To 100 Step 10
      TextWindow.WriteLine(number)
EndFor
```

Iteration - repeatedly executing something until something special happens:

```
While time < 60
      TextWindow.WriteLine(time)
      time = time - 5
EndWhile
```

Selection means making a decision to select which part of the program code should be executed:

```
If lives > 0 Then
      TextWindow.WriteLine("Lost a life!")
Else
      TextWindow.WriteLine("Game Over")
EndIf
```

DESIGN & TECHNOLOGY

Design&Technology

Y7 The 4 areas of **Design and technology** are Investigating, Designing and making, Analyse and evaluate, Demonstrate and apply knowledge

1. To help us remember key bits of information for investigating, designing, analyzing & evaluating we use **ACCESS FAME**:

Word What does it mean?

Aesthetics- what it looks like

Cost- cost to make or buy

Client Customer Consumer- who asks for it to be made, who buys it, who uses it?

Environment – where is it made, is it sustainable, is it recyclable?

Size – how big/small is it?

Safety – what potential hazards are there?

Function – what does it do?

Anthropometrics – what human dimensions are needed so it can be used by the majority of people?

Materials/Manufacture – what will it be made of? How will it be made?

Ergonomics – how will it fit the person using it to make it easy to use?

2. Hazard – Something that can cause you or others harm

Risk – The potential/likelihood of the hazard occurring.

Control Measure – The item or measure you put in place to eliminate or minimize the hazard of occurring.

3. Drill bits

4. Design Process.

Brief – A statement explaining what a client is asking you to do consisting of limitations and requirements.

Specification – A list of criteria of that your product needs to meet.

Final design – Your chosen design that explains chosen materials and dimensions.

Evaluation – A reflection of how successful your final product is against the specification.

5. Health and safety-- 5 things do you need to consider when in the work shop to keep you and others safe?

1.Wear goggles
2. Wear an apron
3. Tie long hair back when using equipment
4. Ensure only 1 person uses the machinery at a time
5. Clamp work down when drilling

6. What these properties mean

Absorbent-ability to take in a liquid.

Wind resistant- ability to stop the wind getting through a material.

Waterproof Ability to stop the liquid going through a material.

Crease resistant - ability to not allow the fabric to crease.

7. Templates/Jigs/Formers/Stencils- what are they? These are all used to create the same shape or hole in the the same place every time without marking it out individually each time. It saves time, resources and money for the maker who needs to make more than one item that is the same. It is used in **batch or mass production** processes.

8. Tools and what they are used for?

Tenon saw for cutting straight lines in wood and plastic

Marking gauge for marking a line in wood parallel to the edge.

Bench hook for helping to hold wood when sawing.

Steel rule for measuring accurately

Sewing needle for tacking and hand sewing.

Dressmaking or fabric shears for cutting fabric

DESIGN & TECHNOLOGY

9. Materials: Timber
A **hardwood** is from a broad-leafed deciduous tree which has a close grain due to its slow growth. The annual growth rings are close together.
E.g. **beech, oak, walnut, Sycamore, birch, mahogany** and **teak**
A **soft wood** comes from a coniferous tree that has needles instead of leaves. It does not shed these in winter. It grows fast and the annual growth rings are further apart.
E.g.. **cedar, larch, pine** and **redwood**
Manufactured boards are industrial made from recycled or waste wood. They are available in large flat sheets and are can be a sustainable resource. They come in different sizes and thicknesses.
MDF: made from tiny fibers /sawdust that is mixed with a formaldehyde-based glue and compressed together. **The surface layer could be a hard wood to make it look better.** This does not have a grain.
Plywood: made from thin layers of wood that is arranged so that each layer is at 90° to each other making it stronger. The surface layer could be a hard wood to make it look better.
Chipboard: made from small particles of wood that is recycled or waste wood mixed with a formaldehyde-based glue and compressed. Similar to MDF but rougher due to the larger wood shavings used.

10. Polymers**: Thermoforming plastics are recyclable and bendy-** They don't resist heat, easily formed into different shapes. They are easy to recycle. (water bottles)
Thermosetting plastics are heat resistant, so they do not change when heat is applied. They are not recyclable.

11. Textiles construction
Temporary is by pinning and tacking two or more fabrics together.
Permanent is when they are machine stitched. This can be unpicked but this is time consuming.

Natural fibres are Plant – flax[linen], cotton [Straw and Bamboo]
Animal – wool and silk

12. Properties of Fibres / appearance / good points / bad points

Cotton – absorbent, creases, washable, lightweight – chemical used to bleach it. Needs a lot of water to grow it which damages the environment.

Elastane/LYCRA - flexible and warm. Cannot be recycled.

Polyester: crease resistant, wind proof, can be waterproof, lightweight. Manmade fabric.

Wool: comes from sheep. It has to be shorn from a sheep, spun and then woven. It is an insulator and absorbent to sound and water. It may shrink when washed.

13. Types of adhesives are

1) PVA for wood

2) Epoxy Resin for all materials

3)Contact adhesive for textiles/carpets and fixing different types of materials together, such as plastic to wood.

4) Super glue for all materials

5) HOT glue gun for temporary fixing and modelling

6) Tensol Cement – For bonding polymer surfaces

14. Decorative stitching & fixing – Using coloured stitching and techniques to cause an effect in textile products.
Embellishing - Using premanufactured components to enhance the appearance of a textile product.

15. A **line bender** is used to bend acrylic and high impact polystyrene to a specific angle using a bending jig

Fixing a design in fabric is when heat is applied to the surface either using an iron or a heat press.

16. What is a requirement or need when designing? This is a specification point which the designer must follow when designing a new product.
Write one requirement for a toy car made from mixed materials:
There must be no friction between the body of the car and any moving part as this would spoil any entertainment for the user.

17. The health and safety rules for textiles when using an iron/sewing machine/shears.
1. Do not run around with sharp tools in your hand.
2. Pass the shears holding the blade end.
3. Remove all pins after tacking when you are about to machine sew.

English Year 7 Writing

1. Key Terms: can you use these in your writing?

1. **Descriptive:** a piece of writing which describes a setting or situation in vivid detail.
2. **Genre**: different types of writing which share similar features.
3. **Atmosphere**: the tone or mood of a place or situation.
4. **Mood**: a state or quality of feeling at a particular time.
5. **Nuance**: subtle or slight difference.
6. **Perspective**: a way of looking at something, a viewpoint.
7. **Sensory**: descriptions which relate to the five senses.
8. **Figurative language:** Using a word or phrase outside of its every day meaning – usually to describe or compare something (e.g. similes, metaphors, personification).
9. **Metaphor**: directly refers to one thing by describing something else.
10. **Simile**: describes something by comparing it to another.
11. **Personification**: gives human qualities to something non-human.

2. SPAG: can you write your own examples?

1. A full stop is used to mark the end of a complete idea, with clear tense. E.g. He was running.
2. A comma is used to join a dependent clause to an independent clause. It should never be used to join two independent clauses together.
3. A semi-colon is used …
A colon is used …
4. An exclamation mark...
5. Parenthesis is …
6. A dash can be used …
7. Inverted commas are used…
8. A new paragraph is needed when …

3. Useful Sentence Starters

1. **Adverbials** E.g. Frantically, the…
2. **-ed words** E.g. Ragged, alerted
3. **-ing verbs** E.g. Staggering, slithering
4. **List of adjectives** E.g. Stagnant, murky, brown water
5. **Comparisons** E.g. Unlike the larger African elephant, the…
6. **A noun to start** E.g. Clouds parted gradually
7. **Simile start** E.g. Like a snake, the..
8. **Prepositions** E.g. Next to the waterfall…
9. **When**…
10. **As** …
11. **Although** …
12. **Whilst…**

4. Super Spellings

1. stagnant
2. picturesque
3. euphoric
4. cacophony
5. azure
6. serene
7. tumult
8. infuse
9. throng
10. bristled
11. undulating
12. disoriented
13. exhilarating
14. transfixed
15. equipment
16. atmospheric

5. Bringing your writing to life

1. **Sensory description**
What would you be able to hear? See? Feel? Smell? Taste?
2. ***SHOW* don't tell**
He ~~was bored~~ slumped in his chair, endlessly tapping his pencil.
3. **Vary your sentences for pace**
Short sentences slow the pace; long sentences increase the pace.
4. **Try figurative language**
Metaphor, simile, personification
5. **Use words with precise meaning**
~~Bad~~ Ugly Confusing Evil Uninspiring
~~Went~~ Ran Slunk Ambled Crept

6. Persuasive Writing Techniques

Alliteration: Repeating the same sound at the beginning of a sequence of words
Anecdote: Giving an example/short story related to the topic.
Pronoun: Using words that refer to people – you, I, they, us, we
Facts: Using true statements to be informative.
Opinions: stating an opinion as a fact
Rhetorical Question: Questions which cause the reader to think –they do not need an answer.
Repetition: Repeating the same word or phrase for emphasis.
Emotive language: using words that create an emotional response in the reader.
Exaggeration: to make something seem better or worse than it really is
Statistics: Using percentages, numbers to sound informative.
Threes: Using three different words/phrases together to describe something.
Expert opinion/quotes:
Flattery: Writing positively about the reader.

7. Mood words. Can you write a paragraph to demonstrate each one?

1. Calm
2. Anticipatory
3. Nervous
4. Exhilarating
5. Gentle
6. Awe-inspiring
7. Chaotic
8. Sinister
9. Foreboding
10. Morose
11. Disorientating
12. Frenzied
13. Tense
14. Idyllic
15. Playful
16. Dignified
17. Sombre
18. Energetic
19. Frenetic
20. Aggressive

1. Context

Can you link context to a specific moment in a text and help you understand the writer's intentions at this point?

- **Author information:** What do they usually write about, what influenced them, what was their life experience?
- **Era:** When was it written? What did people at the time believe about the world that was different to today?
- **Historical Events:** Were there any big events that will have affected the characters in the story?
- **Location:** Where was the book written or set? How does this affect what we can expect from the characters in terms of how they act the way they do and why?
- **Genre** Are there any techniques that are used in the story that are common in this particular style of novel?
- **Audience** How would an audience in this time/location react differently to us?

2. Novel Scheme: *Restart* or *The Boy Who Flew*

Title: The Boy Who Flew
Author: Fleur Hitchcock
Written: 2019
Set: Victorian England, 1837-1901
Location: Bath, Southwest England. Known for: Roman-built baths, Georgian architecture
Genre: thriller, mystery
Themes: Friendship, bravery, injustice
Industrial Revolution: Period of rapid industrial growth and technological advancement.
Inventions: Steam engines, railways, factories, telegraph
Vehicles and transportation – people were interested in flying
Fear of science: many people were still very afraid of Science, going against God and teachings of the Bible.
Superstitions: Belief in witchcraft, spells, myths, folklore
Child Labour: Common practice in factories and mines

Title: Restart
Author: Gordon Korman
Written: 2017
Set: Modern day, American Middle School
The American School System:
Elementary School (equivalent to primary school)= Kindergarten (Year 1, age 5), then Grades 1-5 (Years 2-6, ages 6-11)
Middle School (equivalent to KS3) = Grades 6-8 (Years 7-9 ages 11-14)
High School (equivalent to KS4 and 5) = Grades 9-12 (Years 10-13, ages 14-18)
American Football:
Popular American sport, similar to rugby
11 players per side, played with an oval ball
Y shaped posts rather than the H shaped in rugby
Amnesia:
Memory loss, which can be temporary or permanent
Causes can include head and brain injuries, alcohol and drugs, or traumatic events.

3. *Frankenstein*

Title: Frankenstein
Author: Mary Shelley, play adaptation by Phillip Pullman
Novel written: 1818 **Play written:** 1990
Set: The Arctic circle, Frankenstein's room in Ingolstadt, Germany, Frankenstein's study in Geneva.
Misconception: many believe Frankenstein is the name given to the monster, but in fact, it is the name of the scientist.
Industrial Revolution: Period of rapid industrial growth, travel to other territories, scientific discovery and medicine
Fear of science: many people were still very afraid of science, going against God and teachings of the Bible.

Genre: Mary Shelley's *Frankenstein* is a Gothic novel
Gothic literature emerged in the late 18th century. It gets its name from its similarities to the **Gothic medieval cathedrals** covered with wild creatures — demons, angels, gargoyles, and monsters.
Stories are normally set in **gloomy** and **mysterious** surroundings, such as **crumbling castles, haunted houses or isolated landscapes.**

Gothic stories frequently explore **horror, the fantastic, and the "darker" supernatural forces.** Creatures such as **werewolves, vampires, ghosts and monsters often feature.**

It paints life as a mixture **of good and evil powers** that cannot be understood completely by human reason.

Stories often feature **scary science.** This is a reflection of the **conflict** between people's **religious beliefs** and the interest in **scientific discoveries** at the time.

1. Context

Can you link context to a specific moment in a text and help you understand the writer's intentions at this point?

• **Context of the author**

Shakespeare - born in 1564 (the **Elizabethan** era named after Elizabeth I) in Stratford-Upon-Avon and died in 1616.
James I became king after Elizabeth – **Jacobean** period (Jacob is the Latin for James).
Shakespeare worked as playwright, poet and actor.

•**Location:** Where was the book written or set? How does this affect what we can expect from the characters in terms of how they act the way they do and why?
•**Genre** Are there any techniques that are used in the story that are common in this particular style of novel?
•**Audience** How would an audience in this time/location react differently to us?

2. Shakespeare's plays: *The Tempest*

Title: The Tempest
Author: William Shakespeare
Written: 1610 / 1611 The last play Shakespeare wrote!
Set: The play is set in Italy. During the Elizabethan and Jacobean era, Italy wasn't a unified country, but made up of lots of independent **city states,** each ruled by the rich because of trade. The Tempest involves two Italian city-states: **Milan & Naples**
Genre: Comedy

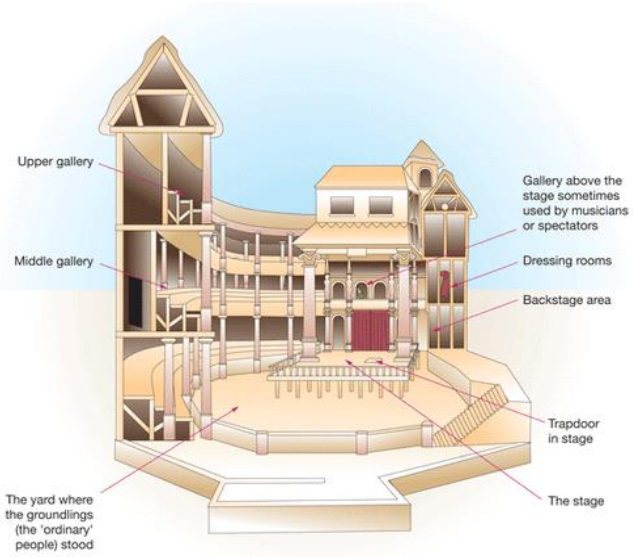
Themes: Magic, betrayal, forgiveness and prejudice. Before science and technology, there were strong beliefs in magic and the supernatural. King James I was particularly interested in the **supernatural,** particularly witches. He wrote 'Daemonologie' (the study of demons) in 1597 which explored the power of the supernatural

Dramatic unities: the play follows Aristotle's theory of dramatic unities. Aristotle was a Greek philosopher, and he established the conventions of **Unity of Place** – one setting, **Unity of Time** – action takes place over 24 hour time period, and **Unity Of Action** – that there should only be one main plot, and everything else revolves around it.
Sea exploration was booming in the Elizabethan era as people '**discovered**' new parts of the world. **Queen Elizabeth**, obsessed with sea explorers' discoveries, was happy to pay for their travels, mainly because she could **claim any new land discovered as England's.**

Colonialism describes European exploration at this time when **one country establishes itself in another and exploits it economically**. It also describes the often negative impact on the people native to those lands.

The Chamberlain's Men and The Globe theatre

The large, open-air theatre, accommodated all people: the poor only had standing tickets on the ground floor (known as the **'groundlings'**). The rich sat in higher-level, covered galleries comfy seats – away from the poor.



Archaic Language (definition)
Thou = You (subj)
Thee = You (obj)
Thy = Your
Thine = Your
Hath = Has
Hast = Have
Ere = Before
Alas = Oh no!
Hence = Away
Wherefore = Why
Doth = does

Shakespearean insults:
"A most notable coward, an infinite and endless liar, an hourly promise breaker, the owner of no one good quality."
All's Well That Ends Well (Act 3, Scene 6)

"The rankest compound of villainous smell that ever offended nostril"
The Merry Wives of Windsor (Act 3, Scene 5)

"The tartness of his face sours ripe grapes."
The Comedy of Errors (Act 5, Scene 4)

"You scullion! You rampallian! You fustilarian! I'll tickle your catastrophe!"
Henry IV Part 2 (Act 2, Scene 1)

English Year 7 Reading

1.Technical terms

1. **Theme**: main idea or repeated idea.
2. **Analysis**: a detailed examination of a piece of writing
3. **Focus:** clear and sustained interest in the central idea or topic.
4. **Structure**: how a piece of writing or a story is organised
5. **Inference**: logical understanding or deductions made based on evidence.
6. **Empathy**: understanding how a character feels.
7. **Narrator**: the person telling the story.
8. **Act:** the main sections of a play.
9. **Scene:** the smaller sections of a play – similar to chapters in a novel.
10. **Stage directions:** notes to the actor and director about how to move or speak.
11. **Monologue:** a longer speech by a character to another character.
12. **Soliloquy:** a longer speech by a character to themselves or the audience.
13. **Metaphor**: describing something by saying it IS something else…but not literally.
14. **Simile**: describing something using 'like' or 'as' to make a comparison.

2. Super Spellings

1. Individual
2. Character
3. Antagonist
4. Protagonist
5. Playwright
6. Specific
7. Identified
8. Create
9. Revealed
10. Interpretation
11. Significant
12. Circumstances
13. Effect
14. Affect
15. Response
16. Definition
17. Relevant
18. Conventions
19. Constant
20. Decline
21. Inference
22. Literature
23. Interaction
24. Relationship
25. Relevant
26. Colonialism

3. Big questions

1. Would I like to be friends with any of these characters? Why?
2. How would I describe the main character?
3. Do I dislike any characters? What is it about them that I don't like?
4. Do I recognise any parts of myself in any of these characters?
5. What do I predict will happen next?
6. What does this character want to achieve?
7. Was I satisfied with the ending? Why?
8. Which character would I go on a camping trip with?
9. If I could live in the setting of this text, would I? Why?
10. If the main character was a colour, what colour would they be and why?
11. If I could give advice to a character what would it be and why?
12. If one of the main characters was an animal what would they be and why?

4. Key vocab

These words may help you when writing about characters in the stories you will read this year.

Courageous
Aggressive
Protective
Heartbroken
Vengeful
Callous
Focused
Appreciative
Observant
Frustrated
Mindful
Defensive
Superstitious
Respectful
Desiring respect
Intrigued
Fascinated
Athletic
Assertive
Apprehensive
Desperate
Humorous
Pleading
Considerate
Curious
Ashamed
Demanding
Persuasive
Determined
Forceful
Discouraged
Relieved
Impatient
Captivated

5. Further reading

His Dark Materials Trilogy - Phillip Pullman
Wonder - R J Palacio
Booked - Kwame Alexander
Armistice Runner - Tom Palmer
Kick - Mitch Johnson
Boy 87 - Ele Fountain
The Bone Sparrow - Zana Frallion
Long Way Down - Jason Reynolds
Alone on a Wide Wide Sea - Michael Morpurgo
Refugee Boy - Benjamin Zephaniah
Diary of Anne Frank - Anne Frank
Cogheart - Peter Bunzl
Wildspark - Vashti Hardy
Boy in the Tower - Polly Ho Yen
Ghost - Jason Reynolds
Holes - Louis Sachar
All the things that could go wrong - Stewart Foster
Malamander - Thomas Taylor
Here Lies Arthur - Phillip Reeve
Stormbreaker - Anthony Horowitz
Boy at the back of the class - Onjali Q'Rauf
Where the world ends - Geraldine McCaughrean

6. Personal response

The writer makes me feel…
The writer makes me think…
The writer makes me question…
The writer helps me to picture…
I predict that…
When I first read ___, I thought…, but then…
It strikes me as… when…
I cannot help but wonder why…
What frustrates me is….
I find it really… when…
…**because**…

English Knowledge Organiser Glossary

1. Short Stories and Novels

1. allusion
2. antagonist
3. character
4. climax
5. conflict
6. development
7. exposition
8. foreshadowing
9. first person
10. hook
11. implicit
12. irony
13. motif
14. narrator
15. pathetic fallacy
16. plot
17. prose
18. protagonist
19. resolution
20. second person
21. setting
22. tension
23. theme
24. third person

2. Plays

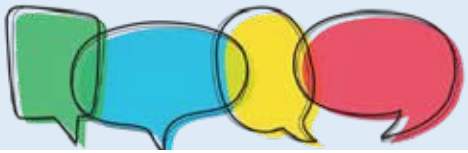
1. act
2. audience
3. cast
4. comedy
5. dialogue
6. director
7. dramatic irony
8. monologue
9. playwright
10. protagonist
11. scene
12. script
13. situational irony
14. soliloquy
15. stage directions
16. staging
17. tragedy
18. romance

3. Poetry

1. anadiplosis
2. anaphora
3. caesura
4. dramatic monologue
5. end stop
6. enjambment
7. alliteration
8. free verse
9. half rhyme
10. metaphor
11. meter
12. ode
13. onomatopoeia
14. personification
15. rhyme
16. rhythm
17. rhyming couplets
18. sibilance
19. simile
20. sonnet
21. stanza
22. volta

4. Persuasive writing

1. alliteration
2. anecdote
3. pronouns
4. facts
5. opinions
6. rhetorical questions
7. repetition
8. exaggeration
9. emotive language
10. statistics
11. threes
12. ethos
13. expert opinion
14. flattery
15. humour
16. imperatives
17. logos
18. pathos
19. sarcasm
20. rhetoric



FOOD YR 7 THE EATWELL GUIDE

A

FRUIT AND VEGETABLES

We need 5-7 portions a day. A portion is a hand full.

Fruit and vegetables provide the nutrients vitamins, minerals and fibre. Vitamins and minerals do all sorts of jobs in the body. Fibre is needed to aid digestion. Water rehydrates us. We need 6-8 glasses a day

COOKING AND FOOD PREPARATION

KNIFE SKILLS- BRIDGE- Finger and thumb each side of the fruit with the knife in the middle

B

CLAW- clutching the fruit with one hand

Rules of the Food Room

Aprons
Wash Hands
Tie hair Back
No running
Listen

ENZYMIC BROWNING

When fruit is cut open the enzymes react with the oxygen in the air and the fruit goes brown. Adding an acid like lemon juice can stop the enzymes reacting with the oxygen.

FOOD YR 7 THE EATWELL GUIDE | NUTRITION | FOOD PROVENANCE | FOOD CHOICE | FOOD SAFETY | FOOD SCIENCE | FOOD IN INDUSTRY | COOKING AND FOOD PREPARATION

Reared- MEAT – FARM TO FORK
Meat comes from animals that are **reared** on farms. Chickens, cows, pigs, ducks, sheep.
Meat is slaughtered and processed.
We can buy meat in many different cuts.

Caught- FISH- This is **caught** in many different oceans around the world. It is then processed. It is also farmed.

Grown- Crops such as wheat, barley, potato's, carrots,(fruit, vegetables, cereals,)

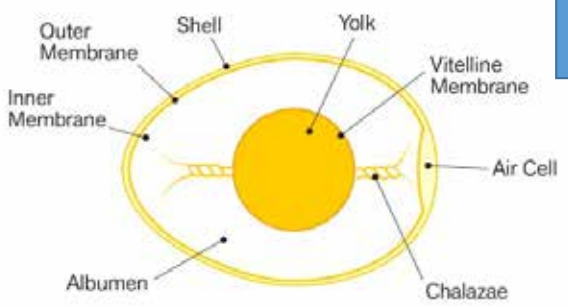
C

BEANS, PULSES, EGGS, FISH AND MEAT
These foods provide the nutrient protein. Protein is needed for growth and repair of all the cells in the body.
HBV: High Biological value: Good source of protein – Animal sources
LBV: Low Biological value Low source of protein – Vegetable sources

E

DAIRY AND ALTERNATIVES
These foods provide the mineral - calcium. Calcium is needed for strong teeth and bones. A lack of calcium can cause OSTEOPOROSIS. Dairy products can also be high in the nutrient fat.

EGGS
Most of our eggs come from chickens, but can use goose eggs which are good for baking, ducks eggs and quails eggs.



G

EGGS

BOILED Soft boil = 5/6 mins Hard boil =10 mins
FRIED - COAGULATION – the protein in the egg white sets solid, followed by the egg yolk
SCRAMBLED Gently whisked over heat until the egg coagulates
POACHED Crack egg into boiling water

4Cs
COOK - 75oC for 2mins – temperature probe.
CHILL - fridge 0-5oC.
CROSS-CONTAMINATION
Red and green boards.
Raw meat and vegetable
CLEAN – remove bacteria

THE OVEN
Hob
Grill
Oven

F

EQUIPMENT
Knives: chefs, vegetable
Chopping boards: red & green
Saucepan/ frying pan- handle not over the heat
Wooden Spoon
Rolling Pin
Baking tray/ Oven gloves
Food processor
WASHING UP hot water and washing up liquid to kill the bacteria
Dish Cloth
Tea Towel

BREAD, POTATOES, RICE AND PASTA- Sugar V Starch- These foods provide the nutrient carbohydrate is made up of starch, sugar and fibre. Starch provides slow release energy.
they provide energy for the body however starch is better for us than sugar.
Starch is a slow releasing form of energy which can keep the body going for long periods of time. Sugar is a quick release energy where there is a short bust of energy .
This issue with sugar is that to keep your body energised you keep needing to have sugar, this means your blood sugar levels rise and fall which can cause mood swings
Sugar does not carry any nutrients whereas starch contains iron good for blood , calcium, good for bones and vitamins B and C which is good for growth and repair.

The amount of carbohydrates we need in a balanced diet is around 40%.
The food which contains starch are rice, bread and pasta, however for this to even better for us it is better to have brown rice, brown pasta and bread as this contains fibre, the last of the third sections of carbohydrates.
Finally, we want to avoid eating too much sugar such as chocolate, cakes and sweets due to this rotting teeth and sugar which is not burned off will turn to fat putting extra pressure on the body.

D

FOOD YR 7 THE EATWELL GUIDE | NUTRITION | FOOD IN INDUSTRY | FOOD SCIENCE | FOOD SAFETY | FOOD PROVENANCE | FOOD CHOICE | COOKING AND FOOD PREPARATION

H

FOODS HIGH IN ANIMAL FAT AND SUGAR
These are not on the Eatwell Guide.
Animal fat – saturated fat is bad for us.
The nutrient sugar is bad for us – a quick energy release and can rot our teeth.

OILS AND SPREADS
These contain the nutrient fat. This fat is a good fat. It comes from vegetables and is called unsaturated fat.

Cheesecake
Base- Biscuits - Carbohydrates
Topping- Dairy- Fats

MILK and CHEESE
Most of our milk comes from cows.
There are 3 main types of milk – Whole, skimmed and semi-skimmed.
Milk can be processed to make cheese and yoghurt.

J

Water and Hydration- 7 key points

1. Water protects your tissue- helps protect the spinal cord
2. Water helps your body remove waste perspiration, urination and defecation
3. Water aids digestion by helping to break down the food
4. Prevents you from becoming dehydrated which can make you very ill.
5. Water helps your brain to function effectively
6. Water keeps your cardiovascular (heart & blood) system healthy
7. Drinking water can help you avoid taking on extra calories you don't need.

- **Salt** or sodium helps to conduct nerve impulses, contract and relax muscles, and maintain the proper balance of water and minerals.
- Too much salt can lead to high blood pressure and heart disease

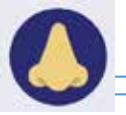
MUFFINS
These use vegetable fat – unsaturated, good fat. These can be developed to make them healthier in lots of different ways.
Muffins can be sweet – sugary (dessert) or savoury – (main course)

K

SPECIFICATION
A list of points that your product **must have** to meet the requirements of the task.

TASTE – Flavour **TEXTURE** – Mouth feel

APPEARANCE Looks **AROMA** Smell



TRAFFIC LIGHT LABELLING
More products now have the traffic colour-coded nutritional information. This tells you at a glance if the food has high, medium or low amounts **of fat, saturated fat, sugars and salt:**

Red = High
Amber = Medium
Green = Low

L

The more green on the label, the healthier the choice.
Amber means neither high nor low, so you can eat foods with all or mostly amber on the label most of the time.
Red on the label means the food is high in fat, saturated fat, salt or sugars and these are the foods we should cut down on.

VEGETARIAN Someone who doesn't eat meat.
VEGAN Someone who doesn't eat anything from an animal.

THE SOYA BEAN – HBV PROTEIN
OBESITY – Being largely overweight from consuming too much fat in the diet. BMI of over 30
OSTEOPOROSIS – Not enough calcium in the diet – weak bones, bending of the spine.

I

Good Fridge organisation
This chart represents the shelves and draws in a fridge

- Dairy
- Cooked meats/ leftovers
- Uncooked meats
- Salad, fruit and veg

L

FOOD YR 7 THE EATWELL GUIDE

NUTRITION | FOOD PROVENANCE | FOOD IN INDUSTRY | FOOD SCIENCE | FOOD SAFETY | FOOD CHOICE | COOKING AND FOOD PREPARATION

BREAD

Bread is made using the biological raising agent yeast.
YEAST is a micro-organism. Yeast needs 5 things to grow and breathe.

KNEADING – trapping oxygen into the dough
PROVING – Leaving the yeast to breath – giving it time

M

PIZZA

Pizza is traditionally made with a bread base. Pizza comes from Italy – Food provenance. The traditional cheese topping is tomatoes and mozzarella cheese (Italian).

HEALTHY EATING

N

Healthy eating is trying to follow the Eatwell guide over a period of time. Food products can be developed to be healthier and better meet the Eatwell Guide.

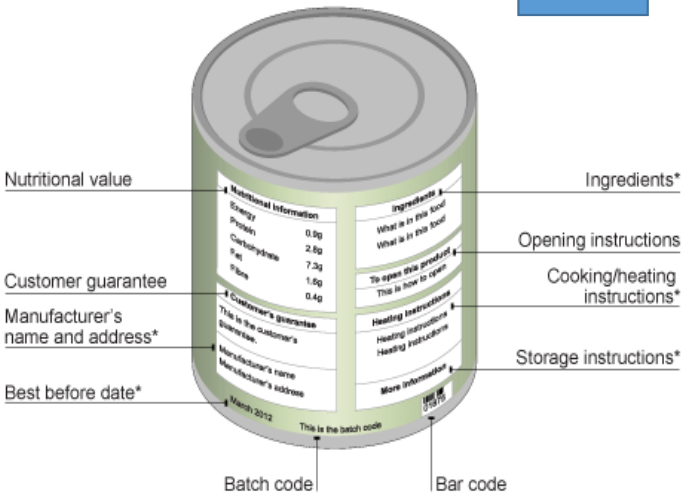
Add fruit and vegetables
Use vegetable fats instead of animal fats
Reduce sugar
Use low fat milk and dairy products
Limit meat and other animal products

PACKAGING

Food is packaged to:
Protect it, make it easier to transport, provide the customer with information **Types of packaging:**

Glass see through, breaks easily.
Plastic Shaped easily, bad for the environment.
Cardboard Easy to print on, soggy when wet.

O



Information that must go on packaging by law includes:

- the name of the food
- any necessary warnings
- a list of ingredients
- instructions for use or cooking
- the name and address of the
- Manufacturer
- any special storage
- conditions

*a 'best before' or 'use by' date
*net quantity information
*the country of origin

Salads and seasonality.
salads are an affective way to eat healthy food that gives our bodies what it needs to function properly.
Seasonal food is fresh food that is ready to eat during its natural growing season. It is usually cheaper due to the abundance of food.

Autum fruits
Lettuces are the edible leafy part of the plant, so they are a vegetable.

Summer fruits
Fruits are the seed-bearing that grow from a flowering plant, whereas vegetables are all the other edible plant parts.

P

GEOGRAPHY 7.1. ECOSYSTEMS

1. and 2. Ecosystems and Biomes

An ecosystem is an environment in which living (biotic) communities of **plants** (flora) and **animals** (fauna) exist suited to the conditions of the non-living (abiotic) **ground** and **climate** in that area.

These four components (biotic and abiotic) all influence each other; this is called **interdependence. See the Venn diagram set out below.**

Ecosystems can be as small as a garden pond, or as massive as a desert. Large scale ecosystems are called **biomes**. Examples are rainforests, coniferous forest or coral reefs.

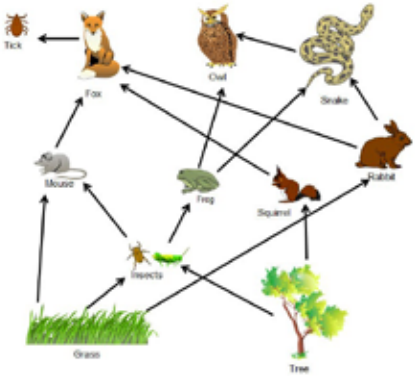
4. Food Chains and Webs

A **food chain** follows a path of energy flow in an ecosystem as animals consume food. **Producers** create food and **consumers** eat them. Some consumers are eaten by **secondary consumers** (**predators**).

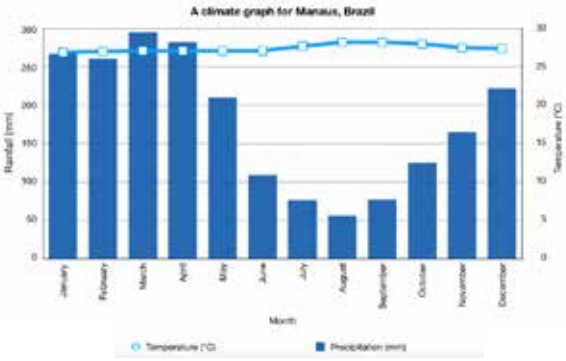
A **food web** consists of many food chains as many animals eat a variety of different things—so the food chains become connected at different points. Nutrients are recycled by **decomposers** when a biotic component dies. See examples of chain and web to the right...

4. Food chain example:

4. Food web example:

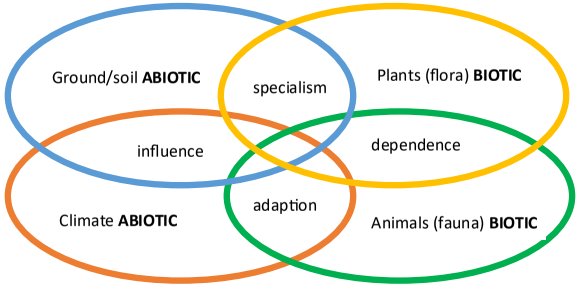


AO4 Climate Graphs and Analysis

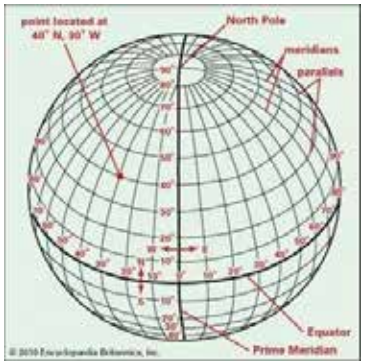


AO4—Statistical Analysis Core skills

Mode	The number which appears the most often in a set of numbers (data)
Bi-modal	If there are two modes
No mode	If one number does not appear more than any other in the set of numbers
Median	The number in the middle of the set when the numbers are put in ascending order
Range	Find the largest and smallest numbers in the set and subtract them
Mean	Add up the numbers and divide by how many there are in the set
Continuous data	Can be measured and take any value. Temperature is continuous over the year on climate graphs and therefore shown at as the line.
Discrete data	Data that can only take particular values. Rainfall is discreet on climate graphs (by month) and therefore shown as non-touching bars.



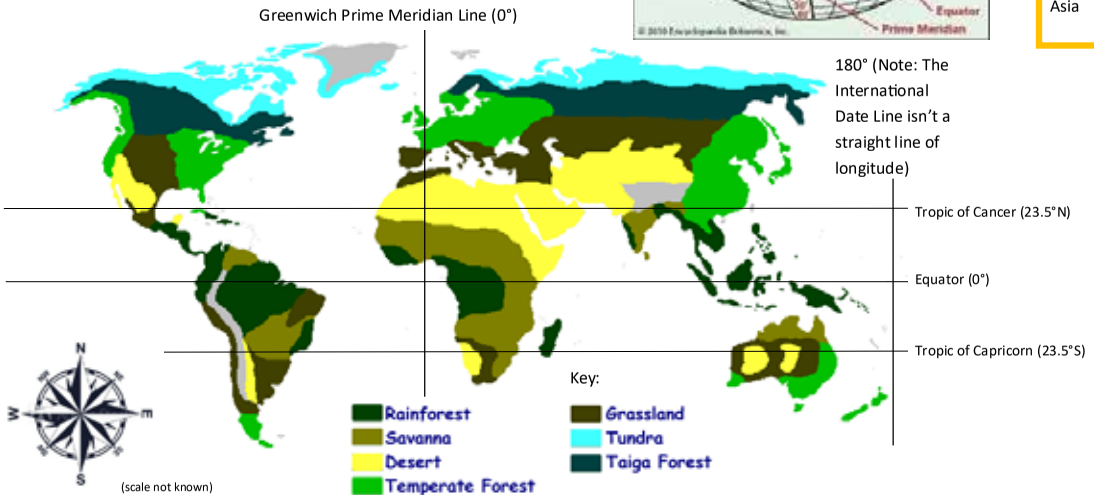
A04 - Longitude and Latitude



Ecosystem Key terms

Ecosystem biome biotic abiotic
interdependence food web food chain
nutrient cycle habitat producers consumers
biomass carnivore omnivore herbivore
predator decomposers longitude latitude
Tropics poles Equator continents
Africa Europe North America South America
Asia Oceania Antarctica

3. Global Biomes and key latitudes

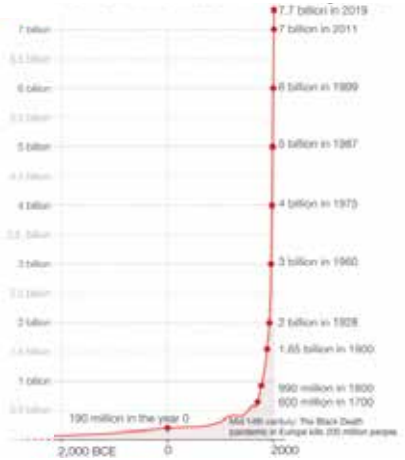


3. 5. 6. 7. Major global biomes overview:

Biome	Locations:	Climate:	Characteristics
Temperate Deciduous Forest	Between 40-60° N or S of the Equator	Mild all year - Cool winters and warm summers. Wet all year	Deciduous trees that lose leaves in winter time. Found in western Europe, eastern USA, eastern Asia and southern Oceania.
Tropical Desert	Generally between 20 -35° N or S—along the tropics	Very hot summer and cool winters. Very dry all year.	Cacti and xerophytes survive here. Extreme climate. Found in North and South America and Africa, western Asia and Oceania.
Tropical Rainforest	Along the equator—between the tropics	Always hot, humid and wet with rain all year	Dense multi-layered forest with a permanent growing season. Found in Central and South America, central western Africa, South-east Asia and northern Oceania.

GEOGRAPHY 7.2. POPULATION

1. World Population Growth



2. Natural Change

B.R—D.R = N.C.

If you take the birth rate (B.R.) of a country and subtract the death rate (D.R.), you will have a number representing natural change; an increase or decrease in population.

Most countries in the world have naturally rising populations, although a small minority are seeing decreasing population size. The most developed countries tend to have very slow growth or slow decline, whilst the least developed countries tend to have rapidly rising populations.

Densely populated area: Southern France A

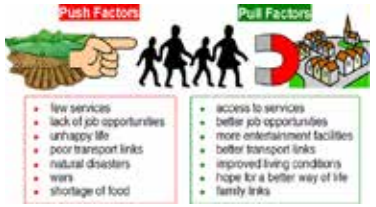
Sparsely populated area: Sahara Desert B

Population key terms

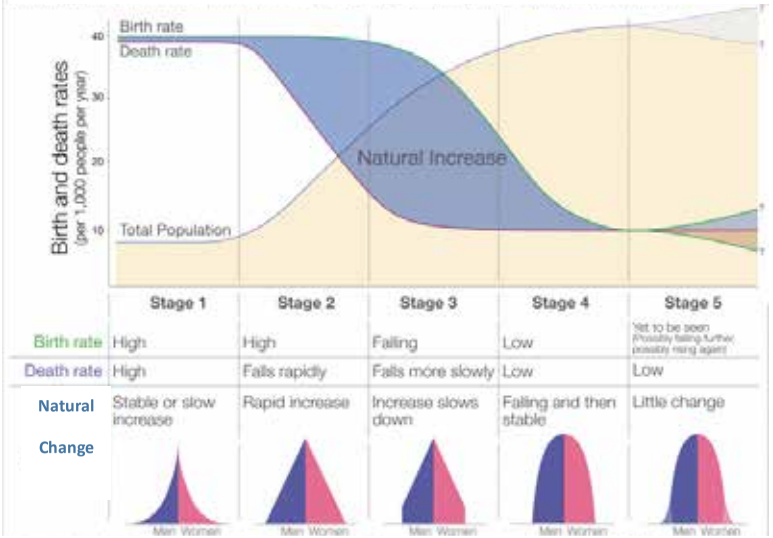
Population distribution density
natural increase natural decrease
natural change birth rate death rate
life expectancy infant mortality population
pyramid demography demographic
transition model dense sparse
push factor pull factor migration
migrant immigrant refugee
asylum seeker displacement

7. Migration

Many people across the world move to live in other places; sometimes it's within a country, sometimes to a different country all together. Some people migrate by choice, others by force or fear for example. Motivation to leave a place is called a 'push factor', the attraction of an alternate place is called a 'pull factor'.



3. The demographic transition model

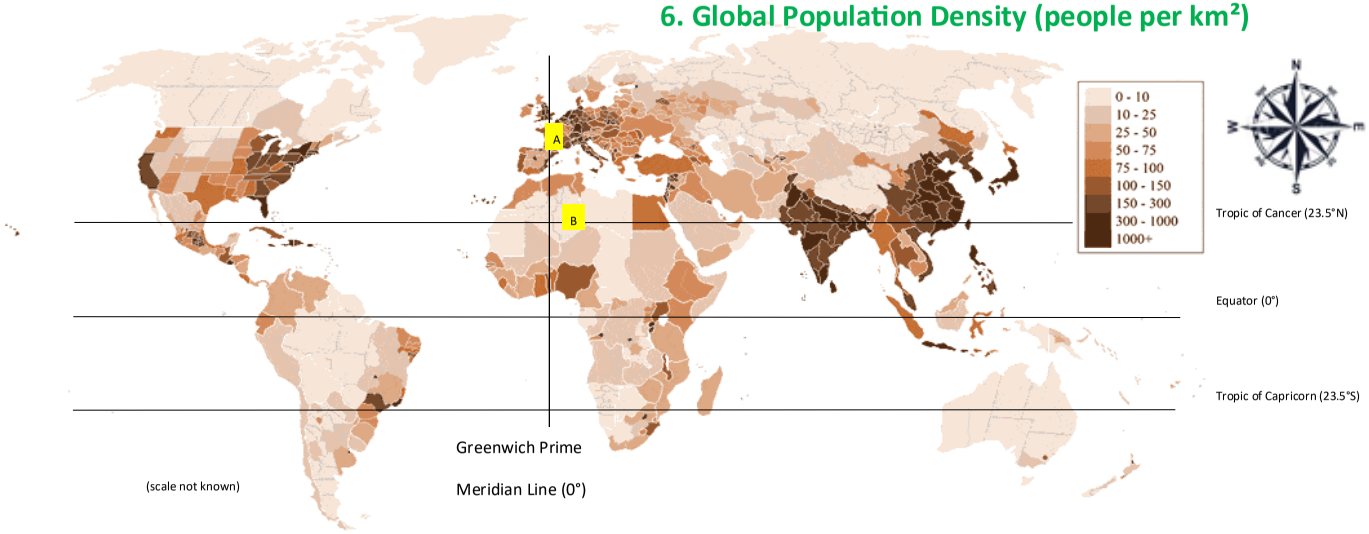


4. and 5. Population Pyramids

Key terms definitions

Birth rate	The number of live births per 1000 of population per year.
Death rate	The number of deaths per 1000 of population per year.
Natural Change	The outcome of difference between annual birth and death rate
Natural Increase	A growing population due to more births than deaths per year
Natural Decrease	A shrinking population due to more deaths than births per year
Ageing Population	A population structure within a country with a large proportion of senior and elderly citizens—typical in more developed countries
Youthful Population	A population structure within a country with a large amount of children and youths relative to the amount of adults and seniors—typical of less developed countries.
Overpopulation	A situation whereby there are simply too many people; this will stress natural resources, economic and social systems within countries and globally.
Dependency Ratio	The number of economically active citizens (tax payers) compared to the economically dependents (young and elderly)
Optimum Population	A stable population with an even distribution of age groups; this is the position all countries would like to achieve.

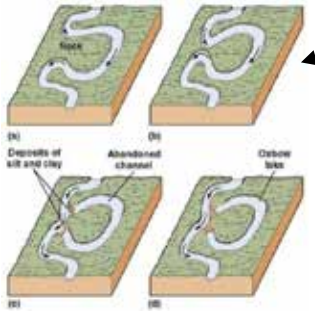
6. Global Population Density (people per km²)



GEOGRAPHY 7.3. RIVERS

3. Erosion processes

The break down and transport of rocks – smooth, round and sorted.	
Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolves rocks.
Abrasion	Rocks scrapped along the banks and bed my the flowing water.
Hydraulic Action	Powerful flow of water blasts off loose rocks, stones and fine silt from the rive banks and bed.

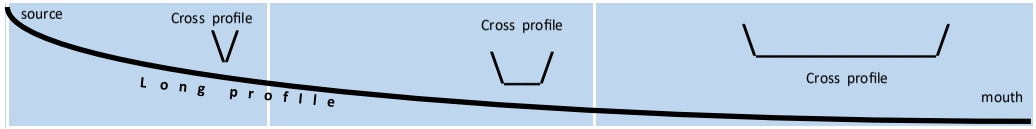


Rivers key terms

Source	The beginning of a river	Long profile	The shape of the river's journey from source to mouth
Mouth	Where a river flows into the sea or lake	Cross profile	The shape of land across the river valley
Tributary	Another river that joins the main river	Gradient	The angle of the ground the river flows over
Watershed	The edge of the drainage basin	Erosion	The breakdown and removal of material
Drainage Basin	The area of land a river system drains	Deposition	Material put down by the river when it loses energy
Confluence	Where a tributary joins the main river	channel	The riverbed and banks that the water flows on/in.

Drainage basin watershed long profile cross profile erosion hydraulic action abrasion attrition solution deposition Valley source confluence tributary waterfall rapids V-shape valley interlocking spurs gorge meander river cliff river beach oxbow lake mouth channel flood plain levee gradient banks flood discharge Carrying capacity load Hard engineering dam bunds reservoir channelization soft engineering afforestation land-use zoning flood alerts

1. and 2. The Long and Cross Profiles and summary of features of the river



UPPER COURSE

Steep gradient leads to a fast flowing rivers that cuts into the land—**eroding** it. Here, you find V-shape valleys, waterfalls and gorges.

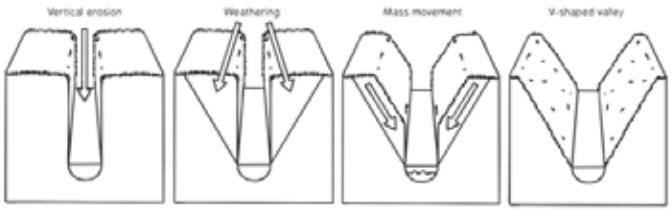
MIDDLE COURSE

The **gradient decreases** so erosion power decreases and the rivers begins to **deposit** material carried down from upstream. Here, you find narrow flood plains and meanders.

LOWER COURSE

The **gradient is very shallow** now, so although the river is larger as more tributaries have joined it, it no longer erodes, and instead creates huge flood plains and levees. When the river is affected by the tide near the mouth, estuaries form.

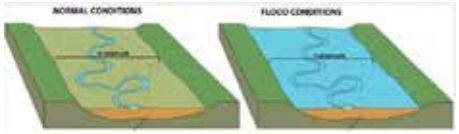
3. Upper Course River Features —V-shape valleys and waterfalls



Key learning: river water cuts vertically into the land in the upper course. Waterfalls occur where the river bed changes from a more resistant rock to a softer rock, so the river can continue cutting vertically into the land—forming a drop-off.

4, 5 and 6. Middle to Lower Course River Features — Meanders and Oxbow lakes

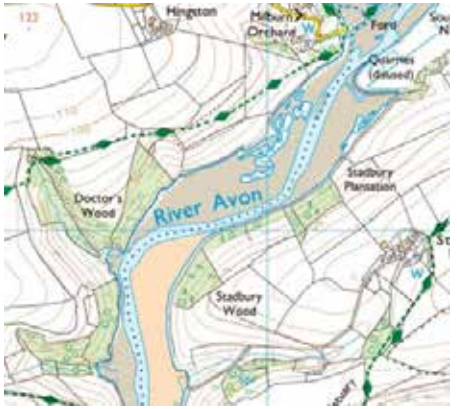
Key learning: In the mid-course, erosion continues but now does so horizontally (laterally) across the flat ground of the flood plains. This is where water moves quickly around the outside of bends forming meanders in the river. However, the river transports eroded material downstream and begins to deposit material along the inside of bends further adding to meander formation. Floodplains are effectively created from repeated flood events—adding a layer of sediment across the flat vally floor. middle course when moving slowly—this builds floodplains.



6. Flooding

Key learning: The lower course is all about deposition of the material - all of which has accumulated by repeat flood events. Tides can affect the lower course creating estuaries.

7. Ordnance Survey Map (OS) Skills



Spot Heights (one in the top left corner of the map—122m) show the height above sea level in metres at a given spot.

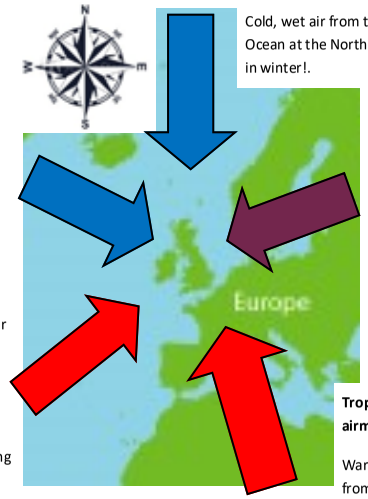
A **V-shape valley** can be seen on the map extract at in the western end of Doctor's Wood. The contour lines 'point' up the valley, this means the river is cutting down into the ground.

Contour lines (pale orange/brown lines) show areas of equal height along their length. This helps show the shape of the land on OS Maps.

A **flood plain** can be seen on either side of the River Avon in the map extract. The absence of contour lines tells us the land is flat. The river meanders across the floodplain and becomes sandier as it nears the sea—so the colour changes.

GEOGRAPHY 7.4. Weather & Climate

3. Airmasses affecting UK weather



Arctic Maritime airmass

Cold, wet air from the Arctic Ocean at the North Pole. Snow in winter!.

Polar Maritime airmass

Cool, wet air from the northern North Atlantic.

Polar Continental airmass

Dry air the year round. Cold air in the Spring and Winter months but warm in Summer and Autumn months

Tropical Maritime airmass

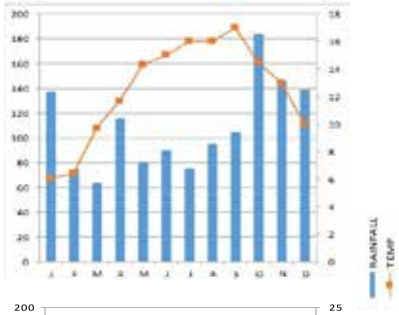
Mild to warm, wet air from the southern North Atlantic.

The most common (prevailing) airmass affecting the UK giving a mild and wet climate the year

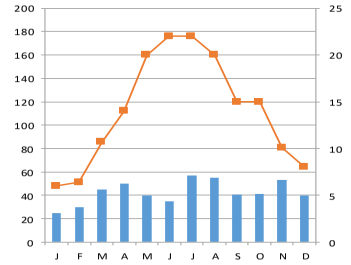
Tropical Continental airmass

Warm to hot, dry air from southern Europe and northern Africa

UK Climate for the North-west

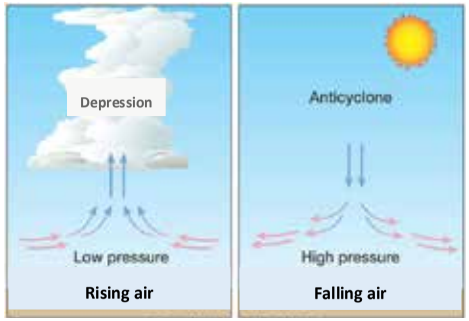


UK Climate for the South-east



5. Depressions—low pressure vs 4. Anticyclones—high pressure

Wind	Windy weather
Sunshine	Very little until after the fronts pass
Cloud cover	Heavy cloud
Precipitation	Rain—often drizzle before getting briefly heavy
Humidity	High humidity as the air is full of moisture
Seasonal difference	Mild days in winter, mild days in summer



Light wind or calm wind conditions	Wind
Lots of sunshine	Sunshine
Low cloud cover—sometimes hazy skies	Cloud cover
Very little—but can produce foggy days	Precipitation
Low humidity—dry air	Humidity
Cold and frosty in winter, very warm in summer	Seasonal difference

1. and 2. Weather and Climate key terms

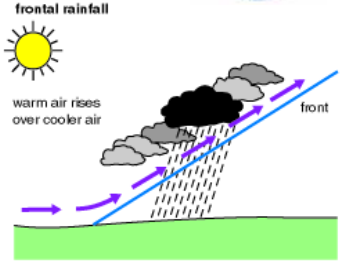
Weather is the short-term change to conditions in the atmosphere. This includes changes in cloud cover, rainfall, precipitation, temperature, humidity, wind direction and wind speed.

Climate is the long-term average typical weather in a given location. This accounts for changes of season as the averages are gathered over 30 years of typical annual weather

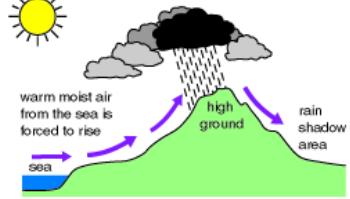
Airmass	A body of air that takes the characteristics of the surface below it: warm or cold, wet or dry.
Depressions	An area of low air pressure at the surface
Anticyclones	An area of high air pressure at the surface
Weather fronts	The border between two air masses in the atmosphere—characterised by cloud and often rain when the warmer air is forced to rise (see frontal rainfall—right).
Synoptic Chart	A weather chart showing air pressure and weather fronts.
evaporation	The process of water turning into vapour (gas) when warmed.
condensation	The process of water vapour sticking to dust particles in the air and turning back into water (forming clouds)
precipitation	All forms of water that fall from clouds dependent on the air temperature the water falls through : rain, sleet, snow or hail

6. Types of Rainfall

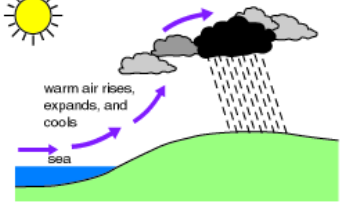
frontal rainfall



relief rainfall



convectional rainfall



Factors influencing climate zones

7. Latitude

Locations at the equator receive a concentration of energy from the sun on a small surface area all year, so they are permanently hot climate zones.

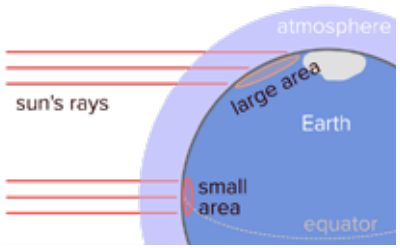
Locations at higher **latitudes** have the same amount of energy spread out over a **larger surface area**, so the climate is colder.

At the North and South Pole, the sun's energy goes straight past and barely warms the surface—even in the brief summer time, so they are permanently cold all year.

8. Altitude

Locations on Earth that are at high **altitudes**—high above sea level—have cold climates; even if they are on the Equator. Air becomes **less dense** the further it is from the surface. As a consequence, the heat cannot be held as the air is 'too thin' to pass the warmth around.

Diagram shows the concentration of sun energy is strong at the equator but weak at higher latitudes



The 'snow line' clearly visible near the top of Mount Kilimanjaro—with the warmer grasslands at lower altitude

GEOGRAPHY 7.5. TOURISM

1. & 2. Global Growth of Tourism

Since the 1950s, tourism has grown *exponentially (continuously increasing)*. There is combination of reasons why so many more people are taking holidays abroad such as: improved **wealth** (affordability), more **paid-holiday** for employees (having the time and money), better **transport** links, **package deals**, more **options**, **budget airlines**, the **internet** (for information, booking and planning), bigger **variety** of options, **long-haul flights**, and for many people, an **aspiration** to go and experience something different—somewhere else— away from the norm!

3. The '6 Ss' of Tourism

People are drawn to destinations that might be nearby to where they live, or on the far side of the world. Every destination has at least one the '6 Ss' that attract tourists. The '6 Ss' are: **sun**, **sea**, **sand**, **snow**, **scenery** or **social**.

Bora Bora—French Polynesia, South Pacific

Zermatt Ski Resort—Alps Mountains, Switzerland

4. UK National Parks

The UK has 15 National Parks. The Peak District, in central England, was the first one established in 1951. *There are two core aims of NPs: to preserve natural and cultural landscapes, and provide access for public enjoyment.*

NPs cover about 7% of England and Wales, and 20% of Scotland.

81% of the land within the NPs is privately owned, and the remainder is owned by the Ministry of Defense (MOD), water companies (reservoirs) and the Forestry Commission.

It was estimated in 2016, that there are 90 million visitors at year to UK NPs!

5. Impact of tourism on National Parks

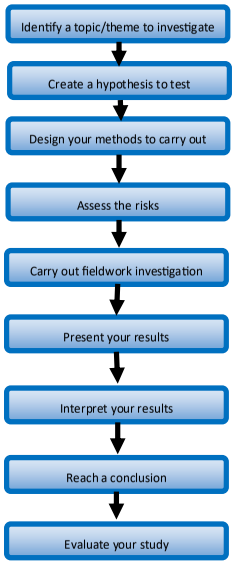
Positives	Negatives
Protects the beautiful natural environments of the UK from development	Some areas within some NPs are under huge pressure from being too popular with tourists.
Cultural heritage sites within National Parks are protected	Major traffic issues in 'honeypot' locations. Huge queues build up, and verges often damaged by poor parking.
No entrance fees — as they are there for everyone to enjoy (some car parks charge in the busiest spots).	Some irresponsible tourists leave litter or create fires when BBQs get out of control.
Protects a large area of Great Britain	Wealthy people often buy second homes in NPs which pushes up house prices for locals—who then cant afford to stay, and often means properties are unoccupied impacting the community.
People are encouraged to visit these beautiful areas—which is great for physical and mental health	Footpath erosion from over-use means some areas must developed to cope with the numbers of people.
International tourists are drawn to the UKs National Parks which creates a booming tourism industry	Seasonal employment is an issue in some NPs—so jobs are insecure.
Locations available for MOD training and reservoirs for water storage and supply.	The MOD and some private land owners close-off access at times.
Huge economic benefits (through tourism) for local people from visitors who stay, eat and buy local produce.	

1. Tourists and Tourism: ***Tourism*** *is defined as the activities of persons identified as* ***visitors****. A* ***tourist*** *is a* ***visitor*** *- someone who is making a visit to a destination outside their usual environment for less than a year for any main purpose [including] holidays, leisure and recreation, business, health, education or other purposes.* ***Tourism*** *is a huge global employer in the service industry (tertiary job sector).*

Fieldwork, Data Presentation and Interpretation skills

From environmental issues to medical drug research, in the world of work, the enquiry process is the fundamental structure followed to investigate an issue or the impact of something. The enquiry process steps are:

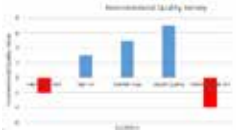
The Enquiry Process



Field sketching

A field sketch is a simplified, diagrammatic representation of a view or landform. You can add labels or annotations afterwards. Start with the horizon (or **background** lines), then do the **foreground** (immediately in front of you) before filling in the **mid-ground** - prioritising the main feature(s); in the example above, that is the river.

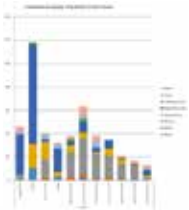
Bi-polar graphs



Bi-polar bar graphs are suitable for showing data that contains both positive and negative values. The bars do not touch as the data is discreet not continuous.

Composite 'stacked' Bar graphs

Composite (or stacked) bar graphs show the total values recorded, but also what made up that total value, by 'stacking' up the individual scores that composed the overall total. A good visual example would be a stack of five coins totaling £1. On the right, the example uses a colour-coded key to show each of the individual scores within each bar.



'High 5' Interpretation

To fully interpret the results of the data you collect on a survey, a technique to use to increase your *writing stamina* is called the **'High 5'**. For each of the 5 themes on the hand (shown to the left), write a paragraph following the PEE (point—evidence (data) and explanation) structure. The last paragraph is a conclusion whereby you refer back to your enquiry question.

Proportional symbols

Proportional symbols apply the data to a location of a base map. In this example of population in the USA, the larger the circle, the greater the population size. However, rather cleverly, each circle is also a pie chart showing what proportion of each circle (representing the different States) is Hispanic (Spanish speaking). So, you've got two ways of showing 'proportional' data in one!

Geographical enquiry terms and skills

Method	A technique for collecting data (results). A simple example is a 'hands up if...' survey question.
Continuous data	Data that can be measured, for example, temperature—which changes over time. When presented, a line is used.
Discrete data	Data that can be counted, for example, litter. When presented in bars, there are gaps between them.
Range	Subtracting the smallest value from your set of numbers from the largest will give you the range
Mean	Add up the numbers and divide by how many there are in the set will give you the 'mean'
General trend	When examining a set of data, identify if the results are following an overall pattern of increase or decrease, improving or worsening.
Anomaly	A piece of data that doesn't fit with the pattern shown by the rest of the data. Plural is 'anomalies'
Qualitative	Data that is non-numerical—such as opinion of people
Quantitative	Data that is measures of values or counts.
Hypothesis	A statement (rather than a question) which can be proven to be true or false, or even partially true—whereby the hypothesis is only partially proven

History

What do I need to know to make progress?

Year 7 Autumn Term

1. To be an historian…

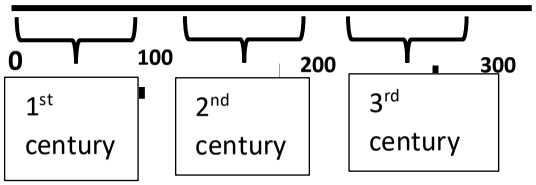
We need to study evidence.
Source: the name for a piece of historical information.
Interpretation: a way of explaining a set of historical sources/facts.
Consequence: something which happens as a result of something else.
Short-term cause: something which happened a short time ago and had an impact.
(So what is a LONG-TERM CAUSE?!)
Infer: when we make an intelligent guess based on what the evidence suggests.
Purpose: why the source was made or written

We need to know how to describe periods of time:
Decade: 10 years
Century: 100 years
Millennium: 1000 years
BC and AD: 'Before Christ' and 'Anno Domini' (year of Our Lord)
This is how we organise dates and events onto a timeline
Timeline: A way of presenting historical events. You measure a line, work out a scale, write the centuries on it, and then mark the events on
Chronology: arranging events in date order, oldest to most recent
'Era' is a word which means 'a period of time'
Diversity is when we work to include people from a range of different social and ethnic backgrounds and of different genders, sexual orientations, etc.

2.

The main eras we need:
The Dark Ages: 500 AD to 1000 AD
Later Middle Ages: 1000-1500 AD
(**"Medieval"** covers both the Dark Ages and the Later Middle Ages 500-1500)
Early Modern: 1500-1800AD
Modern: 1800 AD to the present day

How we 'number' centuries



So the year 194 AD is in the 2nd century
The year 1348 is in the 14th century
2019 is in the 21st century.

You add on *1* to either the first digit or first two digits of the year to give the century.

EXTRA! EXTRA!

In what century did each of these key events occur?

Assassination of Franz Ferdinand: **June 28th 1914**
First World War: **1914-1918**
Second World War: **1939-1945**
Battle of Britain: **Summer 1940**
D-Day: **June 6th 1944**

3.

Subject knowledge for the Autumn Term
…1066 and Beyond
1066: Battle of Hastings
Edward the Confessor: English king who died in January 1066
Harold Godwinson: the English King who took over from him
William, Duke of Normandy: The invader who beat Harold at the Battle of Hastings
The Norman Conquest: the period of time 1066-1086 when William took full control of England
Monarch: a king or queen
Queen: wife of a king, not a female king

Medieval themes:
Religion: Strong belief in God in Medieval times. The Church both helps *and* controls people.
Succession: Who will be the next king? Will they be strong and successful?
Revolt: uprising which challenges someone in power
Methods of control in Norman England:
The Feudal System: system used to control England.
Motte and bailey castles: a castle with a fort on a motte (hill) surrounded by a bailey (an area with buildings surrounded by a wall)
Domesday Book: a record of what everyone owned completed in 1086
Harrying of the North: when William used force to put down revolts in northern England, 1069-70

4.

Turning Points in Medieval history: The Anarchy **1135-53;** King Henry II and Thomas Becket **1170;**

King John and Magna Carta **1215;** The Black Death **1348; The Peasants' Revolt 1381**

History

Year 7 Spring Term

History is full of stories… Here are some of the big Medieval ones

1. **1135-53: The Anarchy.**

Henry I promised the throne to his daughter, Matilda, after his son died. Would this be the first time England had a female king? When Henry I died, Matilda's cousin Stephen took the throne resulting in a brutal civil war that plunged England into anarchv.

2. **1170: The Murder in the Cathedral.**

Thomas Becket was the Archbishop of Canterbury during the reign of Henry II. Becket was murdered by some of Henry II's knights…at the altar of his own cathedral! It was a shocking moment in medieval history.

3. **1215: King John and Magna Carta**

King John fell out with his barons (rich noblemen who expected to be involved in running the country) They forced him to sign the 'Great Charter' (Magna Carta) to share some of his power with them. But has King John been unfairly blamed for what went wrong in his reign? Have historians treated him unfairly?

4. **1348: The Black Death**

The 'most terrible of all terrors'. The Bubonic Plague swept across Europe, carried by fleas living on the black rats on trade ships from China. Nearly half of the population of Europe died! No one at the time understood why. What did they do?! They prayed to God to show they were sorry for their sins, tried various 'remedies', none of which worked, and locked infected people in their homes. What else?

5. **1381: The Peasants Revolt**

After the terrors of the Black Death, then years of wages being controlled, and having no rights, the peasants took their grievances to King Richard II (who was only 14!) in a huge rebellion which swept across England.

6. **The Crusades, from 1095**

The big, religious 'clash' of the Middle Ages. Knights from England, France and Germany walked thousands of miles to the 'Holy Land' (Jerusalem) to fight Muslim warriors to get control of the Holy Places…and to take over land and steal riches!

7.






Which picture illustrates which of the 6 stories?

8. We usually say Medieval times (or the Middle Ages) date from 1000-1500 AD

If we want to be more specific, we can say that it starts and ends with two battles, the Battle of Hastings in 1066 and the Battle of Bosworth in 1485. A King died at both these battles: Harold Godwinson in 1066, and when King Richard III is killed in 1485, the TUDOR royal family comes to the throne.

The Tudor period is plagued with power struggles, and religion plays a very important part in this. A huge split in the church rocks Europe…

Christianity (**the Catholic Church**, with the Pope in Rome) had been the main religion in Europe for centuries…BUT a BIG split in religion began around 1500. Some people began PROTESTING about the Catholic Church, so were called **PROTESTANTS.**

The man in the picture is **Martin Luther**. He was one of the first to protest against the Catholic Church**. "Indulgences**" were one of the big things he protested about. It means that the Church would **forgive for your sins if you paid them some money**! Other things people protested about were:

i)Paying a 10% tax called **tithes** to the church

ii)Some people thought **bishops** and archbishops were **corrupt**

iii)Sometimes they **broke their vows** of chastity (not getting married or having children) and poverty.

iv)Some people thought it was wrong for Catholic Church services and the B**ible** to be in Latin. They protested that it **should be in English** so people could understand it.

However, some churchmen did their jobs well, looked after the poor and sick and gave people hope in their difficult lives

History

What do I need to know to make progress?

Year 7 Summer Term

Religion splits! Lots of heads being chopped off, including two queens! A **very bloody era full of power struggles!**

The Tudors…

A

When King Richard III is killed in 1485, the TUDOR royal family comes to the throne. There are 5 (or 6!) Tudor monarchs:





1.Henry VII (7th)	1485-1509
2.Henry VIII (8th)	1509-1547
3.Edward VI (6th)	1547-1553
4.(Lady Jane Grey…for only 9 days!)	
5.Mary I	1553-1558
6.Elizabeth I	1558-1603

When Elizabeth - the last Tudor monarch - dies her cousin, King James VI of Scotland becomes king of England as well…but he is the first King James we have had, so WE call him King James I ☺

His reign marks the beginning of **The Stuarts**





1. James I 1603- 1625
2. Charles I 1625- 1649
3. Charles II 1660- 1685
4. James II 1685- 1688
5. William and Mary 1689- 1694

What happened between 1649 and 1660?

B

Three of the big stories this term are…

1. Henry VIII and the "Break with Rome", 1533

This means when Henry VIII split up from the Roman Catholic Church and set up his own Protestant church called the **Church of England** instead. This has had a huge impact for centuries…so we say it is a very SIGNIFICANT event in history.

He did this for 3 MAIN REASONS:

1. Henry's first wife, who he was married to for over 20 years, was called **Catherine of Aragon**. She ruled England whilst Henry was away at war, leading the army to victory at the Battle of Flodden, 1513. They only had one surviving child, Mary. Henry was **desperate for a son to succeed** him. The Catholic Church doesn't allow divorce, so however many times Henry asked, **the Pope would not give him a divorce**. Henry had also fallen in love with a woman called **Anne Boleyn** and he wanted to marry her. Anne Boleyn gave Henry and **important Protestant book written by William Tyndale**, and **Henry was inspired to set up his own Church of England,** gave himself a divorce and married Anne in 1533! She was already pregnant…and Henry was furious when she gave birth to another girl, Elizabeth!
2. **Henry was broke!** He had wasted all the money his father Henry VII had left him, mainly fighting wars with France. If he split up from the Catholic Church, he could sell off all the **monasteries** and their land and make a lot of money.
3. **The Pope**, as head of the Catholic Church, had **influence over people in England** because they listened to him. **Henry believed he would have more control** over his kingdom if he was the only one who people had to obey.

We sum these reasons up as DIVORCE, MONEY, and CONTROL.

C

The second big story you need to know about is also partly to do with religion…

2. Elizabeth I and the Spanish Armada, 1588

Spain was a Catholic country and King Phillip II of Spain was angry with England in 1588. This is because…

1. England and Spain were old rivals. Between 1562 and 1567, John Hawkins began Britain's involvement in the Transatlantic Slave Trade, enslaving Africans and selling them to the Spanish. Hawkins' involvement ended after a fight with the Spanish in 1567, but Britain's involvement in the slave trade continued.
2. English ships had been stealing Spanish gold from their ships in the Caribbean…with Elizabeth's permission! Sir Francis Drake was famous for doing this.
3. England was helping Spain's enemies in the Netherlands.
4. Elizabeth had had her (Catholic) cousin Mary Queen of Scots executed for plotting against her.

So the Spanish sent a massive fleet of over 120 ships, called the Spanish Armada, to conquer England. They fought the English navy along the English Channel but were finally beaten, mainly because stormy weather scattered the ships. This was a huge propaganda victory for Elizabeth…even though her poor old sailors didn't get paid afterwards!

D

The Gunpowder Plot 1605

The Plotters: Robert Catesby; Thomas Winter; Thomas Percy; John Wright; Guy Fawkes.

The Plot: To blow up the House of Lords on State Opening Day.

The Punishment: Guy Fawkes was tortured until he revealed the names of the other plotters. Executed and their body parts

YEAR 7 - REASONING WITH NUMBER

Sets and probability

What do I need to be able to do?

By the end of this unit you should be able to:

- Identify and represent sets
- Interpret and create Venn diagrams
- Understand and use the intersection of sets
- Understand and use the union of sets
- Generate sample spaces for single events
- Calculate the probability of a single event
- Understand and use the probability scale

Keywords

Set: collection of things
Element: each item in a set is called an element
Intersection: the overlapping part of a Venn diagram **(AND ∩)**
Union: two ellipses that join **(OR ∪)**
Mutually Exclusive: events that do not occur at the same time
Probability: likelihood of an event happening
Bias: a built-in error that makes all values wrong (unequal) by a certain amount, e.g. a weighted dice
Fair: there is zero bias, and all outcomes have an equal likelihood
Random: something happens by chance and is unable to be predicted

Identify and represent sets

The **universal set** has this symbol ξ – this means EVERYTHING in the Venn diagram is in this set

A set is a collection of things – you write sets inside curly brackets { }

ξ = {the numbers between 1 and 50 inclusive}

My sets can include every number between 1 and 50 including those numbers

A = {Square numbers}

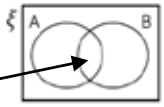
A = {1, 4, 9, 16, 25, 36, 49}

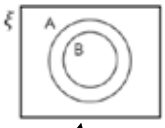
All the numbers in set A are square number and between 1 and 50

Interpret and create Venn diagrams

Mutually exclusive sets
The two sets have nothing in common
No overlap

Union of sets
The two sets have some elements in common – they are placed in the intersection

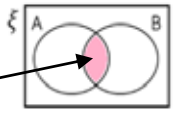




Subset
All of set B is also in Set A so the ellipse fits inside the set

The box
Around the outside of every Venn diagram will be a box. If an element is not part of any set it is placed outside an ellipse but inside the box

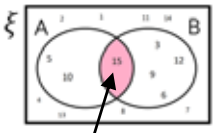
Intersection of sets



Elements in the intersection are in set A AND set B

The notation for this is $A \cap B$

ξ = {the numbers between 1 and 15 inclusive}
A = {Multiples of 5} B = {Multiples of 3}

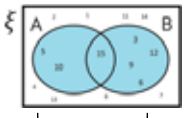


The element in $A \cap B$ is 15

In this example there is only one number that is both a multiple of 3 and a multiple of 5 between 1 and 15

Union of sets

Elements in the union could be in set A OR set B

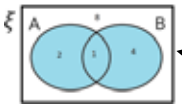


ξ = {the numbers between 1 and 15 inclusive}
A = {Multiples of 5} B = {Multiples of 3}

The elements in $A \cup B$ are 5, 10, 15, 3, 9, 6, 12

The notation for this is $A \cup B$

There are 7 elements that are either a multiple of 5 OR a multiple of 3 between 1 and 15



This Venn shows the **number of elements** in each set

Sample space – for single events

A sample space for rolling a six-sided dice is S = {1, 2, 3, 4, 5, 6}

A sample space for this spinner is S = {Pink, Blue, Yellow}

You only need to write each element once in a sample space diagram

- A Sample space represents a possible outcome from an event
- They can be interpreted in a variety of ways because they do not tell you the probability

Probability of a single event

Probability = number of times event happens / total number of possible outcomes

P(Blue) = 4/10 ← There are 4 blue sectors; There are 10 sectors overall

= 2/5

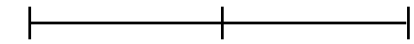
Probability notation P (event)

Probability can be a fraction, decimal or percentage value

4/10 = 40/100 = 0.40 = 40%

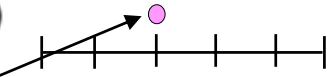
Probability is always a value between 0 and 1

The probability scale



Impossible 0 or 0% | Even chance 0.5, 1/2 or 50% | Certain 1 or 100%

The more likely an event the further up the probability it will be in comparison to another event (It will have a probability closer to 1)



There are 2 pink and 2 yellow balls, so they have the same probability

There are 5 possible outcomes So 5 intervals on this scale, each interval value is 1/5

Sum of probabilities

Probability is always a value between 0 and 1

The probability of getting a blue ball is 1/5
∴The probability of NOT getting a blue ball is 4/5

The sum of the probabilities is 1

The table shows the probability of selecting a type of chocolate

Dark	Milk	White
0.15	0.35	

P(white chocolate) = 1 – 0.15 – 0.35
= 0.5

YEAR 7 - LINES AND ANGLES

Constructing, measuring and using geometric notation

What do I need to be able to do?

By the end of this unit you should be able to:

- Use letter and labelling conventions
- Draw and measure line segments and angles
- Identify parallel and perpendicular lines
- Recognise types of triangle
- Recognise types of quadrilateral
- Identify polygons
- Construct triangles (SAS, SSS, ASA)
- Draw Pie charts

Keywords

Polygon: A 2D shape made with straight lines
Scalene triangle: a triangle with all different sides and angles
Isosceles triangle: a triangle with two angles the same size and two angles the same size
Right-angled triangle: a triangle with a right angle
Frequency: the number of times a data value occurs
Sector: part of a circle made by two radii touching the centre
Rotation: turn in a given direction
Protractor: equipment used to measure angles
Compass: equipment used to draw arcs and circles

Letter and labelling convention

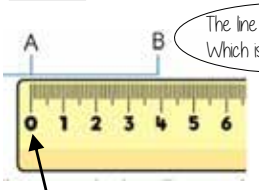
The letter in the middle is the angle
The arc represents the angle

Angle Notation: three letters **ABC**
This is the angle at B = 113 °

Line Notation: two letters **EC**
The line that joins E to C

Draw and measure line segments

Conversions 1cm = 10mm, 1m = 100cm



The line segment is 3.9cm
Which is 39mm

AB is a line segment (part of the line)

Make sure the start of the line is at 0.

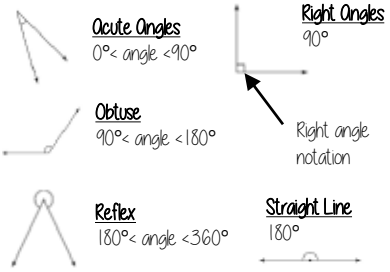
Angles as measures of turn

Clockwise | Anti-Clockwise

East to South is a quarter turn clockwise

Quarter Turn	Half Turn	Three-quarter Turn	Full Turn
90° Clockwise	180°	270° Anti-Clockwise	360°

Classify angles



Acute Angles 0° < angle < 90°

Right Angles 90°

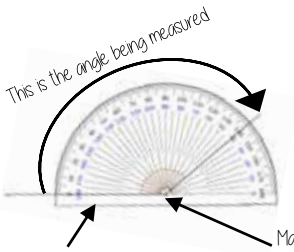
Right angle notation

Obtuse 90° < angle < 180°

Reflex 180° < angle < 360°

Straight Line 180°

Measure angles to 180°



Read from 0° on the base line. Remember to use estimation. This is an obtuse angle so between 90 ° and 180 °

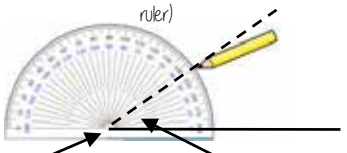
The base line follows the line segment

Make sure the cross is at the point the two lines meet

Draw angles up to 180°

Draw a 35° angle

Make a mark at 35° with a pencil and join to the angle point (use a ruler)



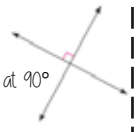
Make sure the cross is at the end of the line (where you want the angle)

The angle

Parallel and Perpendicular lines

Parallel lines
Straight lines that never meet
(Have the same gradient)

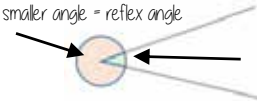
Perpendicular lines
Straight lines that meet at 90°



Angles over 180°

Use your knowledge of straight lines
180 ° and angles around a point
360 °

360 ° - smaller angle = reflex angle



Measure the smaller angle first (less than 180 °

Properties of Quadrilaterals

Square
All sides equal size
All angles 90°
Opposite sides are parallel

Rectangle
All angles 90°
Opposite sides are parallel

Rhombus
All sides equal size
Opposite angles are equal

Parallelogram
Opposite sides are parallel
Opposite angles are equal
Co-interior angles

Trapezium
One pair of parallel lines

Kite
No parallel lines
Equal lengths on top sides
Equal lengths on bottom sides
One pair of equal angles

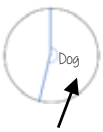
Draw Pie Charts

Type of pet	Dog	Cat	Hamster
Frequency	32	25	3

$\frac{32}{60}$ "32 out of 60 people had a dog"

This fraction of the 360 degrees represents dogs

$\frac{32}{60} \times 360 = 192°$



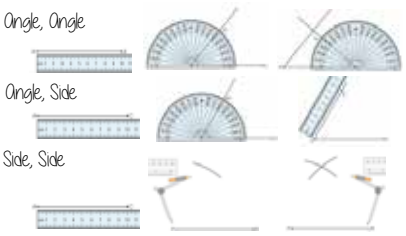
Use a protractor to draw
This is 192°

SAS, SSS, ASA constructions

Side, Angle, Angle

Side, Angle, Side

Side, Side, Side



Polygons

3	- Triangle	5	- Pentagon	8	- Octagon
4	- Quadrilateral	6	- Hexagon	9	- Nonagon
		7	- Heptagon	10	- Decagon

If all the sides and angles are the same, it is a **regular** polygon

YEAR 7 - DEVELOPING GEOMETRY...

Line symmetry and reflection

What do I need to be able to do?

By the end of this unit you should be able to:

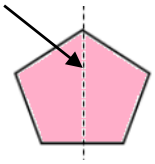
- Recognise line symmetry
- Reflect in a horizontal line
- Reflect in a vertical line
- Reflect in a diagonal line

Keywords

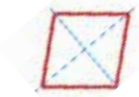
Mirror line: a line that passes through the center of a shape with a mirror image on either side of the line
Line of symmetry: same definition as the mirror line
Reflect: mapping of one object from one position to another of equal distance from a given line.
Vertex: a point where two or more-line segments meet.
Perpendicular: lines that cross at 90°
Horizontal: a straight line from left to right (parallel to the x axis)
Vertical: a straight line from top to bottom (parallel to the y axis)

Lines of symmetry

Mirror line (line of reflection)



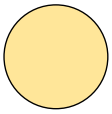
Shapes can have more than one line of symmetry....
This regular polygon (a regular pentagon has 5 lines of symmetry)



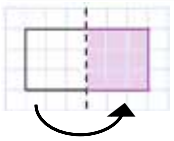
Rhombus
two lines of symmetry

Parallelogram
No lines of symmetry

A circle has an infinite amount of lines of symmetry

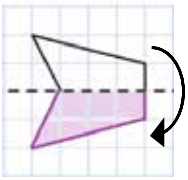


Reflect horizontally/ vertically (1)



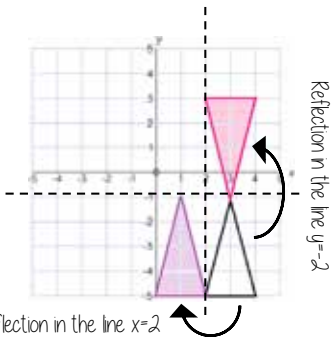
Note: a reflection doubles the area of the original shape

Reflection in a vertical line



Reflection in a horizontal line

Reflection on an axis grid

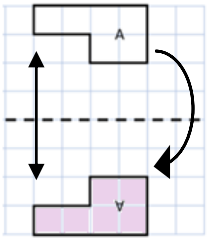


Reflection in the line y=-2

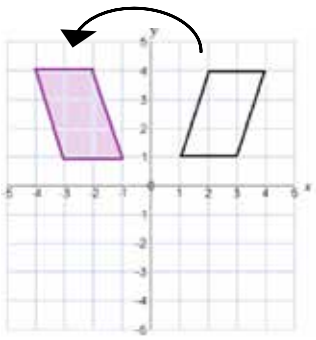
Reflection in the line x=2

Reflect horizontally/ vertically (2)

All points need to be the same distance away from the line of reflection



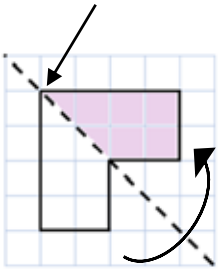
Reflection in the line y axis – this is also a reflection in the line x=0



Lines parallel to the x and y axis
REMEMBER
Lines parallel to the x-axis are y = ____
Lines parallel to the y-axis are x = ____

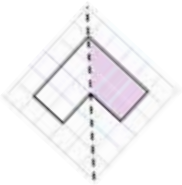
Reflect Diagonally (1)

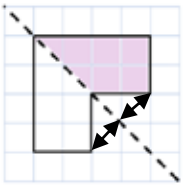
Points on the mirror line don't change position



Fold along the line of symmetry to check the direction of the reflection

Turn your image
If you turn your image it becomes a vertical/ horizontal reflection (also good to check your answer this way)



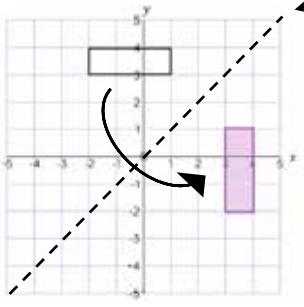


Drawing perpendicular lines

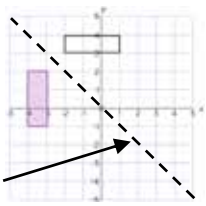
Perpendicular lines to and from the mirror line can help you to plot diagonal reflections

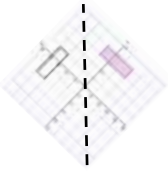
Reflect Diagonally (2)

This is the line **y = x** (every y coordinate is the same as the x coordinate along this line)



This is the line **y = - x**
The x and y coordinate have the same value but opposite sign





Turn your image
If you turn your image it becomes a vertical/ horizontal reflection (also good to check your answer this way)

YEAR 7 - REPRESENTATIONS...

Working in the Cartesian plane

What do I need to be able to do?

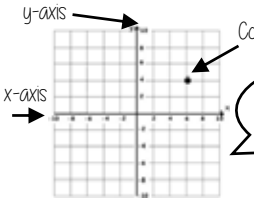
By the end of this unit you should be able to:

- Label and identify lines parallel to the axes
- Recognise and use basic straight lines
- Identify positive and negative gradients
- Link linear graphs to sequences
- Plot y = mx + c graphs

Keywords

Quadrant: four quarters of the coordinate plane.
Coordinate: a set of values that show an exact position.
Horizontal: a straight line from left to right (parallel to the x axis)
Vertical: a straight line from top to bottom (parallel to the y axis)
Origin: (0,0) on a graph. The point the two axes cross
Parallel: Lines that never meet
Gradient: The steepness of a line
Intercept: Where lines cross

Coordinates in four quadrants



Coordinate (x, y) **(6, 4)**

From the origin this coordinate is 6 places along the positive x axis and 4 places up the positive y axis

(x, y)

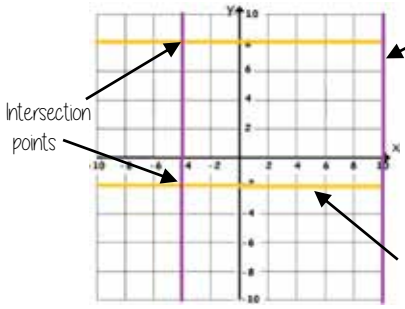
Always the position on the x axis first

Always the position on the y axis second

(0, a) Will be always be a point on the y axis. (a can be any number)

(a, 0) Will be always be a point on the x axis. (a can be any number)

Lines parallel to the axes



All the points on this line have a x coordinate of 10

"a" can be ANY positive or negative value including 0

Lines parallel to the **y axis** take the form **x = a** and are **vertical**

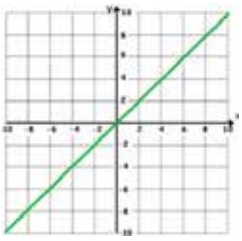
Lines parallel to the **x axis** take the form **y = a** and are **horizontal**

All the points on this line have a y coordinate of -2

e.g (3, -2) (7, -2) (-2, -2) all lay on this line because the y coordinate is -2

Recognise and use the line y=x

This means the x and the y coordinate have the same value

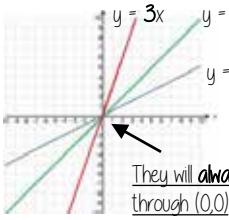


Examples of coordinates on this line: (0, 0) (-3, -3) (8, 8)

The axes **scale is important** – if the scale is the same y = x will be a straight line at 45°

Recognise and use the lines y=kx

The value of **k** changes the steepness of the line



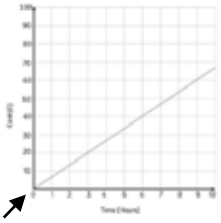
Note: y =x is the same as y= 1x

The bigger the value of k the **steeper** the line will be

They will **always** go through (0,0)

The closer to 0 the value of k the closer the line will be to the x axis

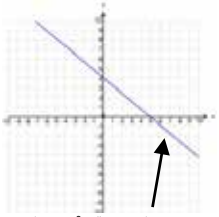
Direct Proportion using y=kx



The line must be straight to be directly proportional – variables increase at the same rate **k**

Direct proportion graphs always start at (0,0) as they are describing relationships between two variables

Lines with negative gradients

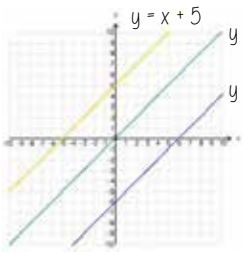


Any straight-line graph with a negative x value has a negative gradient

Eg $y = -2x$
$y = -x$ $y + x = 12$

Direction of all negative gradients

Lines in the form y = x + a



All the lines are **parallel** because the gradients are the same

y = x + a

This is the line y=x when the y and x coordinate are the same

This shows the translation of that line
e.g. y = x + 5
Is the line y=x moved 5 places up the graph

5 has been added to each of the x coordinates

Plotting y = mx + c graphs

$y = 3x - 1$ → 3 x the x coordinate then – 1

x	-3	0	3
y	-10	-1	8

Draw a table to display this information

This represents a coordinate pair (-3, -10)

You only need two points to form a straight line

Plotting more points helps you decide if your calculations are correct (if they do make a straight line)

Remember to join the points to make a line

YEAR 7 - REASONING WITH NUMBER

Prime numbers and Proof

What do I need to be able to do?

By the end of this unit you should be able to:

- Find and use multiples
- Identify factors of numbers and expressions
- Recognise and identify prime numbers
- Recognise square and triangular numbers
- Find common factors including HCF
- Find common multiples including LCM

Keywords

Multiples: found by multiplying any number by positive integers
Factor: integers that multiply together to get another number.
Prime: an integer with only 2 factors.
Conjecture: a statement that might be true (based on reasoning) but is not proven
Counterexample: a special type of example that disproves a statement.
Expression: a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)
HCF: highest common factor (biggest factor two or more numbers share)
LCM: lowest common multiple (the first time the times table of two or more numbers match)

Multiples

The "times table" of a given number

All the numbers in this lists below are multiples of 3

3, 6, 9, 12, 15...

This list continues and doesn't end

$3x$, $6x$, $9x$ ...

x could take any value and as the variable is a multiple of 3 the answer will also be a multiple of 3

Non example of a multiple

4.5 is not a multiple of 3 because it is 3 x 1.5

Not an integer

Factors

Arrays can help represent factors

5 x 2 or 2 x 5

Factors of 10
1, 2, 5, 10

10 x 1 or 1 x 10

The number itself is always a factor

Factors and expressions

x x x x x x

$6x \times 1$ OR $6 \times x$

Factors of $6x$
6, x, 1, $6x$, $2x$, 3, $3x$, 2

x x / x x / x x — $2x \times 3$

x x x / x x x — $3x \times 2$

Prime numbers

- Integer
- Only has 2 factors
- and itself

2

The first prime number
The only even prime number

Learn or how-to quick recall...

2, 3, 5, 7, 11, 13, 17, 19, 23, 29...

Square and triangular numbers

Square numbers

odd even odd

Representations are useful to understand a square number n^2

1, 4, 9, 16, 25, 36, 49, 64 ...

Triangular numbers

Representations are useful – an extra counter is added to each new row

Add two consecutive triangular numbers and get a square number

1, 3, 6, 10, 15, 21, 28, 36, 45...

Common factors and HCF

1 is a common factor of all numbers

Common factors are factors two or more numbers share

HCF – Highest common factor

HCF of 18 and 30

18: 1, 2, 3, 6, 9, 18

30: 1, 2, 3, 5, 6, 10, 15, 30

Common factors (factors of both numbers)
1, 2, 3, 6

HCF = 6

6 is the biggest factor they share

Common multiples and LCM

Common multiples are multiples two or more numbers share

LCM – Lowest common multiple

LCM of 9 and 12

9: 9, 18, 27, 36, 45, 54

12: 12, 24, 36, 48, 60

LCM = 36

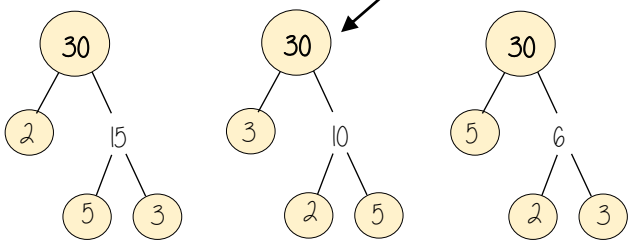
The first time their multiples match

Comparing fractions

$\frac{3}{5}$ and $\frac{7}{10}$ → Compare fractions using a LCM denominator → $\frac{6}{10}$ and $\frac{7}{10}$

Product of prime factors

Multiplication part-whole models



All three prime factor trees represent the same decomposition

Multiplication is commutative

$30 = 2 \times 3 \times 5$ ← Multiplication of prime factors

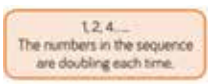
Using prime factors for predictions

e.g. 60: 30 x 2, 2 x 3 x 5 **x 2**

150: 30 x 5, 2 x 3 x 5 **x 5**

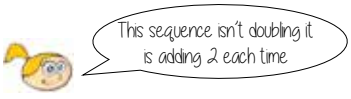
Conjectures and counterexamples

Conjecture



A pattern that is noticed for many cases

Counterexamples



Only **one** counterexample is needed to disprove a conjecture

YEAR 7 - APPLICATION OF NUMBER

Solving problems with multiplication and division

What do I need to be able to do?

By the end of this unit you should be able to:

- Understand and use factors
- Understand and use multiples
- Multiply/ Divide integers and decimals by powers of 10
- Use formal methods to multiply
- Use formal methods to divide
- Understand and use order of operations
- Solve area problems
- Solve problems using the mean

Keywords

Array: an arrangement of items to represent concepts in rows or columns
Multiples: found by multiplying any number by positive integers
Factor: integers that multiply together to get another number.
Mili: prefix meaning one thousandth
Centi: prefix meaning one hundredth
Kilo: prefix meaning multiply by 1000
Quotient: the result of a division
Dividend: the number being divided
Divisor: the number we divide by

Factors

Arrays can help represent factors

5 x 2 or 2 x 5

Factors of 10
1, 2, 5, 10

10 x 1 or 1 x 10

The number itself is always a factor

Square numbers have an **ODD number** of factors

Factors of 4
1, 2, 4

Factors of 36
1, 2, 3, 4, 6, 9, 12, 18, 36

Be strategic
- Lay factors out in pairs can help you not to miss any

Multiples

4	4	4	4	4

Bar models can represent by something is a multiple. E.g. 20 is a multiple of 4

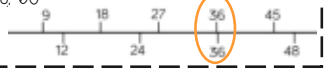
Lowest Common Multiples — LCM of 9 and 12

The first time their multiples match

LCM = 36

9: 9, 18, 27, 36, 45, 54

12: 12, 24, 36, 48, 60



Multiply/ Divide by powers of 10

3 x 100 = 300

0.03 x 100 = 3

Repeated multiplication and division by powers of 10 is commutative

÷ 10 then ÷ 10 → ÷ 100

Metric conversions

Useful Conversions

mm ⇄ cm ⇄ m ⇄ km: ÷ 10, ÷ 100, ÷ 1000 / × 10, × 100, × 1000

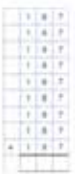
g ⇄ kg: ÷ 1000 / × 1000

ml ⇄ L: ÷ 1000 / × 1000

Multiplication methods

Long multiplication (column)

Grid method



Repeated addition

Less effective method especially for bigger multiplication

Multiplication with decimals

Perform multiplications as integers
e.g. 0.2 x 0.3 → 2 x 3

Make **adjustments** to your answer to match the question: 0.2 x 10 = 2
0.3 x 10 = 3
Therefore 6 ÷ 100 = 0.6

Estimations: Using estimations allows a 'check' if your answer is reasonable

Division methods

3584 ÷ 7 = 512

Short division

$$7\overline{)\,3\,{}^{3}5\,8\,{}^{1}4}\quad 5\ 1\ 2$$

Complex division

÷ 24 = ÷ 6 ÷ 4
Break up the divisor using factors

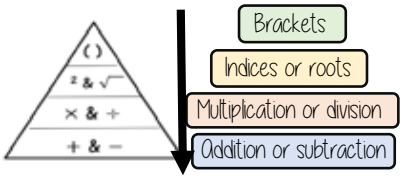
Division with decimals

The placeholder in division methods is essential – the decimal lines up on the dividend and the quotient

24 ÷ 0.02 → 24 ÷ 0.2 → 240 ÷ 2

All give the same solution as represent the same proportion
Multiply the values in proportion until the divisor becomes an integer

Order of operations



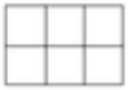
If you have multiple operations from the same tier work from left to right

e.g. 10 – 3 + 5 → 10 - 3 → 7 + 5

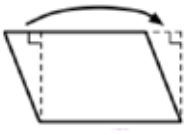
6 x 4 + 8 x 2
24 + 16 = 40

Area problems

Rectangle
Base x Perpendicular height

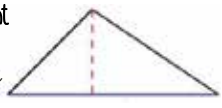


Parallelogram/ Rhombus
Base x Perpendicular height



Triangle
½ x Base x Perpendicular height

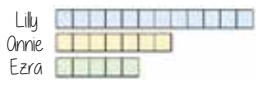
A triangle is half the size of the rectangle it would fit in



Mean problems

Mean – a measure of average
It gives an idea of the central value

Lilly, Annie and Ezra have the following cubes



Finding the mean amount is the average amount each person would have if shared out equally

The mean number of blocks would be 8 each

YEAR 7 - ALGEBRAIC THINKING...

Equality and Equivalence

What do I need to be able to do?

By the end of this unit you should be able to:

- Form and solve linear equations
- Understand like and unlike terms
- Simplify algebraic expressions

Keywords

Equality: two expressions that have the same value
Equation: a mathematical statement that two things are equal
Equals: represented by '=' symbol – means the same
Solution: the set or value that satisfies the equation
Solve: to find the solution
Inverse: the operation that undoes what was done by the previous operation. (The opposite operation)
Term: a single number or variable
Like: variables that are the same are 'like'
Coefficient: a multiplicative factor in front of a variable e.g. 5x (5 is the coefficient, x is the variable)
Expression: a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)

Equality

$2 + 14 = 5 + 5 + 6$

16 16

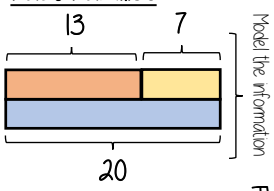
"Is equal to"

The sum on the left has the same result as the sum on the right

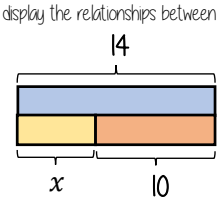
Saying it out loud sometimes helps you to understand equality

Fact Families

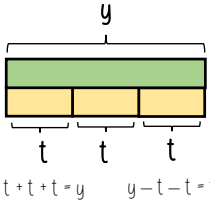
Use a bar model to display the relationships between terms and numbers



$13 + 7 = 20$ $20 - 7 = 13$
$7 + 13 = 20$ $20 - 13 = 7$



$x + 10 = 14$ $14 - 10 = x$
$10 + x = 14$ $14 - x = 10$



$t + t + t = y$ $y - t - t = t$
$3 \times t = y$ $y - 3 = t$
$3t = y$ $y - t = 3$

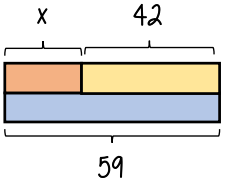
Solve one step equations (+/-)

There is more to this than just spotting the answer

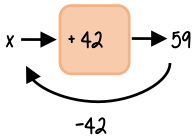
$x + 42 = 59$

$x + 42 = 59$
$42 + x = 59$

$59 - x = 42$
$59 - 42 = x$



Don't forget you know how to use function machines

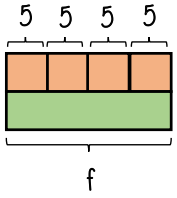


Solve one step equations (x/÷)

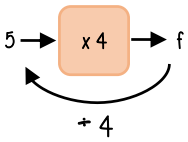
$\frac{f}{4} = 5$

$f \div 4 = 5$
$f \div 5 = 4$

$5 \times 4 = f$
$4 \times 5 = f$



Don't forget you know how to use function machines



Like and unlike terms

Like terms are those whose variables are he same

♡ and 3♡ are **like** terms

the variable is the same

★ 3♡ are **unlike** terms

the variables are NOT the same

Examples and non-examples

Like terms	Un-like terms
y, 7y	y, 7x
$2x^2$, x^2	$2x^2$, $2c^2$
ab, 10ba	ab, 10a
5, -2	5, -2t

Note here ab and ba are commutative operations, so are still like terms

Equivalence

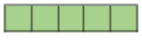
Check equivalence by substitution
e.g. m= 10

5m	2 x 2m	7m – 3m
5 x 10	2 x (2x 10)	(7x 10) – (3x 10)
= 50	= 2 x 20	= 70 – 30
	= 40	= 40

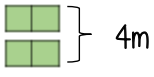
Equivalent expressions

Repeat this with various values for m to check

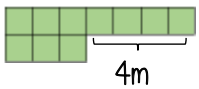
5m



2 x 2m



7m – 3m



Collecting like terms ≡ symbol

The ≡ symbol means equivalent to.
It is used to identify equivalent expressions

Collecting like terms

Only **like terms** can be combined

$4x + 5b - 2x + 10b$

$4x$ $+5b$ $-2x$ $+10b$

$2x + 15b$

Common misconceptions

$2x + 3x^2 + 4x \equiv 6x + 3x^2$

Although they both have the x variable x.2 and x terms are un-like terms so can not be collected

YEAR 7 - ALGEBRAIC THINKING...

Sequences

What do I need to be able to do?

By the end of this unit you should be able to:

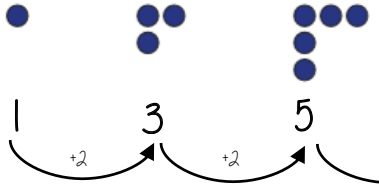
- Describe and continue both linear and non-linear sequences
- Explain term to term rules for linear sequence
- Find missing terms in a linear sequence

Keywords

Sequence: items or numbers put in a pre-decided order
Term: a single number or variable
Position: the place something is located
Rule: instructions that relate two variables
Linear: the difference between terms increases or decreases by the same value each time
Non-linear: the difference between terms increases or decreases in different amounts
Difference: the gap between two terms
Arithmetic: a sequence where the difference between the terms is constant
Geometric: a sequence where each term is found by multiplying the previous one by a fixed non zero number

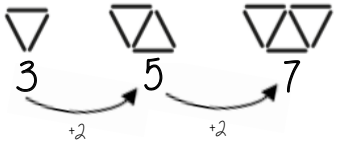
Describe and continue a sequence diagrammatically

Count the number of circles or lines in each image



What will the next number be? Can you draw this?

Predict and check terms



CHECK – draw the next terms

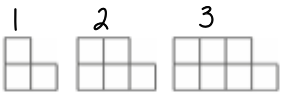
9 11 13

Predictions:
Look at your pattern and consider how it will increase.

e.g. How many lines in pattern 6?
Prediction - 13
If it is increasing by 2 each time - in 3 more patterns there will be 6 more lines

Sequence in a table and graphically

Position: the place in the sequence



3 5 7

"The **term** in **position** 3 has 7 squares"

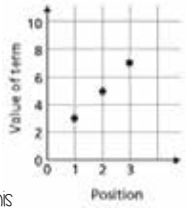
Term: the number or variable
(the number of squares in each image)

In a table

Position	1	2	3
Term	3	5	7

+2 +2

Graphically



Because the terms increase by the same addition each time this is **linear** – as seen in the graph

Linear and Non Linear Sequences

Linear Sequences – increase by addition or subtraction and the same amount each time
Non-linear Sequences – do not increase by a constant amount – quadratic, geometric and Fibonacci.

- Do not plot as straight lines when modelled graphically
- The differences between terms can be found by addition, subtraction, multiplication or division

Fibonacci Sequence – look out for this type of sequence

0 1 1 2 3 5 8 ...

Each term is the sum of the previous two terms.

Continue Linear Sequences

7, 11, 15, 19...

How do I know this is a linear sequence?
It increases by adding 4 to each term.
How many terms do I need to make this conclusion?
At least 4 terms – two terms only shows one difference not if this difference is constant. (a common difference).
How do I continue the sequence?
You continue to repeat the same difference through the next positions in the sequence.

Continue non-linear Sequences

1, 2, 4, 8, 16 ...

How do I know this is a non-linear sequence?
It increases by multiplying the previous term by 2 – this is a geometric sequence because the constant is multiply by 2
How many terms do I need to make this conclusion?
At least 4 terms – two terms only shows one difference not if this difference is constant. (a common difference).
How do I continue the sequence?
You continue to repeat the same difference through the next positions in the sequence.

Explain term-to-term rule

How you get from term to term

Try to explain this in full sentences not just with mathematical notation
Use key maths language – doubles, halves, multiply by two, add four to the previous term etc.

To explain a whole sequence you need to include a term to begin at...

The next term is found by tripling the previous term. The sequence begins at 4.

4, 12, 36, 108...
x3 x3 x3
First term

YEAR 7 - PLACE VALUE AND PROPORTION...

FDP equivalence

What do I need to be able to do?

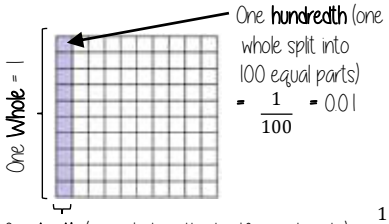
By the end of this unit you should be able to:

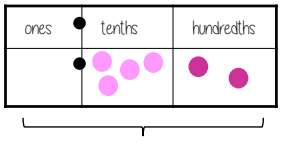
- Convert fluently between fractions, decimals & percentages

Keywords

Fraction: how many parts of a whole we have
Decimal: a number with a decimal point used to separate ones, tenths, hundredths etc.
Percentage: a proportion of a whole represented as a number between 0 and 100
Place value: the numerical value that a digit has decided by its position in the number
Placeholder: a number that occupies a position to give value
Interval: a range between two numbers
Tenth: one whole split into 10 equal parts
Hundredth: one whole split into 100 equal parts
Sector: a part of a circle between two radius (often referred to as looking like a piece of pie)
Recurring: a decimal that repeats in a given pattern

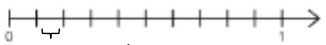
Tenths and hundredths



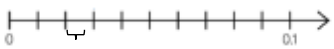


0 ones, 5 tenth and 2 hundredths
0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01
= 0 + 0.5 + 0.02
= **0.52**

On a number line

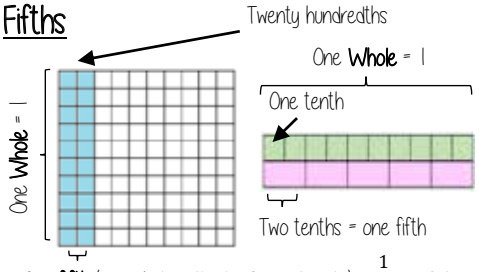


One whole – split into 10 equal parts
One tenth = 1/10 = 0.1



One tenth – split into 10 equal parts
One hundredth = 1/100 = 0.01

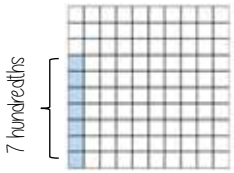
Fifths



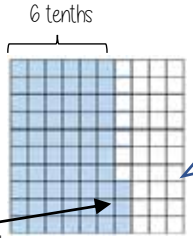
One **fifth** (one whole split into 5 equal parts) = 1/5 = 0.2

Percentages on a hundred grid

100% = a whole = 100 hundredths



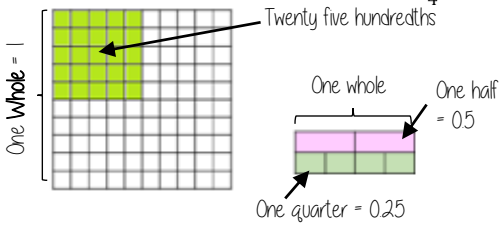
7 hundredths
7 out of 100
7%



6 tenths and 3 hundredths
63 hundredths
63%

Quarters

One **quarter** (one whole split into 4 equal parts) = 1/4 = 0.25



Simple pie charts

A pie chart has 360° so all FDP calculations are out of 360

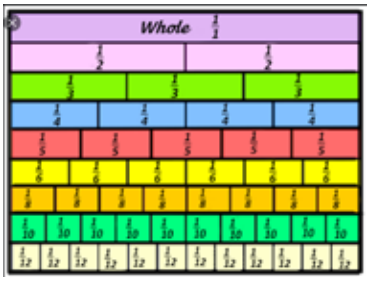
Split into 10 parts
= 10% = 36°

Split into 2 parts
= 50% = 180°

Split into 5 parts
= 20% = 72°

Equivalent fractions

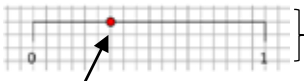
Represent equivalence with fraction walls



Fractions – on a diagram

The denominator is represented by EQUALLY sized parts – this is split into quarters

Fractions – on a number line



This point is at the 6th part
6 is the **numerator**

One whole split into 18 equal parts
18 is the **denominator**

6/18 ← 3/9 ← 1/3

Convert FDP

70/100 → This also means 70 ÷ 100 → 70 out of 100 squares → **70 "hundredths" = 7 "tenths" 0.7**

→ 70 hundredths = 70%

Using a **calculator**

■/□ → S⇌D → Convert to a decimal

This will give you the answer in the simplest form

× 100 converts to a percentage

Be careful of recurring decimals
e.g 1/3 = 0.3333333 = $0.\dot{3}$
The dot above the 3

YEAR 7 - FRACTIONAL THINKING

Addition and subtraction of fractions

What do I need to be able to do?

By the end of this unit you should be able to:

- Convert between mixed numbers and fractions
- Add/Subtract unit fractions (same denominator)
- Add/Subtract fractions (same denominator)
- Add/Subtract fractions from integers
- Use equivalent fractions
- Add/Subtract any fractions
- Add/Subtract improper fractions and mixed numbers
- Use fractions in algebraic contexts

Keywords

Numerator : the number above the line on a fraction. The top number. Represents how many parts are taken

Denominator: the number below the line on a fraction. The number represent the total number of parts

Equivalent: of equal value

Mixed numbers: a number with an integer and a proper fraction

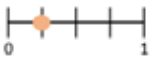
Improper fractions: a fraction with a bigger numerator than denominator

Substitute: replace a variable with a numerical value

Place value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right

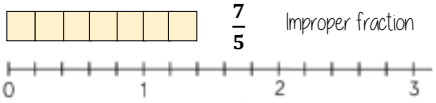
Representing Fractions

$\frac{1}{4}$ is represented in all the images

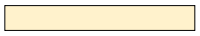


$1 \div 4$

Mixed numbers and fractions



$\frac{7}{5}$ Improper fraction



$1\frac{2}{5}$ Mixed number

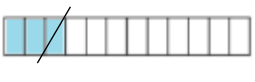
In this model 5 parts make up a whole

Fractions can be bigger than a whole

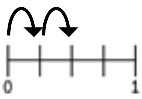
Add/Subtract unit fractions

Same denominator

$\frac{1}{12} + \frac{1}{12} - \frac{1}{12} = \frac{2}{12}$



$\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$



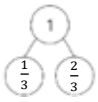
With the same denominator ONLY the numerator is added or subtracted

Add/Subtract fractions

Same denominator

$\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$

Sequences



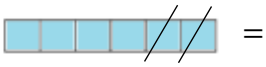
$\frac{1}{3}, 1, 1\frac{2}{3}, 2\frac{1}{3}, 3, \ldots$

$+\frac{2}{3}$ $+\frac{2}{3}$

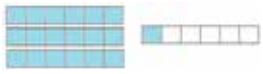
Represent this on a number line to help

Add/Subtract from integers

$1 - \frac{2}{6} = \frac{4}{6}$



$3 + \frac{1}{6} = 3\frac{1}{6}$

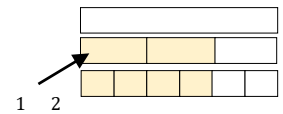


The denominator indicates the number of parts a whole is made up of

Equivalent fractions

Numerator and denominator have the same multiplier

$\frac{2}{3} = \frac{4}{6}$



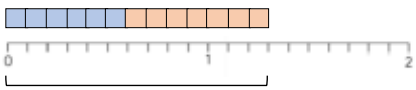
$\frac{1}{3} = \frac{2}{6}$

Add/Subtraction fractions (common multiples)

$\frac{3}{5} + \frac{7}{10}$

$\frac{6}{10} + \frac{7}{10}$

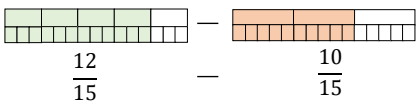
Addition/Subtraction needs a common denominator



$\frac{13}{10}$

Add/Subtraction any fractions

$\frac{4}{5} - \frac{2}{3}$



$= \frac{2}{15}$

$\frac{12}{15}$ — $\frac{10}{15}$

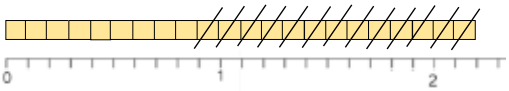
Use equivalent fractions to find a common multiple for both denominators

Add/Subtraction fractions (improper and mixed)

$2\frac{1}{5} - 1\frac{3}{10}$

$2\frac{2}{10}$

$\frac{22}{10} - \frac{13}{10} = \frac{9}{10}$



- Convert to an improper fraction
- Calculate with common denominator

Partitioning method

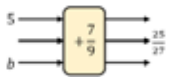
$2\frac{1}{5} - 1\frac{3}{10} = 2\frac{2}{10} - 1\frac{3}{10} = 2\frac{2}{10} - 1 - \frac{3}{10} = 1\frac{2}{10} - \frac{3}{10} = \frac{9}{10}$

Fractions in algebraic contexts

$k - \frac{5}{8} = 2$

Apply inverse operations

$k = 2 + \frac{5}{8}$



Form expressions with fractions

$b + \frac{7}{9} \rightarrow b + \frac{7}{9}$

$p = 5 \quad m = 2$

$\frac{p}{8} + \frac{1}{m}$

Substitution

$\frac{5}{8} + \frac{1}{2}$

Fractions and decimals

$\frac{1}{10} = 0.1$

$\frac{1}{100} = 0.01$

Example $\frac{6}{10} + 0.3 \rightarrow 0.6 + 0.3$

$\frac{6}{10} + \frac{3}{10}$

Remember to use equivalent fractions and common denominators

YEAR 7 - APPLICATION OF NUMBER

Fractions and percentages of amounts

What do I need to be able to do?

By the end of this unit you should be able to:

- Find a fraction of a given amount
- Use a given fraction to find the whole or other fractions
- Find the percentage of an amount using mental methods
- Find the percentage of a given amount using a calculator

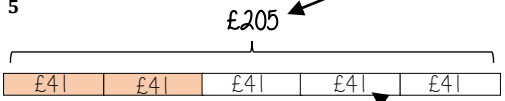
Keywords

Fraction: how many parts of a whole we have
Equivalent: of equal value
Whole: a number with no fractional or decimal part
Percentage: parts per 100 (uses the % symbol)
Place Value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right
Convert: change into an equivalent representation, often fraction to decimal to a percentage cycle

Fraction of a given amount

Find $\frac{2}{5}$ of £205

The bar represents the whole amount

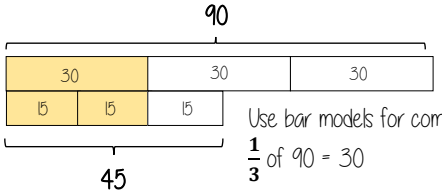


2 out of the 5 equal parts

2 x £41 = **£82**

£205 ÷ 5 = £41

Each part of the bar model represents £41



Use bar models for comparisons

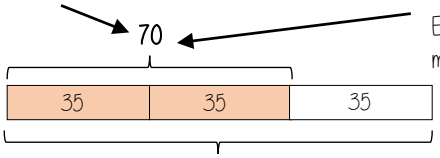
$\frac{1}{3}$ of 90 = 30

$\frac{2}{3}$ of 45 = 30

$\therefore \frac{1}{3}$ of 90 = $\frac{2}{3}$ of 45

Use a fraction of amount

$\frac{2}{3}$ of a value is 70. What is the whole number?



70 ÷ 2 = 35

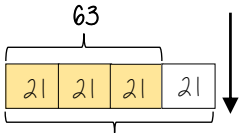
Each part of the bar model represents 35.

35 x 3 = 105

The whole number is 105

The wording of the question is important to setting up the bar model

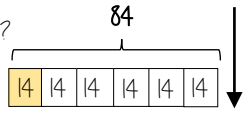
$\frac{3}{4}$ of a number is 63



Find the whole

What is $\frac{1}{6}$ of the number?

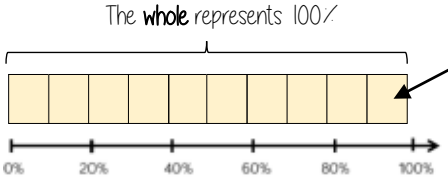
= 14



Use the whole to find a given part

Find the percentage of an amount (Mental methods)

The **whole** represents 100%



10% = $\frac{1}{10}$ of the whole

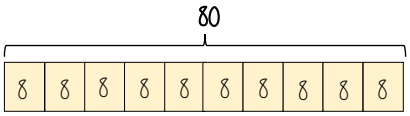
10% = $\frac{1}{10}$ of the whole

20% = $\frac{2}{10}$ = $\frac{1}{5}$ of the whole

50% = $\frac{5}{10}$ = $\frac{1}{2}$ of the whole

5% = $\frac{1}{20}$ of the whole

Find 65% of 80



For bigger percentages it is sometimes easier to take away from 100%

Method 1

65% = 10% x 6 + 5%
= (8 x 6) + 4
= 52

Method 2

65% = 50% + 10% + 5%
= 40 + 8 + 4
= 52

Find the percentage of an amount (Calculator methods)

Using a multiplier

Find 65% of 80

Fraction, decimal, percentage conversion

65% = $\frac{65}{100}$ = 0.65 ← The multiplier

0.65 x 80 = **52**

Using the percent button

Find 65% of 80

This brings up the % button on screen
You will see 65%

Type 65

Press SHIFT ((%)

Press × 80 and then press =

You can also use the calculator to support non calculator methods and find 1% or 10% then add percentages together

"of" can represent 'x' in calculator methods

YEAR 7 - PROPORTIONAL REASONING...

Multiplying and Dividing Fractions

What do I need to be able to do?

By the end of this unit you should be able to:

- Carry out any multiplication or division using fractions and integers.
- Solutions can be modelled, described and reasoned

Keywords

Numerator : the number above the line on a fraction. The top number. Represents how many parts are taken
Denominator: the number below the line on a fraction. The number represent the total number of parts.
Whole: a positive number including zero without any decimal or fractional parts.
Commutative: an operation is commutative if changing the order does not change the result.
Unit Fraction: a fraction where the numerator is one and denominator a positive integer.
Non-unit Fraction: a fraction where the numerator is larger than one.
Dividend : the amount you want to divide up.
Divisor: the number that divides another number.
Quotient: the answer after we divide one number by another. e.g. dividend÷ divisor = quotient
Reciprocal: a pair of numbers that multiply together to give 1.

Representing a fraction

Numerator
Denominator

$\frac{3}{5}$

Number of parts represented
Numerator

Number of parts to make up the whole
Denominator

ALL PARTS of a fraction are of equal size

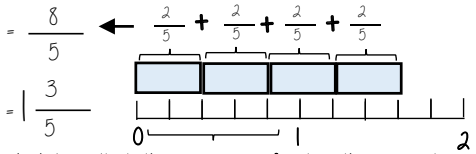
Repeated addition = multiplication by an integer

$4 \times \frac{2}{5} \rightarrow \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$

Integer (Whole number)

Each part represents $\frac{1}{5}$

How many parts are shaded?
What each part represents



Each whole is split into the same number of parts as the denominator

Revisit
When adding fractions with the same denominator = add the numerators

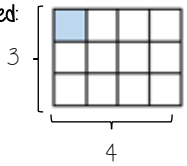
Multiplying unit fractions

$\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$

Parts shaded

Total number of parts in the diagram

Modelled:



Multiplying non-unit fractions

Shade in 3 parts

Repeat it on this many rows

$\frac{3}{4} \times \frac{2}{3}$

This many columns

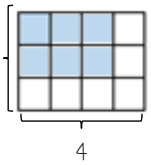
This many rows

$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$

Parts shaded

Total number of parts in the diagram

Modelled:



Quick Multiplying and Cancelling down

$\frac{\cancel{3}^{1}}{5} \times \frac{4}{\cancel{9}_{3}}$

The 3 and the 9 have a common factor and can be simplified

Quick Solving
Multiply the numerators
Multiply the denominators

$\frac{1 \times 4}{5 \times 3} = \frac{4}{15}$

The reciprocal *When you multiply a number by its reciprocal the answer is always 1*

$3 \times \frac{1}{3} = 1$

$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$

The reciprocal of 3 is $\frac{1}{3}$ and vice versa

Reciprocals for division

e.g $5 \div \frac{1}{4} = 20$

$5 \times 4 = 20$

Multiplying by a reciprocal gives the same outcome

Dividing an integer by an unit fraction

$1 \div \frac{1}{4} = 4$

How many quarters are in 1?

"There are 4 quarters in 1 whole. Therefore, there are 20 quarters in 5 wholes"

$5 \div \frac{1}{4} = 20$

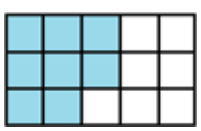
Dividing any fractions *Remember to use reciprocals*

$\frac{2}{5} \div \frac{3}{4}$

$\frac{2}{5} \times \frac{4}{3}$

Multiplying by a reciprocal gives the same outcome

Represented



$= \frac{8}{15}$

YEAR 7 - DEVELOPING NUMBER...

Number Sense

What do I need to be able to do?

By the end of this unit you should be able to:

- Round numbers to powers of 10 and 1 sf
- Round numbers to any dp
- Estimate solutions
- Calculate using order of operations
- Calculate with money, units of measurement and time

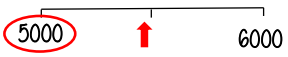
Keywords

Significant: Place value of importance
Round: Making a number simpler but keeping its value close to what it was.
Decimal: Place holders after the decimal point.
Overestimate: Rounding up – gives a solution higher than the actual value
Underestimate: Rounding down – gives a solution lower than the actual value.
Metric: A system of measurement.
Balance: The amount of money in a bank account
Deposit: Putting money into a bank account.

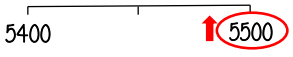
Round to powers of 10 and 1 sig. figure

R If the number is halfway between we "**round up**"

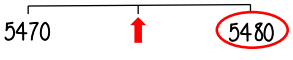
5495 to the nearest 1000



5475 to the nearest 100



5475 to the nearest 10



370 to 1 significant figure is 400
37 to 1 significant figure is 40
3.7 to 1 significant figure is 4
0.37 to 1 significant figure is 0.4
0.00037 to 1 significant figure is 0.0004

Round to the first non-zero number

Round to decimal places

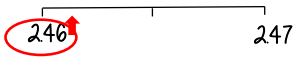
2.46192 ← Focus on the numbers **after** the decimal point

"To 1dp" – to one number after the decimal
"To 2dp" – to two numbers after the decimal

2.46192 (to 1dp) - Is this closer to 2.4 or 2.5

2.4 6192 This shows the number is closer to 2.5

2.46192 (to 2dp) - Is this closer to 2.46 or 2.47



2.46 192 This shows the number is closer to 2.46

Estimate the calculation

Round to 1 significant figure to estimate

$4.2 + 6.7 \approx 4 + 7 \approx 11$ This is an **overestimate** because the 6.7 was rounded up more

The equal sign changes to show it is an estimation

$21.4 \times 3.1 \approx 20 \times 3 \approx 60$ This is an **underestimate** because both values were rounded down

It is good to check all calculations with an estimate in all aspects of maths – it helps you identify calculation errors.

Order of operations

R

Brackets Operations in brackets are calculated first

Other operations e.g. powers, roots,

Multiplication/ Division
They are carried out in the order from left to right in the question

Addition/ Subtraction
They are carried out in the order from left to right in the question

Calculations with money

Debit - You have £0 or more in an account

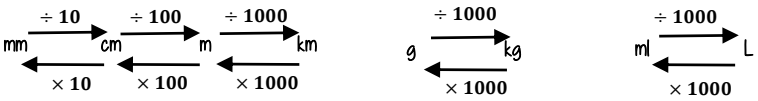
Credit - You have less than £0 in an account

Money calculations are to 2dp

Using a calculator – ensure you are working in the correct units.
£1.30 + 50p = 130 + 50 (in pence)
= 1.30 + 0.50 (in pounds)

£1 = 100p

Units are important: Useful Conversions



Metric measures of length

Kilo = 1000 x meter Centi - $\frac{1}{100}$ x meter

Milli - $\frac{1}{1000}$ x meter

Units of weight/ capacity

Weight = g, kg, t
Capacity (volume of liquid) = ml, L

Time and the calendar

1 Year – the amount of time it takes Earth to go around the sun **365** (and a quarter) **days**
Leap Year – **366 days** (every 4 years)

12 Months - one year = 52 weeks
31 days – **Jan, March, May, July Aug, Oct, Dec**
30 days – **April, June, Sept, Nov**
28 days – **Feb** (29 leap year)

1 week – 7 days
Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday

1 day – 24 hours
1 hour - 60 minutes
1 minute – 60 seconds

Use a number line for time calculations!

Analogue Clock

12-hour clock
- Use am (morning) and pm (afternoon)
- Only use hour times up to 12

Digital Clock (24-hour times)

24-hour clock
- 0-11 (morning hours)
- 12-23 (afternoon hours)

YEAR 7 - REASONING WITH DATA...

Measures of location

What do I need to be able to do?

By the end of this unit you should be able to:

- Understand and use mean, median and mode
- Choose the most appropriate average
- Identify outliers
- Compare distributions using averages and range

Keywords

Spread: the distance/ how spread out/ variation of data
Average: a measure of central tendency – or the typical value of all the data together
Total: all the data added together
Frequency: the number of times the data values occur
Represent: something that show's the value of another
Outlier: a value that stands apart from the data set
Consistent: a set of data that is similar and doesn't change very much

Mean, Median, Mode

The Mean

A measure of average to find the central tendency… a typical value that represents the data

24, 8, 4, 11, 8,

Find the sum of the data (add the values) 55

Divide the overall total by how many pieces of data you have 55 ÷ 5

Mean = 11

The Median

The value in the center (in the middle) of the data

24, 8, 4, 11, 8,

Put the data in order 4, 8, 8, 11, 24

Find the value in the middle 4, 8, 8, 11, 24

Median = 8

NOTE: If there is no single middle value find the mean of the two numbers left

The Mode (The modal value)

This is the number OR the item that occurs the most (it does not have to be numerical)

24, 8, 4, 11, 8,

This can still be easier if it the data is ordered first 4, 8, 8, 11, 24

Mode = 8

Choosing the appropriate average

The average should be a representative of the data set – so it should be compared to the set as a whole - to check if it is an appropriate average

Here are the weekly wages of a small firm

£240	£240	£240	£240	£240
£260	£260	£300	£350	£700

Which average best represents the weekly wage?

The Mean = £307
The Median = £250
The Mode = £240

Put the data back into context
Mean/Median – too high (most of this company earn £240)
Mode is the best average that represents this wage

It is likely that the salaries above £240 are more senior staff members – their salary doesn't represent the average weekly wage of the majority of employers

Identify outliers

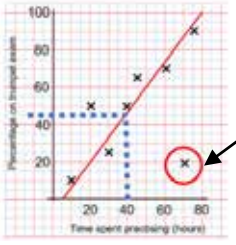
Outliers are values that stand well apart from the rest of the data

Outliers can have a big impact on range and mean
They have less impact on the median and the mode

Sometimes it is best to not use an outlier in calculations

Height in cm
152 150 142 158 182 151 153 149 156 160 151 144

Where an outlier is identified try to give it some context
This is likely to be a taller member of the group
Could the be an older student or a teacher?



Outliers can also be identified graphically e.g. on scatter graphs

Comparing distributions

Comparisons should include a statement of average and central tendency, as well as a statement about spread and consistency

Here are the number of runs scored last month by Lucy and James in cricket matches

Lucy: 45, 32, 37, 41, 48, 35
James: 60, 90, 41, 23, 14, 23

Lucy
Mean: 396 (1dp), **Median:** 38 **Mode:** no mode, **Range:** 16

James
Mean: 418 (1dp), **Median:** 32, **Mode:** 23, **Range:** 76

James has two extreme values that have a big impact on the range

"James is less consistent that Lucy because his scores have a greater range. Lucy performed better on average because her scores have a similar mean and a higher median"

YEAR 7 - REASONING WITH DATA...

The data handling cycle

What do I need to be able to do?

By the end of this unit you should be able to:

- Set up a statistical enquiry
- Design and criticise questionnaires
- Draw and interpret multiple bar charts
- Draw and interpret line graphs
- Represent and interpret grouped quantitative data
- Find and interpret the range
- Compare distributions

Keywords

Hypothesis: an idea or question you want to test
Sampling: the group of things you want to use to check your hypothesis
Primary Data: data you collect yourself
Secondary Data: data you source from elsewhere e.g. the internet/ newspapers/ local statistics
Discrete Data: numerical data that can only take set values
Continuous Data: numerical data that has an infinite number of values (often seen with height, distance, time)
Spread: the distance/ how spread out/ variation of data
Average: a measure of central tendency – or the typical value of all the data together
Proportion: numerical relationship that compares two things

Set up a statistical enquiry

Write a suitable hypothesis → Design a data collection sheet → Pros/ Cons of sampling → Pros/ Cons primary or secondary data → Discrete or continuous data?

Features of a data collection sheet

Grouped or ungrouped categories →

Data Title	Tally	Frequency
	𝍸	

← Total number of that group observed

Design and criticise a questionnaire

The Question - be clear with the question - don't be too leading/ judgemental

e.g. How much pocket money do you get a week?

Responses – do you want closed or open responses? – do any options overlap? – Have you an option for all responses?

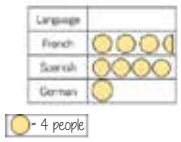
Zero option → ☐ £0 ☐ £0.01 - £2 ☐ £2.01 - £4 ☐ more than £4 ← More option

NOTE: For responses about continuous data include inequalities $< x \leq$

Pictograms, bar and line charts (R)

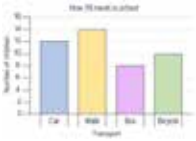
Represents quantitative data

Pictogram



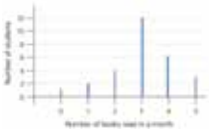
- Need to remember a key
- Visually able to identify mode

Bar Chart



- Gaps between the bars
- Clearly labelled axes
- Scale for the axes
- Title for the bar chart
- Discrete Data

Line Chart



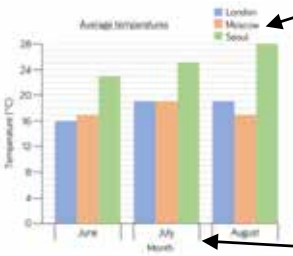
- Gaps between the lines
- Clearly labelled axes
- Scale for the axes
- Discrete Data

Multiple Bar chart

Compares multiple groups of data

- Clearly labelled axes
- Scale for axes
- Comparable data bars drawn next to each other

Key/ Colour code for separate groups of information



Gap between different categories of data

Draw and interpret Pie Charts (R)

Remember a circle has 360°

Type of pet	Dog	Cat	Hamster
Frequency	32	25	3

There were 60 people asked in this survey (Total frequency)

32/60 "32 out of 60 people had a dog"

This fraction of the 360 degrees represents dogs

32/60 X 360 = 192°

Use a protractor to draw This is 192°

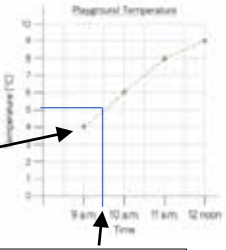
Multiple method
Os 60 goes into 360 – 6 times
Each frequency can be multiplied by 6 to find the degrees (proportion of 360)

Represents quantitative, discrete data

Draw and interpret line graphs

- Commonly used to show changing over time
- The points are the recorded information and the lines join the points

Line graphs do not need to start from 0



More than one piece of data can be plotted on the same graph to compare data

It is possible to make estimates from the line e.g. temperature at 9.30am is 5°C

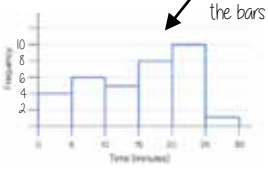
Grouped quantitative data

Time (minutes)	Frequency
0 ≤ t < 5	4
5 ≤ t < 10	6
10 ≤ t < 15	5
15 ≤ t < 20	8
20 ≤ t < 25	10
25 ≤ t < 30	1

"More than or equal to 25 and less than 30 minutes"

The use of inequalities shows that this will be a frequency diagram

This is a frequency diagram There are no gaps between the bars



Grouping the data is useful if there is a large spread of data to begin with

Find and interpret the range

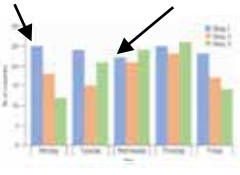
The range is a measure of **spread**

Difference between the biggest and smallest values

A smaller range means there is less variation in the results – it is more consistent data

A range of 0 means all the data is the same value

Shop 1 highest value | Shop 1 lowest value



Shop 1 has the smallest range – this indicates it has a more consistent flow of customers each week

Range of customers = 25 – 22 = 3 (Shop 1)

YEAR 7 - PLACE VALUE AND PROPORTION

Ordering integers and decimals

What do I need to be able to do?

By the end of this unit you should be able to:

- Understand place value and the number system including decimals
- Understand and use place value for decimals, integers and measures of any size
- Order number and use a number line for positive and negative integers, fractions and decimals;
- use the symbols $=, \neq, \leq, \geq$
- Work with terminating decimals and their corresponding fractions
- Round numbers to an appropriate accuracy
- Describe, interpret and compare data distributions using the median and range

Keywords

Approximate: To estimate a number, amount or total often using rounding of numbers to make them easier to calculate with
Integer: a whole number that is positive or negative
Interval: between two points or values
Median: A measure of central tendency (middle, average) found by putting all the data values in order and finding the middle value of the list.
Negative: Any number less than zero, written with a minus sign.
Place holder: We use 0 as a place holder to show that there are none of a particular place in a number
Place value: The value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right
Range: The difference between the largest and smallest numbers in a set
Significant figure: A digit that gives meaning to a number. The most significant digit (figure) in an integer is the number on the left. The most significant digit in a decimal fraction is the first non-zero number after the decimal point.

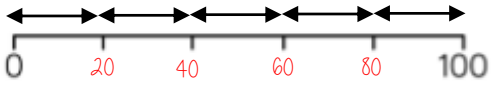
Integer Place Value

Billions			Millions			Thousands			Ones		
H	T	O	H	T	O	H	T	O	H	T	O
		3	1	4	8	0	3	3	0	2	9

Placeholder

Three billion, one hundred and forty eight million, thirty three thousand and twenty nine
1 billion 1, 000, 000, 000
1 million 1 000, 000

Intervals on a number line



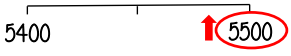
Divide the difference by the number of intervals (gaps).
E.g. 100 ÷ 5 = 20

Rounding to the nearest power of ten

If the number is halfway between we "round up"

5495 to the nearest 1000

5475 to the nearest 100



5475 to the nearest 10

Compare integers using <, >, =, ≠

< *less than*
> *greater than*
= equal to
≠ not equal to

Two and a half million = 2 500 000
300 000 000 = Three billion
Six thousand and eighty < 68 000

Range

Spread of the values

Difference between the biggest and smallest

3 9 8 12

Range: Biggest value – Smallest value

12 – 3 = 9

Range = 9

Median

The middle value

Example 1

4 3 9 8 12

Median: put the in order 3 4 8 9 12
find the middle number 3 4 **8** 9 12

Example 2

150 154 148
137 160 158

Median: put the in order

137 148 **150 154** 158 160

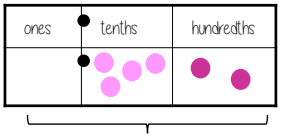
There are 2 middle numbers
Find the midpoint

152

Decimals

We say "nought point five two"

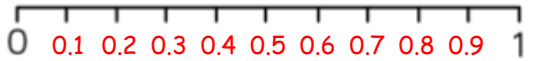
Five tenths and two hundredths

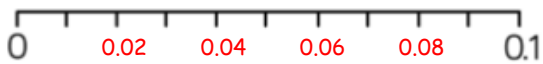


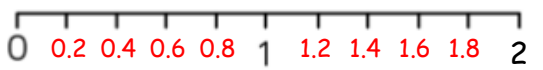
0 ones, 5 tenth and 2 hundredths
0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.001 + 0.001
= 0 + 0.5 + 0.02
= 0.52

Decimal intervals on a number line

One whole split into 10 parts makes tenths = 0.1
One tenth split into 10 parts makes hundredths = 0.01

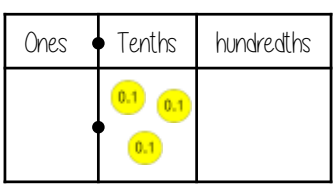


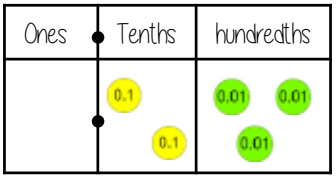




Comparing decimals

Which the largest of 0.3 and 0.23?





$0.3 > 0.23$

"There are more counters in the furthest column to the left"

0.30
0.23

Comparing the values both with the same number of decimal places is another way to compare the number of tenths and hundredths

Round to 1 significant figure

370 to 1 significant figure is 400
37 to 1 significant figure is 40
3.7 to 1 significant figure is 4
0.37 to 1 significant figure is 0.4
0.00000037 to 1 significant figure is 0.0000004

Round to the first non zero number

YEAR 7 - PROPORTIONAL REASONING...

Ratio and Scale

What do I need to be able to do?

By the end of this unit you should be able to:

- Simplify any given ratio
- Share an amount in a given ratio
- Solve ratio problems given a part

Solutions should be modelled, explained and solved.

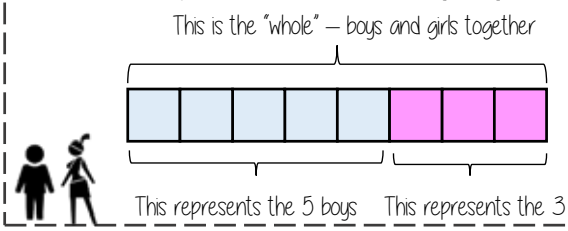
Keywords

Ratio: a statement of how two numbers compare
Equal Parts: all parts in the same proportion, or a whole shared equally
Proportion: a statement that links two ratios
Order: to place a number in a determined sequence
Part: a section of a whole
Equivalent: of equal value
Factors: integers that multiply together to get the original value
Scale: the comparison of something drawn to its actual size.

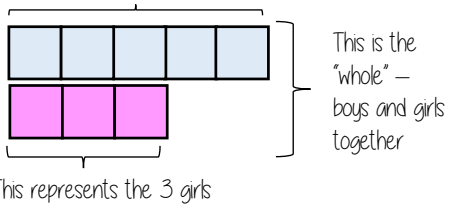
Representing a ratio

"For every 5 boys there are 3 girls"

5:3



Double Number Line



Order is Important

"For every dog there are 2 cats"

Dogs: Cats

1:2

The ratio has to be written in the same order as the information is given.

e.g. 2:1 would represent 2 dogs for every 1 cat ✗

Simplifying a ratio

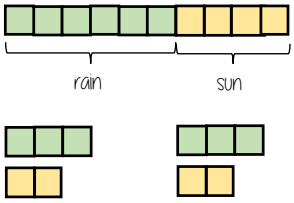
Cancel down the ratio to its lowest form

"For every 6 days of rain there are 4 days of sun"

6:4

÷ by 2

3:2



Find the biggest common factor that goes into all parts of the ratio

For **6** and **4** the biggest factor (number that multiplies into them is **2**)

"For every 3 days of rain there are 2 days of sun" – when this happens twice the ratio becomes 6:4

Ratio 1:n (or n:1)

This is asking you to cancel down until the part indicated represents 1

Show the ratio 4:20 in the ratio of 1:n

The question states that **this part has to be** 1 unit. Therefore **Divide by 4**

4 : 20

1 : 5

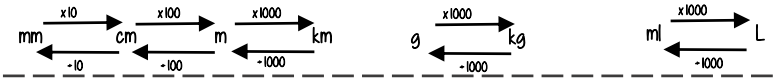
This side has to be divided by 4 too – to keep in **proportion**

n the n part does not have to be an integer for this type of question

Units are important:

When using a ratio – all parts should be in the same units

Useful Conversions



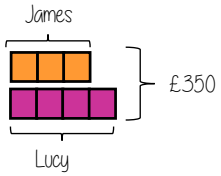
Sharing a whole into a given ratio

James and Lucy share £350 in the ratio 3:4. Work out how much each person earns

Model the Question

James : Lucy

3 : 4



Find the value of one part

Whole: £350
7 parts to share between
(3 James, 4 Lucy)

£350 ÷ 7 = £50

□ = one part
= £50

Put back into the question

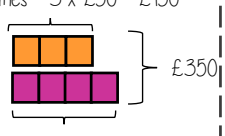
James : Lucy

(x 50) 3 : 4 (x 50)

£150 : £200

James = 3 x £50 = £150

Lucy = 4 x £50 = £200



Finding a value given 1:n (or n:1)

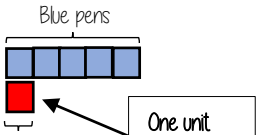
Inside a box are blue and red pens in the ratio 5:1. If there are 10 red pens how many blue pens are there?

Model the Question

Blue : Red

5 : 1

□ = one part
= 10 pens



One unit = 10 pens

Put back into the question

Blue : Red

(x 10) 5 : 1 (x 10)

50 : 10

Blue pens = 5 x 10 = 50 pens

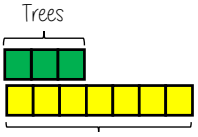
Red pens = 1 x 10 = 10 pens

There are 50 Blue Pens

Ratio as a fraction

Trees : Flowers

3 : 7



Ratio

There are **3** parts for trees

Fraction of trees

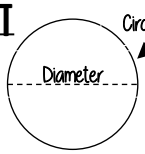
Number of parts of in group / Total number of parts

3 / 10

Fraction

Tree parts **3** + Flower parts **7** = **10**

Pi π



The ratio of a circles circumference to its diameter

YEAR 7 - PROPORTIONAL REASONING...

Multiplicative Change

What do I need to be able to do?

By the end of this unit you should be able to:

- Solve problems and explain direct proportion
- Use conversion graphs to make statements, comparisons and form conclusions.
- Understand and use scale factors for length

Keywords

Proportion: a statement that links two ratios
Variable: a part that the value can be changed
Axes: horizontal and vertical lines that a graph is plotted around
Approximation: an estimate for a value
Scale Factor: the multiple that increases/ decreases a shape in size
Currency: the system of money used in a particular country
Conversion: the process of changing one variable to another
Scale: the comparison of something drawn to its actual size.

Direct Proportion

As one variable changes the other changes at the same rate

This is a multiplicative change

4 cans of pop = £2.40

4 cans of pop = £2.40 → 2 cans of pop = £1.20 (×0.5)

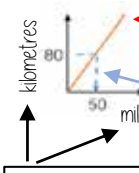
4 cans of pop = £2.40 → 12 cans of pop = £7.20 (×3)

This multiplier is the same In the same way that this would be for ratio

Sometimes this is easiest if you work out how much one unit is worth first
e.g. **1 can of pop = £0.60**

Conversion Graphs

Compare two variables



This is always a straight line because as one variable increases so does the other at the same rate

To make conversions between units you need to find the point to compare – then find the associated point by using your graph.
Using a ruler helps for accuracy
Showing your conversion lines help as a "check" for solutions

Labelling of both axes is vital

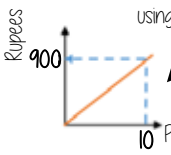
Conversion between currencies

£1 = 90 Rupees ← Currency is directly proportional

For every £1 I have 90 Rupees

£1 = 90 Rupees → £10 = 900 Rupees (×10)

Currency can be converted using a conversion graph



Convert 630 Rupees into Pounds

£1 = 90 Rupees → £7 = 630 Rupees (×7)

630 ÷ 90 = 7

Ratio between similar shapes

Angles in similar shapes do not change.
e.g. if a triangle gets bigger the angles can not go above 180°

The two rectangles are similar.

Corresponding sides

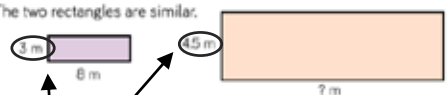
3m : 4.5m → 1m : 1.5m (÷3)

8m : 12m → 1m : 1.5m (×8)

Note
Simplify to the same ratio

Understand Scale Factor

The two rectangles are similar.



3 x 1.5 = 4.5

This is a multiplicative change

Missing length
8 x 1.5 = 12m

Use **corresponding** sides to calculate a scale factor

Scale factor can also be calculated by:

Bigger corresponding side
Smaller corresponding side

Small corresponding side → Big corresponding side: x SF

Big corresponding side → Small corresponding side: ÷ SF

Draw and interpret scale diagrams

A picture of a car is drawn with a scale of 1:30

For every 1cm on my image is 30cm in real life

The car image is 10cm

Image	Real life
1cm	30cm
10cm	300cm

The car in real life is 210cm

Image	Real life
1cm	30cm
7cm	210 cm

Interpret maps with scale factors

÷ 10 ÷ 100 ÷ 1000

mm cm m km

x 10 x 100 x 1000

1 cm : 250 m

Ratios need to be in the same units

1 cm : 250m

250 x 100 = 25000

1 cm : 25000cm

For every 1cm on my map is 25000cm in real life

YEAR 7 - LINES AND ANGLES

Geometric reasoning

What do I need to be able to do?

By the end of this unit you should be able to:

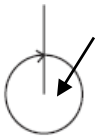
- Understand/use the sum of angles at a point
- Understand/use the sum of angles on a straight line
- Understand/use equality of vertically opposite angles
- Know and apply the sum of angles in a triangle
- Know and apply the sum of angles in a quadrilateral

Keywords

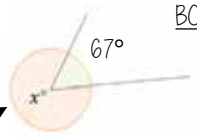
Vertically Opposite: angles formed when two or more straight lines cross at a point
Interior Angles: angles inside the shape
Sum: total, add all the interior angles together
Convex Quadrilateral: a four-sided polygon where every interior angle is less than 180°
Concave Quadrilateral: a four-sided polygon where one interior angle exceeds 180°
Polygon: A 2D shape made with straight lines
Scalene triangle: a triangle with all different sides and angles
Isosceles triangle: a triangle with two angles the same size and two angles the same size
Right-angled triangle: a triangle with a right angle

Sum of angles at a point

The sum of angles around a point is 360°



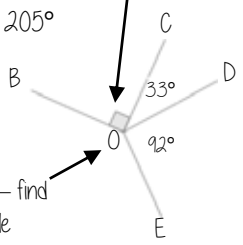
360° - 67° = 293 °



Find angle BOE

90° + 33° + 92° = 205°
360° - 205°
BOE = **155°**

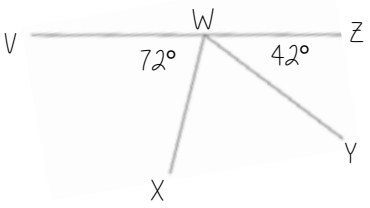
Angle notation – 90°



Angle notation – find this missing angle

Sum of angles on a straight line

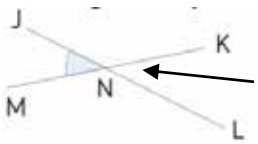
Adjacent angles that share a common point on a line add up to 180°



Find angle XWY

72° + 42° = 114°
180° - 114° = **66°**

Vertically opposite angles

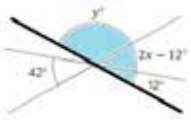


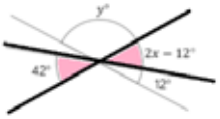
Angle JNM is vertically opposite to angle KNL

JNM = KNL

Vertically opposite angles are the same

Other angle rules still apply
Look for straight line sums and angles around a point

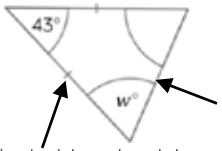




Form equations with information from diagrams:
$2x - 12 = 42$
$2x = 54$
$x = 27°$

Sum of angles in triangles

Sum of interior angles in a triangle = 180°



The two base angles will be the same size

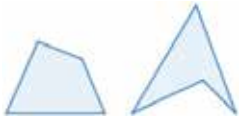
Look at triangle notation. This indicates an isosceles triangle
∴ 180 - 43 = 137
137 ÷ 2 = 68.5°

A triangle can only have ONE right angle

Have a go!
Tearing the corners from triangles forms a straight line which is therefore 180°

Sum of angles in quadrilaterals

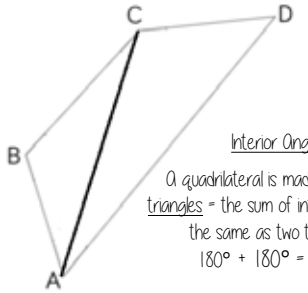
Sum of interior angles in a quadrilateral = 360°



Convex Quadrilateral

Concave Quadrilateral

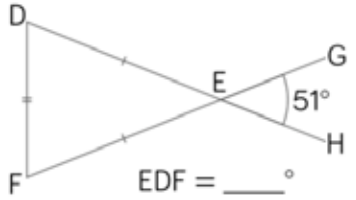
Interior angles are those that make up the perimeter (outline) of the shape



Interior Angles
A quadrilateral is made up of two triangles = the sum of interior angles is the same as two triangles:
180° + 180° = 360°

Angle Problems

Split up the problem into chunks and explain your reasoning at each point using angle notation



Keep working out clear and notes together

1. Angle DEF = 51° because it is a vertically opposite angle DEF = GEH
2. Triangle DEF is isosceles (triangle notation) ∴ EDF = EFD and the sum of interior angles is 180°
   180° - 51° = 129° 129° ÷ 2 = 64.5°
3. Angle EDF = 64.5°

KO1. French Essentials.

Grammar.

G1. Essential Verbs. (present tense)		
Pronoun	**avoir = to have**	**etre = to be**
je (I)	J'ai (I have)	Je suis (I am)
tu (you) informal)	Tu as (you have)	Tu es (you are)
il/elle/on (he/she/we)	Il/elle/on a (he/she/we has)	Il/elle/on est (he/she/it is)
nous (we)	Nous avons (we have)	Nous sommes (we are)
vous (you plural or formal)	Vous avez (you have)	Vous etes (you are)
Ils/elles (they)	Ils/elles ont (they have)	Ils/ells sont (you polite/they are)

G2. Definite & Indefinite Articles & Genders.			Possessive pronouns
Gender	**the**	**a**	**my**
masculine	le	un	mon
feminine	la	une	ma
vowel	1'	un	mon
plural	les		mes

Vocabulary.

V1. Vocabulary Essentials.	
Days of the week	**Months**
lundi (Monday)	janvier
mardi (Tuesday)	fevrier
mercredi (Wednesday)	mars
jeudi (Thursday)	avril
vendredi (Friday)	mai
samedi (Saturday)	juin
dimanche (Sunday)	juillet
Questions and answers	aout
Quand est ton anniversaire? (when is your birthday?)	septembre
Comment ca va? (how are you?)	octobre
As-tu… ? (do you have…?)	novembre
J'ai **douze** ans (I am **12**)	décembre
C'est – it's	Quel mois? (which month)

V2. Numbers.				
0 = zero	1 = un	2 = deux	3 = trois	4 = quatre
5 = cinq	6 = six	7 = sept	8 = huit	9 = neuf
10 = dix	11 = onze	12 = douze	13 =treize	14 = quatorze
15 =quinze	16 =seize	17 =dix-sept	18 = dix-uit	19 =dix-neuf
20 = vingt	30 = trente	40 = quarante	50 = cinquante	60 = soixante
70 = soixante-dix	80 =quatre-vignts	90 =quatre-vignts-dix	100 =cent	1000 =mille

Pronunciation.

P1. L'Alphabet.			
A = ah	B = bay	C = say	D = day
E = euh	F = eff	G = jay	H = ash
I = ee	J = jee	K = ka	L = el
M = em	N = en	O = oh	P = pay
Q = coo	R = air	S = ess	T = tay
U = ooh	V = vay	W dooble vay	X =eeks
Y = ee grek	Z= zed		

P2. Pronunciation rules

Don't pronounce the last letter of a word UNLESS it is CRF or L
(so don't pronounce a, s/t/z or p)
Remember be CAREFUL to NOT say the last consonant.
An H at the start of a word is silent

KO2 French Essentials 2.

Grammar

G1. Possessive Pronouns

Gender	my	your	His/her
masculine	mon	ton	son
feminine	ma	ta	sa
plural	mes	tes	ses

Vocabulary.

V1. Colours

bleu	blue	brun	brown
gris	grey	vert	green
violet	purple	rouge	red
noir	black	blanc	white

V2. Common Questions Words

Quoi	What	Qui	Who
Comment	How	Où	Where
Quand	When	Quel/quelle	Which

Vocabulary.

V3. Key Phrases. Greetings & Introductions.

Deutsch	English
Bonjour/Salut	Hello
Comment ça-va?	How are you?
Ça-va bien et toi?	I'm good, and you?
Comment tu t'appelles?	What is your name?
Je m'appelle/Mon nom est/ Je suis	I'm called/My name is/I am
Au revoir	Goodbye/bye
S'il vous plaît	Please
Merci (beaucoup)	Thank you/thanks (very much).
Quel âge as-tu?	How old are you?
Où habites-tu?	Where do you come from?

Pronunciation.

P1. Key Sounds

see	say
o	oh
au	oh
eau	oh
u	oooh
oi	wa
ch	sh
i	ee
er	ay
é	ay
ez	ay
qu	k
eu	eurgh

KO3. Comment est ta famille? (1) (What is your family like?)

Grammar.

G1. Essential Verbs. (present tense)

Pronoun	Avoir= to have	être= to be
Je (I)	J'ai (I have)	suis (I am)
Tu (you) informal)	as (you have)	es (you are)
Il/elle (he/she)	a (he/she has)	est (he/she is)
Nous (we)	avons (we have)	sommes (we are)
Vous (you plural)	avez (you have)	êtes (you are)
Ils/elles (they)	ont (they have)	sont /they are)

G2. Adjective agreement rules

If the masculine for the adjective ends like this	Make it feminine like this
Ends in a consonant (eg. t or d)	Add an e
Ends in an e or an a	Don't change it
Ends in eux	Change it for euse
Ends in if	Change it to ive

Vocabulary.

V1: Eye colour

V2: Hair colour, length and style

Pronunciation.

P1. How do I say…?

my dad	Mon père (mohn pair)
my brother	Mon frère (mohn frair)
my mum	Ma mère (mah mair)
my sister	Ma soeur (mah sir)
my parents	Mes parents (meh pah-ron)
my family	Ma famille (mah fam-eey)
Half brother	Mon demi -frère (mohn duh-mee - frair)
half sister	Ma demi- soeur (Mah duh-mee- sir)
older	ainé (eh-nay)
younger	cadet (cah-deh)

KO4. Comment est ta famille? (2) (What is your family like?)

Grammar.

G1. Essential Verbs. (present tense)

Pronoun	Avoir= to have	être= to be
Je (I)	J'ai (I have)	suis (I am)
Tu (you) informal)	as (you have)	es (you are)
Il/elle (he/she)	a (he/she has)	est (he/she is)
Nous (we)	avons (we have)	sommes (we are)
Vous (you plural)	avez (you have)	êtes (you are)
Ils/elles (they)	ont (they have)	sont /they are)

G2. Adjective agreement rules

If the masculine for the adjective ends like this	Make it feminine like this
Ends in a consonant (eg. t or d)	Add an e
Ends in an e or an a	Don't change it
Ends in eux	Change it for euse
Ends in if	Change it to ive

Vocabulary.

V1. Common Adjectives

Deutsch	Englisch
grand/petite	big/small
gros/mince	fat/thin
long/court	long/short
frisé/raide	curly/straight
sportif/parésseux	sporty/lazy
Amical /énérvant	friendly/annoying
Bruyant/ timide	loud/shy
marrant/ barbant	funny/boring
bête/gentil	Stupid (silly) /nice
mi-long	medium length
de taille moyenne	medium/average size

Pronunciation

P1. How do I say…?

Hair	Cheuveux (sheurgh-veurgh)
Eyes	Yeux (Yeurgh)
and	Et (ay)
but	Mais (may)
I have	J'ai (jay)
I am	Je suis (Juh swee)
He/she has	Il/elle a (eel/ell ah)
he/she is	Il/elle est (eel/ell ay)
we have	Nous avons (noos ahv on)
we are	Nous sommes (noo som)
they have	Ils/elles ont (eel/ell ohn)
they are	Ils/ells sont(eel/ell sohn

KO5 Tu aimes ta famille? (Do you like your family?)

Grammar.

G1. Vocabulary verbs (present tense)	
aimer	to like
J'aime	I like
Tu aimes	You like
Il/elle/on aime	He/she/we like
Nous aimons	We like
Vous aimez	You like (plural or polite)
Ils/elles aiment	They like

G2. Vocabulary verbs (infinitive form)	
écouter	To listen
regarder	To watch
écrire	To write
parler	To talk
travailler	To work
jouer	To play
manger	To eat

G3. Adjective agreement rules	
If the masculine for the adjective ends like this	**Make it feminine like this**
Ends in a consonant (eg. t or d)	**Add an e**
Ends in an e or an a	**Don't change it**
Ends in eux	**Change it for euse**
Ends in if	**Change it to ive**

J'aime mon père car il est marrant

Vocabulary.

V1. Vocabulary Essentials.	
Intensifiers	**Connectives**
très (very)	mais (but)
un peu (a bit)	aussi (also)
trop (too)	car (because)
vraiment (really)	et (and)
assez (quite)	It's (c'est)

V2. Vocabulary Essentials.	
Family members	**Adjectives**
père (father)	marrant/e (funny)
mère (mother)	sympa (nice)
frère (brother	méchant/e (mean)
soeur (sister)	aimable (likeable)
Demi frère (half brother)	Énérvant/e (annoying)
Beau père/belle mere (step dad/mum)	bavard/d (chatty)

V3. Opinions

J'aime	**I like**
Je n'aime pas	**I don't like**
J'adore	**I love**
Je déteste	**I hate**

Pronunciation.

P1. Key Sounds	
see	say
ille	eey
ai	ay
on	ohn
in	anh
h	silent
ç	ss
en	onh
ss	ss
s	z

P2. Pronunciation rules.

When there is an "e" on the end of the word you pronounce the last consonant. If the next word starts with a vowel, you can usually hear the last consonant in the previous word e.g. Comment dit on = "commen deeton" (this is called liason)

P3. Common mispronunciations	
see	say
je	zuh
J'ai	zjay
famille	fameey
J'aime	zhaym
soeur	sir

KO1. German Essentials.

Grammar.

G1. Essential Verbs. (present tense)

Pronoun	haben = to have	sein = to be	werden = to become
ich (I)	habe (I have)	bin (I am)	werde (I become)
du (you) informal)	hast (you have)	bist (you are)	wirst (you become)
er/sie/es (he/she/it)	hat (he/she it has)	ist (he/she/it is)	wird (he/she/it becomes)
wir (we)	haben (we have)	sind (we are)	werden (we become)
ihr (you plural)	habt (you have)	seid (you are)	werdet (you become)
Sie/sie (you polite/they)	haben (you polite/they have)	sind (you polite/they are)	werden (you polite/they become)

G2. Definite & Indefinite Articles & Genders.

Gender	the	a
masculine	der	ein(en)
feminine	die	eine
neuter	das	ein
plural	die	viele (a lot)

Vocabulary.

V1. Vocabulary Essentials.

Intensifiers	Connectives
besonders (especially)	aber (but)
ein bisschen (a bit)	auch (also)
sehr (very)	denn (because)
wirklich (really)	deshalb (therefore)
ziemlich (quite)	jedoch (however)
zu (too)	und (and)
Subordinating Conjunctions (Verb Kickers)	
da (because)	dass (that)
obwohl (although)	weil (because)
wenn (if/when)	wo (where)

V2. Numbers.

0 = null	1 = eins	2 = zwei	3 = drei	4 = vier
5 = fünf	6 = sechs	7 = sieben	8 = acht	9 = neun
10 = zehn	11 = elf	12 = zwölf	13 = dreizehn	14 = vierzehn
15 = fünfzehn	16 = sechzehn	17 = siebzehn	18 = achtzehn	19 = neunzehn
20 = zwanzig	30 = dreißig	40 = vierzig	50 = fünfzig	60 = sechzig
70 = siebzig	80 = achtzig	90 = neunzig	100 = hundert	1000 = tausend

Pronunciation.

P1. Das Alphabet.

A = ah	B = bay	C = tsay	D = day
E = ey	F = eff	G = gay	H = hah
I = ee	J = yot	K = car	L = ell
M = emm	N = enn	O = oh	P = pay
Q = kuh	R = air	S = ess	T = tay
U = ooh	V = fow	W = vay	X = eeks
Y = oopsi-lon	Z = tsett		

P2. Commonly Mispronounced German Words.

habe (harbour)	viele (feeler)	weil (vile)	meine (miner)
Schule (shooler)	neunzehn (n-oin say-n)	Deutsch (doi-t-sh)	Englisch (eng-lish)
Mädchen (maid-tshun)	Schildkröte (sh-ild-kr-u-te)	Brüder (broo-der)	heiße (hi-sur)

KO1.1 German Essentials 2.

Grammar

G1. Possessive Pronouns

Gender	my	his	her
masculine	mein	sein	ihr
feminine	meine	seine	ihre
neuter	mein	sein	ihr
plural	meine	seine	ihre

Vocabulary.

V1. Colours

blau	blue	braun	brown
grau	grey	grün	green
lila	purple	rot	red
schwarz	black	weiß	white

V2. Common Questions Words

Was	What	Wer	Who
Wie	How	Wo	Where
Wann	When	Welche	Which

Vocabulary.

V3. Key Phrases. Greetings & Introductions.

Deutsch	English
Guten Tag/Hallo	Hello
Wie geht's?	How are you?
Mir geht's gut und dir?	I'm good, and you?
Wie heißen Sie/Wie heißt du?	What is your name (formal/informal)
Ich heiße/Mein Name ist/Ich bin	I'm called/My name is/I am
Auf Wiedersehen/Tschuss	Goodbye/bye
Bitte	Please
Dankeschön/Danke	Thank you/thanks.
Wie alt sind Sie/Wie alt bist du?	How old are you? (formal/informal)
Woher kommen Sie/Woher kommst du?	Where do you come from? (formal/informal)

Pronunciation.

P1. Key Sounds

you see	you say	example
ei	eye	eins (eye-ns)
ie	ee	sieben (see-bun)
au	ow!	blau (bl-ow)
eu/äu	oi	neun (noin)
w	v	wie (v-ee)
j	y	Ja! (ya!)
sch	sh	Schuh (shoe)
___e	uh	habe (har-buh)
ä	ey/e	Bär (bear)
ö	urr	schön (sh-urn)
ü	ooh	grün (g-ooh-n)
ß	ss	weiß (v-eye-ss)

KO2. Wann hast du Geburtstag? (When is your birthday?)

Grammar.

G1. Essential Verbs. (present tense)

Pronoun	haben = to have	sein = to be
ich (I)	habe (I have)	bin (I am)
du (you) informal)	hast (you have)	bist (you are)
er/sie/es (he/she/it)	hat (he/she it has)	ist (he/she/it is)
wir (we)	haben (we have)	sind (we are)
ihr (you plural)	habt (you have)	seid (you are)
Sie/sie (you polite/they)	haben (you polite/they have)	sind (you polite/they are)

G2. Dates in German.

To turn a number into a date in German you have to add some extra letters to the end of the number. Numbers 1-19 you add "ten" and numbers 20-31 you add "sten". For example to say the fourth you would write vier**ten** or the 20th would be "zwanzig**sten**".

Exceptions to the rule.

As always, not every number follows this rule so watch out for the following dates!

1st = ersten, 3rd = dritten, 8th = achten.

Don't forget, when you get to 21 you have to swap the units and the tens around so to say the 21st you would write "einundzwanzigsten".

Vocabulary.

V1. Vocabulary Essentials.

Deutsch	Englisch
Wann hast du Geburtstag?	When in your birthday?
Mein Geburtstag ist am..	My birthday is on the...
Wie alt bist du?	How old are you?
Ich bin X Jahre alt.	I am X years old.

Pronunciation.

P1. Key Sounds.

ei = eye	ie = ee	au = ow	eu/äu = oi	w = v	j = y
sch = sh	___e = uh	ä = ey	ö = urr	ü = ooh	ß = ss

P2. How do I say...?

Geburtstag	guh-burts-tag
Jahre	yar-rer
Wann	van
Mein	mine
Wie	vee
Januar	yan-you-are
Februar	feb-you-are
März	mare-z
April	app-rill
Mai	my
Juni	you-ni
Juli	you-li
August	ow-goost

KO3. Wie siehst du aus? (What do you look like?)

Grammar.

G1. Essential Verbs. (present tense)

Pronoun	haben = to have	sein = to be
ich (I)	habe (I have)	bin (I am)
du (you) informal)	hast (you have)	bist (you are)
er/sie/es (he/she/it)	hat (he/she it has)	ist (he/she/it is)
wir (we)	haben (we have)	sind (we are)
ihr (you plural)	habt (you have)	seid (you are)
Sie/sie (you polite/they)	haben (you polite/they have)	sind (you polite/they are)

G2. Adjective Endings

When the adjective comes in front of the noun it needs an ending (change in spelling) to show the gender of the noun it describes.

Gender	Ending	Example
Masc.	-en	blauen
Fem	-e	blaue
Neut.	-es	blaues
Plural	-e	blaue

Vocabulary.

V1. Common Adjectives

Deutsch	Englisch
groß/klein	big/small
alt/jung	old/young
lang/kurz	long/short
dick/schlank	fat/thin
lockig/glatt	curly/straight
sportlich/faul	sporty/lazy
freundlich/gemein	friendly/mean
laut/ruhig	loud/quiet
frech/höflich	cheeky/polite
nervig/nett	annoying/nice
mittellange	medium length
mittelgroß	medium/average size

Pronunciation.

P1. How do I say…?

Hair	Haare (har-rer)
Eyes	Augen (ow-gun)
and	und
but	aber (ar-bur)
I have	ich habe (ich har-bur)
I am	ich bin
He/she has	er/sie hat (air/see hat)
he/she is	er/sie ist (air/see ist)
we have	wir haben (veer har-bun)
we are	wir sind (veer sind)
they have	sie haben (see har-bun)
they are	sie sind (see sind)

KO4. Wie ist deine Familie? (What is your family like?)

Grammar.

G1. Essential Verbs. (present tense)

Pronoun	haben = to have	sein = to be
ich (I)	habe (I have)	bin (I am)
du (you) informal)	hast (you have)	bist (you are)
er/sie/es (he/she/it)	hat (he/she it has)	ist (he/she/it is)
wir (we)	haben (we have)	sind (we are)
ihr (you plural)	habt (you have)	seid (you are)
Sie/sie (you polite/they)	haben (you polite/they have)	sind (you polite/they are)

G2. Indefinite Articles & Gender of Nouns.

The gender or number of a noun affects the spelling of the indefinite article in the same way as it does an adjective.

Masc	Fem	Neut	Plural
einen(a/an)	eine (a/an)	ein (a/an)	viele (lots of)
Ich habe ein**en** Bruder.	Ich habe ein**e** Schwester.	Ich habe ein Pferd.	Ich habe viele Geschwister.

Vocabulary.

V1. Common Nouns

Deutsch	Englisch
Mutter/Vater	mother/father
Eltern	parents
Schwester/Bruder	sister/brother
Schwestern/Brüder	sisters/brothers
Geschwister	siblings
Großmutter/Großvater	Grandma/Grandpa
Großeltern	Grandparents
Cousin/Cousine	Cousin (m/f)
Onkel/Tante	Uncle/Auntie
Freund/Freundin	Friend (m/f)
Stiefmutter/vater	Stepmother/father

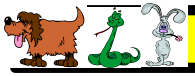
V2. Common adjectives

nett/gemein	nice/mean
groß/klein	big/small
nervig/lustig	annoying/funny
streng/locker	strict/relaxed

Pronunciation.

P1. How do I say…?

my dad	mein Vater (mine Far-ter)
my brother	mein Bruder (mine brew-der)
my mum	meine Mutter (miner Mutt-uh)
my sister	meine Schwester (miner sh-ves-tuh)
my parents	meine Eltern (miner ell-turn)
my family	meine Familie (miner fam-ee-lee-ur)
my siblings	meine Geschwister (miner guh-sh-vis-tuh)
stepbrother	Stiefbruder (sht-eef brew-duh)
half sister	Halbschwester (halb-sh-ves-tuh)
older	älter (el-ter)
younger	jünger (yun-ger)



KO5. Hast du ein Haustier (do you have a pet?)

Grammar.

G1: Articles – object of the sentence (a/an)

M der Hund	Ich habe einen Hund
F die Spinne	Ich habe eine Spinne
N das Pferd	Ich habe ein Pferd
PL die Haustiere	Ich habe viele Haustiere.

G2: Adjectives before plural nouns add e.

blaue Augen = *blue eyes*
lockige Haare = *curly hair*

G3. Opinions

Ich liebe …	I love …
Ich mag …	I like …
Ich mag … nicht	I don't like …
Ich hasse …	I hate …

Vocabulary.

V1. Nouns and Plural Forms.

Noun	Plural form	Meaning
der Hund	Hunde	*dogs*
der Vogel	Vögel	*birds*
der Wellensittich	Wellensittiche	*budgies*
die Schlange	Schlangen	*snakes*
die Spinne	Spinnen	*spiders*
die Schildkröte	Schildkröten	*tortoises*
das Pferd	Pferde	*horses*
das Kaninchen	Kaninchen	*rabbits*
das Meerschweinchen	Meerschweinchen	*guinea pigs*

Vocabulary.

V2: Adjectives – appearance & personality

groß - big	**klein** - small
dick - fat	**schlank** - slim
lang - long	**kurz** - short
wellig - wavy	**lockig** - curly
glatt - straight	**dunkel** - dark
blau - blue	**grün** - green
rot - red	**braun** - brown
schwarz - black	**lustig** - funny
niedlich - cute	**kreativ** - creative
faul - lazy	**streng** - strict
nervig - annoying	**gemein** - mean
frech - cheeky	**klug** - clever
schlau - cunning	**stinkend** - smelly
fleißig - hard working	**langweilig** - boring

FOOTBALL

Knowledge Organiser

Tackling:

1. Get close but not too close to your opponent – about two to three feet is ideal.
2. Keep your eye on the ball. Lock the ankle of your kicking foot (the foot you're going to tackle with).
3. Bend your knees slightly now get close to your opponent and strike the ball firmly

Passing:

1. Place your non-kicking foot to the side of the ball. Hold your arms up and wide to support your balance.
2. Swing your kicking foot through and strike the ball with the inside of your foot. Aim to hit the middle of the ball to ensure it stays close to the ground.
3. Follow your kicking leg through towards the intended target. The speed of the kicking leg will direct how hard you kick the ball.

Shooting:

1. Plant your supporting foot beside the ball to gain stability. Pointing your planted foot in the direction that you want the ball to go will help guide your aim.
2. Hit the ball with the top of your foot, also known as your laces. As you kick, lock your ankle to create power through your striking foot
3. After kicking the ball, follow through with your shooting leg in the direction that you aimed the ball.

Dribbling:

1. Keep the ball close at all times using gentle touches with both the inside and outside of your foot, changing direction to outwit your opponent.
2. Keep your head up, eyes scanning the field, and be aware of surroundings.
3. Establish a low center of gravity keeping your arms out for balance.

Heading:

1. Back slightly arched as ball approaches, slightly leaning forward after striking the ball
2. Contact with the ball should be made on the forehead between the eyebrows and the hairline.
3. Head moves toward the ball. Ball must be struck and not bounce off the head

Rugby

Knowledge Organiser

Handling:

1. Signal for the ball and make a 'W' with your hands
2. Maintain eye contact
3. Tuck or place the ball on your hip

Tackling:

1. Eyes to thighs
2. Ring of steel
3. Squeeze the knees and then drive for five

Ruck:

1. Hinge at the hips and target the ball
2. Get underneath the jackle
3. Wide legs and sink at the hips

Maul:

1. Hinge at the hips
2. Keep your spine in line
3. Keep chasing your feet

Kicking:

1. Eyes on the ball
2. Drop ball onto your foot
3. Follow your foot through in the direction you want the ball to go

HOCKEY

Knowledge Organiser

Passing:

1. Eye on the ball, feet apart, knees bent
2. Stick in contact with ball as weight shifts from back to front foot
3. Push ball towards target

Receiving:

1. Stick down low, flat on floor
2. Rotate stick toward floor 45°
3. Absorb impact

Shooting:

1. One foot in front the other
2. Hands together, raise stick to hip level
3. Looking at the ball, rotate and contact the ball

Dribbling:

1. Hands apart, wide stance
2. Looking up and down
3. Gentle touches using the flat side of the stick

Marking:

1. Get between player with the ball and receiver
2. Close down the space
3. Stick down to apply pressure

Basketball

Knowledge Organiser

Passing:

1. Make a W shape with fingers on the ball
2. Step into pass
3. Follow through

Dribbling:

1. Look up
2. Using your fingers not your palm
3. Bouncing ball to waist height

Shooting:

1. Balanced looking at the hoop
2. Elbow bent
3. Follow through

Footwork/ Marking:

1. Anchor one of your feet
2. Pivot on that anchor foot
3. Bounce of pass before you pick up your anchor foot

Receiving/ Interceptions:

1. Make yourself big to catch and intercept
2. Place the ball in your 'pocket'
3. Now it is in the triple threat position

Badminton

Knowledge Organiser

Forehand Serve:

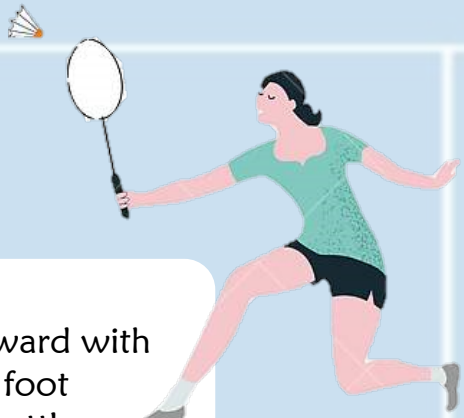
1. Hold shuttle at waist
2. Stand side on, feet shoulder width apart
3. Full swing of racket to make contact at hip height

Overhead Clear:

1. Contact shuttle at highest point
2. Body side on
3. Full swing and follow through

Backhand Serve:

1. Hold shuttle at waist
2. Stood facing the net with feet shoulder width apart
3. Push motion with the racket to make contact around hip height



Net Play:

1. Lunge forward with dominant foot
2. Contact shuttle as close to net height as possible
3. Push forwards with racket facing up

Smash:

1. Contact shuttle at highest point
2. Body side on
3. 'Whip' action when making contact with shuttle.

Netball

Knowledge Organiser

Passing and Receiving:

1. Quick, short passes
2. Receive ball on the move- throw ahead of receiver
3. Get in front of the defender

Dodging:

1. Eyes on the ball
2. Accelerate away from the defender
3. Extend arms to receive ball

Footwork/ Movement:

1. Bend knees on landing
2. Bring weight over grounded food
3. Non grounded foot is reground to maintain balance

Marking:

1. Must be 3ft away from attacker
2. Weight balanced on two feet
3. Arms up and in position over the ball

Shooting:

1. Arms extended above head with ball in hand
2. Push through the hoop
3. Flick your wrist

Cricket

Knowledge Organiser

Batting:
1. Left hand above right hand (Opposite for left handers)
2. Loose, bent elbows
3. Strike the ball from under your nose

Bowling:
1. Straight arm at the elbow
2. Hold the ball with two split fingers
3. Release the ball at 12pm

Catching:
1. Little fingers together
2. Hands spread into wide surface area
3. Cushion the ball into the body

Throwing:
1. Stand side on to your target
2. Throwing hand back behind
3. Rotate shoulders with speed to generate power.

Ground Fielding (Long Barrier):
1. Move into line of ball
2. Place knee on the ground with leg to the side of the body
3. Cup hands, fingers pointing down, collect ball in front of body

Rounders

Knowledge Organiser

Batting:
1. Stand side on
2. Bat up in line with shoulder
3. Watch ball, rotate hips & shoulders to hit ball
4. Follow through

Bowling:
1. Step forward with opposite leg to throwing arm
2. Aim with non-throwing arm to target
3. Throwing arm draws back
4. Throwing arm forward till in line with aim arm & release

(Step, aim, tick, tock)

Underarm Throw: Step, aim, tick, tock
1. Step forward with opposite leg to throwing arm
2. Aim with non-throwing arm to target
3. Throwing arm draws back
4. Throwing arm forward till in line with aim arm & release

(Step, aim, tick, tock)

Overarm throw:
1. Stand side on
2. Arm in Nike tick position with your non-throwing arm aiming at target
3. Rotate hips & shoulders forward
4. Release ball and follow through

Underarm Catching:
1. Little fingers/pinkies together
2. Bucket hands
3. Close hands & bring arms into body

Overarm Catching
1. Thumbs together
2. Bucket hands
3. Close hands & bring into body

Ground Fielding - Long barrier:
1. Body side on, heel and knee touching
2. Hands in front of body, little fingers together
3. Track ball & close hands when ball is in hands

Tennis

Knowledge Organiser

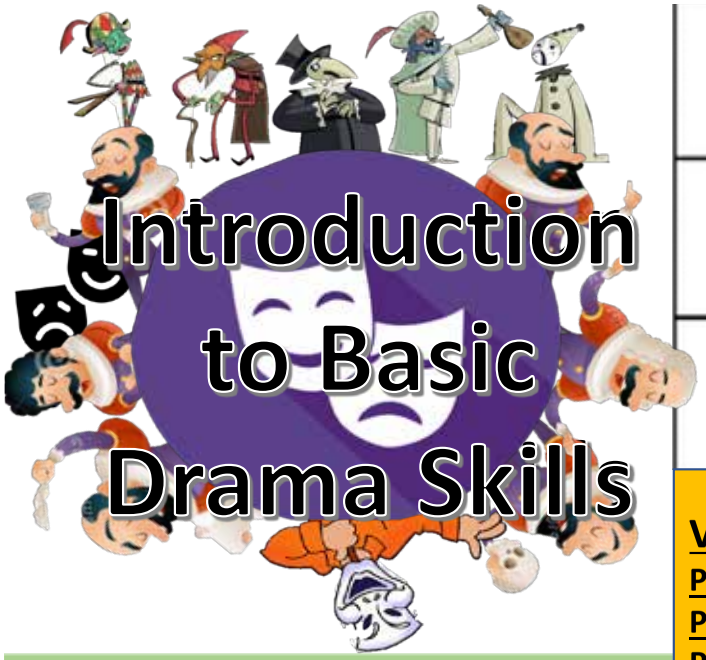
Service:
Point toe to target
Ball Hand and Racquet together in front
Ball toss in front / above head
Bring racket back to tick position
Follow through

Groundstrokes:
Ready Postiion
V Grip
Turn sideways on
Low to high
Finish over your shoulder

Volley:
Ready position
Feet Front Facing
Step into Volley
Strong grip on contact

Smash:
Move feet to position of strike
Ball above head
Tick Position
Follow through to contact in front of head position

Lob:
Move feet to position of ball
Contact with open racket face
Low to high
Follow through to strike above opponents' head



Introduction to Basic Drama Skills

Autumn Term 1:

To successfully represent a character you should be using both physical and vocal skills

1

Physical skills

Facial expression: showing emotion of the character through the face
Body Language: using your body to show the characters emotion
Physicality: using your body to show the character
Gesture: a movement of part of the body to show meaning.
Mannerisms: habitual gesture or way of speaking or behaving in role
Gait: the way a character walks

4

Up right	Up centre	Up left
Right center	Center	Left center
Down right	Down center	Down left

2

Vocal skills

Pace: how fast or how slow the character speaks
Power: how loud or how quiet a character speaks
Pitch: how high our how low a character speaks
Pause: moments where the character stops talking
Tone: shows what the character thinking or how they are feeling

3

Theatrical skills
These skills can be used in a performance to create a story:

Freeze frame: A frozen moment in time expressing a character / scenario.
Still image: frozen image that symbolises an idea or relationship
Thought tracking: a character saying their thoughts aloud
Hot seating: a character is asked questions and the actor responds in role
Narration: telling the audience what is happening
Mime: suggesting action, character, or emotion without words
Improvisation: creating a scene without a script
Proxemics: the use of space on stage to create meaning
Levels: the use of height to show status
Status: the power one character has over another
Physical Theatre: creating objects, set or meaning through the use of the body

Year 7 Drama

Autumn Term 2:

Structuring a response:

1. Identify a theatrical skill used in performance
2. Describe how the skill was used including the name of the skill
3. Analyse what meaning this skill help to create for you as an audience member
4. Evaluate if this skill was used in a successful way
5. Link back to the question
6. Repeat the above.

4

1

Theatrical Skills:

Pace: how fast or how slow the character speaks
Power: how loud or how quiet a character speaks
Pitch: how high our how low a character speaks
Pause: moments where the character stops talking
Tone: shows what the character thinking or how they are feeling
Facial expression: showing emotion of the character through the face
Body Language: using your body to show the characters emotion
Physicality: using your body to show the character
Gesture: a movement of part of the body to show meaning.
Mannerisms: habitual gesture or way of speaking or behaving in role
Gait: the way a character walks

Evaluating THE PERFORMANCES OF OTHERS 2	Year 7 Drama
1. Introduction: Someone else's: as an audience member what did the performance make you think about? Select one character and write in detail about them	What did you learn about the characters and the story from their performance. What do you think the aim was? Was it funny? Sad? Compelling? Unpick the theatrical skills one performer used and think why? What was the purpose? What affect did it have on you?
2. Someone else's: Do you think they were able to create a successful performance?	They were successful why? If you weren't why not? What could they have done differently? What was good about there personal performance and how could they improve? LINK TO THREATRICAL SKILLS USED THROUGHOUT!
3. Write about the performance as a whole.	What worked well? What didn't? Do you have any ideas about how they might have altered/changed the performance if given more time?

Analyse SOMEONE ELSE'S Performance: 3

1. Space:	- Is there a fourth wall? - How have THEY used proxemics to show relationships? What relationship was created? - What is the focus of the audience? - What did you learn through the skills used?
2. Character:	- How have THEY shown the age of the character? - How have THEY shown the personality of the audience? - How has the character helped to create meaning in THEIR performance? LINK TO THEATRICAL SKILLS THROUGHOUT

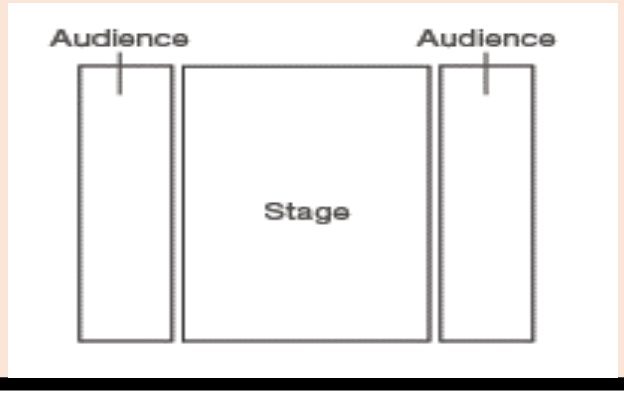
3. Analysis of the moment:
Explain in detail the meaning created by the moment, relating to the audience. E.g. how it made the audience understand the character, themes or story, how it created empathy, comedy, tension or communicated a message for the audience etc.
Your personal reaction– how did you: think/feel/react/respond/engage?
What meaning was communicated to you at this point.

Stage Configurations:

Year 7 Drama:

1

Traverse

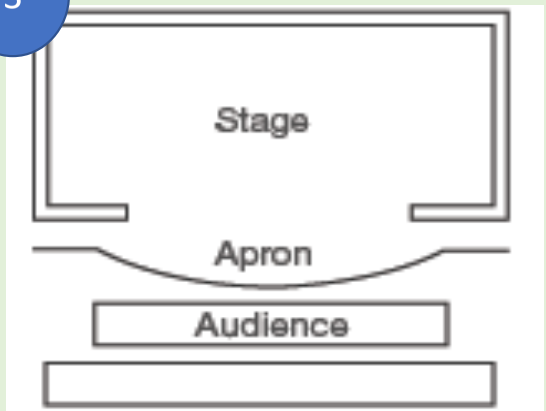


2

Promenade Theatre

3

Proscenium arch



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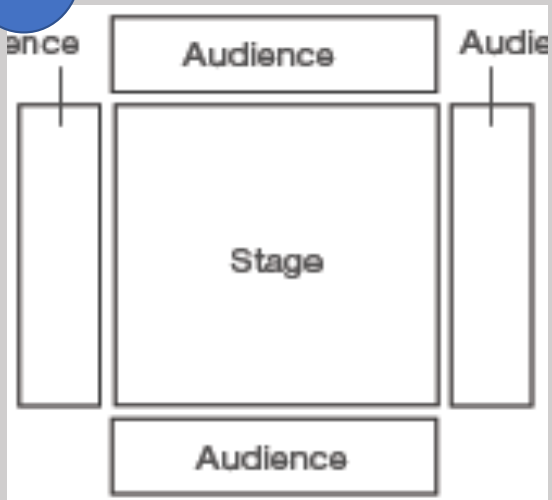
Theatre in the Round



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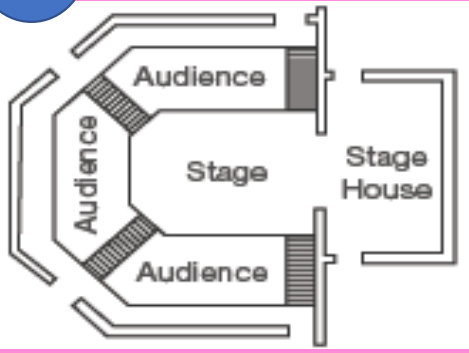
Stage Positioning:

Up right	Up centre	Up left
Right center	Center	Left center
Down right	Down center	Down left

6

Thrust stage



Roles and responsibilities in the theatre :

1. Theatre Maker:
Understudy
What they do:
Learning a part, including lines and movements, so they are able to take over a role for someone if needed when there is a planned or unexpected absence.

2. Theatre Maker:
Playwright
What they do:
Writing the script of the play, including the dialogue and stage direction

3. Theatre Maker:
Puppet Designer
What they do:
Designing the puppets for a production, taking into account the style of puppets and how they will be operated.

4. Theatre Maker:
Costume Designer
What they do:
Designing what the actors wear on stage. Making sure that costumes are appropriate for the style and period of the piece. Ensuring the costumes fit the audience.

5. Theatre Maker:
Theatre Manager
What they do:
Running the theatre building, including overseeing the front of house staff (ushers) and the box office staff who sell tickets.

6. Theatre Maker:
Director
What they do:
Overseeing the creative aspects of the production. Developing a 'concept' or central unifying idea for the production. Liaising with designers, rehearsing the actors and ensuring that all technical elements of the play are ready. Giving 'notes' to the actors to help improve their performances and agreeing the blocking (or movement) of the actors

7. Theatre Maker:
Technician
What they do:
Operating the technical equipment, such as the lighting and sound boards, during the performance.

8. Theatre Maker:
Performer
What they do:
Appearing in a production, for example by acting, dancing or singing. Creating a performance or assuming a role on stage in front of the audience.

9. Theatre Maker:
Sound Designer
What they do:
Designing the sound required for the performance, which may include music and sound effects. Considering if amplification, such as the use of microphones, is needed, and creating a sound plot.

10. Theatre Maker:
Set Designer
What they do:
Designing the set of the play and the set dressing (objects placed on the stage). Providing sketches and other design materials before overseeing the creation of the set.

11. Theatre Maker:
Stage Manager
What they do:
Running the backstage elements of the play and supervising the backstage crew. Organising the rehearsal schedule and keeping lists of props and other technical needs. Creating a prompt book and calling the cues for the performance.

12. Theatre Maker:
Lighting Designer
What they do:
Designing the lighting states and effects that will be used in a performance. Understanding the technical capabilities of the theatre and creating a lighting plot.

Year 7 Drama:

Animal Farm:

Year 7 Drama:

Spring Term 1:

Biographical information 1

1	'Animal Farm' was written in 1945.
2	It was written by George Orwell.
3	Orwell was born in 1903.
4	'Animal Farm' was influenced by the events of World War II.
5	Orwell wanted to write about the cruel leaders of Europe during World War II.
6	'Animal Farm' is an allegory for the events of the Russian Revolution.

Chapter breakdown 2

1	The animals gather to listen to old Major. He gives them a vision of a life without man.
2	The animals rebel and overthrow Jones. The commandments are written.
3	The animals' first harvest is a success. The pigs keep the milk and apples to themselves.
4	The Battle of the Cowshed: Jones attempts to reclaim the farm.
5	Snowball and Napoleon debate the windmill. Napoleon uses dogs to chase Snowball from the farm. Napoleon makes himself leader.
6	Work begins on the windmill. The pigs move into the farmhouse. Winds destroy the windmill.
7	Work on the windmill starts again. Napoleon demands eggs from the hens. Napoleon slaughters animals at the show trials.
8	Napoleon betrays Mr. Pilkington and sells timber to Mr. Frederick. Frederick pays with counterfeit money. Frederick attacks the farm. The animals suffer losses in the Battle of the Windmill. The windmill is destroyed.
9	Boxer is sold to the knacker's yard.
10	The pigs are leaders on the farm. They start walking on two legs and carrying whips. There is no difference between the pigs and the humans they sought to overthrow at the start of the novel.

Characters 3

Napoleon
'a large, rather fierce-looking Berkshire boar, the only Berkshire on the farm, not much of a talker, but with a reputation for getting his own way.'

Snowball
'a more vivacious pig than Napoleon, quicker in speech and more inventive, but was not considered to have the same depth of character.'

Squealer
'with very round cheeks, twinkling eyes, nimble movements, and a shrill voice. He was a brilliant talker, and when he was arguing some difficult point he had a way of skipping from side to side and whisking his tail which was somehow very persuasive. The others said of Squealer that he could turn black into white.'

Boxer
'an enormous beast, nearly eighteen hands high, and as strong as any two ordinary horses put together... in fact he was not of first-rate intelligence, but he was universally respected for his steadiness of character and tremendous powers of work.'

Themes 4

Leadership
Corruption
Control over the intellectually inferior
Lies and deceit
Foolishness and naivety
Violence
Pride and ceremony
Dreams and hope

Key words 5

allegory – a story with two meanings. It has a literal meaning, which is what actually happens in the story. But it also has a deeper meaning. The deeper meaning is often a moral. It teaches you a lesson about life.

tyrant – someone who has total power and uses it in a cruel and unfair way. A **tyranny** is a situation in which a leader or government has too much power and uses that power in a cruel and unfair way.

rebellion – a rebellion is a situation in which people fight against those who are in charge of them.

harvest – the time when crops are cut and collected from fields.

corrupt – when people use their power in a dishonest way order to make life better for themselves.

propaganda – Information that is meant to make people think a certain way. The information may not be true.

cult of personality – a cult of personality is where a leader convinces people to worship him or her, and treat them like a god.

treacherous – If you betray someone who trusts you, you could be described as **treacherous**.

The seven commandments 6

1	Whatever goes upon two legs is an enemy.
2	Whatever goes upon four legs, or has wings, is a friend.
3	No animal shall wear clothes.
4	No animal shall sleep in a bed.
5	No animal shall drink alcohol.
6	No animal shall kill any other animal.
7	All animals are equal.

Masks in Theatre:

Year 7 Drama:

Spring Term 2:

1

Key Terms:

Exaggeration: To magnify (make bigger, more over the top, a performance skill)

Clocking the audience: a moment when a character breaks the fourth wall and looks at the audience.

Point of focus: creating a moment where the audiences focus is on a characters or a point on stage

Mime: suggesting action, character, or emotion without words

2

Steps to Building a Character:

1. Copy exaggerated facial expression of the mask
2. Develop exaggerated body language to suit the character
3. Develop an exaggerated walk to suit the character

4

Masks in Theatre

The rules of mask:

1. Never put the mask on / take it off in front of the audience
2. Never touch, reposition your mask
3. Don't talk whilst wearing the mask
4. Ensure that you face the front, as much as possible, whilst performing.

3

Stock Characters

Protagonist. Handsome, strong, brave, honest and reliable. Status: Middle class or higher

Damsel in Distress. Beautiful, courageous, innocent and vulnerable. Status: Middle class or higher

Antagonist. Cunning, without morals, dishonest, cruel and evil. Status: Middle class or higher

Comedy duo this is usually two people who make the audience laugh, they are often joined at the hip

Year 7 Drama:

Summer Term 1:

The characters in Commedia never learn from their *mistakes*

Physicality

1

- The actors wore masks
- They had to show emotions through their body.
- They would have big gestures.
- The longer the nose on the mask, the more stupid the character

Key Terms:

2

Lazzi: a basic outline for a scene, which is then improvised by the actors

Status: power difference in the relationship between two characters

Clocking the audience: a character breaks the fourth wall

Point of focus: a moment where the audiences focus is on a characters or a point on stage

3

History Commedia Del'Arte is a type of improvised play.

They knew the scenario and then improvised.

It originated in Italy in the 16th Century.

Commedia Del'Arte (roughly translated) means 'Comedy of the profession'.

Style

The form of Theatre came after the 'Black Death/Plague' so most of the storylines are based around themes from that time:

Greed, Hunger, Death and Love.

4

Commedia characters:

Zanni: Physicality:

Leads with his nose, his legs and arms are forward

He gazes up and looks at everything in wonder

He arches his back when he walks

Pantalone: Physicality:

Leads with his head.

Walks with a crooked back, with one hand in front of him (ready to steal something!) and the other behind his back

Shuffles with legs bent.

He pretends he is fragile with old age and then moves very fast when stealing.

Moves his hand a lot

Il Dottore (The Doctor): Physicality:

He is extremely fat, and moves very slowly. He often holds his belly and runs out of breath very easily!

The Doctor is usually drunk.

His belly sticks out and he leans back on his feet.

Il Capitano: Physicality:

Talks in loud voice to be the center of attention.

When he gets scared he screams really loud!

He walks with his head held high, nose in the air and should back… because he thinks he's very important.

Leads from the chest.

Magnifico: Physicality:

Leads with his head, like an eagle.

He looks down on everything

He walks and stands with his hands behind his back

Swishes his cloak around him when he turns and stop

Frantic Assembly:

Summer Term 2:

Devising in the style of Frantic Assembly:

- Frantic Assembly is a theatre company that uses a techniques called contact improvisation – a way of improvising that requires the performers to use physical contact with others as the starting point for their own movements.

1

Chair Duets

This is a challenge created by Frantic Assembly for a dramatic effect within a piece of drama, which involves the use of communication between the partners and physical theater (performed by the upper body) to convey a range of different emotions between the two participants involved. Due to restrictive nature of sitting down, it demands you explore and experiment with different movements to make the most of the body parts that are available. The idea of 'Chair Duets' is to build a story through movement and ultimately create a working scene from it. According to Frantic Assembly, a story will naturally develop after adding meaning to the movement.

2

Round-By-Through

- This puts the 3 individual movements of 'round' , 'by' and 'through' into one piece to convey a storyline or emotion/theme towards the audience
- Round- This is the movement in which consists you to 'literally' go round a part of your partners body as a basis for the entire piece.
- By- Consists for you to be parallel to your partner
- Through- should be confined to only the use of the upper body/arms.

3

Go,Stop,Clap,Jump

This technique of Frantic's requires the actor/actress to have full attention on what the commander (teacher/director) is directing, through four simple commands and how these movements are portrayed through different paces.However, to further challenge the actor/actress there is a reversal of what each command means, further emphasizing the need for full focus.

4

Mirror and Mirror Variation

- This is a technique in which consists of pairs- yet again- one labeled A and the other B and also relies on the full attention of each partner as each individual has to mirror the specific movement their partner does.
- This technique can be altered in many different ways such as: delayed movement; the pace in which it is does;reversal in the order and also the partners can change, to create a different atmosphere or story.

5

music

- Frantic Assembly has a very interesting way of utilizing music because it really highlights how music performs in the theatre, not just as a theatrical element, but as an entity on stage along with the actors.
- best example of this given is that of pool (no water) where the performers were asked to listen to the silence and stillness of the piece of music before translating that quality into the scene they were working on.

6

Walk the grid

This exercise focuses particularly on listening and looking, encouraging actors to move into certain areas with no verbal communication with other actors. If actors bump into one another, it is obvious they haven't been paying attention. Thus, they fail the activity. This exercise can help actors develop spatial awareness and help them to work with others in unprecedented scenarios.

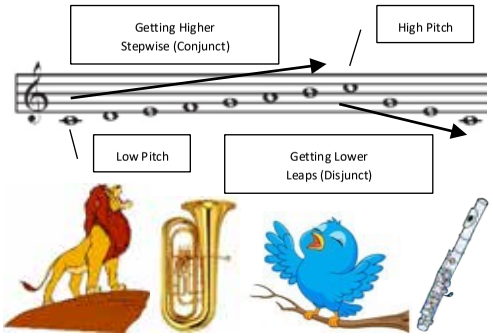
Year 7 Drama:

BUILDING BRICKS

Exploring the Elements of Music

A. Pitch

The **highness** or **lowness** of a sound.



B. Tempo

The **speed** of a sound or piece of music.

FAST: *Allegro, Vivace, Presto*

SLOW: *Andante, Adagio, Lento*

GETTING FASTER – *Accelerando (accel.)*

GETTING SLOWER – *Ritardando (rit.) or Rallentando (rall.)*

C. Dynamics

The **volume** of a sound or piece of music.

VERY LOUD: *Fortissimo (ff)*

LOUD: *Forte (f)*

QUITE LOUD: *Mezzo Forte (mf)*

QUITE SOFT: *Mezzo Piano (mp)*

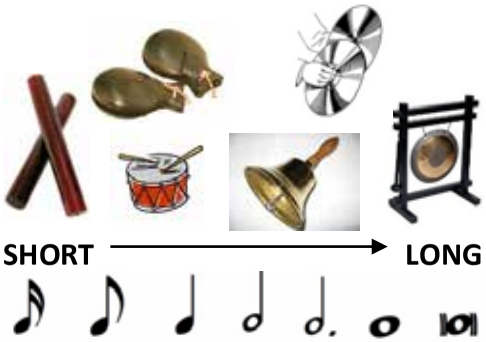
SOFT: *Piano (p)*

VERY SOFT: *Pianissimo (pp)*

GETTING LOUDER: *Crescendo (cresc.)*

GETTING SOFTER: *Diminuendo (dim.)*

D. Duration



The **length** of a sound.

E. Texture

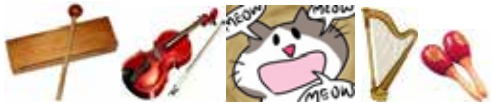
How much sound we hear.

THIN TEXTURE: *(sparse/solo)* – small amount of instruments or melodies.

THICK TEXTURE: *(dense/layered)* – lots of instruments or melodies.

F. Timbre or Sonority

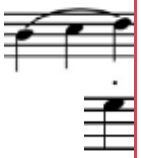
Describes the **unique sound or tone quality** of different instruments voices or sounds.



Velvety, Screechy, Throaty, Rattling, Mellow, Chirpy, Brassy, Sharp, Heavy, Buzzing, Crisp, Metallic, Wooden etc.

G. Articulation

How individual notes or sounds are **played/techniques**.

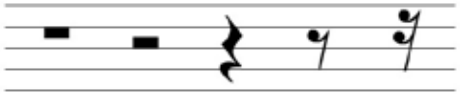


LEGATO – playing notes in a long, smooth way shown by a **SLUR**.

STACCATO – playing notes short, detached, way shown by a **DOT**.

H. Silence

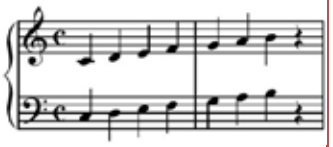
The opposite or absence of sound, **no sound**. In music these are **RESTS**.



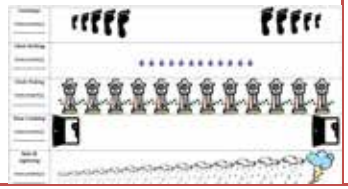
I. Notation

How music is **written** down.

STAFF NOTATION – music written on a **STAVE** (5 lines and spaces)



GRAPHIC NOTATION/SCORE – music written down using shapes and symbols to represent sounds.



J. How Music Works

Music can create an **atmosphere** or **ambience** *e.g., supermarkets and restaurants*.

Music can create an **image** *e.g., in response to art, a story, a poem, a character, a situation* – this is called **PROGRAMME MUSIC**.

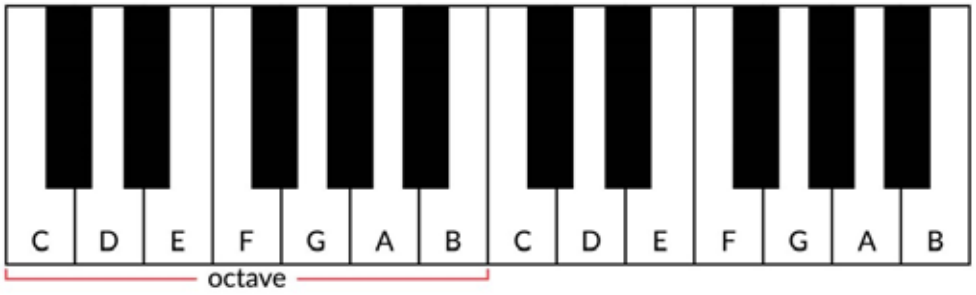
Music can be used for **spiritual reasons** *e.g., worship, meditation, reflection, hymns and chants, yoga, and spiritual reflection*.

Music can be used for **commercial** purposes *e.g., advertising, TV themes*.

KEYBOARD SKILLS

Exploring Treble Clef Reading and Notation

A. Layout of a Keyboard/Piano



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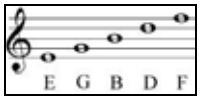
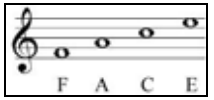
B. Treble Clef & Treble Clef Notation

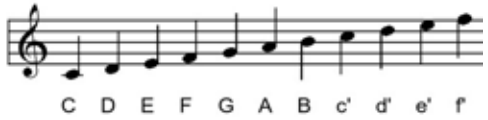
A **STAVE** or **STAFF** is the name given to the five lines where musical notes are written. The position of notes on the stave or staff shows their **PITCH** (how high or low a note is). The **TREBLE CLEF** is a symbol used to show high-pitched notes on the stave and is *usually* used for the right hand on a piano or keyboard to play the **MELODY** and also used by high pitched instruments such as the flute and violin.

Every **G**reen **B**us **D**rives **F**ast. Notes in the **SPACES** spell **"FACE"**





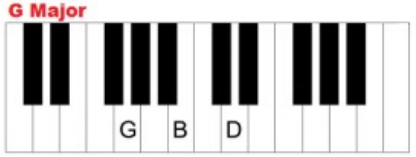
Notes from **MIDDLE C** going up in pitch (all of the white notes) are called a **SCALE**.



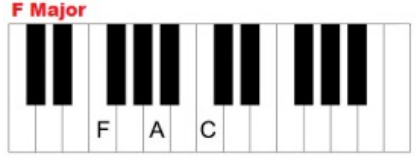
C. Keyboard Chords

C Major

G Major



F Major

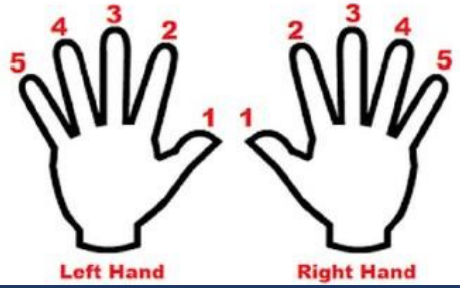


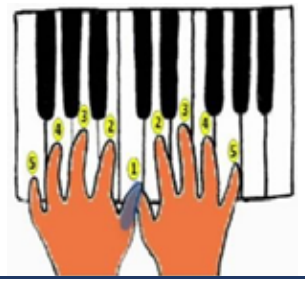
A Minor

Play one – Miss one – play one – miss one – play one

D. Keyboard Functions

E. Left Hand/Right Hand (1-5)

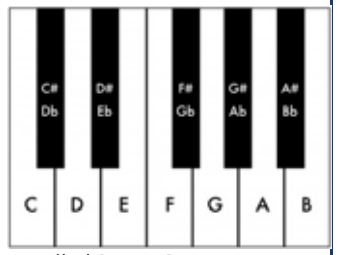




F. Black Keys and Sharps and Flats

There are five different black notes or keys on a piano or keyboard. They occur in groups of two and three right up the keyboard in different pitches. Each one can be a **SHARP** or a **FLAT**.

The # symbol means a **SHARP** which raises the pitch by a semitone *(e.g. C# is higher in pitch (to the right) than C)*. The *b* symbol means a **FLAT** which lowers the pitch by a semitone *(e.g. Bb is lower in pitch (to the left) than B)*. Each black key has 2 names – C# is the same as D*b* – there's just two different ways of looking at it!



Remember, black notes or keys that are to the **R**IGHT of a white note are called SHA**R**PS and black notes to the **L**EFT of a white note are called F**L**ATS.

I'VE GOT RHYTHM

Exploring Rhythm and Pulse

A. Key Words

PULSE – A regular **BEAT** that is felt throughout much music. Certain beats of the pulse can be emphasised to establish regular pulse patterns *e.g.*
***1** 2 3 4, **1** 2 3 4 = a 4-beat pulse*
***1** 2 3, **1** 2 3 = a 3-beat pulse (often called a **WALTZ**)*
***1** 2, **1** 2, **1** 2 = a 2-beat pulse (often called a **MARCH**)*

RHYTHM – A series of sounds or notes of different lengths that create a pattern. A rhythm usually fits with a regular pulse. Everyday sentences can be used to create rhythms. The patterns made by words create rhythms and this rhythm has a 4-beat pulse:

Music is my favourite

ACCENT – Emphasising or stressing a particular note or notes. Accents affect the **ARTICULATION** and are shown with this symbol >

DURATION – The length of a sound – *long/short*

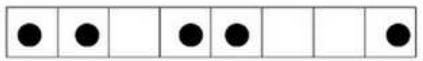
TEMPO – The speed of a sound or piece of music – *fast/slow*

TEXTURE – Layers of sound or how much sound is heard – *thick/thin*

STRUCTURE – The organisation of sound or how sounds are ordered

SILENCE – The absence of sound or no sound, shown in music by **RESTS**.

RHYTHM GRID NOTATION – A way of writing down and recording rhythms using boxes



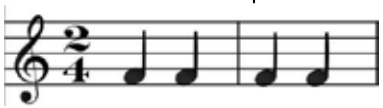
B. Time Signatures

A **TIME SIGNATURE** tells us how many beats (and what type of beats) there are in each **BAR** of music and is made up of two numbers at the beginning of a piece of music.

Top Number = **HOW MANY BEATS**

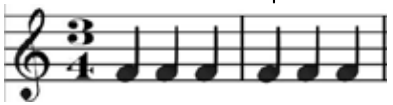
Bottom Number = **TYPE OF BEAT**

2/4 = **TWO CROTCHET** beats per **BAR**



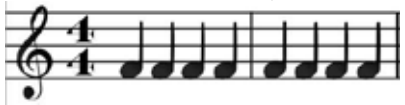
*e.g. a **MARCH***

3/4 = **THREE CROTCHET** beats per **BAR**



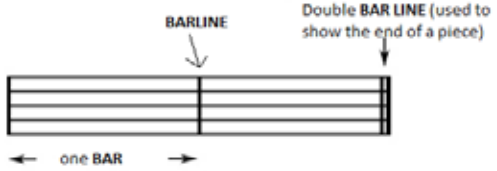
*e.g. a **WALTZ***

4/4 = **FOUR CROTCHET** beats per **BAR**



Bottom Numbers:
2 = Minim 4 = Crotchet 8 = Quaver

BARS AND BARLINES



C. Ostinatos, Cyclic and Polyrhythms

RHYTHMIC OSTINATO – a short repeated pattern made up of notes of different lengths but without a particular pitch.

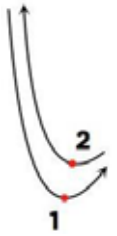
CYCLIC RHYTHM – a rhythm which is repeated over and over again (in a cycle) many times.

POLYRHYTHM - the use of several rhythms performed simultaneously, often overlapping to create a thick, **POLYRHYTHMIC TEXTURE**. A common polyrhythm often used in Latin-American and African Music is to play a 3-beat and 2-beat rhythm simultaneously as shown below. This is called a "3 against 2 Polyrhythm"

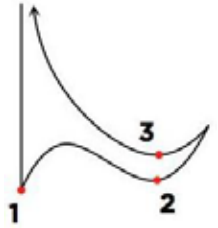
3 beat rhythm	X		X		X		X		X		X
2 beat rhythm	X			X			X			X	

D. Conducting Pulses and Beats

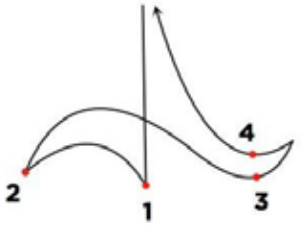
Conducting a 2-beat Pulse/Beat *(e.g. a March)*



Conducting a 3-beat Pulse/Beat *(e.g. a Waltz)*



Conducting a 4-beat Pulse/Beat



E. Note Values - Note Names, Symbols and Duration

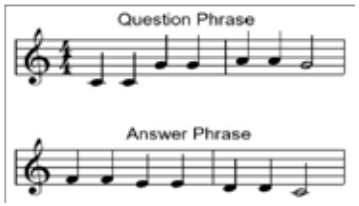
Note Name	Note Symbol	Note Value
Semibreve		**4 beats**
Minim		**2 beats**
Crotchet		**1 beat**
Quaver		**½ of a beat**
Pair of Quavers		**2 x ½ beats = 1**

Form and Structure

Exploring Musical Structures

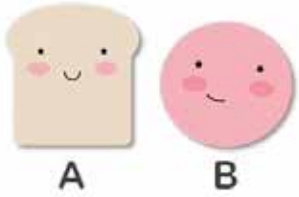
A. Question and Answer Phrases

Two short sections in a piece of music. The first **QUESTION PHRASE** is followed by the **ANSWER PHRASE** – like a 'musical conversation'. The **MELODY** below shows the opening of "Twinkle Twinkle Little Star" - notice how the **QUESTION PHRASE** rises in **PITCH** and the **ANSWER PHRASE** descends in **PITCH**.



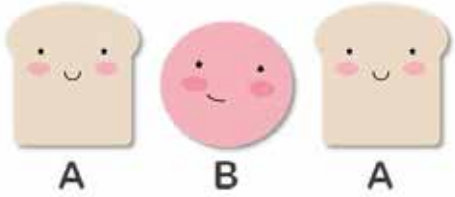
B. Binary Form

BINARY FORM (AB) describes music in two sections. The first section can be labelled "A" and the second section "B" (either or both sections may be repeated). The "B" section **contrasts** musically in some way to the first "A" section.



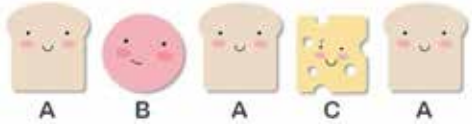
C. Ternary Form

TERNARY FORM (ABA) describes music in three sections. The first section can be labelled "A" and the second section "B" The "B" section **contrasts** in some way to the first "A" section which is then **repeated** after the "B" section again.



D. Rondo Form

RONDO FORM (ABACADA…) describes music where a main **theme** or **melody** "A" keeps returning between different contrasting sections "B, C, D…" (called **episodes**)

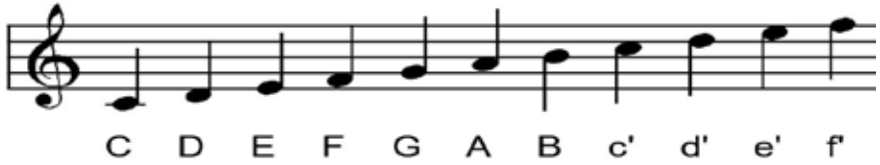


E. Key Words

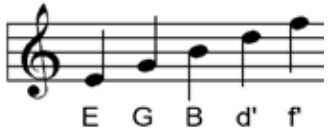
1. **FORM/STRUCTURE** – How a piece of music is organised into different sections or parts.
2. **PHRASE** – A short section of music, like a "musical sentence".
3. **PITCH** – The **highness** or **lowness** of a sound or musical note.
4. **MELODY/THEME** – The main **tune** of a piece of music. The melody or theme often varies in **pitch** and "good melodies" have an organised and recognisable shape.
5. **HARMONY** – Playing two or more notes at the same time. The "harmony part" in music is different to the melody part.
6. **DRONE** – A repeated note or notes of **long duration** played through the music. When two notes are used, they are often **five** notes apart (a **fifth**).
7. **OSTINATO** – A repeated musical pattern. An ostinato can be a repeated rhythm or a repeated melody and are usually short.

F. Music Theory

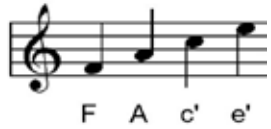
Treble Clef Pitch Notation



Treble Clef "Lines" Note Names

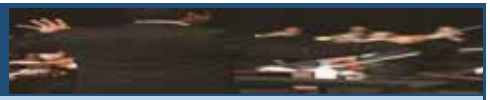


Treble Clef "Spaces" Note Names



Repeat Mark

Sonority City *Exploring Instruments of the Orchestra*



A. Key Words, Terms and Facts about the Orchestra

Orchestra. An ensemble (group of musicians) of performers on various musical instruments. (no set number of musicians)

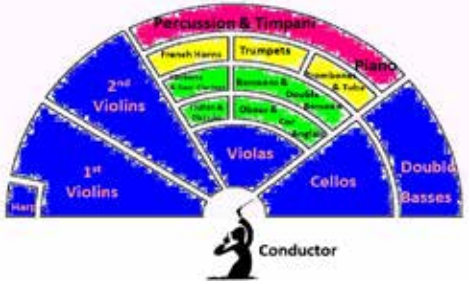
Symphony Orchestra. A large orchestra – between 80 and 100+ performers

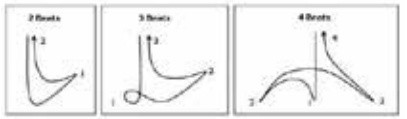
Conductor. Someone who leads the orchestra with baton (white 'stick') and hand signals. Sets the tempo and beats time. Brings different instruments 'in and out' when it is their turn to play. Takes charge in rehearsals and is in ultimate control of the performance, adjusting tempo, dynamics and mood.

Families/Sections – Instruments of the orchestra can be divided into 4 families or sections: Strings, Woodwind, Brass and Percussion

Tuning up. Before the orchestra rehearses or plays, all instruments need to in tune with each other

B. The Layout of the Orchestra and Famous Conductors

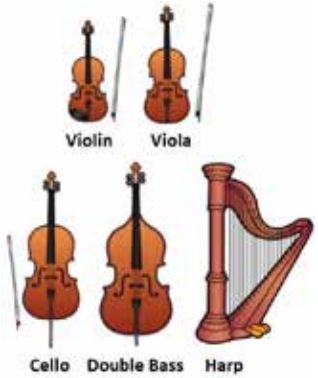




C. Strings Section/Family

Largest section of the orchestra who sit at the front, directly in front of the conductor. Usually played with a **BOW (ARCO)**, (not the **HARP**) but can be **PLUCKED (PIZZICATO)**.

VIOLINS split into two groups: **1st VIOLINS** (often have the main **MELODY** of the piece of music) and **2nd VIOLINS**.



D. Woodwind Section/Family

Originally (and some still are) made from wood (some now metal and plastic). All are **BLOWN**. **FLUTES:** Flute and Piccolo – air blown over hole.

SINGLE REED (small piece of bamboo in the mouthpiece): Clarinet, Bass Clarinet & Saxophone (not traditionally in the orchestra, but some modern composers have used it) **DOUBLE REED** (two reeds in the mouthpiece): Oboe, Cor Anglais, Bassoon, Double Bassoon.

E. Brass Section/Family

Four types of brass instruments in an orchestra, all made from metal – usually brass and **BLOWN** by the player 'buzzing their lips' into a **MOUTHPIECE** *(shown right)*. The Trumpet, French Horn and Tuba all have three **VALVES** which, along with altering the players mouth positions, adjust the length of the tubing allowing for different notes to be played. The Trombone has a **SLIDE** which adjusts the length of the tubing. Brass instruments (along with Percussion) have often been used to play **FANFARES**: a short, lively, loud piece of music usually warlike or victorious in character used to mark the arrival of someone important, give a signal *e.g., in battles*, of the opening of something *e.g., a sporting event or ceremony*. Fanfares often use notes of the **HARMONIC SERIES** – a limited range of notes played by **BUGLES** (smaller trumpets with no valves) and valveless trumpets.

F. Percussion Section/Family

TUNED PERCUSSION

Piano Xylophone Glockenspiel Timpani

UNTUNED PERCUSSION

Bass Drum Snare Drum Cymbals Woodblock

Triangle Gong Tambourine Cabasa

Folk Music

(Exploring Harmony and Accompaniments)

A. History of Folk Music

Folk Music is **TRADITIONAL** music **of the people** performed by the people themselves and played within their own communities. Folk Music was passed on **ORALLY** from one generation to the next – the **ORAL TRADITION** (passed down by word of mouth), and many Folk Songs were not originally written down. The Industrial Revolution of the 18th and 19th Centuries destroyed communities so many of the traditional Folk Songs were lost. Attempts were made to collect these songs and *Cecil Sharp* published a 'written down' collection of English Folk Music in 1907. During the 1950's a great **FOLK MUSIC REVIVAL** began and bands in the 1970's 'mixed together' Folk and Rock (**FOLK ROCK**) as a type of musical **FUSION** *e.g., Lindisfarne, Steeleye Span*. Other musicians created more modern and commercial **ARRANGEMENTS** of Folk Songs such *The Beatles, Paul Simon* and *The Corrs*

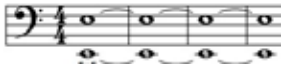
B. Types of Folk Music

People from different countries and cultures have their own **FOLK MUSIC**. However, although it may sound different, **FOLK SONGS** are often include **WORK SONGS**, including **SEA SHANTIES**: songs sung at sea by sailors, the rhythm of these helped the sailors haul the ropes that hoisted the sails, and songs about **EVERYDAY LIFE, THE SEASONS, BATTLES AND WARS, SHEPHERD'S SONGS** and **LULLABIES** (cradle songs).

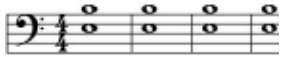
Folk Music can also be **INSTRUMENTAL**, often used for dancing, entertainment, celebration, and religious ceremonies.

C. Folk Song Accompaniments

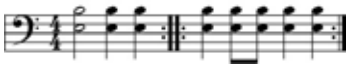
TONIC PEDAL - A (BASS) PEDAL (POINT/NOTE) is a note of long duration, often held in the bass part (lower down the keyboard) which uses the **TONIC** note, over which the melody line and chords will "fit" *e.g.*



DRONE - A form of musical accompaniment consisting of continuous sounding pitched notes, usually a **FIFTH** apart (5 notes), again, often in the bass part *e.g.*

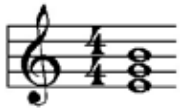


OSTINATO – A repeated musical pattern as an accompaniment, often using notes of the **CHORD** and rhythm patterns from the song *e.g.*

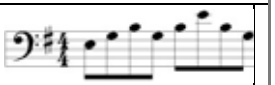


CHORDS – Many Folk Songs use **PRIMARY CHORDS** (**CHORD I**, **CHORD IV** and **CHORD V**) and sometimes the **SECONDARY CHORDS** of **CHORD III** and **CHORD VI** as a musical accompaniment. The notes of a **CHORD** can be performed in different ways to create different accompaniments:

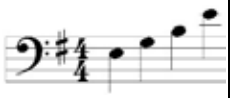
As a **TRIAD** (all three notes (**ROOT, THIRD, FIFTH**) performed together, the **ROOT** sometimes in the **BASS** part acting as **BASS LINE**).



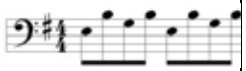
As a **BROKEN CHORD** - a way of playing the notes (**ROOT, THIRD, FIFTH**) of a chord separately ('broken' up) in a different order, ascending (going up) or descending (going down).



As an **ARPEGGIO** - playing the notes of a chord ascending or descending (**ROOT, THIRD, FIFTH**) in order, but separately.



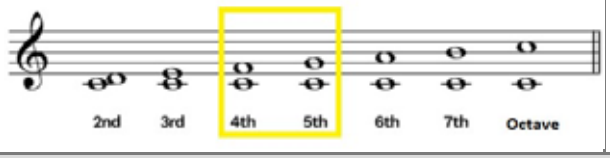
As an **ALBERTI BASS** - a way of playing the notes of a chord in the order: lowest (**ROOT**), highest (**FIFTH**), middle (**THIRD**), highest (**FIFTH**), repeated several times as a bass line **ACCOMPANIMENT**



D. Harmony in Folk Music: Intervals

ACCOMPANIMENT – Music that accompanies either a lead singer or melody line. This can be instrumental performed by members of a Folk Band but also vocal often known as the "backing" provided by backing singers. (see C for different forms of accompaniments).

HARMONY – The effect produced by two or more pitched notes sounding together at the same time *e.g.,* a chord or triad creates harmony or a lead singer and backing singers singing different melodies or parts 'in harmony' (**COUNTER MELODY**) **INTERVAL** – The distance between two musical notes. The intervals of a **FOURTH** and **FIFTH** are common in Folk Music.



F. Instruments, Timbres and Sonorities of Folk Music

Many **FOLK SONGS** are often performed **UNACCOMPANIED** (with no instrumental accompaniment) = **A CAPPELLA**. However, the following instruments are often used in Folk Music:

								
Penny/Tin Whistle	**Harmonica or Mouth Organ**	**Acoustic Guitar**	**Northumbrian Pipes**	**Accordion**	**"Fiddle" (Violin)**	**Mandolin**	**Banjo**	**Concertina**

7.1 The WWWWWs of Religion

KEY CONSTRUCT

1. Diverse worldviews influence and impact how we experience the world.

3.13 What difference does it make to be religious or non-religious in Britain today?

Section A: Key Vocabulary

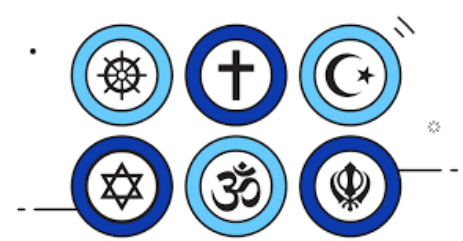
1. **Community** — a group of people with shared values, characteristics or beliefs.
2. **Diversity** — a variety of different people.
3. **Worldview** — how a person experiences and makes sense of the world.
4. **Atheist** — a person who does not believe in God/gods.
5. **Agnostic** — a person who is not sure if they believe in God/gods.

Section B: Component Knowledge

1. The six main world faiths are Judaism, Christianity, Islam, Hinduism, Buddhism, Sikhi.
2. The UK is a diverse community with many different religious and non-religious believers.
3. Most people's worldview is either theist, atheist or agnostic.
4. Humanism is a belief system which believes in the power and authority of humans.
5. Everyone has the legal right to express their beliefs without judgement or fear.

Section C: Core Content

A) The Big Six



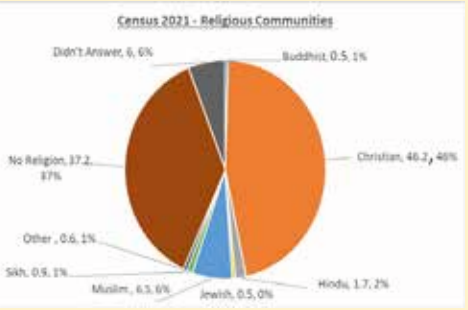
⇒ There are **six world faiths** (meaning these religions are present in almost every country across the world). They are **Buddhism, Christianity, Hinduism, Islam, Judaism, Sikhi.**

⇒ Each religion has a place of **worship**; founding or important **person**; holy **texts** and different **denominations** (groups).

⇒ Most countries will have a majority of people who are part of a religious system. Often in these places the **traditions**, **laws** and **celebrations** are influenced by a particular religion e.g. Britain (Christianity), India (Hinduism), Saudi Arabia (Islam).

⇒ Religious **symbols** are used to reflect certain **historical or cultural aspects** of a religion.

B) The UK Community



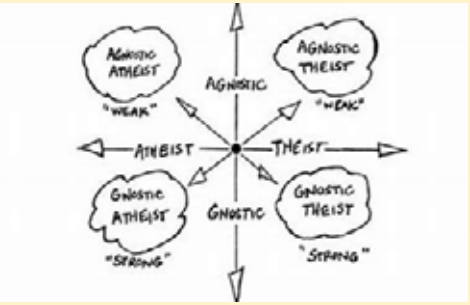
⇒ The UK population is **diverse**, meaning there are **people from all major religions and worldviews living in modern Britain.**

⇒ **British Values and the laws** reflect a commitment to **freedom of religious belief and expression**, meaning people are encouraged to **show and celebrate their individual beliefs.**

⇒ The **diversity** of the British people is highlighted in the **census** (household questionnaire) which is **performed every 10 years**. The last census showed growth in almost all religious communities, except **Christianity** which is now at **46.2%**.

⇒ The **'Nones'** are people with **either no religion or belief in God** and who make up **approximately 37%**.

C) Belief & Non-belief



⇒ **Theists** believe there **is a God**; usually they believe this due to having a **religious experience**; **growing up in a religious household; seeing the world as something that has been purposefully created.**

⇒ **Atheists** believe **there is no God**; usually they believe this due to **a lack of empirical (scientific) evidence; because of the amount of suffering in the world; not seeing theism as logical.**

⇒ **Agnostics** are **undecided** whether there is a God or not; they usually believe this because they have **not seen enough evidence for either side; they had faith but lost it due to suffering/crisis; they have not experienced God for themselves.**

⇒ **Humanists** are a group of **mostly atheists or agnostics** who believe that the power to change the world lies with **humanity** and **humans alone are in control of their lives and environment.**

7.2 A Study of Sikhi

KEY CONSTRUCT

2. Beliefs and teachings form the basis of organised religions.

3.12 How are Sikh teachings on equality and service put into practice today?

Section A: Key Vocabulary

1. **Guru** — a teacher of spiritual or religious matters.
2. **Equality** — everyone given equal opportunities and treatment.
3. **Sewa** — selfless service to humanity.
4. **Langar** — free kitchen open to all inside a Gurdwara.
5. **Khalsa** — Community of Sikhs who have chosen to join the Sikh brotherhood.

Section B: Component Knowledge

1. Guru Nanak was the first human guru and believed in equality, service and one God.
2. The 10 Guru's each promoted equality and service through their teachings and actions.
3. Gurdwara means house of the Guru and all people are welcome there.
4. The Khalsa is the community of men and women who have devoted themselves to Sikhi.
5. There are three types of sewa, tan (physical), man (mental) and dhan (sacrificial) service.

Section C: Core Content

A) The Guru's

⇒ There are **10 human Sikh gurus**. The first was Nanak who broke away from his Hindu family's beliefs and worshipped just **one god—called Waheguru.**

⇒ When travelling Nanak was offered **two loaves of bread**, one loaf poured with milk because it was pure, the other was made by slaves so poured with blood. He used this as a way to demonstrate **the importance of honest work**.

⇒ When the **flowers around his body** miraculously remained fresh and his body disappeared after died, this **reminded his followers to show equal respect to different beliefs and religions.**

⇒ The other 10 Gurus established a **Sikh alphabet**, **healed the sick, built the Golden Temple, started the langar (free kitchen), fought and died for Sikhi**.

B) Sewa

⇒ Sewa is considered **an act of worship to Waheguru** (God) because it makes them **less selfish** and therefore **closer to how God wants them to be**.

⇒ There are **three types of sewa** - **Tan (physical - using your body), Man (mental - using your mind/intellect) and Dhan (sacrificing something).**

⇒ The **langar is a free kitchen/eatery** run by Sikhs; **everyone is welcome** (Sikh or not), **everyone sits on the floor** (if able), **food is vegetarian and everyone helps to maintain it**.

⇒ Other ways to perform sewa are: **donating money/time/supplies, studying, showing kindness, teaching younger Sikhs.**

C) Khalsa

⇒ **Gobind Singh founded the Khalsa** during a time of great persecution. Joining therefore means you **vow to live according to Sikh values** and are **willing to fight and even die for these values.**

⇒ **Equality** is important in the Khalsa - **all Sikh men and women are able to join** - all members **change their surnames to show their unity** - all members of the Khalsa **wear the same uniform as each other - the 5Ks**.

⇒ The Five Ks are: **Kesh** (uncut hair), **Khanda** (comb), **Kachera** (undergarments), **Kara** (bracelet) and **Kirpan** (ceremonial sword).

⇒ All Khalsa Sikhs are expected to perform lots of sewa (service) - **Khalsa Aid is a charity they can work/volunteer for** and they can **help people in need in the UK and abroad.**

7.3 A Study of Hinduism

KEY CONSTRUCT

2. Beliefs and teachings form the basis of organised religions.

3.9 Why don't Hindus want to be remanifested and what do they do about it?

Section A: Key Vocabulary

1. **Samsara** — cycle of birth, death and rebirth
2. **Moksha** — liberation or freedom from the cycle of samsara
3. **Karma** — the consequences of your positive and negative actions
4. **Dharma** — your duty according to your stage of life and place in society
5. **Ashrama** — the four stages of Hindu life.

Section B: Component Knowledge

1. Each samsara life cycle allows the soul to accumulate positive and/or negative karma.
2. Karma decides what being your soul will be born into in its next life.
3. Hindu's want to release their atman from the cycle; this is called Moksha.
4. Dharma means doing your duty according to your stage in life and position in society.
5. The four ashramas (stages of life) are student, householder, retired and renouncer.

Section C: Core Content

A) Key Beliefs

⇒ Every creature has an soul (atman) within it. **The soul wants to be returned to God (Brahman) but is stuck in the cycle of samsara and needs positive karma to free itself**. This is called Moksha (liberation).

⇒ **Karma decides which living thing the soul will be born into** each time (plant/animal/human); the **more positive karma the soul has collected the better the life-form it will be manifested into.**

⇒ There are **four pathways (yogas)** to Moksha - **Jnana** (path of knowledge); **Bhakti** (path of devotion); **Raja** (path of meditation) and **Karma** (path of action).

⇒ Hindus have to **follow their dharma** (duties and responsibilities) to gain positive karma and have a better rebirth.

B) Hindu Life

⇒ There is a **hierarchy of humans (called the Varna system)**; humans closest to Moksha are called **Brahmins** (they are often Hindu holy men/priests); then there are **Kshatriyas** (warriors or rulers); then **Vaishyas** (skilled workers) and then **Sudras** (unskilled workers).

⇒ **Untouchables** are people who are considered **impure** because they have **too much negative karma**; they are often **treated poorly as outsiders to society**.

⇒ There are **four stages of Hindu life**, called ashramas and each stage has **associated duties (dharma)** everyone is expected to do.

⇒ **1. Student** stage (**Brahmacharya**) - dharma is learning and obeying your parents.

⇒ **2. Householder** stage (**Grihasta**) - dharma is raising a family, working and serving the community.

⇒ **3. Retirement** stage (**Vanaprastha**) - dharma is teaching younger generations and developing spiritual practices.

⇒ **4. Renouncer** stage (**Sannyasin**) - dharma is to give up all the material things and devote themselves completely to spirituality. This stage is not for everyone and most Hindus do not complete it.

C) The Ramayana

⇒ The ancient poem 'Ramayana' tells the journey of Prince Rama as he rescues his wife, Sita, from the demon king Ravana.

⇒ **Prince Rama is considered the perfect example of following dharma.** He has to make multiple decisions in the story about how best to follow his dharma.

⇒ He is **born as a kshatriya (ruler) and becomes an excellent bowman (warrior); he also has a devoted wife as he is in the grihasta ashrama.**

⇒ Rama defeats the demon and therefore **proves that light/goodness will always conquer evil/darkness.**

⇒ This story celebrated at **Diwali** (Festival of Light).

7.4 Sources of Authority

KEY CONSTRUCT

4. Sources of authority are interpreted for wisdom and guidance.

3.4 Does the world need prophets today?

Section A: Key Vocabulary

1. **Authority** — to have wisdom, knowledge or power above that of others.
2. **Prophet** — a person with a message about God, religion or morality.
3. **Prophecy** — a prediction or warning for the future.
4. **Announcement** — a message that encourages or says what is considered right/good.
5. **Denouncement** — a message that discourages or says what is considered wrong/evil.

Section B: Component Knowledge

1. A source of authority can be any human or text which holds wisdom or power above others.
2. Religious prophets bring messages from God about religion and morality.
3. Moses, Gandhi, and Desmond Tutu are all considered religious prophets.
4. Sir David Attenborough is an example of a non-religious source of authority.
5. The impact of a source of authority is usually to inspire a positive change.

Section C: Core Content

A) Religious Prophets

- ⇒ Religious prophets bring **messages from God to encourage better worship; moral goodness; conversion to the faith; discourage immorality; criticise injustice or bring hope.**
- ⇒ Prophets and religious leaders are considered sources of authority because they have a **closer connection with God than others**.
- ⇒ The **role of a prophet** is to **announce a positive message; predict a future event or denounce actions which go against God's teachings.**
- ⇒ **Amos** is a minor prophet from the Bible who is known for **denouncing wealth, greed and injustice.**
- ⇒ **Archbishop Desmond Tutu** is a modern prophet who lived in South Africa and **denounced the apartheid (system of black and white segregation) and campaigned against all forms of racism and injustice.**
- ⇒ **Mohandas K. Gandhi** was an Indian-born campaigner who **denounced the mistreatment and inequality of Indian society where the 'Untouchables' were persecuted.**

B) Prophetic Texts

- ⇒ **Sacred texts** are believed to be sources of authority because they **contain wisdom and instructions from God** about how to live within the world and how to worship or serve God.
- ⇒ The **Bible/Torah** contain the **10 Commandments** which are **10 announcements and denouncements given to Prophet Moses and passed down through the holy text.**
- ⇒ The **Guru Granth Sahib** is the Sikh sacred text and is **treated as a living guru** (prophet) as it contains all the teachings of the 10 human gurus. It is known as the **'Everlasting Guru'.**

C) Non-religious sources

- ⇒ **Humanists/Atheists rely on multiple sources of authority** to guide them including **politics and law, science, reason, conscience, role models as well as some religious and non-religious texts.**
- ⇒ Someone such as **Sir David Attenborough** may not be bringing messages from God/religion but could still be **considered a prophet for the impact he has had on the world.**
- ⇒ Sir David continues to **denounce the ways humans damage and mistreat the environment and living things.**
- ⇒ He has made many **predictions about the effects of global warming**; **many of which have been proven accurate.**

7.5 Expressions of Belief

KEY CONSTRUCT

3. Religious expression celebrates and reflects peoples beliefs and values.

3.18 How can people express the spiritual?

Section A: Key Vocabulary

1. **Sacred** — something with religious significance.
2. **Pilgrimage** — a religious journey to a sacred place.
3. **Kosher** — Jewish word for food which are permitted.
4. **Kumbh Mela** — Hindu gathering at the River Ganges every 12 years.
5. **Jerusalem** — holy city for Jews and Christians.

Section B: Component Knowledge

1. Pilgrimages are religious journeys to sacred places like Jerusalem and Varanasi.
2. Some people express their beliefs through their diet or clothing.
3. Vegetarianism has religious significance to some people, for example Hindus.
4. Some religions consider certain animals to be either sacred or impure.
5. Religious celebrations such as Holi and Vaisakhi allow religious communities to celebrate their beliefs.

Section C: Core Content

A) Religious Journeys

⇒ Pilgrimage in most religions is not compulsory but the benefits can make it one of the most significant religious practices.

⇒ The **holiest place on earth for Jews is the city of Jerusalem**. According to Jewish tradition, **all of creation began in Jerusalem**. Many travel there to **pray at the Wailing Wall.**

⇒ **Jerusalem is also significant to Christians** as it is the place Jesus came in the days leading up to his death so has many sacred sites for Christians to visit—**Christians can follow the 'Via Dolorosa' (path of sorrow).**

⇒ **Hindus generally pilgrimage to rivers, mountains and temples**. Many Hindus will travel to the city of **Varanasi**. It is believed to be the city where Shiva, the god of destruction, lived a long time ago.

⇒ The **Kumbh Mela** is the largest human gathering on earth (approximately 120million people visit over 49 days) and **takes place at Varanasi every 12 years. Hindus bathe in the River Ganges hoping to wash their sins away**.

B) Food

⇒ **Food that is allowed is called kosher**. Food that is not allowed is called treif or trefah. **Jews do not eat pork or shellfish among others**. They must also **keep dairy and meat products separate**.

⇒ Orthodox Jews keep all the rules. **Some even have separate utensils and fridges for the preparation and storage of meat and dairy products**. Reform Jews observe a selection of the laws.

⇒ Most **Hindus** will be **vegetarian** due to their belief in **ahimsa (non-violence).**

⇒ **Cows** are also considered sacred in Hindu culture therefore **beef or dairy products will be prohibited.**

C) Celebrations

⇒ **Holi** is a **Hindu festival that celebrates spring, love, and new life**.

⇒ Some families hold religious ceremonies, but for many Holi is more a time for fun. It's a **colourful festival, with dancing, singing and throwing of powder paint and coloured water.**

⇒ Holi is also known as the **"festival of colours".**

⇒ **Vaisakhi**, also called Baisakhi, is the festival which celebrates the **founding of the Sikh community, the Khalsa,** in 1699.

⇒ On Vaisakhi, Sikhs go to the **Gurdwara in the morning for a service**.

⇒ Afterwards, they have a **procession through the streets** with lots of singing, chanting and colourful clothes. The procession is called the **Nagar Kirtan**.

⇒ In the evening, Sikhs have a **special meal with family and friends**.

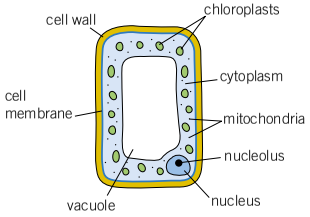
B1 Chapter 1: Cells
Knowledge organiser

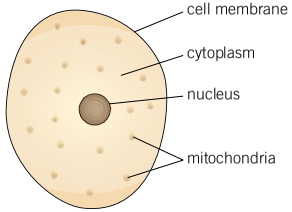
Activate
Question • Progress • Succeed

All living things (organisms), are made of **cells**. Some are only made of a single cell, for example, bacteria. A person is made up of millions of cells joined together.

Plant and animal cells

Cells have smaller structures inside them, called components, that each have an important function.





Specialised cells

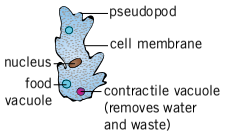
Specialised cells have special features that allow them to do a specific job or function:

	Cell type	Function	Special features	Diagram
plant cells	root hair cell	absorb water and nutrients from soil	• root hair creates a large surface area • no chloroplasts as no light underground	
	leaf cell (palisade cell)	carry out photosynthesis	• found at the top surface of leaves • packed with chloroplasts • thin with a large surface area to absorb more light	
animal cells	red blood cell	transport oxygen around the body	• contain haemoglobin which joins to oxygen • no nucleus • disc shaped to increase surface area	
	nerve cell (neurone)	carry electrical impulses around the body	• long and thin with connections at each end	
	sperm cell	carry male genetic material	• streamlined head and a long tail • lots of mitochondria to transfer energy	

Unicellular organisms

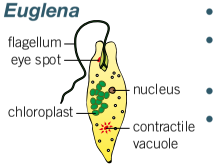
A **unicellular** organism only consists of one cell. They have no fixed shape and are adapted to carry out many different functions.

Amoeba



- nucleus controls growth and reproduction
- move by moving part of their body and the rest follows slowly in the same direction
- eat bacteria, algae, and plant cells by engulfing them
- reproduce by splitting in half (binary fission)

Euglena



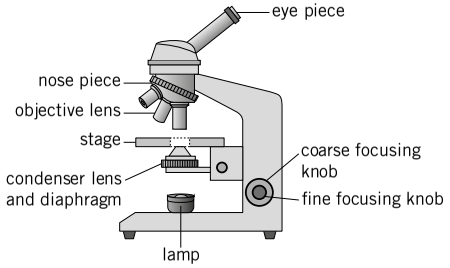
- microscopic organism found in fresh water
- contain chloroplasts and make their own food by photosynthesis
- eye spot that detects light
- flagellum allows the *Euglena* to move towards the light to make more food

Microscopes

Cells can only be seen under a microscope. A microscope magnifies an object using lenses.

Remember that:

- the specimen needs to be thin so light can pass through
- a dye can be added to make the object easier to see.



Using a microscope

1. Move the stage to its lowest position.
2. Place the slide/object on the stage.
3. Choose the objective lens with the lowest magnification.
4. Look through the eyepiece and turn the coarse-focus knob slowly until you see the object.
5. Turn the fine focus knob until it comes into focus.
6. Repeat steps 1–5 using a higher magnification lens.

Movement in and out of cells

Particles move in and out of cells by **diffusion**.

During diffusion, particles spread out from where they are in *high* **concentration** to where they are in *low* concentration.

Diffusion in water is called **osmosis**.

Glucose and oxygen move from the blood **into** cells by diffusion.

Carbon dioxide moves **out of** cells to the blood by diffusion.

Key terms Make sure you can write definitions for these key terms.

amoeba | cell | cell membrane | cell wall | chloroplast | concentration | cytoplasm | diffusion | Euglena | flagellum | leaf cell | microscope | mitochondria | nerve cell | nucleus

B1 Chapter 2: Structure and function of body systems

Knowledge organiser

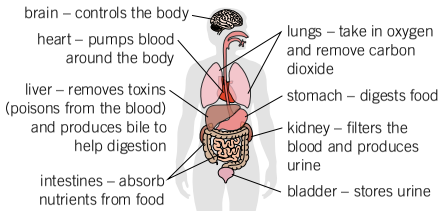
Activate
Question • Progress • Succeed

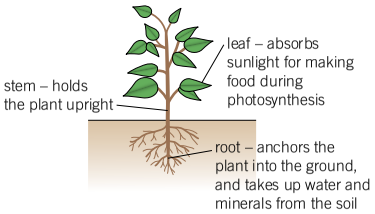
Multicellular organisms are made up of many cells and have five levels of organisation:

cell	tissue	organ	organ system	multicellular organism
the smallest building block of an organism	a group of specialised cells working together	a group of tissues working together	a group of organs working together	a group of systems working together

increasing complexity

Plant and animal organs

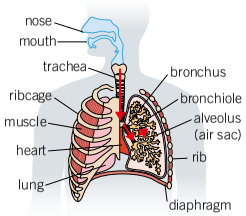


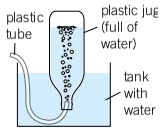


Respiratory system

The respiratory system is involved in:

- breathing in oxygen (for **respiration**)
- breathing out waste carbon dioxide.





Measuring lung volume

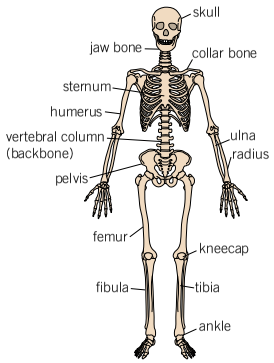
When you breathe out fully into the plastic tube, air from your lungs pushes water out of the bottle.

volume of air in the plastic bottle

=

lung volume

Skeleton



All the bones in your body make up your skeleton.

The four main functions of the **skeleton** are to:

- support the body
- protect vital organs
- help the body move
- make blood cells (in the **bone marrow**).

Joints occur between two or more bones. They allow the skeleton to bend.

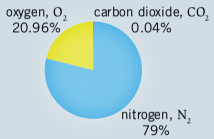
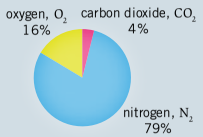
Three types of joint are:

1. **Hinge joints**
   forwards/backwards movements only, e.g., knees
2. **Ball-and-socket joints**
   movement in all directions, e.g., shoulders
3. **Fixed joints**
   no movement allowed, e.g., the skull

In a joint:

- your bone is protected with **cartilage**
- the two bones are held together by **ligaments**.

What happens when we breathe?

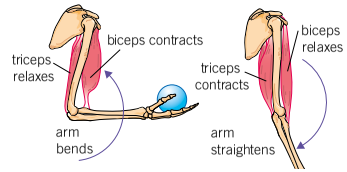
When you breathe in (inhale)	• muscles between ribs contract • ribs are pulled up and out • diaphragm contracts and flattens • volume of the chest increases • pressure inside the chest decreases • air rushes into the lungs	composition of inhaled air: 
When you breathe out (exhale)	• muscles between ribs relax • ribs are pulled in and down • diaphragm relaxes and moves up • volume in the chest decreases • pressure inside the chest increases • air is forced out of the lungs	composition of exhaled air: 

Muscles

Muscles are a type of tissue – lots of muscle cells work together to cause movement.

Types of muscle include:

- **cardiac (heart) muscle**
- **smooth muscle**
- **skeletal muscle**



Muscles are attached to bones by **tendons**.

Muscles produce movement by **contracting** (getting shorter).

If a muscle contracts it pulls the bone, causing it to move.

Antagonistic muscles

Pairs of muscles that work together are called **antagonistic** muscles.
When one contracts the other relaxes.

For example, biceps and triceps work together to bend and straighten the forearm.

Key terms

Make sure you can write definitions for these key terms.

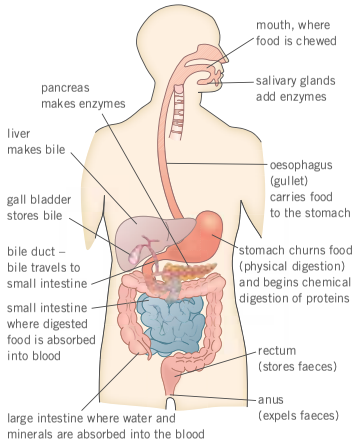
alveolus antagonistic bone bone marrow contract cartilage diaphragm exhale inhale joint ligament lung multicellular organ organ system respiration respiratory system ribcage skeleton tendon tissue trachea volume

B2 Chapter 1: Health and lifestyle
Knowledge organiser

Activate
Question • Progress • Succeed

Diet

The digestive system



Bacteria live on fibre in your diet in the large intestine and make important vitamins (e.g., vitamin K).

Enzymes

Enzymes are special proteins that can break large molecules of nutrients down into small molecules.

Enzymes are known as biological **catalysts** – they speed up **digestion** without being used up.

There are three main types of enzyme involved in digestion:

	Type of enzyme		
	carbohydrase	protease	lipase
digests	carbohydrates (e.g., starch)	protein	lipids
	↓	↓	↓
	sugars	amino acids	fatty acids and glycerol

Nutrients

Nutrient	Role in your body
carbohydrates	main source of energy
lipids	fats and oils provide energy
proteins	growth and repair of cells and tissues
vitamins and minerals	essential in small amounts to keep you healthy
water	needed in all cells and body fluids
fibre	provides bulk to food to keep it moving through the gut (not actually a nutrient)

Food tests

Starch
Add a few drops of iodine solution to the food solution.
Result: If the solution turns blue-black, the food contains starch.

Lipids
Add a few drops of ethanol to the food solution, shake it, and leave for one minute. Then pour the ethanol into a test tube of water.
Result: If the solution turns cloudy, the food contains lipids.

Sugar
Add a few drops of Benedict's solution and heat the solution in a water bath.
Result: If the solution turns orange-red, the food contains sugar.

Protein
Add a few drops of copper sulfate solution and sodium hydroxide solution.
Result: If the solution turns purple, the food contains protein.

Effects of an unhealthy diet

A **balanced diet** is when you have the right proportions of the food groups to keep you healthy.

Eating an unbalanced diet can lead you to be:

underweight
Increased risk of:
- poor immune system
- lack of energy
- lack of vitamins and minerals.

overweight
Increased risk of:
- heart disease
- stroke
- diabetes
- some cancers.

vitamin and mineral deficient
Vitamin A deficiency can lead to night blindness.
Vitamin D deficiency can lead to rickets.

Effects of lifestyle on health

Drugs

Drugs are any chemicals that affect the way your brain and body work.

Medical drugs	Recreational drugs
• used in medicine • benefit your health if used correctly • used to treat symptoms or cure illness • some have side effects	• taken for enjoyment/to relax/stay awake • normally have no health benefits • many can be harmful • many are illegal
examples include: painkillers, antibiotics, and cough mixture	examples include: alcohol, caffeine, heroine, cocaine, tobacco

Alcohol

Alcohol is a depressant because it slows down your body's reactions.

Drinking large amounts of alcohol over a long time can cause:
- stomach ulcers
- heart disease
- reduced fertility
- brain damage
- liver damage (cirrhosis)

Drinking during pregnancy increases the risk of:
- miscarriage
- stillbirth
- premature birth
- low birth weight babies
- Fetal Alcohol Syndrome (FAS)

Smoking

Cigarette smoke is full of harmful chemicals including:
tar – clogs the lining of the lungs and alveoli, contains cancer-causing chemicals
nicotine – an addictive stimulant
carbon monoxide – stops blood from carrying oxygen.

Smoking can cause many different diseases, including:
- heart disease
- emphysema
- respiratory infections
- strokes
- lung cancer

Smoking during pregnancy increases the risk of miscarriage and low birth weight babies, and can also affect the fetus' development.

Addiction – When your body becomes used to the chemical changes caused by a drug and you need to take the drug to feel normal.

When a person who is addicted to a drug tries to stop taking it, they may suffer from sickness, nausea, stomach cramps, headaches, anxiety, and sweating. These are called **withdrawal symptoms**.

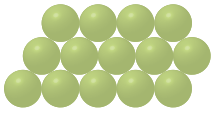
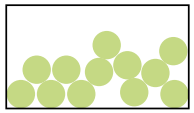
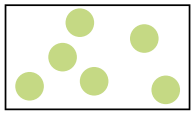
Key terms Make sure you can write definitions for these key terms.

addiction anus balanced diet carbohydrase carbohydrate carbon monoxide catalyst deficiency digestion digestive system drug enzyme fibre food test large intestine lipid lipase mineral nicotine nutrient oesophagus protease protein rectum small intestine stimulant stomach tar vitamin withdrawal symptom

C1 Chapter 5: Matter
Knowledge organiser

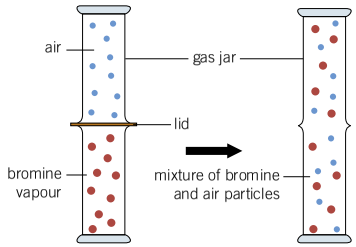
Activate
Question • Progress • Succeed

Changes of state

	solid	melting	liquid	boiling/evaporation	gas
state of matter					
how do the particles move?	Particles donot move around		Particles touching but can slide over each other		particles are spread out far away from each other
arrangement of particles					
can it be compressed?	No, becausethere is no space between the particles		No, because the particles are touching their neighbours		Yes, because there is space between the particles
can it flow?	No, because the particles can't move around		Yes, because the particles can move around		Yes, because the particles can move around
changes of state		freezing		condensation	

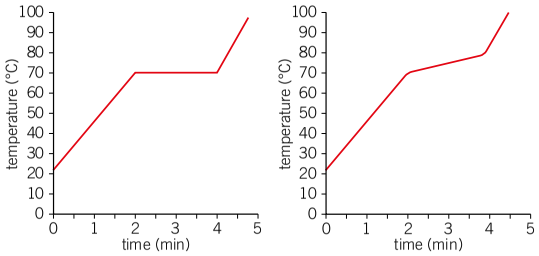
Diffusion

- **Diffusion** is the movement of particles from an area of high concentration (lots of the same particle) to an area of low concentration (not a lot of the same particle)
- It is a random process which does not need energy
- The speed of diffusion can be increased by:
  - A higher temperature
  - Smaller particles diffusing
  - A gas rather than a liquid
- Diffusion does not happen in a solid as the particles can't flow



Melting and boiling points

- The **melting point** of a substance is the temperature at which it turns from a solid to a liquid, or a liquid to a solid
- The **boiling point** of a substance is the temperature at which it turns from a liquid to a gas or a gas to a liquid
- **Pure substances** have a fixed (sharp) boiling or melting point, whereas **impure substances** have a range which appears as a diagonal line on a graph



Mixtures

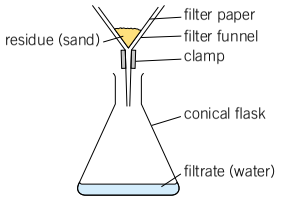
- **Mixtures** are different **substances** which are together, they are not chemically bonded and so are easy to separate
- The substances which make up a mixture keep their own **properties** unlike those in a compound
- A mixture is an **impure** substance as it does not have a fixed melting point, instead it has a range

- A **solution** is a type of mixture which is made up of two parts
- A **solute** is the part which has dissolved in the solution
- A **solvent** is the liquid part which the solute has dissolved into

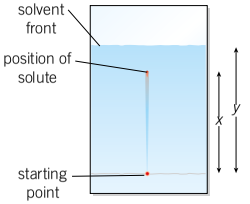
- The **solubility** of a substance is a measure of how much of it will **dissolve**
- Not all solutes will dissolve in all solvents
- Solutes which do not dissolve are known as **insoluble**
- Substances which do dissolve are known as **soluble**
- The **solubility** of a substance can be increased by increasing the temperature of the solution or by stirring the solution
- A **saturated solution** is one where the maximum amount of solute has dissolved in it, no more solute will be able to dissolve

Separating Mixtures

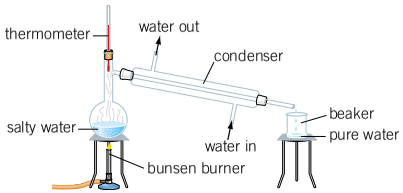
Filtration



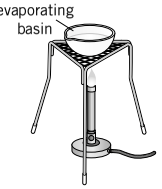
Chromatography



Distillation



Evaporation



Key terms Make sure you can write definitions for these key terms.

boiling point · chromatography · condensation · diffusion · dissolve · distillation · evaporation · filtration · freezing · impure substance · melting point · mixture · property · properties · pure substance · saturated solution · substance · soluble · solubility · solute · solution · solvent

C2 Chapter 2: Separation techniques
Knowledge organiser

Activate
Question • Progress • Succeed

What are mixtures?

Mixtures are different substances found together, but not chemically bonded. This means the different substances can be **separated** from each other.

In a **compound**, different substances are chemically bonded together, while in a mixture they are not.

The substances that make up a mixture keep their own properties and are easy to separate.

You can change the amounts of the substances in a mixture.

You can tell the difference between a **pure substance** and an **impure substance** – a pure substance has a single, sharp melting point, while an impure substance (a mixture) has a range of temperatures for its melting point.

Solutions

Solutions are a type of mixture made of two parts:

1 **Solvent**: the liquid that makes up most of the solution.

2 **Solute**: the substance that is added to the solvent and **dissolves** into it.

The solute usually starts as a solid, and its particles break away from each other and move into the solvent.

Solubility

The **solubility** of a solute means how much solute can dissolve in a certain volume of solvent.

- Different solutes have different solubilities in different solvents.
- Increasing the temperature often increases the solubility.
- Soluble substances can dissolve, **insoluble** substances cannot.

Saturated: when so much solute has been added to the solvent that no more can dissolve, we say the mixture is saturated.

How can we separate mixtures?

Filtration

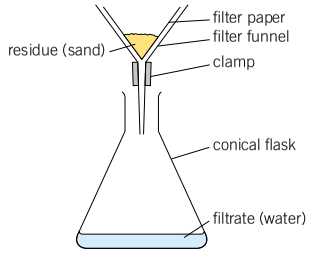
A method to separate a mixture of an undissolved solid and a liquid.

1 **Filter paper** has extremely small holes in it.

2 Particles in a liquid or solution are so tiny that they can fit through the holes.

3 Larger particles of the solid are too big to fit through the holes and are held back by the paper.

- **Residue**: solids left behind in the filter paper.
- **Filtrate**: the liquid that passes through the filter paper.

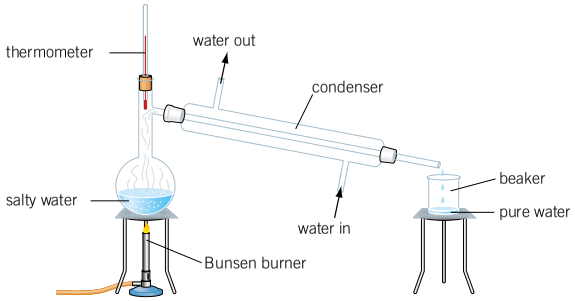


Distillation

A method that separates a solute and a solvent while keeping the solvent.

1 The solution is boiled so the solvent turns in to a gas.

2 The gas is then cooled down in a **condenser**, where it turns back into a liquid and can be collected.

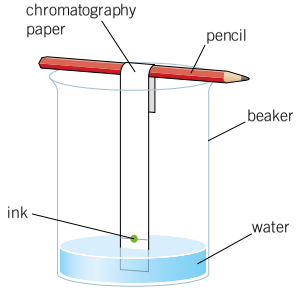


Chromatography

A method used to separate mixtures that are soluble in the same solvent.

1 A mixture like ink is placed on a piece of paper, which is placed in a solvent.

2 As the solvent moves up the paper it separates all the different constituents (parts) of the ink, producing a **chromatogram**.

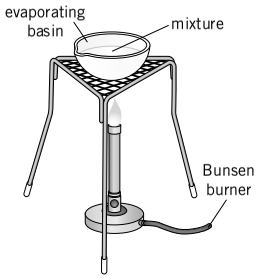


Evaporation

A method to separate a solute and a solvent, keeping the solute.

1 The solution is heated then left in an evaporating basin until all the solvent evaporates.

2 The solute is left behind as a solid.



Key terms Make sure you can write definitions for these key terms.

chromatography chromatogram compound condenser dissolve distillation evaporation filtrate filtration filter paper impure substance insoluble mixture pure substance residue saturated separate solvent solute soluble solubility solution

C2 Chapter 4: The Earth
Knowledge organiser

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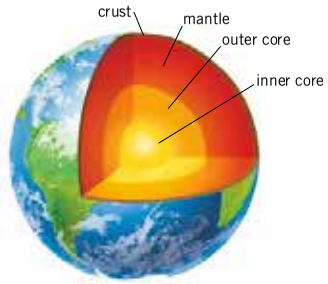
Question • Progress • Succeed

The Earth

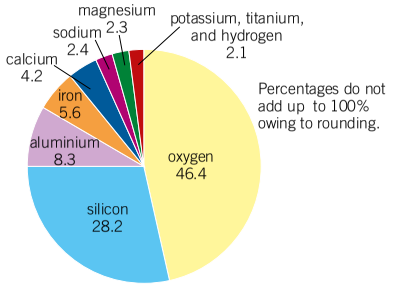


The Earth is made of several layers:

- The **crust** is rocky and solid.
- The **mantle** is solid rock but can flow.
- The **outer core** is liquid metal and the **inner core** is solid metal.

The crust

The Earth's crust contains many naturally-occurring elements in different proportions.

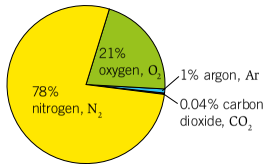


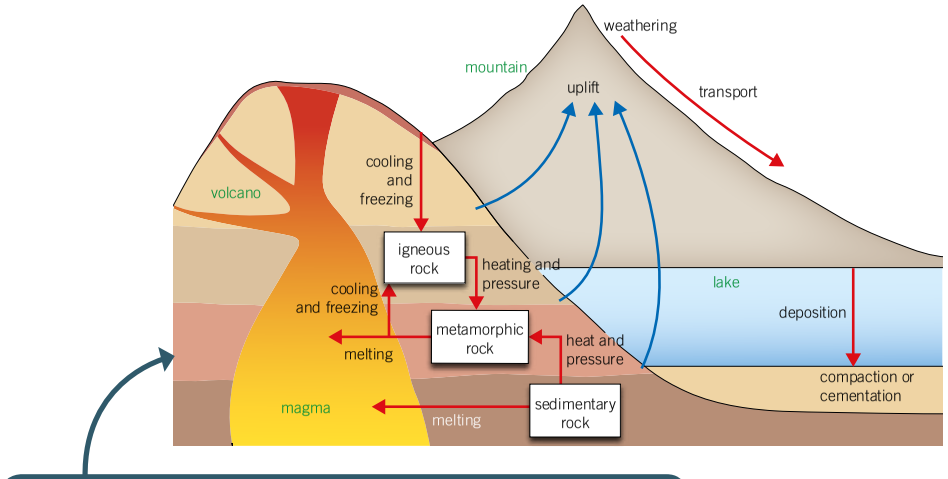
Types of rock

There are three types of rock that make up the Earth's crust. These are formed by different processes in the **rock cycle**, and have different properties.

The atmosphere

The **atmosphere** is a layer of gas surrounding the Earth. It is mainly comprised of nitrogen and oxygen.





The rock cycle

Because the different rocks can turn into each other, we say that there is a rock cycle.

Type of rock	How it is formed	Properties	Uses
sedimentary rock	• **sediment** piles up in one place and over many years stick together by **compaction** or **cementation** • **compaction**: weight of sediments above squeeze them into rocks • **cementation**: another substance sticks the sediments together	• porous: made of small grains stuck together so there are holes that water can pass through • soft: easy to break apart the sediments	building materials (*e.g., sandstone and limestone*)
igneous rock	• when liquid rock cools it turns into igneous rocks these are made of **crystals** locked tightly together • **Magma**: liquid rock underground – cools slowly and forms large crystals. • **Lava**: liquid rock above the ground – cools quickly and forms small crystals.	• Durable and hard (difficult to damage): the crystals are locked tightly together • Not porous: there is no space between crystals	pavement rail tracks
metamorphic rock	• other rocks under the Earth are heated and put under pressure • over time, these rocks become metamorphic	• Not porous: there is no space between crystals	marble used for kitchens slate used for roofing tiles

Key terms Make sure you can write definitions for these key terms.

atmosphere crust cementation compaction Earth igneous rock inner core lava magma mantle metamorphic rock outer core porous rock cycle sedimentary rock

P1 Chapter 2: Electricity
Knowledge organiser

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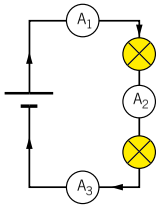
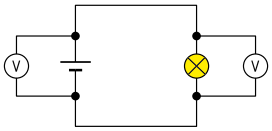
Current

- **Current** is the amount of **charge** flowing per second
- The charges that flow in a circuit are **electrons**, they are negatively charged
- **Electrons** leave the negative end of the **cell** and travel around the circuit to the positive end of the cell
- Current has the unit of Amps (A) and is measured with an **ammeter** (which is placed in series or in the main circuit)



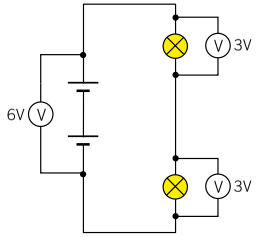
Potential difference

- **Potential difference** is the amount of energy transferred by the cell or **battery** to the charges
- The value of potential difference tells us about the force applied to each charge and then the energy transferred by each charge to the component which it passes through
- Potential difference has the unit of volts (V) and is measured with a **voltmeter** (which is placed in parallel to the circuit)



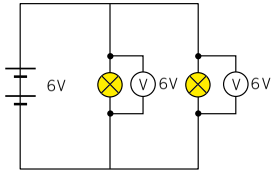
Series circuits

- **Series** circuits only have one loop
- If one component breaks, the whole circuit stops working
- Current is the same everywhere in a series circuit
- The total potential difference from the battery is shared between the components in a series circuit
- Adding more bulbs decreases the brightness of the bulbs



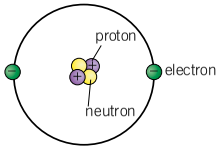
Parallel circuits

- **Parallel** circuits have more than one loop
- If one component breaks, the rest of the circuit will still work
- Current is shared between the different loops in the circuit
- The potential difference is the same everywhere in the circuit
- Adding more bulbs does not affect the brightness of the bulbs



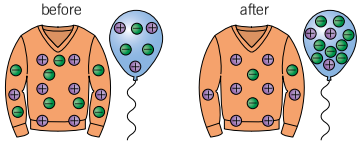
The atom

- The **atom** consists of a central nucleus with electrons orbiting around the outside in shells
- **Electrons** have a negative charged
- **Protons** are inside the nucleus and have a positive charge
- **Neutrons** are inside the nucleus and have a neutral charge



Static electricity

- Static electricity is the caused by the rubbing together of two **insulators**
- This causes electrons to be transferred, leaving one object with a positive charge, and one object with a negative charge



- Like charges will **repel**, opposite charges will **attract**

Resistance

- **Resistance** is a measure of how easy or how hard it is for charges to pass through a component in a circuit
- Resistance has the unit of ohms (Ω)
- Resistance is calculate by measuring potential difference and current and using the following equation:

$$\text{resistance } (\Omega) = \frac{\text{potential difference (V)}}{\text{current (A)}}$$

- Materials with a high resistance are said to be **insulators**
- Materials with a low resistance are said to be **conductors**

Key terms Make sure you can write definitions for these key terms.

ammeter atom attract battery cell conductors current electrons electric charge insulator neutral neutrons parallel potential difference protons repel resistance series voltmeter

P2 Chapter 2: Electromagnets
Knowledge organiser

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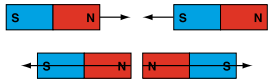
Question • Progress • Succeed

Magnets

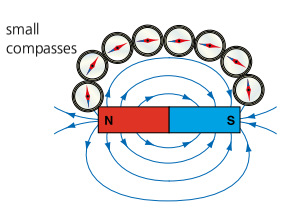
- A **magnet** has two poles, a north and a south pole
  - North poles **attract** south poles
  - South poles **attract** north poles
  - South poles **repel** south poles
  - North poles **repel** north poles



- **Magnetic materials** will experience a magnetic force when placed near a magnet, this is a type of non-contact force as the materials do not have to touch for the force to be apparent
- The three magnetic metals are iron, nickel and cobalt

Magnetic fields

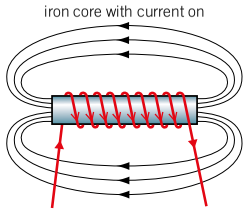
- A **magnetic field** is an area where a magnetic material will experience a force
- A **permanent magnet** will have it's own magnetic field
- **Magnetic field lines** represent the field, these always travel out of the north pole of the magnet, and into the south pole
- The closer together the magnetic field lines are, the stronger the magnetic field will be
- We can find out the shape of a magnetic field in two ways:
  - Using plotting compasses
  - Using iron filings



- The Earth has its own magnetic field, which acts like a giant bar magnet inside the centre of the Earth
- This magnetic field allows compasses to work when navigating around the Earth

Electromagnets

- **Electromagnets** are made by wrapping a coil of wire around a magnetic **core**
- Electromagnets only work when electricity is flowing through the coil, which means that they can be turned on and off
- Electromagnets are also stronger than **permanent** magnets
- The electromagnet will produce the same magnetic field shape as a bar magnet



- You can increase the strength of an electromagnet by:
  - Increasing the number of turns on the coil around the core of the electromagnet
  - Increasing the current which is flowing through the coil of wire
  - Using a more magnetic material for the core, e.g. iron rather than aluminium

Using electromagnets

Electric Bells

The electromagnet attracts the iron armature

↓

When it moves, it breaks the circuit, no longer allowing current to flow

↓

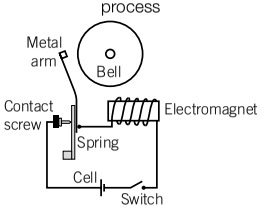
The coil and core are no longer magnetic meaning the spring is no longer attracted and returns to its original position

↓

The bell is rung once

↓

The circuit is complete again, restarting the process

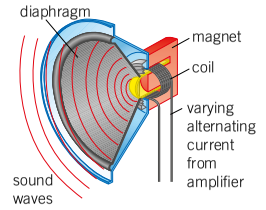


Circuit breakers

- Circuit breakers detect large changes in current in a house, and will break a circuit
- When a large current flows, the electromagnet becomes strong enough to attract an iron catch which will break a circuit
- They can then be reset and used again
- This makes them suitable as an electrical safety device in a home

Loudspeakers

- Loudspeakers use an electromagnet in order to generate sound
- A current passes through the coil and creates an electromagnet, this repels another permanent magnet which moves the cone in and out creating sound



Key terms Make sure you can write definitions for these key terms.

attract core circuit breaker electromagnet electric bell loudspeaker magnet magnetic pole magnetic field lines magnetic material permanent magnet repel

P1 Chapter 1: Forces
Knowledge organiser

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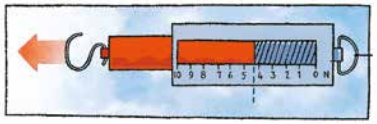
Question • Progress • Succeed

What are forces?

A **force** can be a *push* or a *pull*.

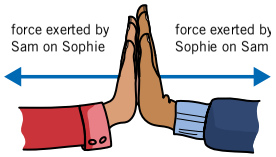
Forces can be measured using a **newtonmeter**.
Forces are measured in **newtons** (N).



Contact forces occur when objects are touching, for example:
- **friction**
- **drag forces** (**air resistance** and **water resistance**)
- support forces (e.g., **reaction forces**)

Non-contact forces work at a distance, for example:
- **gravity** • **magnetic force** • **electrostatic force**

Forces always occur in pairs.
The pairs are called **interaction pairs**.



Balanced and unbalanced forces

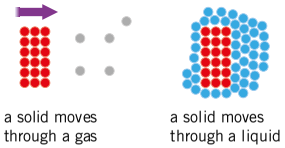
When the forces acting on an object are the same size, but act in opposite directions, we say that they are **balanced**.
The balanced forces cancel out, and the object is in **equilibrium**.

If the forces are not the same size, and do not cancel each other out, we say they are **unbalanced**.
The larger the difference between unbalanced forces, the quicker the object will change speed.

Drag forces and friction

Friction is a contact force that occurs when two objects move against each other. It happens because all surfaces have some roughness – even ones that look smooth.
Friction can be reduced by adding **lubrication** (e.g., oil or grease).
Friction is often useful, for example:
- you need friction to walk across surfaces
- the brakes on a bike need friction to work.

A solid moving through a liquid or a gas has to push the liquid or gas particles out of the way. This produces a drag force on the solid object.

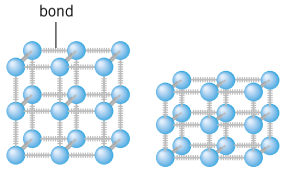


Water resistance and air resistance are drag forces.
Drag forces can be useful if we need to slow something down, for example, by using parachutes.
Making an object more **streamlined** will reduce the drag forces on it.

Reaction forces

When you stand on the floor:
- your weight pushes the particles in the floor together
- the bonds between the particles are **compressed**
- the compressed particles push back and support you.

A support force that balances the weight of an object is called the reaction force.
Upthrust is another example of a support force.



Fields and non-contact forces

In physics, a **field** is a special region where certain objects experience a non-contact force. For example, when
- a mass experiences a force in a gravitational field
- a magnetic material (like iron) experiences a force in a magnetic field
- a charged object experiences a force in an electrostatic field.

As you get further away from a mass, a magnet, or a charged object, the field gets weaker.

Weight and mass

Mass is the amount of 'stuff' something is made of – it is measured in kilograms (kg).
Weight is a force so it is measured in newtons.

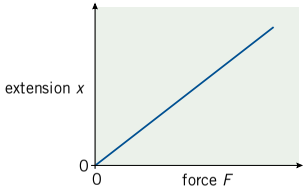
$$\text{weight (N)} = \text{mass (kg)} \times \text{gravitational field strength (N/kg)}$$

The **gravitational field strength** on Earth is about 10 N/kg.
Your weight depends on the gravitational field strength but your mass is the same everywhere.

Hooke's law

Some objects – like springs – can be **stretched** when pulled. The amount they stretch by is called the **extension**.
A force called **tension** makes a spring return to its original length (unless it has gone beyond its **elastic limit**).

Hooke's law states that the extension of a spring doubles when you double the force. This means there is a **linear** relationship between force and extension.



Key terms Make sure you can write definitions for these key terms.

air resistance, balanced, compress, contact force, drag force, elastic limit, electrostatic force, equilibrium, extension, field, friction, gravitational field strength, gravity, Hooke's law, interaction pair, linear, lubrication, magnetic force, mass, newton, newtonmeter, non-contact force, reaction force, stretch, streamlined, tension, unbalanced, upthrust, water resistance, weight

P1 Chapter 4: Waves
Knowledge organiser

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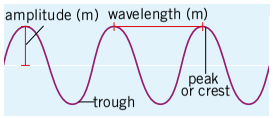
Properties of waves

- A **wave** is an **oscillation** or **vibration** which transfers energy from one place to another
- **Amplitude** – the distance from the middle to the top of bottom of the wave
- **Wavelength** – the distance between a point on the wave to the same point on the next wave
- **Trough** – The bottom of the wave
- **Peak** – The top of the wave
- **Frequency** – How many waves pass a fixed point per second, measured in Hertz (Hz)



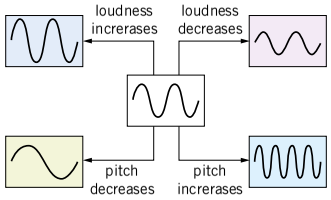
There are two main types of waves:

Transverse waves, e.g. light
- Travel at 90°direction of energy transfer
- Do not need a medium to travel through

Longitudinal waves, e.g. sound
- Travel in the direction of energy transfer
- Need a medium to travel through

Sound waves

- Sound waves are caused by the vibration of particles, sound travels quicker in a solid than a gas as the particles are closer together
- **Oscilloscopes** display sound waves on a screen
- Humans can hear between 20–20 000 **hertz** (Hz), but other animals have different ranges of hearing
- Sound waves above 20 000 Hz are known as **ultrasound**, thesesound waves are too high pitched for humans to hear

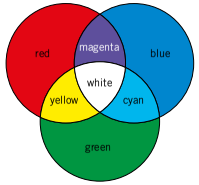


Hearing

- The **pinna** directs sound along the **auditory canal** to the **eardrum** which will vibrate
- The vibration from the ear drum moves onto the ossicles which amplifies the sound
- This passes the sound to the cochlea where tiny hairs detect the vibrations and passes this along to the **auditory nerve** as electrical signals for our brain

Colour

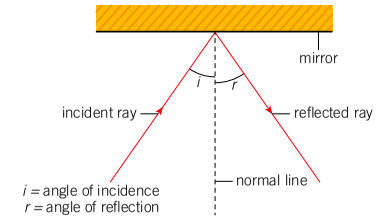
- Light can be split using a prism and is made up from different colours of light
- **Primary colours** can be mixed in order to form **secondary colours**



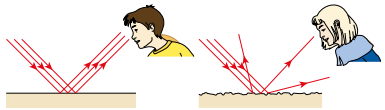
- Objects appear a certain colour as they absorb all other colours of light, but reflect the colour of light which they appear.

Reflection

- The **law of reflection** states that the **angle of incidence** will be equal to the **angle of reflection**

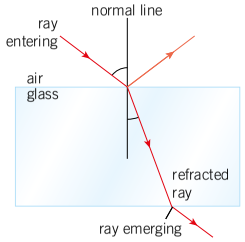


- For light reflecting off a smooth surface will form an image is called **specular reflection**
- Reflection off of a rough surface will not form an image and is know as **diffuse scattering**



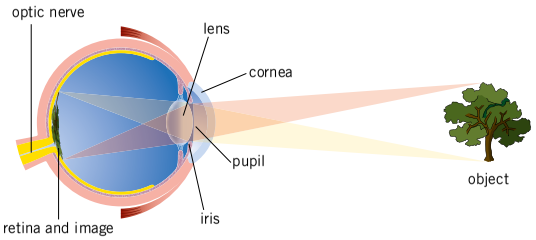
Refraction

- **Refraction** occurs when a wave passes between two different substances
- This happens as the wave will travel at different speeds in the different materials
- When the wave passes into a more dense material from a less dense material it will bend towards the **normal**, e.g. air into glass
- When the wave passes into a less dense material from a more dense material it bends away from the normal e.g. glass to air



Light and the eye

- Light entering your eye is refracted by the **lens**, focusing it on the retina and creating an inverted image
- **Photoreceptors** detect the light hitting your retina and send an electrical impulse to your brain
- If the light is not focussed on the retina or the eye, people cannot see properly



- Long sighted people have the light focus behind the eye, short sighted people have the light focus in front of the retina.
- Lenses can be used to refract the light in a way in which it will focus on the retina.

Key terms Make sure you can write definitions for these key terms.

amplitude angle of incidence angle of reflection auditory canal auditory nerve diffuse scattering eardrum frequency hertz law of reflection lens longitudinal normal oscillation oscilloscope peak photoreceptors primary colour refraction secondary colour specular reflection transverse trough ultrasound wave wavelength