



**KNOWLEDGE ORGANISER
YEAR 7**

2023 - 2024





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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
Computing	10-13
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THS Knowledge Organiser Homework

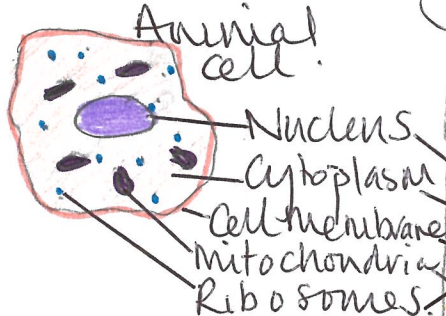
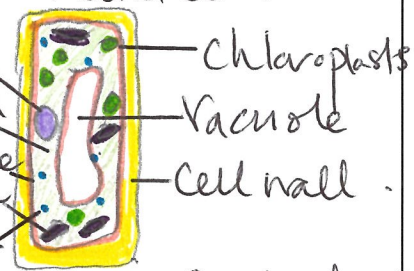
Subject: Science

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	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Animal cell</p>  </div> <div style="text-align: center;"> <p>Plant cell</p>  </div> </div>	
Animal cell		
Plant cell		
Eukaryotic		A type of cell that contains a nucleus.
Summary:		<p>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.</p>
Self Quiz:	<ol style="list-style-type: none"> 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? Mitochondria. 4 The cells genetic materials are contained where? Nucleus 5 What cell does not have a Nucleus? Prokaryotic cell. 	

THS Knowledge Organiser Homework

Year 7 English

Section of Reading knowledge organiser for homework: 4 Mood Words

Key constructs: Writers adapt **tone** and **style** to suit their **audience** and **purpose**.

Task/s:

1. Read the reading knowledge organiser section 4.
2. In the "Notes from KO" section, choose 5 words that are relevant to the setting, characters or storyline of Frankenstein. Write one in each box.
3. In the "my notes" section, describe a scene or character that matches each word you have selected.
4. In "Summary," summarise the play so far in one paragraph, using as many of the words from the "notes from KO" section as you can.
5. Write five self-quiz questions about the play so far using your key terms.

2. Notes from KO:	3. My notes from KO:
eerie	An eerie atmosphere is created by the stormy weather at the start of the play.
sinister	A sinister atmosphere is created as Frankenstein experiments to make dead things come alive.
frustrated	Frankenstein has made people frustrated by his experiments who think this is wrong, especially Elizabeth.
shocked	There are lots of times when characters feel shocked in the play.
hopeful	Frankenstein was hopeful that his amazing experiment would be a success.
4. Summary: Frankenstein could be seen as a sinister play as his eerie experiments were to do with the dead coming back to life. He frustrated those around him but Frankenstein was a hopeful character and people were relieved when they found out the monster was not so monstrous after all.	
5. Self-Quiz and mark	
1 How would you describe the mood when the monster awakes in the storm? eerie	
2. What is sinister about the play? The fact that Dr Frankenstein is digging up bodies and using parts to create a new being.	
3. Which character is most frustrated and why? Elizabeth hardly sees Frankenstein and she is most frustrated.	
4. Who feels shocked in the story and when? Clerval feels very shocked when he sees what Frankenstein has created and the shock increases when the monster comes alive.	
5. Who is hopeful in the play? When the monster comes alive I think he is hopeful that he will be looked after.	Mark 5 /5

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

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

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

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

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

- Sublist 10**
1. convinced
 2. persistent
 3. integrity
 4. conceived



Most common

Least common

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 ?	Command	How do I respond in my writing ?	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.	Explore	Music: To investigate, examine and look into with an open mind about what might be found and developed.	Produce	D&T: Draw or design an isometric or orthographic drawing
Apply	Music: To use knowledge, skills and understanding and to employ appropriate techniques when developing and progressing ideas.	Express	Maths: Re-write in another form, some working may be needed.	Prove	Maths: More formal than 'show', all steps must be present. In the case of a geometrical proof, reasons must be given.
Arrange	History: Put the factors in an order and then justify your choices	Factorise	Maths: Insert brackets by taking out common factors.	Prove algebraically	Maths: Use algebra in the proof.
Change	Maths: Usually convert from one unit to another; either using known metric unit conversions or the use of a conversion graph.	Factorise fully	Maths: Insert brackets by taking out all the common factors.	Realise	Music: To achieve, attain and/or accomplish your intentions.
Collate	Gather and organise your ideas logically	Find	Maths: Some working will be needed to get to the final answer.	Recommend	Put forward or suggest an answer that is suitable for the question
Comment	Write an informed opinion	Give	Typically a very short, undeveloped answer Synonyms: state, name and identify.	Record	Music: To document ideas, thoughts, insights and responses to starting points in visual and written annotated form.
Consider	To think through, review, reflect on, and respond to given information	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	Refine	Music: To improve, enhance and change elements of your work for the better.
Convert	Computing: change the form, character or function of something	How far do you agree...	History: Examine the evidence and form a detailed opinion	Research	Music: To study in detail, discover and find information about.
Demonstrate	Music: To show, exhibit, prove or express such things as subject specific knowledge, understanding and skills.	How important was...	History: Judge the importance of the factor and then compare relative to others	Respond	Music: To produce personal work generated by a subject, theme, starting point, or design brief.
Design	Computing: produce a plan, simulation or model	Identify	Provide an answer from a number of possibilities	Review	Review is to explain/evaluate e.g. write about and assess the importance, quality or value of the topic
Determine	Science: Use given data or information to obtain an answer	Interpret	Dance: Translate information into recognisable form. Other subjects: examine information for patterns and causation	Show	Show structured steps or evidence or all workings needed to get to a given answer
Develop	Music: To take forward, change, improve or build on an idea, theme or starting point.	List	Provide the information in a list rather than continuous writing	Simplify	Maths: Simplify the given expression
Draw	Produce a diagram or picture. Note: this command is often linked with 'label' or 'annotate'.	Match	Link or pair-up a definition to the a key term	Simplify fully	Maths: Simplify the given expression. Answer must be given in its simplest form
Estimate	Science: Assign an approximate value	Plan	Science: Write a method used extended bullet point method—unique to writing in Science!	Solve	Maths: Find the solution of an equation or inequality. Computing: Obtain the answer(s) using algebraic/numeric/graphical methods.
Evidence	To show, prove, support and make clear or verify something.	Predict	Science: Suggest the most likely outcome	State	Music: to express clearly and briefly your intentions.
Expand	Maths: Remove brackets	Present	Music: To give a response to an idea, theme or starting point that shows a personal, meaningful and organised fulfilment of intentions.	Tick	Put a mark to indicate that something is correct
Expand and simplify	Maths: Remove brackets and the collect like terms.	Produce	D&T: Draw or design an isometric or orthographic drawing	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.

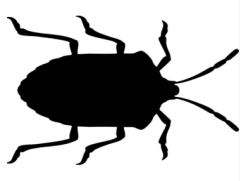
Command	How do I respond in my writing ?
Analyse	Systematically break down the theme of the question into parts and examine each in turn. You should include description, explanations and evidence to reach conclusions.
Annotate	Annotations are extended labels. When annotating, you should write brief descriptive 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 and 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 this. 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. <i>Synonyms are: give/name or identify.</i>
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 only earn marks for writing in the appropriate way in exam questions

know suitable to the question

THE 'TRIPLE C' TECHNIQUE

The 'Triple C' technique for question deconstruction stands for 'Colour Code Complex' 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)

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 technique: BUGS and Triple C

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

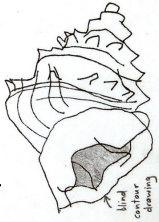
Judge the effectiveness by evaluating strengths, weaknesses and opportunities to change something

Art Year 7 Skill

1. Sketching a line – 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- 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 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.



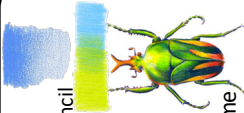
4. Checklist for a successful drawing
Choice of object – In drawing this object you will be able to demonstrate your skills
Sharp pencil – To help you add accurate detail
Size – work large so you can fit in more visual information
Shape – ensure the shape is accurate
Sketching you have used a sketched 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

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

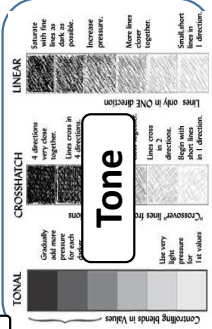


8. Oil Pastel

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.



5. BASIC ELEMENTS



Creativity

13. Composition

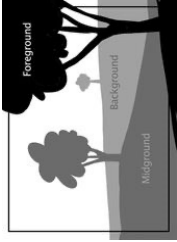
Landscape



Portrait



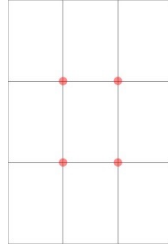
14. Foreground/Mid-ground/Background



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.

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?

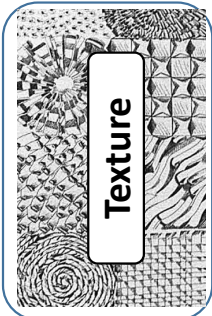
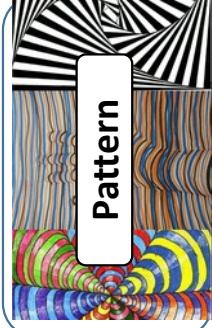
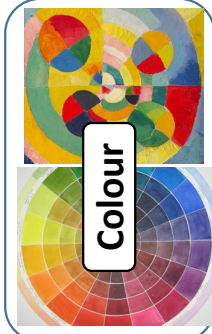
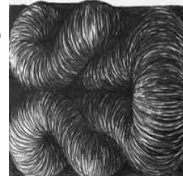
11. Organic forms objects like seed pods, shells, bugs and butterflies..... These objects have curved edges.....

12. Peter Randall- Page

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

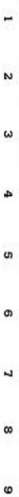
Connections- Natural forms, Greek and Roman art.
 Randall-Page uses direction shading to create the illusion that the drawing is 3d.



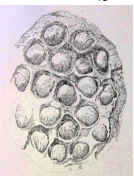
ART

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. 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) 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.

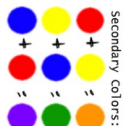


20. How to paint with water colour
 Start with the background, paint the whole space
 Build up the tones in the back ground
 Sketch the outline
 Start with the lightest tones
 Add brush marks to create layers working from lightest through to darkest colours.
 Add the detail last.

Colour



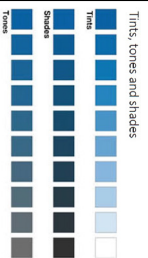
Primary colours



Secondary colours

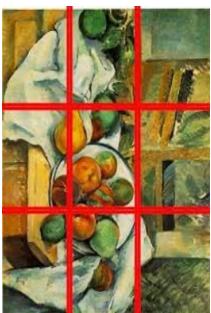


Complementary
 Blue and orange
 Red and green
 Yellow and purple



Harmonious colours are colours that go well together. Warm 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



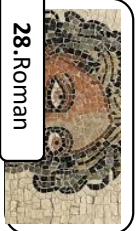
25. Prehistoric



26. Egyptian



27. Greek



28. Roman



29. Medieval



30. Renaissance



31. Impressionism



32. Modern



Tiverton High School Year 7 Computing Autumn Term Knowledge Organiser

Hardware and software

Key Construct 3: **Computer Systems**

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

Software means the **programs** that it uses.

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

Without software, the hardware would be useless, it would not have any instructions to follow.

Operating systems, device drivers and **utilities** are examples of **systems software**.

Without an operating system, a modern computer would be too difficult to use.

General purpose **software applications** include **Word Processing, Spreadsheets, Graphics Packages**.

Devices and components

Key Construct 3: **Computer Systems**

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

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

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**.

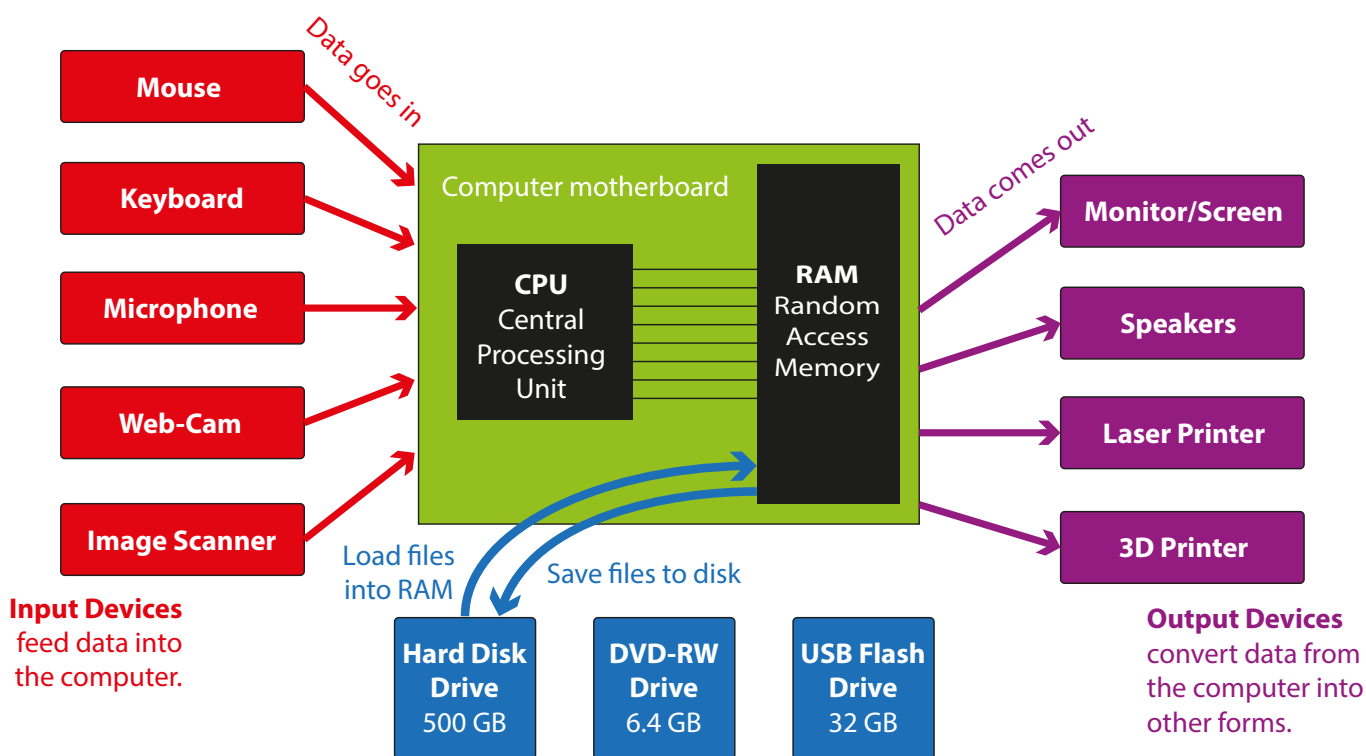
A computer has a **processor** inside it (called a **CPU**).
The processor **executes** each instruction to carry out a program.

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 is lost when the power is turned off**.

Parts of a computer system



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

Working with text | Key Construct 1: Working with Software and Documents

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

It also lets you add **pictures, tables, page numbers** and other things to your document.

Always make it clear what your document is about. Use a large, bold **heading**.

Divide 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**.

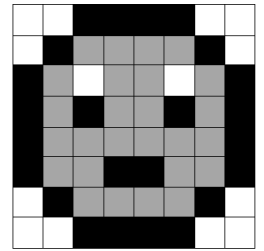
Working with pictures | Key Construct 1: Working with Software and Documents

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 binary digits... **1s** and **0s**.



Working with numbers | Key Construct 1: 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 **spreadsheet 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**.

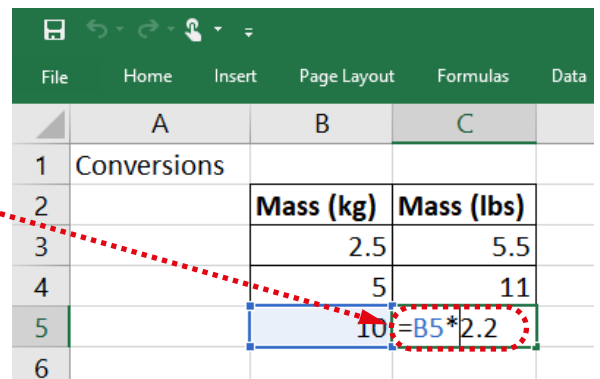
A spreadsheet can **calculate** things for you. Instead of typing in a data value into a cell, you can type in a **formula**.

A formula always begins with the **=** sign.

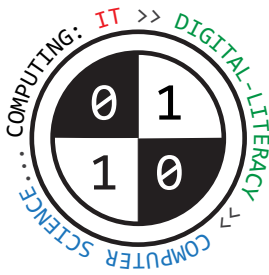
This sign tells the spreadsheet to **work something out for you**.

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"



	A	B	C
1	Conversions		
2		Mass (kg)	Mass (lbs)
3		2.5	5.5
4		5	11
5		10	=B5*2.2
6			



Tiverton High School Year 7 Computing Spring/Summer Terms Knowledge Organiser

Creating web-pages using HTML | Key Construct 2: Working with Software and Documents

Web-pages can be **displayed** or **viewed** in a program called a **web-browser**.



Web-pages can be **created** using a special language called **HTML** (Hyper Text Markup Language).

When creating a web-page, a person adds special codes called "HTML **tags**" into their document. The tags tell the web-browser exactly **how** to display parts of the document.

A web-page is made up of 2 separate parts: the **HEAD** and the **BODY**.

The **HEAD** section contains **important settings** about the web-page that you cannot actually see in the main browser window.

The **BODY** part contains **all the information that you will be able to see when the web-browser loads the web-page**.

Some tags can also contain extra useful information for the browser to use. These details are placed **inside** the tag. They are called **attributes**. A good example is the **IMG** tag. When typing an **IMG** tag into your web-page, you can add extra information to set the **width** and the **height** of the picture so the web-browser displays it correctly.

HTML tags for creating web-pages | Key Construct 2: Working with Software and Documents

<HTML> </HTML> makes a web-page that can be displayed in a web-browser program.

<HEAD> </HEAD> makes the **head** section of the web-page. This holds important **settings** for the web-page.

<BODY> </BODY> makes the **body** of the web-page. Anything inside the body section will be **displayed** in the web-browser.

<TITLE> </TITLE> must be used **inside** the head section. This sets the **title** (or **name**) of the browser window.

<H1>Exclusive!</H1> makes a large **heading/headline**.

**** inserts a **picture** into the page, setting out how large it should be.

Click here creates a **hyperlink** so a person can **jump** to another web-page.

Here is an example of a very simple web-page made using HTML:

```
<HTML>
  <HEAD>
    <TITLE>Web-Page!</TITLE>
  </HEAD>
  <BODY>
    <H1>Look!</H1>
    This is a simple web-page that can be displayed in a browser.
  </BODY>
</HTML>
```

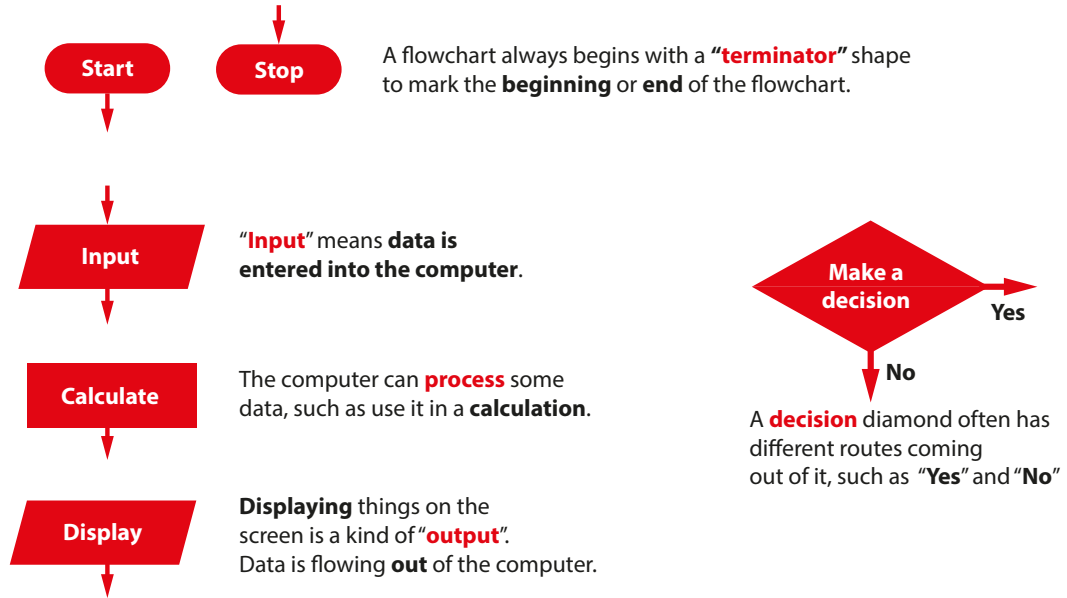
Planning solutions to problems | Key Construct 6: Problem Solving and Programming

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



Creating and testing computer programs | Key Construct 6: Problem Solving and Programming

You can create software by writing new programs. You write the program instructions using a **programming language**.

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

```
INPUT width
```

Output means displaying something on the screen:

```
PRINT "Your final score is"  
PRINT score
```

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

```
x = 3          password = "Cu5tArd"
```

Iteration means repeatedly executing parts of the program again and again (looping):

```
FOR time = 1 TO 10      WHILE time < 60
```

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

```
IF lives > 0 THEN  
    PRINT "Lost a life"  
ELSE  
    PRINT "Game Over"  
ENDIF
```

Arithmetic operators

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

Relational Operator Symbols when making comparisons

<	less than	>	greater than
<=	less than or equal to	>=	greater than or equal to
==	is the same as	!=	not the same as

DESIGN & TECHNOLOGY

Design & Technology

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

4. 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?

1. Health & Safety

A Hazard is – Something that can cause you or others harm

A Risk is – The likelihood or severity of the hazard occurring

A Control Measure is –

Something that is put in place to stop or reduce the risk of the hazard occurring.

2. 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

5. Materials: Timber

A hardwood is from a broad-leaved deciduous tree which has a close grain due to its slow growth. The annual growth rings are close together.

E.g. **beech, oak (pictured), 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 (pictured) 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 or wood that is recycled or waste wood mixed with a formaldehyde-based glue and compressed.

3. 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

6. Metals There are two main types of metals, ferrous and non-ferrous. Put simply, **ferrous metals** contain **iron and non-ferrous metals** do not. **Non-ferrous metals** are rarer, more valuable and resistant to corrosion than ferrous metals. Ferrous and non-ferrous metals can both be recycled. Magnetising the iron in ferrous metals can separate ferrous and non-ferrous materials.

Alloys A metal alloy is a substance that combines more than one metal or mixes a metal with other non-metallic elements. For example, brass is an alloy of two metals: copper and zinc.

	Ferrous Metals	Non-Ferrous Metals
 Magnetic	✓	✗
 Value	↓	↑
 Resistance to Rust/Corrosion	↓	↑
 Weight	↑	↓
 Recyclable	✓	✓

7. Plastics: Thermofforming 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.

8. 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

9. 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.

10. Types of glues 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



11. Mono-printing is a single one-off print with ink onto a surface or fabric.
Screen printing is created when a stencil has been used to lock out certain areas within a design. It can be used a multiple of times in batch production processes.

12. 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.



13. 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.

14. 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?

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

2. Useful Sentence Starters

- Adverbials** E.g. Frantically, the...
- ed words** E.g. Ragged, alerted
- ing verbs** E.g. Staggering, slithering
- List of adjectives** E.g. Stagnant, murky, brown water
- Comparisons** E.g. Unlike the larger African elephant, the...
- A noun to start** E.g. Wildebeest migrate every year
- Simile starts** E.g. Like a snake, the ...
- Prepositions** E.g. Next to the waterfall...
- When...**
- As ...**
- Although ...**



6. Structuring Your Writing

Non Fiction:

- Introduction/hook
 - Connective
 - Topic sentence
 - Conclusion
- Creative Prose:**
- Extreme close up
 - Point-of-view shot – describe as if looking from a specific character's viewpoint.
 - Panning shot – describe as if moving across
 - Bird's-eye view – describe from a high viewpoint

5. SPAG: can you write your own examples?

- A full stop is used to mark the end of a complete idea, with clear tense. E.g. He was running.
- 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. Super Spellings

- stagnant
- picturesque
- stampede
- cacophany
- azure
- serene
- tumult
- wildebeest
- throng
- bristled
- undulating
- disorientated
- exhilarating
- transfixed
- equipment

4. Bringing your writing to life

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

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

- Calm
- Anticipatory
- Nervous
- Exhilarating
- Gentle
- Awe-inspiring
- Chaotic
- Sinister
- Foreboding
- Morose
- Disorientating
- Frenzied
- Tense
- Idyllic
- Playful
- Dignified
- Sombre
- Energetic
- Frenetic
- Aggressive.



1. Key Terms		English Year 7 Reading		4. Mood words		7. Further reading			
<ol style="list-style-type: none"> Theme: main idea or repeated idea. Analysis: a detailed examination of a piece of writing Focus: clear and sustained interest in the central idea or topic. Structure: how a piece of writing or a story is organised Inference: logical understanding or deductions made based on evidence. Empathy: understanding how a character feels. Narrator: the person telling the story. Act: the main sections of a play. Scene: the smaller sections of a play – similar to chapters in a novel. Stage directions: notes to the actor and director about how to move or speak. Monologue: a longer speech by a character to another character. Soliloquy: a longer speech by a character to themselves or the audience. Metaphor: describing something by saying it IS something else...but not literally. Simile: describing something using 'like' or 'as' to make a comparison. 		<ol style="list-style-type: none"> Individual Specific Identified Create Revealed Interpretation Significant Circumstances Effect Affect Response Definition Relevant Conventions Constant Decline 		<ol style="list-style-type: none"> Would I like to be friends with any of these characters? Why? How would I describe the main character? Do I dislike any characters? What is it about them that I don't like? Do I recognise any parts of myself in any of these characters? What do I predict will happen next? What does this character want to achieve? Was I satisfied with the ending? Why? Which character would I go on a camping trip with? If I could live in the setting of this text, would I? Why? If the main character was a colour, what colour would they be and why? 		<ol style="list-style-type: none"> Sinister Eerie Furious Frustrated Frightening Shocked Alarmed Joyful Exciting Cheerful Hopful Surprising Intriguing Impressed Relieved Amusing 		<p>His Dark Materials Trilogy - Phillip Pullman</p> <p>Wonder - R J Palacio</p> <p>Booked - Kwame Alexander</p> <p>Armistice Runner - Tom Palmer</p> <p>Kick - Mitch Johnson</p> <p>Boy 87 - Elie Fountain</p> <p>The Bone Sparrow - Zana Fraillon</p> <p>Long Way Down - Jason Reynolds</p> <p>Alone on a Wide Wide Sea - Michael Morpurgo</p> <p>Refugee Boy - Benjamin Zephaniah</p> <p>Diary of Anne Frank - Anne Frank</p> <p>Cogheart - Peter Bunzl</p> <p>Wildspark - Yashiti Hardy</p> <p>Boy in the Tower - Polly Ho Yen</p> <p>Ghost - Jason Reynolds</p> <p>Holes - Louis Sachar</p> <p>All the things that could go wrong - Stewart Foster</p> <p>Mclamander - Thomas Taylor</p> <p>Here Lies Arthur - Phillip Reeve</p> <p>Stormbreaker - Anthony Horowitz</p> <p>Boy of the back of the class - Orjali Q'Rauf</p> <p>Where the world ends - Geraldine McCaughrean</p>	
<ol style="list-style-type: none"> 2. Super Spellings 		<ol style="list-style-type: none"> 3. Big questions 		<ol style="list-style-type: none"> 4. Mood words 		<ol style="list-style-type: none"> 7. Further reading 			
<ol style="list-style-type: none"> 5. Personal response <p>The writer makes me feel... The writer makes me think... The writer helps 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...</p>		<ol style="list-style-type: none"> 6. Structuring your essay <p>Introduction What is the novel/play about? ' ____ ' by ____ is about... Analysing the text Choose what you think are the most important moments through the text that answer the question you have been asked. ____ creates presents ____ as ____ when ____. The word ' ____ ' suggests ____. This makes me... Conclusion What are your overall thoughts? Overall I feel/think....</p>							

FOOD YR 7 THE EATWELL GUIDE

Eatwell Guide

Use the Eatwell Guide to help you get a balance of healthier and more sustainable food. It shows how much of what you eat overall should come from each food group.



Source: Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland © Crown copyright 2016

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



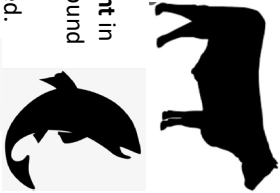
Rules of the Food Room
Aprons
Wash Hands
Tie hair Back
No running
Listen

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.

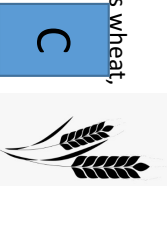
Reared- MEAT – FARM TO FORK

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,)



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

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.

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



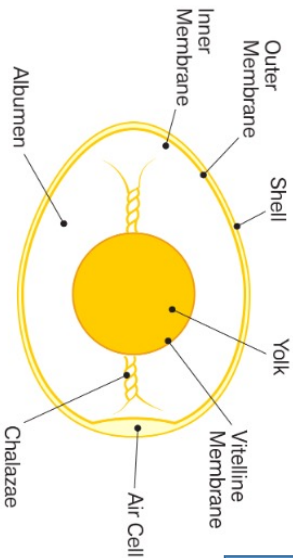
THE OVEN
Hob
Grill
Oven

F

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

EGGS

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



EGGS


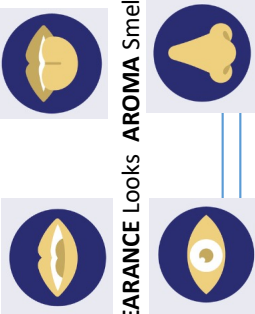
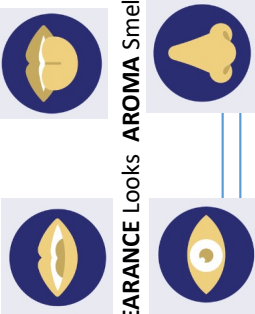
- BOILED** Soft boil = 5/6 mins
Hard boil =10 mins
- FRIED - COAGULATION** – the protein in the egg white sets solid, followed by the egg yolk
- SCRAMBLED** Gently whisked over heat until the egg coagulates
- POACHED** Crack egg into boiling water

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 burst 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																													
<p>H</p> <p>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.</p> <p>OILS AND SPREADS These contain the nutrient fat. This fat is a good fat. It comes from vegetables and is called unsaturated fat.</p>  <p>Cheesecake Base- Biscuits - Carbohydrates Topping- Dairy- Fats</p> <p>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.</p>	<p>I</p> <p>VEGETARIAN Someone who doesn't eat meat. VEGAN Someone who doesn't eat anything from an animal.</p> <p>THE SOYA BEAN – HBV PROTEIN</p> <p>OBESITY – Being largely overweight from consuming too much fat in the diet. BMI of over 30</p> <p>OSTEOPOROSIS – Not enough calcium in the diet – weak bones, bending of the spine.</p>	<p>Water and Hydration- 7 key points</p> <ol style="list-style-type: none"> 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. <ul style="list-style-type: none"> • 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 	<p>Water and Hydration- 7 key points</p> <ol style="list-style-type: none"> 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. <ul style="list-style-type: none"> • 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 	<p>Good Fridge organisation This chart represents the shelves and draws in a fridge</p> <table border="1"> <tr><td>Dairy</td></tr> <tr><td>Cooked meats/ leftovers</td></tr> <tr><td>Uncooked meats</td></tr> <tr><td>Salad, fruit and veg</td></tr> </table>	Dairy	Cooked meats/ leftovers	Uncooked meats	Salad, fruit and veg	<p>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 <u>fat</u>, <u>saturated fat</u>, <u>sugars</u> and <u>salt</u>:</p> <p>Red = High Amber = Medium Green = Low</p> <p>The more green on the label, the healthier the choice.</p> <p>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.</p>	<p>MUFFINS These use vegetable fat – unsaturated, good fat. These can be developed to make them healthier in lots of different ways.</p> <p>Muffins can be sweet – sugary (dessert) or savoury – (main course)</p> <p>SPECIFICATION A list of points that your product must have to meet the requirements of the task.</p> <p>TASTE – Flavour TEXTURE – Mouth feel</p> <p>APPEARANCE Looks AROMA Smell</p> 	<p>Check how much fat, sugar and salt is in your food</p> <table border="1"> <thead> <tr> <th>What is</th> <th>Sugars</th> <th>Fat</th> <th>Saturates</th> <th>Salt</th> </tr> </thead> <tbody> <tr> <td>High per 100g</td> <td>15g</td> <td>20g</td> <td>5g</td> <td>1.5g</td> </tr> <tr> <td>Medium per 100g</td> <td>5g</td> <td>3g</td> <td>1.5g</td> <td>0.3g</td> </tr> <tr> <td>Low per 100g</td> <td>15g</td> <td>20g</td> <td>5g</td> <td>1.5g</td> </tr> <tr> <td>Low per 100g</td> <td>5g</td> <td>3g</td> <td>1.5g</td> <td>0.3g</td> </tr> </tbody> </table> <p>Remember that the amount you eat of a particular food affects how much sugars, fat, saturates and salt you will get from it.</p>	What is	Sugars	Fat	Saturates	Salt	High per 100g	15g	20g	5g	1.5g	Medium per 100g	5g	3g	1.5g	0.3g	Low per 100g	15g	20g	5g	1.5g	Low per 100g	5g	3g	1.5g	0.3g
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FOOD YR 7 THE EATWELL GUIDE

NUTRITION

FOOD PROVENANCE

FOOD IN INDUSTRY

FOOD SCIENCE

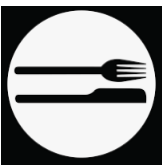
FOOD SAFETY

FOOD CHOICE

COOKING AND FOOD PREPARATION

BREAD

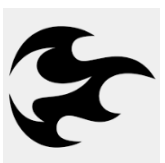
Bread is made using the biological raising agent yeast. **YEAST is a micro-organism.** Yeast needs 5 things to grow and breathe.



Food



Oxygen



Time



Warmth



Oxygen

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).



N

HEALTHY EATING

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:

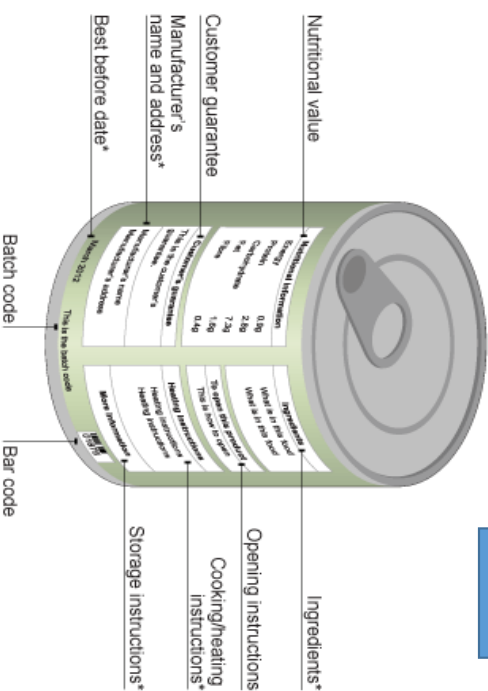
Protect it, make it easier to transport, provide the customer with information **Types of packaging:**

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.



Autumn 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

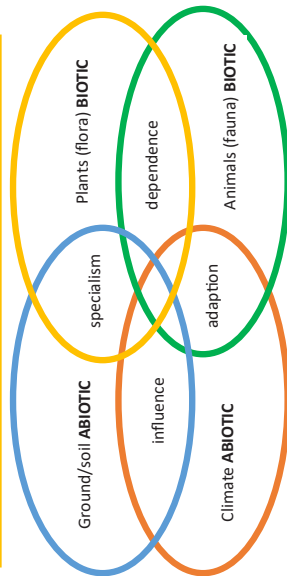
GEOGRAPHY 7.1. ECOSYSTEMS

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.

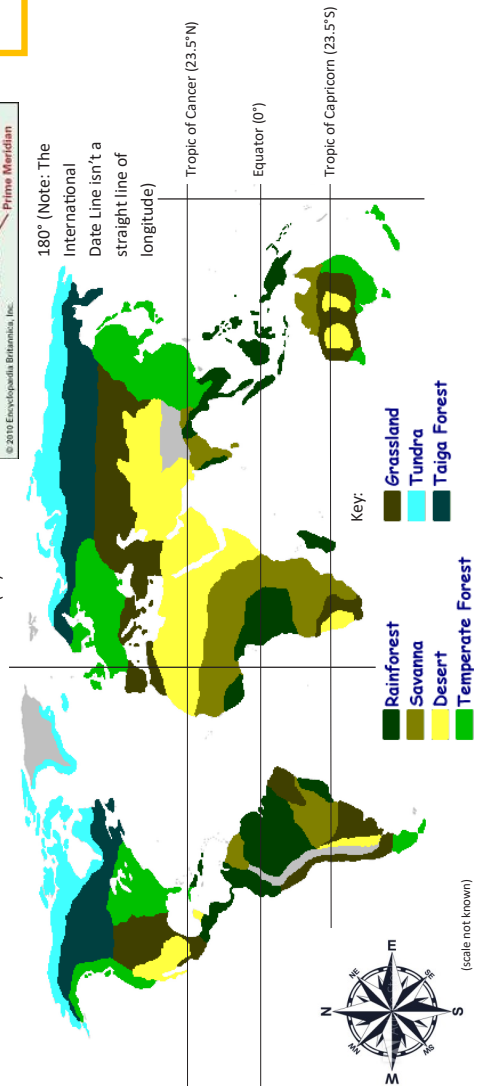
These four components (biotic and abiotic) all influence each other; this is called **interdependence**. See the **Venn diagram** set out below.

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.



3. Global Biomes and key latitudes

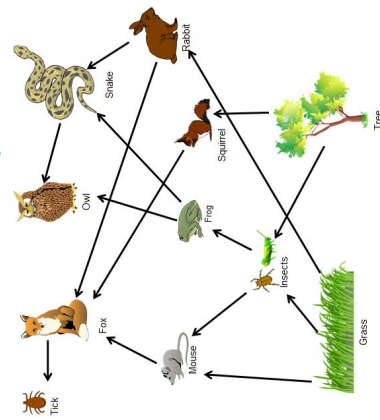
Greenwich Prime Meridian Line (0°)



4. Food chain example:



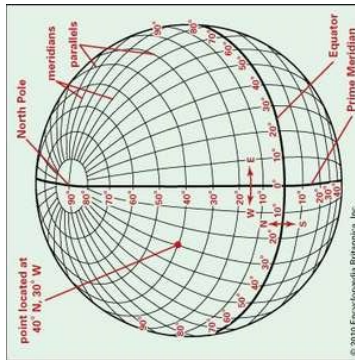
4. Food web example:



Ecosystem Key terms

Ecosystem	biome	biotic	abiotic
interdependence	food web	producers	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	

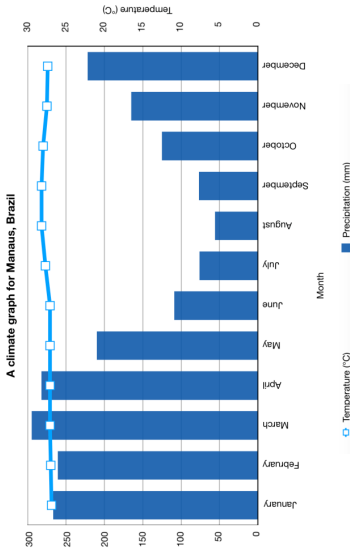
A04 - Longitude and Latitude



180° (Note: The International Date Line isn't a straight line of longitude)

Tropic of Cancer (23.5°N)
Equator (0°)
Tropic of Capricorn (23.5°S)

A04 Climate Graphs and Analysis



A04—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 as the line.
Discrete data	Data that can only take particular values. Rainfall is discrete on climate graphs (by month) and therefore shown as non-touching bars.

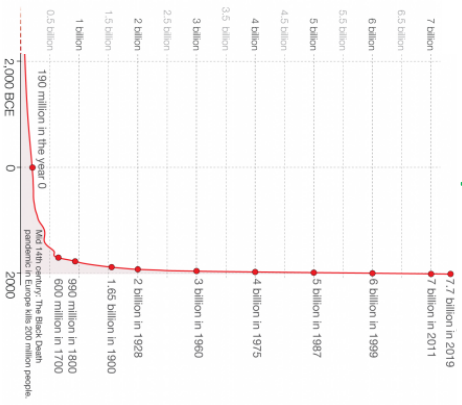
3. 5. 6. 7. Major global biomes overview:

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

Population
key terms

1. World Population Growth

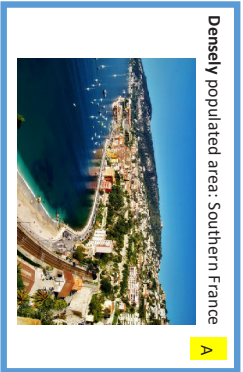


2. Natural Change

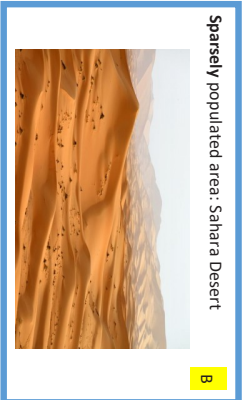
$$B.R. - D.R. = N.C.$$

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**



Sparingly populated area: Sahara Desert **B**

7. Migration

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

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'.



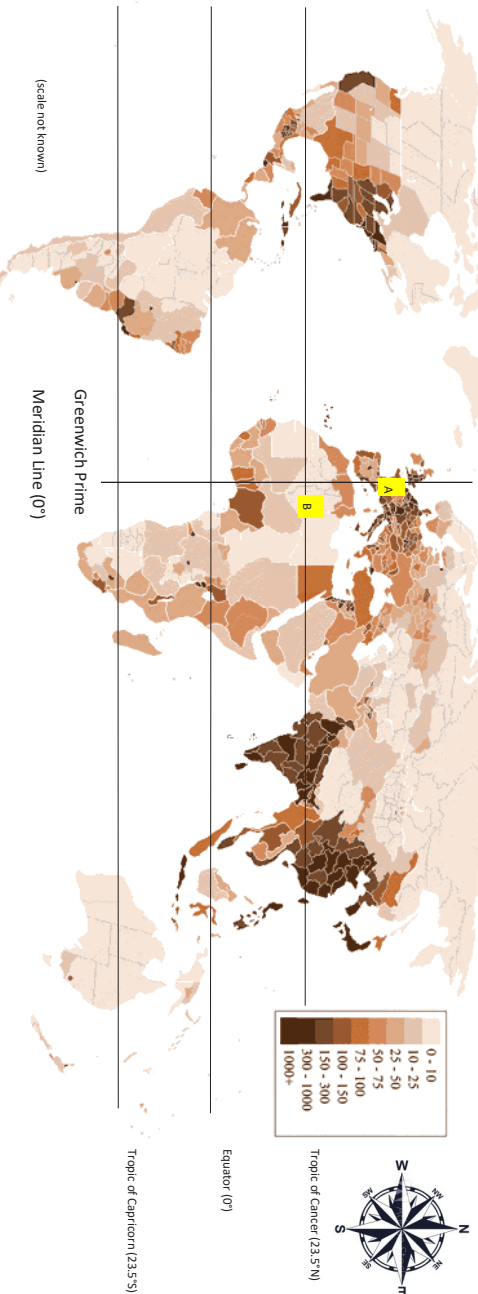
Push Factors

- few services
- lack of job opportunities
- untidy life
- poor transport links
- natural disasters
- wars
- shortage of food

Pull Factors

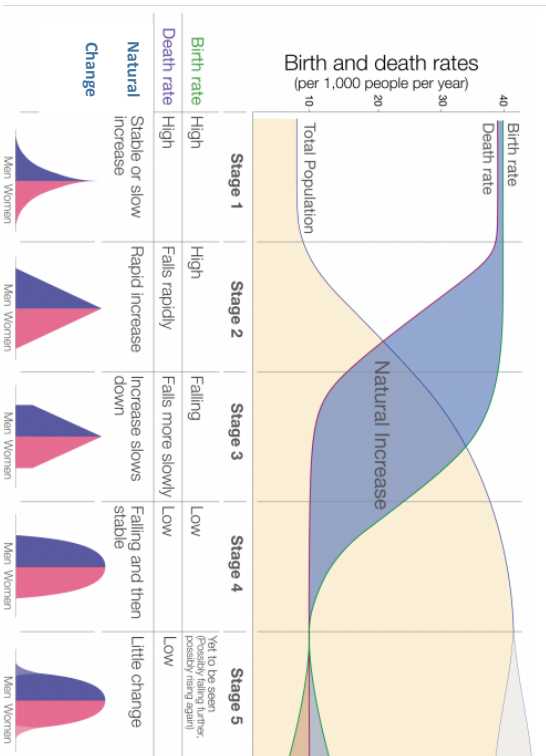
- access to services
- better job opportunities
- more entertainment facilities
- better transport links
- better housing
- hope for a better way of life
- family links

6. Global Population Density (people per km²)



3. The demographic transition model

Birth and death rates (per 1,000 people per year)

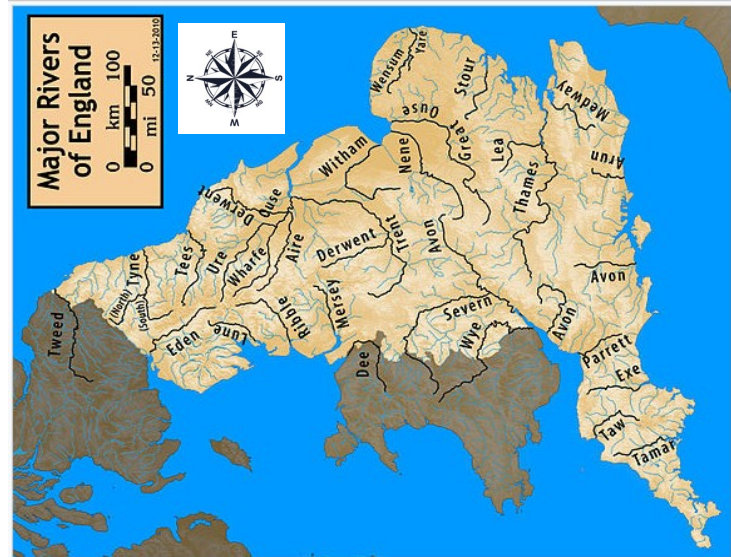


4. and 5. Population Pyramids

Key terms definitions

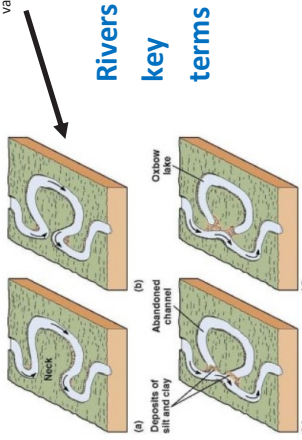
Birth rate	The number of live births per 1000 of population per year.
Death rate	The number of deaths per 1000 of population per year.
Natural Change	The outcome of difference between annual birth and death rate
Natural increase	A growing population due to more births than deaths per year
Natural decrease	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.

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 by the flowing water.
Hydraulic Action	Powerful flow of water blasts off loose rocks, stones and fine silt from the river banks and bed.



Rivers key terms

Drainage basin	watershed	long profile	cross profile	erosion	hydraulic action	abrasion	attrition
solution	Valley	source	confluence	waterfall	rapids	V-shape valley	interlocking spurs
gorge	meander	river cliff	river beach	mouth	channel	flood plain	levee
gradient	banks	flood	discharge	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

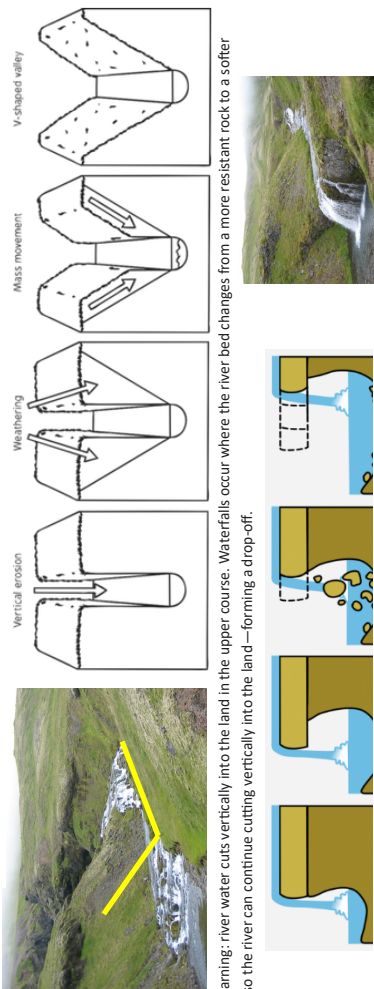
	Cross profile	Long profile	Cross profile	mouth
UPPER COURSE				
MIDDLE COURSE				
LOWER COURSE				

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 valley floor. middle course when moving slowly—this builds floodplains.

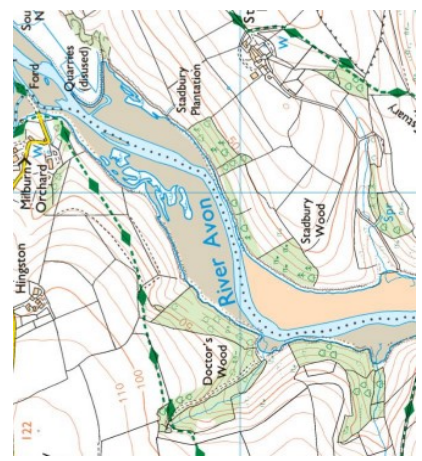
Source	The beginning of a river	Long profile	The shape of the river's journey from source to mouth
Mouth	Where a river flows into the sea or lake	Cross profile	The shape of land across the river valley
Tributary	Another river that joins the main river	Gradient	The angle of the ground the river flows 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.



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—422m) 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.

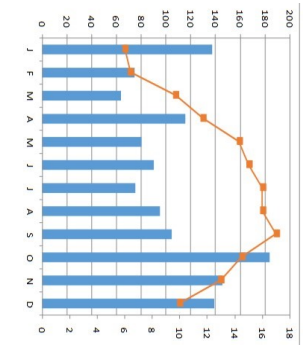
Tropical Maritime airmass
Mild to warm, wet air from the southern North Atlantic.

Tropical Continental airmass
The most common (prevailing) airmass affecting the UK giving a mild and wet climate the year round. Cold air in the Spring and Winter months but warm in Summer and Autumn

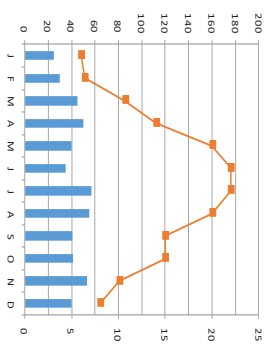
Polar Continental airmass
Dry air the year round. Cold air in the Spring and Winter months but warm in Summer and Autumn

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

UK Climate for the North-west

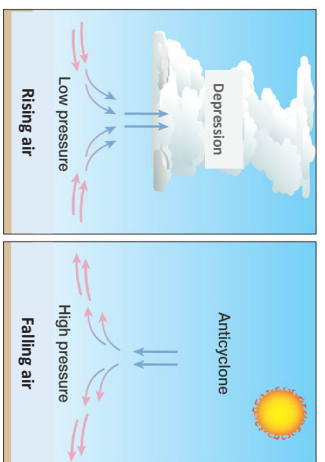


UK Climate for the South-east



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



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

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

7. Latitude

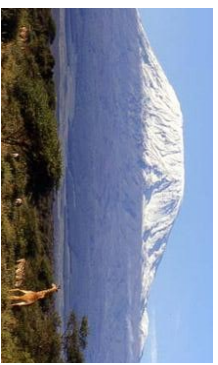
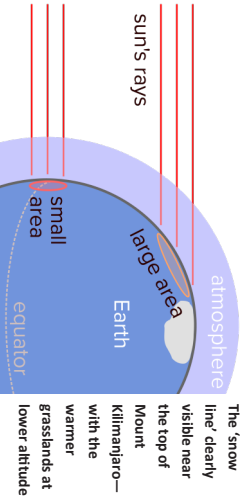
Locations at the equator receive a concentration of energy from the sun on a small surface area all year, so they are permanently hot climate zones.

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

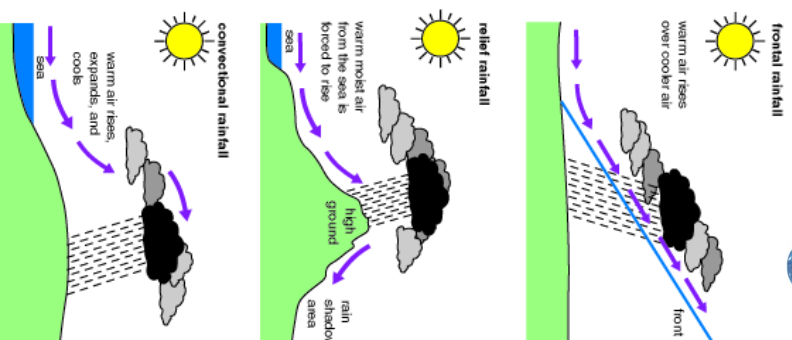
At the North and South Pole, the sun's energy goes straight past and barely warms the surface—even in the brief summer time, so they are permanently cold all year.

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.

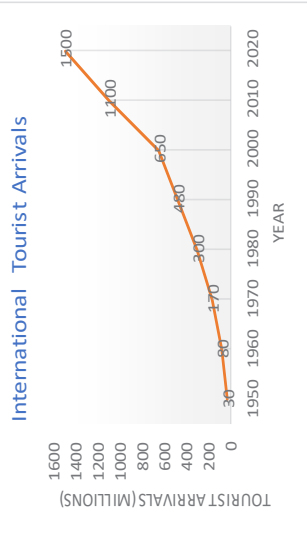


6. Types of Rainfall



GEOGRAPHY 7.5. TOURISM

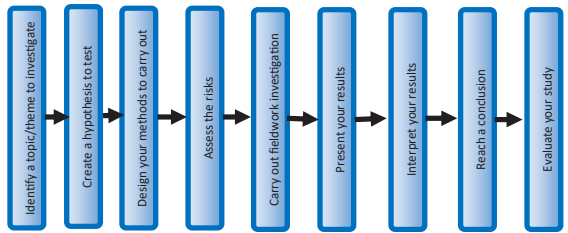
1. & 2. Global Growth of Tourism



Since the 1950s, tourism has grown **exponentially** (*continuously increasing*). There is a 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!

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

3. The '6 Ss' of Tourism

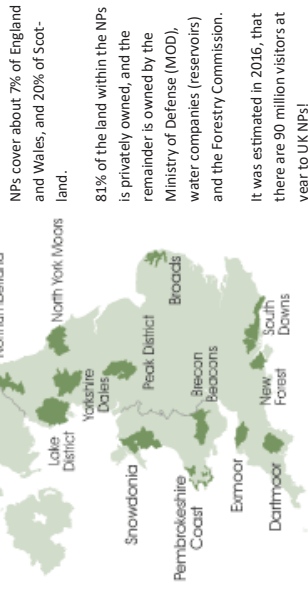
People are drawn to destinations that might be nearby to where they live, or on the far side of the world. Every destination has at least one the '6 Ss' that attract tourists. The '6 Ss' are: **sun, sea, sand, snow, scenery or social**.



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).**

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 a year to UK NPs!

5. Impact of tourism on National Parks

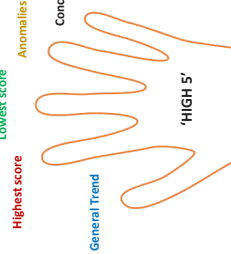
Positives	Negatives
Protects the beautiful natural environments of the UK from development	Some areas within some NPs are under huge pressure from being too popular with tourists.
Cultural heritage sites within National Parks are protected	Major traffic issues in 'honeypot' locations. Huge queues build 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 can't 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 be developed to cope with the numbers of people.
International tourists are drawn to the UK's 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 reservists 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.	

Geographical enquiry terms and skills

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

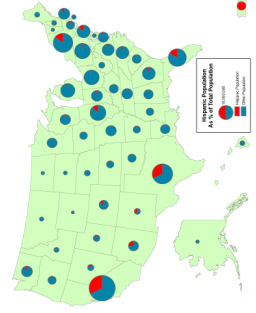
'High 5' Interpretation

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!

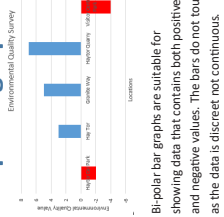


Field sketching



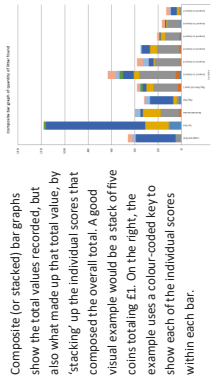
A field sketch is a simplified, diagrammatic representation of a view or landscape. You can add labels or annotations afterwards. Start with the horizon (or background lines), then do the **foreground** (immediately in front of you) before filling in the **mid-ground**—prioritising the main feature(s);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



GEOGRAPHY COMMAND WORDS

ADDITIONAL

EXAM SKILLS

Command

How do I respond in my writing ?

Annotate
Annotations are extended labels. When annotating, you should write brief descriptive or explanatory sentences linked to features referenced in the question.

Justify
Write a convincing argument to reach a conclusion supported by evidence.

Assess
Like analyse, assess means to break the theme of the question down into parts but offer your opinion on the successes and failures to reach an informed judgement.

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.

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.

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.

Compare
An effective comparison will make clear references to both similarities and differences between the items within the questions.

Suggest
Explain a possible reason for theme of the question. 'Suggest' questions are asking you to put forward an idea you have.

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.

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.

Contrast
Writing to show contrast will make clear references to just differences between the items within the questions.

GEOGRAPHY ASSESSMENT OBJECTIVES

Describe
Write details of what the feature/item or theme are like within the question. Do not explain as a description requires no explanation.

AO1
Demonstrate **knowledge** of location, places, processes, patterns, environments of different scales

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.

AO2
Demonstrate geographical **understanding** of concepts and how they are used in relation to places, environments and processes; interrelationships between places, environments and processes.

Draw
Using a pencil, produce a simple diagram (plan view/cross-section/field sketch or box style) of the theme within the question. Quite often, you will be asked to label or annotate your drawing too

AO3
Application of knowledge and understanding to interpret, analyse and evaluate information and issues to make judgements.

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.

AO4
Select, adapt and use a variety of **skills** and techniques to investigate questions and issues and communicate finding.

Explain
Give reasons for 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.

AO4
Select, adapt and use a variety of **skills** and techniques to investigate questions and issues and communicate finding.

Identify
Identify the name of a feature or item referenced in the question. Synonyms are: give/name or state.

AO4
Select, adapt and use a variety of **skills** and techniques to investigate questions and issues and communicate finding.

Label
Labelling is simply naming features or parts of something; these are not sentences


AO4
Select, adapt and use a variety of **skills** and techniques to investigate questions and issues and communicate finding.

'Using a case study or an 'example you have studied...'

When commanded to 'use an example' in a question response, you must try to link your knowledge to a real world example as evidence to demonstrate that you have understand beyond just a theory or idea.

In addition to learning lots of 'examples' at GCSE level, you will learn a small selection of detailed 'case studies'; these cover knowledge of specific important geographical events or phenomena, or important places. Unlike 'examples', you will definitely get examined on your knowledge of 'case studies' at GCSE level

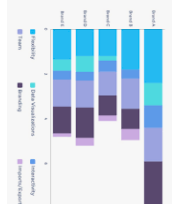
Examples of 'Figures' in exams:




Photos



Maps



Diagrams



Graphs

Assessment Objectives are the ways that your knowledge of the subject could be assessed using the command words. For example, the command word 'explain' would be AO2, and 'evaluate' would be AO3.

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

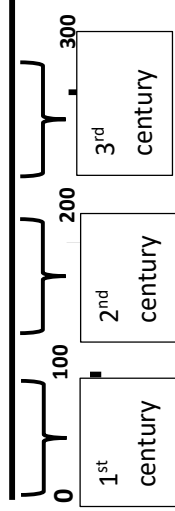
Later Middle Ages: 1000-1500 AD

("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

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

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 anarchy.

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?

Year 7 Spring Term

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 Hasting 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 **Bible** to be in Latin. They protested that it **should be in English** so people could understand it.

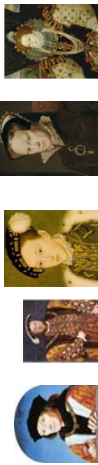
However, some churchmen did their jobs well, looked after the poor and sick and gave people hope in their difficult lives

History

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

The Tudors...

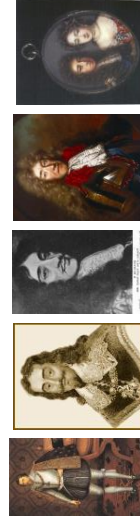
A When King Richard III is killed in 1485, the TUDOR royal family comes to the throne. There are 5 (or 6!) Tudor monarchs:



- 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?

What do I need to know to make progress?

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.

Year 7 Summer Term

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 (\cap)
- Union:** two ellipses that join (\cup)
- 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 { }

$\xi = \{\text{the numbers between 1 and 50 inclusive}\}$

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

$A = \{\text{Square numbers}\}$

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

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

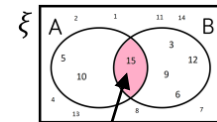
The box
Around the outside of every Venn diagram will be a box. If an element is not part of any set it is placed outside an ellipse but inside the box

Intersection of sets

Elements in the intersection are in set A AND set B

The notation for this is $A \cap B$

$\xi = \{\text{the numbers between 1 and 15 inclusive}\}$
 $A = \{\text{Multiples of 5}\}$ $B = \{\text{Multiples of 3}\}$

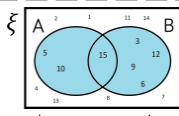


The element in $A \cap B$ is 15

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

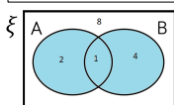


$\xi = \{\text{the numbers between 1 and 15 inclusive}\}$
 $A = \{\text{Multiples of 5}\}$ $B = \{\text{Multiples of 3}\}$

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

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

The notation for this is $A \cup B$



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 $S = \{\text{Pink, Blue, Yellow}\}$

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 = $\frac{\text{number of times event happens}}{\text{total number of possible outcomes}}$

$$P(\text{Blue}) = \frac{4}{10}$$

← There are 4 blue sectors
← There are 10 sectors overall

$$= \frac{2}{5}$$

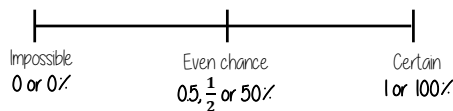
Probability notation
 $P(\text{event})$

Probability can be a fraction, decimal or percentage value

$$\frac{4}{10} = \frac{40}{100} = 0.40 = 40\%$$

Probability is always a value between 0 and 1

The probability scale



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 $\frac{1}{5}$

Sum of probabilities

Probability is always a value between 0 and 1



The probability of getting a blue ball is $\frac{1}{5}$
∴ The probability of **NOT** getting a blue ball is $\frac{4}{5}$
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	

$$P(\text{white chocolate}) = 1 - 0.15 - 0.35 = 0.5$$



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

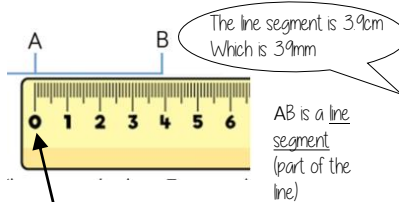


Angle Notation: three letters ABC
This is the angle at B = 113°

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

Draw and measure line segments

Conversions $1\text{cm} = 10\text{mm}$, $1\text{m} = 100\text{cm}$



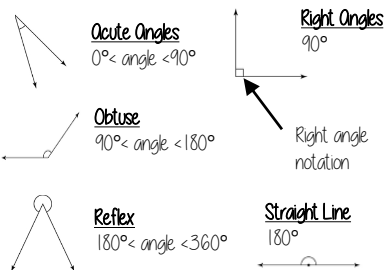
Make sure the start of the line is at 0.

Angles as measures of turn

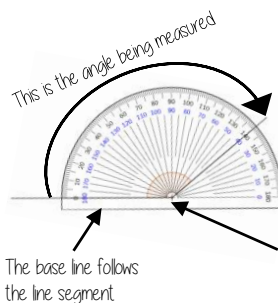
Clockwise **Anti-Clockwise**

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

Classify angles

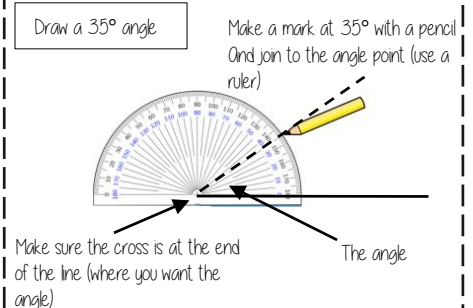


Measure angles to 180°

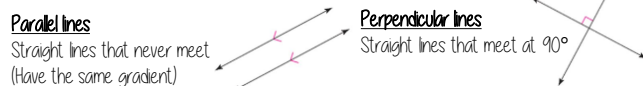


Read from 0° on the base line. Remember to use estimation. This is an obtuse angle so between 90° and 180°

Draw angles up to 180°



Parallel and Perpendicular lines



Angles over 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

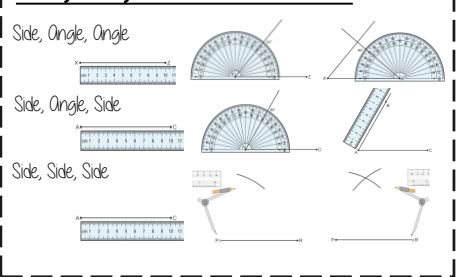
$\frac{32}{60}$ "32 out of 60 people had a dog"

This fraction of the 360 degrees represents dogs

$\frac{32}{60} \times 360 = 192^\circ$

Use a protractor to draw
This is 192°

SAS, SSS, ASA constructions



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:

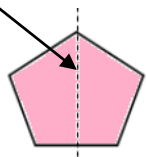
- Recognise line symmetry
- Reflect in a horizontal line
- Reflect in a vertical line
- Reflect in a diagonal line

Keywords

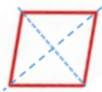
- Mirror line:** a line that passes through the center of a shape with a mirror image on either side of the line
Line of symmetry: same definition as the mirror line
Reflect: mapping of one object from one position to another of equal distance from a given line.
Vertex: a point where two or more-line 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)



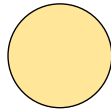
Rhombus
two lines of symmetry

Parallelogram

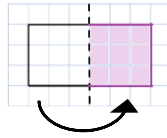
No lines of symmetry



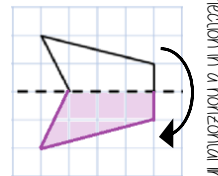
A circle has an infinite amount of lines of symmetry



Reflect horizontally/ vertically (1)



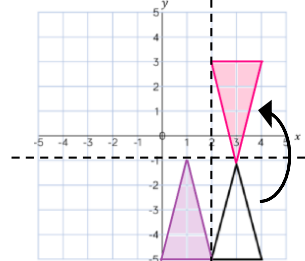
Reflection in a vertical line



Reflection in a horizontal line

Note: a reflection doubles the area of the original shape

Reflection on an axis grid

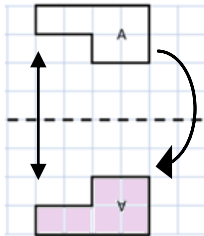


Reflection in the line $x=2$

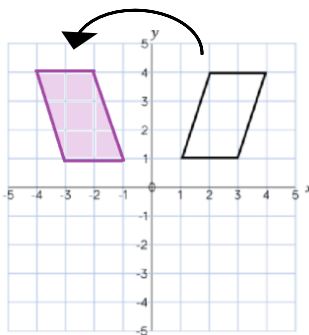
Reflection in the line $y=2$

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 $x=0$



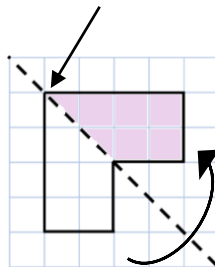
Lines parallel to the x and y axis

REMEMBER

Lines parallel to the x-axis are $y = \dots$
 Lines parallel to the y-axis are $x = \dots$

Reflect Diagonally (1)

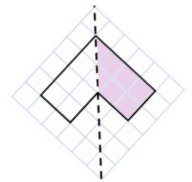
Points on the mirror line don't change position



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)

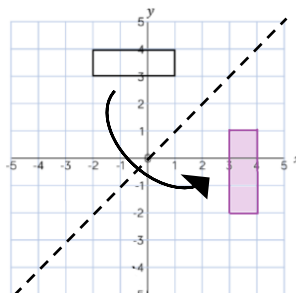


Drawing perpendicular lines

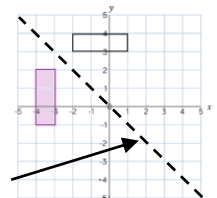
Perpendicular lines to and from the mirror line can help you to plot diagonal reflections

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?

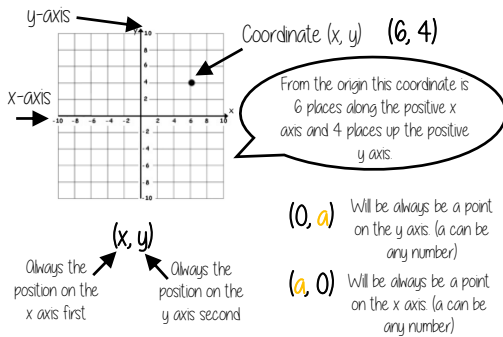
By the end of this unit you should be able to:

- 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

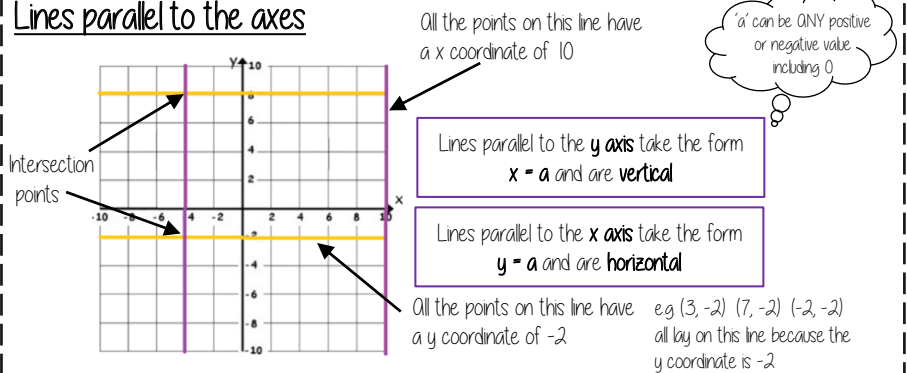
Keywords

- 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

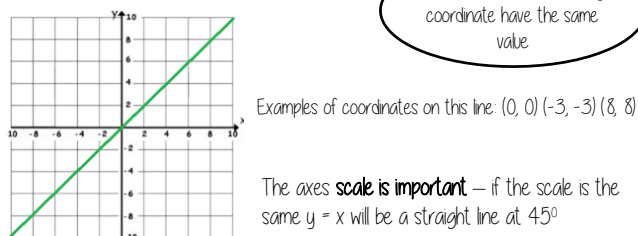
Coordinates in four quadrants



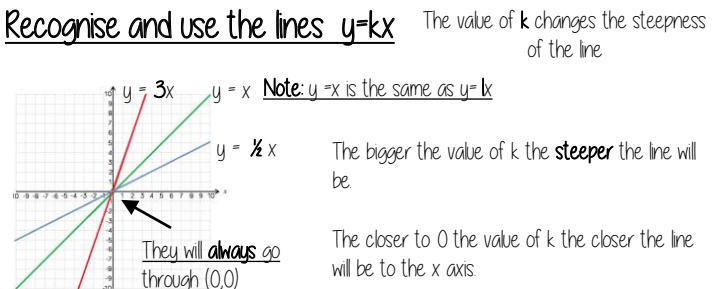
Lines parallel to the axes



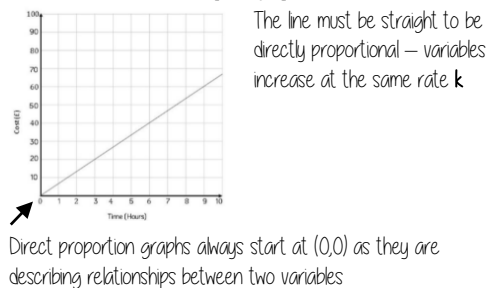
Recognise and use the line $y=x$



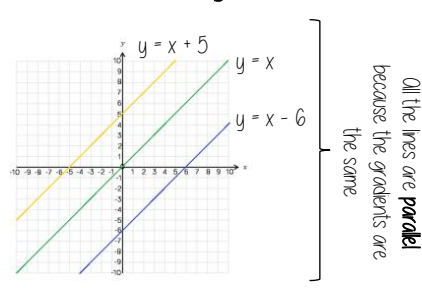
Recognise and use the lines $y=kx$



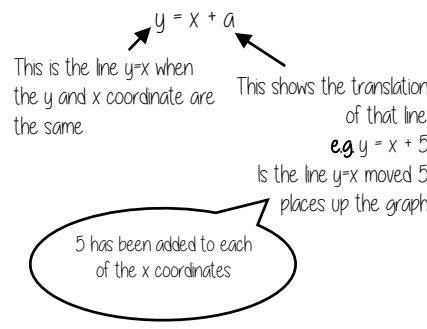
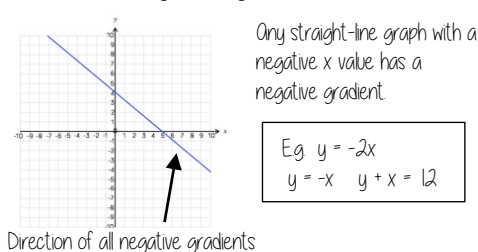
Direct Proportion using $y=kx$



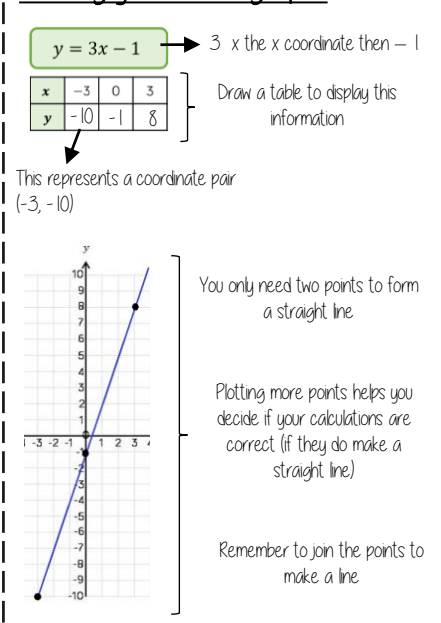
Lines in the form $y = x + a$



Lines with negative gradients



Plotting $y = mx + c$ graphs



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...

$3x, 6x, 9x \dots$

This list continues and doesn't end

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

45 is not a multiple of 3 because it is 3×15

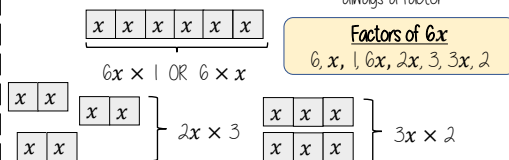
Not an integer

Factors

Arrays can help represent factors

Factors of 10: 5×2 or 2×5 10×1 or 1×10

Factors and expressions



Prime numbers

- Integer
- Only has 2 factors
- and itself

The first prime number
The only even prime number

2

Learn or how-to quick recall...

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

Square and triangular numbers

Square numbers

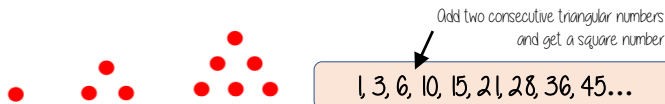


Representations are useful to understand a square number n^2

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

Triangular numbers

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



Common factors and HCF

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

1 is a common factor of all numbers

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

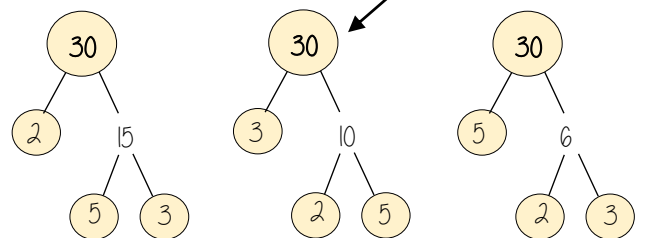
$\frac{3}{5}$ and $\frac{7}{10}$

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

eg 60: 30×2 $2 \times 3 \times 5 \times 2$

150: 30×5 $2 \times 3 \times 5 \times 5$

Conjectures and counterexamples

Conjecture

1, 2, 4, ...
The numbers in the sequence are doubling each time.

Counterexamples



This sequence isn't doubling it is adding 2 each time.

A pattern that is noticed for many cases

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.
Milli: 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 ●●●●●●●●●●

●●●● Factors of 10 10 x 1 or 1 x 10
 5 x 2 or 2 x 5 1, 2, 5, 10

The number itself is always a factor

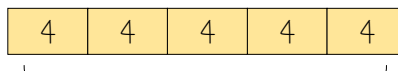
Square numbers have an ODD number of factors

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



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

Lowest Common Multiples

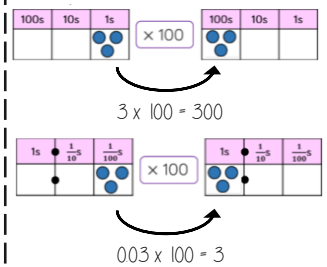
LCM of 9 and 12

The first time their multiples match
LCM = 36

- 9: 9, 18, 27, 36, 45, 54
 12: 12, 24, 36, 48, 60



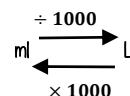
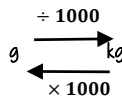
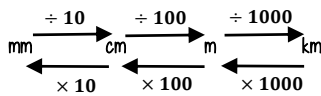
Multiply/ Divide by powers of 10



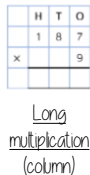
Repeated multiplication and division by powers of 10 is commutative
 $\div 10$ then $\div 10 \rightarrow \div 100$

Metric conversions

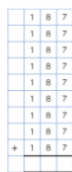
Useful Conversions



Multiplication methods



Grid method



Repeated addition

Less effective method especially for bigger multiplication

Multiplication with decimals

Perform multiplications as integers
 eg $0.2 \times 0.3 \rightarrow 2 \times 3$

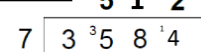
Make adjustments to your answer to match the question: $0.2 \times 10 = 2$
 $0.3 \times 10 = 3$
 Therefore $6 \div 100 = 0.06$

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

Division methods

$3584 \div 7 = 512$

Short division



Complex division

$\div 24 = \div 6 \div 4$
 Break up the divisor using factors

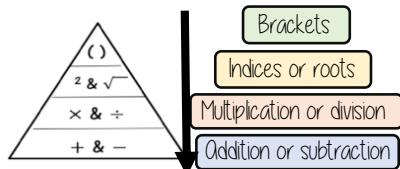
Division with decimals

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

$24 \div 0.02 \rightarrow 24 \div 0.2 \rightarrow 240 \div 2$

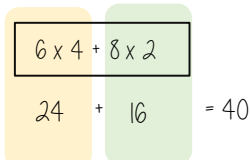
All give the same solution as represent the same proportion
 Multiply the values in proportion until the divisor becomes an integer

Order of operations



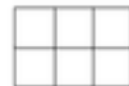
If you have multiple operations from the same tier work from left to right

eg $10 - 3 + 5 \rightarrow 10 - 3 \rightarrow 7 + 5$



Area problems

Rectangle
 Base x Perpendicular height



Parallelogram/ Rhombus
 Base x Perpendicular height



Triangle
 $\frac{1}{2} \times$ Base x Perpendicular height

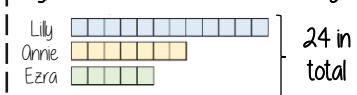
A triangle is half the size of the rectangle it would fit in



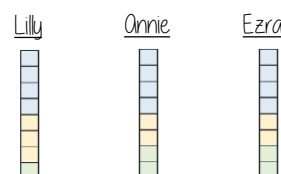
Mean problems

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?

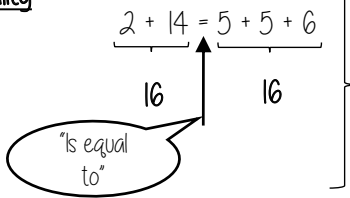
By the end of this unit you should be able to:

- 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

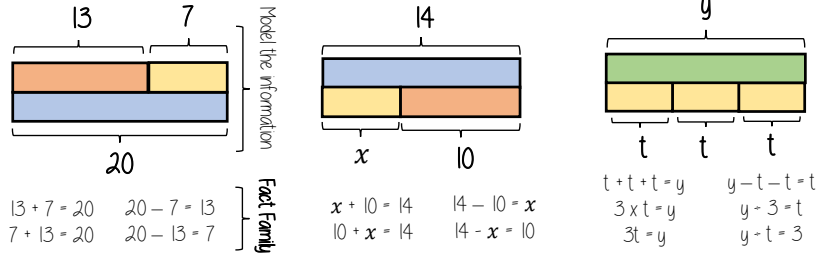


Saying it out loud sometimes helps you to understand equality

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

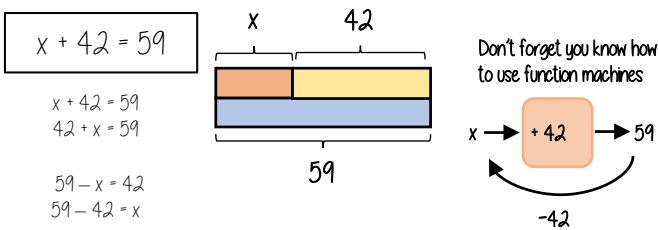
Fact Families

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

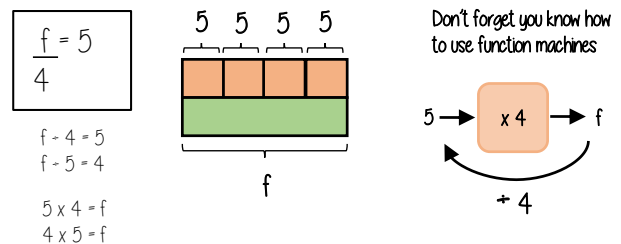


Solve one step equations (+/-)

There is more to this than just spotting the answer

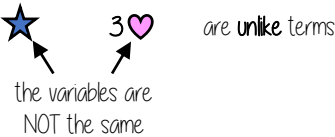
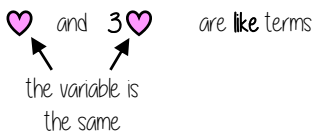


Solve one step equations (x/+)



Like and unlike terms

Like terms are those whose variables are the same



Examples and non-examples

Like terms

$y, 7y, 2x^2, x^2, ab, 10ba, 5, -2$

Un-like terms

$y, 7x, 2x^2, 2c^2, ab, 10a, 5, -2t$

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

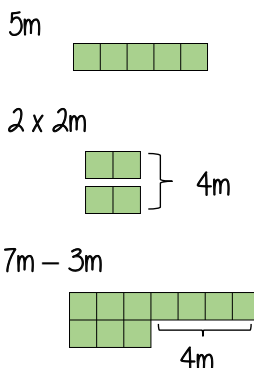
Equivalence

Check equivalence by substitution
e.g. $m = 10$

$$\begin{array}{l}
 5m \\
 5 \times 10 \\
 = 50
 \end{array}
 \quad
 \begin{array}{l}
 2 \times 2m \\
 2 \times (2 \times 10) \\
 = 2 \times 20 \\
 = 40
 \end{array}
 \quad
 \begin{array}{l}
 7m - 3m \\
 (7 \times 10) - (3 \times 10) \\
 = 70 - 30 \\
 = 40
 \end{array}$$

Equivalent expressions

Repeat this with various values for m to check

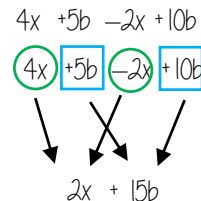


Collecting like terms \equiv symbol

The \equiv symbol means equivalent to
It is used to identify equivalent expressions

Collecting like terms

Only like terms can be combined



Common misconceptions

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

Although they both have the x variable x^2 and x terms are unlike 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:

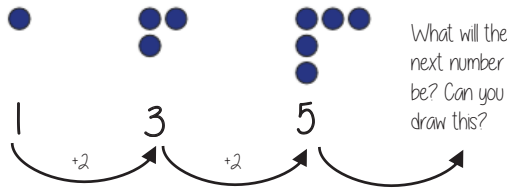
- Describe and continue both linear and non-linear sequences
- Explain term to term rules for linear sequence
- Find missing terms in a linear sequence

Keywords

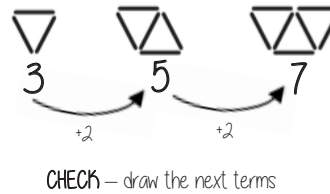
- Sequence:** items or numbers put in a pre-decided order
- Term:** a single number or variable
- Position:** the place something is located
- Rule:** instructions that relate two variables
- Linear:** the difference between terms increases or decreases by the same value each time
- Non-linear:** the 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



Predict and check terms



Predictions:

Look at your pattern and consider how it will increase.

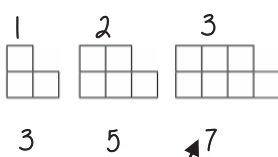
e.g. How many lines in pattern 6?

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

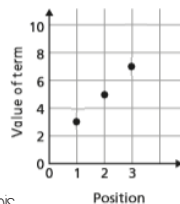
Position: the place in the sequence



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

"The term in position 3 has 7 squares"

Graphically



In a table

Position	1	2	3
Term	3	5	7

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



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

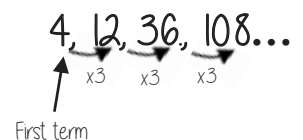
How you get from term to term

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.



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

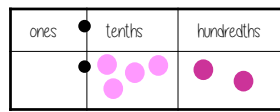
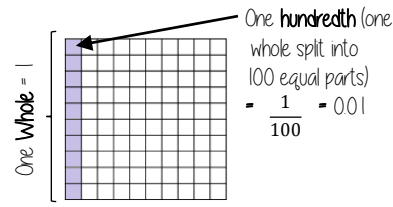
Tenth: one whole split into 10 equal parts

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

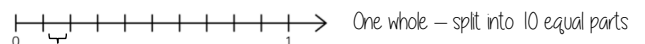
Tenths and hundredths



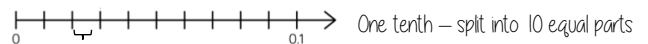
0 ones, 5 tenths and 2 hundredths
 $0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01 = 0 + 0.5 + 0.02 = 0.52$

One tenth (one whole split into 10 equal parts) = $\frac{1}{10} = 0.1$

On a number line

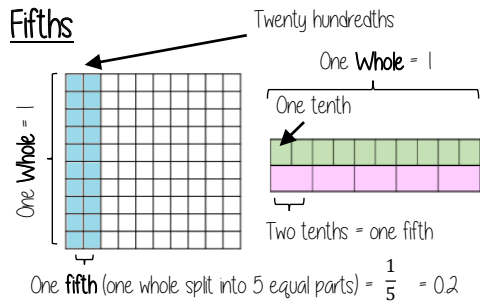


One tenth = $\frac{1}{10} = 0.1$



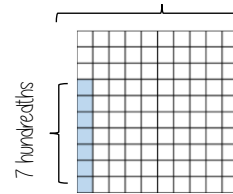
One hundredth = $\frac{1}{100} = 0.01$

Fifths

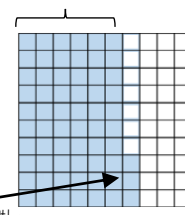


Percentages on a hundred grid

100% = a whole = 100 hundredths

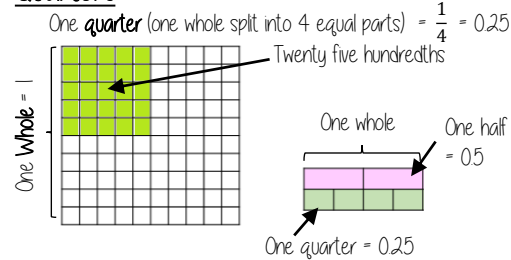


6 tenths

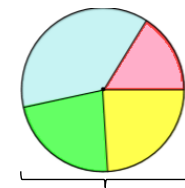


3 hundredths

Quarters



Simple pie charts



Split into 10 parts
= 10% = 36°

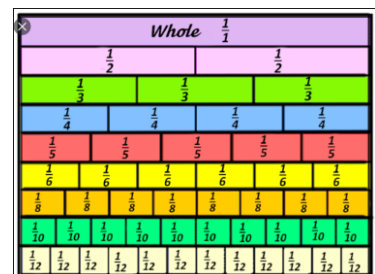
Split into 2 parts
= 50% = 180°

Split into 5 parts
= 20% = 72°

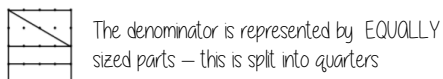
A pie chart has 360° so all FDP calculations are out of 360

Equivalent fractions

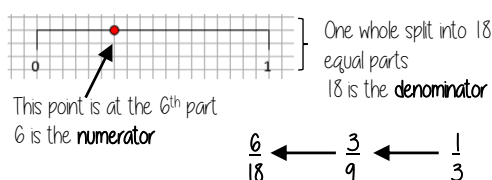
Represent equivalence with fraction walls



Fractions - on a diagram



Fractions - on a number line



Convert FDP



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
 eg $\frac{1}{3} = 0.333333$
 $\frac{3}{10} = 0.\dot{3}$
 The dot above the 3

YEAR 7 - FRACTIONAL THINKING

Addition and subtraction of fractions

What do I need to be able to do?

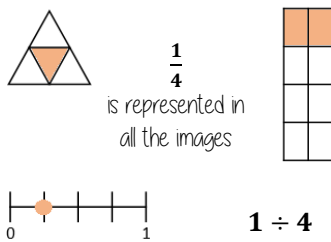
By the end of this unit you should be able to:

- 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

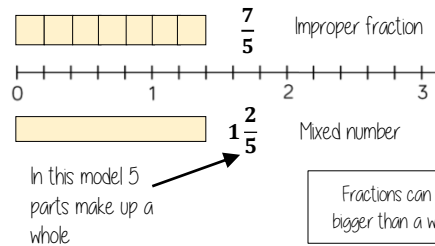
Keywords

- 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

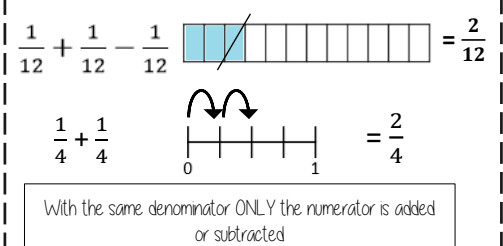
Representing Fractions



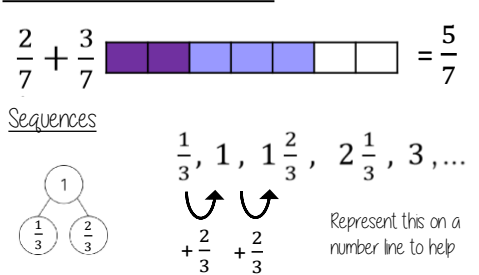
Mixed numbers and fractions



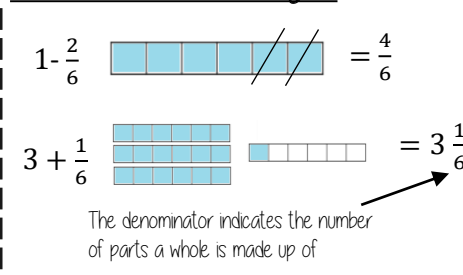
Add/Subtract unit fractions Same denominator



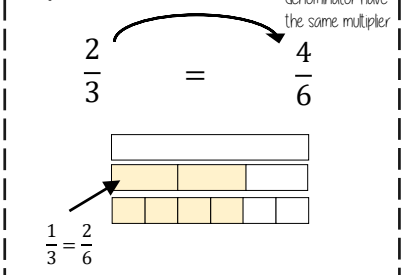
Add/Subtract fractions Same denominator



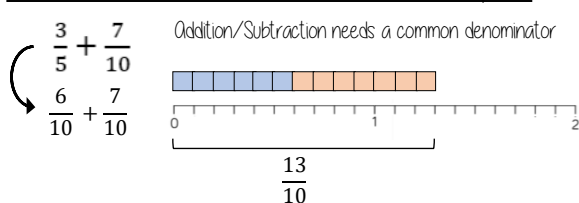
Add/Subtract from integers



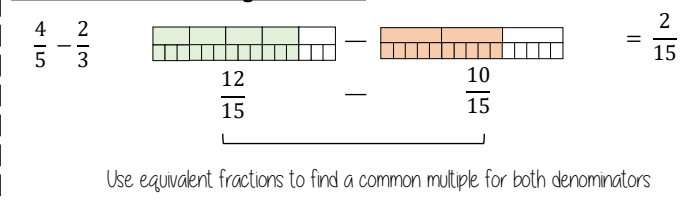
Equivalent fractions Numerator and denominator have the same multiplier



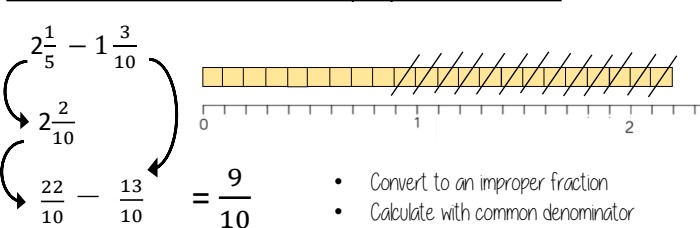
Add/Subtraction fractions (common multiples)



Add/Subtraction any fractions



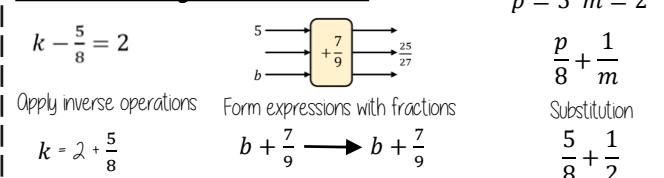
Add/Subtraction fractions (improper and mixed)



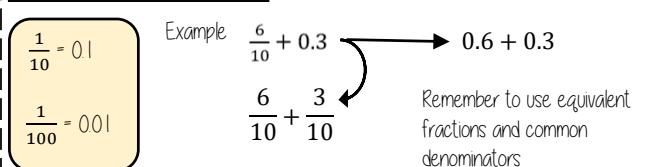
Partitioning method

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

Fractions in algebraic contexts



Fractions and decimals



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)

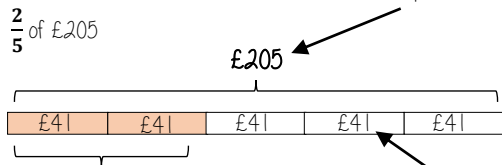
Place Value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right

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

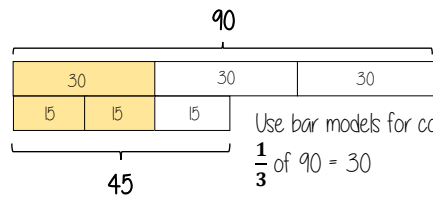


2 out of the 5 equal parts

$$2 \times £41 = \underline{£82}$$

$$£205 \div 5 = £41$$

Each part of the bar model represents £41



Use bar models for comparisons

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

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

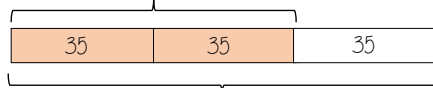
$$\therefore \frac{1}{3} \text{ of } 90 = \frac{2}{3} \text{ of } 45$$

Use a fraction of amount

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

$$70 \div 2 = 35$$

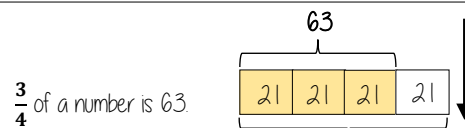
Each part of the bar model represents 35



$$35 \times 3 = 105$$

The whole number is 105

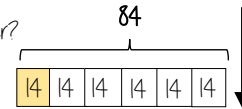
The wording of the question is important to setting up the bar model



Find the whole

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

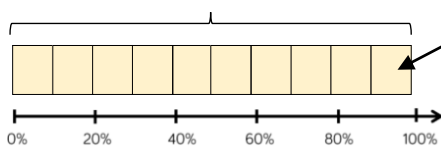
$$= 14$$



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

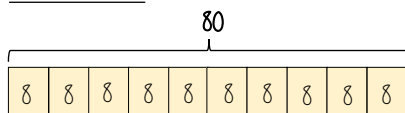
$$10\% = \frac{1}{10} \text{ of the whole}$$

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

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

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

Find 65% of 80



Method 1

$$\begin{aligned} 65\% &= 10\% \times 6 + 5\% \\ &= (8 \times 6) + 4 \\ &= 52 \end{aligned}$$

Method 2

$$\begin{aligned} 65\% &= 50\% + 10\% + 5\% \\ &= 40 + 8 + 4 \\ &= 52 \end{aligned}$$

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

Find the percentage of an amount (Calculator methods)



Using a multiplier

Find 65% of 80

Fraction, decimal, percentage conversion

$$65\% = \frac{65}{100} = 0.65 \quad \leftarrow \text{The multiplier}$$

$$0.65 \times 80 = \underline{52}$$

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?

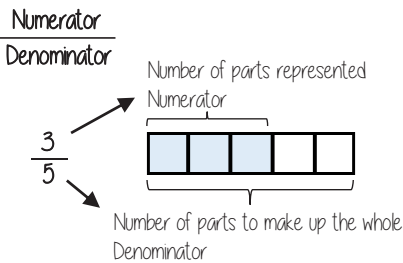
- By the end of this unit you should be able to:
- Carry out any multiplication or division using fractions and integers.
 - Solutions can be modelled, described and reasoned

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

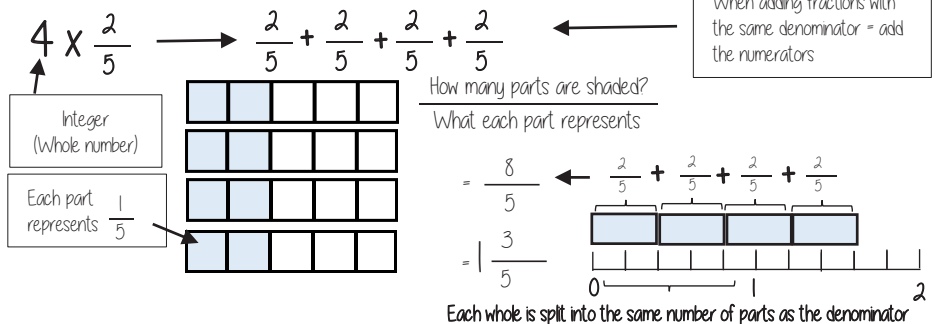


Representing a fraction

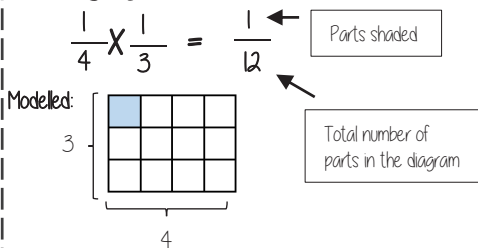


ALL PARTS of a fraction are of equal size

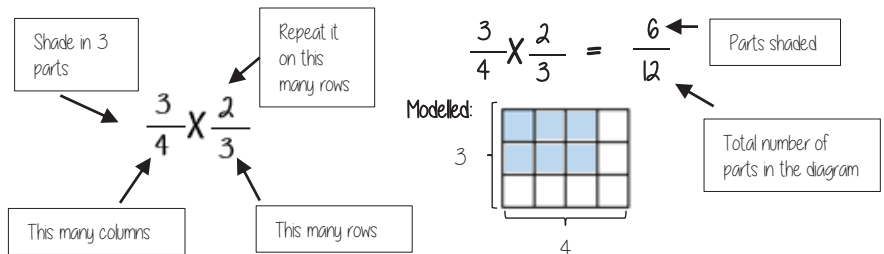
Repeated addition = multiplication by an integer



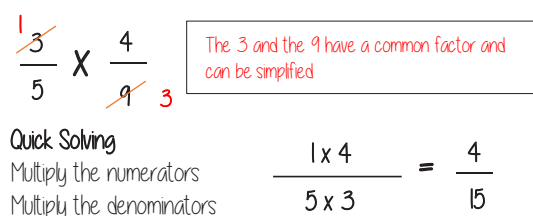
Multiplying unit fractions



Multiplying non-unit fractions

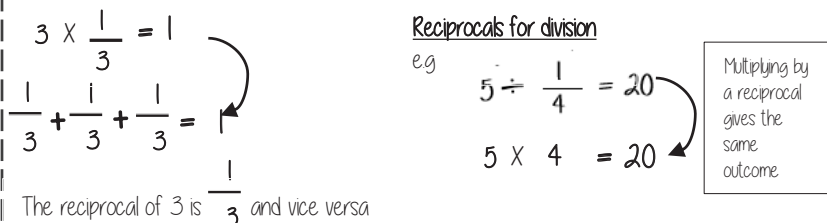


Quick Multiplying and Cancelling down

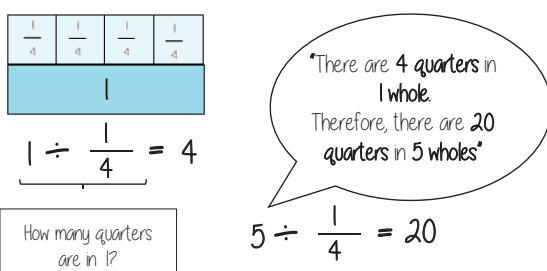


The reciprocal

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

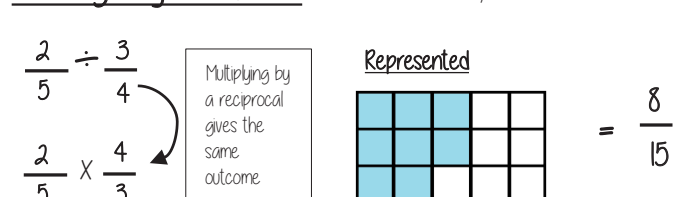


Dividing an integer by an unit fraction



Dividing any fractions

Remember to use reciprocals



YEAR 7 - DEVELOPING NUMBER...

Number Sense

What do I need to be able to do?

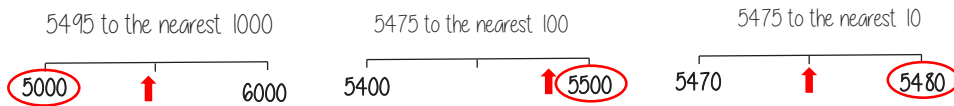
By the end of this unit you should be able to:

- 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"



- 370 to 1 significant figure is 400
- 37 to 1 significant figure is 40
- 37 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

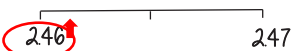
Round to decimal places 2.46192

"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



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



Focus on the numbers after the decimal point

2.4 \leftarrow 6192 This shows the number is closer to 2.5

2.46 \leftarrow 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

$214 \times 3.1 \approx 20 \times 3 \approx 60$ 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



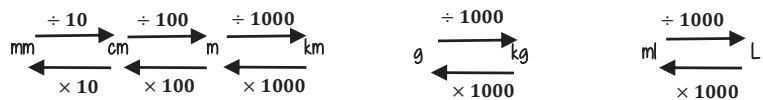
Using a calculator – ensure you are working in the correct units

$\text{£}1.30 + 50\text{p} = 130 + 50$ (in pence)
 $= 130 + 0.50$ (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

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

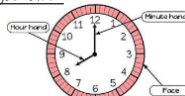
Use a number line for time calculations!

Units of weight/ capacity

Weight = g, kg, t

Capacity (volume of liquid) = ml, L

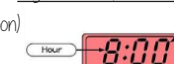
Analogue Clock



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 shows 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 $55 \div 5$

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 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 employees

Identify outliers

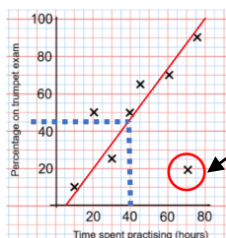
Outliers are values that stand well apart from the rest of the data

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: 39.6 (1dp), Median: 38, Mode: no mode, Range: 16

James

Mean: 41.8 (1dp), Median: 32, Mode: 23, Range: 76

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

"James is less consistent than 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?

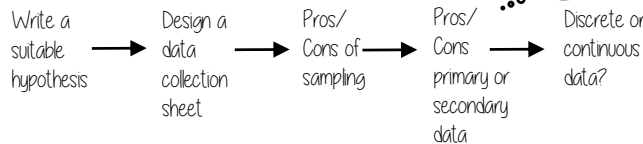
By the end of this unit you should be able to:

- 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



Features of a data collection sheet

Data Title	Tally	Frequency
Grouped or ungrouped categories		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

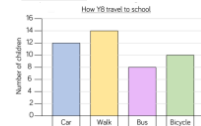
Pictogram

Language	Number of children
French	8
Spanish	6
German	2

● = 4 people

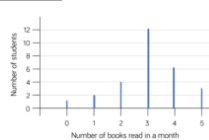
- Need to remember a key
- Visually able to identify mode

Bar Chart



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

Line Chart



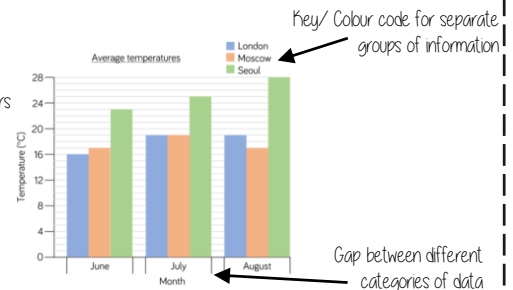
- Gaps between the lines
- Clearly labelled axes
- Scale for the axes
- Discrete Data

Represents quantitative data

Multiple Bar chart

Compares multiple groups of data

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

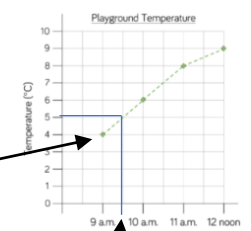


Draw and interpret line graphs

- 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

Draw and interpret Pie Charts

R

Remember a circle has 360°

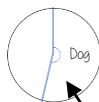
Type of pet	Dog	Cat	Hamster
Frequency	32	25	3

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

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

This fraction of the 360 degrees represents dogs

$$\frac{32}{60} \times 360 = 192^\circ$$



Use a protractor to draw This is 192°

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

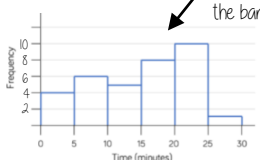
Represents quantitative, discrete data

Grouped quantitative data

Time (minutes)	Frequency
$0 \leq t < 5$	4
$5 \leq t < 10$	6
$10 \leq t < 15$	5
$15 \leq t < 20$	8
$20 \leq t < 25$	10
$25 \leq t < 30$	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

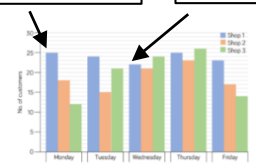
A smaller range means there is less variation in the results - it is more consistent data

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

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

Difference between the biggest and smallest values

Shop 1 highest value Shop 1 lowest value



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 numbers 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

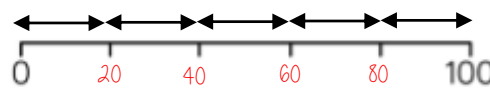
Integer Place Value

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

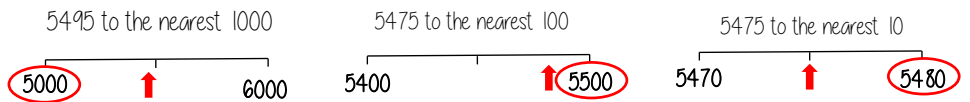
Intervals on a number line



Divide the difference by the number of intervals (gaps).
 Eg $100 \div 5 = 20$

Rounding to the nearest power of ten

If the number is halfway between we "round up"



Compare integers using $<$, $>$, $=$, \neq

- $<$ less than: Two and a half million (2 500 000)
- $>$ greater than: 300 000 000 (Three billion)
- $=$ equal to: 68 000 (Six thousand and eighty)
- \neq not equal to

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

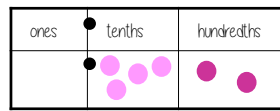
Median The middle value

Example 1 Median: put the in order 3 4 8 9 12
 4 3 9 8 12 find the middle number 3 4 8 9 12

Example 2 Median: put the in order 137 148 150 154 158 160
 137 160 158 There are 2 middle numbers
 Find the midpoint 152

Decimals

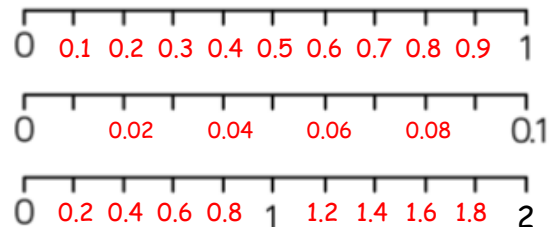
We say "nought point five two"
 Five tenths and two hundredths



$$0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01 = 0 + 0.5 + 0.02 = 0.52$$

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 is the largest of 0.3 and 0.23?

Ones	Tenths	hundredths
	0.1, 0.1, 0.1	
	0.1	0.01, 0.01

$0.3 > 0.23$

"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

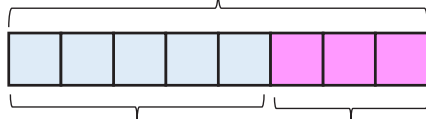
- Ratio:** a statement of how two numbers compare
Equal Parts: all parts in the same proportion, or a whole shared equally
Proportion: a statement that links two ratios
Order: to place a number in a determined sequence
Part: a section of a whole
Equivalent: of equal value
Factors: integers that multiply 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"

This is the "whole" - boys and girls together

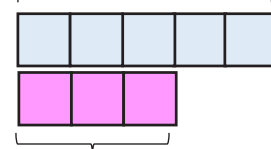


This represents the 5 boys This represents the 3 girls

5:3

This represents the 5 boys

Double Number Line



This is the "whole" - boys and girls together

This represents the 3 girls

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

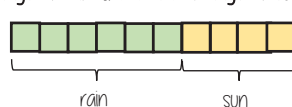
Cancel down the ratio to its lowest form

"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 In (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

**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

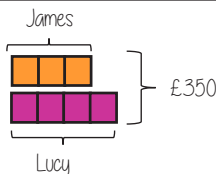


Sharing a whole into a given ratio

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

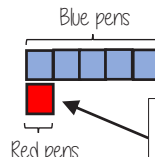
Finding a value given 1:n (or n:1)

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

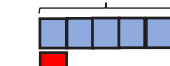


One unit = 10 pens

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

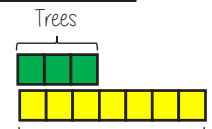
There are 50 Blue Pens

Ratio as a fraction



Trees: Flowers

3:7



Ratio

There are 3 parts for trees

Flowers

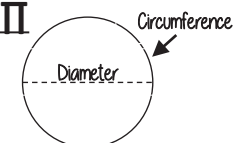
Fraction of trees

Number of parts of in group / Total number of parts = 3/10

Fraction

Tree parts 3 + Flower parts 7 = 10

Pi II



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.



4 cans of pop = £2.40

4 cans of pop = £2.40
 $\times 0.5$
 2 cans of pop = £1.20

4 cans of pop = £2.40
 $\times 3$
 12 cans of pop = £7.20

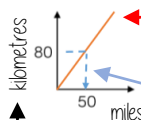
Sometimes this is easiest if you work out how much one unit is worth first
 eg 1 can of pop = £0.60

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

This is a multiplicative change

Conversion Graphs

Compare two variables



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

Labeling of both axes is vital

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

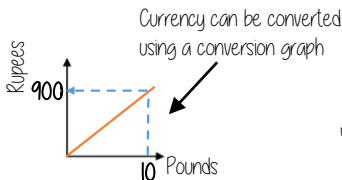
Conversion between currencies



£1 = 90 Rupees Currency is directly proportional

For every £1 I have 90 Rupees

£1 = 90 Rupees
 $\times 10$
 £10 = 900 Rupees



Currency can be converted using a conversion graph

Convert 630 Rupees into Pounds

£1 = 90 Rupees
 $\times 7$
 £7 = 630 Rupees

$630 \div 90 = 7$

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

$\frac{3m}{1m} = \frac{4.5m}{1.5m}$

$\frac{8m}{1m} = \frac{12m}{1.5m}$

Note: Simplify to the same ratio

Understand Scale Factor

The two rectangles are similar.



$3 \times 15 = 45$

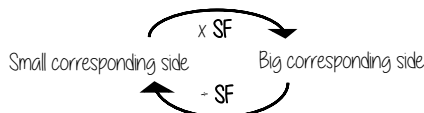
This is a multiplicative change

Use corresponding sides to calculate a scale factor

Missing length
 $8 \times 15 = 12m$

Scale factor can also be calculated by:

Bigger corresponding side
 Smaller corresponding side



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
 $\times 10$
 10cm : 300cm

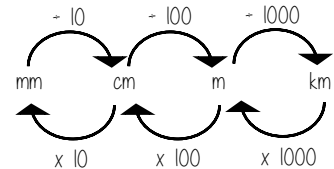


The car in real life is 210cm

Image : Real life
 1cm : 30cm
 $\times 7$
 7cm : 210cm



Interpret maps with scale factors



1 cm : 250 m

Ratios need to be in the same units

1 cm : 250m

1 cm : 25000cm

$250 \times 100 = 25000$

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°

Find angle BOE

$$90^\circ + 33^\circ + 92^\circ = 205^\circ$$

$$360^\circ - 205^\circ$$

$$\text{BOE} = 155^\circ$$

Angle notation – 90°

Angle notation – find this missing angle

$$360^\circ - 67^\circ = 293^\circ$$

Sum of angles on a straight line

Adjacent angles that share a common point on a line add up to 180°

Find angle XWY

$$72^\circ + 42^\circ = 114^\circ$$

$$180^\circ - 114^\circ = 66^\circ$$

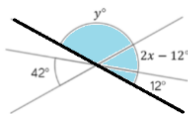
Vertically opposite angles

Angle JNM is vertically opposite to angle KNL

$$\text{JNM} = \text{KNL}$$

Vertically opposite angles are the same

Other angle rules still apply. Look for straight line sums and angles around a point.

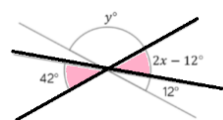


Form equations with information from diagrams:

$$2x - 12 = 42$$

$$2x = 54$$

$$x = 27^\circ$$



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.

$$\therefore 180 - 43 = 137$$

$$137 \div 2 = 68.5^\circ$$

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

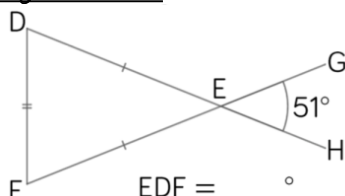
Interior Angles

A quadrilateral is made up of two triangles = the sum of interior angles is the same as two triangles

$$180^\circ + 180^\circ = 360^\circ$$

Angle Problems

Split up the problem into chunks and explain your reasoning at each point using angle notation



- 1 Angle DEF = 51° because it is a vertically opposite angle DEF = GEH
- 2 Triangle DEF is isosceles (triangle notation) \therefore EDF = EFD and the sum of interior angles is 180°
 $180^\circ - 51^\circ = 129^\circ$ $129^\circ \div 2 = 64.5^\circ$
- 3 Angle EDF = 64.5°

Keep working out clear and notes together

KO1. French Essentials.

Grammar.

G1. Essential Verbs. (present tense)		
Pronoun	avoir = to have	être = 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 êtes (you are)
ils/elles (they)	Ils/elles ont (they have)	Ils/elles sont (you polite/they are)

G2. Definite & Indefinite Articles & Genders.		
	the	a
Gender		
masculine	le	un
feminine	la	une
vowel	l'	un
plural	les	mes

Vocabulary.

V1. Vocabulary Essentials.		
Days of the week	Months	
lundi (Monday)	janvier	
mardi (Tuesday)	février	
mercredi (Wednesday)	mars	
jeudi (Thursday)	avril	
vendredi (Friday)	mai	
samedi (Saturday)	juin	
dimanche (Sunday)	juillet	
Questions and answers		
Quand est ton anniversaire? (when is your birthday?)	septembre	
Comment ça va? (how are you?)	octobre	
As-tu...? (do you have...?)	novembre	
J'ai deux ans (I am 12)	décembre	
C'est - it's	Quel mois? (which month)	

V2. Numbers.			
	1 = un	2 = deux	3 = trois
0 = zero	6 = six	7 = sept	8 = huit
5 = cinq	11 = onze	12 = douze	13 = treize
10 = dix	16 = seize	17 = dix-sept	18 = dix-huit
15 = quinze	30 = trente	40 = quarante	50 = cinquante
20 = vingt	80 = quatre-vingts	90 = quatre-vingts	100 = cent
70 = soixante-dix			1.000 = mille
			4 = quatre
			9 = neuf
			14 = quatorze
			19 = dix-neuf
			60 = soixante

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

P2. 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 Tu aimes ta famille? (Do you like your family?)

Grammar.

V1. Vocabulary verbs (present tense)		V2. Vocabulary verbs (infinitive form)	
aimer	to like	écouter	To listen
J'aime	I like	regarder	To watch
Tu aimes	You like	écrire	To write
Il/elle/on aime	He/she/we like	parler	To talk
Nous aimons	We like	travailler	To work
Vous aimez	You like (plural or polite)	jouer	To play
Ils/elles aiment	They like	manger	To eat

V3. 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.		V2. Vocabulary Essentials.	
Intensifiers	Connectives	Family members	Adjectives
très (very)	mais (but)	père (father)	marrant/e (funny)
un peu (a bit)	aussi (also)	mère (mother)	sympa (nice)
trop (too)	car (because)	frère (brother)	méchant/e (mean)
vraiment (really)	et (and)	soeur (sister)	aimable (likeable)
assez (quite)	It's (c'est)	Demi frère (half brother)	Énervant/e (annoying)
		Beau père/belle mère (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		P2. Pronunciation rules.
see	say	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 liaison)
ille	eey	
ai	ay	
on	ohn	
in	anh	
h	silent	
ç	ss	
en	onh	
ss	ss	
s	z	

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 = siebenzig	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-oo-h-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
ich (I)	habe (I have)
du (you) informal	hast (you have)
er/sie/es (he/she/it)	hat (he/she/it has)
wir (we)	haben (we have)
ihr (you plural)	habt (you have)
Sie/sie (you polite/they)	haben (you polite/they have)
	sein = to be
	bin (I am)
	bist (you are)
	ist (he/she/it is)
	sind (we are)
	seid (you are)
	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 **vierten** or the 20th would be "zwanzigsten".

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.

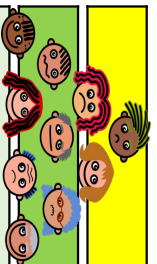


Pronunciation.

P1. Key Sounds.			
ei = eye	ie = ee	au = ow	eu/äu = oi
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



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

KO3. Wie siehst du aus? (What do you look like?)

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

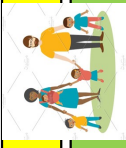


P1. How do I say...?



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.

<u>G1. Essential Verbs. (present tense)</u>		
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 einen Bruder.	Ich habe eine Schwester.	Ich habe ein Pferd.	Ich habe viele Geschwister.

Vocabulary.

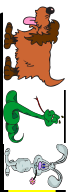
<u>V1. Common Nouns</u>		
Deutsch	Englisch	
Mutter/Vater	mother/father	
Eltern	parents	
Schwester/Bruder	sister/brother	
Schwestern/Brüder	sisters/brothers	
Geschwister	siblings	
Großmutter/Großvater	Grandma/Grandpa	
Großeltern	Grandparents	
Cousin/Cousine	Cousin (m/f)	
Onkel/Tante	Uncle/Auntie	
Freund/Freundin	Friend (m/f)	
Stiefmutter/vater	Stepmother/father	

V2. Common adjectives

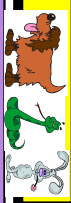
nett/gemein	nice/mean
groß/klein	big/small
nervig/lustig	annoying/funny
streng/locker	strict/relaxed

Pronunciation.

<u>P1. How do I say...?</u>	
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)	
<u>M</u> der Hund	Ich habe <u>einen</u> Hund
<u>F</u> die Spinne	Ich habe <u>eine</u> Spinne
<u>N</u> das Pferd	Ich habe <u>ein</u> Pferd
<u>PL</u> die Haustiere	Ich habe <u>viele</u> Haustiere.

G2: Adjectives before plural nouns add **e**.
 blaue Augen = blue eyes
 lockige Haare = curly hair



G3. Opinions

Ich liebe ...
 Ich mag ...
 Ich mag ... nicht
 Ich hasse ...



I love ...
 I like ...
 I don't like ...
 I hate ...



Vocabulary.

V1. Nouns and Plural Forms.		
<u>Noun</u>	<u>Plural form</u>	<u>Meaning</u>
der Hund	Hunde	<i>dogs</i>
der Vogel	Vögel	<i>birds</i>
der Wellensittich	Wellensittiche	<i>budgies</i>
die Schlange	Schlangen	<i>snakes</i>
die Spinne	Spinnen	<i>spiders</i>
die Schildkröte	Schildkröten	<i>tortoises</i>
das Pferd	Pferde	<i>horses</i>
das Kaninchen	Kaninchen	<i>rabbits</i>
das Meerschweinchen	Meerschweinchen	<i>guinea pigs</i>

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

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 = siebenzig	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.

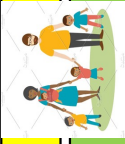
V3. Key Phrases. Greetings & Introductions.

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-oo-h-n)
ß	ss	weiß (v-eye-ss)



KO6. Wie findest du deine Familie? (What do you think of your family?)



Grammar.

Vocabulary.

G1. Essential Verbs. (present tense)			
Pronoun	lieben = to love	hassen = to hate	finden = to find/think
ich (I)	liebe (I love)	hasse (I hate)	finde (I find)
du (you) informal)	liebst (you love)	hasst (you hate)	findest (you find)
er/sie/es (he/she/it)	liebt (he/she/it loves)	hasst (he/she/it hates)	findet (he/she/it finds)
wir (we)	lieben (we love)	hassen (we hate)	finden (we find)
ihr (you plural)	liebt (you love)	hasst (you hate)	findet (you find)
Sie/sie (you polite/ they)	lieben (you polite/they love)	hassen (you polite/they hate)	finden (you polite/they find)

V1. Useful opinion phrases.

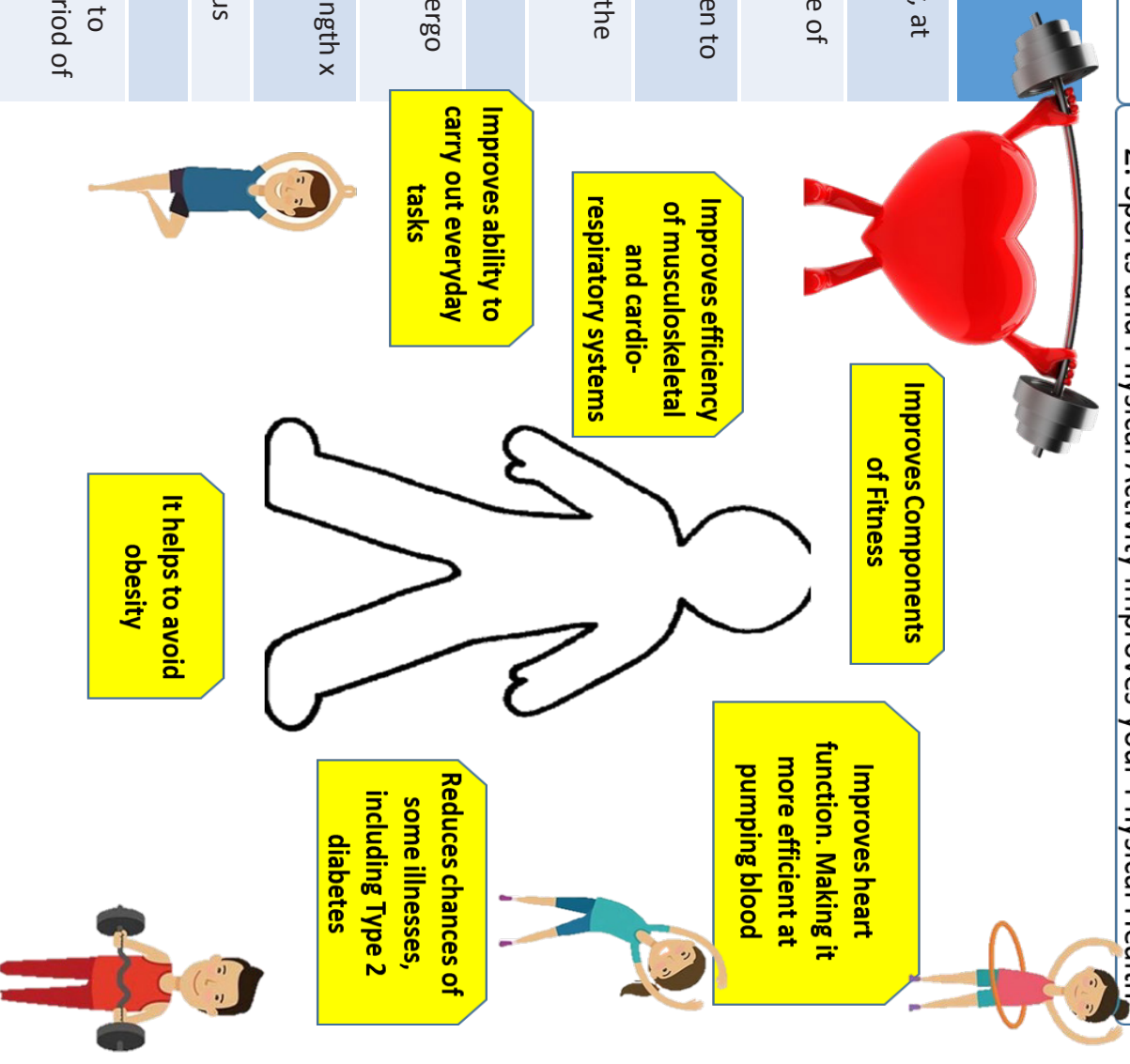
Deutsch	Englisch
Ich liebe meinen Vater	I love my dad
Ich hasse meine Mutter	I hate my mum
Ich finde meinen Bruder nervig	I think my brother is annoying
Meine Schwester findet unsere Mutter nett.	My sister thinks our mum is nice.
Wir lieben die Katze	We love the cat
Ich finde meine Großeltern sehr lieb.	I think my grandparents are very sweet.
Mein Bruder findet Hunde toll.	My brother thinks dogs are great.
Mein Vater ist sehr gemein	My dad is very mean
Meine Eltern sind ziemlich streng	My parents are quite strict
Meerschweinchen sind langweilig	Guinea pigs are boring
Ich liebe mein Pferd	I love my horse

Year 7 Physical Education

1. Fitness is made up of 10 Components

2. Sports and Physical Activity improves your Physical Health

Component of Fitness	Definition
Agility	The ability to move and change direction quickly, at speed, while maintaining control
Balance	Maintaining the centre of the mass over the base of support
Cardiovascular Endurance	The ability of the heart and lungs to supply oxygen to the working muscles
Coordination	The ability to use two or more different parts of the body together, smoothly and efficiently
Flexibility	The range of movement possible at a joint
Muscular Endurance	The ability of a muscle or a muscle group to undergo repeated contractions, avoiding fatigue
Power	The product of speed and strength. Power = strength x speed
Reaction Time	The time taken to initiate a response to a stimulus
Strength	The ability to overcome resistance.
Speed	The maximum rate at which an individual is able to perform a movement or cover a distance in a period of time.





Autumn Term 1:

1

To successfully represent a character you should be using both **physical** and **vocal** skills

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

Vocal skills

- Pace:** how fast or how slow the character speaks
- Power:** how loud or how quiet a character speaks
- Pitch:** how high or how low a character speaks
- Pause:** moments where the character stops talking
- Tone:** shows what the character thinking or how they are feeling

2

4

Up right	Up centre	Up left
Right center	Center	Left center
Down right	Down center	Down left

Theatrical skills

3
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:

1. How to Evaluate in Drama



Year 7 Drama

2. How to Analyse in Drama

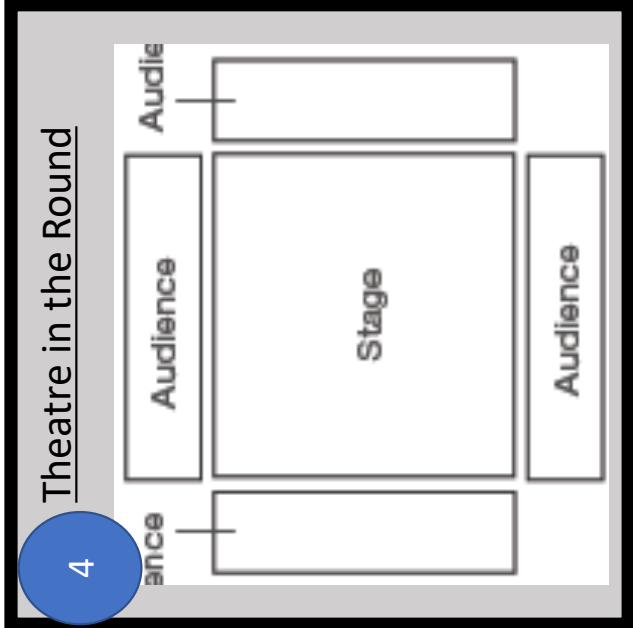
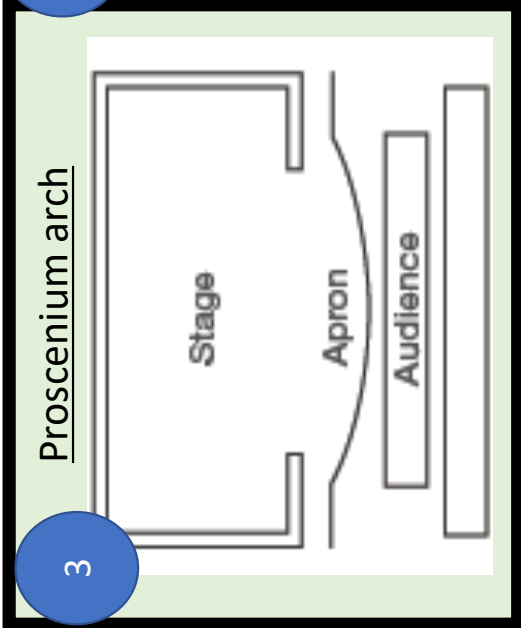
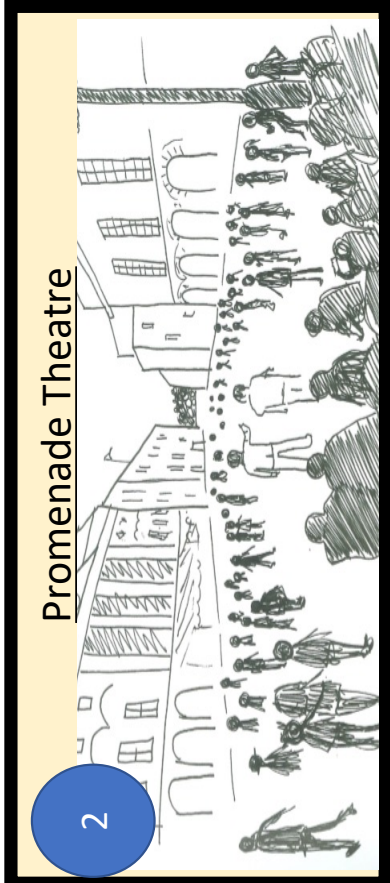
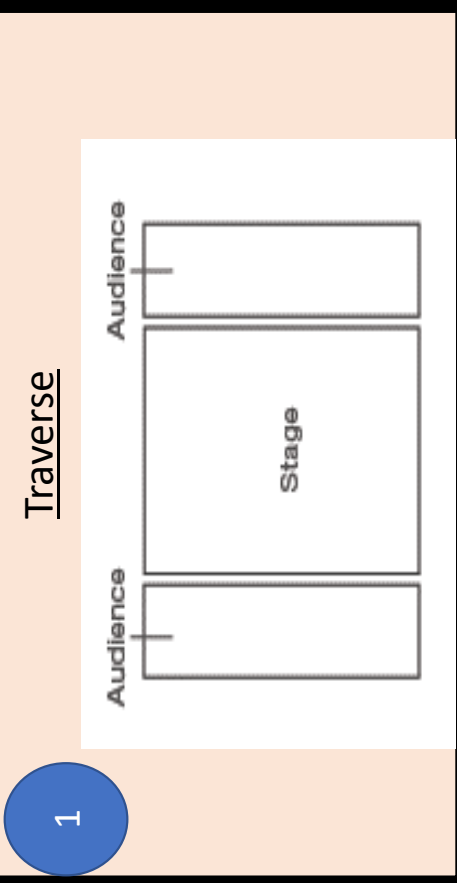
Evaluating OUR OWN PERFORMANCE AND THE PERFORMANCES OF OTHERS	
<p>1. Introduction:</p> <p>Your performance: describe in detail the performance and the character you played</p> <p>Someone else's: as an audience member what did the performance make you think about? Select one character and write in detail about them</p>	<p>Your performance: What theatrical skills did you use, why did you use these? What was the effect you were hoping to have on the audience?</p> <p>Someone else's: 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?</p>
<p>2.</p> <p>Your performance: Do you think you were able to create a successful performance, meeting your aims and intention?</p> <p>Someone else's: Do you think they were able to create a successful performance?</p>	<p>Your performance and someone else's:</p> <p>If you / they were successful why? If you weren't why not?</p> <p>What could you / they have done differently?</p> <p>What was good about your / there personal performance and how could you / they improve?</p> <p>LINK TO THEATRICAL SKILLS USED THROUGHOUT!</p>
<p>3.</p> <p>Write about the performance as a whole.</p>	<p>What worked well?</p> <p>What didn't?</p> <p>Do you have any ideas about how you / they might have altered/changed the performance if given more time?</p>

Analyse OUR OWN PERFORMANCES AND SOMEONE ELSE'S:	
<p>1. Space:</p>	<ul style="list-style-type: none"> - Is there a fourth wall? - How have you / THEY used proxemics to show relationships? What relationship was created? - What is the focus of the audience?
<p>2. Character:</p>	<ul style="list-style-type: none"> - How have you / THEY shown the age of the character? - How have you / THEY shown the personality of the audience? - How has the character helped to create meaning in your / THEIR performance? <p>LINK TO THEATRICAL SKILLS THROUGHOUT</p>
<p>3. Analysis of the moment:</p> <p>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.</p> <p>Your personal—how did you: think/feel/react/respond/engage? What meaning was communicated to you at this point.</p>	

Stage Configurations:



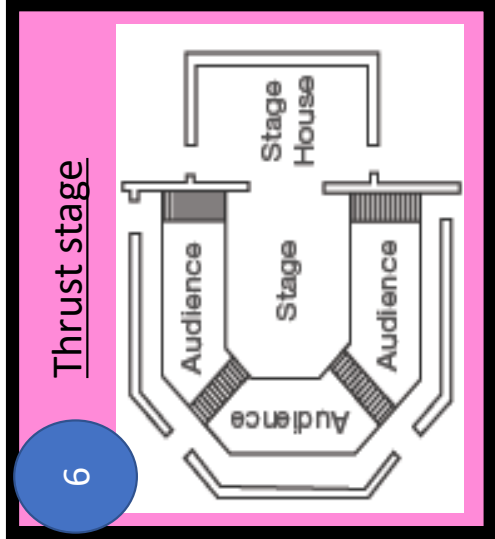
Year 7 Drama:



5

Stage Positioning:

Up right	Up centre	Up left
Right center	Center	Left center
Down right	Down center	Down left



Roles and responsibilities in the theatre :

1. Theatre Maker:

Understudy

1

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

2

What they do:

Writing the script of the play, including the dialogue and stage direction

3. Theatre Maker:

Puppet Designer

3

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

4

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

5

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

6

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

7

What they do:

Operating the technical equipment, such as the lighting and sound boards, during the performance.

8. Theatre Maker:

Performer

8

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

9

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

10

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

11

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

12

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:



Biographical information	
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.

Year 7 Drama:

Spring Term 1:

Chapter breakdown		Characters		Key words	
2		3		5	
1	The animals gather to listen to old Major. He gives them a vision of a life without man.	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.'	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.		
2	The animals rebel and overthrow Jones. The commandments are written.	Snowball 'a more vivacious pig than Napoleon, quicker in speech and more inventive, but was not considered to have the same depth of character.'	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.		
3	The animals' first harvest is a success. The pigs keep the milk and apples to themselves.	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.'	rebellion – a rebellion is a situation in which people fight against those who are in charge of them.		
4	The Battle of the Cowshed: Jones attempts to reclaim the farm.	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.'	harvest – the time when crops are cut and collected from fields.		
5	Snowball and Napoleon debate the windmill. Napoleon uses dogs to chase Snowball from the farm. Napoleon makes himself leader.		corrupt – when people use their power in a dishonest way order to make life better for themselves.		
6	Work begins on the windmill. The pigs move into the farmhouse. Winds destroy the windmill.		propaganda – information that is meant to make people think a certain way. The information may not be true.		
7	Work on the windmill starts again. Napoleon demands eggs from the hens. Napoleon slaughters animals at the show trials.		cult of personality – a cult of personality is where a leader convinces people to worship him or her, and treat them like a god.		
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.		treacherous – If you betray someone who trusts you, you could be described as treacherous .		
9	Boxer is sold to the knacker's yard.		The seven commandments		
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.		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.	





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

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

2

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.

4

Year 7 Drama:

Spring Term 2:

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

3



Year 7 Drama:

Summer Term 1:

The characters in Commedia never learn from their mistakes

Physicality

- 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

2

Key Terms:

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.

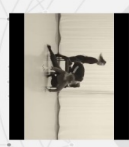
Magnifico: Physicality:
Leads with his head, like an eagle.
He looks down on everything
He walks and stands with his hands behind his back
Swishes his cloak around him when he turns and stop



1

Chair Duets

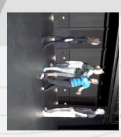
This is a challenge created by Frantic Assembly for a dramatic effect within a piece of drama, which involves the use of communication between the partners and physical theater (performed by the upper body) to convey a range of different emotions between the two participants involved. Due to restrictive 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 story/line 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 done; 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.

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.

Year 7 Drama:

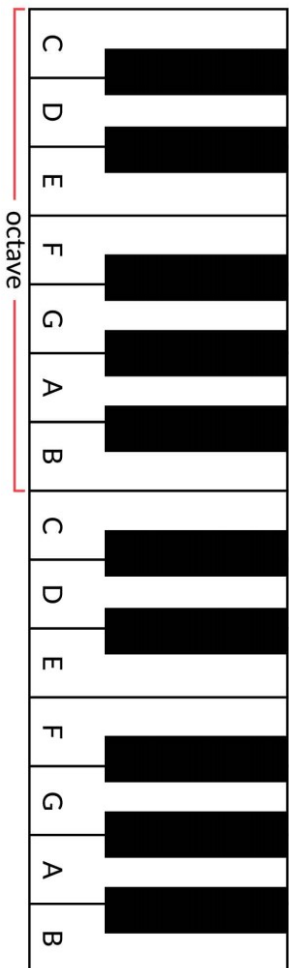
BUILDING BRICKS

Exploring the Elements of Music

<p>A. Pitch</p> <p>The highness or lowness of a sound.</p>	<p>B. Tempo</p> <p>The speed of a sound or piece of music.</p> <p>FAST: <i>Allegro, Vivace, Presto</i> SLOW: <i>Andante, Adagio, Lento</i></p> <p>GETTING FASTER – <i>Accelerando (accel.)</i> GETTING SLOWER – <i>Ritardando (rit.) or Rallentando (rall.)</i></p>	<p>C. Dynamics</p> <p>The volume of a sound or piece of music.</p> <p>VERY LOUD: <i>Fortissimo (ff)</i> LOUD: <i>Forte (f)</i> QUITE LOUD: <i>Mezzo Forte (mf)</i> QUITE SOFT: <i>Mezzo Piano (mp)</i> SOFT: <i>Piano (p)</i> VERY SOFT: <i>Pianissimo (pp)</i></p> <p>GETTING LOUDER: <i>Crescendo (cresc.)</i> GETTING SOFTER: <i>Diminuendo (dim.)</i></p>	<p>D. Duration</p> <p>The length of a sound.</p>
<p>E. Texture</p> <p>How much sound we hear.</p> <p>THIN TEXTURE: (<i>sparse/solo</i>) – small amount of instruments or melodies.</p> <p>THICK TEXTURE: (<i>dense/layered</i>) – lots of instruments or melodies.</p>	<p>F. Timbre or Sonority</p> <p>Describes the unique sound or tone quality of different instruments voices or sounds.</p> <p><i>Velvety, Screechy, Throaty, Rattling, Mellow, Chirpy, Brassy, Sharp, Heavy, Buzzy, Crisp, Metallic, Wooden etc.</i></p>	<p>G. Articulation</p> <p>How individual notes or sounds are played/techniques.</p> <p>LEGATO – playing notes in a long, smooth way shown by a SLUR.</p> <p>STACCATO – playing notes short, detached, way shown by a DOT.</p>	<p>H. Silence</p> <p>The opposite or absence of sound, no sound. In music these are RESTS.</p>
<p>I. Notation</p> <p>How music is written down.</p> <p>STAFF NOTATION – music written on a STAVE (5 lines and spaces)</p> <p>GRAPHIC NOTATION/SCORE – music written down using shapes and symbols to represent sounds.</p>	<p>J. How Music Works</p> <p>Music can create an atmosphere or ambience e.g., <i>supermarkets and restaurants</i>.</p> <p>Music can create an image e.g., <i>in response to art, a story, a poem, a character, a situation</i> – this is called PROGRAMME MUSIC.</p> <p>Music can be used for spiritual reasons e.g., <i>worship, meditation, reflection, hymns and chants, yoga, and spiritual reflection</i>.</p> <p>Music can be used for commercial purposes e.g., <i>advertising, TV themes</i>.</p>		

KEYBOARD SKILLS

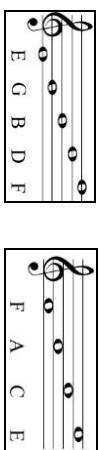
A. Layout of a Keyboard/Piano



Exploring Treble Clef Reading and Notation

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.

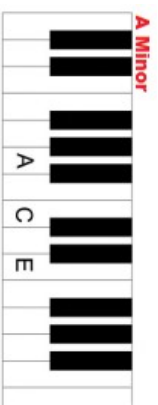
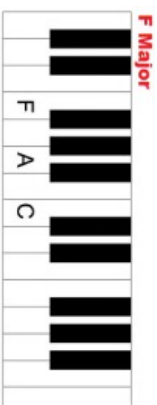
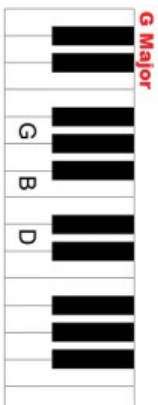
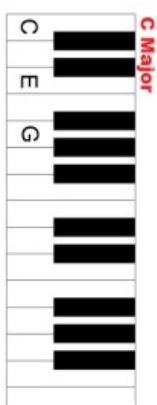


Every Green Bus Drives Fast. Notes in the **SPACES** spell "FACE"

Notes from **MIDDLE C** going up in pitch (all of the white notes) are called a **SCALE**.

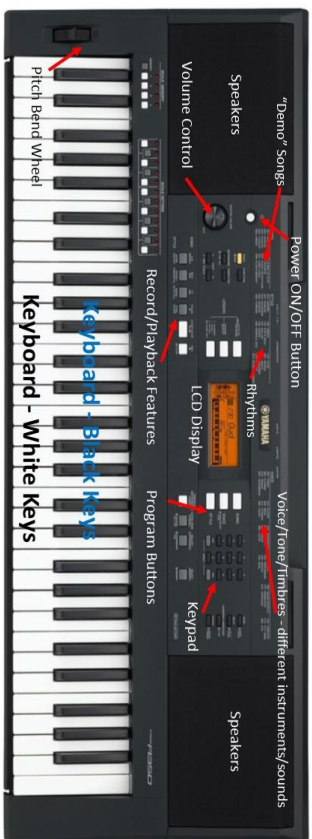


C. Keyboard Chords

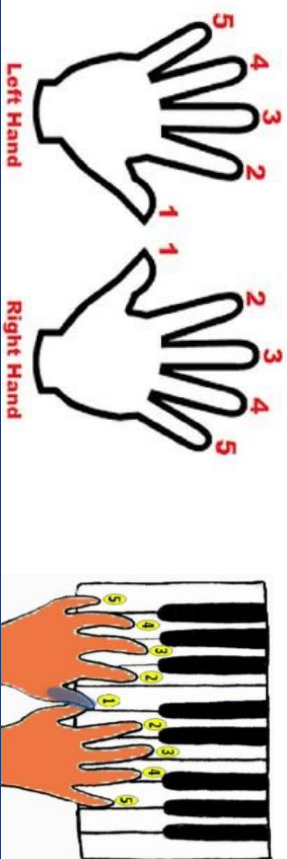


Play one – Miss one – play one – miss one – play one

D. Keyboard Functions

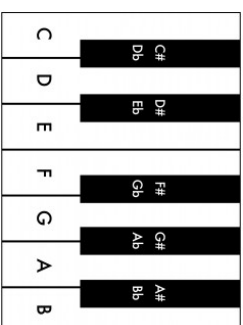


E. Left Hand/Right Hand (1-5)



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 Db – there's just two different ways of looking at it! Remember, black notes or keys that are to the **RIGHT** of a white note are called **SHARPS** and black notes to the **LEFT** of a white note are called **FLATS**.





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

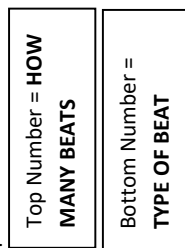
SILENCE – The absence of sound or no sound, shown in music by **RESTS**.

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.

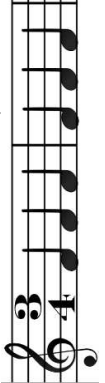


2/4 = **TWO CROTCHET** beats per **BAR**



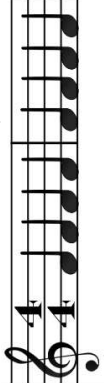
e.g. a **MARCH**

3/4 = **THREE CROTCHET** beats per **BAR**



e.g. a **WALTZ**

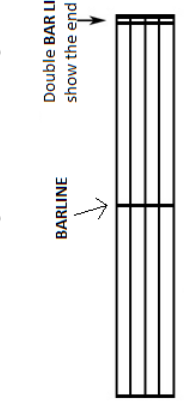
4/4 = **FOUR CROTCHET** beats per **BAR**



Bottom Numbers:

2 = Minim 4 = Crotchet 8 = Quaver

BARS AND BARLINES

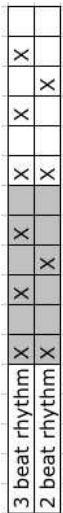


C. Ostinatos, Cyclic and Polyrhythms

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.

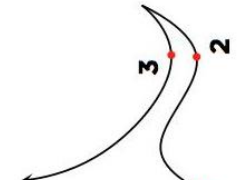
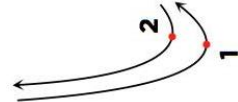
POLYRHYTHM - the use of several rhythms performed simultaneously, often overlapping to create a thick, **POLYRHYTHMIC TEXTURE**. A common polyrhythm often used in Latin-American and African Music is to play a 3-beat and 2-beat rhythm simultaneously as shown below. This is called a “3 against 2 Polyrhythm”



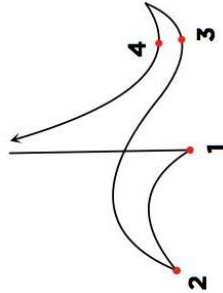
D. Conducting Pulses and Beats

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



<p>A. Question and Answer Phrases</p> <p>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.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Question Phrase</p> </div> <div style="text-align: center;"> <p>Answer Phrase</p> </div> </div>	<p>B. Binary Form</p> <p>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.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> </div>	<p>C. Ternary Form</p> <p>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.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> </div>	<p>D. Rondo Form</p> <p>RONDO FORM (ABACADA...) describes music where a main theme or melody “A” keeps returning between different contrasting sections “B, C, D...” (called episodes)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> </div>
<p>E. Key Words</p> <ol style="list-style-type: none"> FORM/STRUCTURE – How a piece of music is organised into different sections or parts. PHRASE – A short section of music, like a “musical sentence”. PITCH – The highness or lowness of a sound or musical note. 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. HARMONY – Playing two or more notes at the same time. The “harmony part” in music is different to the melody part. 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). OSTINATO – A repeated musical pattern. An ostinato can be a repeated rhythm or a repeated melody and are usually short. 	<p>F. Music Theory</p> <p>Treble Clef Pitch Notation</p> <p>C D E F G A B c' d' e' f'</p> <p>Treble Clef “Lines” Note Names Treble Clef “Spaces” Note Names Repeat Mark</p> <div style="display: flex; justify-content: space-around; align-items: center;"> </div>		

Sonority City Exploring Instruments of the Orchestra

A. Key Words, Terms and Facts about the Orchestra

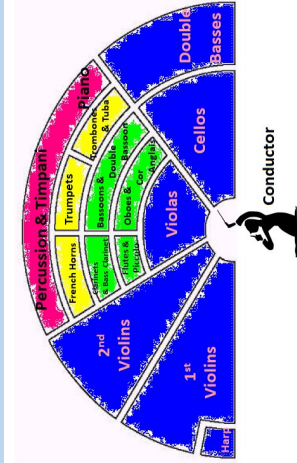
ORCHESTRA An ensemble (group of musicians) of performers on various musical instruments. (no set number of musicians)
SYMPHONY ORCHESTRA A large orchestra – between 80 and 100+ performers

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 **SOLO** 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**

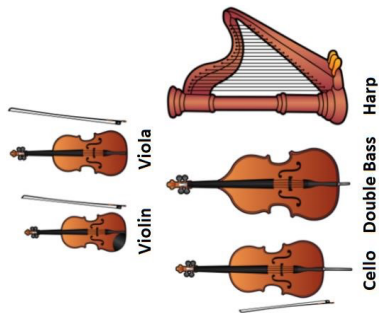
Tuning up. Before the orchestra rehearses or plays, all instruments need to be in tune with each other

B. The Layout of the Orchestra and Famous Conductors



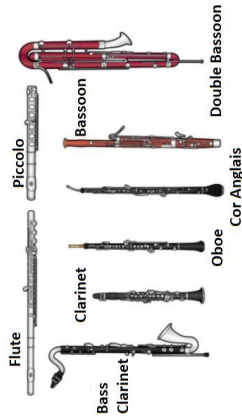
C. Strings Section/Family

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 **PULCKED (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.



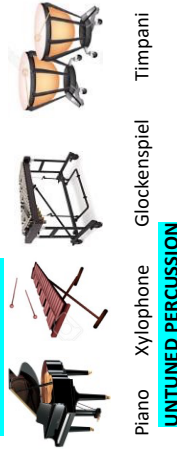
E. Brass Section/Family

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** (small trumpets with no valves) and valveless trumpets.

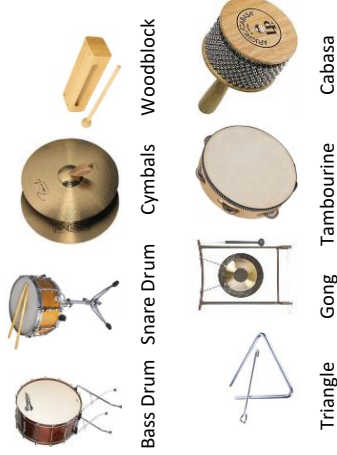


F. Percussion Section/Family

TUNED PERCUSSION



UNTUNED PERCUSSION

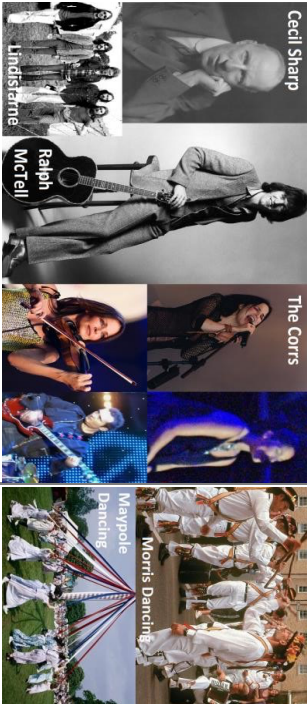


Folk Music

(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.

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

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**

7.1 A Modern Global Community

Enquiry Question:

3.13 What difference does it make to be an atheist or agnostic in Britain today?

Key Construct: P1. A modern global community is made up of diverse religions and cultures.

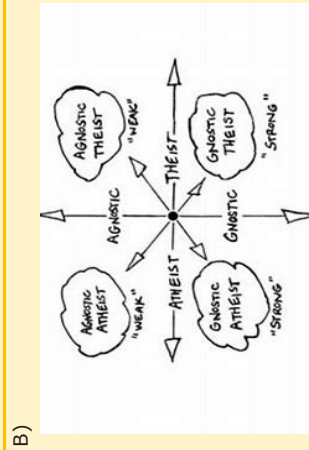
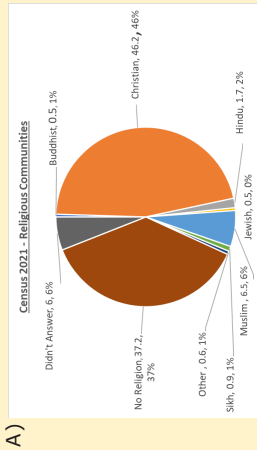
Section A: Key Vocabulary

- Atheist**—a person who does not believe in God/gods.
- Theist**—a person who does believe in God/gods.
- Agnostic**—a person who is not sure if they believe in God/gods.
- Community**—a group of people with shared values, characteristics or beliefs.
- Globalisation**—the concept that all people are becoming part of a single, world wide community.

Section B: Component Knowledge

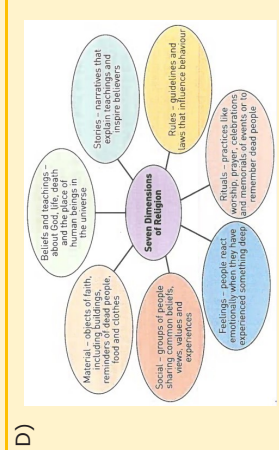
- A modern global community is where multiple cultures and religions live together equally
- Most people in the modern global community are either theists, atheists, agnostics.
- The six main world faiths are Judaism, Christianity, Islam, Hinduism, Buddhism, Sikhi
- Religious communities are having to adapt to a changing religious climate due to globalisation.
- Humanism is a belief system which believes in the power and authority of humans.

Section C: Core Content



C)

Religion	Beliefs	Worship	Sacred Texts
Judaism	Jesus Christ	Church	Bible
Christianity	Abraham	Synagogue	Torah
Jews	The Qur'an	Mosque	Qur'an
Muslims	Guru Nanak	Gurdwara	Guru Granth Sahib
Sikhs	Buddha	Vihara (Temple)	Tripiṭaka
Buddhists	(Gandhi)	Mandi	Vedas
Hindus			



- ⇒ The **UK** is part of the **modern global community** due to its **diversity** of religious communities and its commitment to **freedom** of religious and non-religious expression.
- ⇒ 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%.
- ⇒ Britain can be described at both **pluralist** (meaning people are free to believe, or not believe, in whatever they want) or as **secular** (meaning religion is not at the centre of peoples lives).
- ⇒ A **modern** community is where values and beliefs are being updated to fit with how people think, feel and act in the **21st Century**.
- ⇒ 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.
- ⇒ There are **six** world faiths (meaning these religions are present in almost every country across the world). They are **Buddhism, Christianity, Hinduism, Islam, Judaism, Sikhism**.
- ⇒ Each religion has a place of **worship**; founding or important **person**; holy **texts** and different **denominations** (groups).
- ⇒ Some countries are run according to a religious system meaning their **traditions, laws** and **celebrations** are influenced by a particular religion e.g. Britain, India, Saudi Arabia.
- ⇒ Religious **symbols, clothes** and **foods** are used to reflect certain historical or spiritual aspects of a religion.
- ⇒ **Globalisation** means that religions are interacting with each other more than even before, this means religious people are having to find **common ground** with each other to live peacefully together.
- ⇒ The **Golden Rule** is a common belief that people should treat each other as they would like to be treated.
- ⇒ Religions aim to answer questions which have no set answer; these are sometimes called **Big Questions**; some examples are **'what happens after we die?'**; **'how did we get here?'** and **'what is the meaning of life?'**.
- ⇒ Some people regard religion as **irrelevant** in a modern world therefore religions have to work hard to stay relevant and have a **positive impact** on the world.

Learning Milestone Tasks

- Can you draw and name the six religious symbols?
- Can you explain what makes Britain diverse?
- Can you say what the holy text for each religion is called?
- Can you give a description of what globalization is?
- Can you explain what makes religion relevant in a modern world?
- Can you create a list of Big Questions with some possible answers?
- Can you explain why some people are theists, atheists and agnostics?

7.2 SOURCES OF AUTHORITY

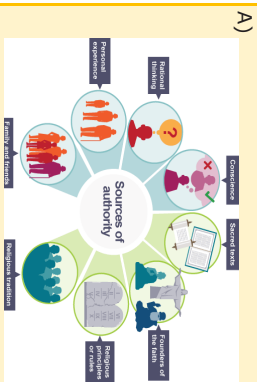
Enquiry Question:
3.4 Does the world need prophets today?

Key Construct: R1. Sources of authority are interpreted for wisdom and guidance.

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. Revelation —when information is given to a prophet.
4. Announcement —what should be encouraged or considered right.
5. Denouncement —what should be discouraged or considered wrong.

Section B: Component Knowledge
1. A source of authority can consist of wisdom (knowledge) and prophecy (predictions) about the world.
2. Prophets deliver messages which can be announcements and denouncements.
3. Jonah, Muhammad (pbuh), Shane Claibourne and Maria Gomez are all religious prophets.
4. Prophets could be non-religious, for example David Attenborough and Greta Thunberg
5. Religious texts are often treated differently to regular texts because they are sources of authority.

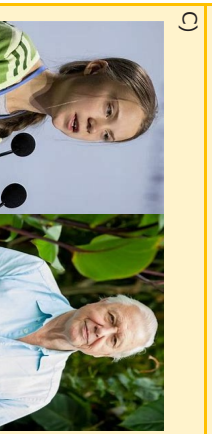
Section C: Core Content



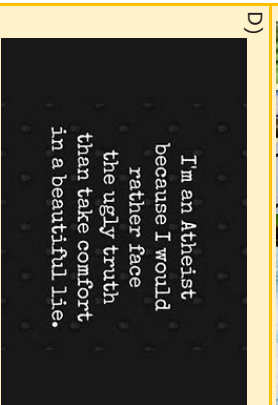
- ⇒ Holy texts are believed to be **sources of authority** because they contain **wisdom and instructions** from God about how to live within the world.
- ⇒ Some faith communities have more than one holy text they refer which can make some texts more **reliable** than others based on who wrote them, when and why.
- ⇒ 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.



- ⇒ Religious prophets bring **messages from God** to encourage better worship; moral goodness; conversion to the faith; discourage immorality; criticise injustice or bring hope.
- ⇒ Religious prophets have information revealed to them through visions, dreams, angels or divine inspiration. This is known as **revelation**.
- ⇒ **Jonah** was a prophet who was sent to the sinful city of Nineveh to announce that if they did not change their ways God would destroy them. In the end, God shows the city **mercy** thanks to the messages from Jonah.
- ⇒ **Muhammad** is known as the Seal of the Prophets for Muslims. He denounced the worship of idols (false gods) and announced the **Shari'ah** (straight path for getting to paradise)
- ⇒ **Maria Gomez** and **Shane Claibourne** are modern Christian prophets; Maria died for her beliefs in **equality and justice** for El Salvador; Shane Claibourne is a writer and speaker



- ⇒ Non-religious prophets including **Sir David Attenborough** and **Greta Thunberg** are not bringing God's messages but could still be considered prophets for the impact they have had on the world.
- ⇒ Greta and Sir David both continue to **denounce** the ways humans are continuing the damage and mistreat the **environment** and living things.
- ⇒ Both have made **predictions** about the effects of global warming; many of which have been proven correct.



- ⇒ **Holy texts** also provide announcements and denouncements; they also contain about **historical events** and **moral stories** to convey the effects of certain actions.
- ⇒ The Bible is a '**library**' of different books written by different Christian authors about God, humans and how the world works.
- ⇒ The Qur'an is holy text of Islam and is the **recited** 'word of Allah' therefore Muslims treat it with extraordinary care and respect and young/new Muslims will attend lessons to help read the Arabic text.
- ⇒ **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.

Learning Milestone Tasks

Can you describe what a holy text is and what it contains?	Can you explain what makes certain texts and certain people 'sources of authority'?	Can you create a profile for one of the religious or non-religious prophets?	Can you explain the impact of David Attenborough? Has it been positive or negative?	Can you describe how Humanists and Atheists know the difference between good/bad they don't have a text to guide them?
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7.3 Sikhi - Beliefs and Teachings

Enquiry Question:

3.12 How are Sikh teachings on equality and service put into practice today?

Key Construct: P1. A modern global community is made up of diverse religions and cultures.

Section A: Key Vocabulary	
1.	Guru —a teacher of spiritual or religious matters.
2.	Langar —free kitchen open to all inside a Gurdwara.
3.	Gurdwara —Sikh place of worship; house of the guru.
4.	Sewa —selfless service to humanity.
5.	Khalsa —Community of Sikhs who have chosen to join the Sikh brotherhood.

Section B: Component Knowledge	
1.	Nanak was the first human guru and founder of Sikhi, he taught 'Useless are the hands and feet if they do not serve humanity.'
2.	Gobind Singh was the tenth and final human guru, he established the Khalsa - servant soldiers.
3.	The Guru Granth Sahib is the Sikh holy text and the everlasting guru.
4.	The Khalsa is the community of initiated Sikhs, both men and women.
5.	Sewa means selfless service to humanity.
6.	Gurdwara means house of the Guru and is the Sikh place of worship; all people are welcome there.

Section C: Core Content

<p>A) Guru Nanak</p> 	<p>↑ Nanak was born to a Hindu family in 1469, his beliefs take inspiration from his family's faith.</p> <p>↑ Jana sakhis (stories) are told to remember key events in his life.</p> <p>↑ Nanak was lost underwater for 3 days as he communicated with, and learnt from, God.</p> <p>↑ Nanak was offered two loaves of bread, he used them to demonstrate the importance of helping others and treating them fairly. One loaf poured with milk because it was pure, the other was made by slaves so poured with blood.</p> <p>↑ Muslims and Hindus both received respect from Nanak, even after death. Whilst his friends argued about how to bury him, the flowers around his body miraculously remained fresh and his body disappeared.</p>
<p>B) Sewa</p> 	<p>↑ Sewa is considered an act of worship to Waheguru (God).</p> <p>↑ There are three methods of performing sewa - Tan (using the body), Man (using the mind) and Dhan (giving up something).</p> <p>↑ Khalsa Aid is a charity which enables members of the Sikhi community to perform sewa in the UK and abroad.</p> <p>↑ Serving in the langar (free kitchen) enables members of the local Gurdwara to perform tan, man and dhan for other Sikhs and the wider community.</p> <p>↑ Sewa enables a Sikh to become less selfish and so become closer to Waheguru.</p>
<p>C) Khalsa</p> 	<p>↑ All Sikh men and women are able to join the Khalsa - the Sikh brotherhood.</p> <p>↑ Gobind Singh founded the Khalsa during a time of great persecution. He encouraged the Sikhi community to stand up and be brave for each other and to serve Waheguru (God).</p> <p>↑ All members of the Khalsa adopt the same uniform as each other - the 5Ks.</p> <p>↑ The 5Ks remind Amritdhari (Khalsa) Sikhs to serve others and serve Waheguru through their actions.</p> <p>↑ Becoming Amritdhari brings a change in name to recognise the commitment made to fight for, and protect others.</p>
<p>D) Gurdwara</p> 	<p>↑ A Gurdwara is any building where the Guru Granth Sahib dwells - it means 'House of the Guru'.</p> <p>↑ A Gurdwara has doors on all four walls to show that people from every direction are welcome to come in.</p> <p>↑ The Guru Granth Sahib is treated as a living guru, so is treated with the utmost respect within the Gurdwara.</p> <p>↑ A Gurdwara is more than just a place of worship, it is also a community centre where all are welcome to attend the langar or study. Many have hospitality facilities where people can stay overnight too.</p> <p>↑ Anyone who uses the Gurdwara is expected to show respect in the same ways - covering their heads and removing their shoes.</p>

Learning Milestone Tasks

<p>Can you say what the word Guru means?</p>	<p>Can you give examples of each type of Sikh service?</p>	<p>Can you say why Sikhs believe service is important?</p> <p>Can you remember what a Sikh pledges when they join the Khalsa?</p> <p>Can you list the 5Ks and say what they mean to Sikhs?</p> <p>Can you describe what happens in a Langar?</p>
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7.4 Hindu Beliefs and Teachings

Key Construct: R2. Beliefs and teachings are what form the basis of a religion.

Enquiry Question:
3.9 Why don't Hindus want to be **remanifestered** and what do they do about it?

Section A: Key Vocabulary

1. **Atman**—the Hindu word for soul
2. **Karma**—the consequences of your positive and negative actions
3. **Dharma**—your duty according to your stage of life and place in society
4. **Moksha**—liberation or freedom from the cycle of samsara
5. **Samsara**—cycle of birth, death and rebirth

Section B: Component Knowledge

1. Hindus believe that an atman (soul) moves from one life to the next taking only karma with it.
2. Each samsara life cycle allows the atman to accumulate positive and/or negative karma.
3. Hindu's want to release their atman from the cycle; this is called Moksha.
4. Ashrama are the four stages of life; student, householder, retired and renouncer; and each one has it's dharma (duties).
5. Varna are the four levels of society; brahmin, kshatriya, vaishya and sudra; and each one has it's dharma (duties).

Learning Milestone Tasks

Can you describe what the atman is and how it links to karma?

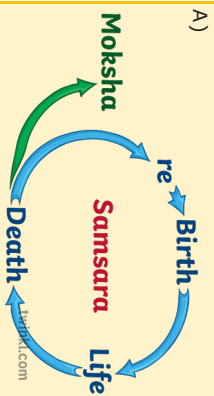
Can you draw your own labelled version of the samsara cycle of birth, death and rebirth?

Can you create a series of illustrations for the four ashramas?

Can you explain reasons for and against having a group called Untouchables?

Can you explain why Rama is the perfect example of a person who follows dharma?

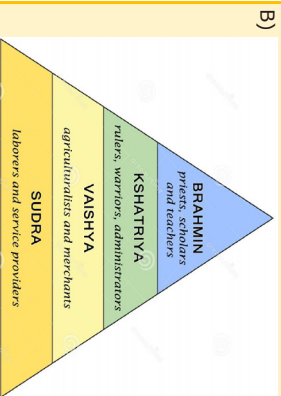
Section C: Core Content



⇒ **Brahman (God)** can be represented by the ocean - (beyond human understanding, always changing, giving life to the world)

⇒ Every creature has an **atman (soul)** within it. This is like Brahman but separate from him and stuck in samsara. Like a drop of water in a bucket.

⇒ Before being born human, an atman (soul) works up through the animal and plant stages of life. Hindus aim to **free their atman from samsara** completely, so it can be with Brahman (where it belongs) and so that it doesn't have to be **remanifestered (reborn)** again. This is **Moksha!**



⇒ The varna system is **based on karma**, meaning those at the top of society are closest to achieving Moksha and being free from the system forever.

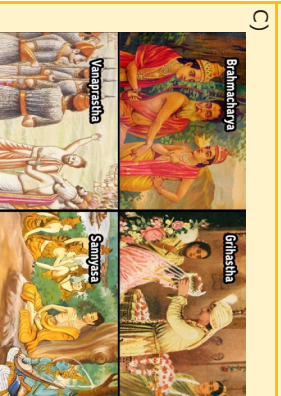
⇒ Your **karma from your past lives** is what decides where in society you belong.

⇒ Each level has specific jobs and expectations of behaviour and morality and should not be changed or ignored. This is your **varna-dharma**.

⇒ **Brahmins** are the priests/religious leaders and gurus; **Kshatriyas** are the political/social/military rulers and warriors; **Vaishyas** are the skilled workers business and land owners; **Sudras** are the unskilled workers, labourers and service providers.

⇒ The **Untouchables** are considered impure because of their negative karma and are therefore not permitted to be fully a part of the varna society.

⇒ Treatment of the Untouchables can be very bad and campaigners such as **Mohandas K Gandhi** believe it is part of their dharma to protect and help them.



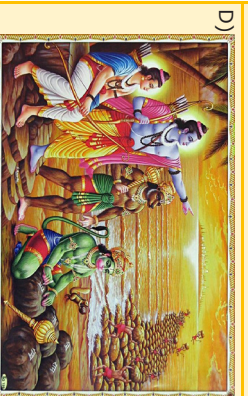
⇒ Hindu scripture recognises **four stages of life**, called ashramas and each stage has **associated duties** (dharma) everyone is expected to do. These are your **ashrama-dharma**.

⇒ The first stage dharma is learning, being a pupil or student—a person living in this stage is called **Brahmachari**.

⇒ The second stage dharma is being a householder and parent—this stage is called **Grihastha**.

⇒ The third stage dharma is retirement from work, teaching younger generations and developing spiritual practices—this stage is called **Vanaprastha**.

⇒ The fourth stage is where some people give up (**renounce**) all the things of this world to devote themselves completely to their spirituality. This stage is not for everyone – a person living in the fourth ashrama is called a **Sannyasin**.



⇒ The ancient Indian poem Ramayana is one of the most important in Hindu literature. It follows the adventures 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 so his karma is not affected.

⇒ He is born as a **kshatriya** (ruler) and becomes an excellent bowman (warrior); he also has a devoted wife as he is in the **grihastha ashrama**.

⇒ Rama defeats the demon and therefore proves that **light/goodness will always conquer evil/darkness**.

7.5 Religious Practices

Key Construct: R3. Religious practices are performed to reflect religious beliefs and values.

Enquiry Question:

3.18 How can people express the spiritual?

Section A: Key Vocabulary	Section C: Core Content	
<ol style="list-style-type: none"> Kosher—Jewish word for food which are permitted. Fasting—not eating or drinking certain foods/drinks at certain times. Pilgrimage—a religious journey to a sacred place. Eid al Fitr—Islamic celebration at the end of Ramadan. Sacred—something with religious significance or connections. 	<p>A) </p>	<p>All people have a legal right to express their beliefs and opinions, this right is outlined in The Declaration of Human Rights.</p> <p>Religious symbols are used to convey beliefs and values associated with that religion.</p> <p>Religious people make specific lifestyle choices which reflect, or are influenced by, their religious beliefs and values.</p>
Section B: Component Knowledge	<p>B) </p>	<p>Judaism—Food</p> <p>The Torah sets out rules about food which is permitted and food which is not. Kosher rules say how food should be slaughtered and prepared.</p> <p>Food that is allowed is called kosher. Food that is not allowed is called treif or trefah.</p> <p>Orthodox Jews keep all the rules. Some even have separate utensils and perhaps fridges for the preparation and storage of meat and dairy products. Reform Jews observe a selection of the laws.</p> <p>Islam—Food</p> <p>During the month of Ramadan, Muslims won't eat or drink during the hours of daylight. This is called fasting.</p> <p>Fasting allows Muslims to devote themselves to their faith. It is thought to teach self-discipline and reminds them of the suffering of the poor. However, children, pregnant women, elderly people and those who are ill or travelling don't have to fast.</p>
<ol style="list-style-type: none"> Religious beliefs and values are shown in food, clothing, fasting and pilgrimage. Jewish food laws are referred to as Kosher. Ramadan is the Islamic month of fasting. Jews and Christians both travel to Jerusalem as an important site for pilgrimage. Religious celebrations such as Easter and Eid bring the community together and create unity. 	<p>C) </p>	<p>Jerusalem is the Holy City. For Jews, Jerusalem is at the core of their faith and their world. According to Jewish tradition, all of creation began in Jerusalem.</p> <p>There are many sites of Christian pilgrimage, several of which are mentioned in Bible stories about the life of Jesus. One of the main places for pilgrimage is Jerusalem.</p> <p>Hindu 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.</p> <p>The Kumbh Mela is the largest human gathering on earth and takes place at Varanasi each year.</p> <p>The River Ganges, which is one of the most sacred rivers in the world, runs through the city and is important as it is where Hindus bathe in the hope they can wash their sins away.</p> <p>Pilgrimage in most religions is not compulsory but the benefits can make it one of the most significant religious practices.</p>
Learning Milestone Tasks	<p>D) </p>	<p>In Christianity, the most solemn week of the Christian year, Holy Week is the week leading up to Easter, and is the week during which Christians particularly remember the last week of Jesus's life. Holy Week begins on Palm Sunday and ends on Easter Sunday.</p> <p>In Islam, Eid marks the end of a month of fasting from dawn to sunset, as well as spiritual reflection and prayer. Many Muslims also make their annual charity donations (Zakah) during this time.</p> <p>Eid normally begins with a big meal followed by celebrations like parties and gatherings in parks and outdoor spaces. One of the most common things you'll hear people say to one another is "Eid Mubarak!"</p>

Can you explain why religious expression is one of the Human Rights?

Can you create a do/don't list for Jews?

Can you describe reasons why pilgrimage is so important?

Can you describe what Holy Week involves?

Can you create a series of symbols for religious expression?

B1 Chapter 1: Cells

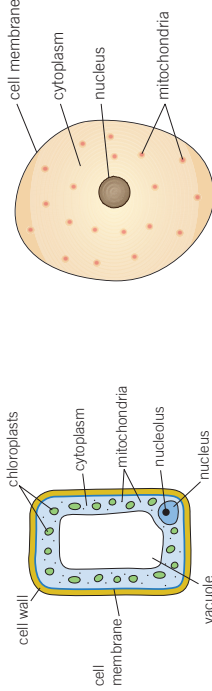
Knowledge organiser

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 special job or function:

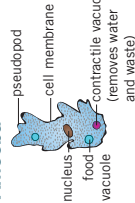
Cell type	Function	Special features	Diagram
plant cells			
root hair cell	absorb water and nutrients from soil	<ul style="list-style-type: none"> root hair creates a large surface area no chloroplasts as no light underground 	
leaf cell (palisade cell)	carry out photosynthesis	<ul style="list-style-type: none"> found at the top surface of leaves packed with chloroplasts thin with a large surface area to absorb more light 	
red blood cell	transport oxygen around the body	<ul style="list-style-type: none"> contain haemoglobin which joins to oxygen no nucleus disc shaped to increase surface area 	
nerve cell (neurone)	carry electrical impulses around the body	<ul style="list-style-type: none"> long and thin with connections at each end 	
sperm cell	carry male genetic material	<ul style="list-style-type: none"> 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.

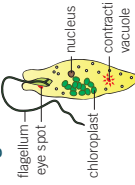
Amoeba

- 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

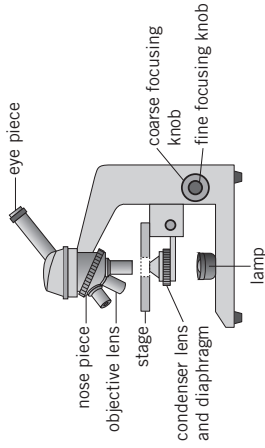


Microscopes

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

- Move the stage to its lowest position.
- Place the slide/object on the stage.
- Choose the objective lens with the lowest magnification.
- Look through the eyepiece and turn the coarse-focus knob slowly until you see the object.
- Turn the fine focus knob until it comes into focus.
- 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

Activate
Question • Progress • Succeed

Multicellular organisms are made up of many cells and have five levels of organisation:

cell
the smallest building block of an organism

tissue
a group of specialised cells working together

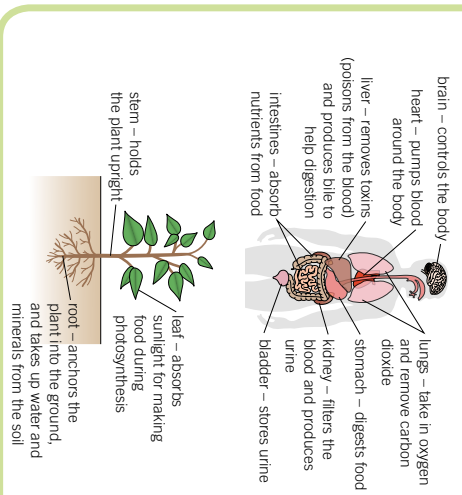
organ
a group of tissues working together

organ system
a group of organs working together

multicellular organism
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:

- Hinge joints** forwards/backwards movements only, e.g., knees
- Ball-and-socket joints** movement in all directions, e.g., shoulders
- 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)	composition of inhaled air:
<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> oxygen, O₂ 20.96% carbon dioxide, CO₂ 0.04% nitrogen, N₂ 79%
When you breathe out (exhale)	composition of exhaled air:
<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> oxygen, O₂ 16% carbon dioxide, CO₂ 4% nitrogen, N₂ 79%

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.

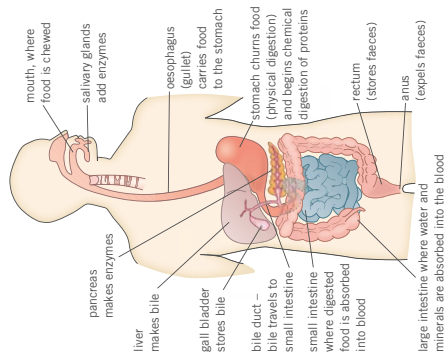
For example, *biceps* and *triceps* work together to bend and straighten the forearm.

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
- respiratory system
- ribcage
- skeleton
- tendon
- tissue
- trachea
- volume

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	lipase
carbohydrates (e.g., starch)	protease	lipids
	protein	↓
		fatty acids and glycerol
digests		↓
		sugars
		↓
		amino acids

Key terms

Make sure you can write definitions for these key terms.

- addiction
- anus
- lipid
- balanced diet
- lipase
- mineral
- carbohydrase
- nicotine
- nutrient
- carbohydrate
- carbon monoxide
- oesophagus
- protease
- protein
- rectum
- deficiency
- small intestine
- digestion
- deficiency
- small intestine
- digestive system
- drug
- enzyme
- fibre
- food test
- large intestine
- stimulant
- stomach
- tar
- vitamin
- withdrawal symptom

Diet

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)

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.

Food tests

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
<ul style="list-style-type: none"> used in medicine benefit your health if used correctly used to treat symptoms or cure illness some have side effects 	<ul style="list-style-type: none"> 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
- brain damage
- heart disease
- liver damage (cirrhosis)
- reduced fertility

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
- strokes
- emphysema
- lung cancer
- respiratory infections

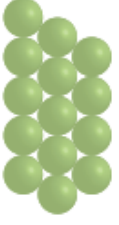


Smoking during pregnancy increases the risk of miscarriage and low birth weight babies, and can also affect the fetus' development.

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**.

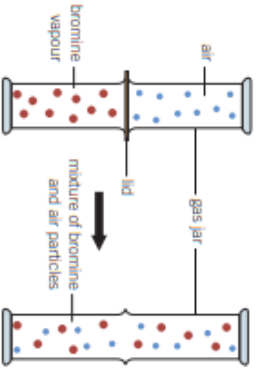
Chemistry - Matter 1

Changes of state

changes of state	solid	melting	liquid	boiling/evaporation	gas
state of matter	solid				
how do the particles move?	Particles do not move around				
arrangement of particles					
can it be compressed?	No, because there is no space between the particles				
can it flow?	No, because the particles can't move around				
changes of state	freezing		condensation		
	<p>liquid</p> <p>Particles touching but can slide over each other</p> 				
	<p>gas</p> <p>particles are spread out far away from each other</p> 				

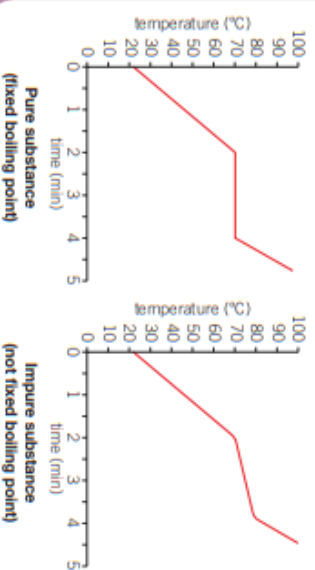
Diffusion

- **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

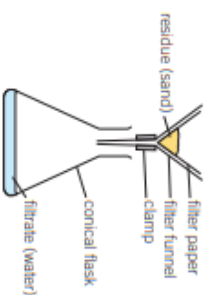


Mixtures

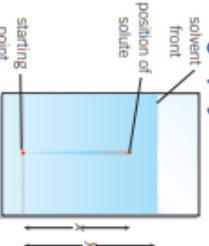
- **Mixtures** are different **substances** which are together, they are not chemically bonded and so are easy to separate
- The substances which make up a mixture keep their own **properties** unlike those in a compound
- A mixture is an **impure** substance as it does not have a fixed melting point, 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

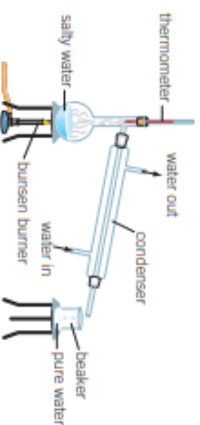
Filtration



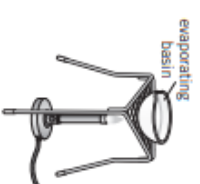
Chromatography



Distillation



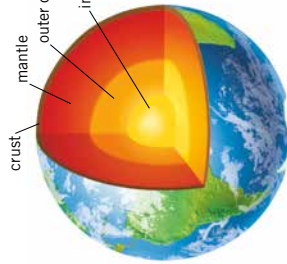
Evaporation



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

The Earth

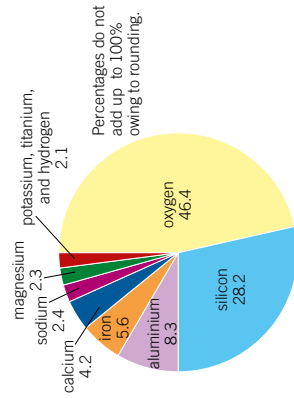


The Earth is made of several layers:

- 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.

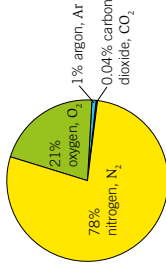


Types of rock

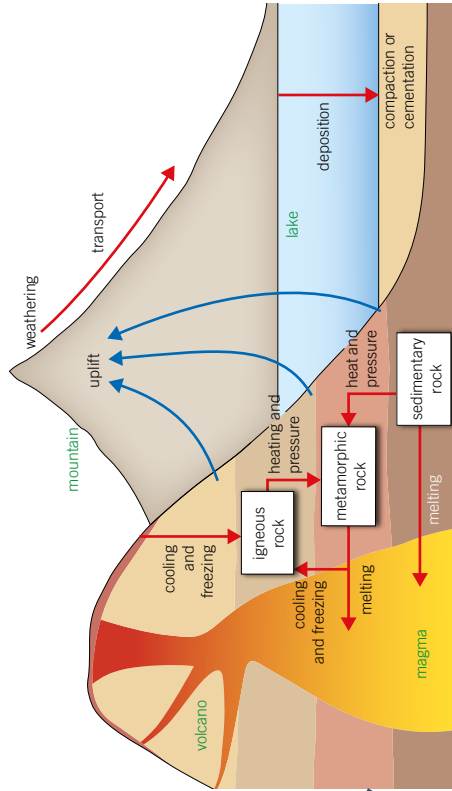
There are three types of rock that make up the Earth's crust. These are formed by different processes in the **rock cycle**, and have different properties.

The atmosphere

The **atmosphere** is a layer of gas surrounding the Earth. It is mainly comprised of nitrogen and oxygen.



Type of rock	How it is formed	Properties	Uses
sedimentary rock	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> when liquid rock cools it turns into igneous rocks these are made of crystals locked tightly together Magma: liquid rock slowly and forms large crystals. Lava: liquid rock above the ground – cools quickly and forms small crystals. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> other rocks under the Earth are heated and put under pressure over time, these rocks become metamorphic 	<ul style="list-style-type: none"> Not porous: there is no space between crystals 	marble used for kitchens slate used for roofing tiles



The rock cycle

Because the different rocks can turn into each other, we say that there is a rock cycle.



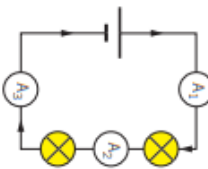
Make sure you can write definitions for these key terms.

- atmosphere crust cementation compaction Earth igneous rock inner core lava magma mantle metamorphic rock outer core porous rock cycle sedimentary rock

Physics - Electricity

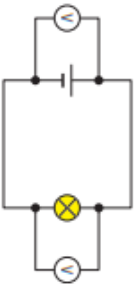
Current

- 1 **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 Ampos (A) and is measured with an **ammeter** (which is placed in series or in the main circuit)



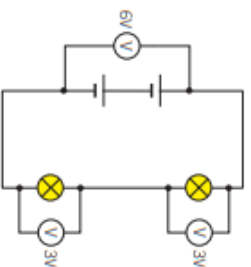
Potential difference

- 2 **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)



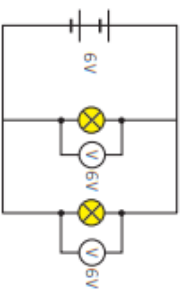
Series circuits

- 3 **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



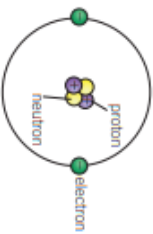
Parallel circuits

- 4 **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



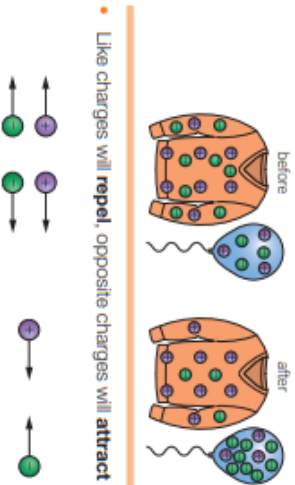
The atom

- 5 The **atom** consists of a central nucleus with electrons orbiting around the outside in shells
 - **Electrons** have a negative charge
 - **Protons** are inside the nucleus and have a positive charge
 - **Neutrons** are inside the nucleus and have a neutral charge



Static electricity

- 6 Static electricity is 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



Resistance

- 7 **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**



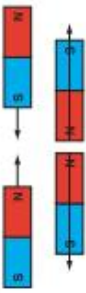
Make sure you can write definitions for these key terms.

ammeter atom attract battery cell conductors current electrons electric charge insulator neutral neutrons parallel
 potential difference protons repel resistance series voltmeter

Physics - Magnets

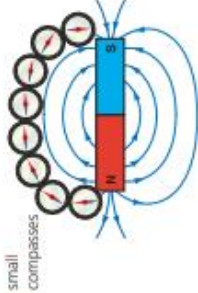

1

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

2

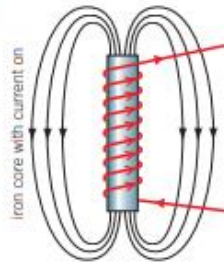
Magnetic fields

- 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, these always travel out of the north pole of the magnet, and into the south pole 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

3

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

4

Using electromagnets

Circuit breakers

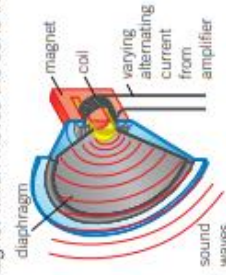
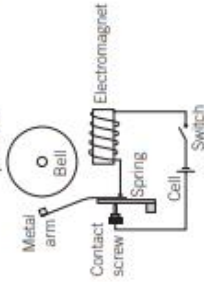
- Circuit breakers detect large changes in current in a house, and will break a circuit
- When a large current flows, the electromagnet becomes strong enough to attract an iron catch which will break a circuit
- They can then be reset and used again
- This makes them suitable as an electrical safety 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

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



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

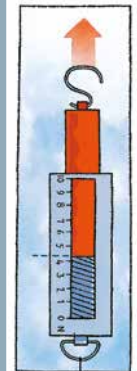
Knowledge organiser

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:

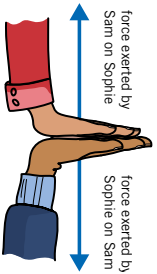
- **friction**
- **drag forces (air resistance and water resistance)**
- support forces (e.g., **reaction forces**)

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

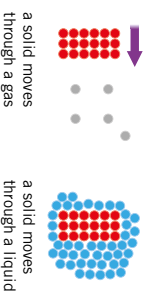
Friction is a contact force that occurs when two objects move against each other. It happens because all surfaces have some roughness – even ones that look smooth.

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.

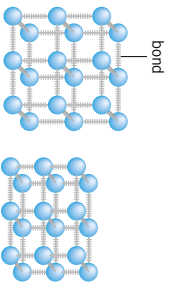
Reaction forces

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.

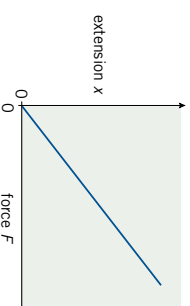
Your weight depends on the gravitational field strength but your mass is the same everywhere.

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.



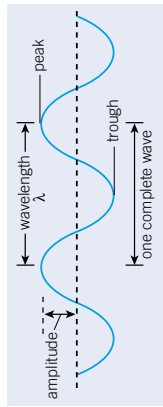
Key terms

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 | streamlined | stretch | streamlined | tension | unbalanced | upthrust | water resistance | weight | | |

Properties of waves

A wave is an **oscillation** or **vibration** that transfers energy. Matter is not transferred. Waves can be longitudinal or transverse.



Amplitude – distance from the middle to the top or bottom of the wave

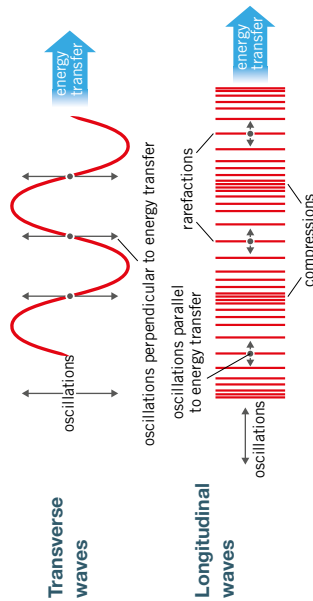
Wavelength – distance between a point on the wave to the same point on the next wave

Trough – bottom of the wave **Peak** – top of the wave

Frequency – how many waves go past a particular point in a second, measured in **hertz** (Hz) or kHz

If waves meet they **superpose**. This means they add up or cancel out, depending on if they are in time with each other or not.

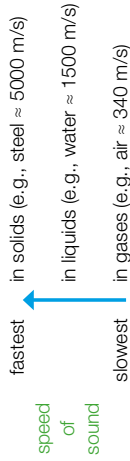
Transverse and longitudinal waves



Sound waves

Sound is produced by vibrations, which make air molecules oscillate.

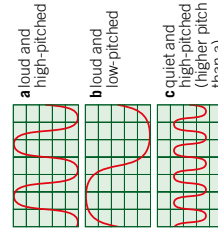
Sound is a longitudinal wave.



Waves can be **reflected** from a surface. The wave hitting the surface is the **incident wave**, and the wave bouncing off is the **reflected wave**. A reflected sound wave is heard as an echo. The time delay of an echo can be used to work out the distance to an object.

Ultrasound (waves >20 kHz) is used to make images of unborn babies, in medical scans, and for underwater (sonar) searches.

Measuring sound



Oscilloscopes display sound waves.

Humans can hear frequencies 20 Hz to 20 kHz. Above this is ultrasound. Below this is **infrasound**.

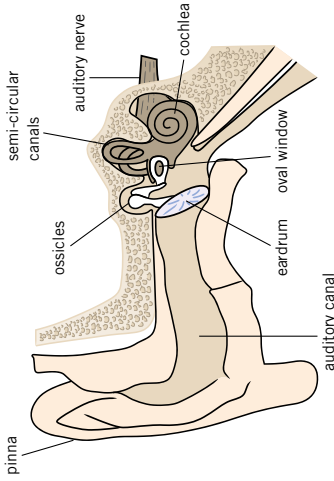
Sound volume is measured in **decibels** (dB). The decibel scale is not linear – a 10dB increase is 10 times the volume.

Recording and playing sounds

In a microphone sound waves hit a **diaphragm** making it vibrate. This produces an electrical signal by moving a coil of wire over a magnet. Speakers are the opposite to microphones – an electrical signal is turned into sound by moving a cone backwards and forwards.

Hearing

Your ear is made of many specially adapted structures that detect and transmit sound waves, allowing you to hear noises.



Part of ear	Structure	Function
outer ear	pinna	directs sound into auditory canal
	auditory canal	sound travels through it to reach the eardrum
middle ear	eardrum	vibrates and passes vibrations to the ossicles
	ossicles	tiny bones that amplify sound
inner ear	cochlea	filled with thousands of tiny hairs and liquid – sound makes the hairs move, which sends an electrical signal to your brain
	semi-circular canals	helps you keep your balance

Hearing damage be caused by a number of factors, for example:

- a hole in the ear drum (grows back naturally)
- canal blocked with wax (curable)
- loud sounds or injury, causing damage to the hairs in the cochlea (permanent).

Key terms

Make sure you can write definitions for these key terms.

- amplify amplitude auditory canal auditory nerve cochlea compression decibel diaphragm eardrum frequency hertz incident wave infrasound longitudinal oscillation oscilloscope ossicle oval window peak pinna pitch rarefaction reflected semi-circular canal superpose transverse trough ultrasound vibration wavelength

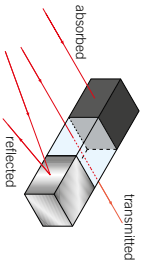
P1 Chapter 3: Light

Knowledge organiser

How does light travel?

Luminous objects are sources of light.
Non-luminous objects do not produce their own light.

When light hits an object it can be **absorbed**, **reflected**, or **transmitted**.
If an object is:
transparent – most light is transmitted
translucent – light is scattered
opaque – no light is transmitted so a shadow is produced.



Light can travel through gases, some solids and liquids, and completely empty space (a vacuum).
The speed of light in a **vacuum** is about 300 000 km/s.

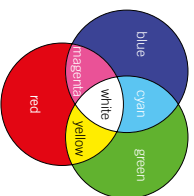
Distances in space are measured in **light-time**. Remember that light-time is a distance (not a measure of time).
A light-minute is the distance light travels in one minute.
A light-year is the distance light travels in one year.

Colours of light

A **prism** refracts different colours of light by different amounts. This disperses light into a continuous **spectrum** of colours.

The **primary colours** of light are **red**, **green**, and **blue**.

Secondary colours are produced when any two primary colours are mixed.



Filters subtract colours from white light, so that only one colour of light is transmitted.

Objects appear to be different colours because they reflect some colours of light and absorb others.
Black objects absorb all colours and white objects reflect all colours.

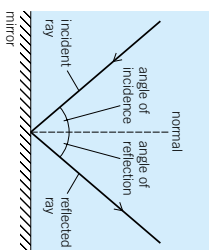


Make sure you can write definitions for these key terms.

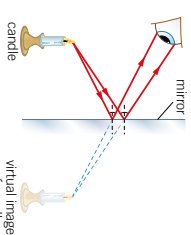
- absorb angle of incidence change-coupled device colour converging convex diffuse scattering filter focal point focus incident ray law of refraction lens
light-time luminous normal opaque photoreceptor pixel primary colour prism real image refraction retina secondary transmit spectrum specular reflection
reflection translucent transparent transparent translucent transparent virtual image

Reflection and refraction of light

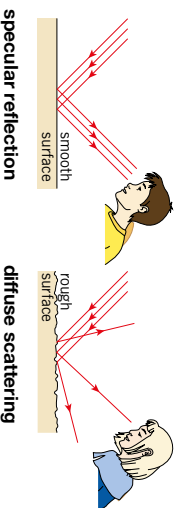
The **law of reflection** states that:
The **angle of incidence** is equal to the **angle of reflection**.



Images in mirrors are **virtual** – they look like they are behind the mirror.



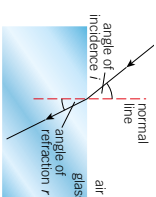
Whether or not you can see a clear reflected image depends on how smooth the surface is:



Refraction of light

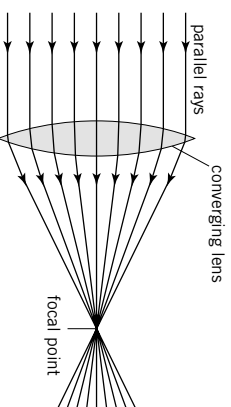
Refraction is when light changes direction when it travels from one **medium** (material, such as air or water) to another.
Refraction happens because light travels at different speeds in different materials.

- Rays of light will be refracted:
- towards the **normal** if they slow down, such as going from air to glass
- away from the normal if they speed up, such as going from water to air.



Lenses use refraction to spread out or **focus** light.

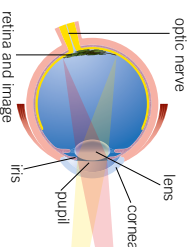
Convex (or **converging**) lenses (like the ones in your eyes) are shaped to focus the light to a point – called the **focal point**.



How do eyes and cameras work?

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.



Cameras work in the same way as your eye – light passes through an opening and a **real image** is formed on a screen or film.
Digital cameras now have a **charge-coupled device (CCD)** instead of film – when light hits a **pixel** it produces an electrical charge.

