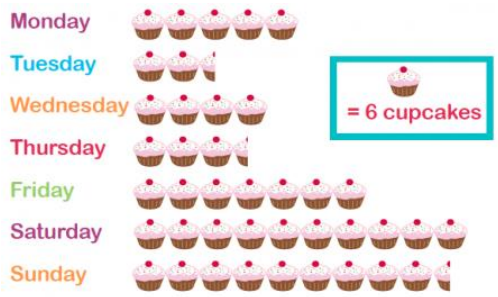
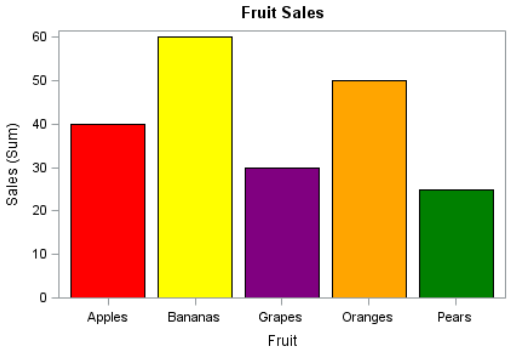



1. Pictogram

16

- Uses symbols
- Include a key to explain what the symbol represents
- Can use fractions of the symbol




2. Bar Chart

15

- Label axes
- Gaps between the bars
- Consistent scale on y axis
- Use a pencil and ruler

**3. Frequency** is the number of times something happens.
A **frequency table** can be used to show the frequency of each outcome. Data can be put into groups or classes. A **grouped frequency table** gives the frequency for each group.

65

**4. Mode**– the number which appears most often in a set of numbers.

**Median**– the number in the middle of the set when the numbers are listed in ascending order. If there are two numbers in the middle then calculate the number in the middle of them.

**Range**– find the largest and smallest numbers in the list and subtract them.

**Mean**– add up the numbers and divide by how many there are.

62

5. There are many different words which mean the same thing. Some are listed below.

**Add**: sum, plus, total, addition
**Subtract**: take away, minus, difference
**Multiply**: times, product, lots of
**Divide**: share, share by, how many go into...

6. A **multiple** of a number is something in that numbers times table.

A **factor** is a whole number that divides exactly into another number.

A **square number** is the answer you get when a number is multiplied by itself e.g. 3 x 3 = 9 so 9 is a square number.

**Square root** is the inverse of squaring a number. The symbol $\sqrt{}$ means square root.

| | | | |
|---|---|---|---|
| $1^2 = 1$ | $4^2 = 16$ | $7^2 = 49$ | $10^2 = 100$ |
| $2^2 = 4$ | $5^2 = 25$ | $8^2 = 64$ | $11^2 = 121$ |
| $3^2 = 9$ | $6^2 = 36$ | $9^2 = 81$ | $12^2 = 144$ |

81

7

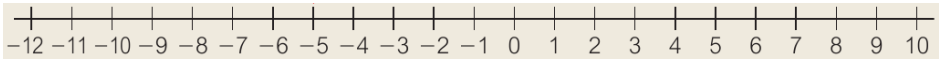
**Key point**

Multiplying by 10 moves the digits 1 place to the left.
Multiplying by 100 moves the digits 2 places to the left.
Multiplying by 1000 moves the digits 3 places to the left.

**Key point**

Dividing by 10 moves the digits 1 place to the right.
Dividing by 100 moves the digits 2 places to the right.
Dividing by 1000 moves the digits 3 places to the right.

8. A number line can help you with negative numbers.



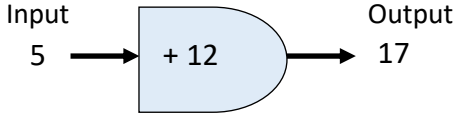

Y7 Mathematics Pi CH 1 and 2

# Mathematics Pi 1 Chapters 3 & 4

A function is a relationship between two sets of numbers.

The numbers that go into a function machine are called the **input.**

The numbers that come out are called the **output**.




156

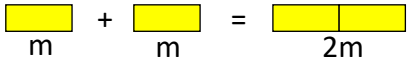
Within mathematics, if we do not know a value we can use letters instead.

An **expression** is a mathematical statement written using symbols, numbers or letters. It **doesn't** include an equal sign.

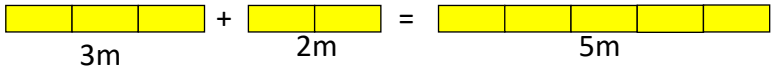
A **formula** shows the relationship between two or more variables. It **does** include an equal sign.

Such as, the area of a rectangle = length x width. The formula for this would be A = L x W.

We can simplify expressions by collecting 'like terms'.

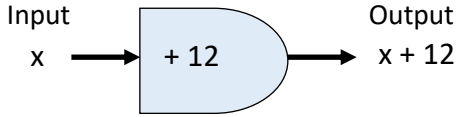



3m + 2m = 5m




156

We can write expressions by using a function machine.




159

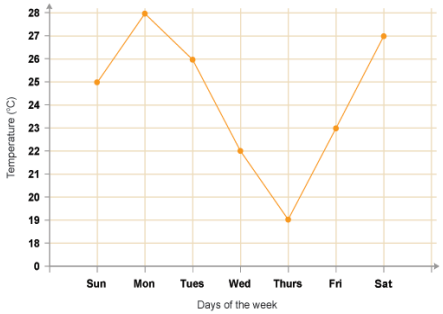
When using a formula, we can **substitute** a given number in.

Such as,

Distance = speed x time, find the distance when the speed is 40mph and time is 3 hours.

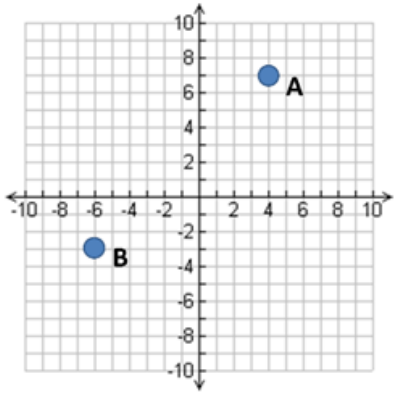
40 x 3 = 120 miles

780




Real life graphs show how something changes over time, we put time on the x-axis (horizontal axis).

780




- Coordinates are written in pairs.
- The first number is the x-coordinate (movement across)
- The second number is the y-coordinate (movement **up** or **down**)

A: (4,7) B: (-6,-3)

# Mathematics Year 7 Pi 1 Chapters 5 & 6

1) Use BIDMAS for multistep calculations to understand what order to perform the calculations.

| | |
|---|---|
| **B** | Brackets |
| **I** | Indices (Indices mean powers like $^2$ and √) |
| **D** | Divide |
| **M** | Multiply |
| **A** | Addition |
| **S** | Subtraction |

150

2)

| | |
|---|---|
| Multiple | A number that appears in a numbers times table. |
| Factor | A whole number that divides exactly into another number. |
| Prime number | A number that has exactly two factors; 1 and itself. The first ten prime numbers are; 2, 3, 5, 7, 11, 13, 17, 19, 23, 31. |
| Square number | The answer to a number multiplied by itself. |

33&27
28&99

3)

| | |
|---|---|
| Highest common factor | The largest number that is a factor of both numbers. |
| Lowest common multiple | Write a list of multiplies for each number and look for the first number that appears in both lists. |

31&34

4) **Working with decimals**

47&48&50

**Add and subtract** decimals using **column method**. Remember to line up your decimal points.

When **multiplying** decimals remember the answer should have the **same number of figures** after the decimal point as the total number of figures after decimal points in the question.

When **dividing** decimals keep **multiplying both numbers by 10** until you are **dividing by an integer** then use **bus stop method** or long division.

5)

| | | |
|---|---|---|
| Metric System | A system of measures based on:<br>the metre for length; the gram for mass; the litre for volume<br>**Length: mm, cm, m, km**<br>**Mass: mg, g, kg**<br>**Volume: ml, cl, l** | 1 kilometres = 1000 metres<br>1 metre = 100 centimetres<br>1 centimetre = 10 millimetres<br>1 kilogram = 1000 grams |

691

6)

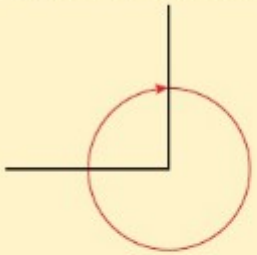
| | | |
|---|---|---|
| Decimal | A number with a **decimal point** in it. Can be positive or negative. | 3.7, 0.94, -24.07 |
| Rounding | To make a number simpler but keep its value close to what it was.<br>If the **digit to the right** of the rounding digit is **less than 5, round down**.; If the **digit to the right** of the rounding digit is **5 or more, round up**. | 74 rounded to the nearest ten is 70, because 74 is closer to 70 than 80.<br>152,879 rounded to the nearest thousand is 153,000. |

45&56

# Mathematics Year - 7 Pi 1 Chapters 7 & 8

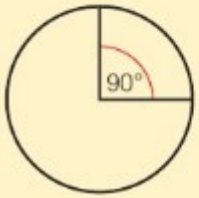
1

**Angle** measures a turn.
Angles are measured in **degrees** (°).

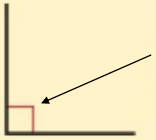


A whole turn is 360°.

A half turn is 180°.



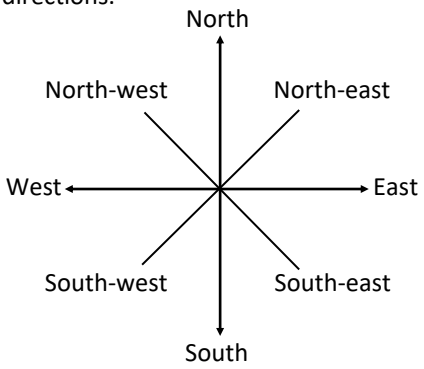

A **right angle** is a quarter turn, or 90°.



This symbol means an angle is a right angle.

The corner of a piece of paper is a right angle. You can use it to check if an angle is 90°.

2) You can use a compass to give directions.

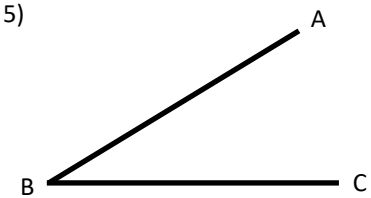



The direction of a turn is either clockwise or anticlockwise.

CLOCKWISE ANTI-CLOCKWISE

Angles on a compass are measured clockwise from North.

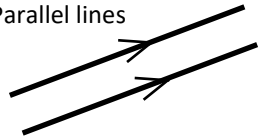
5)



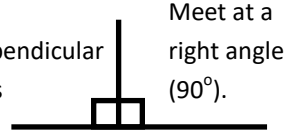

This angle could be called

- Angle ABC
- ∠ ABC
- $\hat{ABC}$
- Angle CBA
- ∠CBA
- $\hat{CBA}$

Parallel lines

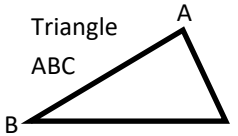


Perpendicular lines



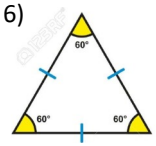
Meet at a right angle (90°).

Triangle ABC





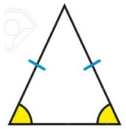

6)




Equilateral Triangle

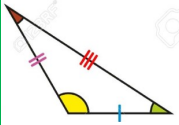
- all angles equal
- all sides equal

Isosceles Triangle



- two angles equal
- two sides equal

Scalene Triangle

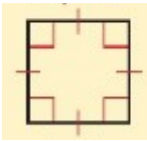


- all angles and sides are different

7) A quadrilateral is a flat shape with four straight sides.

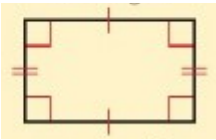
Squares and rectangle are special quadrilaterals. All their corners are right angles.

square



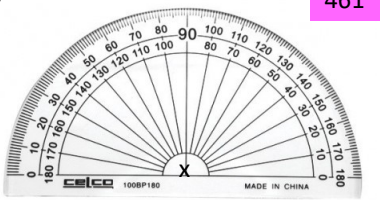
All sides equal

rectangle



Opposite sides equal

3) 461



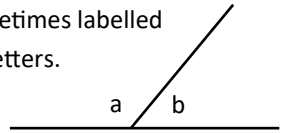

Measure angles using a protractor.

Make sure the point of the angle is on the cross marked x above.

Line up the zero line with one line of the angle. Read up from 0.

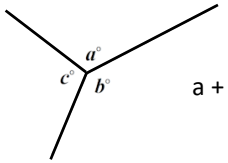
4) Angles are sometimes labelled with lowercase letters.

a + b = 180°




Angles on a straight line add up to 180°.

Angles around a point add up to 360°.




a + b + c = 360°

477+

8)

| | |
|---|---|
| Line symmetry | A shape has line symmetry if one half folds exactly on top of the other half. |
| Rotational symmetry | A shape has rotational symmetry if it looks the same more than once in a turn. 827+ |

9)

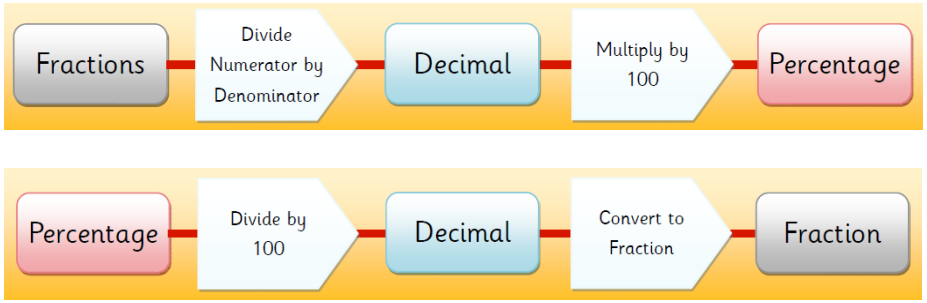
| | |
|---|---|
| Perimeter 548+ | Distance around the edge of a shape. |
| Area | Space inside a shape. |
| Polygon | A 2D shape with straight sides. |
| Regular polygon | A shape with all sides the same length and angles the same size. |

# Mathematics Year 7 - Pi 1 Chapter 9

1)

| | |
|---|---|
| Fraction | Part of a whole. |
| Numerator | The number on the top of the fraction. |
| Denominator | The number on the bottom of the fraction. |
| Improper fraction | A fraction where the numerator is bigger than the denominator. |
| Mixed number | Has a whole number part and a fraction part. |
| Equivalent fraction | Fractions that represent the same amount but have different numerators and denominators. |
| Simplified fraction | One with the smallest possible numerator and denominator. |
| Common denominator | Fractions with the same denominator. |

58+




82+

3)

| | |
|---|---|
| **Multiplying fractions** | Write any mixed numbers as improper fractions. Multiply the numerators. Multiply the denominators. |
| **Dividing fractions** | Write any mixed numbers as improper fractions. Invert the fraction you are dividing by and multiply |
| **Adding fractions** | Find a common denominator if you don't already have one. Add the numerators. Keep the denominators the same. |
| **Subtracting fractions** | Find a common denominator if you don't already have one. Subtract the numerators. Keep the denominators the same. |

65+

| | |
|---|---|
| Percent | Percent means out of 100. The symbol % is used. |
| 1% | To find 1% divide the amount by 100. |
| 10% | To find 10% divide the amount by 10. |
| 50% | To find 50% divide the amount by 2. |
| 25% | To find 25% divide the amount by 4. |

84+

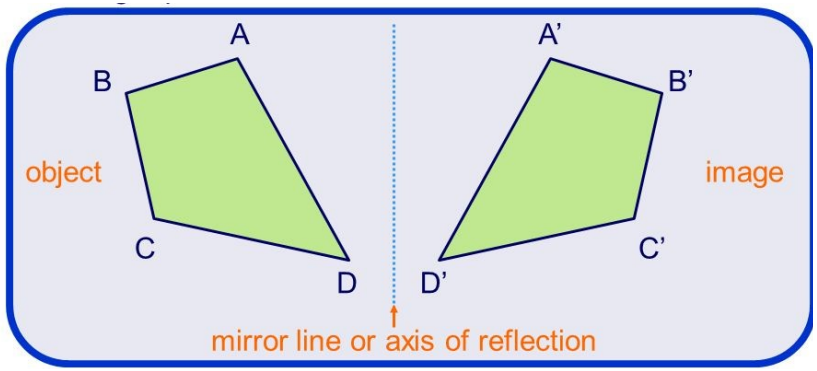
# Mathematics Year 7 - Pi 1 Chapter 10

## 1)

| | |
|---|---|
| Congruent shapes | Shapes that are exactly the same size and shape. 680 |
| Criteria for congruency | • Corresponding sides are equal<br>• Corresponding angles are equal |
| Example |  |

## 2)

| | |
|---|---|
| Reflection | Transformation which reflects a shape in a mirror line. All points on the image are the same distance from the mirror line as points on the object but on the opposite side. |
| Line of reflection | Also called the mirror line or axis of reflection. 639+ |
| Instructions | 1. Draw the line of reflection.<br>2. Count the distance/number of squares from the first corner of the object to the mirror line.<br>3. Count the same distance on the opposite side of the mirror line and plot the new point.<br>4. Repeat for each corner then join them up to form the image. |
| Describing a reflection | Information needed:<br>• Write the word 'reflection'<br>• Write the equation of the mirror line, e.g. x = 3 or y = -2 |



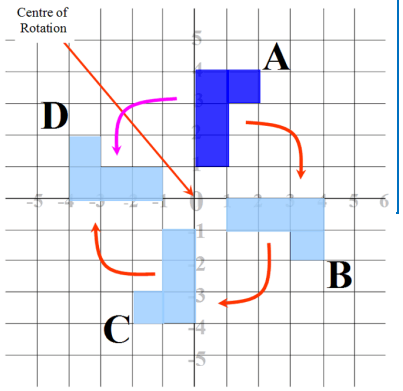

## 3)

| | |
|---|---|
| Line of symmetry | The imaginary **line** where you could fold the image and have both halves match exactly. |
| Order of rotational symmetry | When a shape is rotated 360° the number of times it looks exactly the same is the order of rotational symmetry. |
| Plane of symmetry | If a 3D shape has reflection symmetry the mirror line is called the plane of symmetry. 827+ |

## 4) Rotation

Turning a shape around a point, called the centre of rotation.

| | |
|---|---|
| Describing a rotation | Information needed:<br>• Centre of rotation<br>• Angle<br>• Direction needed. |
| Equipment | You can ask for tracing paper to help you.<br>Trace over the shape, draw an arrow pointing up and rotate until the arrow points in the required direction. |




## 5) Translation

Moving a shape. Size and orientation stay the same.

| | |
|---|---|
| Vector | Translations are written as a vector. |
| $\begin{pmatrix} a \\ b \end{pmatrix}$ | • If a is positive, move the shape to the right.<br>• If a is negative, move the shape to the left.<br>• If b is positive, move the shape up<br>• If b is negative, move the shape down. |