



Rewarding Learning

General Certificate of Secondary Education
2022

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

Mathematics

Unit M5 Paper 2
(With calculator)
Foundation Tier



[GMC52]
MONDAY 13 JUNE, 10.45am–11.45am

GMC52

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page. **You are provided with Foundation Tier Additional Support Materials for use with this paper.**

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page, on blank pages or tracing paper.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all fifteen** questions.

All working should be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.

You **may** use a calculator for this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 50.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You should have a calculator, ruler, compasses and a protractor.

The Formula Sheet is on page 2.

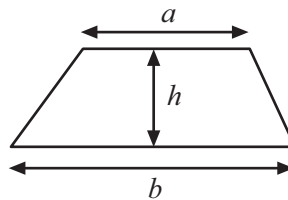
12992.06 R



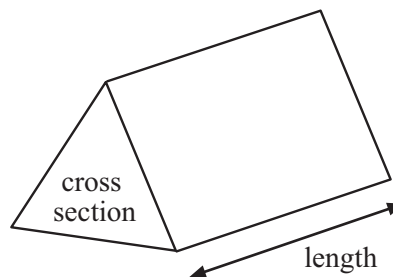
20GMC5201

Formula Sheet

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section \times length



1

Impossible

Unlikely

Evens

Likely

Certain

Choose from the words above to describe the chance of each of the following.

(a) The day before Friday is Thursday.

Answer _____ [1]

(b) A child's birthday falls on 30th February.

Answer _____ [1]

(c) A doctor will see at least one child patient on any work day.

Answer _____ [1]

[Turn over]

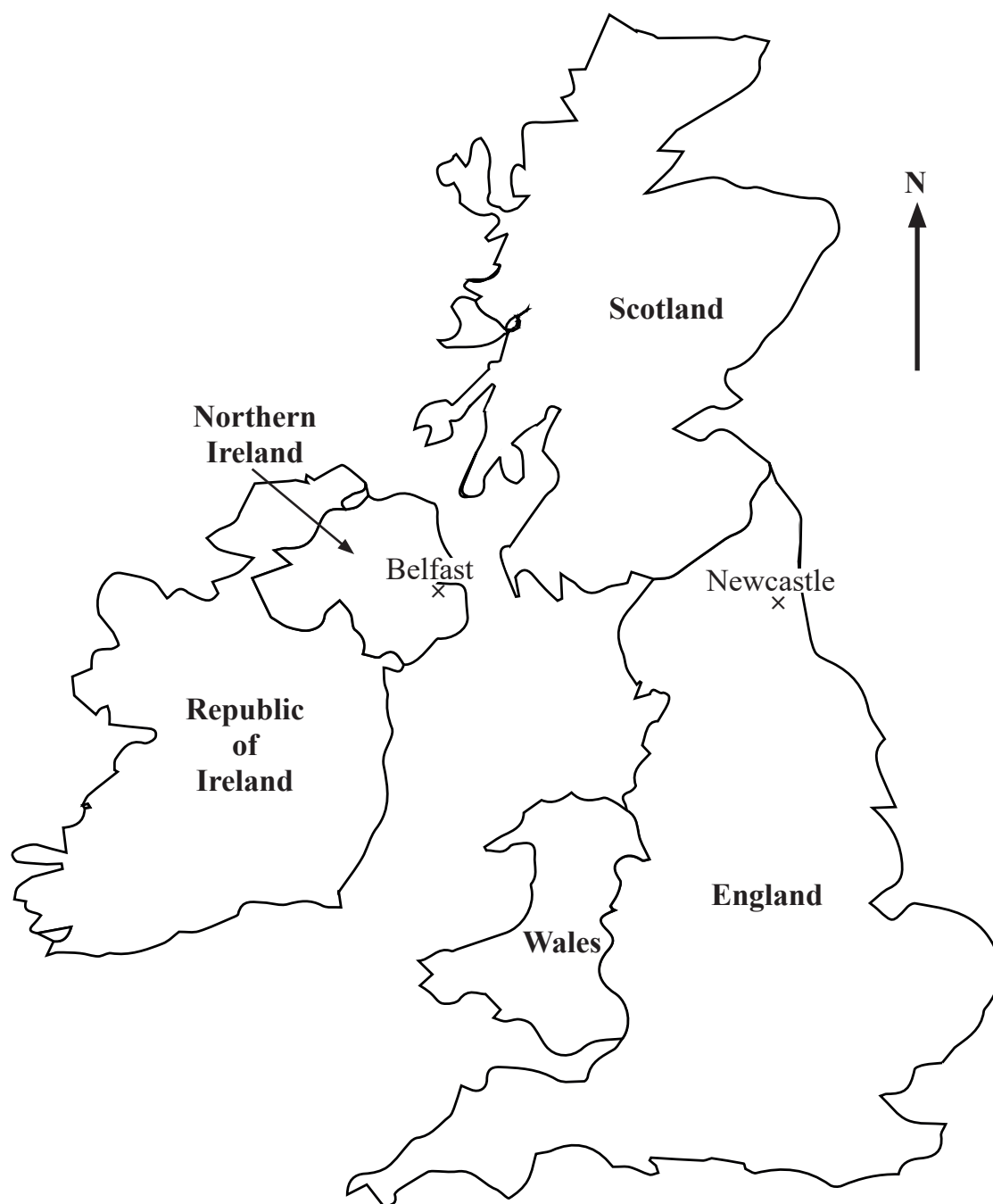
12992.06 R



20GMC5203

- 2 Glasgow is North East of Belfast and North West of Newcastle.

Mark with an × the position of Glasgow on this map.



[2]



3 (a) The first four square numbers are

1 4 9 16

Write down all the square numbers between 20 and 70

Answer _____ [2]

(b) Fifteen is a triangular number.

Martha says

**Multiplying a
triangular number by
8 and adding 1 gives a
square number**



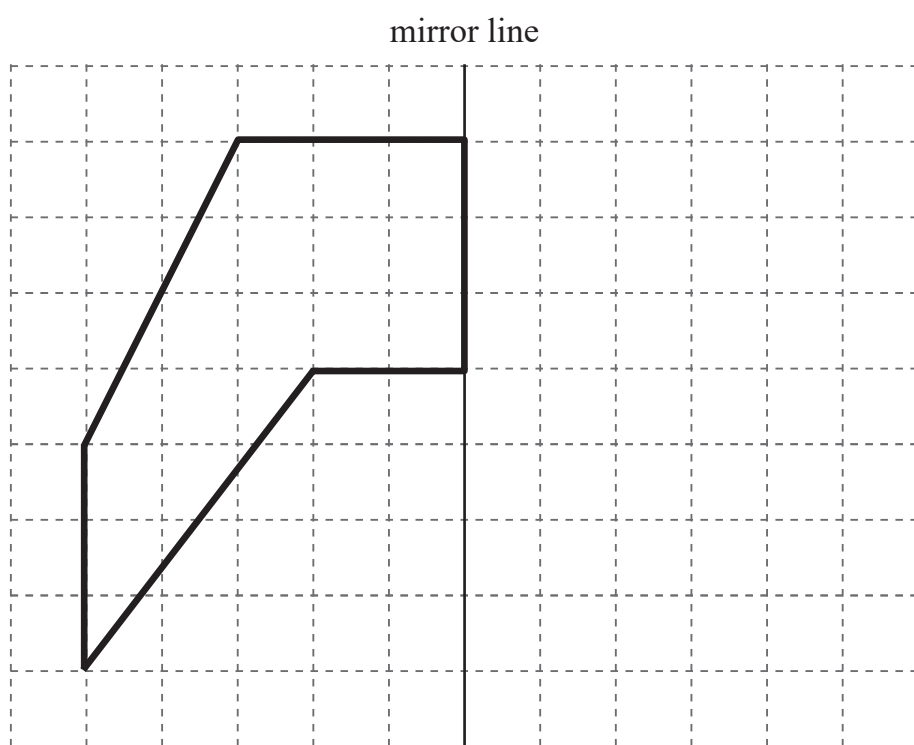
Show that Martha is correct for this triangular number.

[2]

[Turn over]



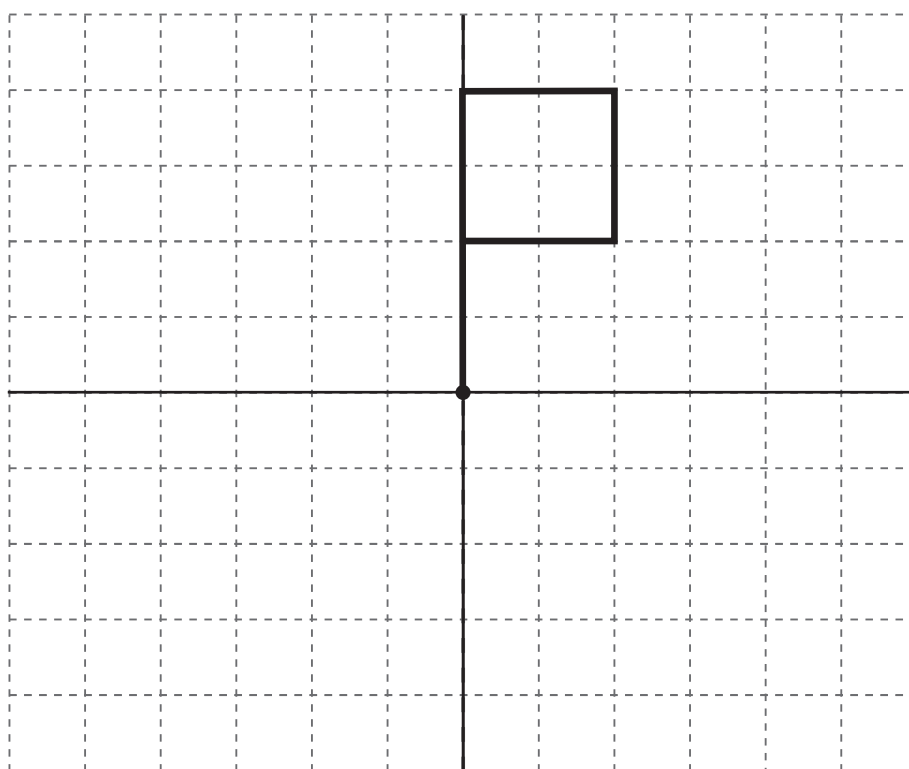
- 4 (a) Draw the reflection of this shape in the mirror line.



[2]



(b) Complete the shape so that it has rotational symmetry of order 4

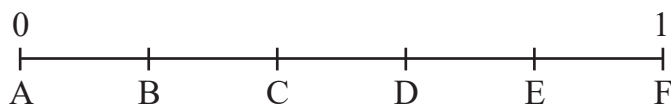


[2]



- 5 There are 2 ham sandwiches, 3 chicken sandwiches, 4 cheese sandwiches and 1 egg sandwich on a plate.

Benny takes a sandwich at random from the plate.



Which point (A, B, C, D, E or F) on the probability scale best matches the probability of Benny taking

- (a) a prawn sandwich,

Answer _____ [1]

- (b) a cheese sandwich?

Answer _____ [1]



6 Paint is sold in two sizes of tins.

Tin A



Tin B



(a) Which size of tin is better value?

Show your working.

Answer _____ [3]

(b) Why might a customer choose not to buy the size that is best value for money?

Answer _____ [1]

(c) A painter is paid £84 for 6 hours' work.

How much would he be paid for 9 hours' work?

Answer £ _____ [1]

[Turn over]



7 Tallia goes pony riding.

She has been told that the pony she will ride is any age from 2 to 15 years old, inclusive.

There is only one pony of each age.

Tallia picks a pony at random.



What is the probability that the pony's age is less than 5?

Answer _____ [2]



- 8 (a) Winter 2018–19 was the wettest on record in the United States.

The average rainfall was 9.01 inches.

How many centimetres was this to the nearest centimetre?

1 inch = 2.54 cm



Answer _____ cm [3]

- (b) A bag of potatoes weighs 5 kg.

How many pounds is this?

Answer _____ pounds [2]

[Turn over]



9 Kendra flips a coin and rolls a dice.

(a) List all the possible outcomes in the table below.

Two have already been filled in for you.

		Dice					
Coin		1	2	3	4	5	6
	Heads (H)	H1					
	Tails (T)					T5	

[2]

Given that each outcome is equally likely, find the probability that

(b) Kendra gets a 5,

Answer _____ [1]

(c) Kendra gets a Tail and an odd number.

Answer _____ [1]

10 (a) Describe, in words, the rule for continuing the sequence

71, 66, 61, 56, 51 ...

Answer _____ [1]

(b) Write down the next two terms in the sequence below.

1, 8, 27, 64, _____, _____ [2]



11 A concrete mixture contains cement, sand and gravel in the ratio 1 : 2 : 3

(a) What weight of concrete contains 36 kg of gravel?

Answer _____ kg [2]

(b) Work out the weight of sand contained in 198 kg of concrete.

Answer _____ kg [2]

12 Phil changed 230 euro into £ and Gerry changed 168 euro into £.

The exchange rate is £1 = 1.09 euro.

How much more did Phil receive in £?

Answer £ _____ [3]

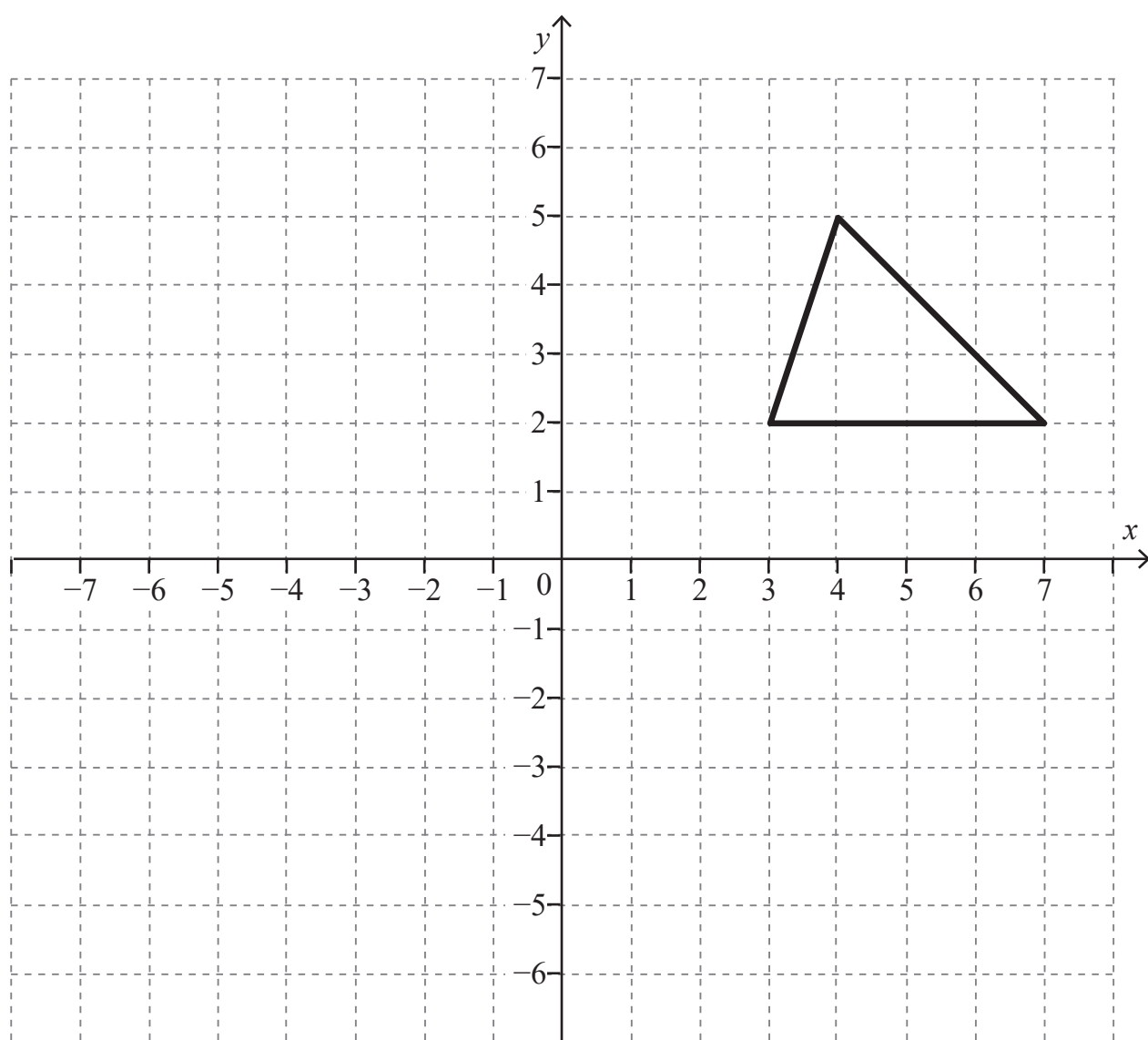
[Turn over]

12992.06 R



20GMC5213

13 Rotate the triangle 90° anticlockwise about the origin $(0, 0)$



[3]



14 Marie has a recipe for Spaghetti Carbonara which requires the following ingredients.

Spaghetti	500 g
Bacon	200 g
Eggs	8
Cream	76 ml
Parmesan	48 g

Marie only has 150 g of bacon.

Work out how much of the other ingredients she should use.

Answer

Spaghetti	g
Eggs	
Cream	ml
Parmesan	g

[3]

[Turn over



15 Calculate the size of the angle a.

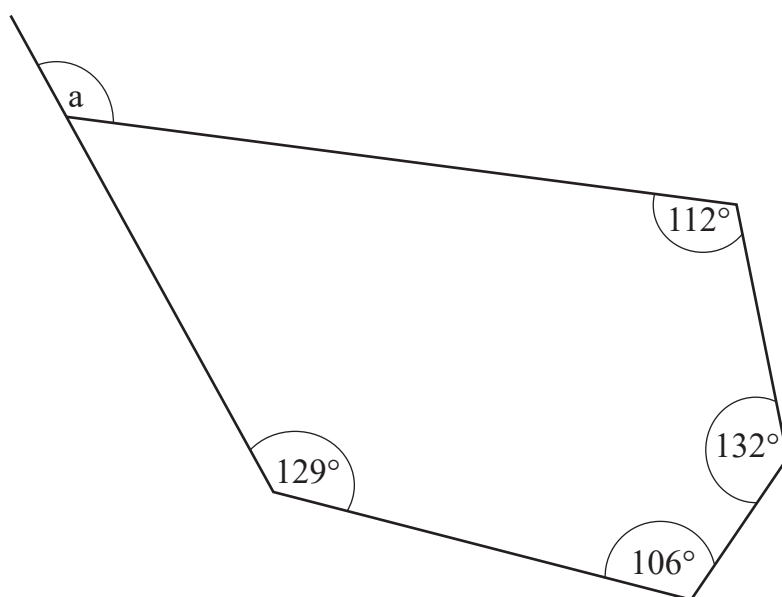


diagram
not drawn
accurately

Answer Angle a = _____ $^\circ$ [3]



THIS IS THE END OF THE QUESTION PAPER

BLANK PAGE

DO NOT WRITE ON THIS PAGE

12992.06 R



20GMC5217

BLANK PAGE
DO NOT WRITE ON THIS PAGE

12992.06 R



20GMC5218



BLANK PAGE

DO NOT WRITE ON THIS PAGE

12992.06 R



20GMC5219

DO NOT WRITE ON THIS PAGE

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Total Marks	
-------------	--

Examiner Number

Permission to reproduce all copyright material has been applied for.
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA
will be happy to rectify any omissions of acknowledgement in future if notified.





Rewarding Learning

**General Certificate of Secondary Education
Summer 2022**

GCSE Mathematics

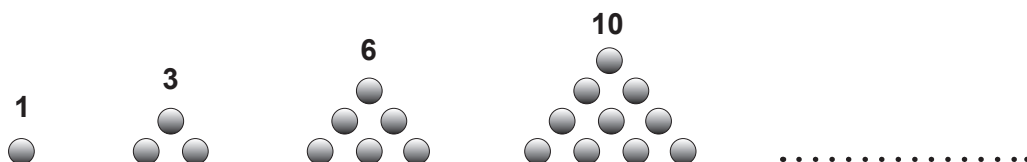
FOUNDATION TIER ADDITIONAL SUPPORT MATERIALS (For use in Summer 2022)

FOUNDATION TIER ADDITIONAL SUPPORT MATERIALS (Summer 2022)

Numbers

Lowest common multiple (LCM): The lowest common multiple is the lowest multiple shared by 2 or more numbers.

Triangular numbers – are a pattern of numbers which form triangles. Each number in the sequence adds a new row of dots to the triangle.



Trial and Improvement

This is a method of trying different values in an equation until you get a suitable solution (e.g to 1 decimal place).

Measures

Conversion from metric to imperial units

$$1 \text{ kg} = 2.2 \text{ pounds (lb)}$$

Metric units

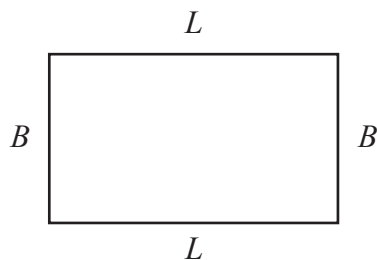
$$1 \text{ ml} = 1 \text{ cm}^3$$

Compound Measures

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$\text{Average Speed} = \frac{\text{Distance}}{\text{Time}}$$

Perimeter and Volume



The perimeter of a rectangle is the distance around the outside of the rectangle. It is found by adding the lengths of the 4 sides of the rectangle.

$P = 2L + 2B$ where P is perimeter, L is length and B is breadth.

The volume of a cuboid is found by multiplying the length by the breadth by the height of the cuboid.

$V = L \times B \times H$ where V is volume, L is length, B is breadth and H is height.

The circumference (perimeter) of a circle is $C = 2\pi r$ where r is the radius of the circle. An alternative formula is $C = \pi d$ where d is the diameter of the circle.

Geometry and Angles

There are 180° on a straight line.

There are 180° inside a triangle.

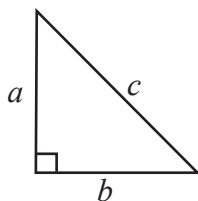
An isosceles triangle is a triangle with 2 equal sides and 2 equal angles.

The sum of all the angles inside a polygon is given by $180(n - 2)$ where n is the number of sides in the polygon.

Pythagoras' Theorem

If a , b and c are the sides of a right angled triangle shown below, then

$$a^2 + b^2 = c^2$$



Range

The range of a set of data is the difference between the largest value and the smallest value in the data set.

Mean

The mean of a set of data is the sum of all the data values divided by the number of data values.

Estimate for the mean of a grouped frequency distribution

Estimated mean = sum of (mid interval values multiplied by their frequency) divided by the sum of all the frequencies.

Pie Chart

In a pie chart, the total angle that corresponds to the entire data set is 360°

Probability

The sum of the probabilities of all outcomes equals 1