



Rewarding Learning

General Certificate of Secondary Education  
2022

Centre Number

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Candidate Number

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# Mathematics

Unit M6 Paper 2  
(With calculator)  
Foundation Tier



[GMC62]

\*GMC62\*

MONDAY 13 JUNE, 10.45am–11.45am

## 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.

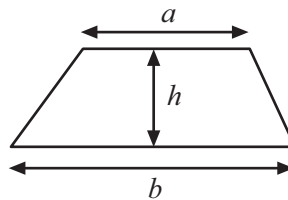
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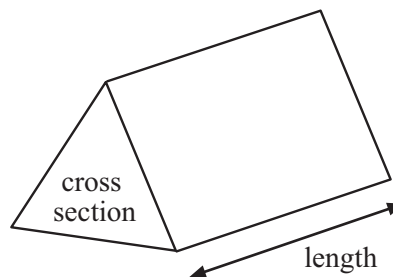
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# Formula Sheet

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



**Volume of prism** = area of cross section  $\times$  length



- 1 (a) 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]

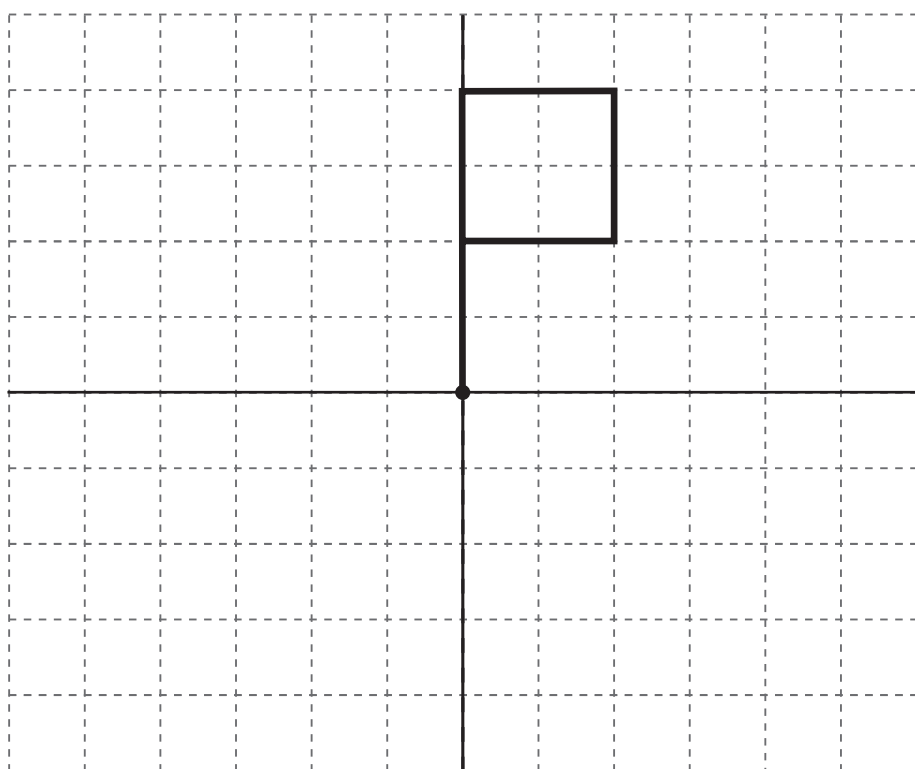
- (b) Write down the triangular number between 40 and 50

Answer \_\_\_\_\_ [1]

[Turn over



2 Complete the shape so that it has rotational symmetry of order 4

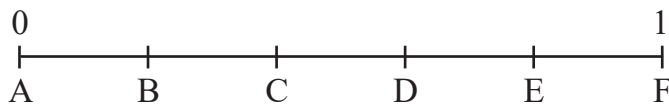


[2]



- 3 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]

[Turn over]



- 4 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]



5 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]

[Turn over



- 6 (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]





7 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]

8 (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]

[Turn over]



**9** 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]

**10** Phil changed 230 euro into £ and Gerry changed 168 euro into £.

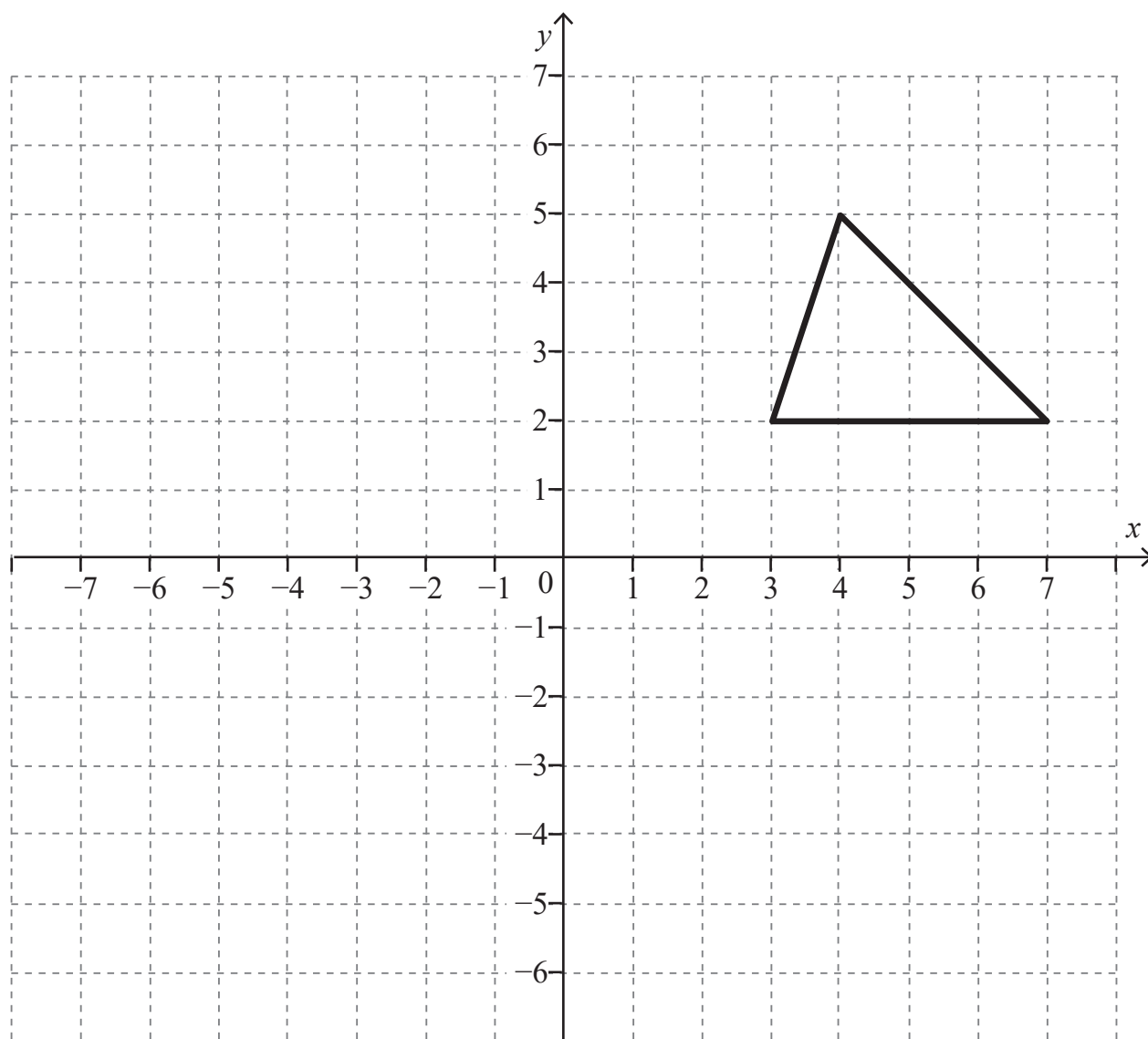
The exchange rate is £1 = 1.09 euro.

How much more did Phil receive in £?

Answer £ \_\_\_\_\_ [3]



11 Rotate the triangle  $90^\circ$  anticlockwise about the origin  $(0,0)$



[3]

[Turn over



- 12 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]



13 Calculate the size of the angle a.

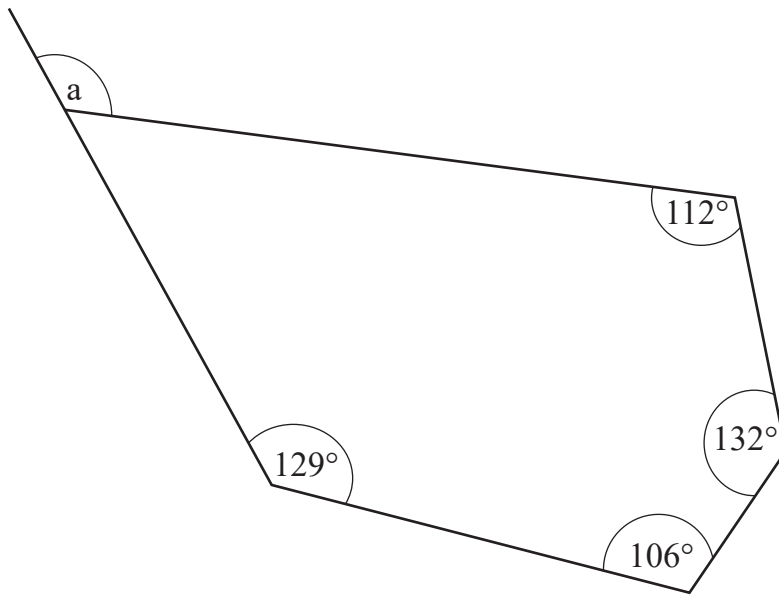


diagram  
not drawn  
accurately

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

[Turn over]





- 15 (a) When a spinner was spun 50 times, it landed on red 12 times.  
When spun another 50 times, it landed on red another 9 times.

Calculate the relative frequency for red

- (i) after the first 50 spins,

Answer \_\_\_\_\_ [1]

- (ii) after the 100 spins.

Answer \_\_\_\_\_ [1]

- (b) The spinner landed on yellow 40 times in the 100 spins.

- (i) Estimate the probability for this spinner landing on yellow.

Answer \_\_\_\_\_ [1]

- (ii) Estimate how many times the spinner will land on yellow in 300 spins.

Answer \_\_\_\_\_ [1]

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**THIS IS THE END OF THE QUESTION PAPER**

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For Examiner's use only	
Question Number	Marks
1	
2	
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14	
15	

Total Marks	
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Examiner Number

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Summer 2022**

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# **GCSE Mathematics**

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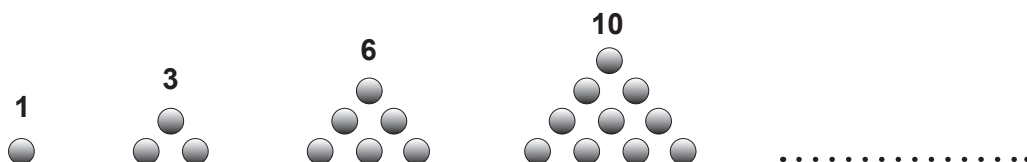
## **FOUNDATION TIER ADDITIONAL SUPPORT MATERIALS (For use in Summer 2022)**

## 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

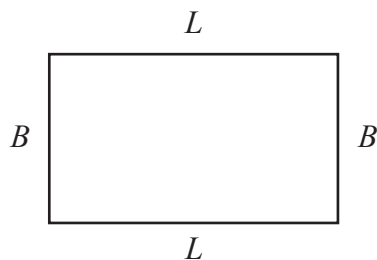
$$1 \text{ ml} = 1 \text{ cm}^3$$

#### 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  $180^\circ$  on a straight line.

There are  $180^\circ$  inside a triangle.

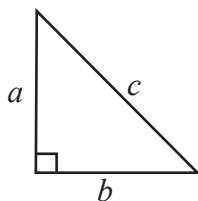
An isosceles triangle is a triangle with 2 equal sides and 2 equal angles.

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  $360^\circ$

## Probability

The sum of the probabilities of all outcomes equals 1