Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
November 2021

Mathematics

Unit M6 Paper 1
(Non-Calculator)
Foundation Tier

[GMC61] *GMC61*

THURSDAY 2 DECEMBER, 9.15am–10.15am

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 **must not** use a calculator for this paper.

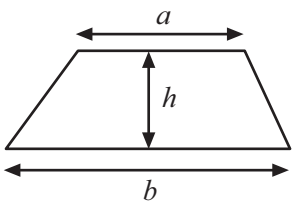
INFORMATION FOR CANDIDATES

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 ruler, compasses and a protractor.
The Formula Sheet is on page 2.

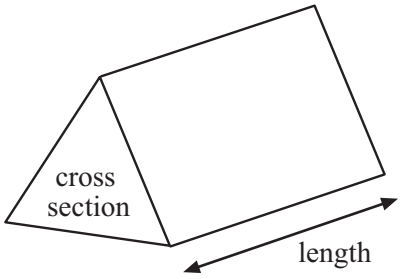
12923

Formula Sheet

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

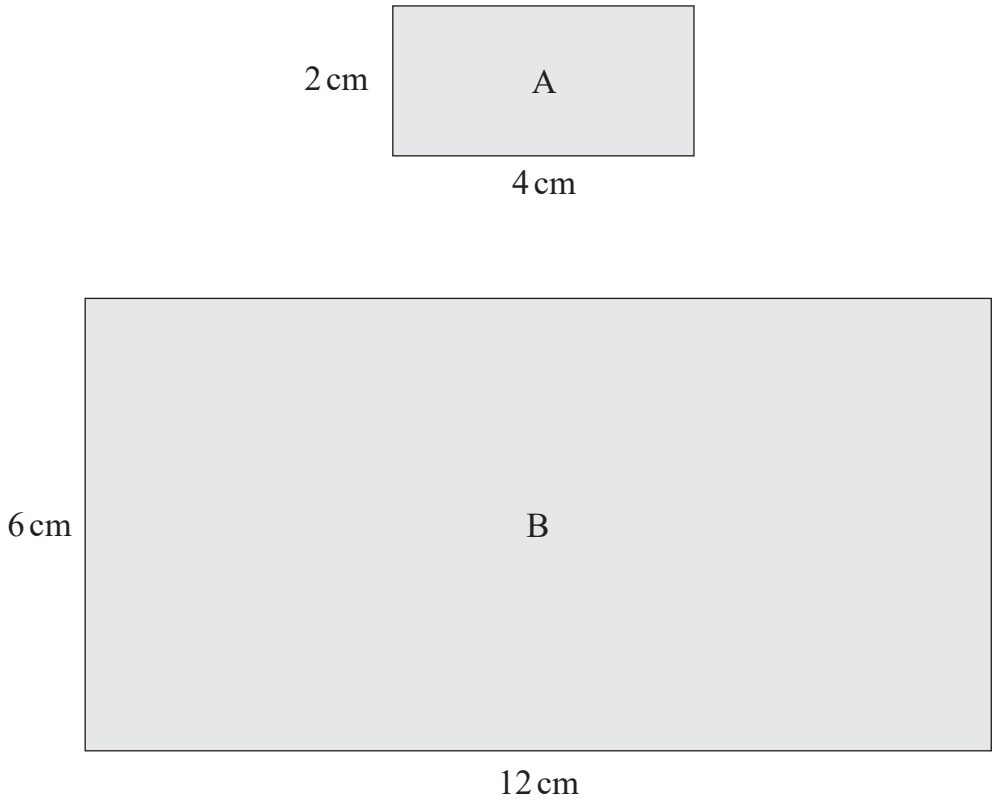


Volume of prism = area of cross section × length



1 Rectangle B is an enlargement of Rectangle A.

What is the scale factor?



Answer _____ [1]

2 **(a)** Work out the missing number.

$$54 \times 4 \times \square = 5400$$

Answer _____ [1]

(b) Work out the missing number.

$$68 \times 40 + 68 \times \square = 6800$$

Answer _____ [1]

3 There are 45 000 people in the town of Arrondale.

(a) $\frac{2}{9}$ of the people are children.

How many are children?

Answer _____ [2]

(b) 30% of the people in Arrondale are over 65

How many are over 65?

Answer _____ [2]

[Turn over

4 Grace cannot divide a number by 36

Her friend Chloe says,

"That's easy. Divide first by 4 and then divide by 9 as $4 \times 9 = 36$"

Use Chloe's method to divide 5238 by 54

Show your work.

Answer _____ [2]

5 800 students attend Clarendon College.

15% of them are in Year 11

10% of Year 11 students are in the Spanish class.

Of **all** the students in Clarendon College, how many **are not** in the Year 11 Spanish class?

Answer _____ [3]

[Turn over

6 Each new number in a sequence is found using the rule

multiply the previous number by 3 and then subtract 5

Find the next two numbers in this sequence.

2 , _____ , _____

[2]

7 A bag contains five counters, each one a different colour.

The colours are red (R), green (G), blue (B), white (W) and yellow (Y).

Daniel takes a counter at random from the bag.

Daniel now tosses a fair coin.

One possible outcome is (red, heads), which can be written as (R, H).

(a) List all the possible outcomes for this experiment in this way in the two-way table below.

One has already been done for you.

		Counter (colour)				
		R	**G**	**B**	**W**	**Y**
Coin	**H**	(R, H)				
	T					

[2]

(b) What is the probability that the outcome is (B, H)?

Answer _____ [1]

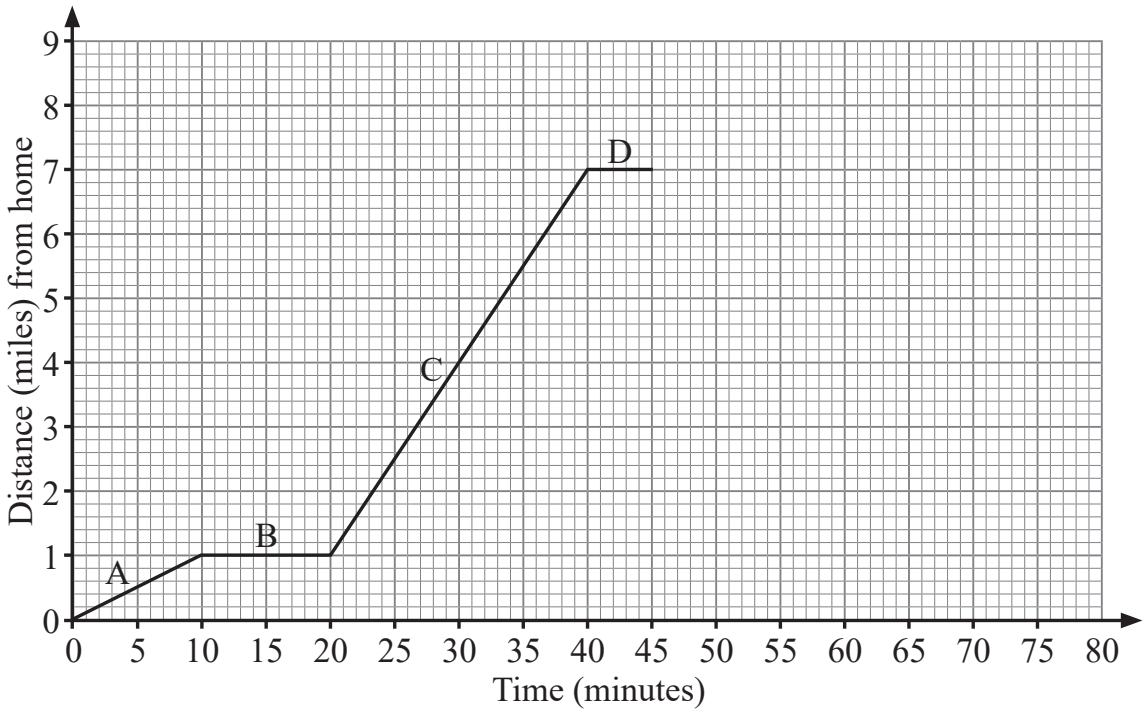
(c) What is the probability that the outcome of this experiment contains a green (G) or a tail (T) or both of these?

Answer _____ [2]

[Turn over

8 Mike is out for a bicycle ride. He starts from home.

The graph shows four stages of his ride labelled A, B, C and D.



(a) Which stage of the graph shows Mike repairing an **early** puncture?

Answer _____ [1]

(b) What is Mike's average speed during stage C?

Answer _____ mph [1]

(c) Mike travels home at an average speed of 14 mph.

Complete the final stage of Mike's bicycle ride on the graph. [2]

9

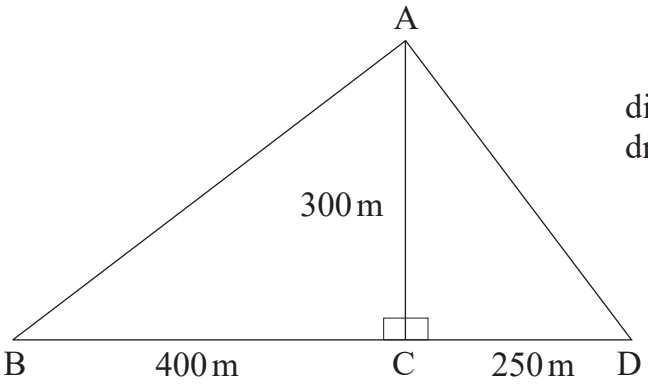


diagram not
drawn accurately

(a) In the space below, make a scale drawing of the diagram ABCD shown above.

Use a scale of 1 cm to 50 m.

B ×

[3]

(b) Use your scale drawing to calculate the actual length of AB.

Answer AB = _____ m [1]

[Turn over

10 This recipe makes 16 scones with the following ingredients.

Ingredients

- 250 g flour
- 1 tsp baking powder
- 40 g butter
- 25 g sugar
- 1 large egg
- about 100 ml milk

Source: © Getty Images

(a) Paul wants to make 20 scones.

How much butter will he need?

Answer _____ g [2]

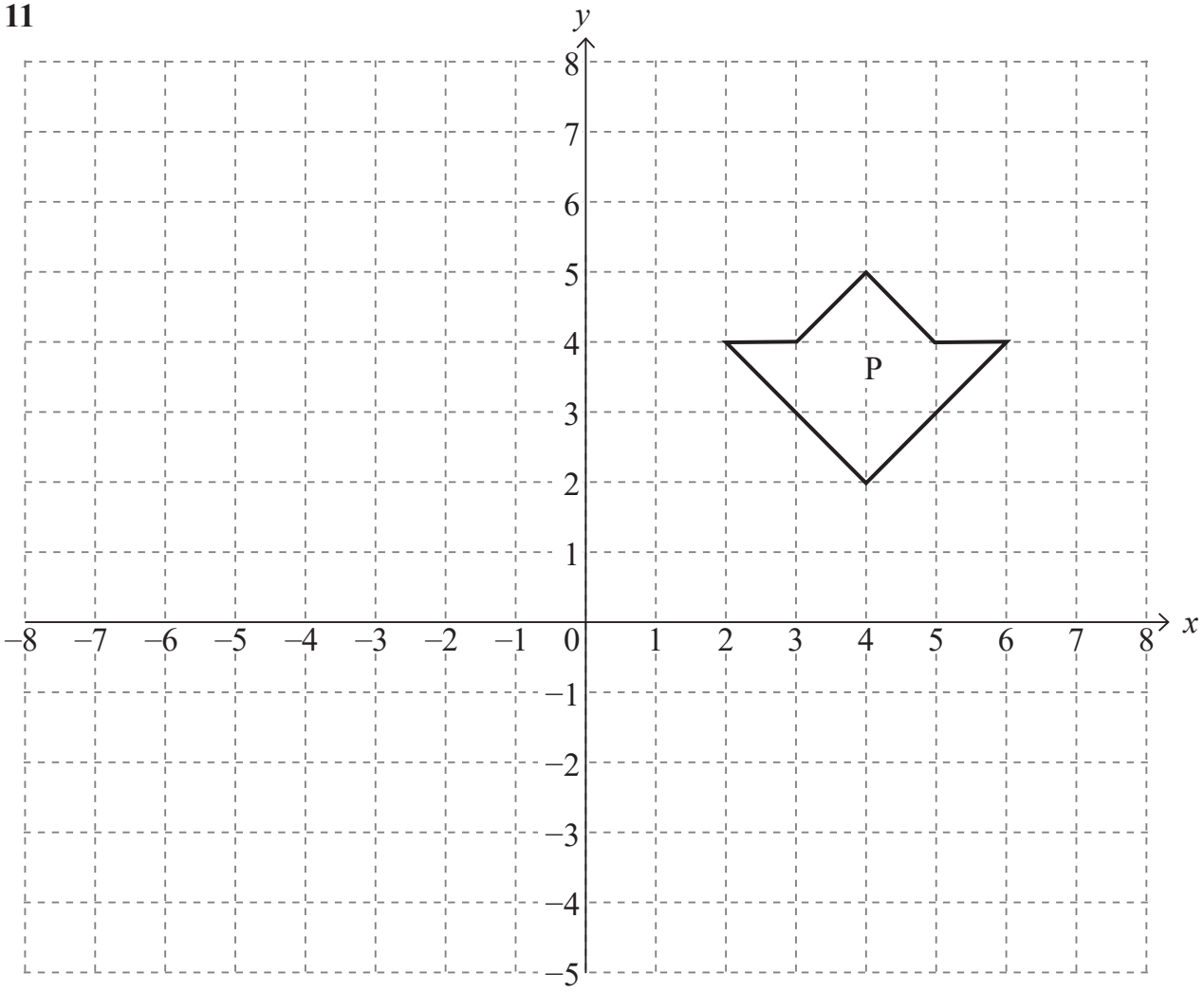
(b) Paul has 300 g of flour.

Has he enough flour to make 20 scones?

Show all your working.

Answer _____ because _____ [2]

11



(a) On the grid above translate the shape P 6 units left and 5 units down.

Label the new shape Q. [1]

(b) On the same grid, rotate the shape P 90° anticlockwise about the origin.

Label the new shape R. [3]

[Turn over

12 A 6-sided dice is biased.

The table below gives the probabilities of getting a 1, 2, 3, 4 and 5 when this dice is rolled.

Outcome	1	2	3	4	5	6
Probability	0.13	0.17	0.2	0.11	0.14	

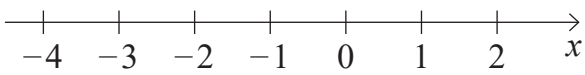
Work out the probability of getting a 6 when this dice is rolled.

Answer _____ [2]

13 **(a)** Solve $2x - 1 \leq -5$

Answer _____ [2]

(b) Show your solution on the number line.

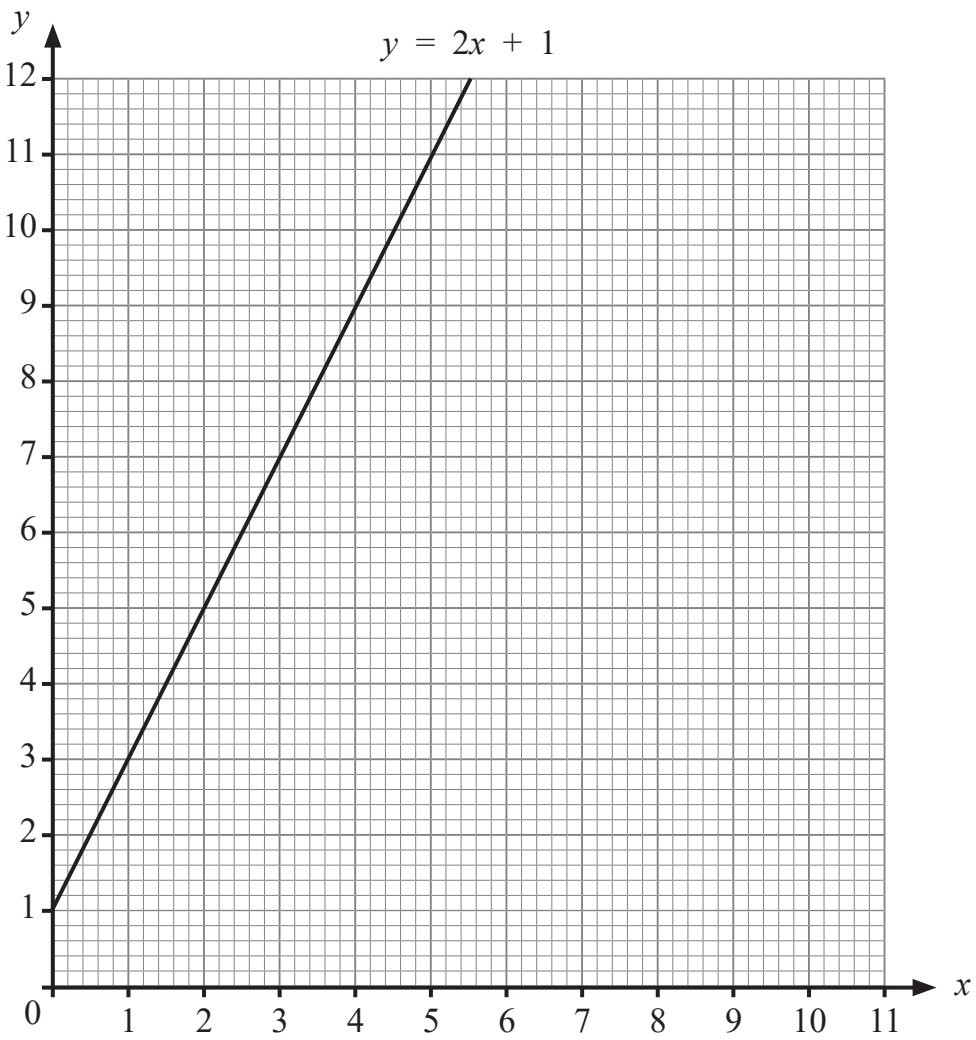


[1]

14 Use graphs to solve the simultaneous equations

$$y = 2x + 1 \quad \text{and} \quad y = 10 - x$$

The graph of $y = 2x + 1$ has already been drawn for you.

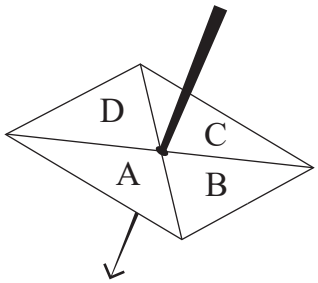


Answer $x =$ _____ and $y =$ _____ [4]

[Turn over

15 A spinner has sections labelled A, B, C and D.

The spinner is spun, and the relative frequency of landing on D is recorded after every 10 spins.



Some of the results are recorded in the table below.

Number of spins	Relative frequency of D
10	0.5
20	0.3
30	0.4
40	0.35
50	
60	0.45

(a) After 50 spins the spinner had landed on D 19 times.

Fill in the missing relative frequency in the table above. [1]

(b) How many times had the spinner landed on D after 60 spins?

Answer _____ [1]

(c) Do you think that the spinner is biased? Give a reason for your answer.

Answer _____ because _____

_____ [2]

(d) If the spinner is spun 400 times how many times would you expect it to land on D?

Answer _____ [2]

THIS IS THE END OF THE QUESTION PAPER

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Question Number	**Marks**
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