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General Certificate of Secondary Education November 2024

# **Mathematics**

Unit M6 Paper 1 (Non-Calculator)

Foundation Tier



[GMC61]

\*GMC61\*

## THURSDAY 21 NOVEMBER, 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 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.

Questions which require drawing or sketching should be completed using an HB pencil. All working **must** be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.

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

Answer all sixteen questions.

### 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.

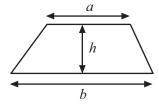
The Formula Sheet is on page 2.



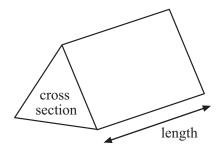
# **Formula Sheet**

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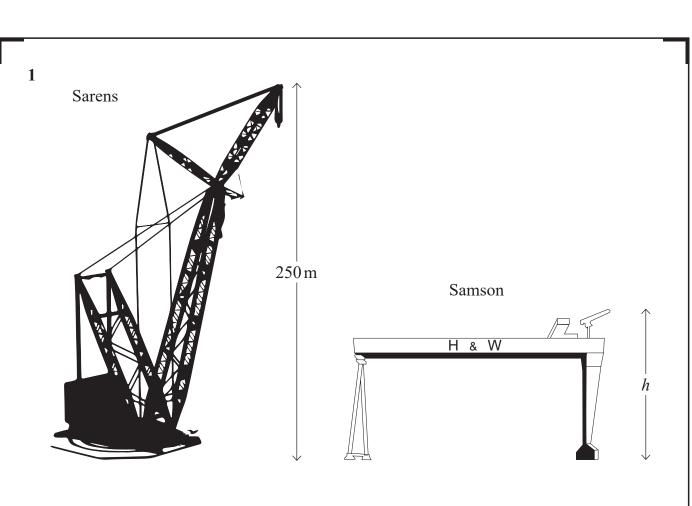
Area of trapezium =  $\frac{1}{2}(a+b)h$ 



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







Two cranes, drawn to scale, are shown.

Sarens is 250 m tall.

What height, *h*, is Samson?

Show your working out clearly.

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Amendry I



2	(a)	A fair six-sided dice is rolled.
		Write down the probability that it lands on a number greater than 5
		Give your answer as a <b>fraction</b> .
		Answer [1]

(b) An event is certain to happen.

Mark this probability on the probability scale below with an X.



[1]

(c) An event is unlikely to happen.

Mark this probability on the probability scale below with an X.



[1]

(d) Clay has a drawer of T-shirts.

He has 5 red T-shirts.

The probability that he picks a red T-shirt at random is  $\frac{1}{4}$ 

How many T-shirts has Clay altogether?

Answer \_\_\_\_\_ T-shirts [1]





Source: © Getty Images

14 out of 20 people who had dinner in a restaurant ordered dessert.

(a) What is the **ratio** of the number of people who ordered dessert to the number of people who didn't order dessert?

Give your answer in its simplest form.

Anguror	•	[2
Answer	•	4

3 of these 20 people in the restaurant changed their mind and ordered dessert.

**(b)** Write down the new ratio for the number of people who ordered dessert to the number of people who didn't order dessert.

Answer	:	[2]

Turn over

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4 Luke is going to choose two different pizza toppings.

He can choose from

Ham (H) Chilli (C) Mushrooms (M) Olives (O)

Write down all the topping combinations Luke can choose.

[2]

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5 Max is playing a game with cards.

There are four blue cards numbered 1, 2, 3 and 4

There are three yellow cards numbered 2, 3 and 4

The cards are placed with the numbers facing downwards.

He takes one blue card at random and one yellow card at random.

He multiplies the two numbers together to get his score.

(a) Complete the table to show the possible scores.

Blue

	×	1	2	3	4
	2	2	4	6	
Yellow	3				
	4				

[2]

(b) What is the probability that he gets a score which is

(i) an even number,

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

(ii) a number greater than 4,

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

(iii) a prime number?

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

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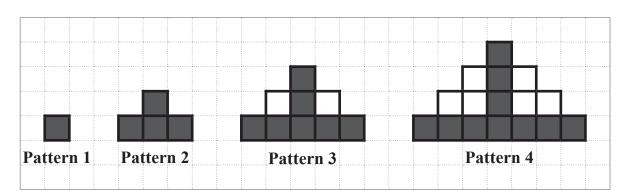
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8 The first four patterns in a sequence are shown below.



(a) Write down the total number of squares for each of the patterns shown.

**(b)** Use your answer in part **(a)** to help calculate the **total** number of squares in Pattern 7

The number of **black** squares also follows a sequence.

(c) Use this sequence to help calculate the number of white squares in Pattern 7

Answer white squares [3]

[Turn over]

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**9** A school canteen supervisor asked a sample of students what drink they bought in the canteen.

The table shows the results.

Drink	Frequency
Tea	6
Coffee	10
Orange juice	4
Hot chocolate	3
Water	7

On a later day, 300 students buy a drink in the canteen.

How many students do you expect to buy tea?

Answer	students	[2]
Allswel	Students	4

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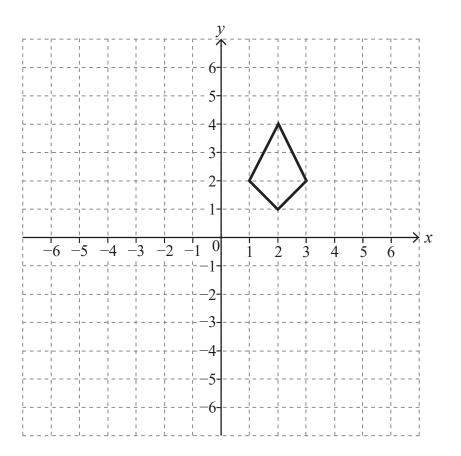
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10 Translate the shape 2 to the right and 5 down.

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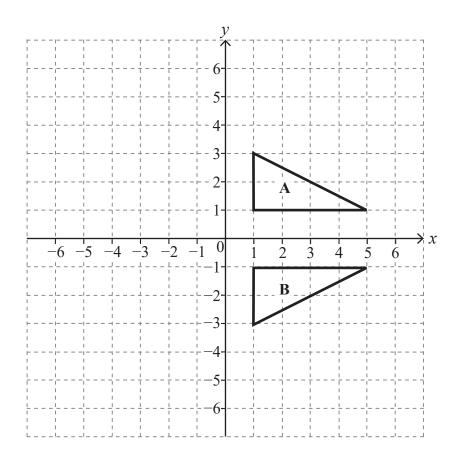


[Turn over

[2]



11 Describe fully the single transformation that maps **A** to **B**.



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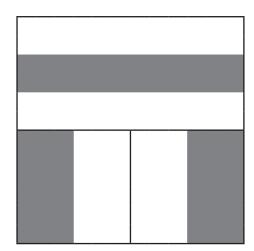
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Answer	[2]
Answer	





A square is divided into two halves.

The top half is divided into 3 equal parts.

The bottom half is divided into 4 equal parts.

What fraction of the whole square is shaded?

Answer	[3

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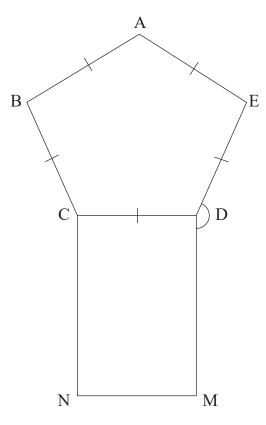


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ABCDE is a regular pentagon.

CDMN is a rectangle.

Work out the size of the obtuse angle EDM.

Answer \_\_\_\_\_° [4]



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14 Kevin tosses a coin.He knows it is biased.

It lands 60 times on Heads.

Kevin uses his experiment to work out that the relative frequency of his coin landing on Heads is  $\frac{2}{3}$ 

How many times did Kevin toss the coin?

Answer \_\_\_\_\_ [2]

[Turn over



15 Katie used flour to make muffins.

She used an equal amount of flour for each muffin.

To begin, she made three muffins and had  $\frac{3}{4}$  of her flour left.

(a) What fraction of her flour did Katie use for each muffin?

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

20 7 Learning

Katie then made **another** seven muffins, giving a total of 10 muffins, and had 50 g of flour left.

(b) How many grams of flour did Katie use for each muffin?

Answer \_\_\_\_\_ g [2]

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16 A rectangle is divided into four triangles.

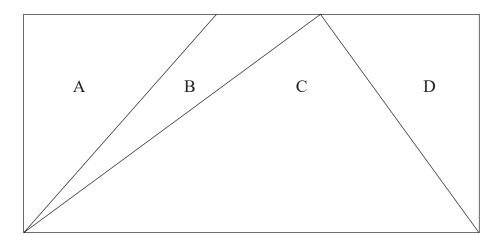


diagram not drawn accurately

The area of triangle C is  $120 \,\mathrm{cm}^2$  and is **half** of the area of the rectangle.

The ratio of the area of triangle A to the area of the rectangle is 1:4

The ratio of the area of triangle D to the area of the rectangle is 1:6

What is the area of triangle B?

Answer cm <sup>2</sup> [4	Answer		$cm^2$	[4]
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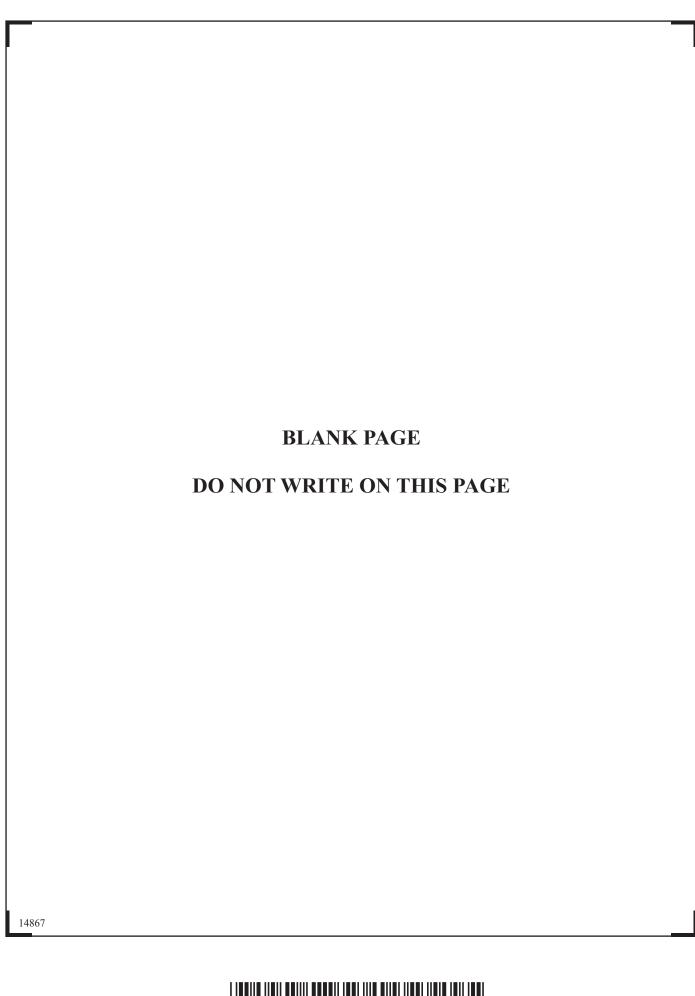
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