Centre Number

Candidate Number

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.
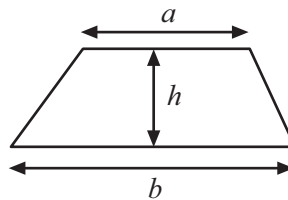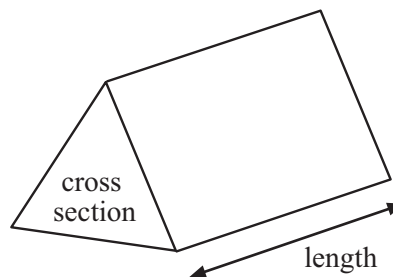The Formula Sheet is on page 2.

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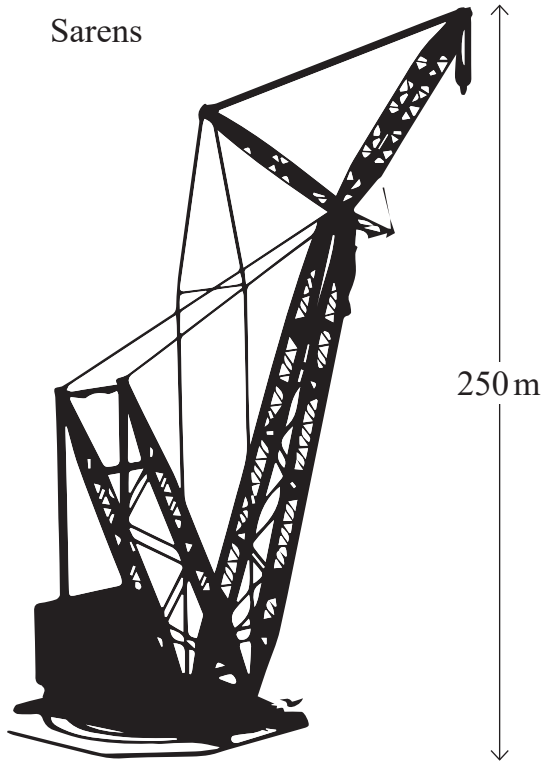# Formula Sheet

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

Volume of prism = area of cross section × length
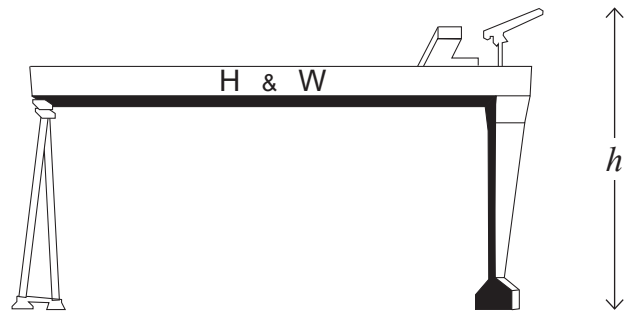

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1

Sarens

250 m

Samson

H & W

h

Two cranes, **drawn to scale**, are shown.

Sarens is 250 m tall.

What height, *h*, is Samson?

Show your working out clearly.

Answer _____ m [4]

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 **fraction**.

Answer _____ [1]

(b) An event is **certain** to happen.

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

```
 |_____|_____|
 0                                 1
```

[1]

(c) An event is **unlikely** to happen.

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

```
 |_____|_____|
 0                                 1
```

[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]

3

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.

Answer _____:_____ [2]

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

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	
3				
4				

Yellow

[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]

[Turn over

6 Write down the next two terms in the sequence below

39   37   33   27   19   _____   _____   [2]

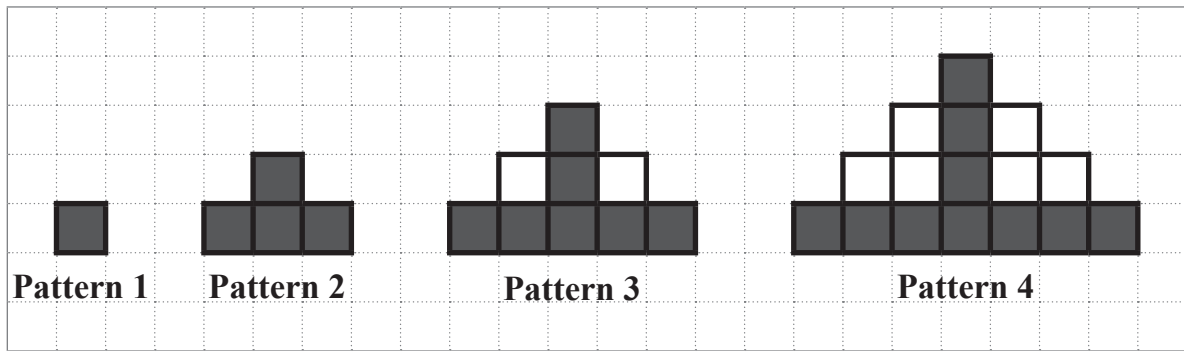**7** Laura deposits £7 200 in a bank for one year.

The interest rate is 2% per year.

How much **interest** does Laura receive at the end of the year?

Answer £ _____ [2]

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

Pattern 1   Pattern 2   Pattern 3   Pattern 4

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

Pattern 1 = _____   Pattern 2 = _____   Pattern 3 = _____   Pattern 4 = _____

[1]

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

Answer _____ squares [1]

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.

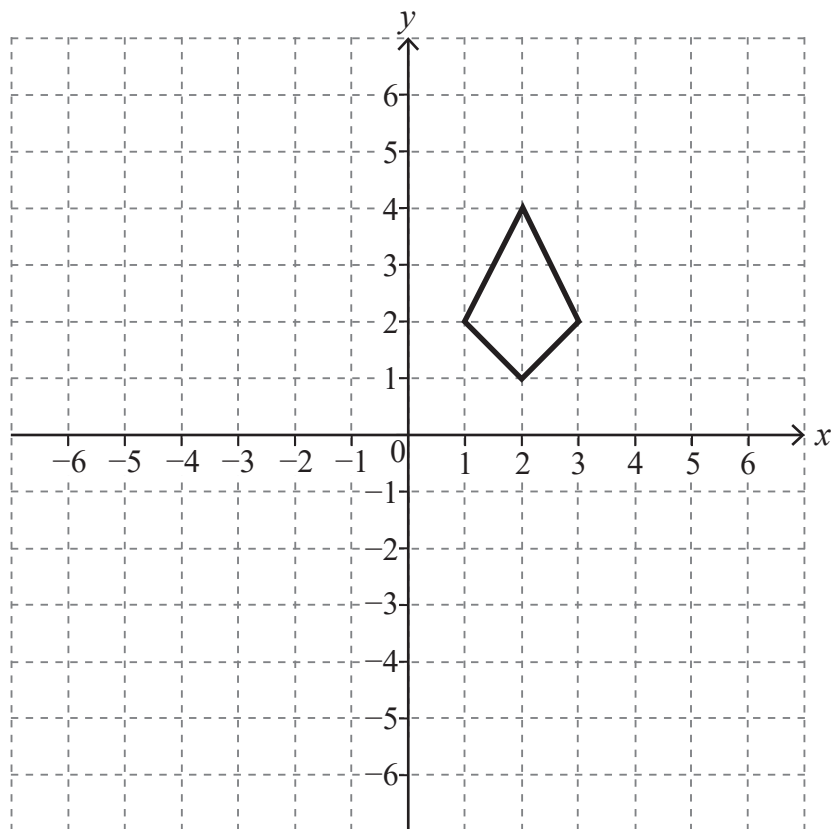| Drink	Frequency
Tea	6
Coffee	10
Orange juice	4
Hot chocolate	3
Water	7

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

How many students do you expect to buy tea?

Answer _____ students [2]
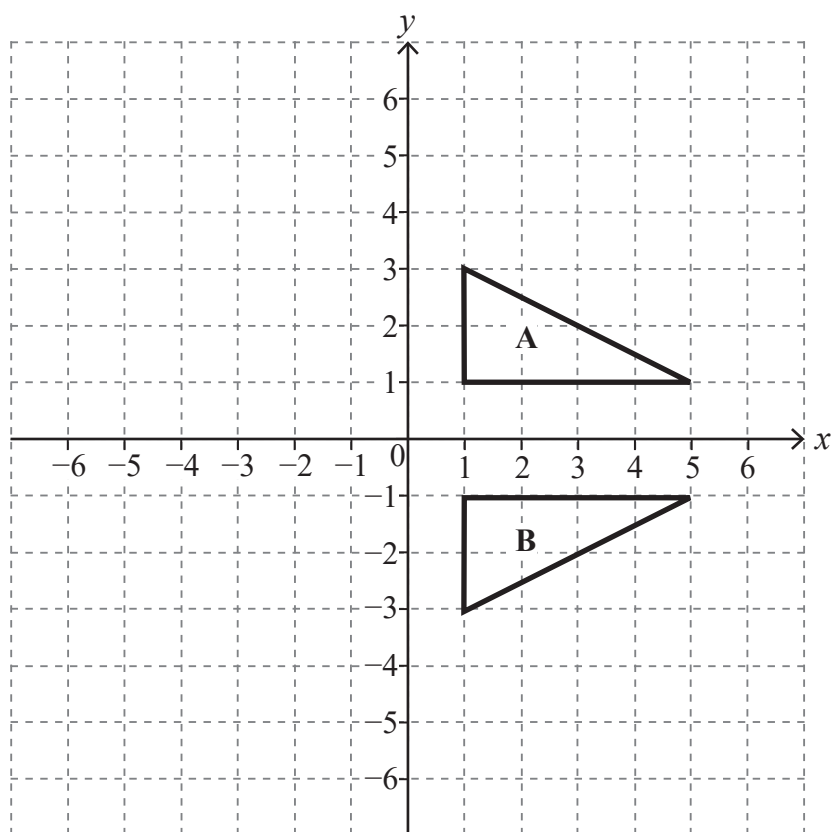
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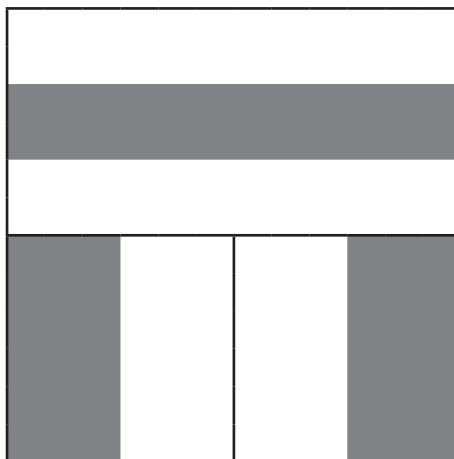**10** Translate the shape 2 to the right and 5 down.

[2]

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

Answer _____ [2]

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12

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.

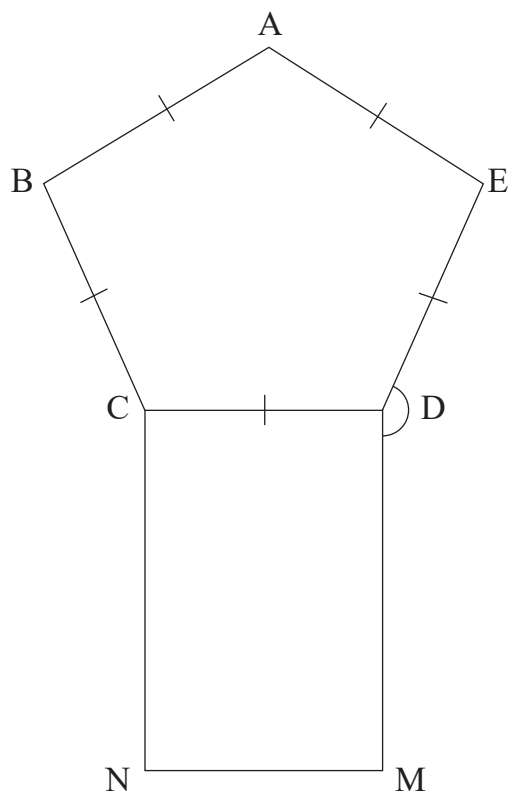What fraction of the whole square is shaded?

Answer _____ [3]

13

diagram not
drawn accurately

ABCDE is a regular pentagon.

CDMN is a rectangle.

Work out the size of the obtuse angle EDM.

Answer _____° [4]

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]

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]

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?

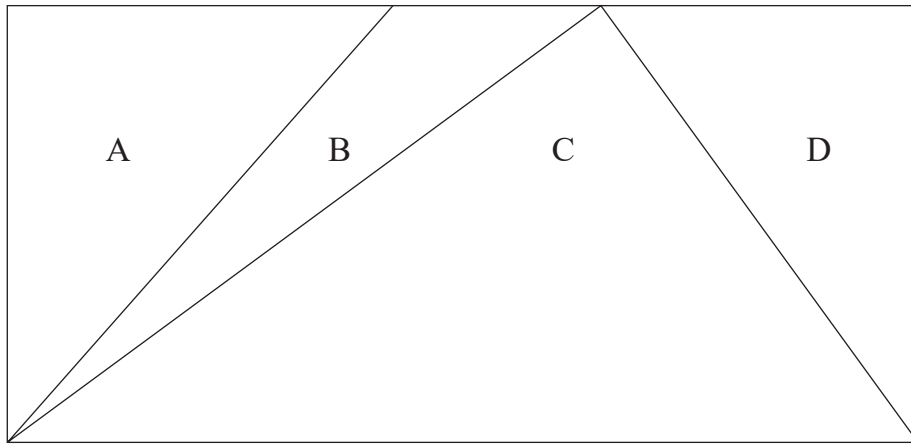Answer _____ g [2]

16 A rectangle is divided into four triangles.

diagram not drawn accurately

The area of triangle C is $120\,\text{cm}^2$ 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^2 [4]

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