Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2025

Mathematics

StemUp Model Solution

Unit M6 Paper 1
(Non-Calculator)
Foundation Tier



[GMC61]

GMC61

WEDNESDAY 4 JUNE, 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 eighteen** questions.

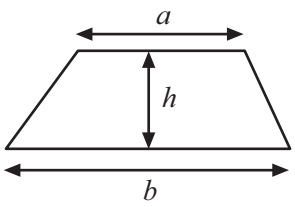
INFORMATION FOR CANDIDATES

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.

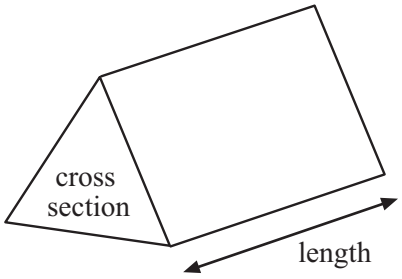
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Formula Sheet

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



Volume of prism = area of cross section × length



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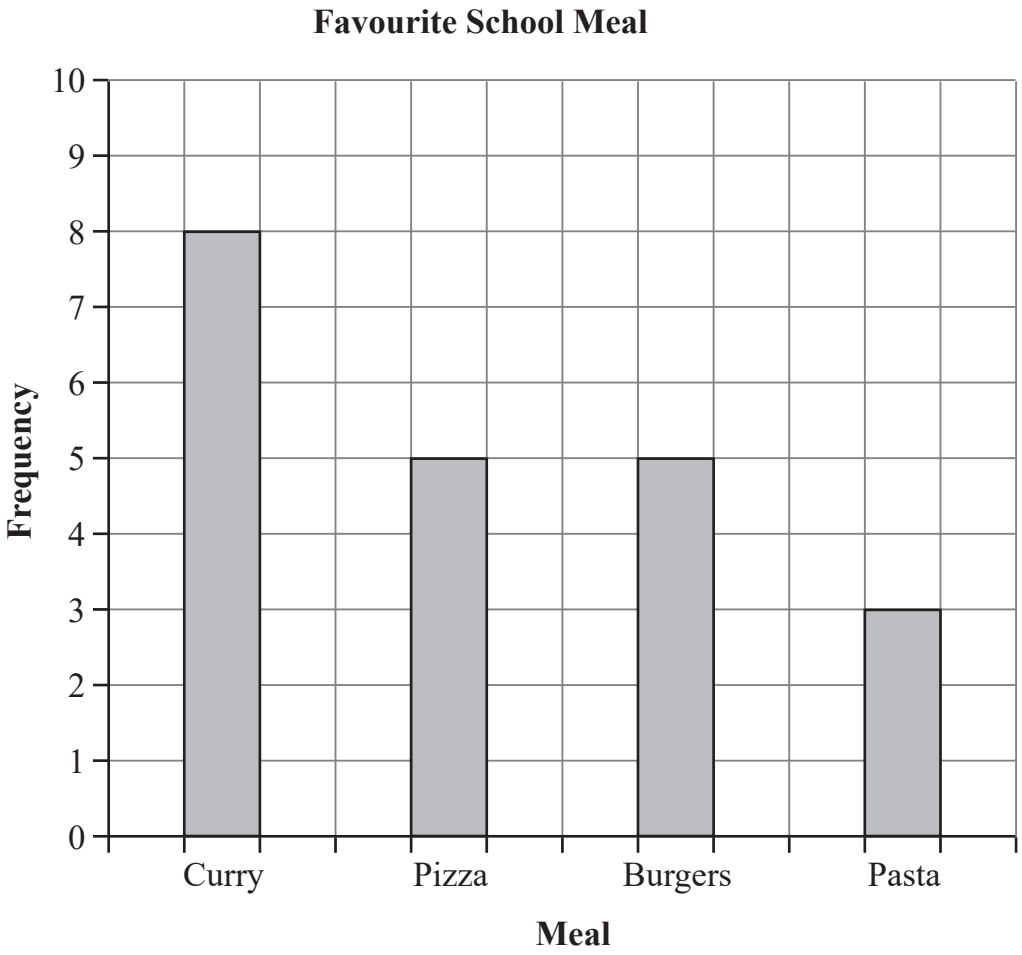
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(Questions begin overleaf)

stemup.co.uk

1 Andy asks his classmates what their favourite school meal is.

He displays their answers in a bar chart.



Andy asks one of his classmates at random about their choice.

(a) What is the probability that they say pasta is their favourite school meal?

Give your answer as a fraction.

Total = 8 + 5 + 5 + 3 = 21

$P(\text{pasta}) = \frac{3}{21} = \frac{1}{7}$

Answer $\frac{1}{7}$ [2]

(b) Is his classmate more likely to have chosen pizza or burgers as their favourite school meal?

Explain your answer clearly.

Answer Neither. Pizza and Burgers were both chosen by 5 classmates,

so $P(\text{pizza}) = P(\text{burgers}) = \frac{5}{21}$, they are equally likely.

[1]

[Turn over

2 Tick [✔] the correct box to show the best unit to measure each of the following.

(a) The time taken to boil an egg.

Minutes	✓
Hours	
Days	

[1]

(b) The distance travelled in a one-hour car journey.

Inches	
Yards	
Miles	✓

[1]

(c) The mass of a large dog.

Grams	
Kilograms	✓
Tonnes	

[1]

3 Terri buys

1 bag of crisps for £1.30

1 bar of chocolate for £1.40

2 packets of sweets at 75p each.

Terri pays with a £5 note.

Terri is given 80p change.

Is this the correct change?

Explain your answer clearly.

Sweets: 2 × 75p = 150p = £1.50

Total spent = £1.30 + £1.40 + £1.50 = £4.20

Change = £5.00 − £4.20 = £0.80 = 80p

Answer *Yes* because *the total cost is £4.20 and £5 − £4.20 = 80p, so the change should be 80p.* [3]

[Turn over

4 Eggs are sold in boxes of six.

Each box costs £1.75

Charlie needs 44 eggs.

How much will it cost Charlie to buy enough eggs?

44 ÷ 6 = 7 remainder 2

7 boxes = 42 eggs, not enough, so 8 boxes are needed

(8 × 6 = 48 eggs ≥ 44)

Cost = 8 × £1.75

8 × £1 = £8, 8 × 75p = 600p = £6

£8 + £6 = £14.00

Answer £ 14.00 [3]

5 A rectangular wall measures 4.7 metres by 2.9 metres.

Tiles cost £29.75 per square metre.

Estimate the cost to tile the wall.

Show your working out clearly.

$4.7 \approx 5$ m, $2.9 \approx 3$ m, £29.75 ≈ £30

Area $\approx 5 \times 3 = 15$ m^2

Cost ≈ 15 × 30 = £450

Answer £ 450 [3]

[Turn over

6 How much bigger is 35% of £120 than $\frac{1}{3}$ of £120?

$\frac{1}{3}$ of £120 = 120 ÷ 3 = £40

10% of £120 = £12

30% of £120 = 3 × 12 = £36

5% of £120 = 12 ÷ 2 = £6

35% of £120 = 36 + 6 = £42

Difference = 42 − 40 = £2

Answer £ 2 [3]

7 **(a)** A square number and a cube number add together to give a total of 52

Write down the two numbers.

Square numbers: 1, 4, 9, 16, 25, 36, 49

Cube numbers: 1, 8, 27

25 + 27 = 52

Answer 25 and 27 [1]

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

Triangular numbers:

1, 3, 6, 10, 15, 21, 28, 36, 45, 55

Answer 45 [1]

[Turn over

8 Jackie chooses chips or mash or baby boiled potatoes for a side order.

The probability she chooses chips is 0.65

The probability she chooses mash is 0.2

What is the probability that Jackie chooses baby boiled potatoes?

P(chips or mash) = 0.65 + 0.2 = 0.85

P(baby boiled potatoes) = 1 − 0.85 = 0.15

Answer 0.15 [2]

9 **(a)** 2 cm represents 15 km on a map.

How many kilometres are represented by 12 cm on the map?

2 cm represents 15 km

1 cm represents 15 ÷ 2 = 7.5 km

12 cm represents 12 × 7.5 = 90 km

Answer 90 km [2]

(b) A different map has a scale of 1: 25 000

John measures the distance between two points on this map to be 8 cm.

Is the actual distance, in km, between these two points greater than 10 km?

Show your working out clearly.

Actual distance = 8 × 25 000 = 200 000 cm

200 000 cm = 2000 m = 2 km

2 km is less than 10 km, so it is not greater

Answer No, 2 km [2]

[Turn over

10 The ratio of girls to boys in an athletics club is 3:5

There are 45 **boys** in the club.

$\frac{1}{4}$ of the children are sprinters.

How many children are sprinters?

Boys: 5 parts = 45, so 1 part = 45 ÷ 5 = 9

Girls: 3 parts = 3 × 9 = 27

Total children = 45 + 27 = 72

Sprinters = $\frac{1}{4}$ of 72 = 72 ÷ 4 = 18

Answer 18 [3]

11 Hilary is ordering T-shirts for a school trip.

She has to pay a £60 design fee and an amount for each T-shirt.

The total cost of 40 T-shirts is £380

What is the **total** cost of 30 T-shirts?

Cost of 40 T-shirts without design fee:

£380 − £60 = £320

Cost of 1 T-shirt = 320 ÷ 40 = 32 ÷ 4 = £8

Cost of 30 T-shirts = 30 × 8 = £240

Total = £240 + £60 design fee = £300

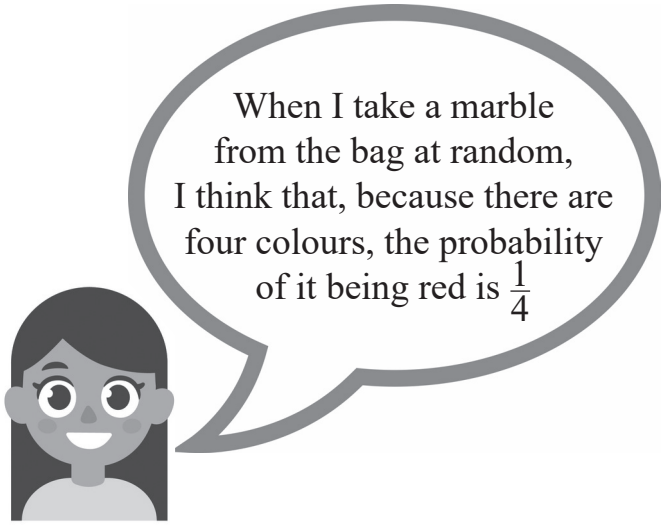
Answer £ 300 [4]

[Turn over

12 (a) A bag contains 20 coloured marbles.

The marbles are coloured red, green, blue and orange.

Rosie says



Explain why Rosie **might not** be correct in what she thinks.

Answer *There might not be the same number of each colour.*

P(red) is only $\frac{1}{4}$ if there are 5 red marbles in the bag. [1]

(b) A different bag contains 20 coloured marbles.

The marbles are coloured red, green, blue and orange.

The bag has 2 red marbles and 7 green marbles.

The probability of choosing a blue marble is $\frac{2}{5}$

How many orange marbles are there in the bag?

Blue = $\frac{2}{5}$ of 20 = 20 ÷ 5 × 2 = 8

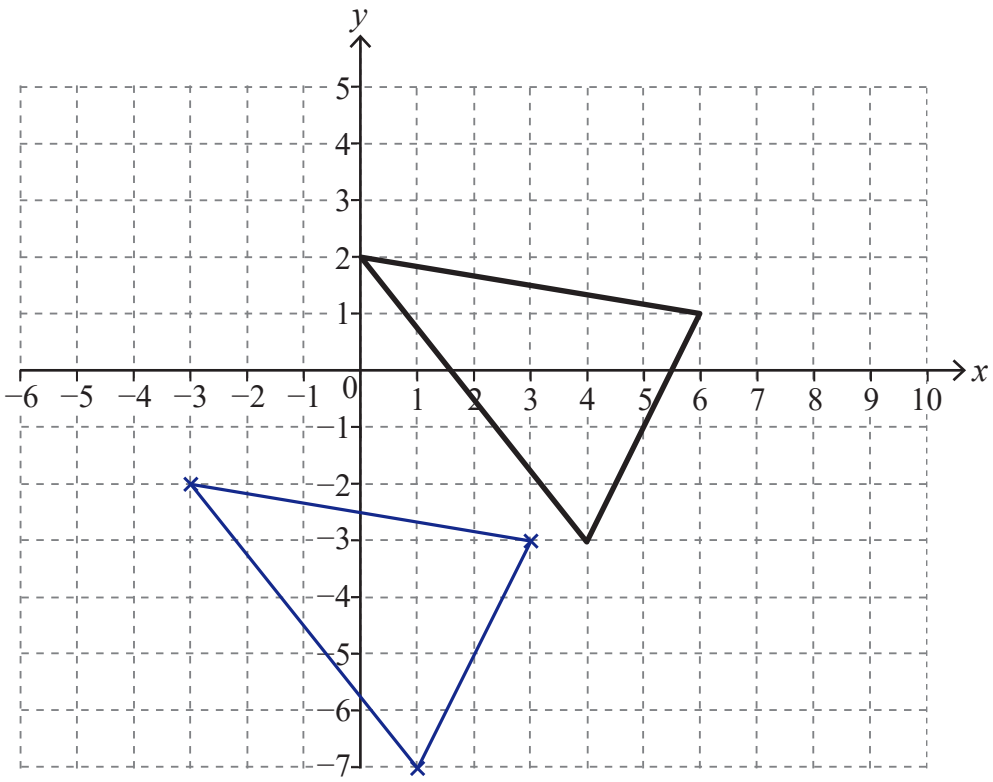
Red + green + blue = 2 + 7 + 8 = 17

Orange = 20 − 17 = 3

Answer 3 [2]

[Turn over

13 **(a)** Draw the image of the triangle shown after a translation of 3 units left and 4 units down.



[2]

(b) A different triangle, PQR, was translated 4 units right and 6 units down.

The **image** of the point P **after** this different translation is (8 , –4)

What were the coordinates of the original point P?

x: 8 − 4 = 4, y: −4 + 6 = 2

Answer (4 , 2) [2]

14 The exterior angle of a regular polygon is 9°

How many sides has the polygon?

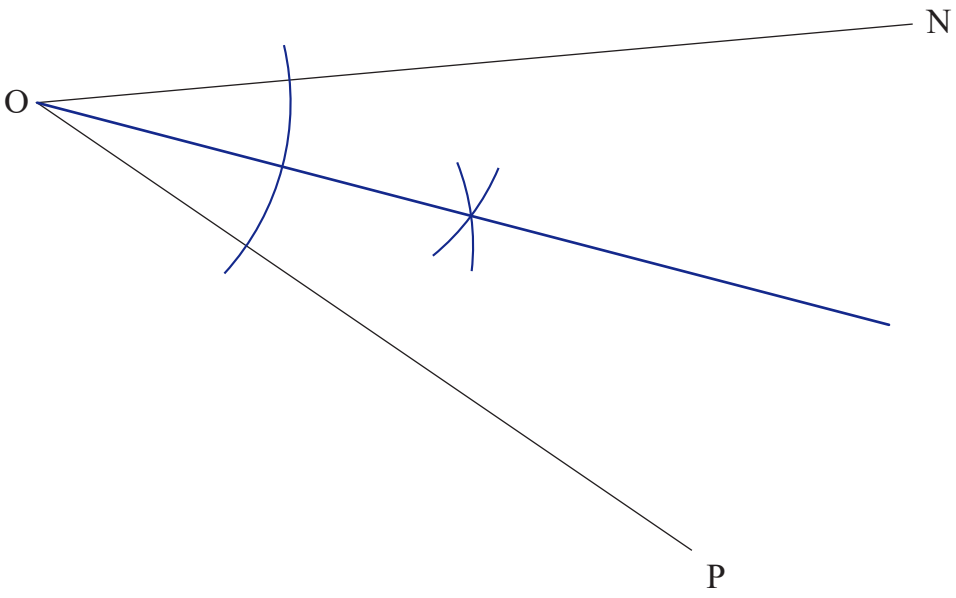
Number of sides = 360 ÷ exterior angle

= 360 ÷ 9 = 40

Answer *40* [2]

15 Using a ruler and compasses only, construct the bisector of the angle NOP below.

Do not rub out your construction arcs.



[2]

[Turn over

16 Jacqui and Gil each flip a coin a number of times.

Jacqui says, "The coin was 'Heads' 6 times out of 13, so I think it is a fair coin."

Gil says, "The coin was 'Heads' 15 times out of 32, so I think it is a fair coin."

Whose conclusion is more reliable?

Explain your answer clearly.

Answer Gil because he flipped the coin more times (32 is more than 13). More trials give a more reliable result. [2]

17 **(a)** Write the binary number 10111 as a decimal number.

16	8	4	2	1
1	0	1	1	1

16 + 4 + 2 + 1 = 23

Answer 23 [1]

(b) Write the decimal number 34 as a binary number.

32	16	8	4	2	1
1	0	0	0	1	0

34 = 32 + 2

Answer 100010 [1]

[Turn over

18 A parallelogram is enlarged by scale factor 5

(a) How many times bigger is the perimeter of the enlargement than the perimeter of the original?

Answer 5 [1]

(b) How many times bigger is the area of the enlargement than the area of the original?

$5^2 = 5 \times 5 =$ Answer 25 [1]

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