Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
November 2024

Mathematics

StemUp Model Solution

Unit M5 Paper 2
(With calculator)
Foundation Tier



[GMC52]

GMC52

THURSDAY 21 NOVEMBER, 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 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 **may** use a calculator for this paper.
Answer **all sixteen** questions.

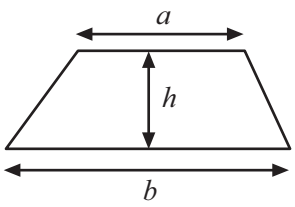
INFORMATION FOR CANDIDATES

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

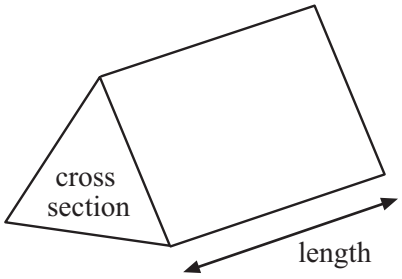
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Formula Sheet

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



Volume of prism = area of cross section × length



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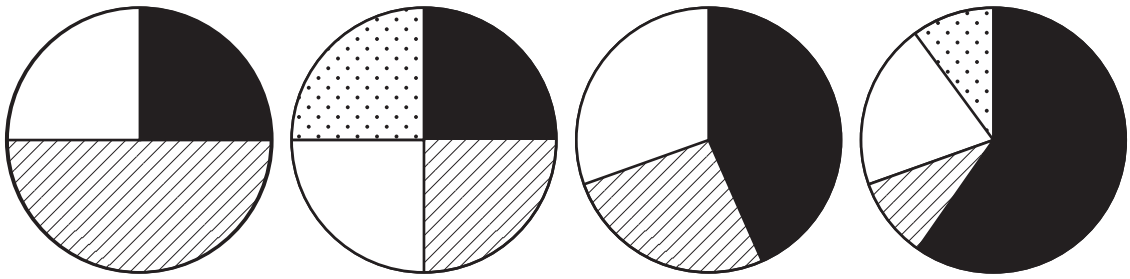
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DO NOT WRITE ON THIS PAGE

(Questions begin overleaf)

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1 **(a)** Which one of these spinners is fair?



Spinner 1 Spinner 2 Spinner 3 Spinner 4

Answer Spinner 2 [1]

(b) Bob rolls an ordinary 6-sided dice 100 times.

The dice lands on even numbers 80 times.

The dice lands on odd numbers 20 times.

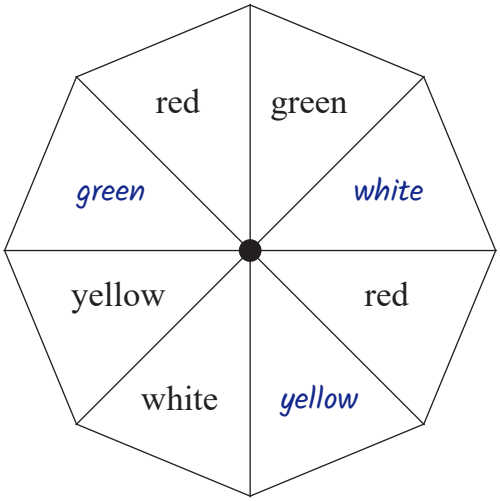
Choose a word from below to complete the sentence.

fair	biased	unlikely	evens

Answer The dice is biased . [1]

(c) Aimee is designing a spinner.

This is what she has drawn so far.



Finish her spinner so that it is fair. [1]

2 Gary is paid £25 for attending an online meeting.

He is **also** paid £15 for every 30 minutes the meeting lasts.

How much is Gary paid for attending a 2 hour meeting?

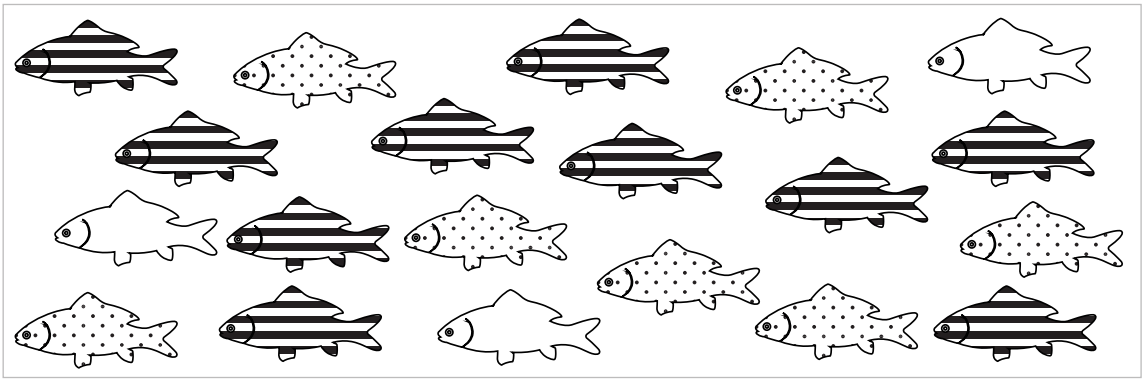
Show your working out clearly.

2 hours = 120 minutes
120 ÷ 30 = 4
25 + 4 × 15 = 25 + 60 = 85

Answer £ 85 [2]

[Turn over

3 **(a)** A fish tank has 20 fish.



Ten fish are striped.

Seven fish are spotted.

Three fish have no markings.

A fish is chosen at random.

Describe **in words** the chance that the fish is

(i) striped, Answer evens [1]

(ii) spotted. Answer unlikely [1]

(b) Which one of these events is as likely to happen as it is not to happen?

A It snows in Belfast in July.

B A yellow ball is chosen at random from a box containing 5 yellow and 5 red balls.

C A child chosen at random has a birthday over the summer holidays.

Answer B [1]

4 Complete the bill for this Saturday night takeaway.

Order	Cost
2 Cod Suppers at £7.20 each	£ 14.40
3 Sausage Suppers at £4.60 each	£ 13.80
4 Cans of Cola at £1.20 each	£ 4.80
Total	£ 33.00

[4]

2 × 7.20 = 14.40

3 × 4.60 = 13.80

4 × 1.20 = 4.80

14.40 + 13.80 + 4.80 = 33.00

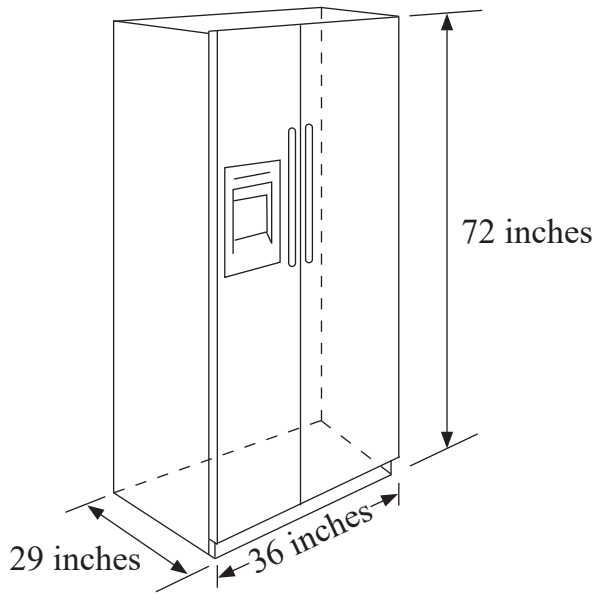
[Turn over

5

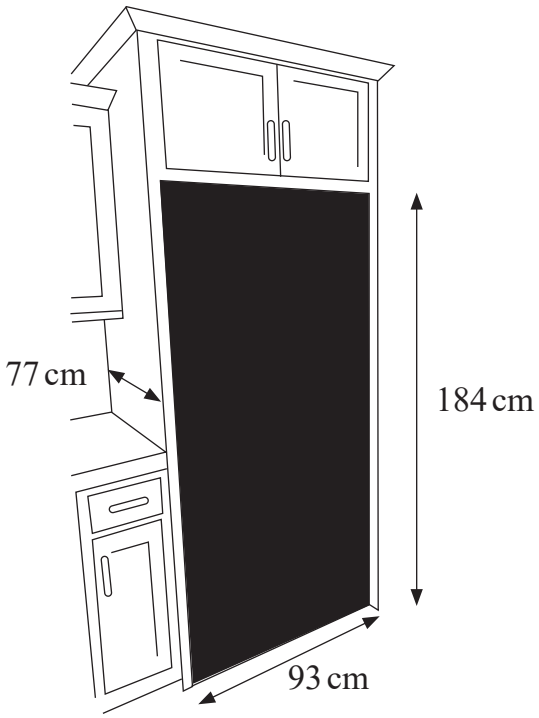
1 inch is 2.54 cm

Will the fridge fit into the space in the kitchen cabinet shown?

fridge



space in kitchen cabinet



You must show all of your working out.

29 × 2.54 = 73.66 cm 73.66 < 77

36 × 2.54 = 91.44 cm 91.44 < 93

72 × 2.54 = 182.88 cm 182.88 < 184

All three fridge lengths are less than the space,

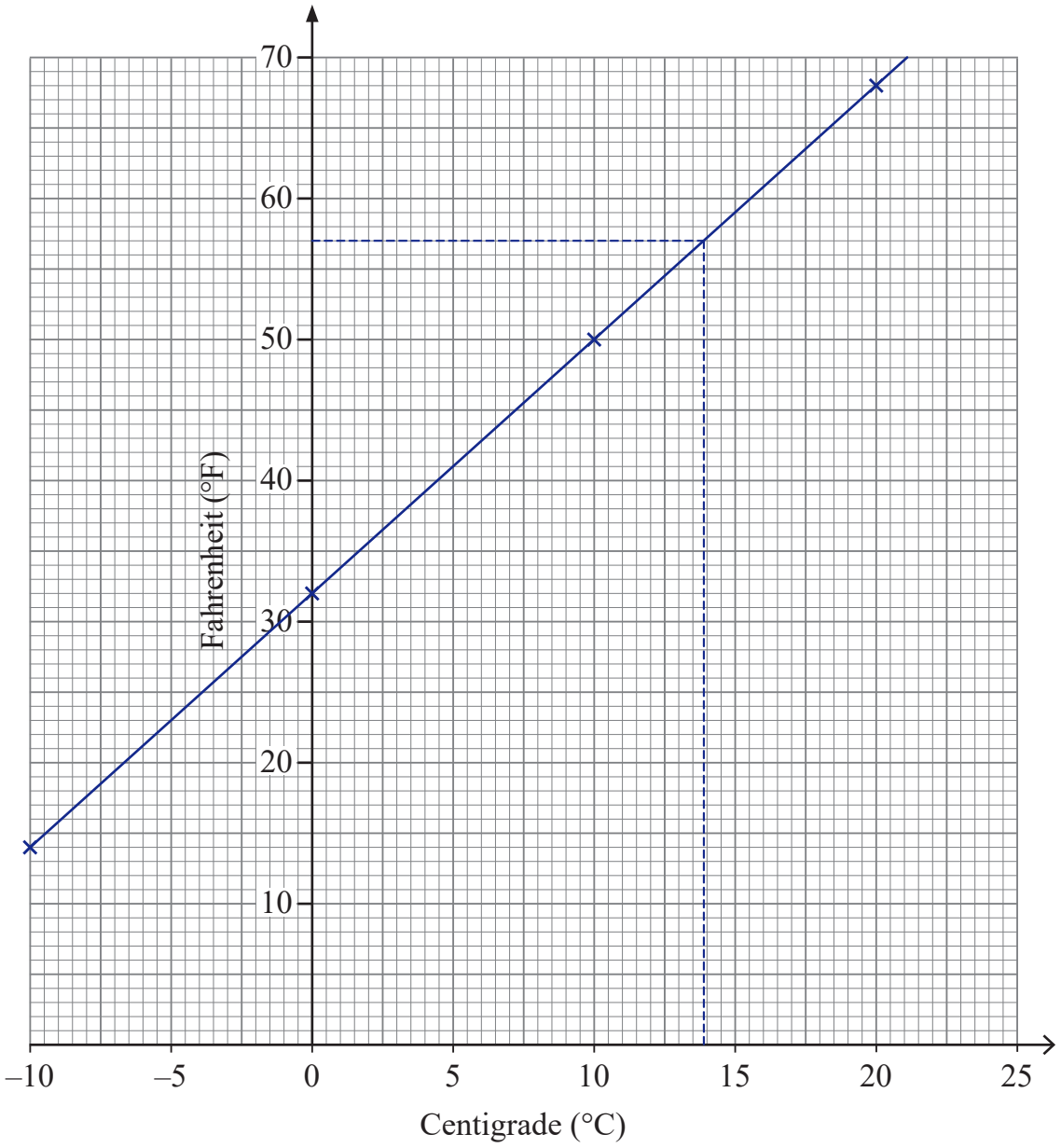
so the fridge will fit.

Answer Yes [3]

6 **(a)**

Centigrade (°C)	–10	0	10	20
Fahrenheit (°F)	14	32	50	68

Use the table to draw a conversion graph to change between Centigrade (°C) and Fahrenheit (°F). [3]



(b) Use the graph to change 57°F to °C

Answer 14 °C [1]

[Turn over

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7 The rule to find the next number in a sequence is

Multiply by 3 and then add 1

The **second** term of a sequence is 13

(a) Use the rule to find the **third** term in this sequence.

13 × 3 + 1 = 39 + 1 = 40

Answer 40 [1]

(b) Use the rule to find the **first** term in this sequence.

work backwards: subtract 1 then divide by 3
13 − 1 = 12
12 ÷ 3 = 4

Answer 4 [2]

8 A canteen has four options for breakfast.

The table shows the probability for each option.

Option	Probability
Toast	0.35
Cereal	0.15
Scone	0.3
Croissant	0.2

Use the table to fill in the blanks.

(a) _____Cereal_____ is the least popular option. [1]

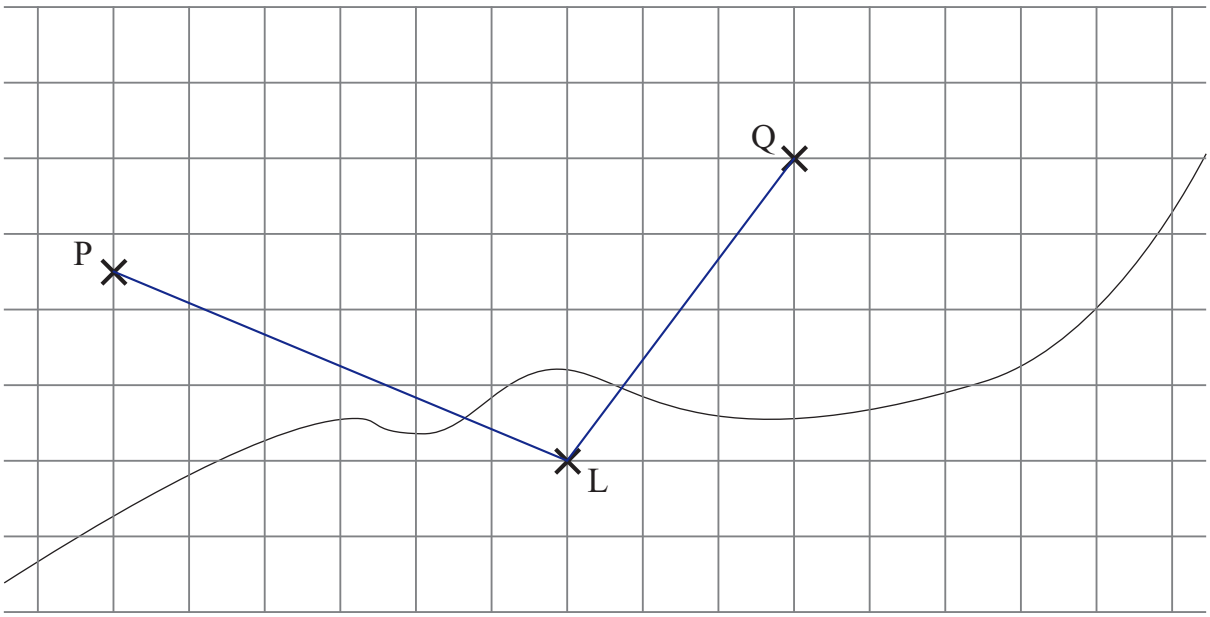
(b) _____Scone_____ is twice as popular as _____Cereal_____ . [1]

$0.3 = 2 \times 0.15$

[Turn over

9 The diagram shows the position of two ships P and Q and a lighthouse L.

The scale is 1 cm represents 20 km.



Which ship is closer to L and how much closer is it?

Show your working out clearly.

LQ = 5 cm, 5 × 20 = 100 km

LP = 6.5 cm, 6.5 × 20 = 130 km

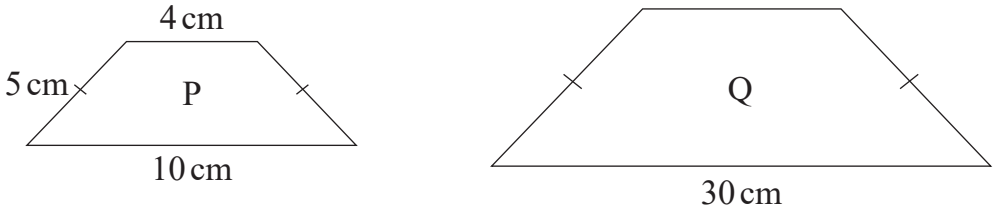
130 − 100 = 30 km

Q is closer

Answer Q is closer by 30 km [3]

10

diagrams not drawn accurately



Shape P is enlarged to give shape Q.

Work out the perimeter of shape Q.

Scale factor = 30 ÷ 10 = 3

Missing sides of Q: 5 × 3 = 15 cm, 4 × 3 = 12 cm

Perimeter of Q = 30 + 15 + 15 + 12

= 72 cm

Answer 72 cm [3]

[Turn over

11 Dylan wants to calculate his car's fuel consumption.

(a) He travels 180 miles and uses 24 litres.

Calculate his car's number of miles per litre.

180 ÷ 24 = 7.5

Answer 7.5 miles per litre [1]

He wants to work out the number of miles per gallon.

1 gallon = 4.54 litres

(b) Calculate his car's number of miles per gallon.

7.5 × 4.54 = 34.05

Answer 34.05 miles per gallon [2]

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12 Izzy's uncle sent her **four** 200 rand banknotes for her birthday.

£1 = 20.806 rand

(a) Izzy **estimates** in her head how much she will get for her four notes.

How much does she estimate?

Show your working out clearly.

4 × 200 = 800 rand
£1 ≈ 20 rand
800 ÷ 20 = 40

Answer £ 40 [1]

(b) How much **less** does Izzy get when the exact exchange rate is used?

Show your working out clearly.

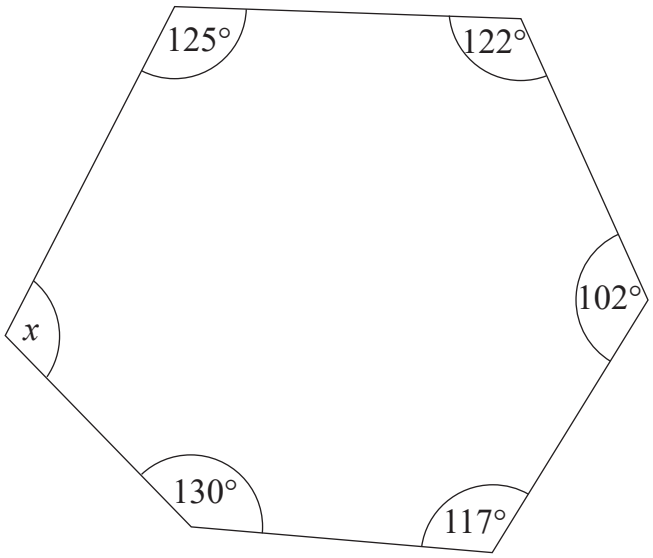
800 ÷ 20.806 = 38.4504...
= £38.45
40 − 38.45 = 1.55

Answer £ 1.55 [2]

[Turn over

13 Work out the size of angle x in the hexagon.

diagram not drawn accurately



Sum of interior angles = (6 − 2) × 180

= 4 × 180 = 720°

125 + 122 + 102 + 117 + 130 = 596°

x = 720 − 596 = 124°

Answer $x =$ 124 ° [4]

14 A spinner is spun once.

It lands on A, B, C or D.

The probability of it landing on C and D is shown in the table.

The probability of it landing on A is the same as the probability of it landing on B.

Landing on	A	B	C	D
Probability	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{2}$	$\frac{3}{10}$

Work out the missing probabilities for A and B.

Write your answers in the table.

$\frac{1}{2} + \frac{3}{10} = \frac{5}{10} + \frac{3}{10} = \frac{8}{10}$

$1 - \frac{8}{10} = \frac{2}{10}$

$\frac{2}{10} \div 2 = \frac{1}{10}$ each for A and B

[3]

[Turn over

15 Jill has ten 50 pence coins and eight 20 pence coins.

Jack also has 50 pence coins and 20 pence coins.

Jack has the same total number of coins as Jill, but his coins are worth £2.10 **less**.

How many 20 pence coins does Jack have?

Jill: $10 \times 50 + 8 \times 20 = 500 + 160 = 660p$ (£6.60)

Jack: $660 - 210 = 450p$ (£4.50), with 18 coins

Try 15 twenty pence and 3 fifty pence:

$15 \times 20 + 3 \times 50 = 300 + 150 = 450p$

$15 + 3 = 18$ coins

Answer 15 20 pence coins [3]

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16 The ingredients to make eight biscuits are:

Flour	160 g
Sugar	50 g
Butter	100 g

Pauline has 700 g of flour, 150 g of sugar and 520 g of butter.

How many grams of butter has she **left over** if she makes the **largest** number of biscuits she can?

For 1 biscuit: flour 160 ÷ 8 = 20 g,
sugar 50 ÷ 8 = 6.25 g, butter 100 ÷ 8 = 12.5 g
Flour: 700 ÷ 20 = 35, Sugar: 150 ÷ 6.25 = 24,
Butter: 520 ÷ 12.5 = 41.6
Most biscuits = 24 (sugar runs out first)
Butter used = 24 × 12.5 = 300 g
Butter left = 520 − 300 = 220 g

Answer 220 g [4]

THIS IS THE END OF THE QUESTION PAPER

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For Examiner's use only	
Question Number	**Marks**
1	
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Examiner Number

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