Rewarding Learning

General Certificate of Secondary Education

Centre Number

Candidate Number

Mathematics

StemUp Model Solution

Unit M5 Paper 1
(Non-Calculator)
Foundation Tier



[GMC51]
Assessment

GMC51

Assessment Level of Control:
Tick the relevant box (✓)

Controlled Conditions	
Other	

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.**
Answer **all fourteen** 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.

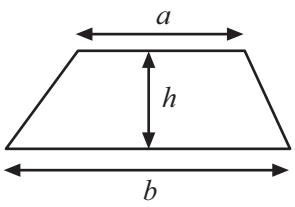
INFORMATION FOR CANDIDATES

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.

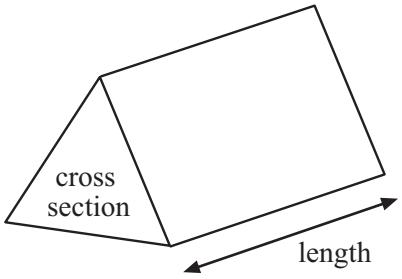
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Formula Sheet

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



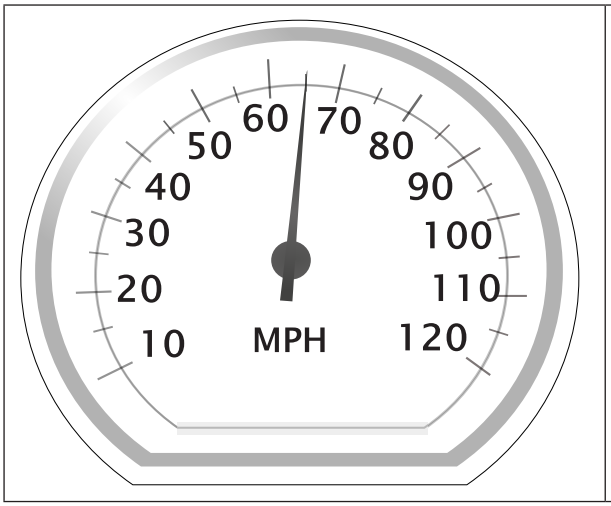
Volume of prism = area of cross section × length



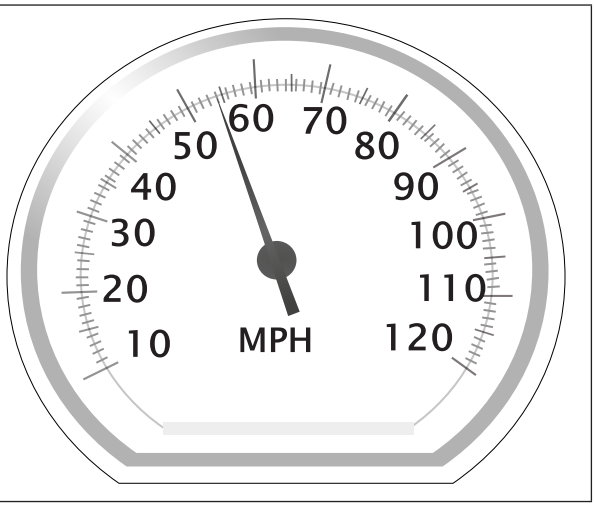
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1 **(a)** The diagrams show two car speedometers, **A** and **B**.

A



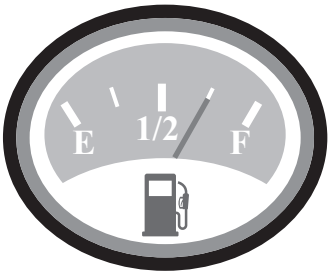
B



What speed does each show?

Answer **A** 65 mph **B** 54 mph [2]

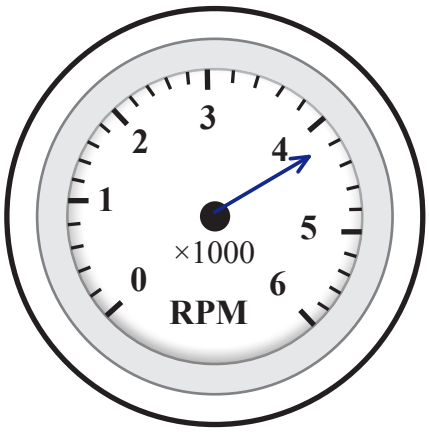
(b) What reading is shown on the fuel gauge?



Answer $\frac{3}{4}$ [1]

[Turn over

(c) Use an arrow to show 4200 rpm on the diagram below.



[1]

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2 **(a)** Liam writes a letter that is 28 lines long.

Each line has 12 words on average.

Estimate how many words there are in the letter.

$28 \approx 30$ $12 \approx 10$

$30 \times 10 = 300$

Answer 300 words [2]

(b) A book contains 8356 words.

The book is 17 pages long.

Kate is **estimating** how many words there are on each page of the book.

Which **two** of the calculations below would be most appropriate for Kate to use?

Circle your answers.

8000 × 20 (8000 ÷ 20) 8356 × 17 8356 ÷ 17 8400 × 20 (8400 ÷ 20)

[2]

[Turn over

3 Ben has 40 flags.

The table shows information about his flags.

Continent	Africa	Asia	Australia	Europe	North America	South America
Number of flags	10	5	2	20	0	3

(a) Ben takes a flag at random.

Circle the word that best describes the likelihood of these events.

(i) Ben's flag is from Africa.

impossible (unlikely) evens likely certain [1]

(ii) Ben's flag is from Europe.

impossible unlikely (evens) likely certain [1]

(iii) Ben's flag is from North America.

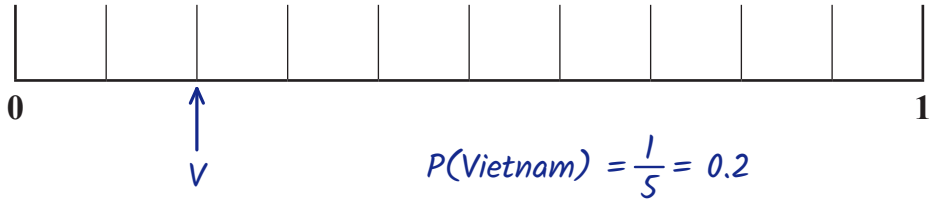
(impossible) unlikely evens likely certain [1]

(b) Ben has five flags from Asia.

They are from Malaysia, Mongolia, Myanmar, Taiwan, and Vietnam.

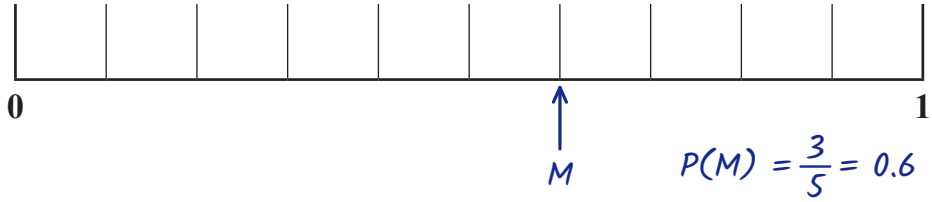
Ben takes one of these flags at random.

(i) Mark on the probability scale with a **V** the probability that the flag taken is Vietnam.



[1]

(ii) Mark on the probability scale with an **M** the probability that the flag taken is from a country beginning with the letter M.



[1]

[Turn over

4 **(a)** Circle the two units of capacity.

gallons miles pints pounds stones yards [1]

(b) Jack is 6 feet 3 inches tall.

Jill is 5 feet 8 inches tall.

1 foot = 12 inches.

How many inches taller is Jack than Jill?

Jack: $6 \times 12 + 3 = 72 + 3 = 75$ inches

Jill: $5 \times 12 + 8 = 60 + 8 = 68$ inches

$75 - 68 = 7$

Answer 7 inches [2]

5 Use $5 \times 12 = 60$ $60 \div 5 = 12$ and $12 \div 5 = 2.4$

to complete the following.

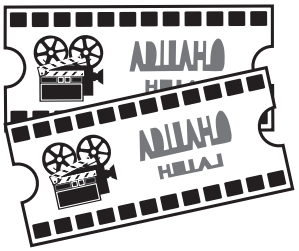
(a) [50] $\times$ 12 = 600 [1]

(b) 600 $\div$ [5] = 120 [1]

(c) 12 $\div$ 50 = [0.24] [1]

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6 A cinema has two screens.



500 people go to this cinema on a Saturday evening.

$\frac{3}{5}$ of these people go to screen 1

40% of the people who go to screen 2 are children.

How many children go to screen 2?

Show all your working.

$\frac{3}{5} \times 500 = 500 \div 5 \times 3 = 300$ (screen 1)

500 − 300 = 200 (screen 2)

10% of 200 = 20

40% of 200 = 4 × 20 = 80

Answer 80 [3]

[Turn over

7 **(a)** Write in its simplest form the ratio 12 : 30

12 : 30 = 2 : 5 (÷ 6)

Answer 2 : 5 [1]

(b) **(i)** Mark and Dylan have a number of toy bricks

in the ratio 3 : 2

What fraction of the bricks does Mark have?

3 + 2 = 5 parts, Mark has 3 parts

Answer $\frac{3}{5}$ [1]

(ii) They have 35 bricks in total.

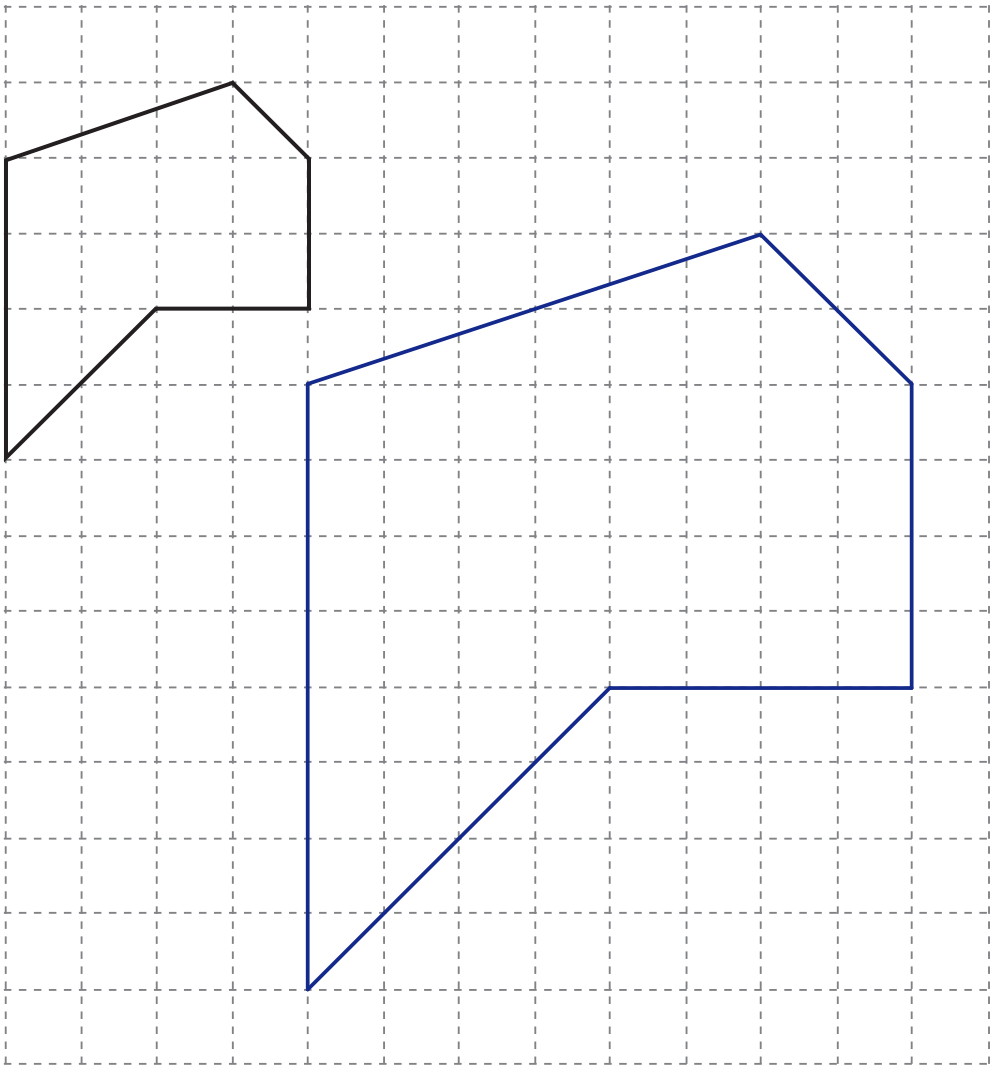
How many do they each have?

35 ÷ 5 = 7 bricks in each part
Mark: 3 × 7 = 21
Dylan: 2 × 7 = 14 (35 − 21 = 14)

Answer Mark has 21, Dylan has 14 [2]

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8 On the grid, enlarge the shape with a scale factor of 2



[2]

[Turn over

9 Which of the numbers below shows that the following statement is not true?

"If P is any odd number, then P + 2 is always a prime number."

Show all working before you tick the correct box.

P = 1: 1 + 2 = 3 prime

P = 3: 3 + 2 = 5 prime

P = 5: 5 + 2 = 7 prime

P = 7: 7 + 2 = 9 9 = 3 × 3, so 9 is not prime

P = 1	☐	P = 5	☐
P = 3	☐	P = 7	☑

[2]

10 In a Year 12 class, the following information was recorded.

	Boys	Girls
Wears glasses	3	5
Does not wear glasses	10	6

(a) What fraction of the pupils in the class wear glasses?

Total = 3 + 10 + 5 + 6 = 24

Glasses = 3 + 5 = 8

Answer $\frac{8}{24}$ [2]

(b) A pupil was chosen at random from the class.

What is the probability that the pupil was a boy who does not wear glasses?

10 boys without glasses

Answer $\frac{10}{24}$ [1]

(c) The next week a new boy joins the class.

He wears glasses.

Will this change the probability of now choosing at random a girl who wears glasses?

Explain your answer clearly.

Before: P(girl with glasses) = $\frac{5}{24}$

After: P(girl with glasses) = $\frac{5}{25}$ (now 25 pupils, still 5 girls)

Answer Yes because it changes from $\frac{5}{24}$ to $\frac{5}{25}$ [2]

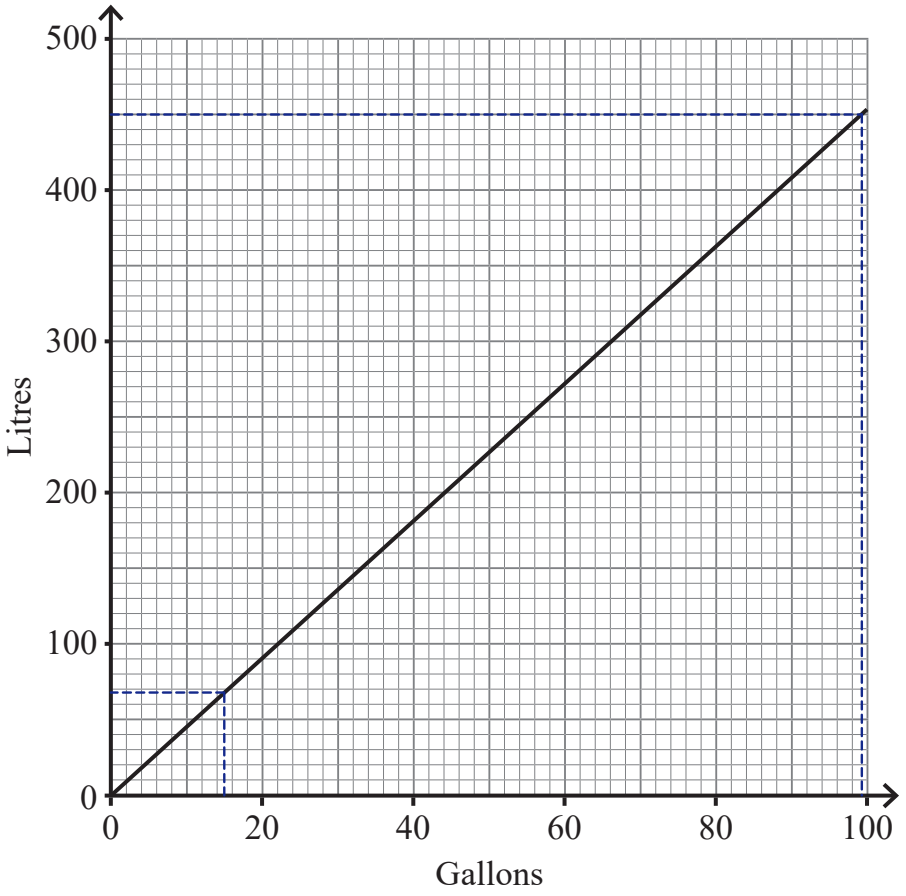
[Turn over

11 Change 20 miles/h to km/h.

5 miles ≈ 8 km
20 ÷ 5 = 4
4 × 8 = 32

Answer _____32_____ km/h [2]

12 Use this conversion graph to answer the following.



(a) An oil drum holds 15 gallons of oil.

How many litres of oil is this?

Answer 68 litres [1]

(b) An oil tank holds 900 litres of oil.

How many gallons of oil is this?

450 litres ≈ 99 gallons, so 900 ≈ 2 × 99

Answer 198 gallons [1]

(c) Complete this sentence. (100 gallons ≈ 450 litres)

A gallon is about 4.5 times greater than a litre. [1]

[Turn over

13 "Look Dad," said Erin.

"Here are all the silver coins from my piggy bank."

"How much have you got?" said Dad.

"$\frac{1}{3}$ are 5p coins, $\frac{1}{4}$ are 10p coins and the other 10 coins are 50p coins," said Erin.

What is Erin's total amount of money?

Show all working.

$\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$

50p coins: $1 - \frac{7}{12} = \frac{5}{12}$

$\frac{5}{12}$ = 10 coins, so $\frac{1}{12}$ = 10 ÷ 5 = 2 coins

Total coins = 12 × 2 = 24

5p: $\frac{1}{3}$ of 24 = 8 coins, 8 × 5 = 40p

10p: $\frac{1}{4}$ of 24 = 6 coins, 6 × 10 = 60p

50p: 10 coins, 10 × 50 = 500p

40 + 60 + 500 = 600p = £6.00

Answer £6.00 [5]

14 ABCDE is a pentagon.

Lines AF and CG are straight lines.

Work out the value of $x + y + z$

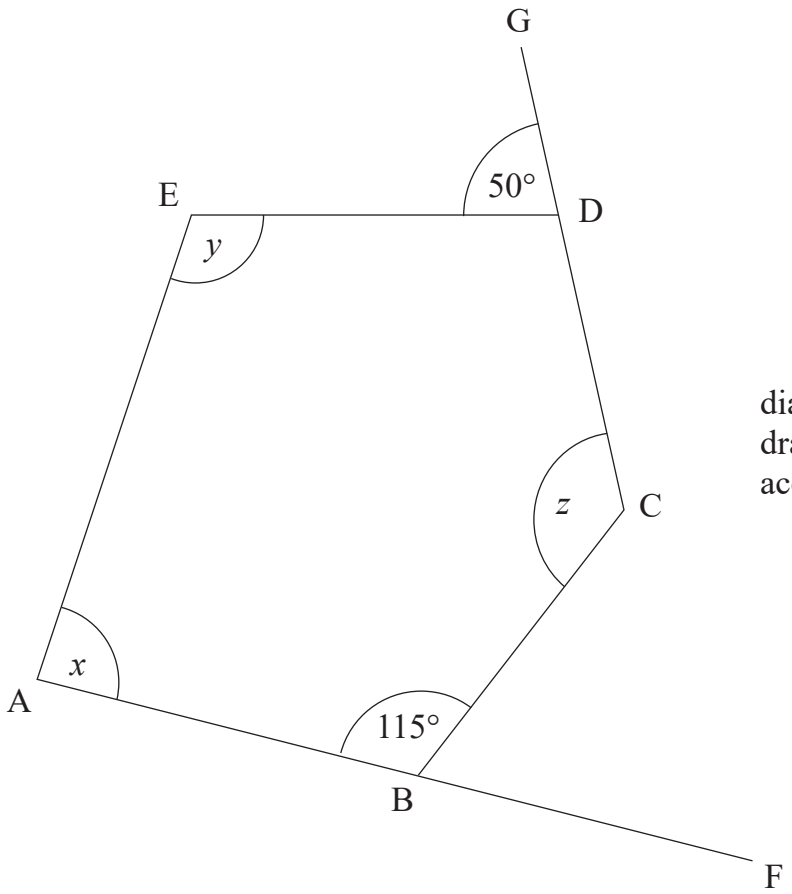


diagram not drawn accurately

Angle EDC = 180° − 50° = 130° (angles on a straight line)

Angles in a pentagon = (5 − 2) × 180° = 540°

x + y + z = 540° − 115° − 130°

= 540° − 245° = 295°

Answer 295 ° [5]

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Question Number	**Marks**
1	
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Total Marks	

Examiner Number

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