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8286450910

MATHEMATICS **0580/31**

Paper 3 Calculator (Core) **October/November 2025**

1 hour 30 minutes

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a scientific calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages.

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List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

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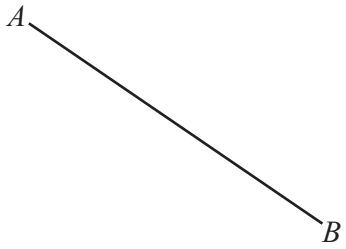

(a) Measure the length of line *AB* in centimetres.

..... cm [1]

(b) Draw a line that is perpendicular to the line *AB*. [1]

2 Complete this shopping bill.

3.4 kg of flour at $4.60 per kg	= $ .....
2.75 kg of sugar at $ ..... per kg	= $ 9. 90
	Total = $ .....

[3]

3 Total cost of a journey = number of litres of fuel used × cost of fuel per litre.

A journey uses 128 litres of fuel.
The cost of fuel is $1.52 per litre.

Calculate the total cost of this journey.

$ ..... [1]

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4

$\frac{6}{15}$ $\frac{1}{10}$ $\frac{16}{80}$ $\frac{10}{25}$ $\frac{5}{2}$

Draw a ring around the fractions which are **not** equivalent to $\frac{2}{5}$. [2]

5 Find the value of

(a) (i) $\sqrt{1.96}$

..... [1]

(ii) 17^3

..... [1]

(iii) -0.8×-1.2 .

..... [1]

(b) Write these numbers in order, starting with the smallest.

$\frac{11}{19}$ 58% $\frac{27}{47}$ 0.574

..... < ..... < ..... < ..... [2]

smallest

6

17	4	25	18	14	6	3	18	12

Find

(a) the mode

..... [1]

(b) the range.

..... [1]

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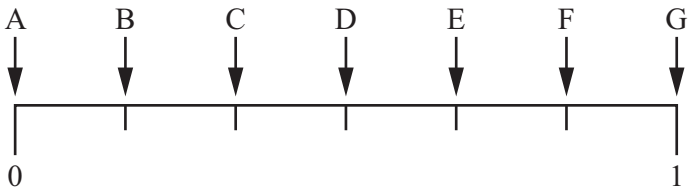
7 A bag contains 6 red balls, 4 green balls and 2 blue balls.
Zia takes a ball from the bag at random.

The diagram shows a probability scale.



Which arrow shows the probability that,

(a) Zia takes a green ball

..... [1]

(b) Zia takes a yellow ball

..... [1]

(c) Zia does **not** take a blue ball.

..... [1]

8 Solve.

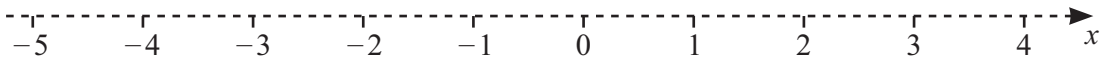
(a) $8x = 32$

$x =$ ..... [1]

(b) $6x - 3 = 12$

$x =$ ..... [2]

(c) Represent the inequality $-4 \leqslant x < 2$ on the number line.



[2]

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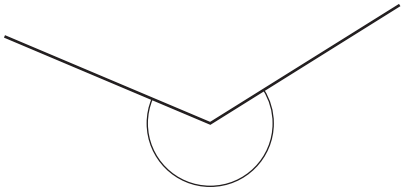
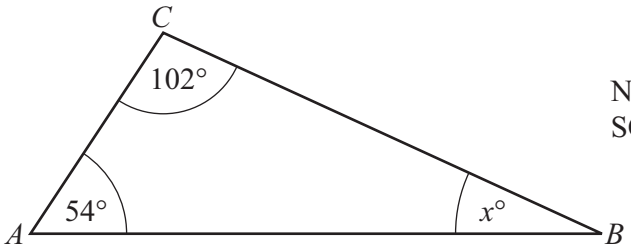
9 (a)



Write down the mathematical name for this type of angle.

..... [1]

(b) *ABC* is a triangle.



NOT TO SCALE

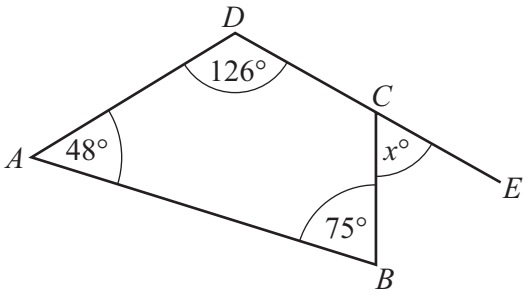
Lily says x is 34.

Give a geometrical reason why Lily is not correct.

.....

..... [1]

(c)



NOT TO SCALE

ABCD is a quadrilateral.
DCE is a straight line.

Calculate the value of x.

$x =$ ..... [2]

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10 Anna and Bruno share some money in the ratio Anna : Bruno = 3 : 7.
Bruno receives $36 more than Anna.

Calculate the total amount of money they share.

$ ..... [2]

11 **(a)** Naz pays $76.25 per day to hire a car.
He hires this car for 7 days.
He also pays $146 for fuel.

Calculate the total amount Naz pays.

$ ..... [2]

(b) Li pays $1400 to hire a car.
$364 of this is insurance.

Calculate the insurance as a percentage of the $1400.

..... % [1]

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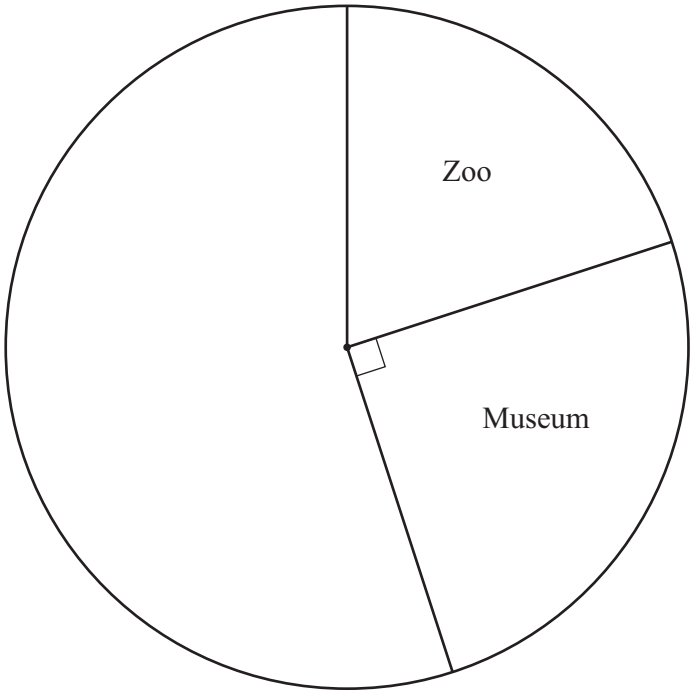
12 300 students choose where to go on a trip.
The students choose either a zoo, a museum, an art gallery or a sports stadium.



(a) Show that 75 students choose the museum.

[1]

(b) 45 students choose the art gallery and 120 students choose the sports stadium.

Complete the pie chart to show this information. [2]

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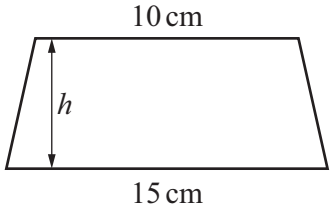
13 **(a)** The surface area of a solid cube is $121.5\,\text{cm}^2$.

Calculate the length of the side of the cube.

..... cm [3]

(b)



NOT TO SCALE

The area of the trapezium is $106.25\,\text{cm}^2$.

(i) Calculate the height of the trapezium.

..... cm [2]

(ii) Convert $106.25\,\text{cm}^2$ into m^2.

..... m^2 [1]

14 A bag contains red, yellow, blue and green cards.
The table shows the probability of taking a red card and a yellow card.
The probability of taking a blue card or a green card is in the ratio blue : green = 5 : 2 .

Complete the table.

Colour	red	yellow	blue	green
Probability	0.53	0.19		

[3]

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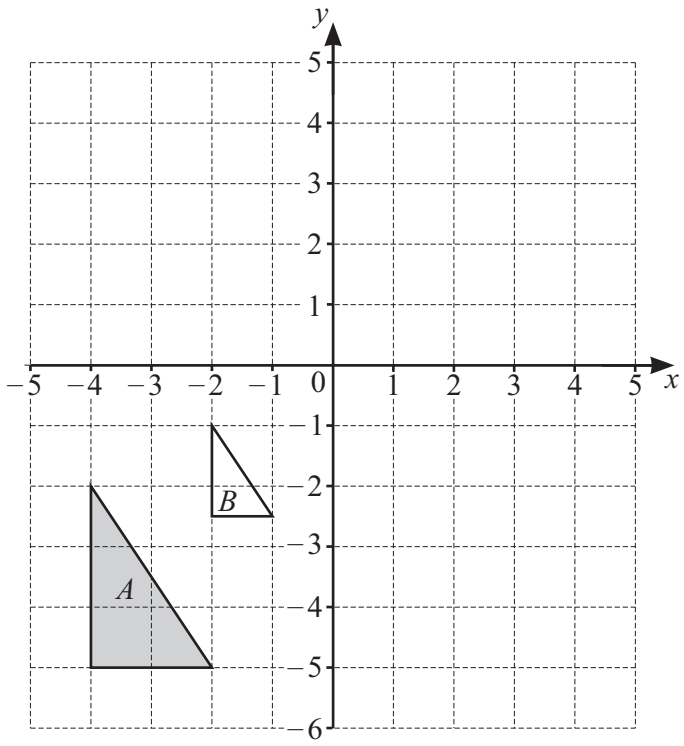
15 Shapes A and B are shown on the grid.



(a) Describe fully the **single** transformation that maps shape A onto shape B.

.....

..... [3]

(b) On the grid, draw the image of shape A after a translation by the vector $\begin{pmatrix} 6 \\ 7 \end{pmatrix}$. [2]

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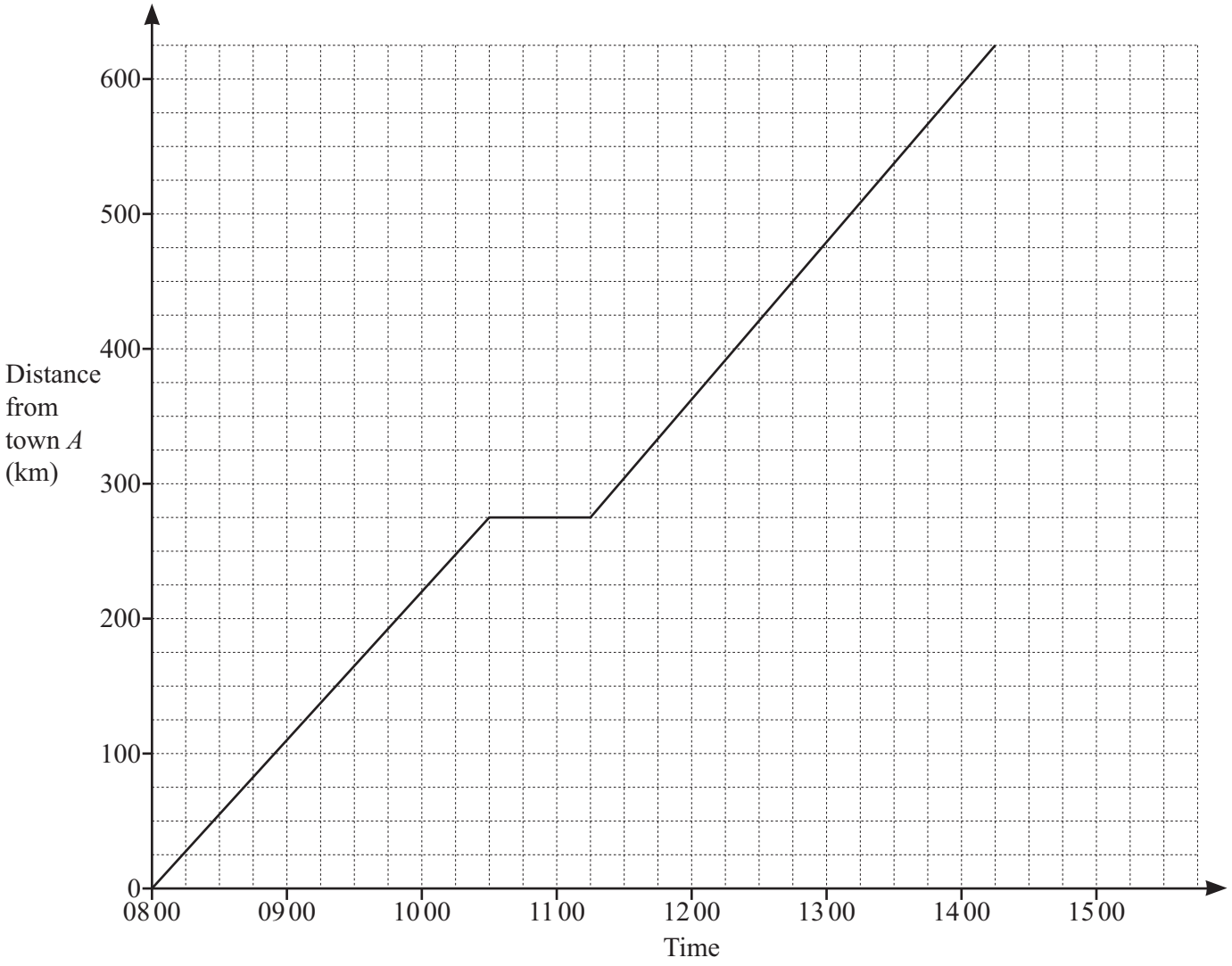
16 Bob travels from town *A* to town *B*.
The travel graph shows his journey.



(a) Between which two times did Bob stop for a rest?
Explain how you know.

..... and ..... because .....

..... [2]

(b) Calculate Bob's average speed, in km/h, for the whole journey.

..... km/h [3]

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17 Factorise.

$21x - 7xy$

..... [2]

18 **(a)** The nth term of a sequence is $n^2 - 4$.

Find the first 3 terms of this sequence.

....., ..., ... [2]

(b) These are the first four terms of a different sequence.

5 2 −1 −4

Find the nth term.

..... [2]

19 Jo invests \$500 at a rate of 2% per year compound interest.

Calculate the amount of interest earned at the end of 7 years.

\$ ..... [3]

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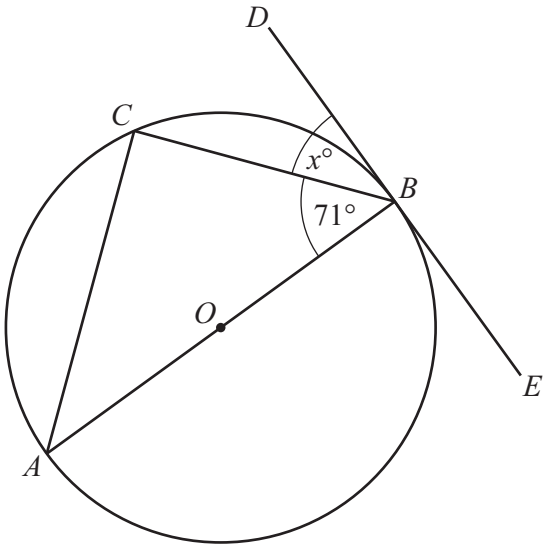
20 **(a)** Work out the size of one interior angle of a regular 8-sided polygon.

..... [2]

(b)



NOT TO SCALE

A, *B* and *C* lie on the circumference of the circle, centre *O*.
AB is a diameter.
DBE is a tangent to the circle at *B*.

Find the value of *x*.
Give a geometrical reason for your answer.

..... because .....

..... [2]

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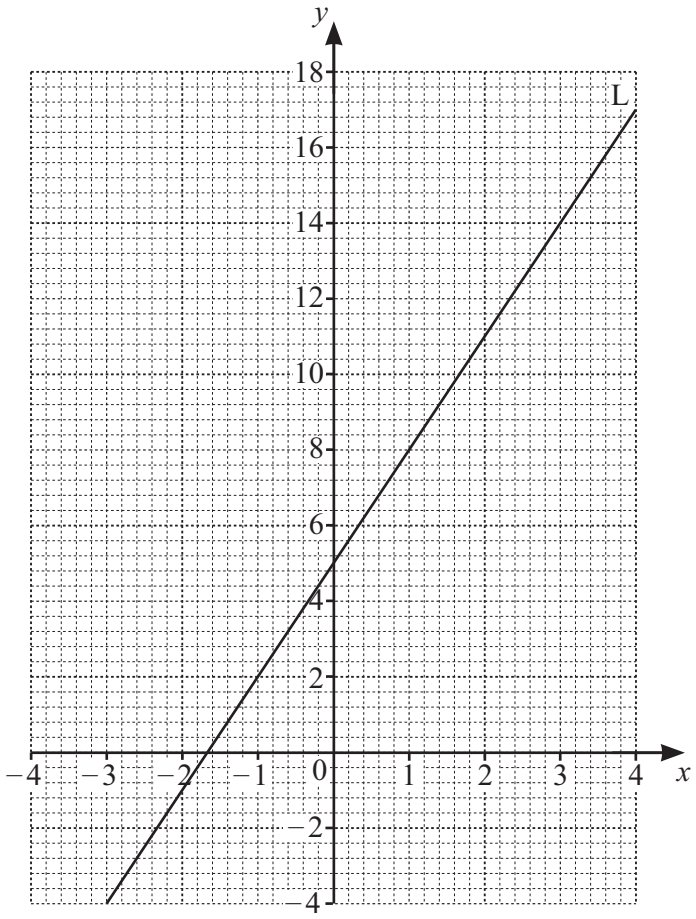
21 The line L is shown on the grid.



Find the equation of the line L.

Give your answer in the form $y = mx + c$.

$y =$ ..... [3]

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22 **(a)** A train to town P leaves a station every 20 minutes.
A train to town Q leaves the same station every 35 minutes.
Both trains leave at 09 30.

Find the next time both trains leave together.

..... [3]

(b) The distance, d km, between town P and town Q is 97 km, correct to the nearest kilometre.

Complete the statement about the value of d.

..... $\leqslant d <$ ..... [2]

23 Calculate $\dfrac{4.6 \times 10^3}{1.84 \times 10^5}$.

Give your answer in standard form.

..... [2]

Question 24 is printed on the next page

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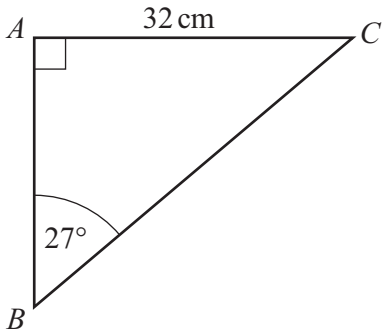
24



NOT TO SCALE

ABC is a right-angled triangle.

Calculate *BC*.

BC = ... cm [3]

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