Cambridge Assessment International Education

# Cambridge IGCSE™ (9–1)

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

*251218561 3*

**MATHEMATICS** **0980/31**

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 $\pi$, use either your calculator value or 3.142.

**INFORMATION**

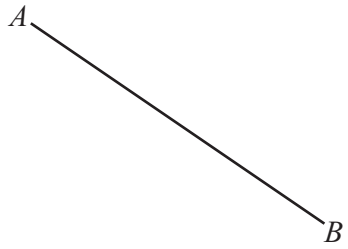
- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages.

## 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 $r$. | $V = \frac{4}{3}\pi r^3$ |

**1**




**(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]

**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)** $-0.8 \times -1.2$ .

..... [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

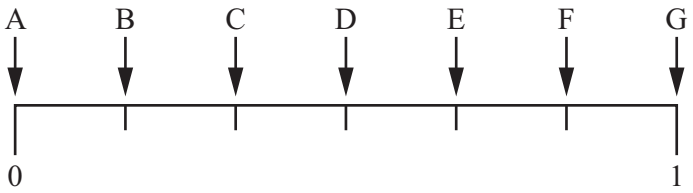
..... [1]

**(b)** the range.

..... [1]

**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.

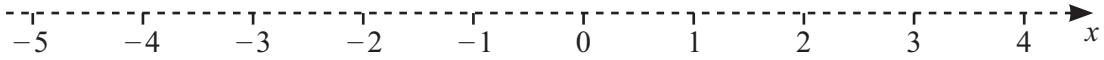
**(a)** $8x = 32$

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

**(b)** $6x - 3 = 12$

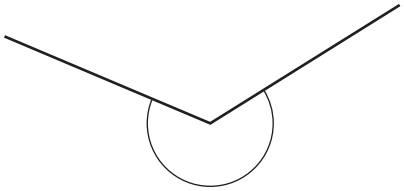
$x =$ ..... [2]

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




[2]

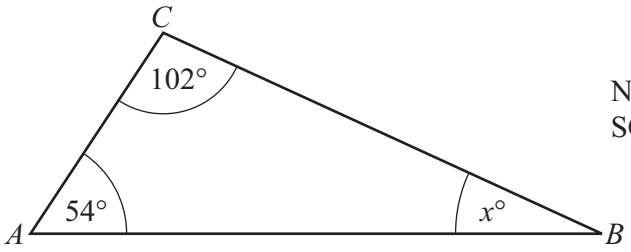
**9** **(a)**



Write down the mathematical name for this type of angle.

..... [1]

**(b)** $ABC$ is a triangle.




NOT TO SCALE

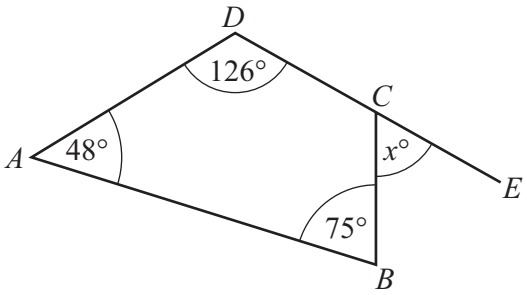
Lily says $x$ is 34.

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]

**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.

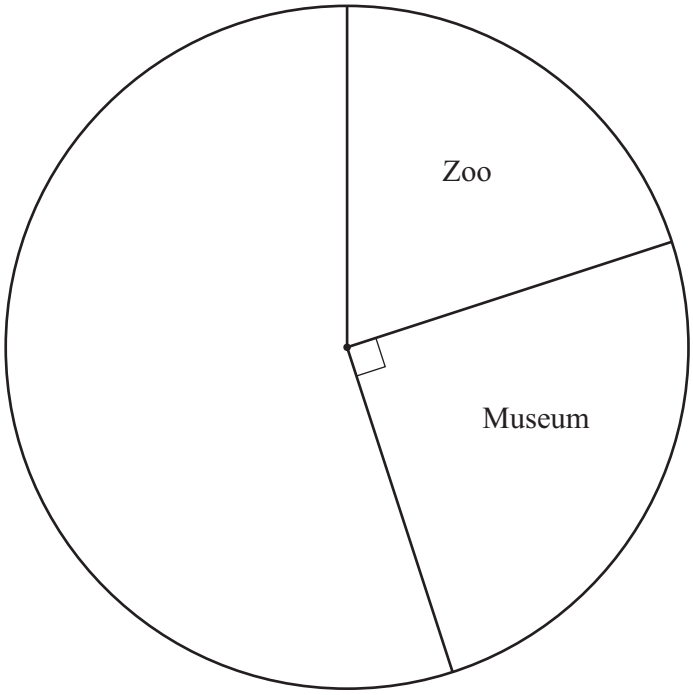
$ ..... [2]

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

Calculate the insurance as a percentage of the $1400.

..... % [1]

**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.

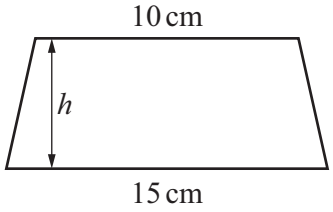
Complete the pie chart to show this information. [2]

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

Calculate the length of the side of the cube.

..... cm [3]

**(b)**




NOT TO SCALE

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

**(i)** Calculate the height of the trapezium.

..... cm [2]

**(ii)** Convert $106.25\,cm^2$ into $m^2$.

..... $m^2$ [1]

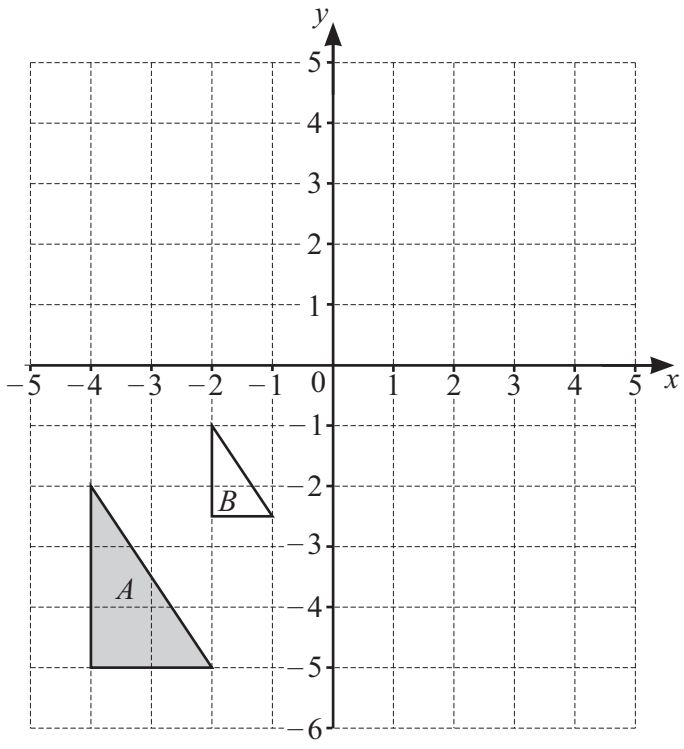
**14** A bag contains red, yellow, blue and green cards.
The table shows the probability of taking a red card and a yellow card.
The probability of taking a blue card or a green card is in the ratio blue : green = 5 : 2 .

Complete the table.

| Colour | red | yellow | blue | green |
|---|---|---|---|---|
| Probability | 0.53 | 0.19 | | |

[3]

**15** Shapes $A$ and $B$ are shown on the grid.



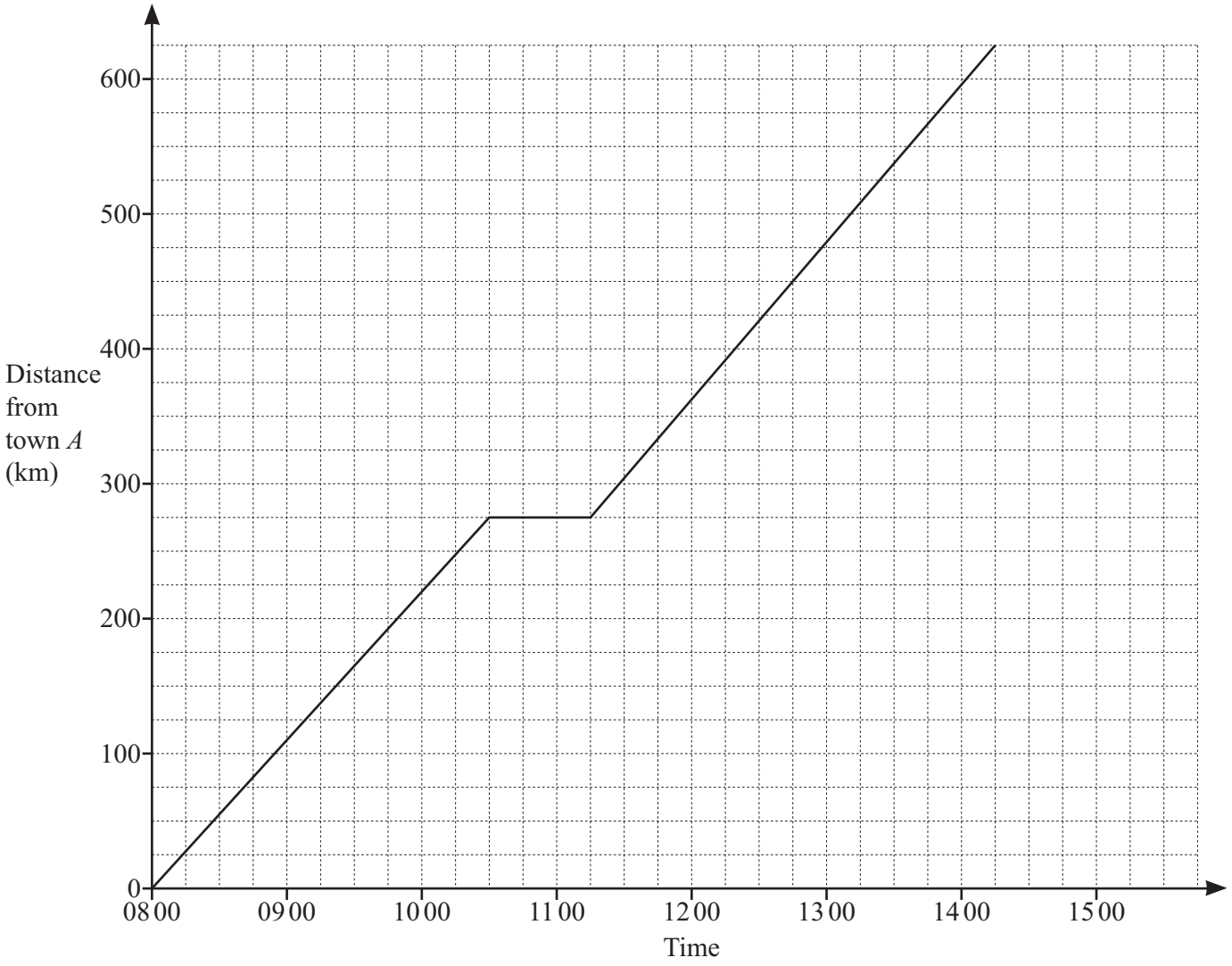

**(a)** Describe fully the **single** transformation that maps shape $A$ onto shape $B$.

.....

..... [3]

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

**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]

**17** Factorise.

$21x - 7xy$

..... [2]

**18** **(a)** The $n$th 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 $n$th term.

..... [2]

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

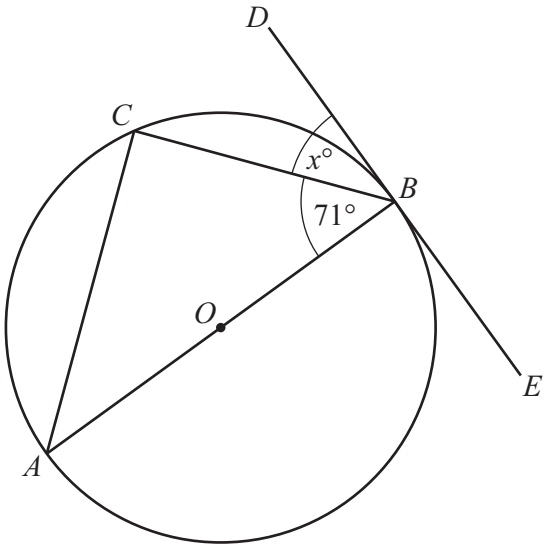
Calculate the amount of interest earned at the end of 7 years.

\$ ..... [3]

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

..... [2]

**(b)**




NOT TO SCALE

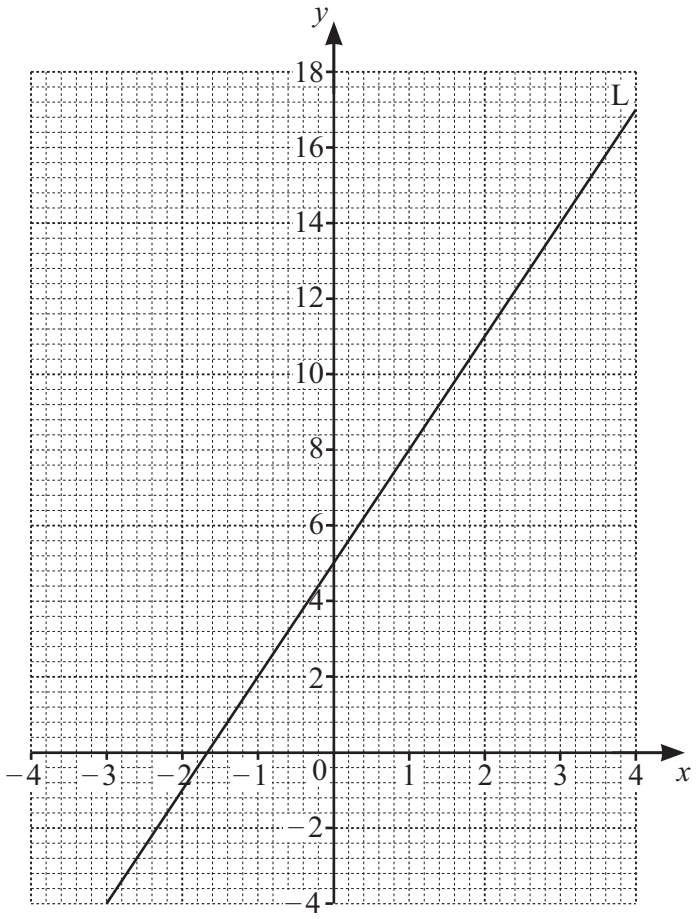
$A$, $B$ and $C$ lie on the circumference of the circle, centre $O$.
$AB$ is a diameter.
$DBE$ is a tangent to the circle at $B$.

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

..... because .....

..... [2]

**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]

**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]

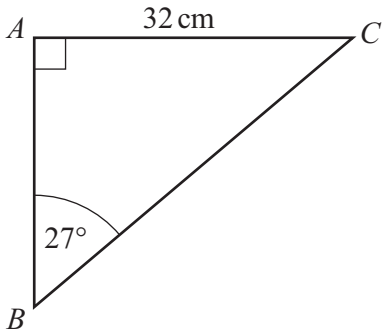
**23** Calculate $\dfrac{4.6 \times 10^3}{1.84 \times 10^5}$.

Give your answer in standard form.

..... [2]

**Question 24 is printed on the next page**

**24**




NOT TO SCALE

*ABC* is a right-angled triangle.

Calculate *BC*.

*BC* = ..... cm [3]