



## Cambridge IGCSE™

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CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/32

Paper 3 (Core)

May/June 2023

1 hour 45 minutes

You must answer on the question paper.

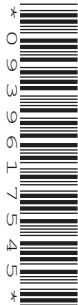
You will need: Geometrical instruments

## 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 graphic display calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly and you will be given marks for correct methods, including sketches, even if your answer is incorrect.
- 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 your calculator value.

## INFORMATION

- The total mark for this paper is 96.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages.

**Formula List**

Area,  $A$ , of triangle, base  $b$ , height  $h$ .

$$A = \frac{1}{2}bh$$

Area,  $A$ , of circle, radius  $r$ .

$$A = \pi r^2$$

Circumference,  $C$ , of circle, 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  $l$ .

$$A = \pi rl$$

Curved 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  $r$ .

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

**3**Answer **all** the questions.

- 1 (a)** Show that, in a year of 365 days, there are 31 536 000 seconds.

[2]

- (b) (i)** Write 31 536 000 in words.

.....

.....

[1]

- (ii)** Write 31 536 000 in standard form.

..... [1]

- (c)** Write down all the factors of 49.

..... [2]

- (d)** Write  $\frac{1}{4}$  as a percentage.

..... % [1]

- (e)** Find  $\sqrt{604}$ .

Give your answer correct to 3 decimal places.

..... [2]

- (f)** Work out  $4.85 - 3.26 \times 2.31$ .

Give your answer correct to 4 significant figures.

..... [2]

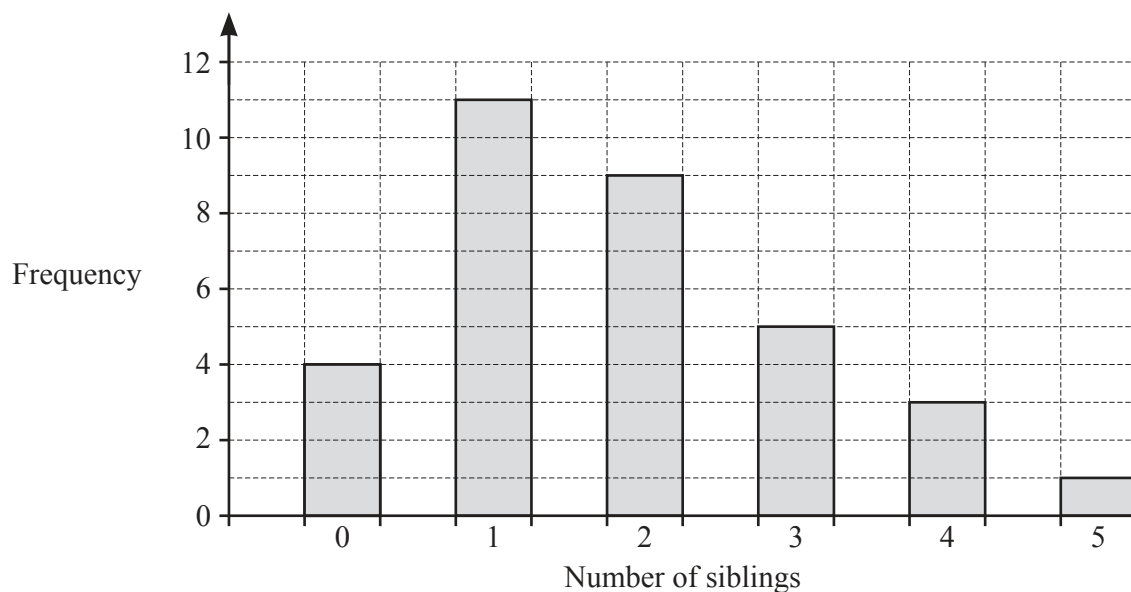
- (g)** Write these numbers in order of size, starting with the smallest.

5.6      5.56      5.06      5.65

..... [2]  
*smallest*

4

- 2 33 students in a class write down the number of siblings they each have. The results are shown in this bar chart.



- (a) Write down the mode.

..... [1]

- (b) (i) Write down the number of students that have 0 siblings.

..... [1]

- (ii) Work out how many more students have 2 siblings rather than have 5 siblings.

..... [1]

- (c) One of the 33 students is chosen at random.

- (i) Find the probability that this student has 3 siblings.

..... [1]

- (ii) Find the probability that this student has more than 1 sibling.

..... [2]

**5**

- 3 (a)** Petrol costs \$0.76 per litre.

Work out the amount of petrol that can be bought with \$10.

..... litres [2]

- (b)** Company A and Company B have cars to rent.  
Company A charges \$50 for the first day and \$28 for each additional day.

- (i)** Find the cost of renting a car from Company A for 4 days.

\$ ..... [2]

- (ii)** Company B charges \$200 to rent a car for a week.  
Selma wants to rent a car for 2 weeks.

Work out whether Company A or Company B is cheaper for Selma.  
You must show all your working.

[3]

## 6

- 4** The Burj Khalifa has a height of 828 metres.  
Sky Level is a floor in the Burj Khalifa at a height of 555 metres.

**(a)** Work out the difference in height between Sky Level and the top of the Burj Khalifa.

..... m [1]

- (b)** An elevator takes visitors the 555 metres up to Sky Level.  
The elevator travels at an average speed of 10 metres per second.

**(i)** Work out how many seconds it takes for the elevator to reach Sky Level.

..... s [1]

**(ii)** Change 10 metres per second to kilometres per hour.

..... km/h [2]

- (c)** In year 1, 1.66 million people visited the Burj Khalifa.  
In year 2, 13% more people visited the Burj Khalifa.

Work out the number of people who visited the Burj Khalifa in year 2.

..... million [2]

7

**5 (a)**  $T = 5a - 2b$

**(i)** Find  $T$  when  $a = 2.34$  and  $b = 1.68$  .

$$T = \dots\dots\dots [2]$$

**(ii)** Find  $a$  when  $T = 12.6$  and  $b = 1.2$  .

$$a = \dots\dots\dots [2]$$

**(iii)** Rearrange the formula to make  $b$  the subject.

$$b = \dots\dots\dots [2]$$

**(b)**  $f(x) = 3(x - 7)$

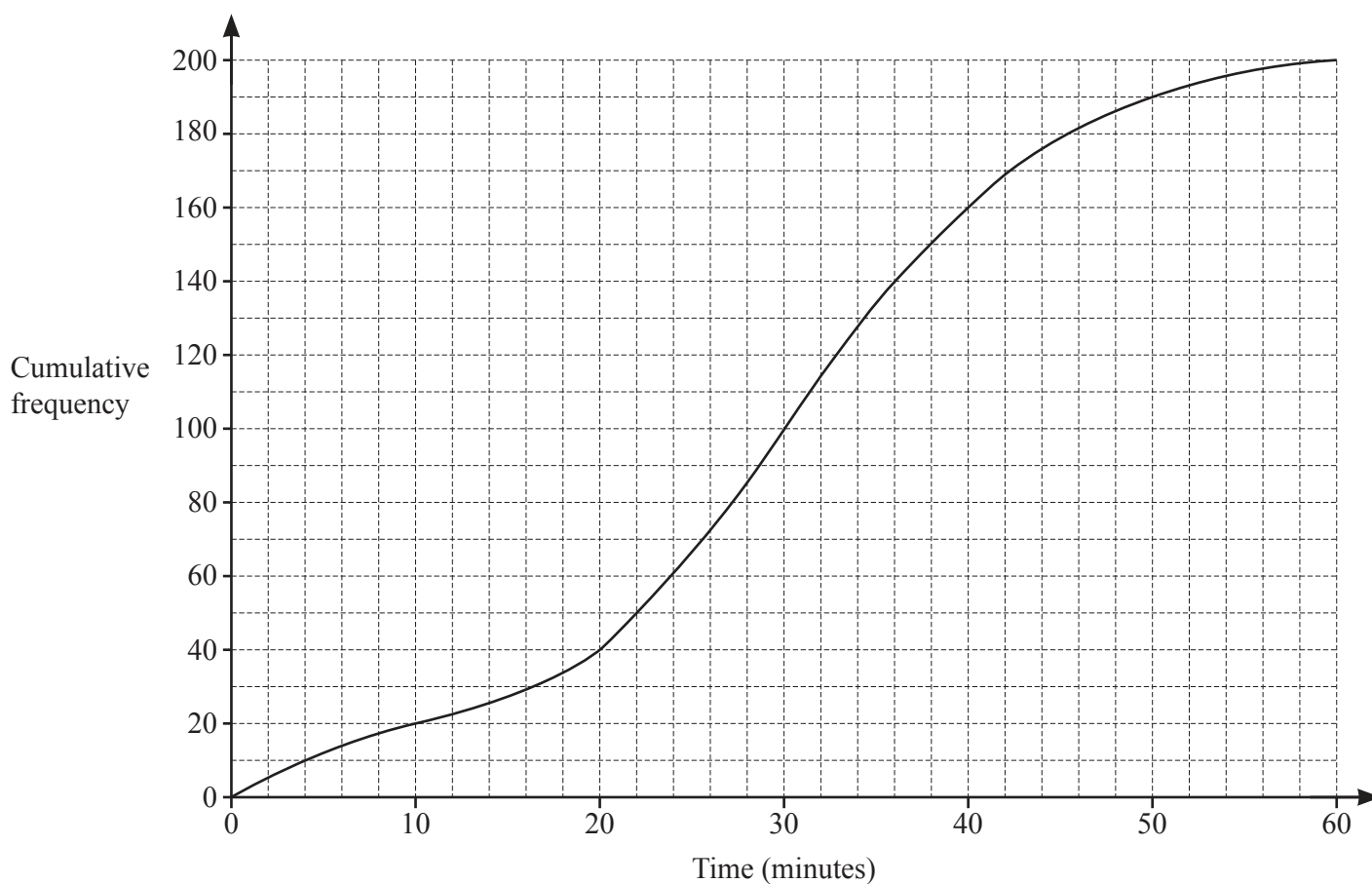
**(i)** Find  $f(10)$ .

$$\dots\dots\dots [1]$$

**(ii)** Find the value of  $x$  when  $f(x) = -34.5$  .

$$x = \dots\dots\dots [3]$$

- 6 The cumulative frequency curve shows the times, in minutes, taken by 200 students to travel to school.



(a) Find

(i) the median

..... min [1]

(ii) the interquartile range.

..... min [2]

(b) Work out the number of students who took more than 36 minutes to travel to school.

..... [2]



(c) (i) Use the cumulative frequency curve to complete the frequency table.

| Time ( $m$ minutes) | Frequency |
|---------------------|-----------|
| $0 < m \leq 10$     |           |
| $10 < m \leq 20$    |           |
| $20 < m \leq 30$    |           |
| $30 < m \leq 40$    |           |
| $40 < m \leq 50$    |           |
| $50 < m \leq 60$    |           |

[2]

(ii) Write down the mid-point of the group  $0 < m \leq 10$ .

..... [1]

(iii) Using the mid-point of each group, work out an estimate for the mean.

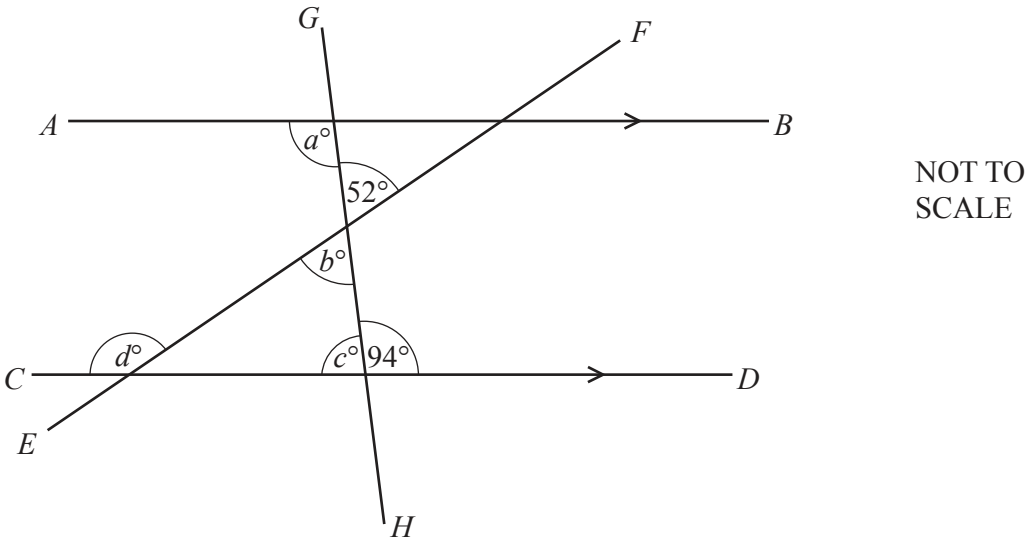
..... min [2]

- 7 (a) Use a ruler to draw a suitable angle in each of the spaces provided.  
Mark each angle with an arc.

|                |                 |
|----------------|-----------------|
| A right angle  | An obtuse angle |
| An acute angle | A reflex angle  |

[3]

(b)



*AB* is parallel to *CD*.  
*EF* and *GH* are straight lines.

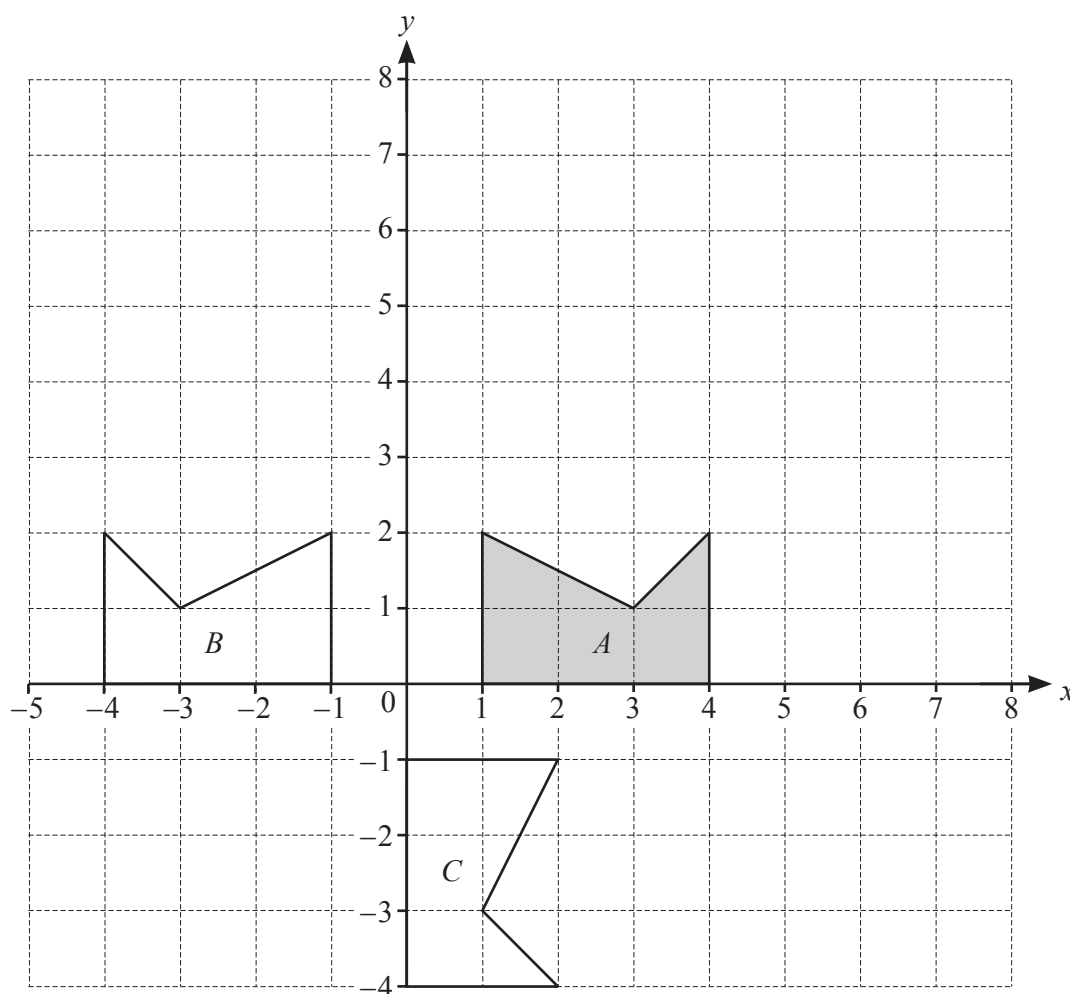
Work out the size of angle *a*, angle *b*, angle *c* and angle *d*.

Angle *a* = .....

Angle *b* = .....

Angle *c* = .....

Angle *d* = ..... [5]



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

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

- (b) Describe fully the **single** transformation that maps shape *A* onto shape *C*.

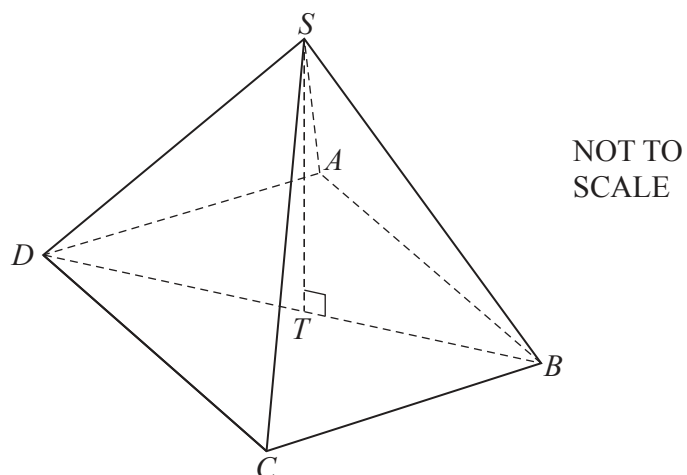
.....  
 ..... [3]

- (c) Translate shape *A* by vector  $\begin{pmatrix} -5 \\ -3 \end{pmatrix}$ .

[2]

12

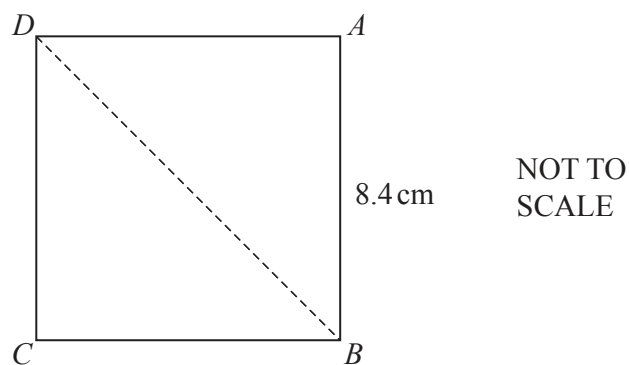
9



The diagram shows a pyramid,  $ABCD S$ .

The base,  $ABCD$ , is a square of side 8.4 cm.

This diagram shows the square base.

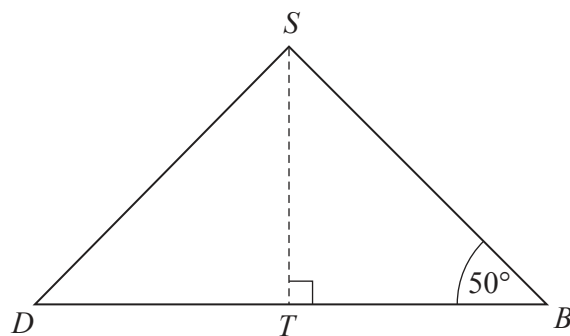


(a) Show that  $BD = 11.9$  cm, correct to 3 significant figures.

[2]

13

(b)



$T$  is the mid-point of diagonal  $DB$  with  $S$  vertically above  $T$ .

$ST$  is the height of the pyramid.

Angle  $SBT$  is  $50^\circ$ .

Use trigonometry to work out the length of  $ST$ .

..... cm [2]

(c) Work out the volume of the pyramid.

.....  $\text{cm}^3$  [2]

**14**

- 10 (a)** Complete this statement using one of  $<$  or  $>$  or  $=$ .

$$4^2 \dots\dots\dots \sqrt[3]{4096} \quad [1]$$

- (b)** Solve.

$$2x - 5 = -9$$

$$x = \dots\dots\dots [2]$$

- (c)** Factorise completely.

$$6x^2 + 2x$$

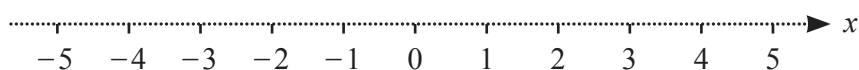
$$\dots\dots\dots [2]$$

- (d)** Expand and simplify.

$$(3x - 1)^2$$

$$\dots\dots\dots [2]$$

- (e)** On the number line, show the inequality  $x \leq -2$ .



[1]

- (f)** Write as a single fraction in its simplest form.

**(i)**  $\frac{6a}{5} + \frac{2a}{3}$

$$\dots\dots\dots [2]$$

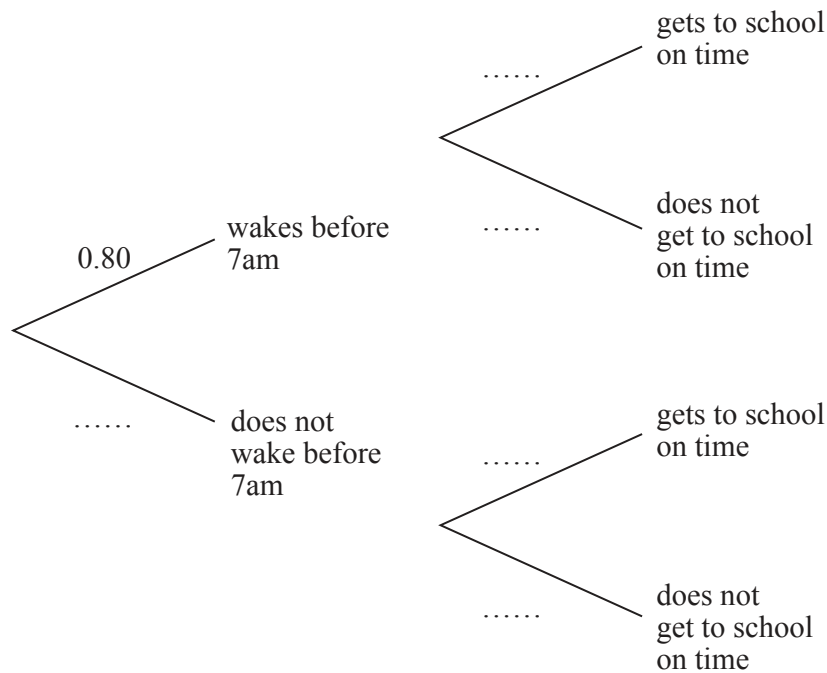
**(ii)**  $\frac{8c}{3} \times \frac{3c}{16}$

$$\dots\dots\dots [2]$$

15

- 11** On any school day, the probability that Mindy wakes before 7am is 0.80 .  
 When Mindy wakes before 7am, the probability that she gets to school on time is 0.92 .  
 When Mindy does not wake before 7am, the probability that she gets to school on time is 0.23 .

**(a)** Complete the tree diagram.



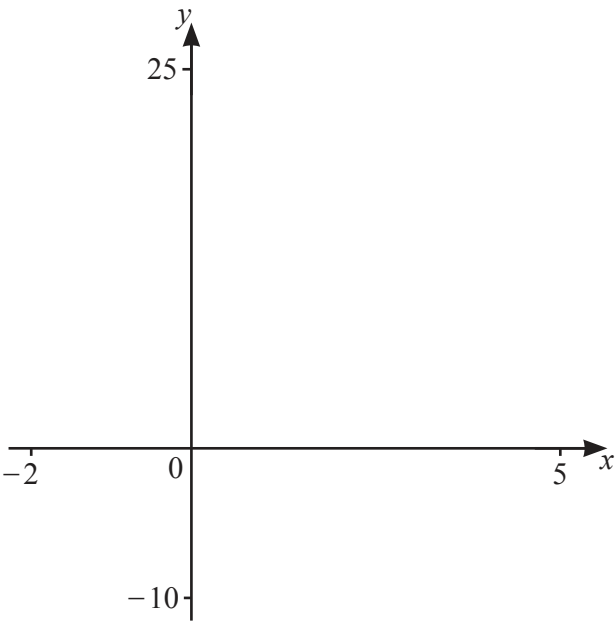
[3]

- (b)** Find the probability that, on one school day, Mindy does not wake before 7am and gets to school on time.

..... [2]

**Question 12 is printed on the next page.**

12



(a) On the diagram, sketch the graph of  $y = 2x^2 - 5x - 3$  for  $-2 \leq x \leq 5$ . [2]

(b) On the same diagram, sketch the graph of  $y = x + 5$  for  $-2 \leq x \leq 5$ . [2]

(c) Find the  $x$ -coordinate of each point of intersection of  $y = 2x^2 - 5x - 3$  and  $y = x + 5$ .

$x = \dots\dots\dots$  and  $x = \dots\dots\dots$  [2]

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