Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0939617545

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 π, 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.

© UCLES 2023

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

© UCLES 2023

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]

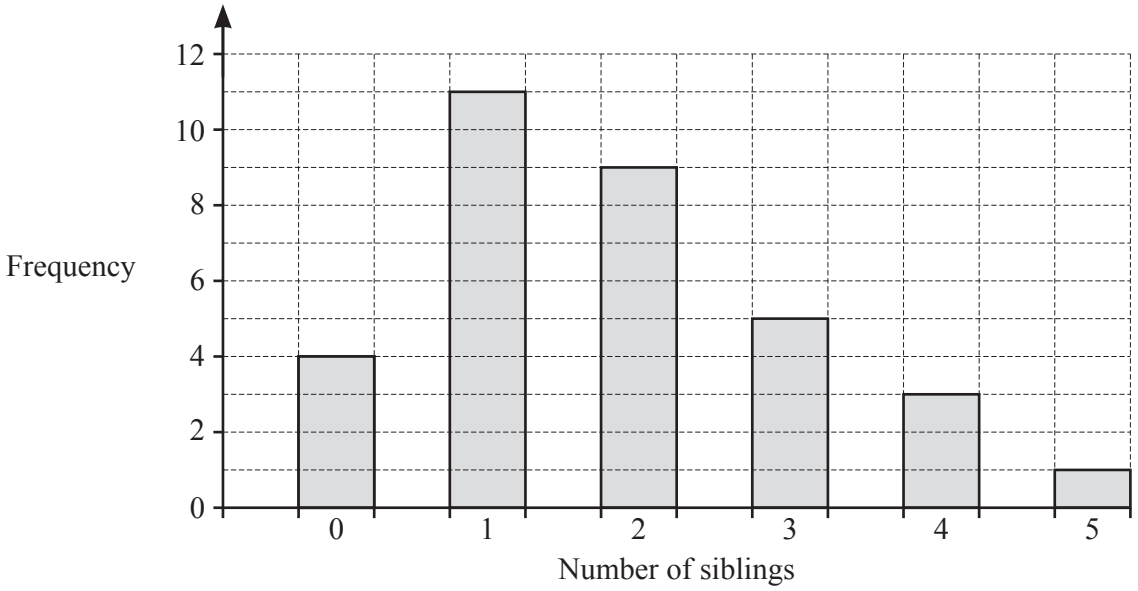
(g) Write these numbers in order of size, starting with the smallest.

5.6 5.56 5.06 5.65

.... [2]

smallest

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]

© UCLES 2023

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]

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]

© UCLES 2023

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

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

$T =$ ..... [2]

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

$a =$ ..... [2]

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

$b =$ ..... [2]

(b) $\mathrm{f}(x) = 3(x - 7)$

(i) Find $\mathrm{f}(10)$.

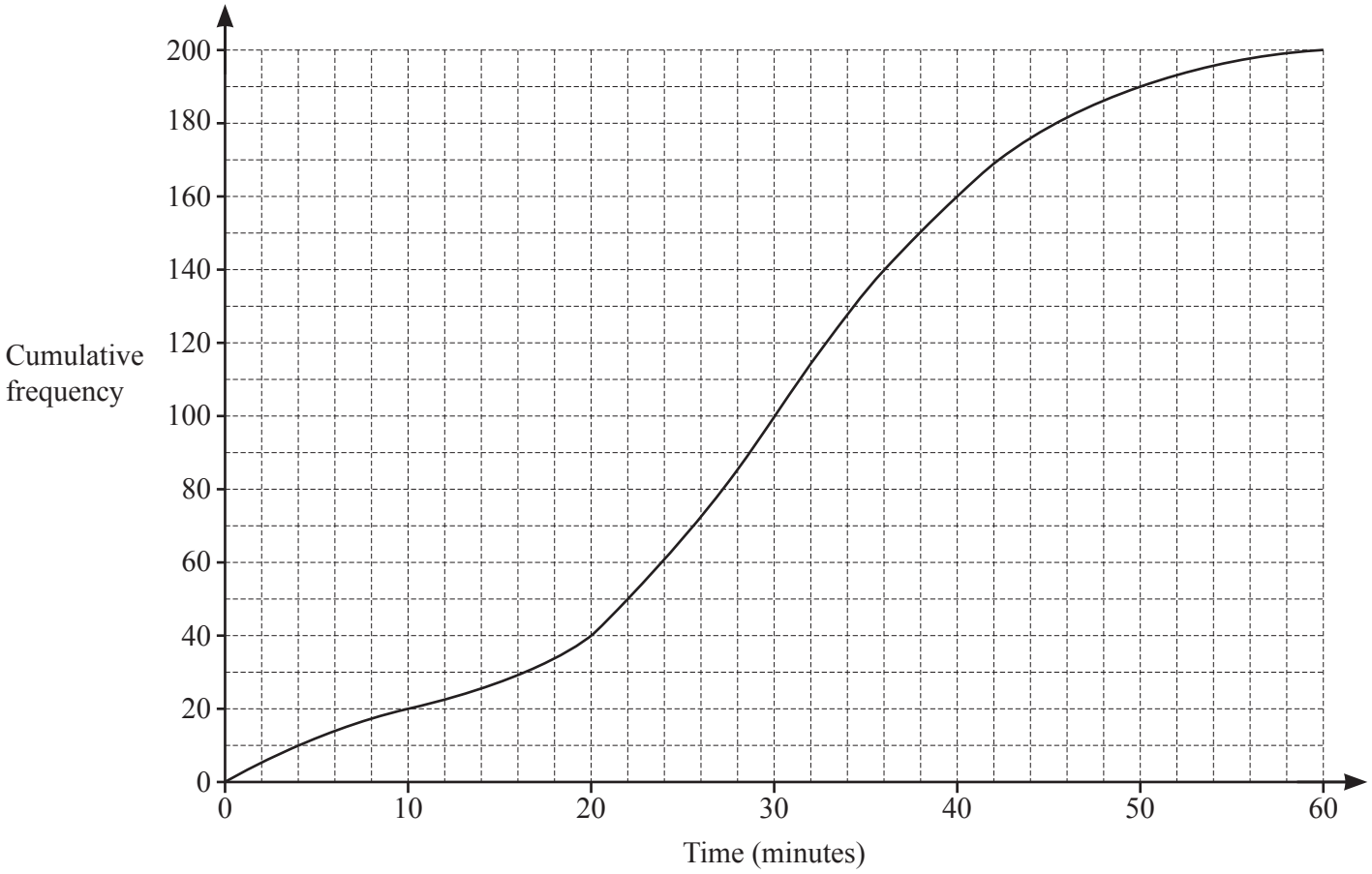
..... [1]

(ii) Find the value of x when $\mathrm{f}(x) = -34.5$.

$x =$ ..... [3]

© UCLES 2023

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]

© UCLES 2023

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

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

[2]

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

..... [1]

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

..... min [2]

© UCLES 2023

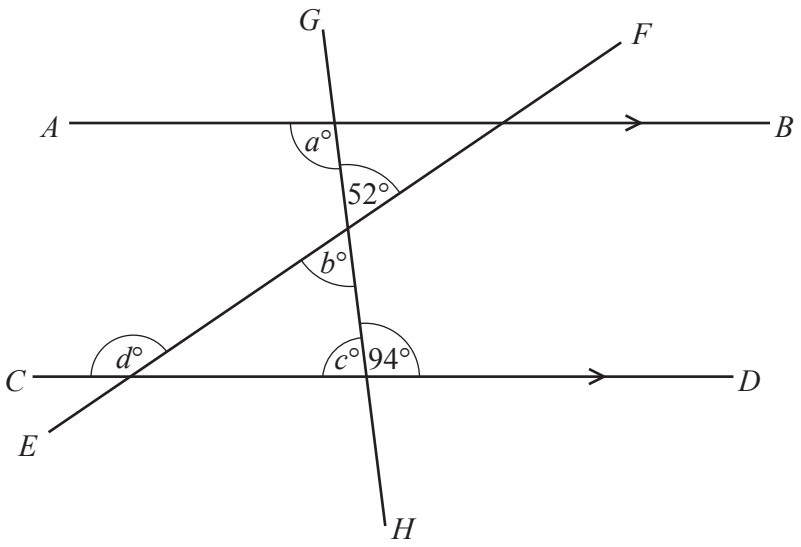
[Turn over

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)



NOT TO SCALE

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*.

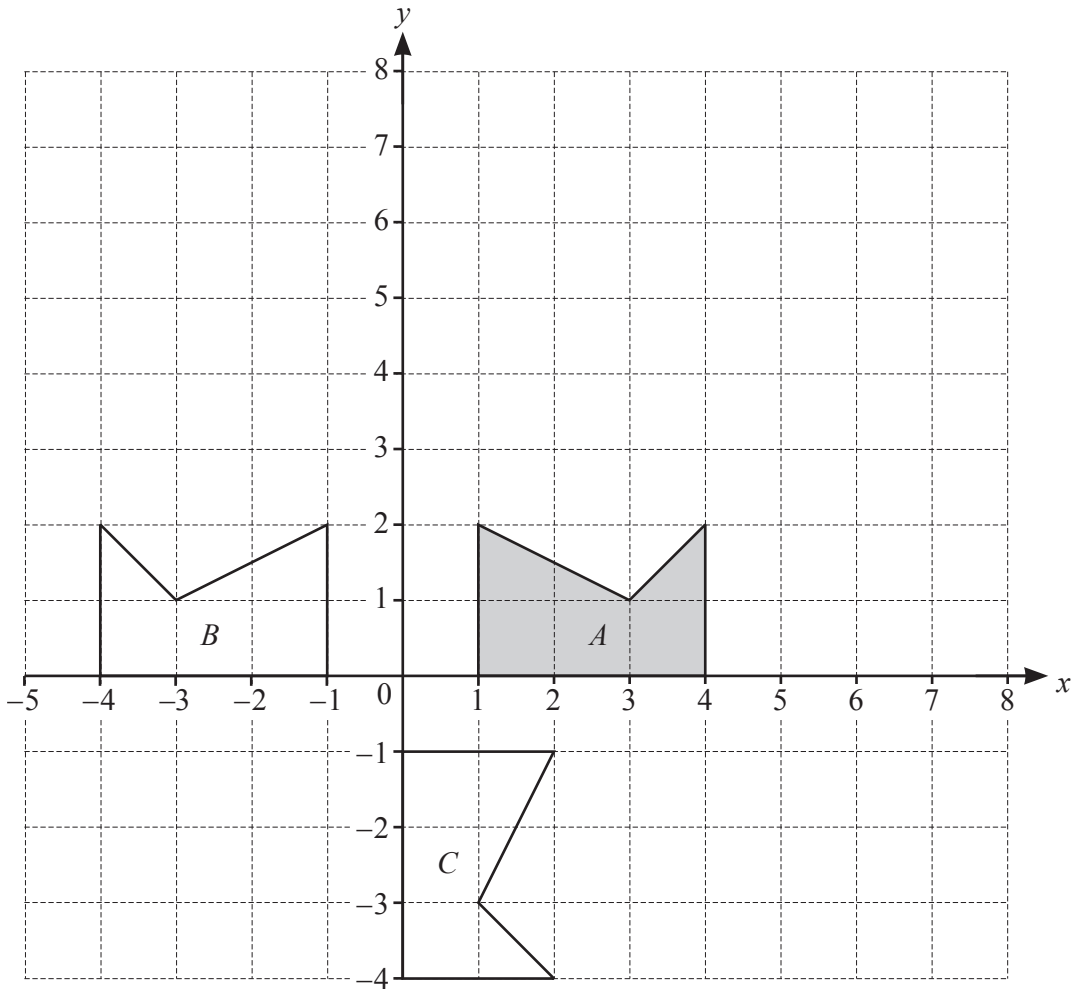
Angle a = ...

Angle b = ...

Angle c = ...

Angle d = ... [5]

8



(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*.

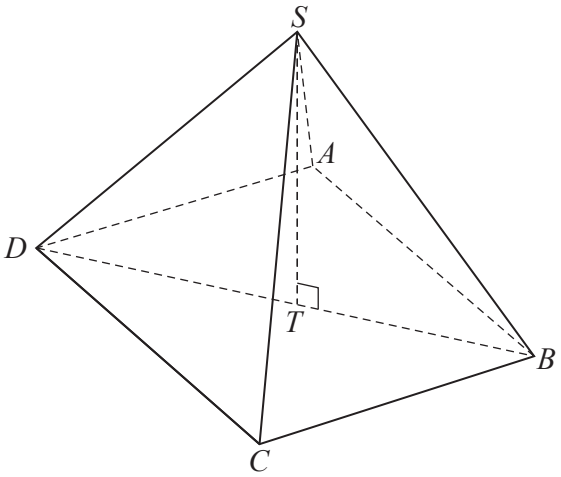
.....

..... [3]

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

[2]

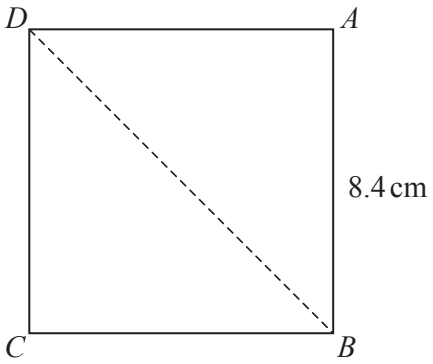
9



NOT TO SCALE

The diagram shows a pyramid, *ABCDS*.

The base, *ABCD*, is a square of side 8.4 cm.
This diagram shows the square base.

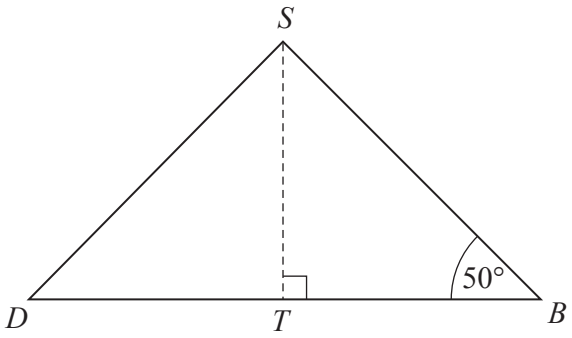


NOT TO SCALE

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

[2]

(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°.

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

..... cm [2]

(c) Work out the volume of the pyramid.

..... cm^3 [2]

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

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

(b) Solve.

$$2x - 5 = -9$$

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

(c) Factorise completely.

$$6x^2 + 2x$$

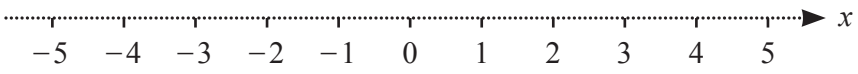
..... [2]

(d) Expand and simplify.

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

..... [2]

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



[1]

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

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

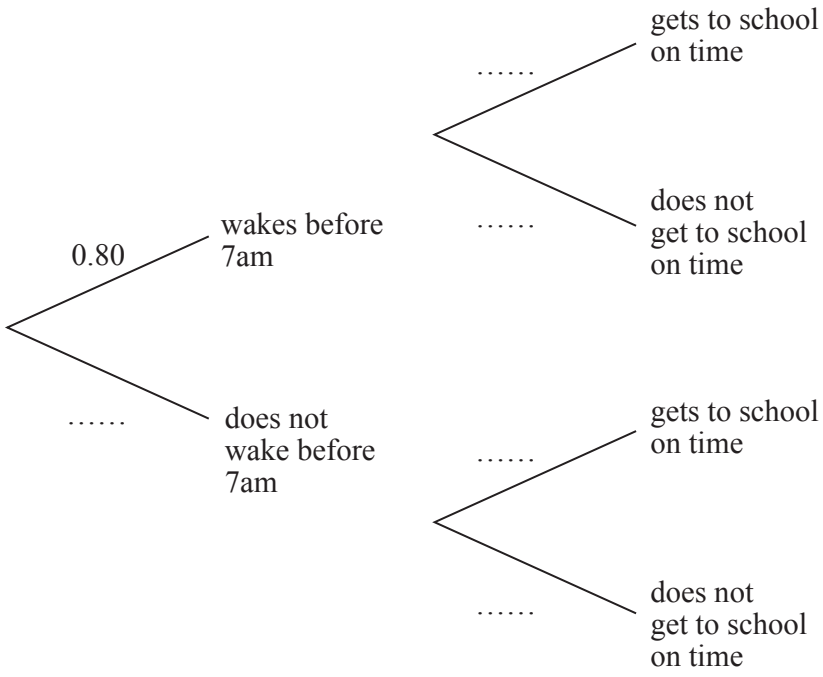
..... [2]

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

..... [2]

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.



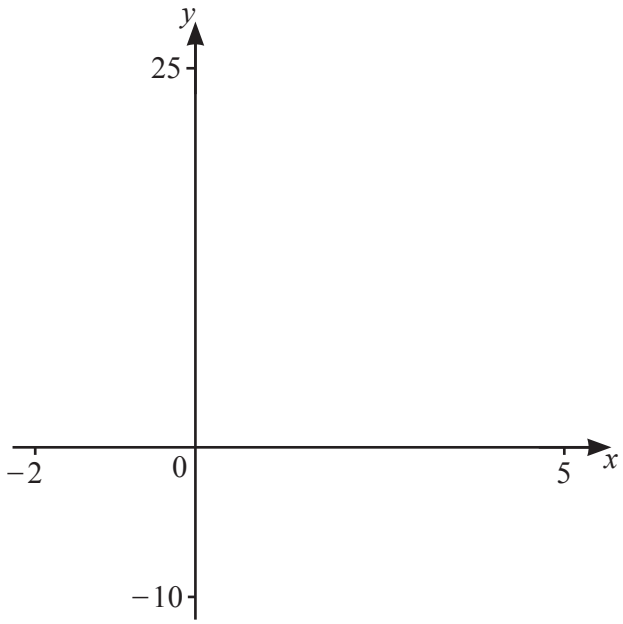
[3]

(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 $-2 \leqslant x \leqslant 5$. [2]

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

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

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

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

© UCLES 2023