Cambridge Assessment International Education

# Cambridge IGCSE™

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*1878641349*

**CAMBRIDGE INTERNATIONAL MATHEMATICS** **0607/32**

Paper 3 (Core) **February/March 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.


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

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Answer **all** the questions.

**1** **(a)** 121 122 123 124 125 126 127

From this list, write down a number that is

**(i)** even

..... [1]

**(ii)** a square

..... [1]

**(iii)** a cube

..... [1]

**(iv)** a multiple of 7

..... [1]

**(v)** prime.

..... [1]

**(b)** **(i)** Find the value of $\sqrt[3]{3.628}$ .

Give your answer correct to 3 decimal places.

..... [2]

**(ii)** Find the value of $\frac{36.2 \times 21.4}{0.23}$ .

Give your answer correct to the nearest hundred.

..... [2]

**2** The table shows the number of babies born to each of 25 hamsters.

| Number of babies | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| Frequency | 3 | 3 | 4 | 2 | 5 | 6 | 2 |

**(a)** Write down how many hamsters had 6 babies.

..... [1]

**(b)** Find

**(i)** the range

..... [1]

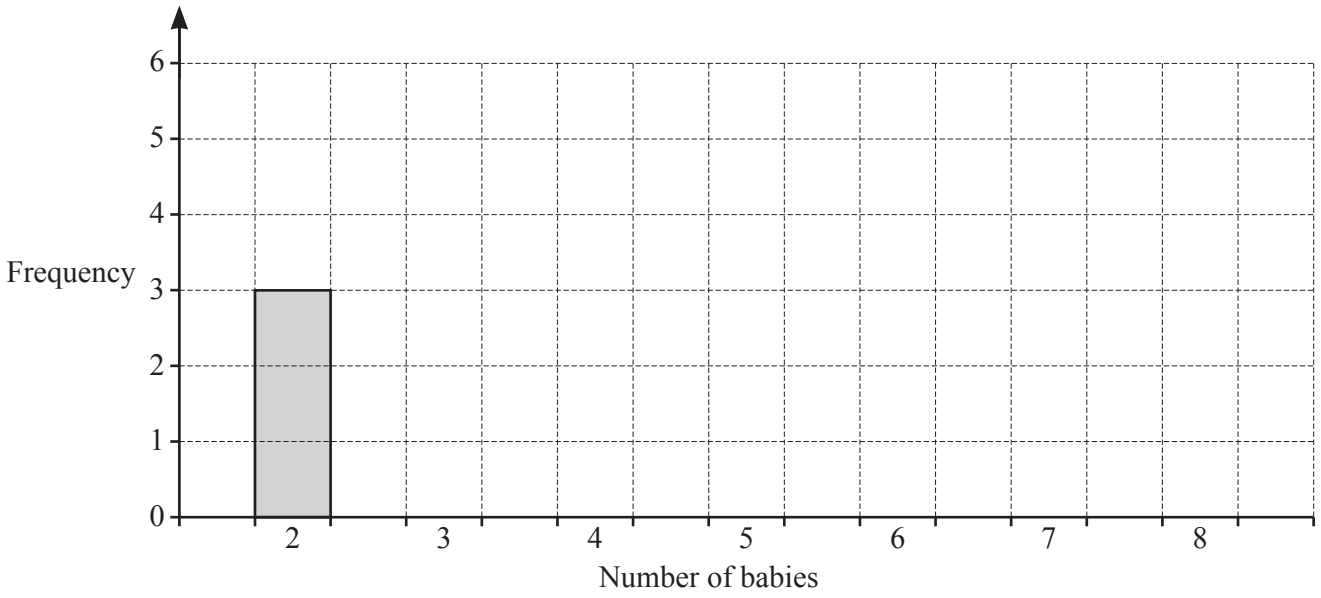
**(ii)** the median

..... [1]

**(iii)** the mean.

..... [2]

**(c)** Use the information to complete the bar chart.




[2]

**3** In 2019 the Louvre museum had 9 609 900 visitors.

**(a)** Write 9 609 900 in words.

.....

..... [1]

**(b)** The Louvre museum is open 309 days of the year.

Work out the average number of visitors per day.

..... [1]

**(c)** 40% of all visitors are admitted free.

**(i)** Write down the percentage of visitors who have to pay.

.....% [1]

**(ii)** The admission price is 15 euros (€).

Work out how much money, on average, was paid to the Louvre museum each day for admissions.

€ ..... [3]

**4** **(a)** Prija changes 600 pounds (£) to US dollars ($) at a bank.

**(i)** The bank charges 2% of the £600 to change the money.

Show that the bank charges £12.

[1]

**(ii)** The bank takes the £12 charge and then changes the rest of the money.
The exchange rate is £1 = $1.335 .

Work out how much money, in $, Prija receives.

$ ..... [2]

**(b)** From the money Prija receives, she spends $150 on food, $225 on entertainment and $130 on gifts.

Work out how much, in $, Prija has left.

$ ..... [2]

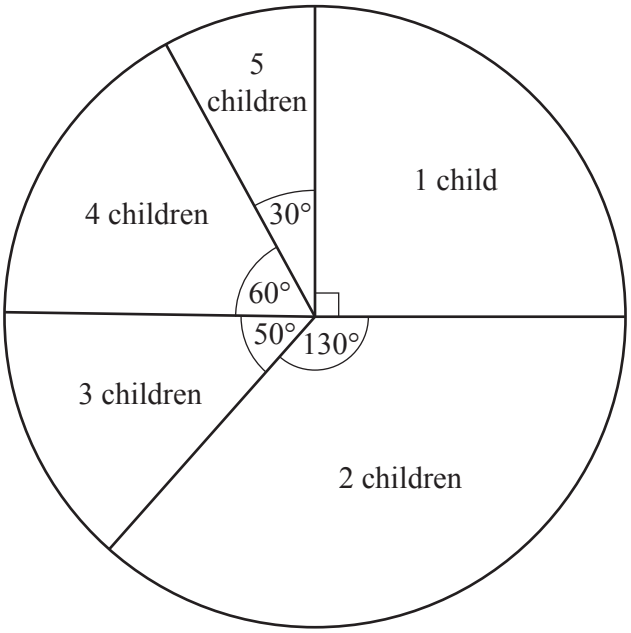
**(c)** Prija changes the remaining dollars back to pounds at a rate of £1 = $1.347 .
The bank does not charge to make the change.

Work out how much money, in £, she receives.

£ ..... [1]

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**5** Sabhina asks 180 parents how many children they have.
The results are shown in the pie chart.




**(a)** Write down the mode.

..... children [1]

**(b)** Work out how many parents have

**(i)** 1 child

..... [1]

**(ii)** 4 children.

..... [2]

**(c)** One of these parents is picked at random.

Find the probability that they have 5 children.
Give your answer as a fraction in its simplest form.

..... [2]

**6** **(a)** This is the start of a sequence.
The first term and the fifth term are missing.

..... 55 63 71 ..... 87 95

**(i)** Find the first term and the fifth term of this sequence.

First term = .....

Fifth term = ..... [2]

**(ii)** Find the $n$th term of this sequence.

..... [2]

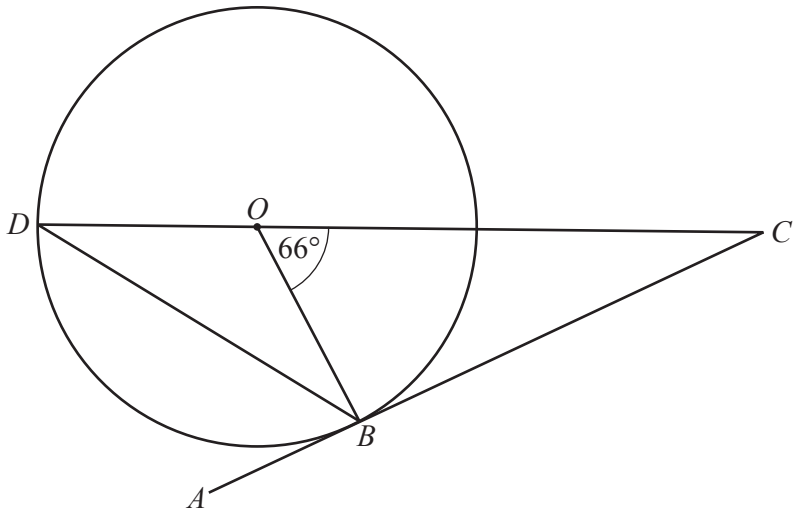
**(b)** Another sequence has $n$th term $2n^2 + 3n$.

Work out the first 3 terms of this sequence.

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

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**7**




NOT TO SCALE

The diagram shows a circle, centre $O$.
$AC$ is a tangent to the circle at $B$ and angle $BOC = 66°$.
$DOC$ is a straight line.

**(a)** Find

**(i)** angle $OBC$

Angle $OBC$ = ..... [1]

**(ii)** angle $OCB$

Angle $OCB$ = ..... [1]

**(iii)** angle $ODB$

Angle $ODB$ = ..... [2]

**(iv)** angle $DBA$.

Angle $DBA$ = ..... [1]

**(b)** The circle has radius 3.2 cm.

**(i)** Work out the area of the circle.

..... $cm^2$ [2]

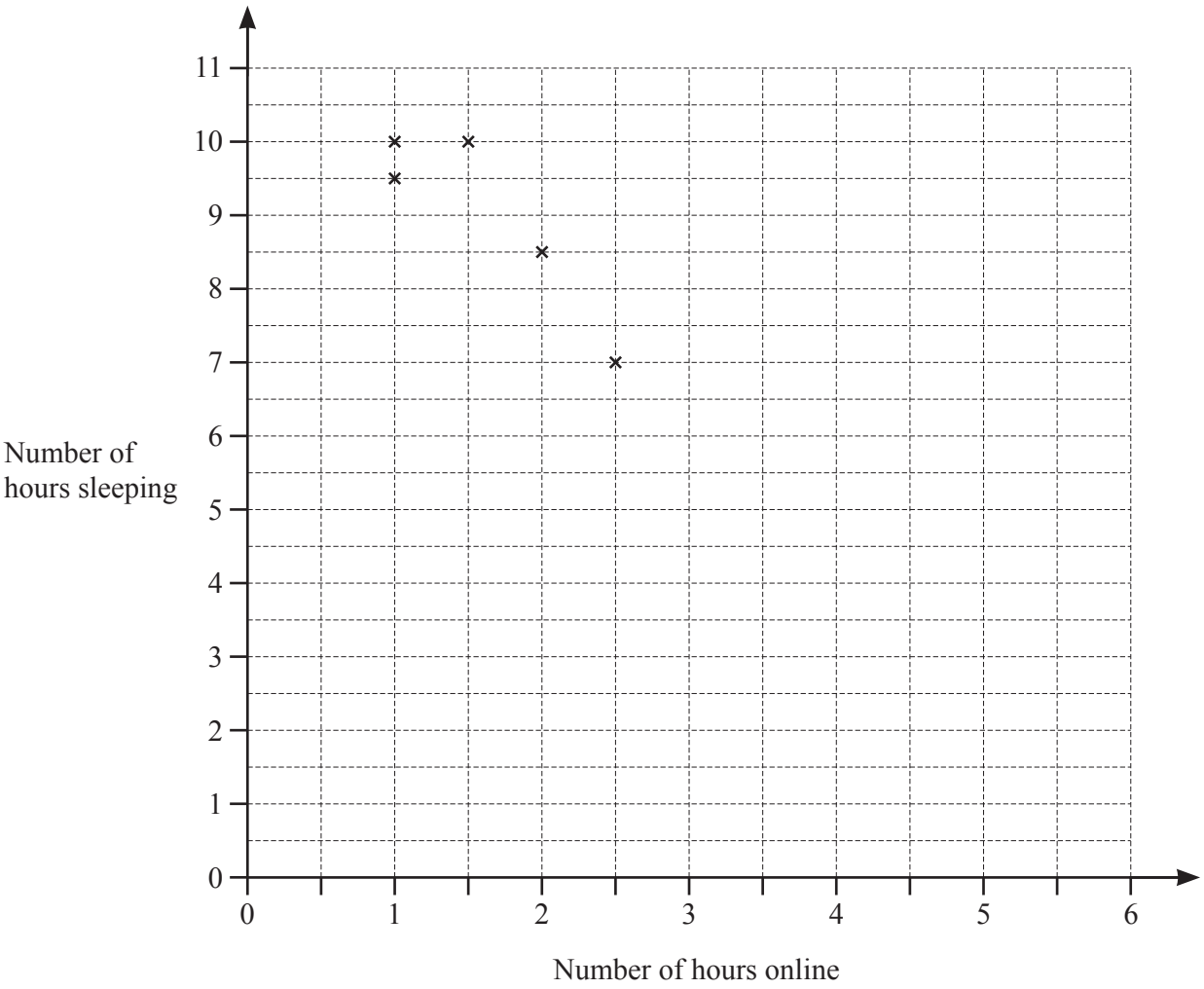
**(ii)** Work out the length of $OC$.

$OC$ = ..... cm [3]

**8** On one day ten students record the number of hours they are online and the number of hours they sleep that night.

| Number of hours online | 1 | 1 | 1.5 | 2 | 2.5 | 2.5 | 3 | 3 | 3.5 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of hours sleeping | 10 | 9.5 | 10 | 8.5 | 7 | 9 | 6 | 7.5 | 7 | 5.5 |

**(a)** Complete the scatter diagram.
The first 5 points have been plotted for you.




[2]

**(b)** What type of correlation is shown in the scatter diagram?

..... [1]

**(c)** Find

**(i)** the mean number of hours online

..... h [1]

**(ii)** the mean number of hours sleeping.

..... h [1]

**(d)** On the diagram, draw a line of best fit.

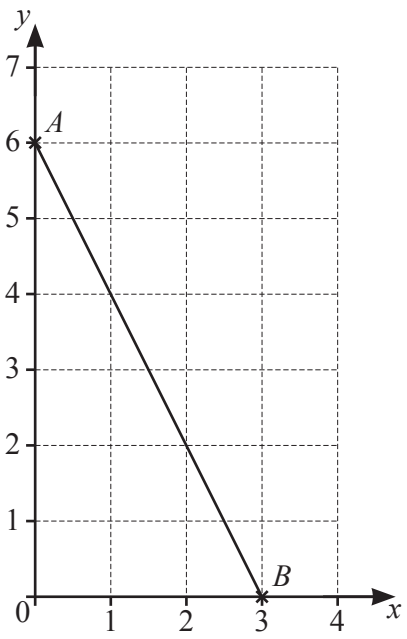
[2]

**(e)** Another student is online for 4 hours in the day.

Use your line of best fit to estimate the number of hours sleeping for this student.

..... h [1]

**9**




The diagram shows the line $AB$ drawn on a 1 $cm^2$ grid.

**(a)** Write down the coordinates of point $A$ and point $B$.

$A$ ( ..... , .....)

$B$ ( ..... , .....) [2]

**(b)** Calculate the length of $AB$.

$AB =$ ..... cm [2]

**(c)** Find the coordinates of the mid-point of $AB$.

( ..... , .....) [1]

**(d)** Work out the gradient of $AB$.

..... [1]

**(e)** Find the equation of the line $AB$.

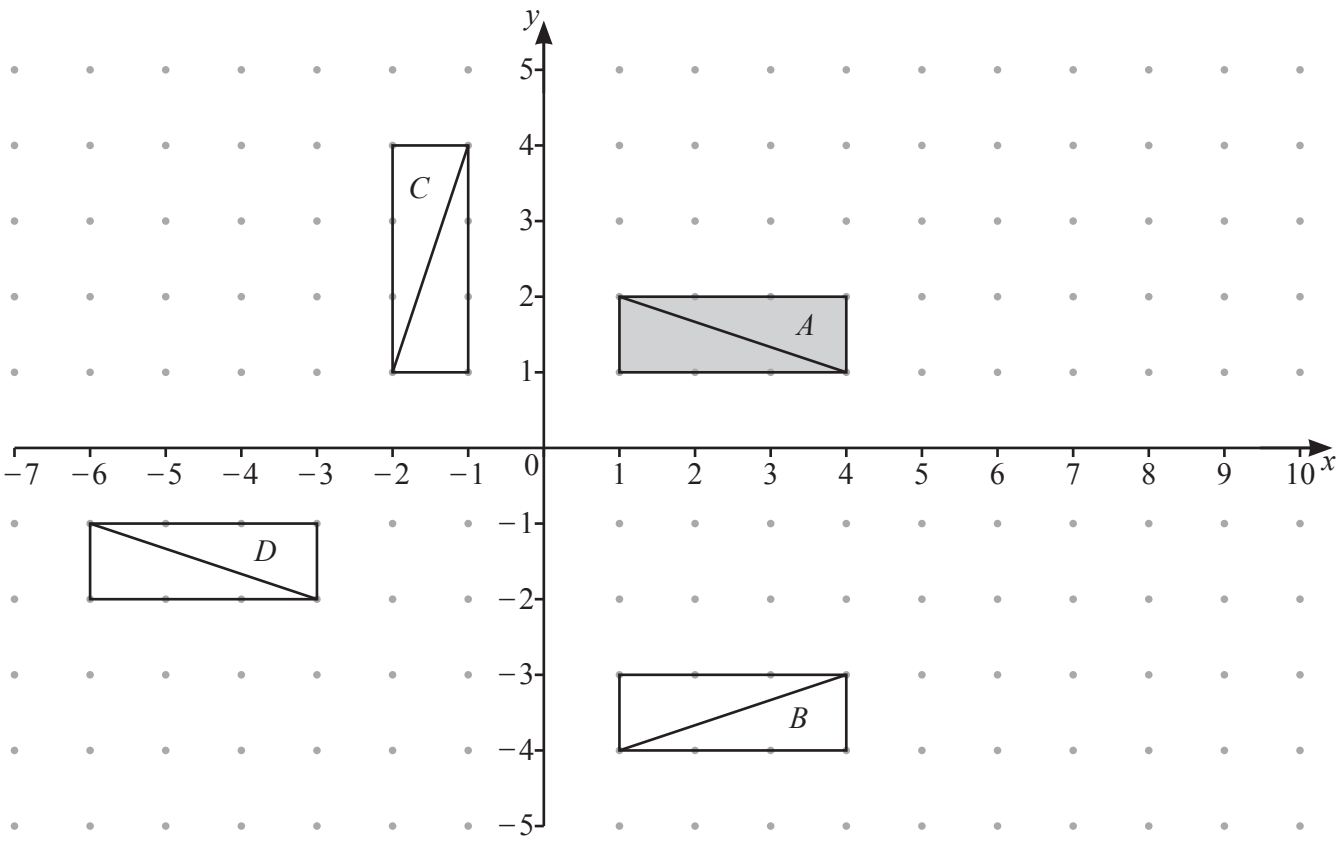
..... [2]

**(f)** Does the point (1.37, 3.36) lie on the line $AB$?
Show how you decide.

[2]

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**10**




**(a)** Shape $B$ is a reflection of shape $A$ in the line $y = m$.

Write down the value of $m$.

$m =$ ..... [1]

**(b)** Shape $C$ is an anticlockwise rotation of shape $A$ through $t°$ about the origin.

Write down the value of $t$.

$t =$ ..... [1]

**(c)** Shape $D$ is a translation of shape $A$ by the vector $\begin{pmatrix} x \\ y \end{pmatrix}$.

Write down the value of $x$ and the value of $y$.

$x =$ .....

$y =$ ..... [2]

**(d)** Enlarge shape $A$ with centre (0, 0) and scale factor 2.

[2]

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**11** **(a)** Solve.

$$x - 6 > -3$$

..... [1]

**(b)** Solve the simultaneous equations.

$$2x + 3y = 17$$
$$2x - y = 5$$

$x =$ .....

$y =$ ..... [2]

**(c)** Simplify.

$$2r - 5s - 3r + s$$

..... [2]

**(d)** Expand.

$$2x(3x^2 - 4y)$$

..... [2]

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**(e)** Find each value of $x$.

**(i)** $\frac{3^9}{3^x} = 3$

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

**(ii)** $2^x \times 2^3 = 2^6$

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

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

**(i)** $\frac{7x}{3} - \frac{x}{6}$

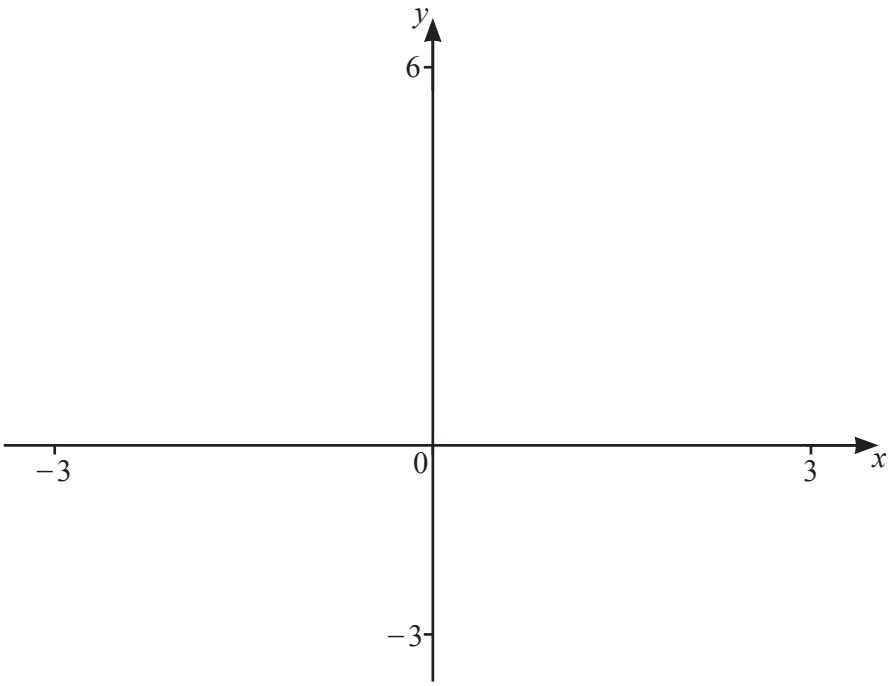
..... [2]

**(ii)** $\frac{5d}{9} \div \frac{d}{3}$

..... [3]

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

**12**




**(a)** On the diagram, sketch the graph of $y = \frac{3x+2}{x}$ for values of $x$ from $-3$ to $3$. [2]

**(b)** Write down the equations of the two asymptotes.

.....

..... [2]

**(c)** On the same diagram, sketch the graph of $y = x+3$ for $-3 \leqslant x \leqslant 3$. [2]

**(d)** Find the $x$-coordinates of the points of intersection of $y = \frac{3x+2}{x}$ and $y = x+3$.

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

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