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CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/32

Paper 3 (Core)

February/March 2022

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

Answer **all** the questions.

- 1 (a) Simon swims 25 metres.

Change 25 metres to centimetres.

..... cm [1]

- (b) Aroon swims four lengths of a 50-metre pool.
Here is the time, in seconds, for each length.

44.8 45.3 44.5 44.4

Work out the total time.
Give your answer in minutes and seconds.

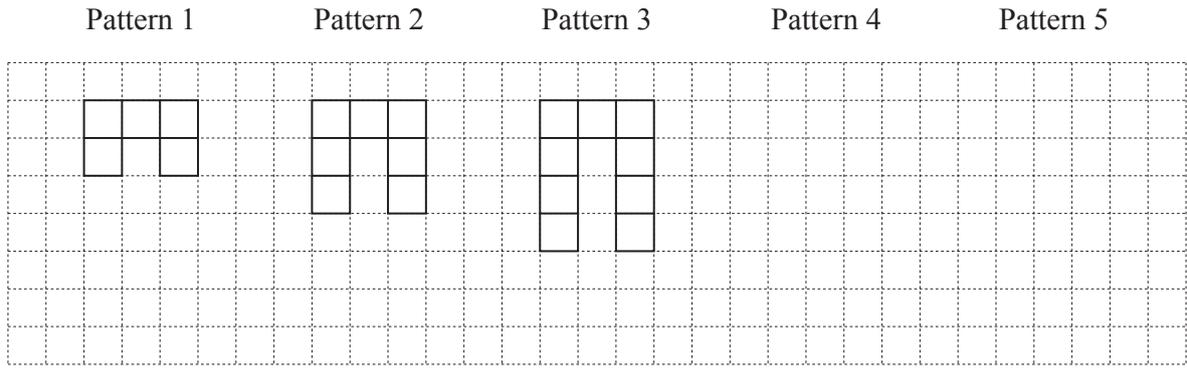
..... minutes seconds [2]

- (c) Tam swims 200 metres in a total time of 3.2 minutes.

Calculate her average speed in metres per second.

..... m/s [3]

2 (a) These are the first three patterns in a sequence.



(i) In the space above, draw Pattern 4 and Pattern 5. [2]

(ii) Complete the table for the number of squares in each pattern.

Pattern number	1	2	3	4	5		8
Number of squares	5						

[3]

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

5 9 13 17

For this sequence,

(i) write down the rule for continuing the sequence,
 [1]

(ii) find the n th term.
 [2]

- (c) The n th term, T , of a different sequence is given by this formula.

$$T = n^2 - 5$$

- (i) Work out the value of T when $n = 4$.

$$T = \dots\dots\dots [1]$$

- (ii) Rearrange the formula to make n the subject.

$$n = \dots\dots\dots [2]$$

3 Students in a college carry out a science experiment.

(a) At the start of the experiment, the temperature of a gas was -42°C .
During the experiment, the temperature of the gas rises to 28°C .

(i) Work out how much the temperature of the gas rises during the experiment.

..... $^{\circ}\text{C}$ [1]

(ii) Work out the temperature that is half-way between -42°C and 28°C .

..... $^{\circ}\text{C}$ [1]

(b) The experiment began at 07 50 and ended at 15 25.

Work out the length of time the experiment lasted.
Give your answer in hours and minutes.

..... h min [1]

(c) When the results were posted online, there were 1279 views in the first day.

Write 1279 correct to the nearest 10.

..... [1]

(d) By the end of the week, there had been 15 503 views.

(i) Write 15 503 in words.

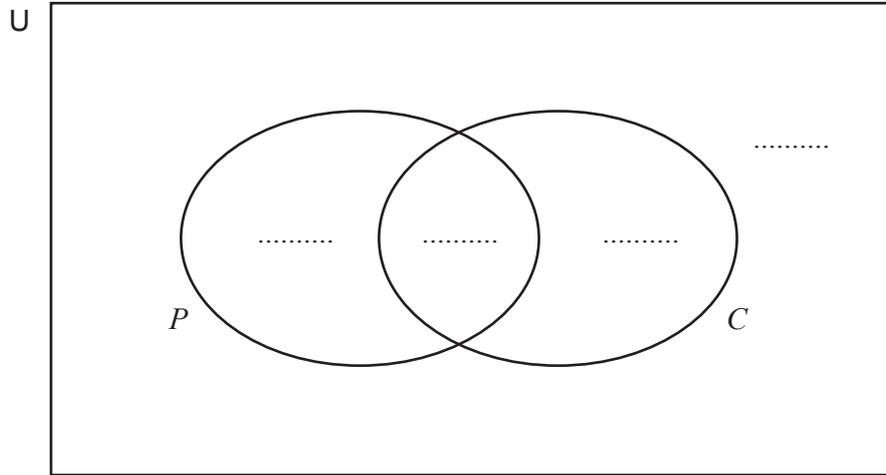
..... [1]

(ii) Write 15 503 in standard form, correct to two significant figures.

..... [2]

- (e) In the college, 53 students study science.
32 study physics (P).
24 study chemistry (C).
18 study both physics and chemistry.

Complete the Venn diagram.



[3]

- 4 50 students were asked the number of magazines they bought in a week. The results are shown in the table.

Number of magazines	0	1	2	3	4
Number of students	18	8	14	7	3

- (a) Work out how many **more** students bought 2 magazines than bought 1 magazine.

..... [1]

- (b) Write down the most common number of magazines bought.

..... [1]

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

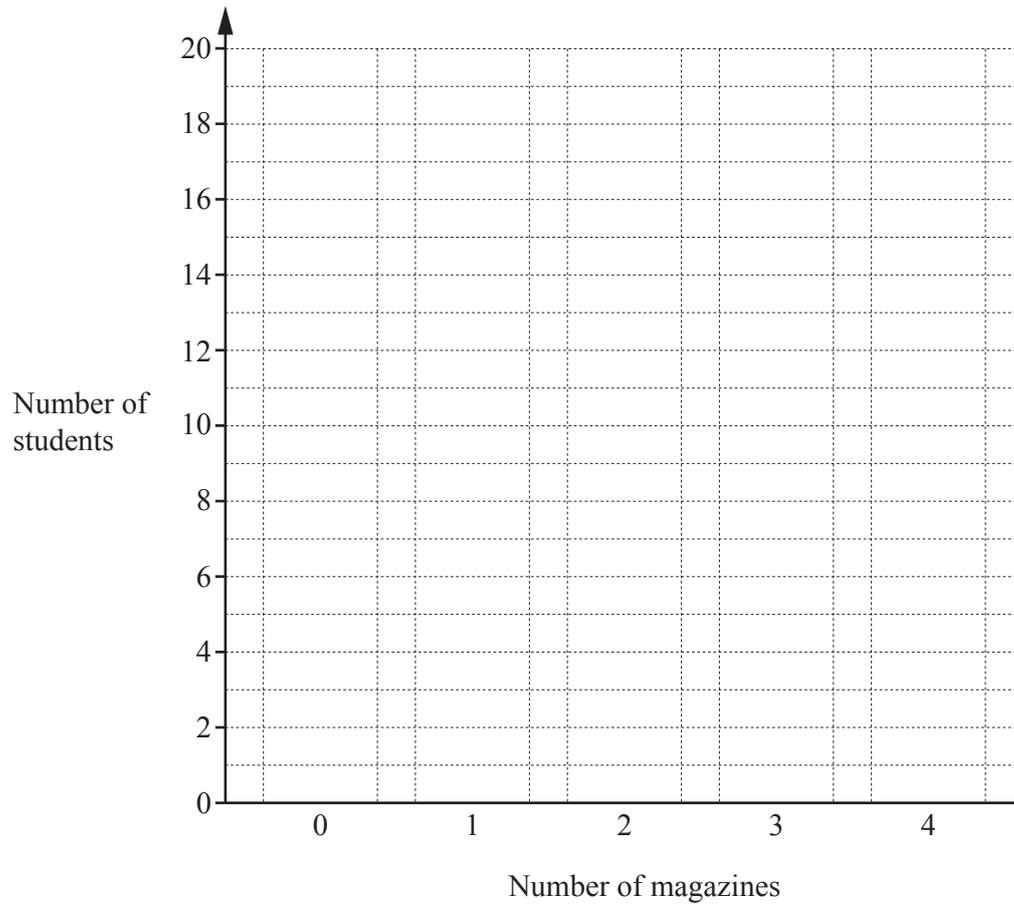
Find the probability that this student bought 3 or 4 magazines.
Give your answer as a fraction in its simplest form.

..... [2]

- (d) Work out the mean number of magazines bought.

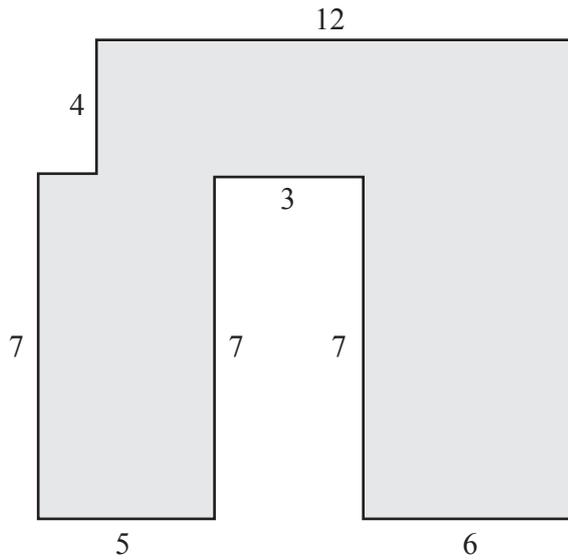
..... [2]

(e) On the grid, draw a bar chart to show the information in the table.



[2]

5 In the diagram, all lengths are in centimetres and all angles are right angles.



NOT TO
SCALE

- (a) Work out the area of the shaded shape.
Give the units of your answer.

..... [4]

- (b) Work out the perimeter of the shaded shape.

..... cm [3]

- 6 In a school there are 960 students.
540 of the students are girls.

(a) Write the ratio girls : boys in its simplest form.

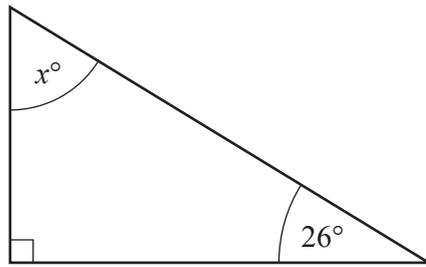
..... : [3]

- (b) Two thirds of the 540 girls and 45% of the boys travel to school by bus.

Work out how many **more** girls than boys travel to school by bus.

..... [3]

7 (a)

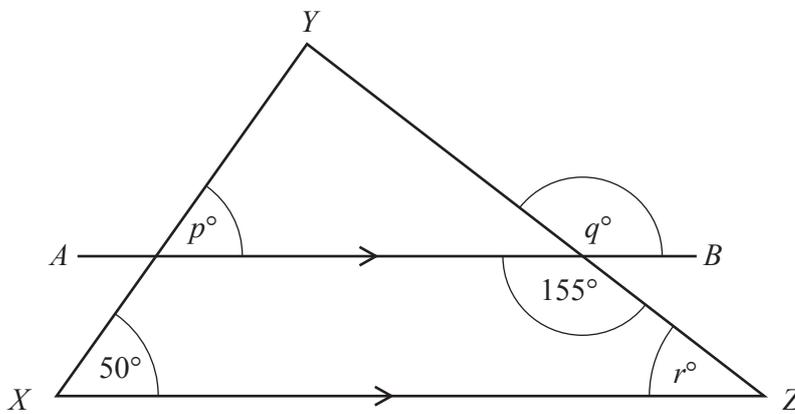


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Find the value of x .

$x = \dots\dots\dots$ [1]

(b)



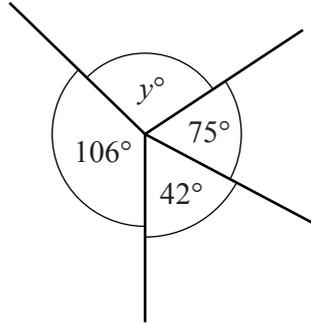
NOT TO SCALE

The diagram shows a triangle XYZ and a straight line AB .
 AB is parallel to XZ .

Find the value of p , the value of q and the value of r .

$p = \dots\dots\dots$
 $q = \dots\dots\dots$
 $r = \dots\dots\dots$ [3]

(c)

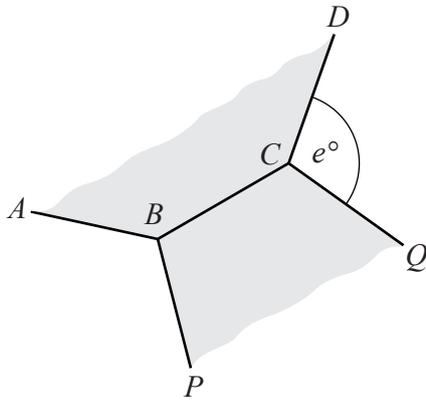


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Find the value of y .

$y = \dots\dots\dots$ [1]

(d)



NOT TO SCALE

$ABCD$ is part of a regular octagon.
 $PBCQ$ is part of a regular hexagon.

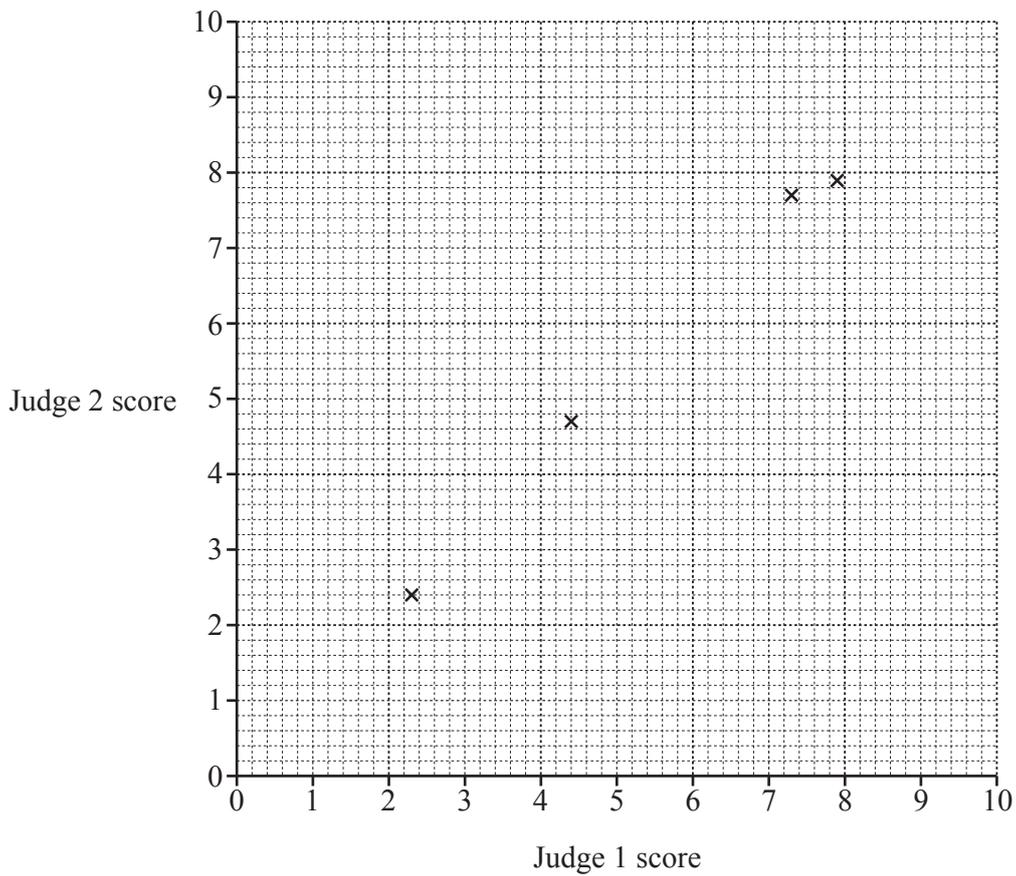
Find the value of e .

$e = \dots\dots\dots$ [4]

- 8 In a competition, each diver is given a score out of 10 by each of two judges. The table shows the scores for eight divers.

Judge 1	2.3	7.3	7.9	4.4	8.5	7.7	1.8	8.1
Judge 2	2.4	7.7	7.9	4.7	8.8	7.9	2.4	7.8

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



[2]

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

..... [1]

(c) Calculate the mean of the scores given by each judge.

Judge 1

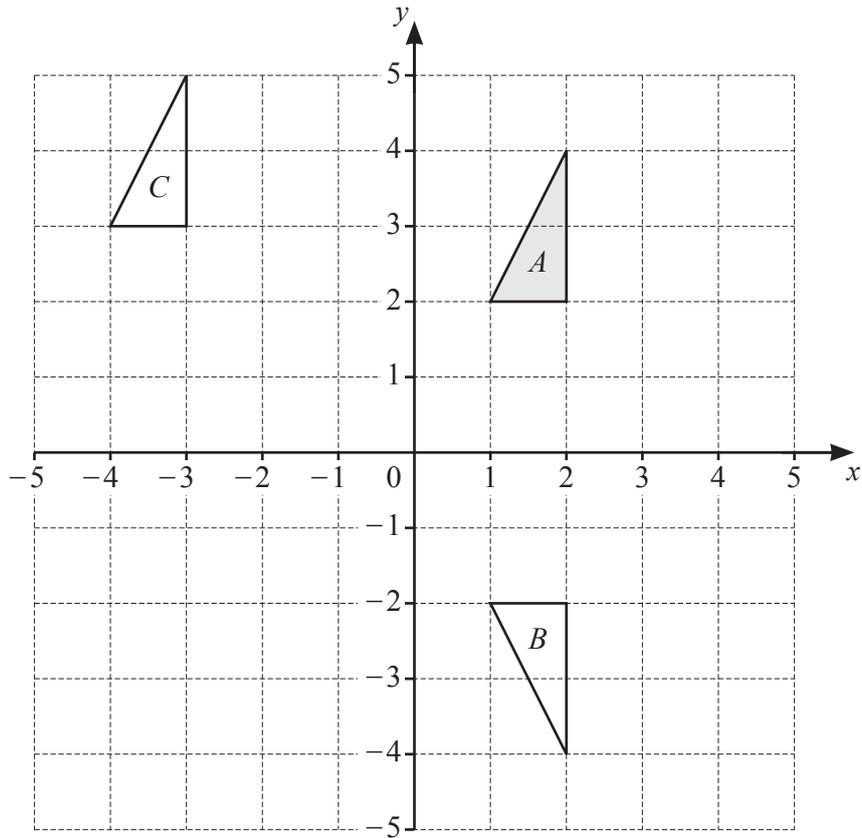
Judge 2 [2]

(d) On the scatter diagram, draw a line of best fit. [2]

(e) Judge 1 gives another diver a score of 5.6 .

Use your line of best fit to estimate the score given to this diver by Judge 2.

..... [1]



The diagram shows three triangles *A*, *B* and *C*.

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

.....
 [2]

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

.....
 [2]

(c) Rotate triangle *A* through 180° about $(0, 0)$.
 Label the image *P*. [2]

(d) Enlarge triangle *A*, scale factor 2, centre $(1, 4)$.
 Label the image *Q*. [2]

10 (a) Solve.

(i) $x + 7 = 11$

$x = \dots\dots\dots$ [1]

(ii) $4(3x - 2) = 10$

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

(iii) $\frac{x}{5} + 1 = 9$

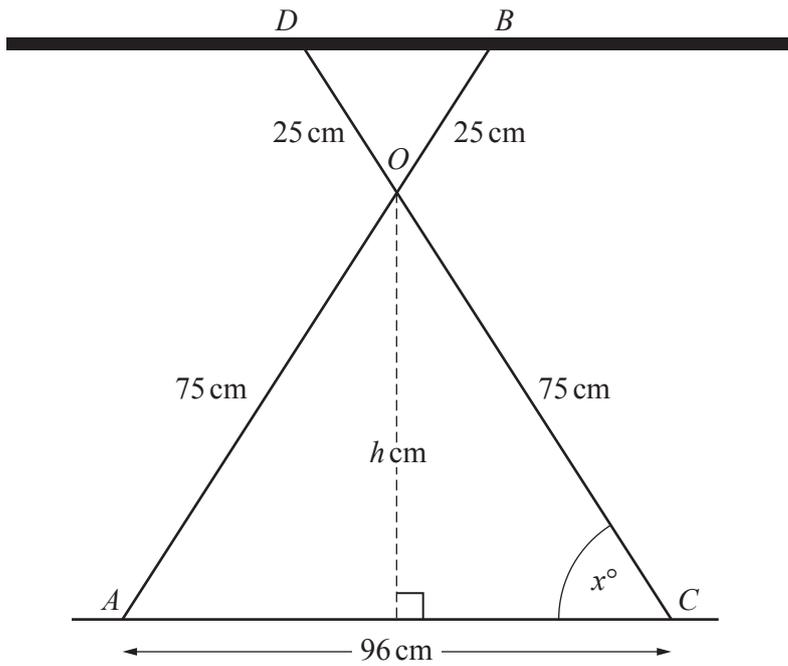
$x = \dots\dots\dots$ [2]

(b) Multiply out the brackets and simplify.

$(x + 6)(x - 8)$

$\dots\dots\dots$ [2]

11



NOT TO SCALE

The diagram shows a table standing on a horizontal floor. The table top is horizontal and is supported by two legs AOB and COD .

(a) Use trigonometry to find the value of x .

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

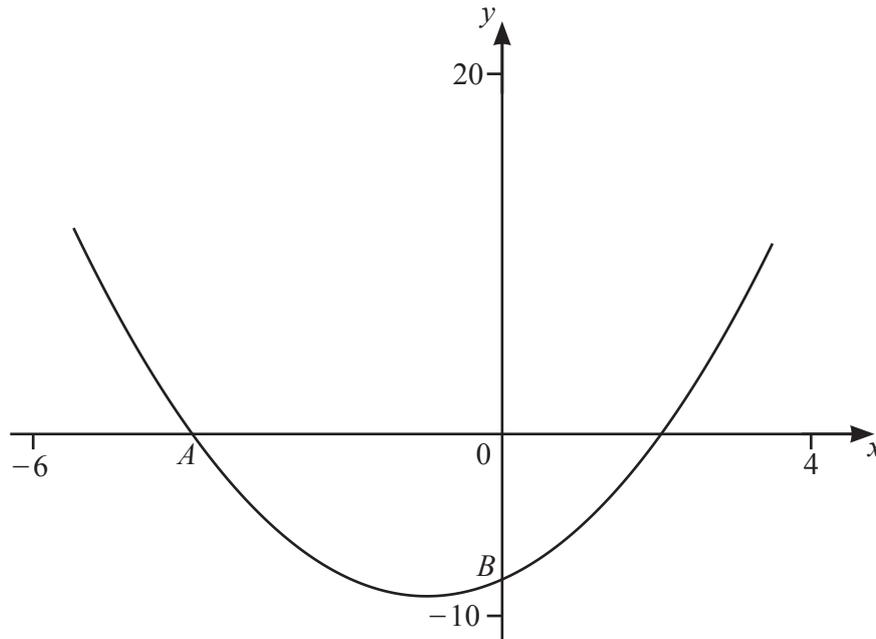
(b) Use similar triangles to find DB .

$DB = \dots\dots\dots$ cm [2]

(c) Use Pythagoras' Theorem to find the height, h cm, of O above the floor.

..... cm [3]

Question 12 is printed on the next page.



The diagram shows the graph of $y = (x+4)(x-2)$ for $-6 \leq x \leq 4$.
 A and B are two of the points where the graph crosses the axes.

(a) Find the coordinates of

(i) point A ,

(..... ,) [1]

(ii) point B ,

(..... ,) [1]

(iii) the local minimum.

(..... ,) [1]

(b) On the diagram, sketch the graph of $y = 1 - x$ for $-6 \leq x \leq 4$. [2]

(c) Find the x -coordinate of each point of intersection of $y = (x+4)(x-2)$ and $y = 1 - x$.

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

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