Cambridge Assessment International Education

Cambridge IGCSE™

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5485313677

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/32**

Paper 3 (Core) **February/March 2021**

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. Any blank pages are indicated.

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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)** 6 13 21 25 27 38 39 41 43 49

From the list above, write down

(i) an even number,

..... [1]

(ii) a factor of 50,

..... [1]

(iii) a multiple of 7,

..... [1]

(iv) a triangle number,

..... [1]

(v) a cube number,

..... [1]

(vi) a prime number.

..... [1]

(b) Find $\sqrt[3]{421}$.
Give your answer correct to 4 significant figures.

..... [2]

(c) Work out $\frac{41}{27 \times 49}$.
Give your answer correct to 5 decimal places.

..... [2]

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2 Here is the price list in a restaurant.
You can choose a 1-course meal or a 2-course meal or a 3-course meal.

1-course meal	$28
2-course meal	$35
3-course meal	$42
Coffee or Tea	$3

Anna and Alexa eat a meal in this restaurant.

Anna has a 3-course meal and a cup of coffee.
Alexa has a 2-course meal and two cups of tea.

(a) Work out how much this costs altogether.

$ ..... [2]

(b) They pay a service charge of 15% of this cost.

(i) Work out the total cost including the service charge.

$ ..... [2]

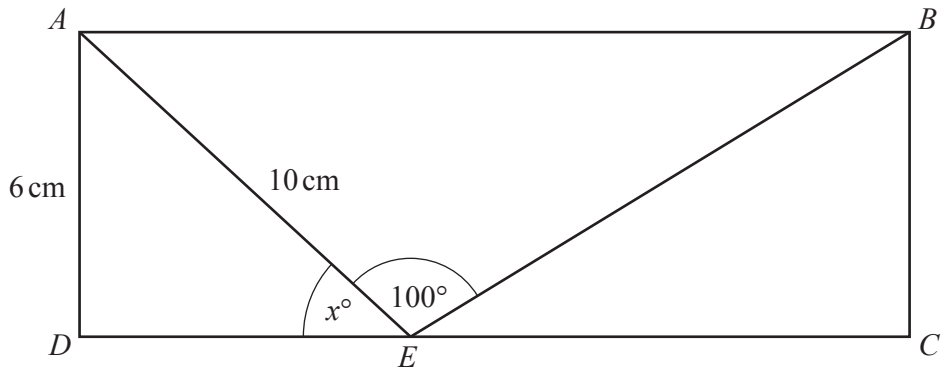
(ii) They each pay half of the total cost including the service charge.

Work out how much they each pay.

$ ..... [1]

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3



NOT TO SCALE

ABCD is a rectangle.
$AD = 6$ cm, $AE = 10$ cm and angle $AEB = 100°$.

(a) Write down the size of one interior angle of a rectangle.

..... [1]

(b) Use trigonometry to show that the value of x is 37, correct to the nearest whole number.

[2]

(c) Find the size of

(i) angle *DAE*,

Angle *DAE* = ... [1]

(ii) angle *ABE*,

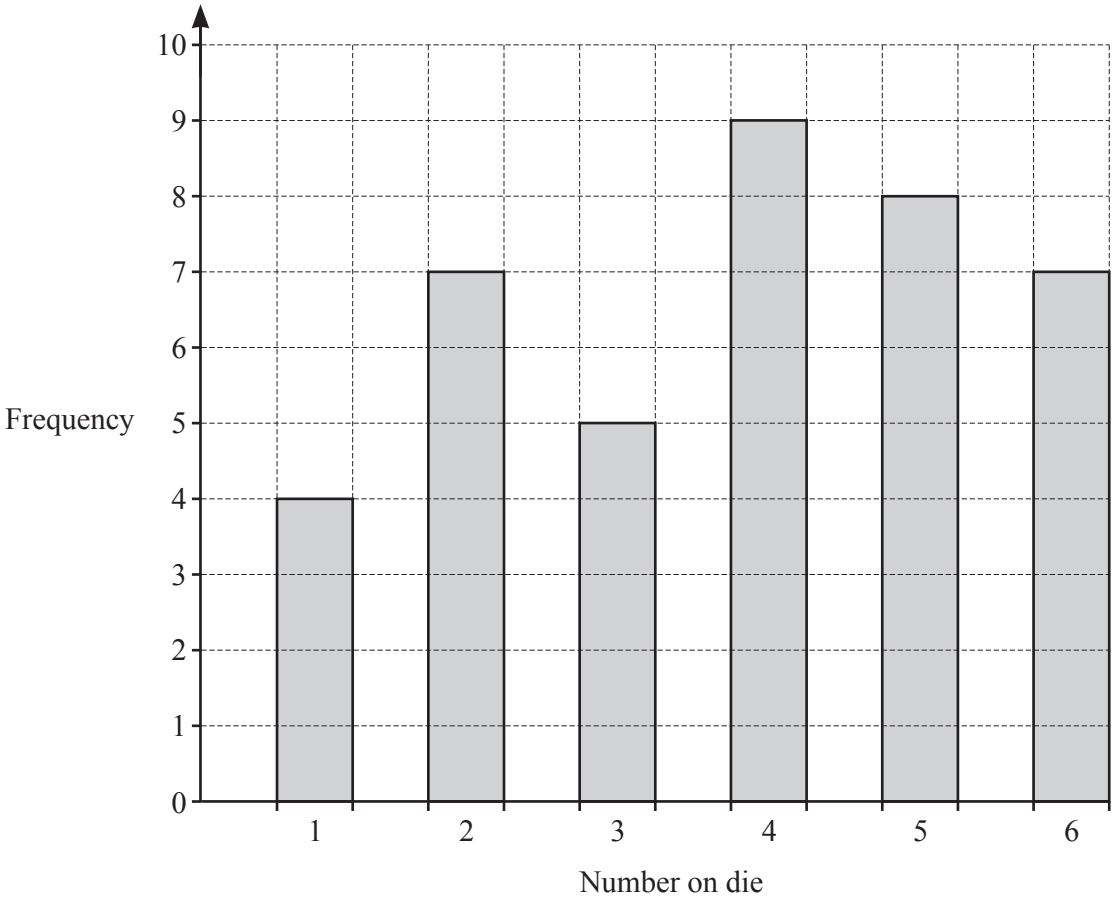
Angle *ABE* = ... [2]

(iii) angle *EBC*.

Angle *EBC* = ... [1]

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4 Hikaru throws a die 40 times.
The results are shown in the bar chart.



(a) Write down the mode.

..... [1]

(b) Find how many **more** times she throws 2 than 1.

..... [1]

(c) Calculate the mean.

..... [2]

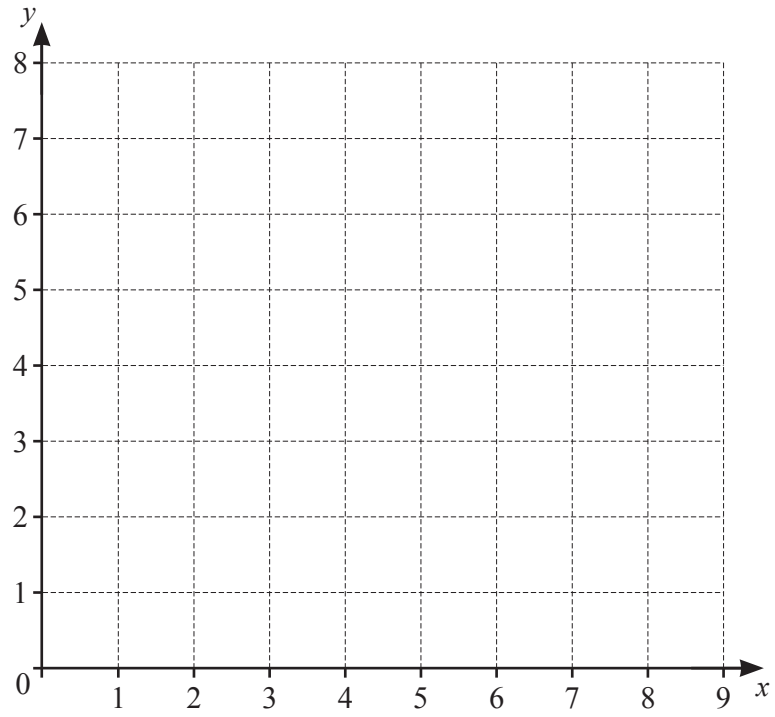
(d) Hikaru represents her results in a pie chart.

Work out the sector angle for throwing a 3.

..... [2]

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5 The diagram shows a 1 cm^2 grid.



(a) On the grid, plot and label the points A (3, 5), B (6, 5), C (8, 1) and D (1, 1). Join the points to form a quadrilateral. [2]

(b) Write down the mathematical name for quadrilateral $ABCD$.

..... [1]

(c) Write down the coordinates of the mid-point of BC.

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

(d) Work out the gradient of DA.

..... [2]

(e) Use Pythagoras' Theorem to work out the length of BC.

..... cm [2]

(f) Work out the perimeter of $ABCD$.

..... cm [2]

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6 Piotr works at a pottery making solid spheres.

(a) Each sphere has a radius of 2 cm.

(i) Calculate the volume of one sphere.

..... cm^3 [2]

(ii) Calculate the surface area of one sphere.

..... cm^2 [2]

(b) A sphere costs \$4.50 to make.
The selling price of a sphere is \$25.

(i) Work out the profit made when a sphere is sold.

\$ ..... [1]

(ii) In a sale, the selling price of a sphere is reduced by 16%.

Work out the sale price of a sphere.

\$ ..... [2]

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7 **(a)** Solve.

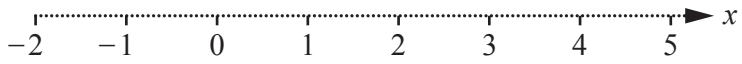
(i) $x+6=-3$

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

(ii) $5(2x-1)=6$

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

(b) Show the inequality $x \geqslant 2$ on the number line.



[1]

(c) Simplify.

$3r+2r-r$

..... [1]

(d) $a^n \times a^n = a^{16}$

Find the value of n.

$n =$ ..... [1]

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

(i) $\frac{m}{7}+\frac{3m}{2}$

..... [2]

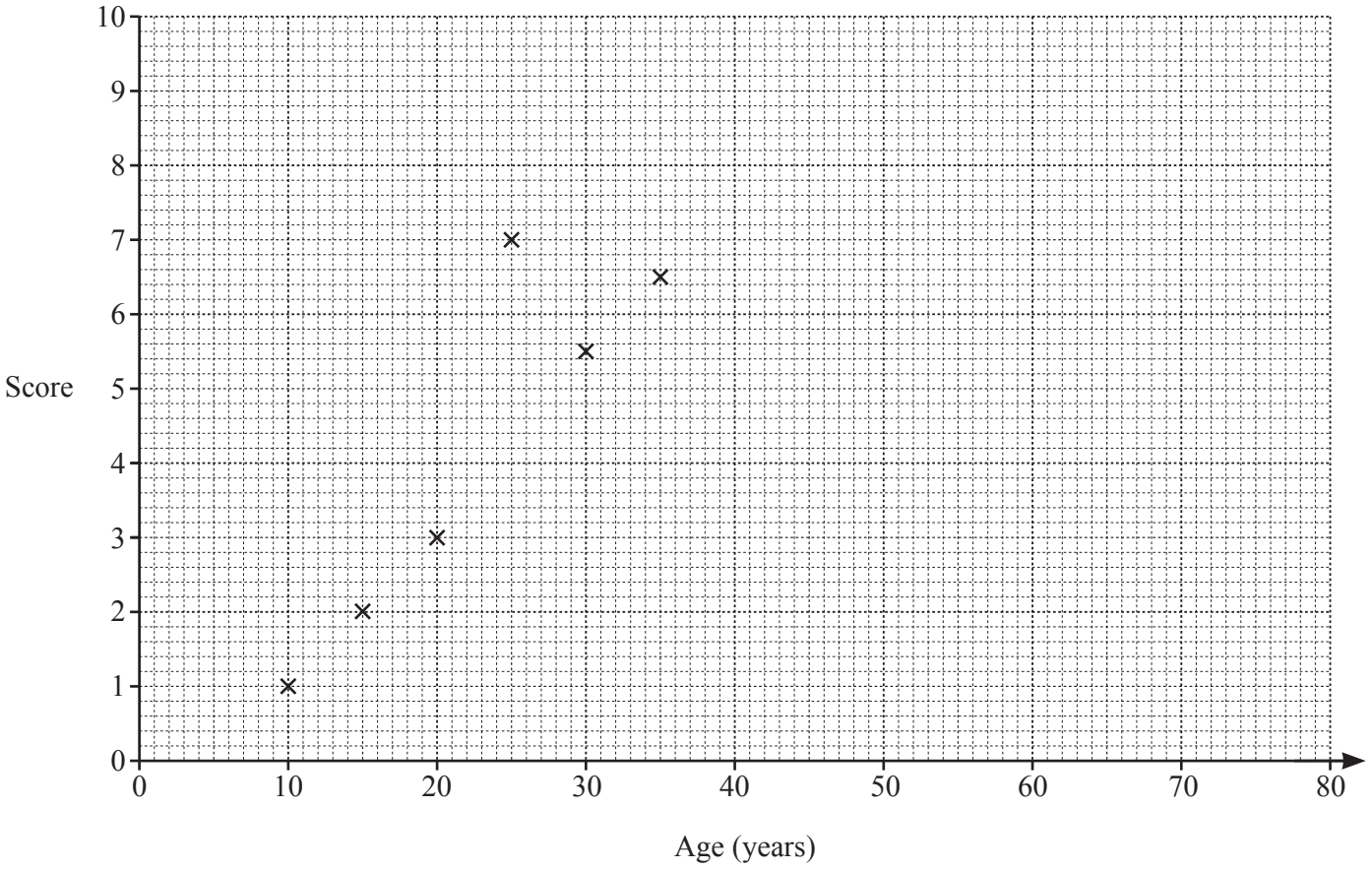
(ii) $\frac{3m}{4}\times\frac{8}{9m}$

..... [2]

8 11 males were asked to score how pleased they were to receive socks as a present.
For each male, their score from 0 to 10 and their age in years are shown in the table.

Age (years)	10	15	20	25	30	35	45	50	60	70	80
Score	1	2	3	7	5.5	6.5	5	7.5	10	9.5	9

(a) Complete the scatter diagram.
The first 6 points have been plotted for you.



[2]

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

..... [1]

(c) Find

(i) the mean age,

..... years [1]

(ii) the mean score.

..... [1]

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

(e) Use your line of best fit to find a score for a male aged 55 years.

..... [1]

9 **(a)** $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
$A = \{2, 4, 6, 8, 10\}$
$B = \{1, 2, 5, 10\}$

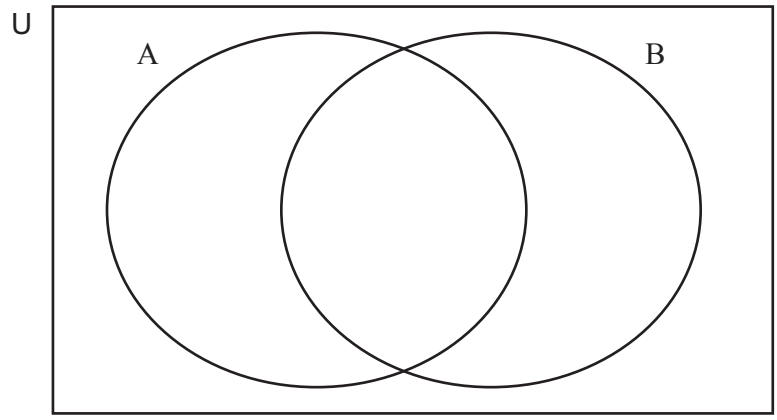
(i) Complete each statement.

$A \cap B = \{.....\}$

$n(B) = ...$

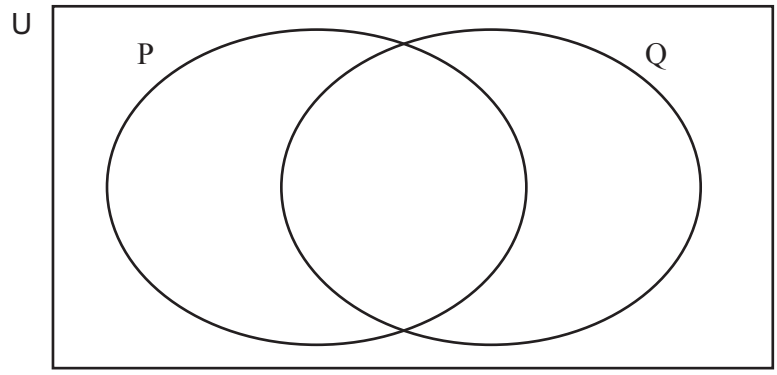
$5 \notin .....$ [3]

(ii) Write each element in the correct region of the Venn diagram.



[2]

(b) On the Venn diagram, shade the region $(P \cup Q)'$.



[1]

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10 A birthday cake is in the shape of a cylinder of radius 11 cm and height 10 cm.

(a) Calculate the volume of the cake.
Give the units of your answer.

.... [3]

(b) The top of the cake and the curved surface area of the cake are covered in icing.

Calculate the area of the cake that is covered in icing.

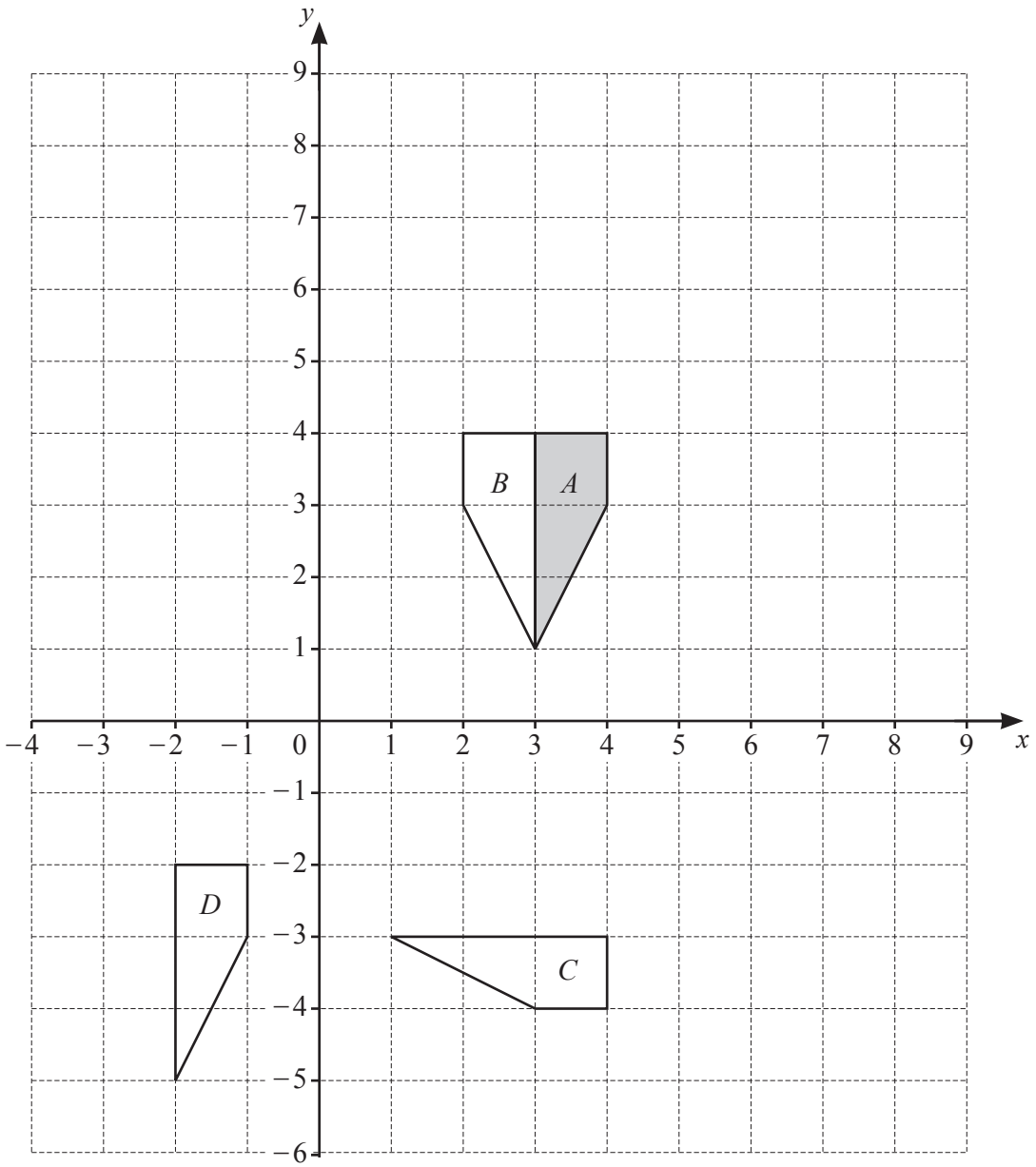
..... cm^2 [3]

(c) The top of the cake is divided into 12 equal sectors.

Work out the arc length of one sector.
Give your answer correct to the nearest centimetre.

..... cm [3]

11



(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) Describe fully the **single** transformation that maps shape *A* onto shape *D*.

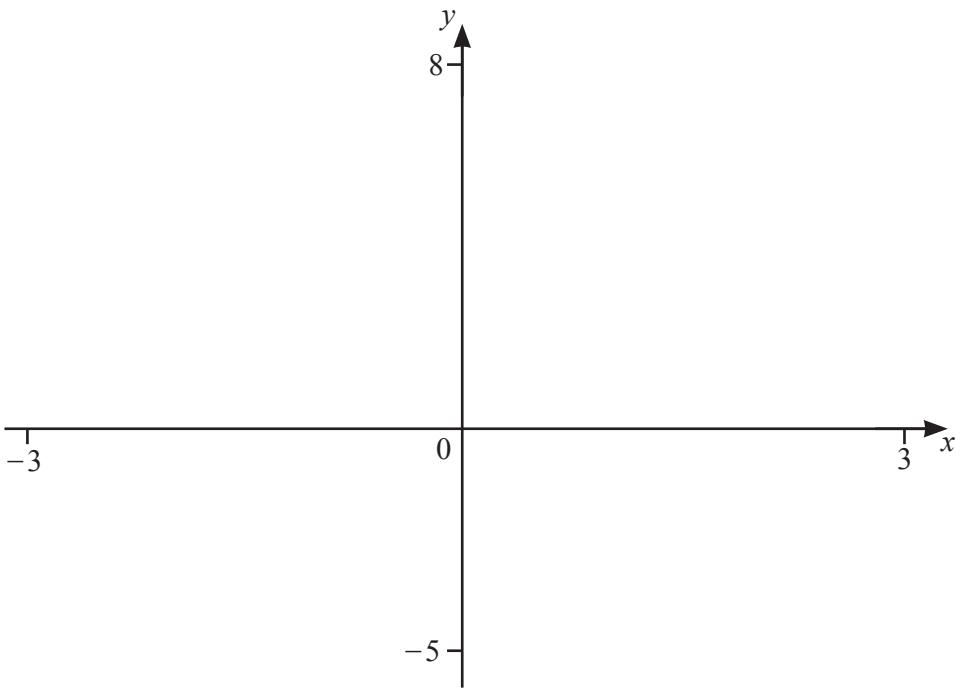
.....

..... [2]

(d) Draw the enlargement of shape *A* with scale factor 2 and centre (0, 0). [2]

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12



(a) On the diagram, sketch the graph of $y = 0.5^x$ for $-3 \leqslant x \leqslant 3$. [2]

(b) Write down the equation of the horizontal asymptote.

..... [1]

(c) On the same diagram, sketch the graph of $y = -x^2 + 4$ for $-3 \leqslant x \leqslant 3$. [2]

(d) Find the zeros of the graph of $y = -x^2 + 4$.

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

(e) Find the x-coordinate of each point where the graphs of $y = 0.5^x$ and $y = -x^2 + 4$ intersect.

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

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