



CANDIDATE
NAME

--

CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--

0607/32

February/March 2021

1 hour 45 minutes

You will need: Geometrical instruments

- 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.

- 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.

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) 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]

- 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.

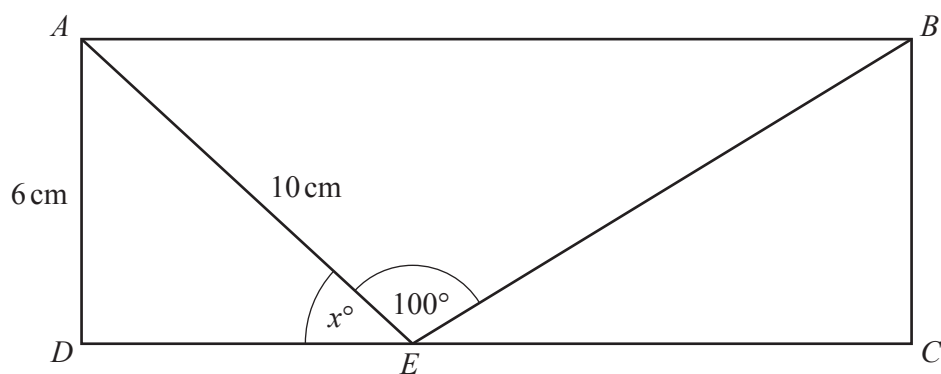
\$ [2]

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

Work out how much they each pay.

\$ [1]

3



$ABCD$ is a rectangle.

$AD = 6$ cm, $AE = 10$ cm and angle $AEB = 100^\circ$.

(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]

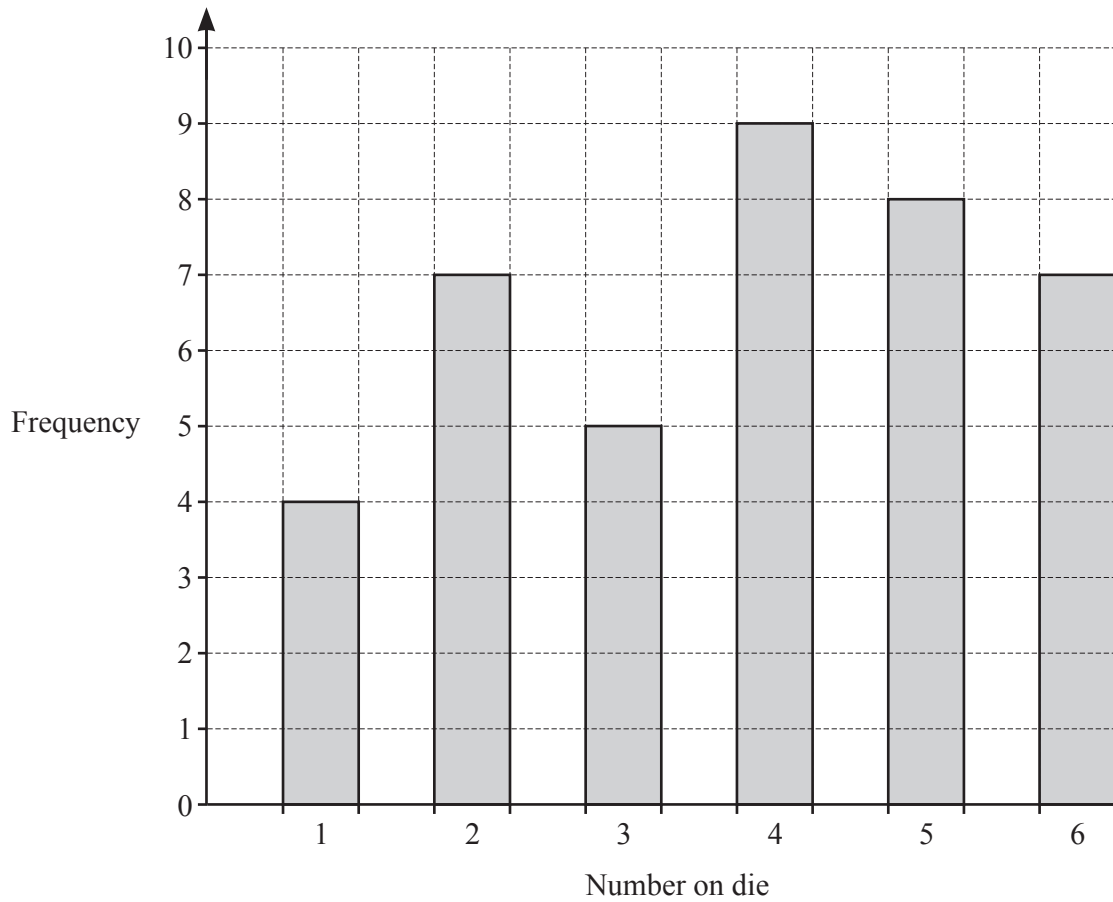
(ii) angle ABE ,

Angle $ABE =$ [2]

(iii) angle EBC .

Angle $EBC =$ [1]

- 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.

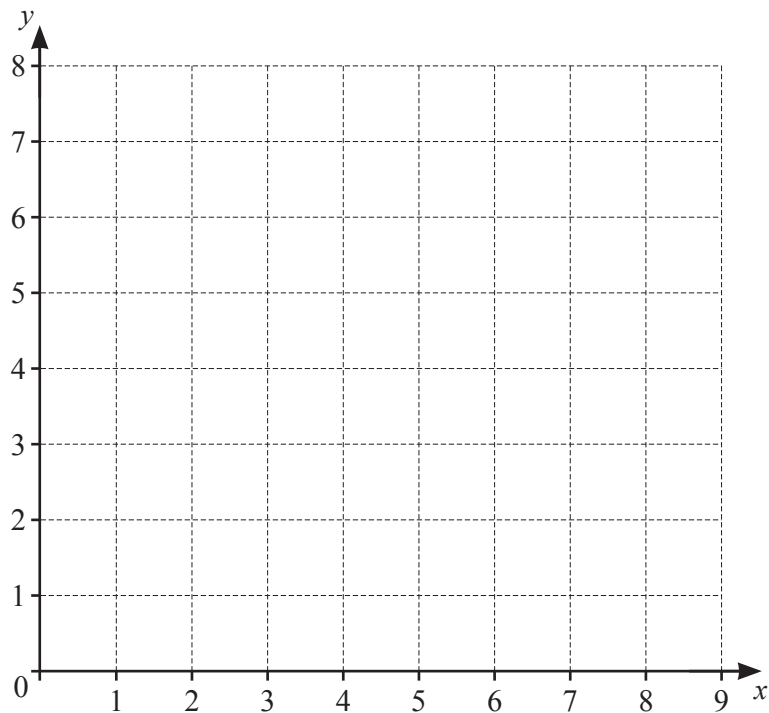
..... [2]

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

Work out the sector angle for throwing a 3.

..... [2]

- 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]

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]

7 (a) Solve.

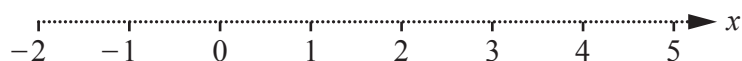
(i) $x + 6 = -3$

$x =$ [1]

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

$x =$ [2]

(b) Show the inequality $x \geq 2$ 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]

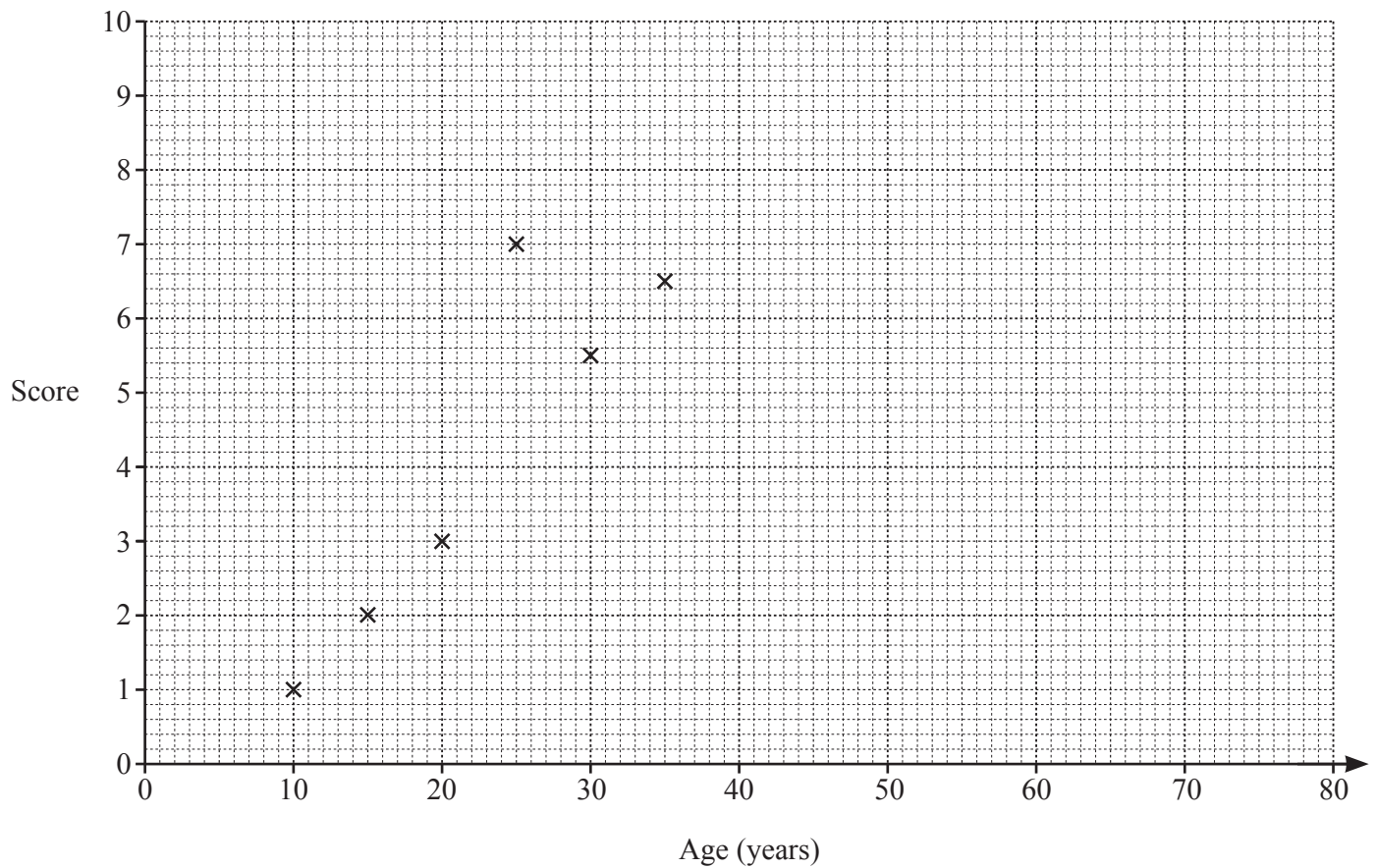
(ii) $\frac{3m}{4} \times \frac{8}{9m}$

..... [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.

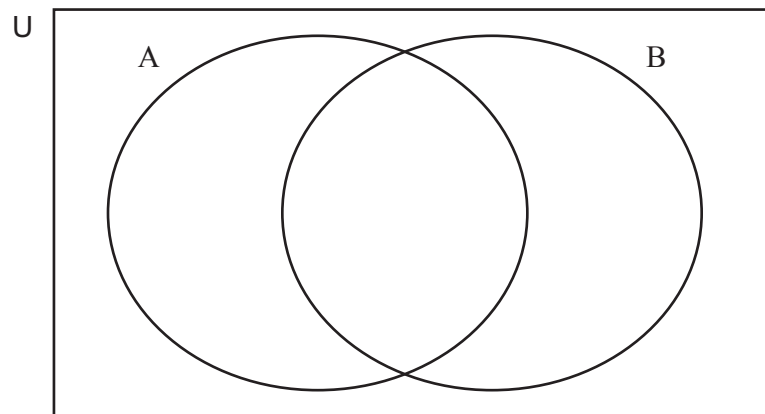
$$A \cap B = \{\dots\dots\dots\}$$

$$n(B) = \dots\dots\dots$$

$$5 \notin \dots\dots\dots$$

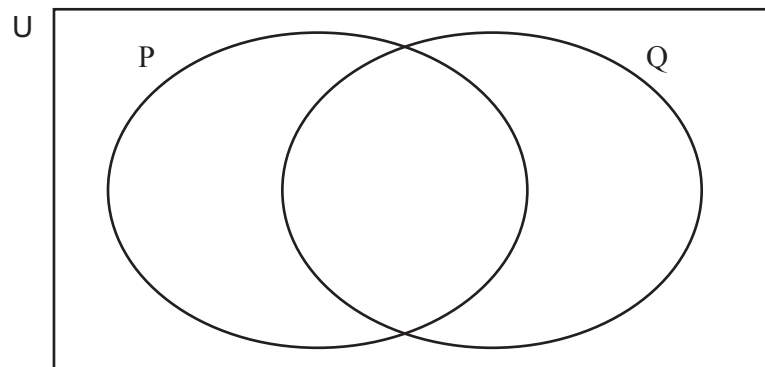
[3]

(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]

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.

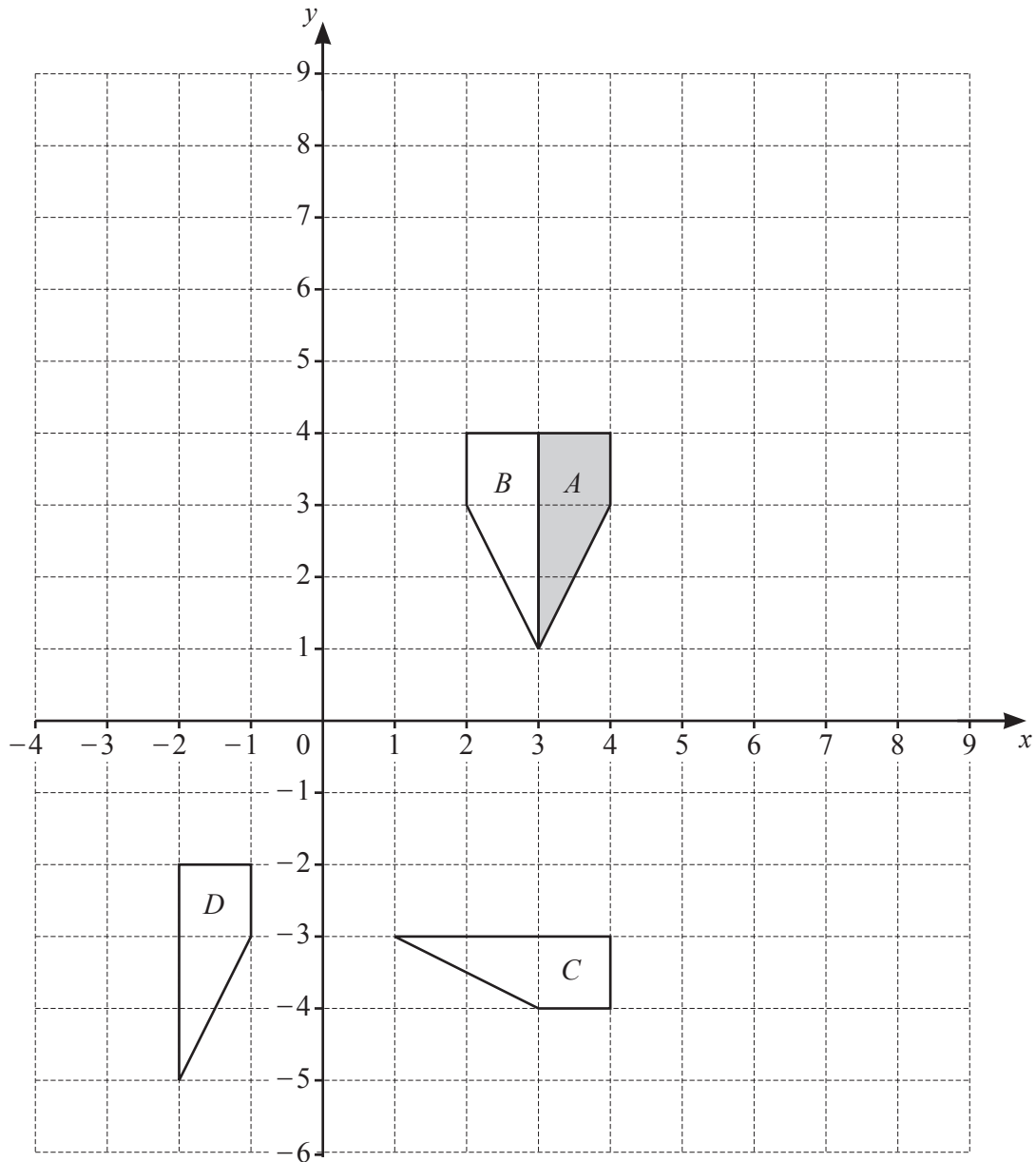
..... cm² [3]

- (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]



- (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]

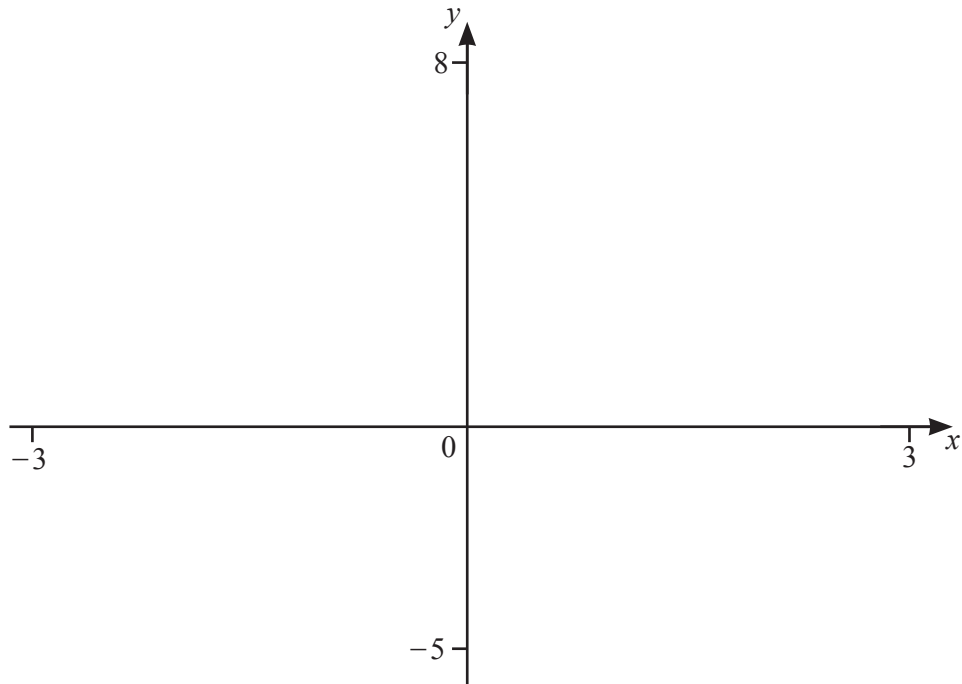
- (c) Describe fully the **single** transformation that maps shape *A* onto shape *D*.

.....
 [2]

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

[2]

12



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

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

BLANK PAGE

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 the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.