



CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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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 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.

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) 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]

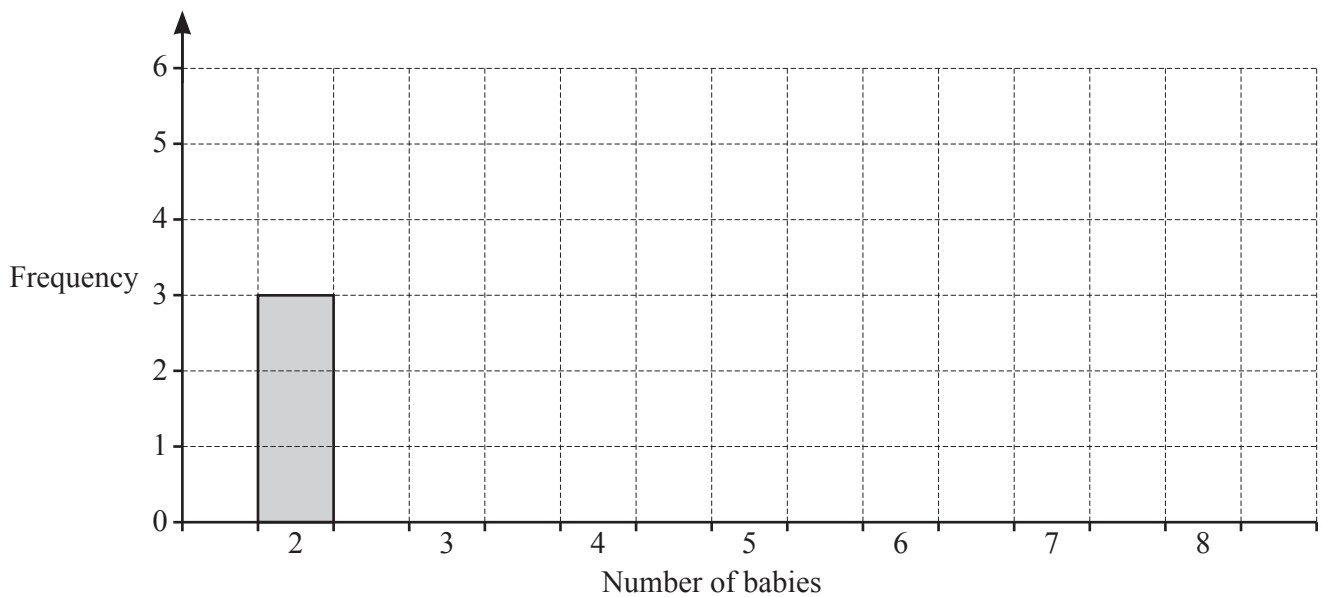
- (ii) the median

..... [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 $\text{£}1 = \$1.335$.

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.

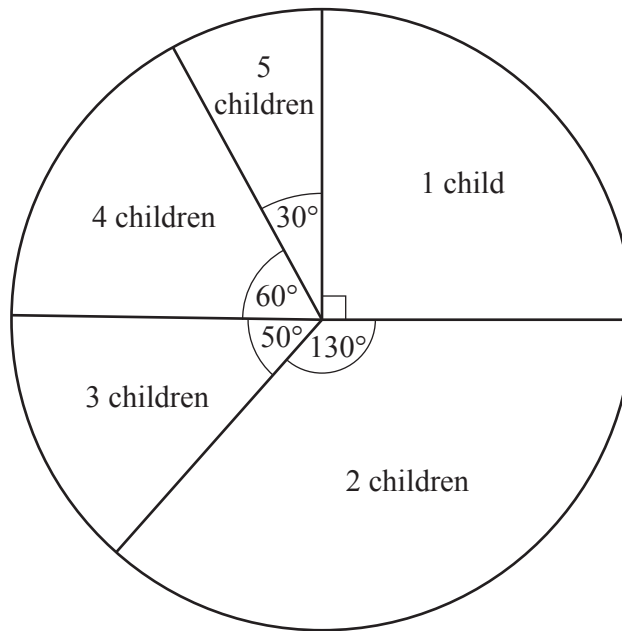
\$ [2]

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

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

£ [1]

- 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]

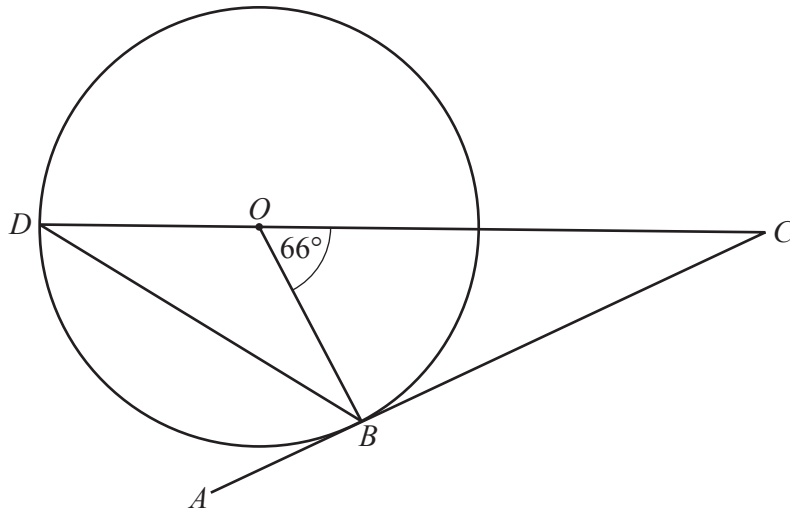
- (ii) Find the n th term of this sequence.

..... [2]

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

Work out the first 3 terms of this sequence.

.....,, [2]



NOT TO
SCALE

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

(a) Find

(i) angle OBC

Angle $OBC = \dots\dots\dots$ [1]

(ii) angle OCB

Angle $OCB = \dots\dots\dots$ [1]

(iii) angle ODB

Angle $ODB = \dots\dots\dots$ [2]

(iv) angle DBA .

Angle $DBA = \dots\dots\dots$ [1]

(b) The circle has radius 3.2 cm.

(i) Work out the area of the circle.

$\dots\dots\dots \text{ cm}^2$ [2]

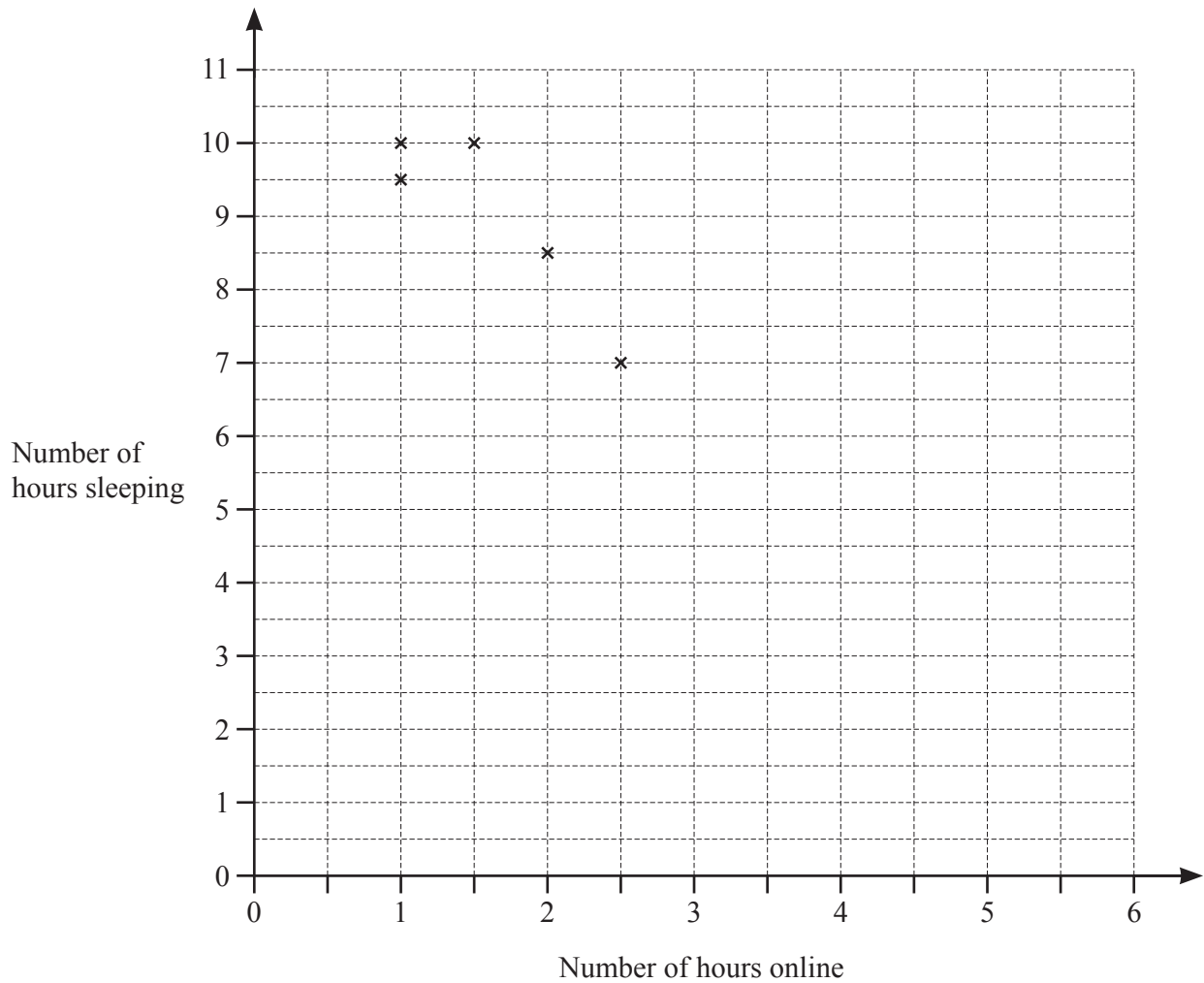
(ii) Work out the length of OC .

$OC = \dots\dots\dots \text{ cm}$ [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]

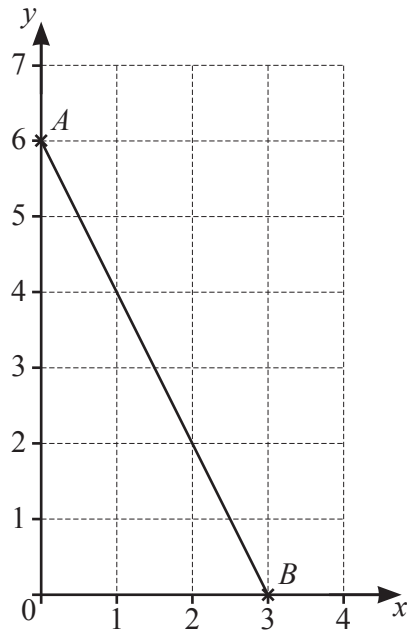
(d) On the diagram, draw a line of best fit.

[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]



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]

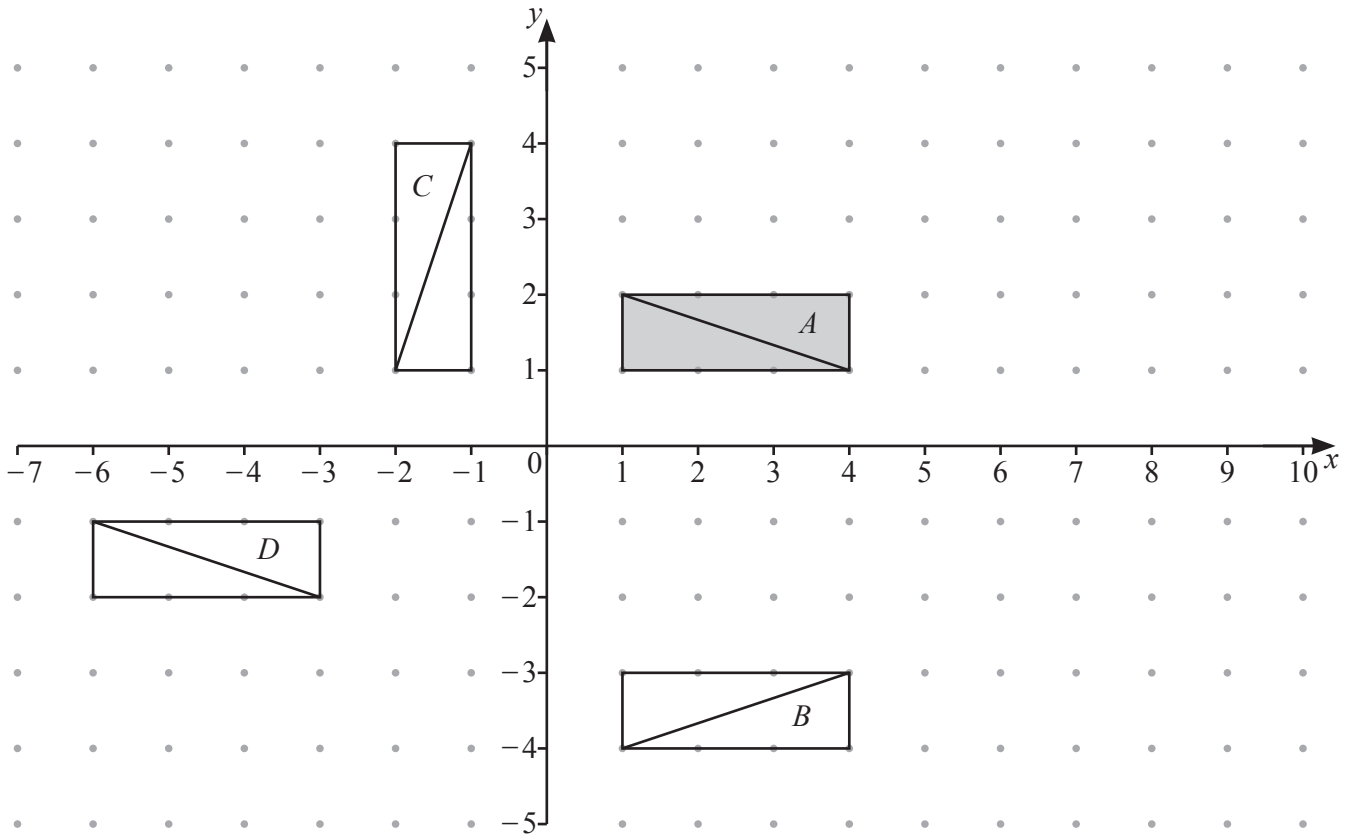
- (e) Find the equation of the line AB .

..... [2]

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

[2]

10



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

Write down the value of m .

$m = \dots\dots\dots$ [1]

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

Write down the value of t .

$t = \dots\dots\dots$ [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 .

$x = \dots\dots\dots$

$y = \dots\dots\dots$ [2]

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

[2]

11 (a) Solve.

$$x - 6 > -3$$

..... [1]

(b) Solve the simultaneous equations.

$$2x + 3y = 17$$

$$2x - y = 5$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [2]$$

(c) Simplify.

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

..... [2]

(d) Expand.

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

..... [2]

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

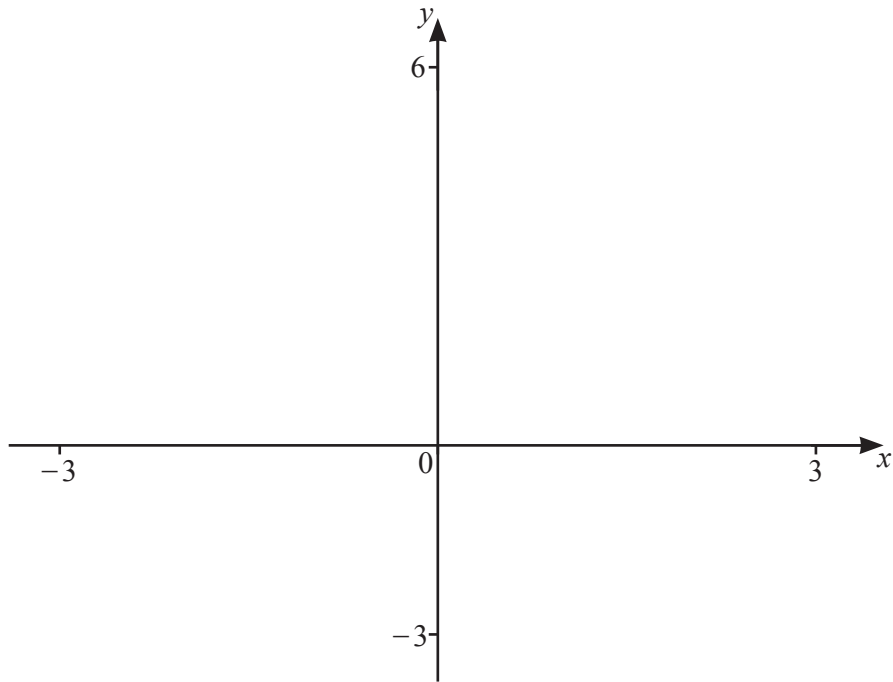
..... [2]

(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 $-3 \leq x \leq 3$. [2]

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

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

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