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MATHEMATICS (SYLLABUS D) **4024/13**

Paper 1 Non-calculator **May/June 2026**

2 hours

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. Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages.

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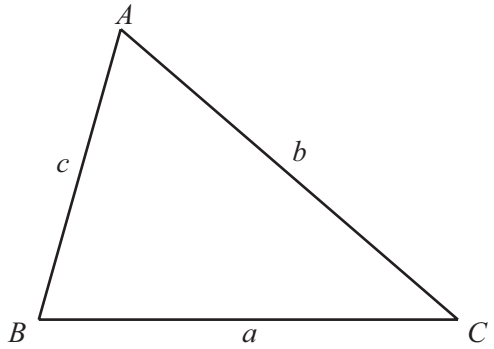
[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of 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.	$A = \pi rl$
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.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}ab\sin C$$

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Calculators must **not** be used in this paper.

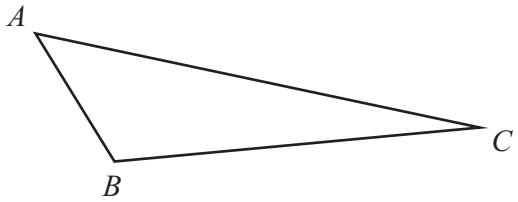
1 **(a)** Write 2.3 million in figures.

..... [1]

(b) Write down all the factors of 45.

..... [2]

2 **(a)** The diagram shows triangle *ABC*.



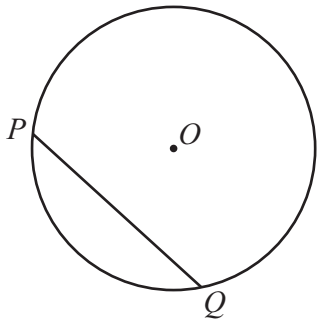
Choose a word from this list to complete each statement.

acute	**equilateral**	**isosceles**	**obtuse**	**reflex**	**scalene**

(i) Triangle *ABC* is ..... [1]

(ii) Angle *ABC* is ..... [1]

(b) *P* and *Q* are points on a circle, centre *O*.



Use the correct geometrical term to complete the statement.

The line *PQ* is a ..... of the circle. [1]

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3 These are the number of meeting rooms in each of ten offices.

6 7 8 40 4 4 3 8 4 6

(a) Write down the mode.

..... [1]

(b) Calculate the mean.

..... [2]

(c) Find the median.

..... [2]

(d) Explain why the mean is **not** a good representation of the number of meeting rooms in these offices.

.....

..... [1]

4 Simplify.

$5x + 7y - x + 2y$

..... [2]

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5 **(a)** These are the first four terms in a sequence.

2 5 8 11

Find the next two terms in the sequence.

..... , ... [1]

(b) The nth term of a different sequence is $n^2 + 3$.

Find the first three terms in this sequence.

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

6 Alice has some red beads, yellow beads and blue beads.
The ratio red : yellow : blue = 1 : 3 : 6 .
Alice has 60 more yellow beads than red beads.

Calculate the total number of beads that Alice has.

..... [3]

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7 **(a)** Work out.

$$30 - 0.5 \times (-6)$$

..... [2]

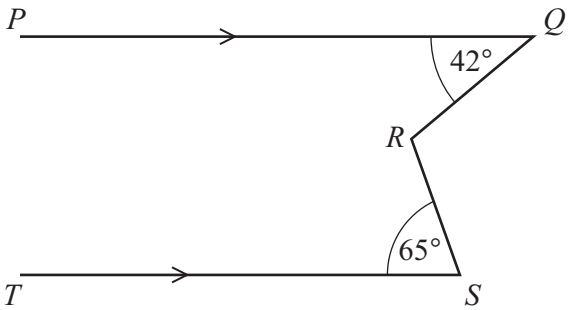
(b) Work out.

$$\frac{3}{4} - \frac{3}{10}$$

Give your answer as a fraction in its simplest form.

..... [3]

8



NOT TO SCALE

PQ is parallel to TS.
Angle $PQR = 42°$ and angle $RST = 65°$.

Work out the reflex angle QRS.

reflex angle $QRS =$ ..... [2]

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9 **(a)** Ann invests $300 in a savings account.
The account pays simple interest at a rate of 4% per year.

Calculate the value of her investment at the end of 5 years.

$ ..... [3]

(b) Ravi buys a computer in a sale.
The cost of the computer is reduced from $500 to $400.

Calculate the percentage reduction in the cost of the computer.

..... % [2]

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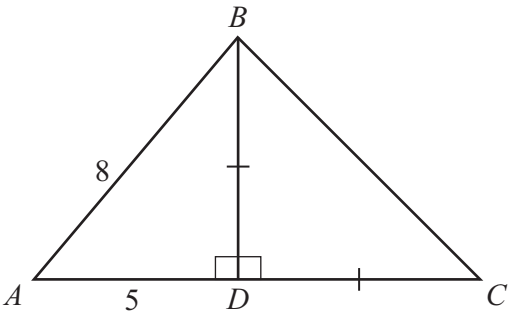
10 ABC is a triangle.



NOT TO SCALE

D lies on AC and angle BDA = angle BDC = 90°.
AB = 8 cm, AD = 5 cm and BD = CD.

Work out the area of triangle BCD.

..... cm^2 [5]

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11 **(a)** The bearing of town A from town B is 162°.

Find the bearing of town B from town A.

..... [2]

(b) On a map, the distance of town A from town B is 10 cm.
The actual distance of town A from town B is 20 km.

Work out the scale of the map in the form 1 : n.

1 : ..... [2]

12 **(a)** Write 0.000 63 in standard form.

..... [1]

(b) P and Q are numbers written in standard form.

$$P = 7 \times 10^{x} \qquad Q = 5 \times 10^{3x}$$

Giving your answers in standard form, find in terms of x

(i) P^2

..... [2]

(ii) $P \div Q$.

..... [2]

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13 **(a)** Solve the simultaneous equations.
You must show all your working.

$$5x - 2y = 19$$
$$2x - 3y = 1$$

$x =$ .....

$y =$ .....
[4]

(b) Solve by factorisation.

$$6x^2 - x - 5 = 0$$

$x =$ ..... or $x =$ ..... [3]

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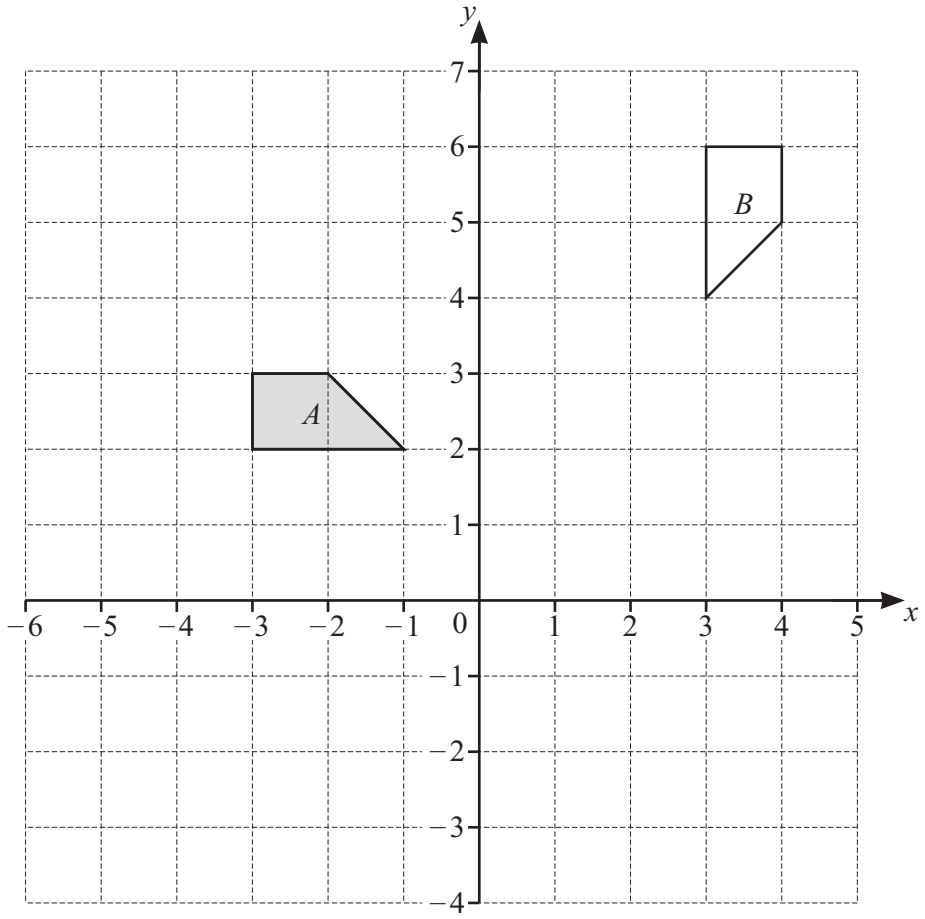
14 Shape A and shape B are drawn on the grid.



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

.....

..... [3]

(b) Shape C is the image of shape A after a reflection.
The coordinates of two of the vertices of shape C after the reflection are $(-3, 6)$ and $(-1, 6)$.

(i) Find the equation of the line of reflection.

..... [1]

(ii) Find the coordinates of the other two vertices of shape C after the reflection.

(..... , ...) and (..... , ...) [2]

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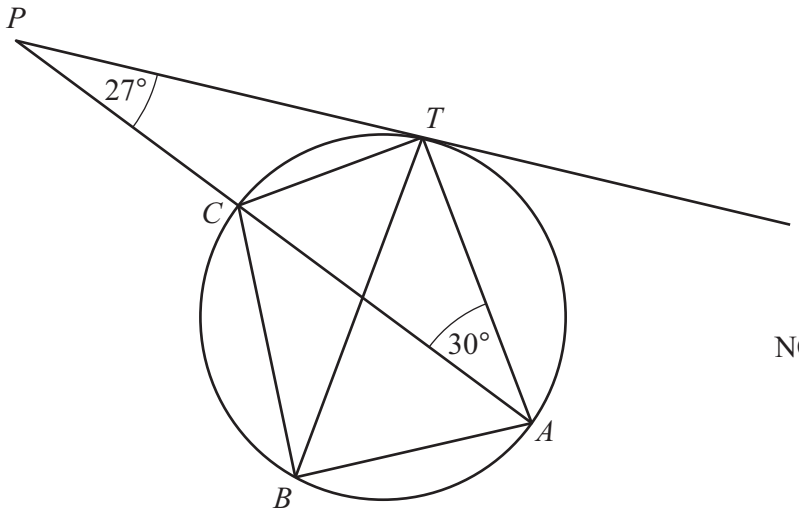
15



NOT TO SCALE

A, *B*, *C* and *T* are points on the circumference of a circle.
PT is a tangent to the circle at *T*.
PCA is a straight line.
Angle *APT* = 27° and angle *TAP* = 30°.

(a) Find angle *TBC*.

angle *TBC* = ... [1]

(b) Find angle *PTC*.

angle *PTC* = ... [1]

(c) Find angle *ATC*.

angle *ATC* = ... [2]

(d) Find angle *ABC*.

angle *ABC* = ... [1]

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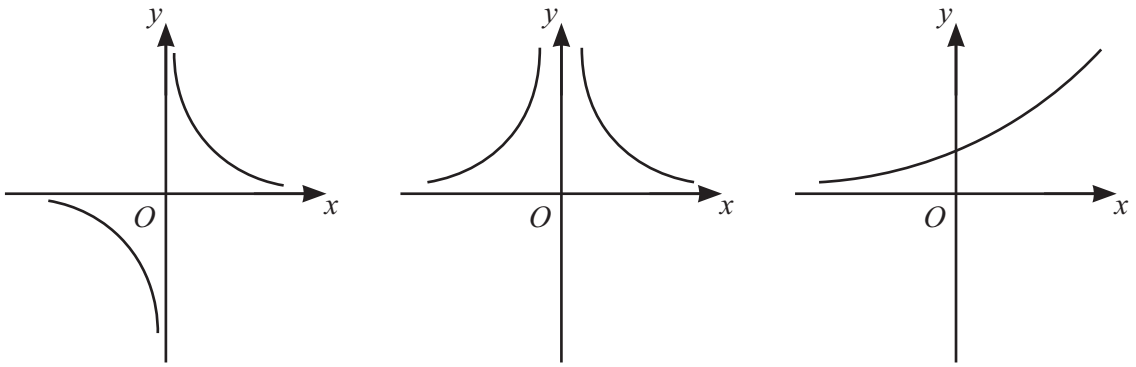
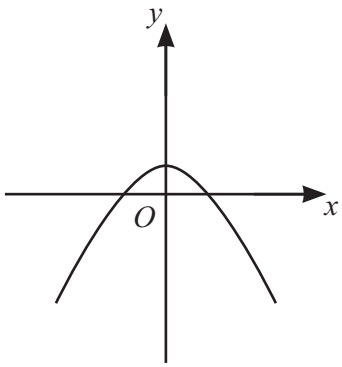
16 These are the sketches of six curves.



A

B

C



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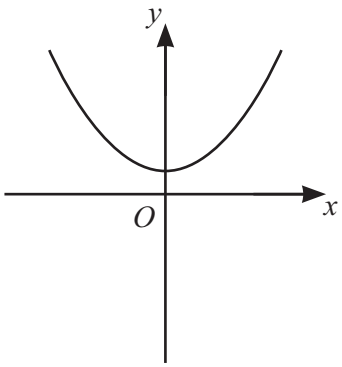

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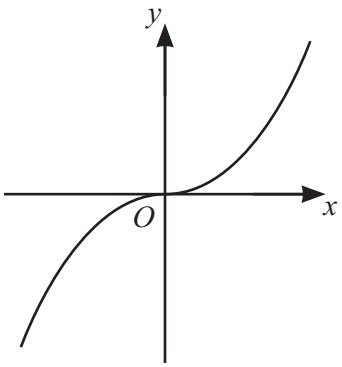

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Complete each statement with the correct letter.

The sketch of the curve $y = x^2 + 1$ is .....

The sketch of the curve $y = 2^x$ is .....

The sketch of the curve $y = \frac{1}{x}$ is .....

[3]

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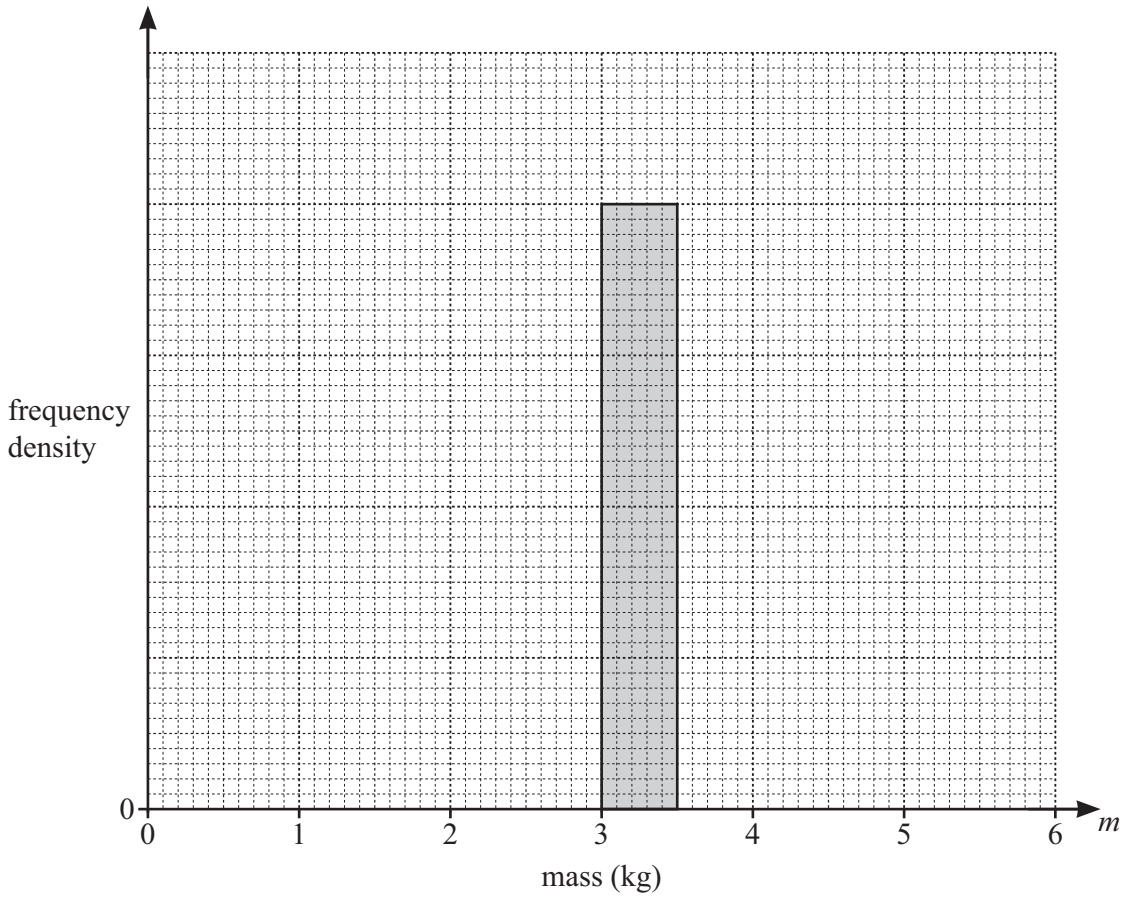
17 The table gives information about the masses of 36 parcels.

mass (m kg)	$1 < m \leqslant 2$	$2 < m \leqslant 3$	$3 < m \leqslant 3.5$	$3.5 < m \leqslant 4$	$4 < m \leqslant 6$
frequency	4	9	10	8	5

Complete the histogram to show this information.
Write the scale on the frequency density axis.

One bar has been drawn for you.



[4]

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18 Rearrange the formula to make x the subject.

$$a = \frac{x+4}{7-x}$$

$x =$ ..... [4]

19 Line L passes through point $P(1, 7)$ and point $Q(3, -1)$.
Line N is perpendicular to line L and passes through point P.

Find the equation of line N.
Give your answer in the form $y = mx + c$.

$y =$ ..... [4]

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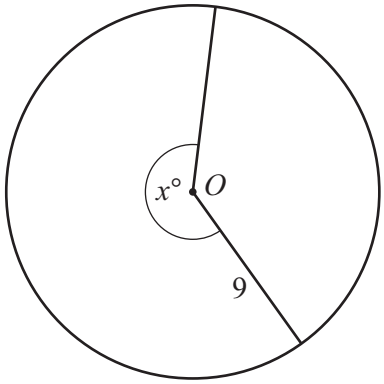

NOT TO SCALE

The diagram shows a circle with centre O and radius 9 cm.
The length of the minor arc is $\frac{15}{2}\pi$ cm.

Find the value of x.

$x =$ ..... [3]

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21 **(a)** Simplify.

$$\left(\frac{25}{x^4}\right)^{-\frac{3}{2}}$$

..... [2]

(b) Find the value of x .

$$8^x = 4^{x+3}$$

$x =$ ..... [3]

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22 **(a)** Simplify.

$$\sqrt{98} - \sqrt{18}$$

..... [2]

(b) Rationalise the denominator.

$$\frac{5}{3+\sqrt{7}}$$

Give your answer in its simplest form.

..... [3]

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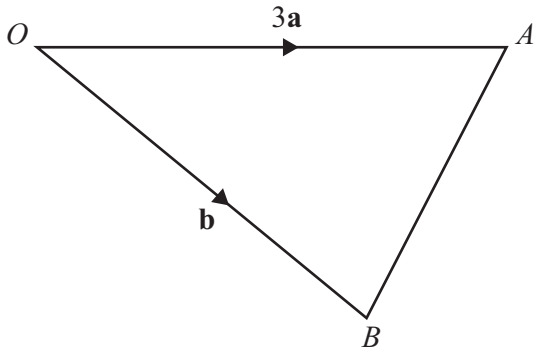
23 OAB is a triangle.



NOT TO SCALE

$\overrightarrow{OA} = 3\mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.

(a) Find $\overrightarrow{AB}$ in terms of **a** and **b**.

$\overrightarrow{AB}$ = ... [1]

(b) X is a point on AB such that $AX : XB = 2 : 3$.

Find $\overrightarrow{OX}$ in terms of **a** and **b**.
Give your answer in its simplest form.

$\overrightarrow{OX}$ = ... [3]

Question 24 is on the back page.

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24 Write as a single fraction in its simplest form.

$$\frac{x+3}{x+1} - \frac{2}{x-4}$$

..... [4]

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