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MATHEMATICS **0580/22**

Paper 2 Non-calculator (Extended) **February/March 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 **16** pages.

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[Turn over

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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. $V = \frac{1}{3}Ah$

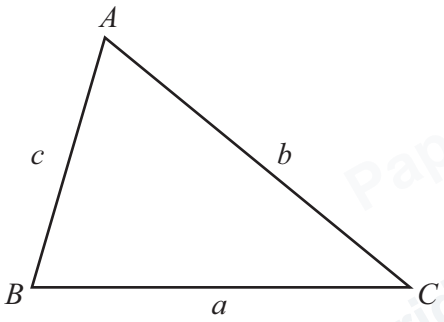
Volume, V, of cylinder of radius r, height h. $V = \pi r^2 h$

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,



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

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

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

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

1 Work out.

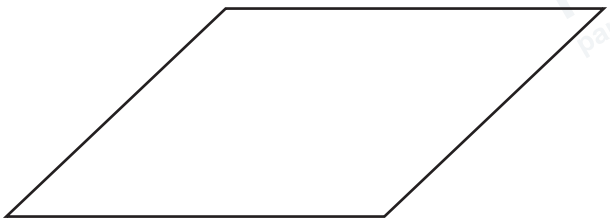
(a) 0.7^2

..... [1]

(b) $2 \div 0.04$

..... [1]

2



The diagram shows a parallelogram.

Complete the statement.

A parallelogram has ..... lines of symmetry

and rotational symmetry of order ..... [1]

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3

–50	–11	9	15	27	50	83

(a) From this list of numbers, write down

(i) a prime number

..... [1]

(ii) a cube number

..... [1]

(iii) two numbers with a product of 550.

..... and ..... [1]

(b) Rishwan writes each of these numbers on a card.

–50	–11	9	15	27	50	83

Rishwan picks a card at random and replaces it.

(i) Find the probability that he picks a natural number.

..... [1]

(ii) He repeats this 140 times.

Find the expected number of times that Rishwan picks a natural number.

..... [1]

4 Simplify.

$a \times 2a + 3a$

..... [1]

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5 A theatre has 3 types of seating: stalls, circle or private box.
The cost of a ticket for each type of seating is shown in the table.

type of seating	cost of a ticket
stalls	$30
circle	$24
private box	$72

(a) Find the ratio of the cost of the tickets stalls : circle : private box.
Give your answer in its simplest form.

..... : ..... : ..... [2]

(b) Arshad buys tickets for the theatre on a website.
The website charges a fee of 5% of the cost of each ticket.
Arshad buys 2 tickets in the stalls and 3 tickets in the circle.

Work out the total cost of Arshad's tickets.

$ ..... [3]

(c) There are 1200 seats in the stalls.
One evening, $\frac{5}{6}$ of the tickets for seats in the stalls are sold.
On this evening, the number of tickets sold for seats is in the ratio stalls : circle = 10 : 7.

Find the number of tickets sold for seats in the circle.

..... [3]

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6 Nisha plays basketball.
Here are some statistics about the number of points she has scored in her last 4 games:

- The mean is 10.
- The median is 13.
- The range is 12.

Find the number of points she scored in each of her last 4 games.

.... [3]

7 Line L has equation $y = 2$.

(a) Find the equation of the line perpendicular to line L that passes through the point (–1, 5).

..... [1]

(b) Find the coordinates of the point where line L intersects the line $y = 20 - 6x$.

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

8 Find the integer values of x that satisfy $-3 \leqslant x < 1$.

..... [2]

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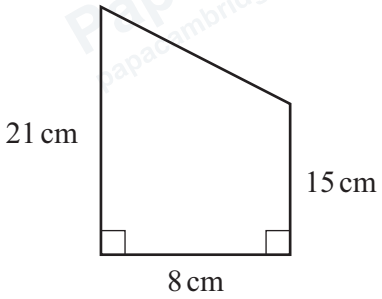

NOT TO SCALE

Work out the perimeter of the trapezium.

..... cm [3]

10 The bearing of A from B is $(2x + 50)°$.
The bearing of B from A is 060°.

Find the value of x.

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

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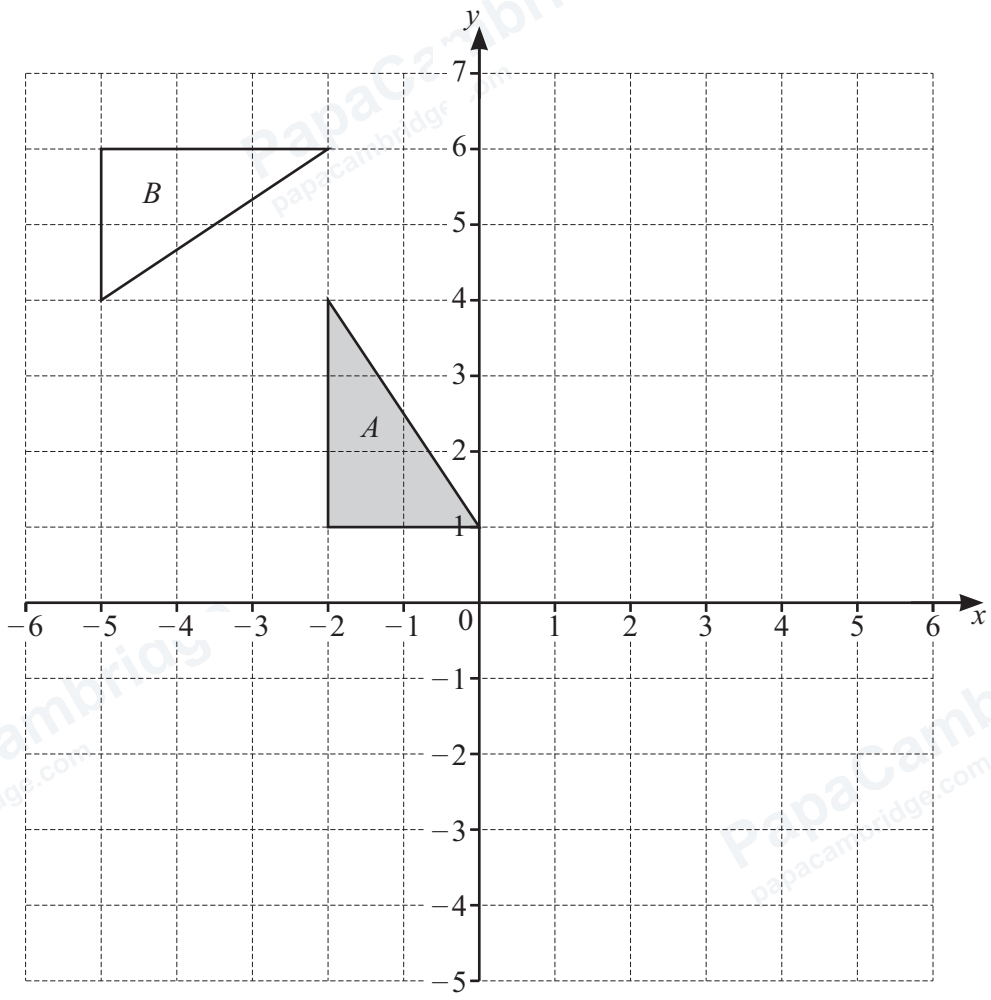

(a) On the grid, draw the image of

(i) triangle A after a translation by the vector $\begin{pmatrix} -3 \\ -5 \end{pmatrix}$ [2]

(ii) triangle A after a reflection in the line $y = x$. [2]

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

.....

..... [3]

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12 **(a)** Write 230 000 in standard form.

..... [1]

(b) Work out $(4.2 \times 10^{32}) - (4.2 \times 10^{31})$.

Give your answer in standard form.

..... [2]

(c) Work out $(80 \times 10^{50})^{\frac{1}{3}}$.

Give your answer in standard form.

..... [2]

13 $\mathscr{E} = \{x : x \text{ is an integer where } 40 < x < 50\}$
$P = \{x : x \text{ is a square number}\}$
$Q = \{x : x \text{ is an odd number}\}$
$R = \{x : x \text{ is a multiple of } 3\}$

(a) Use set notation to complete the statement.

$P \cap R =$ ..... [1]

(b) Find $\text{n}(P \cap Q \cap R)'$.

..... [1]

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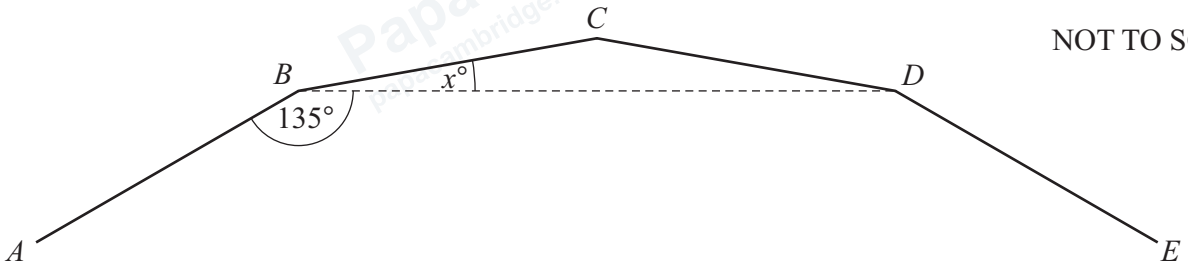

The diagram shows part of a regular polygon.
Angle $ABD = 135°$ and angle $CBD = x°$.

By finding the value of x, work out the number of sides of this polygon.

..... [4]

15 Simplify.

$\sqrt{40} + \sqrt{160}$

..... [2]

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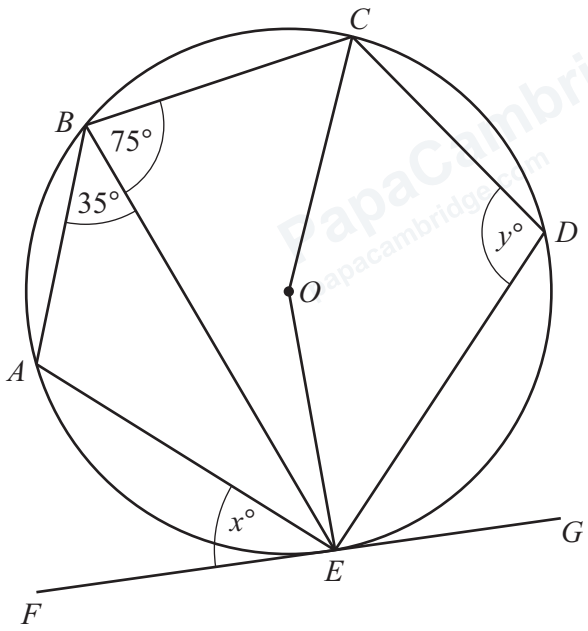

NOT TO SCALE

A, B, C, D and E lie on a circle, centre O.
FG is a tangent to the circle at E.
Angle $ABE = 35°$ and angle $CBE = 75°$.

(a) Find the value of x and the value of y.

$x =$ .....

$y =$ .....
[2]

(b) Complete this statement with the geometrical reason.

Obtuse angle $EOC = 150°$ because .....

..... [1]

(c) The radius of the circle is 6 cm.

Work out the area of the major sector EOC.
Give your answer in terms of π in its simplest form.

..... cm^2 [3]

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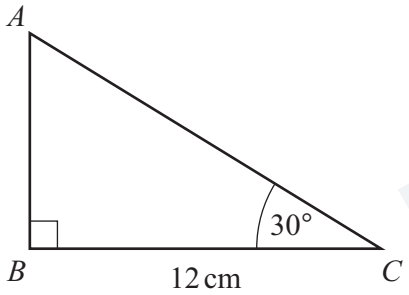

NOT TO SCALE

(a) Find the length of AC.
Give your answer in the form $a\sqrt{b}$.

..... cm [4]

(b) Find the shortest distance from B to AC.

..... cm [3]

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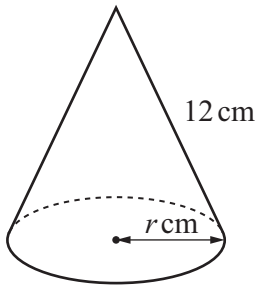

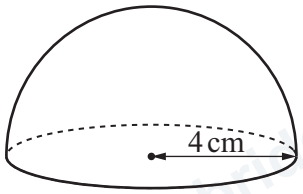

NOT TO SCALE

The diagram shows a cone and a hemisphere.
The cone has radius r cm and sloping edge 12 cm.
The hemisphere has radius 4 cm.
The **total** surface area of the cone is equal to the **total** surface area of the hemisphere.

(a) Show that $r^2 + 12r - 48 = 0$.

[3]

(b) Find the exact value of the radius of the cone.
Give your answer as a surd in its simplest form.

$r =$ ..... [4]

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19 Point A has coordinates $(-4, 3)$ and point B has coordinates $(4, 7)$.

(a) Find the vector $\overrightarrow{BA}$.

$\overrightarrow{BA} = \begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [2]

(b) Point C has coordinates $(x, 7)$ and $\left|\overrightarrow{AC}\right| = 4\sqrt{10}$.

Find the two possible values of x.

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

(c) Point D lies on the line AB.
$AD : DB = 3 : 1$.

Find the equation of the line perpendicular to AB that passes through point D.
Give your answer in the form $y = mx + c$.

$y =$ ..... [5]

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20 **(a)** Simplify.

$$(27x^9)^{-\frac{2}{3}}$$

..... [3]

(b) Solve.

$$7^x = 49^{(1-2x)}$$

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

21 Simplify.

$$\frac{2x^2+3x-20}{ax+4a-3bx-12b}$$

..... [5]

Question 22 is on the back page.

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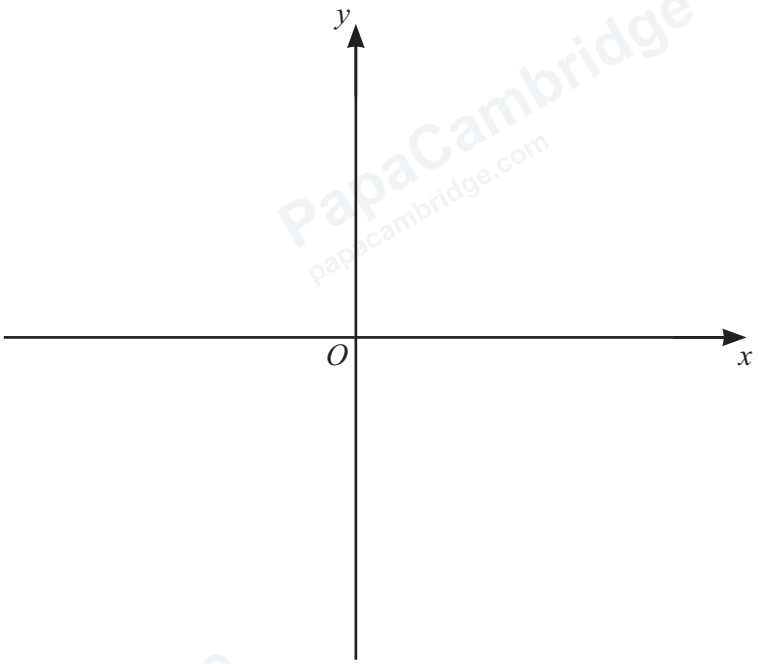
22 **(a)** Expand and simplify $(x+5)(x-3)^2$.

..... [3]

(b) On the diagram, sketch the graph of $y=(x+5)(x-3)^2$, indicating the values where the graph crosses the axes.



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