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MATHEMATICS **0580/12**

Paper 1 Non-calculator (Core) **February/March 2025**

1 hour 30 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.
- 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 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Any blank pages are indicated.

[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.	$V = \frac{4}{3}\pi r^3$

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

1 Write the number twenty thousand in figures.

..... [1]

2 Write 0.07

(a) as a percentage

..... % [1]

(b) as a fraction

..... [1]

(c) in standard form.

..... [1]

3 Write down all the factors of 18.

..... [2]

4 Find the value of

(a) 10^3

..... [1]

(b) $\sqrt[3]{27}$

..... [1]

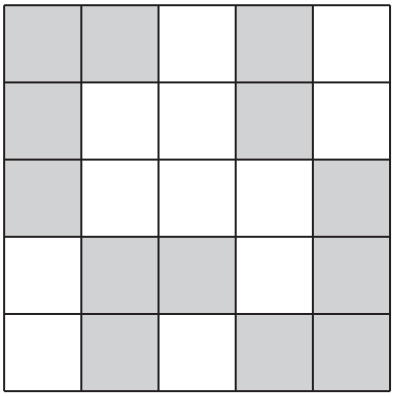
(c) 7^0.

..... [1]

5 **(a)** On the diagram, draw all the lines of symmetry.

[2]

(b) Shade one square so that the diagram has rotational symmetry of order 2.



[1]

6 Find the value of the reciprocal of 0.25 .

..... [2]

7 Work out $-6\times-3+7\times2$.

..... [2]

8 Write these numbers in order, starting with the smallest.

34% π $\frac{1}{3}$ 3 $\frac{3}{10}$

.....<.....<.....<.....<..... [2]

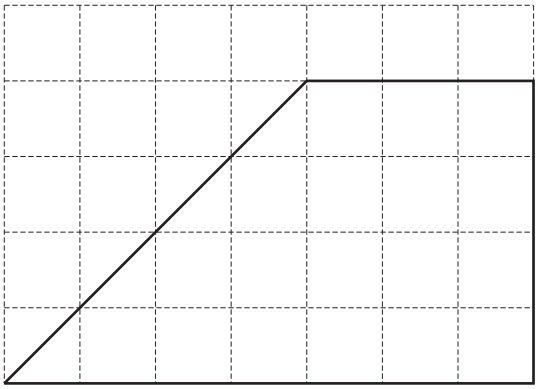
smallest

9 A film starts at 19 35.
The film lasts for 70 minutes.

Work out the time the film finishes.

..... [1]

10 A shape is drawn on a 1 cm^2 grid.



(a) Find the area of the shape.

..... cm^2 [1]

(b) On the grid, shade 50% of the shape. [1]

11

$$19.5 \times 20.4 = 397.8$$

Work out.

(a) 1.95×2.04

..... [1]

(b) $3978 \div 204$

..... [1]

12 **(a)** Kat has a method for finding the difference between two square numbers, $a^2 - b^2$.
Her method is

(the sum of a and b) × (the difference between a and b) .

She shows her method for $17^2 - 13^2$.

$17^2 - 13^2$

$= (17 + 13) \times (17 - 13)$

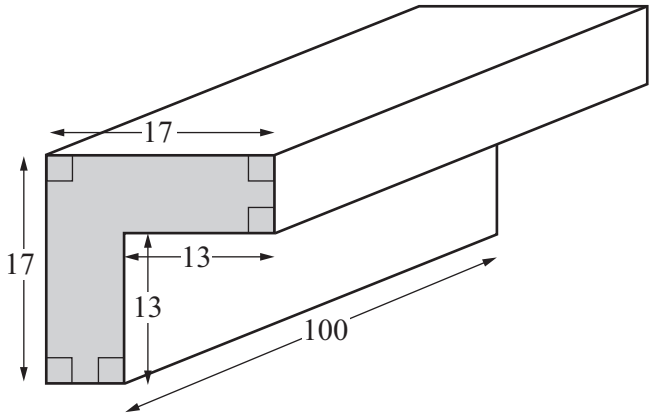
$= 30 \times 4$

$= 120$

Work out $29^2 - 21^2$ using Kat's method.

..... [2]

(b) In this part, all lengths are in centimetres.



NOT TO SCALE

The diagram shows a prism.

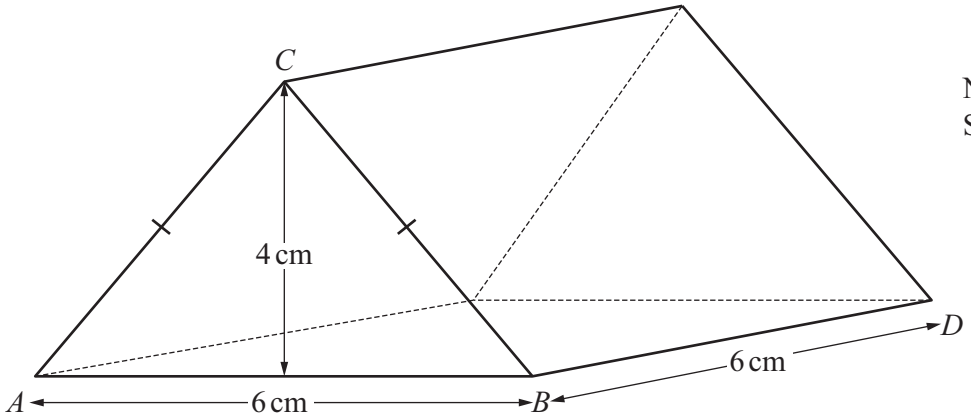
Work out the volume of the prism.

..... cm^3 [2]

13 Convert 8 litres into cm^3.

..... cm^3 [1]

14



NOT TO SCALE

The diagram shows a triangular prism.
ABC is an isosceles triangle with $AC = BC$.
The perpendicular height of triangle ABC is 4 cm.
$AB = 6$ cm and $BD = 6$ cm.

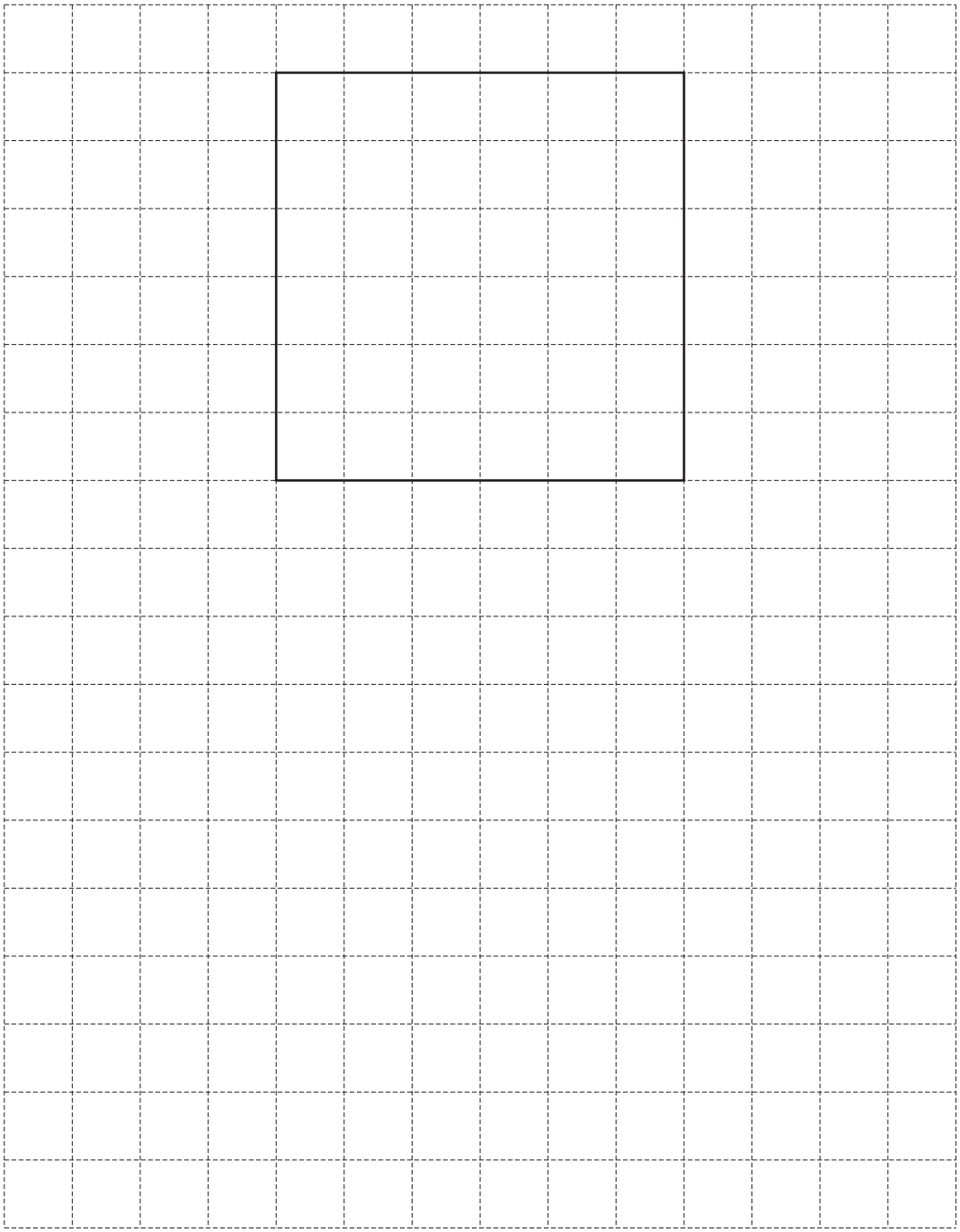
(a) Complete this statement.

The prism has ..... faces and ..... edges. [2]

(b) Show that the length of BC is 5 cm.

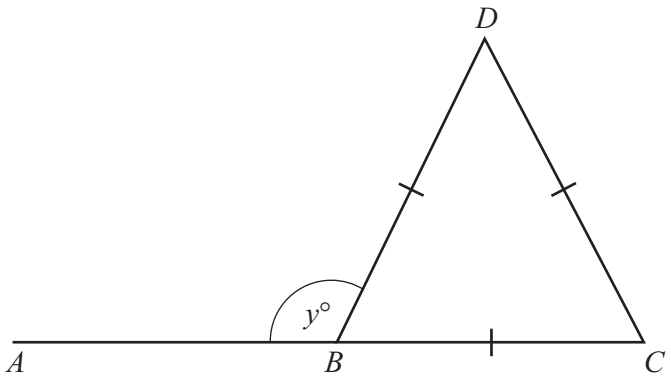
[2]

(c) Complete the net of the prism on the 1 cm^2 grid.
The base has been drawn for you.



[3]

15



NOT TO SCALE

The diagram shows a triangle *BCD* and a straight line *ABC*.
DB=DC=BC.

(a) Write down the mathematical name for triangle *BCD*.

..... [1]

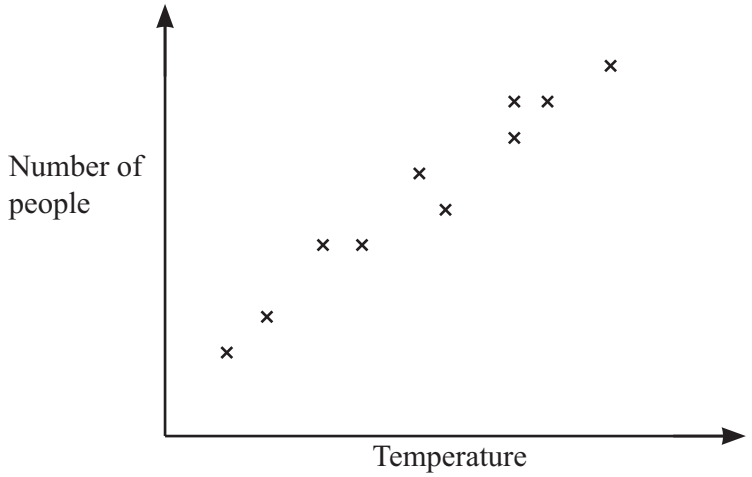
(b) Work out the value of *y*.
Give two geometrical reasons for your answer.

y = ... because

1. .....

2. .....
[4]

16 Jill records the temperature and the number of people on a beach for each of ten days.
The results are shown in the scatter diagram.



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

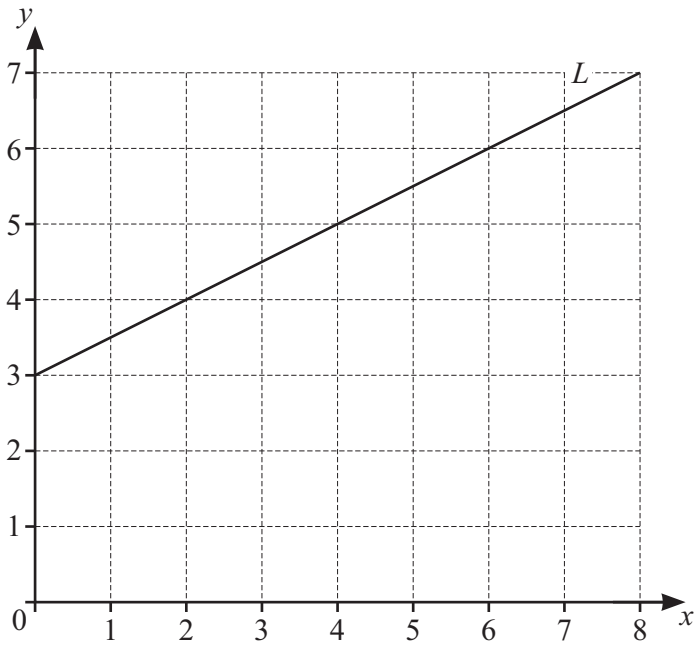
..... [1]

(b) Describe the relationship between the temperature and the number of people on the beach.

.....

..... [1]

17 Line L is shown on the grid.



(a) Find the equation of line L in the form $y = mx + c$.

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

(b) Line L crosses the x-axis at P.

Find the coordinates of P.

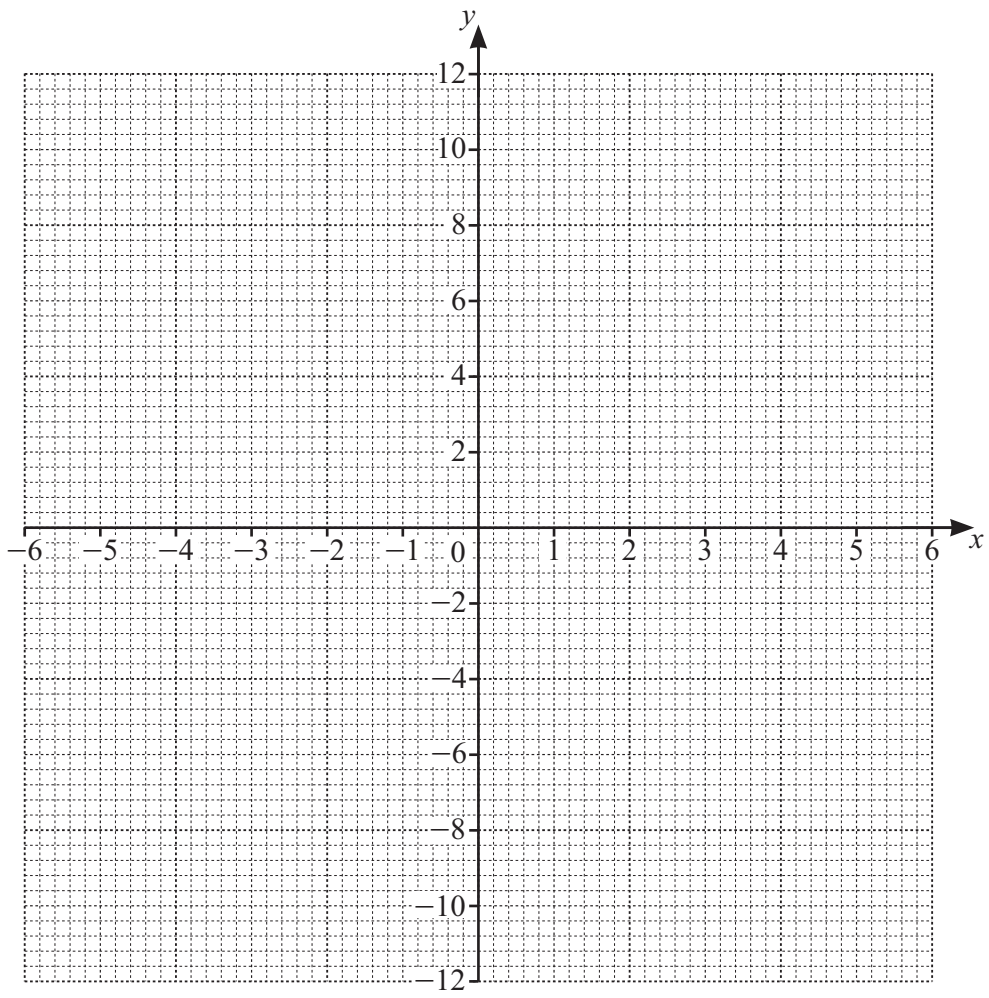
(..... , ...) [2]

18 **(a)** Complete the table of values for $y = \frac{12}{x}$.

x	-6	-4	-3	-2	-1		1	2	3	4	6
y		-3		-6				6		3	

[3]

(b) On the grid, draw the graph of $y = \frac{12}{x}$ for $-6 \leqslant x \leqslant -1$ and $1 \leqslant x \leqslant 6$.



[4]

(c) On the grid, draw the line $y = -9$. [1]

(d) Use your graph to solve $\frac{12}{x} = -9$.

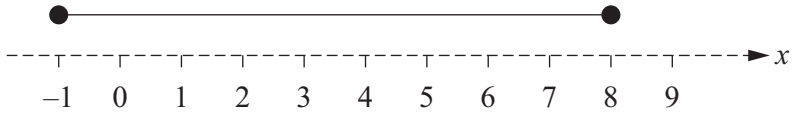
$x =$ ..... [1]

19 **(a)** n is an **odd** number.

Write down the values of n that satisfy $7 < n \leqslant 15$.

..... [2]

(b)



Pip thinks $-1 < x < 8$ is the inequality represented on the number line.

Complete the statement.

Pip's inequality is not correct because .....

..... [1]

20 The height, h metres, of a building is 635 m, correct to the nearest metre.

Complete this statement about the value of h.

..... $\leqslant h <$ ..... [2]

21 $X = \frac{1}{3}w^2p$

(a) Find the value of X when $w = 5$ and $p = 6$.

$X =$ ..... [2]

(b) Make p the subject of the formula.

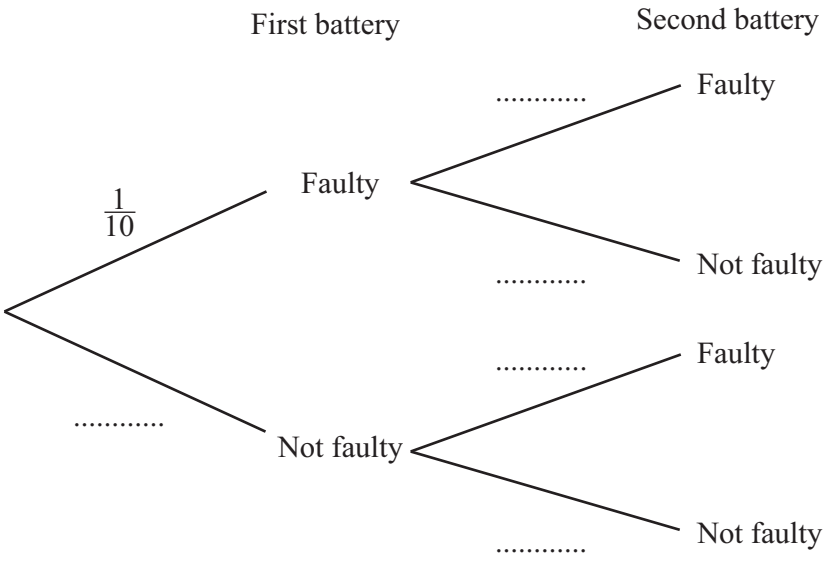
$p =$ ..... [2]

22 Work out $1\frac{7}{15} - \frac{4}{5}$.

Give your answer as a fraction in its simplest form.

..... [3]

23 Mai buys two batteries.
The probability that a battery is faulty is $\frac{1}{10}$.



(a) Complete the tree diagram. [2]

(b) Find the probability that Mai buys two faulty batteries.

..... [2]

(c) A shop sells 3000 batteries in one month.

Work out the expected number of faulty batteries the shop sells.

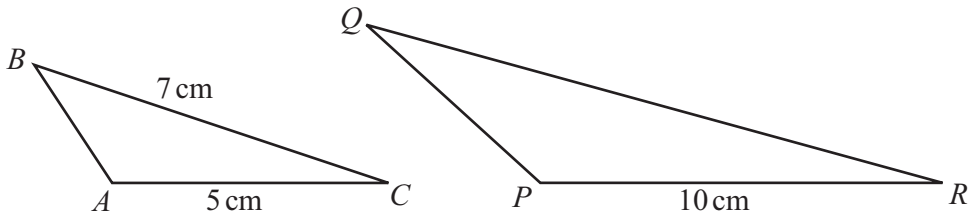
..... [1]

24 A circle has radius 7 cm.
A square has side x cm.
The circumference of the circle is the same length as the perimeter of the square.

Find the value of x.
Give your answer in terms of π.

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

25



NOT TO SCALE

Triangle ABC is mathematically similar to triangle PQR.

Show that $QR = 14$ cm.

[1]

26 Solve the simultaneous equations.

$$4t - 3w = 11$$
$$6t + 2w = -3$$

$t =$ .....

$w =$ ..... [4]

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