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MATHEMATICS **0580/12**

Paper 1 (Core) **October/November 2024**

1 hour

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 calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- 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 either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 56.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages.

[Turn over

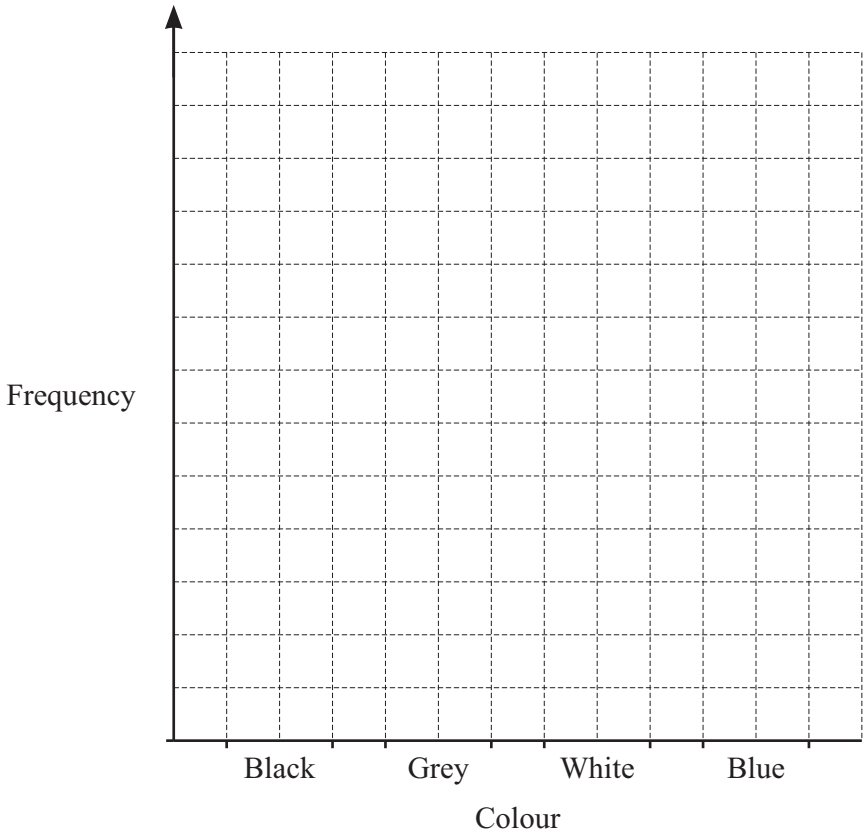
1 Write the number half a million in figures.

..... [1]

2 Anton records the colour of each car in a car park.
His results are shown in the table.

Colour	Black	Grey	White	Blue
Frequency	12	9	11	4

On the grid, draw a bar chart to show this information.
Complete the scale on the frequency axis.



[3]

3 Solve.

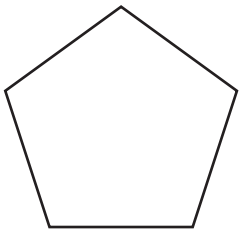
(a) $5x = 14$

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

(b) $x + 6 = 25$

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

4 The diagram shows a regular polygon.



(a) Write down the mathematical name for this polygon.

..... [1]

(b) On the diagram, draw all the lines of symmetry. [2]

(c) Write down the order of rotational symmetry.

..... [1]

5 Write 53 683.588 correct to

(a) the nearest hundred

..... [1]

(b) 1 decimal place.

..... [1]

6 Triangle ABC has sides $AC = 4.2\,\text{cm}$ and $BC = 5.6\,\text{cm}$.

Using a ruler and compasses only, construct triangle ABC.
Leave in your construction arcs.
The side AB has been drawn for you.

A B

[2]

7 Put **one** pair of brackets in each calculation to make it correct.

(a) $15 + 12 - 3 \times 4 = 51$ [1]

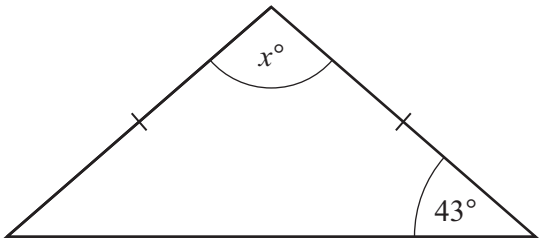
(b) $15 + 12 - 3 \times 4 = 96$ [1]

8 Simplify.

$8c - d - 3c + 3d$

..... [2]

9 The diagram shows an isosceles triangle.



NOT TO SCALE

Find the value of x.

$x =$ ..... [2]

10

0.25	3.142	$\sqrt{3}$	-3	24	-0.4	1.2	$-\frac{1}{4}$

Complete each statement with a number from the list.

..... is a natural number.

..... is an irrational number.

..... is the reciprocal of 4.

[3]

11 The temperature in town A is $-8\,°C$ and the temperature in town B is $16\,°C$.

(a) Find the difference in these two temperatures.

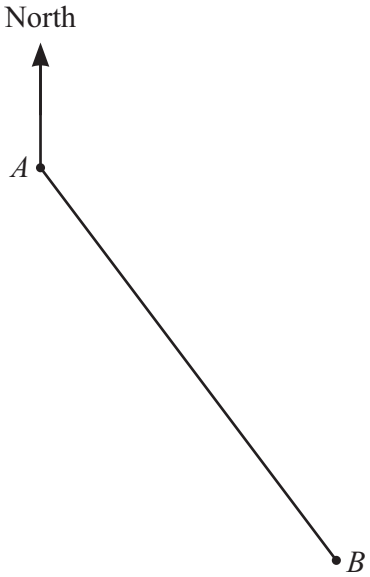
..... °C [1]

(b) The temperature in town A rises by $12\,°C$.

Find the temperature in town A now.

..... °C [1]

12 The scale drawing shows the positions of two ships, *A* and *B*.
The scale is 1 cm represents 6 km.



Scale : 1 cm to 6 km

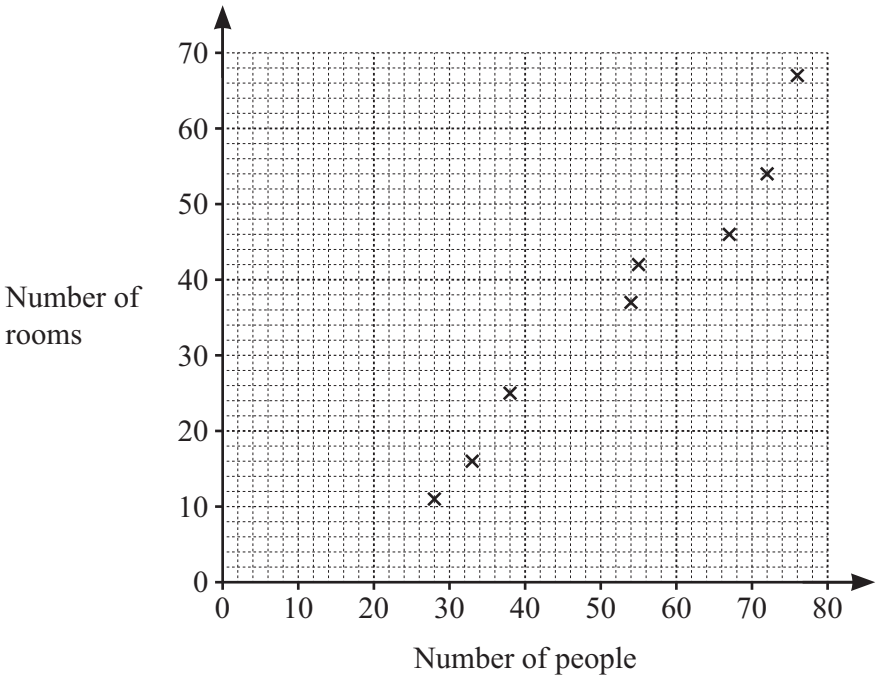
(a) Measure the bearing of ship *B* from ship *A*.

..... [1]

(b) Find the actual distance between the two ships.

..... km [2]

13 The scatter diagram shows the number of rooms and the number of people in each of eight buildings.



(a) One of the buildings has 67 rooms.

Write down the number of people in this building.

..... [1]

(b) In another building there are 42 people and 33 rooms.

On the scatter diagram, plot this point. [1]

(c) **(i)** On the scatter diagram, draw a line of best fit. [1]

(ii) There are 45 people in a different building.

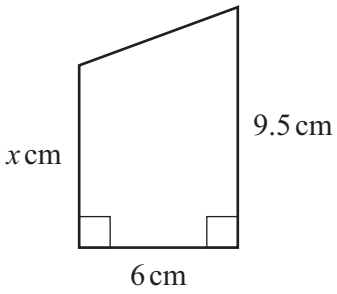
Find an estimate for the number of rooms in this building.

..... [1]

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

..... [1]

14 The diagram shows a trapezium.



NOT TO SCALE

The area of the trapezium is $42\,cm^2$.

Calculate the value of x.

$x =$ ..... [2]

15 In a league, teams gain 4 points for each win, 2 points for each draw and bonus points.
A team has x wins, y draws and b bonus points.

Write down an expression, in terms of x, y and b, for the total number of points the team has.

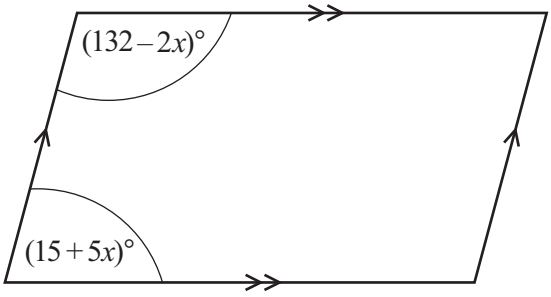
..... [2]

16 Dana invests $3600 at a rate of 3.8% per year compound interest.

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

$ ..... [2]

17 The diagram shows a parallelogram.



NOT TO SCALE

Work out the size of the smallest interior angle of the parallelogram.

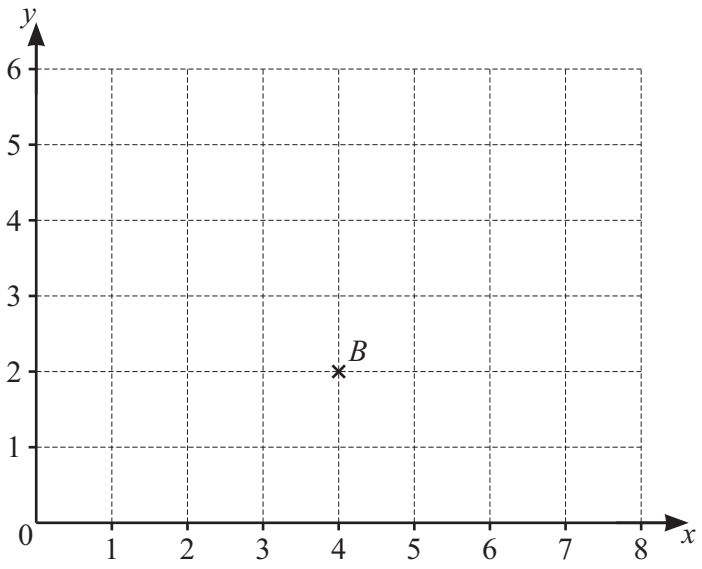
..... [4]

18 Simplify.

$$\frac{18x^6}{3x^2}$$

..... [2]

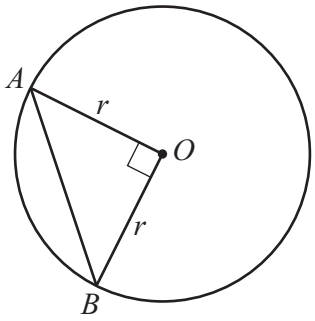
19



$\overrightarrow{AB} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$

Mark point A on the grid. [1]

20 Points A and B lie on a circle, centre O and radius r.



The area of the circle is $120\,\text{cm}^2$.

Find the area of the right-angled triangle AOB.

..... cm^2 [3]

21 **Without using a calculator**, work out $2\frac{3}{4} \times 1\frac{1}{2}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

Question 22 is printed on the next page.

22 Solve the simultaneous equations.
You must show all your working.

$$2x + 7y = 34$$
$$3x + 5y = 18$$

$x =$ .....

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