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MATHEMATICS**0580/13**

Paper 1 (Core)

May/June 2022**1 hour**

You must answer on the question paper.

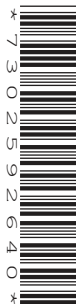
You will need: Geometrical instruments

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 [].

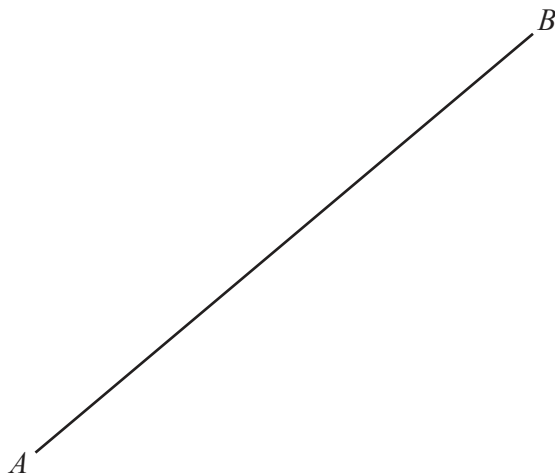
This document has **12** pages. Any blank pages are indicated.

2

- 1 Write the number one hundred and three thousand eight hundred and six in figures.

..... [1]

2



- (a) Measure the length of the line AB in millimetres.

..... mm [1]

- (b) Mark the midpoint, M , of the line AB .

[1]

- (c) Draw a line through M that is perpendicular to the line AB .

[1]

- 3 Simplify.

$$3x - 4x + 7x$$

..... [1]

- 4 Work out the area of a rectangle that is 9.5 m long and 6.8 m wide.

..... m^2 [2]

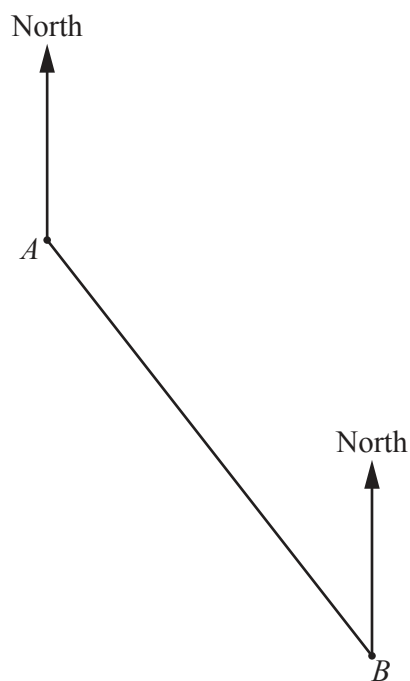
- 5 The probability of picking a red sweet from a bag is 0.05 .

Find the probability of not picking a red sweet.

..... [1]

3

6



Measure the bearing of point B from point A .

..... [1]

- 7 Work out the value of $\frac{mk^3}{\sqrt{3}}$ when $m = 4$ and $k = 7$.

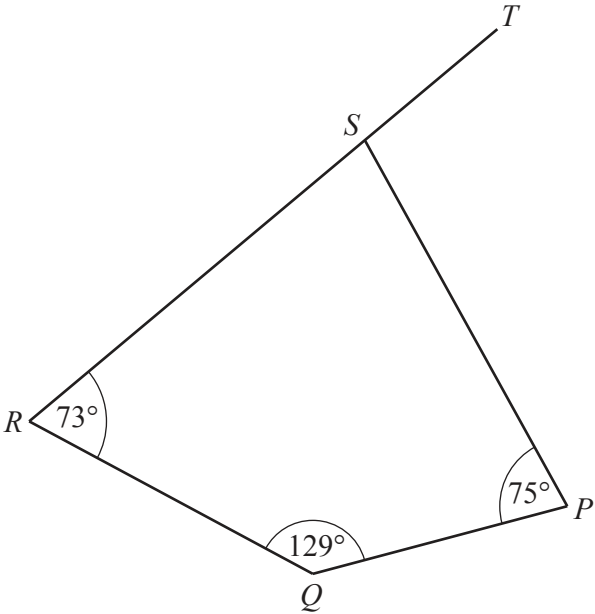
..... [2]

- 8 A box, in the shape of a cuboid, has volume 357 cm^3 .
It has a length of 8.5 cm and a width of 6 cm .

Calculate the height of the box.

..... cm [2]

9



NOT TO
SCALE

PQRS is a quadrilateral.
RST is a straight line.

Find angle *PST*.

Angle *PST* = [2]

10 These are the masses, in kg, of 12 parcels.

0.3 0.4 1.2 0.8 1.1 2.1 1.7 1.8 1.2 2.3 0.7 1.1

(a) Complete the stem-and-leaf diagram for the 12 parcels.

0	3 4
1	
2	

Key: 0 | 3 represents 0.3 kg

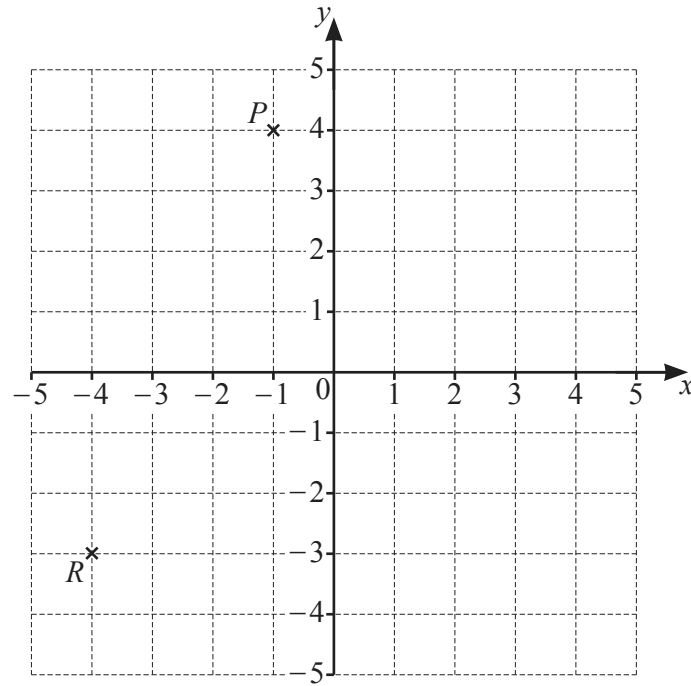
[2]

(b) Find the median.

..... kg [1]

5

11 The grid shows point P and point R .



(a) Write down the coordinates of point P .

(..... ,) [1]

(b) $\overrightarrow{PQ} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$

Mark point Q on the grid.

[1]

(c) Find $\overrightarrow{QR}$.

$\overrightarrow{QR} = \begin{pmatrix} \\ \end{pmatrix}$ [1]

(d) Complete this statement.

$\overrightarrow{PQ} + \overrightarrow{QR} = \underline{\hspace{2cm}}$

[1]

12 Simplify.

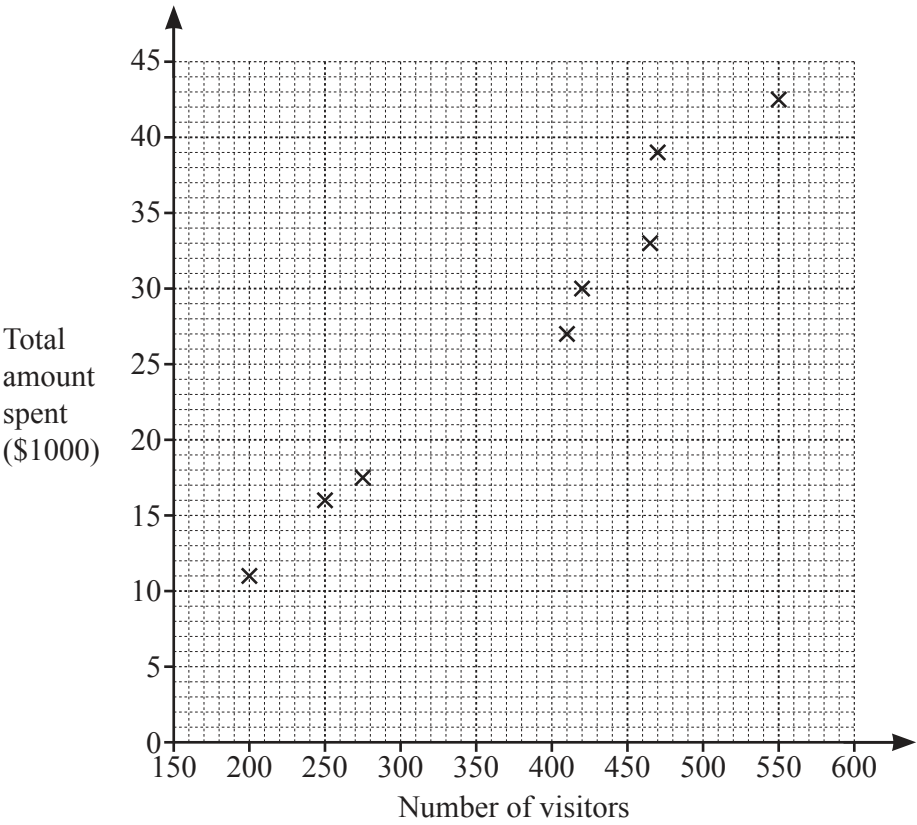
(a) $y^3 \div y^5$

..... [1]

(b) $7x^0$

..... [1]

- 13 The scatter diagram shows the number of visitors and the total amount spent, in thousands of dollars, at a zoo on each of eight days.



- (a) On one of the eight days there are 410 visitors.

Find the total amount spent by visitors during this day.

\$ [1]

- (b) Information for the ninth day is shown in the table.

Number of visitors	175
Total amount spent (\$1000)	9

Plot this information on the scatter diagram. [1]

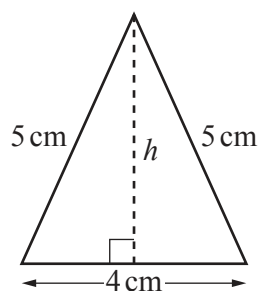
- (c) Draw a line of best fit on the scatter diagram. [1]

- (d) On the tenth day the total amount spent is \$22 000.

Estimate the number of visitors on this day.

..... [1]

14

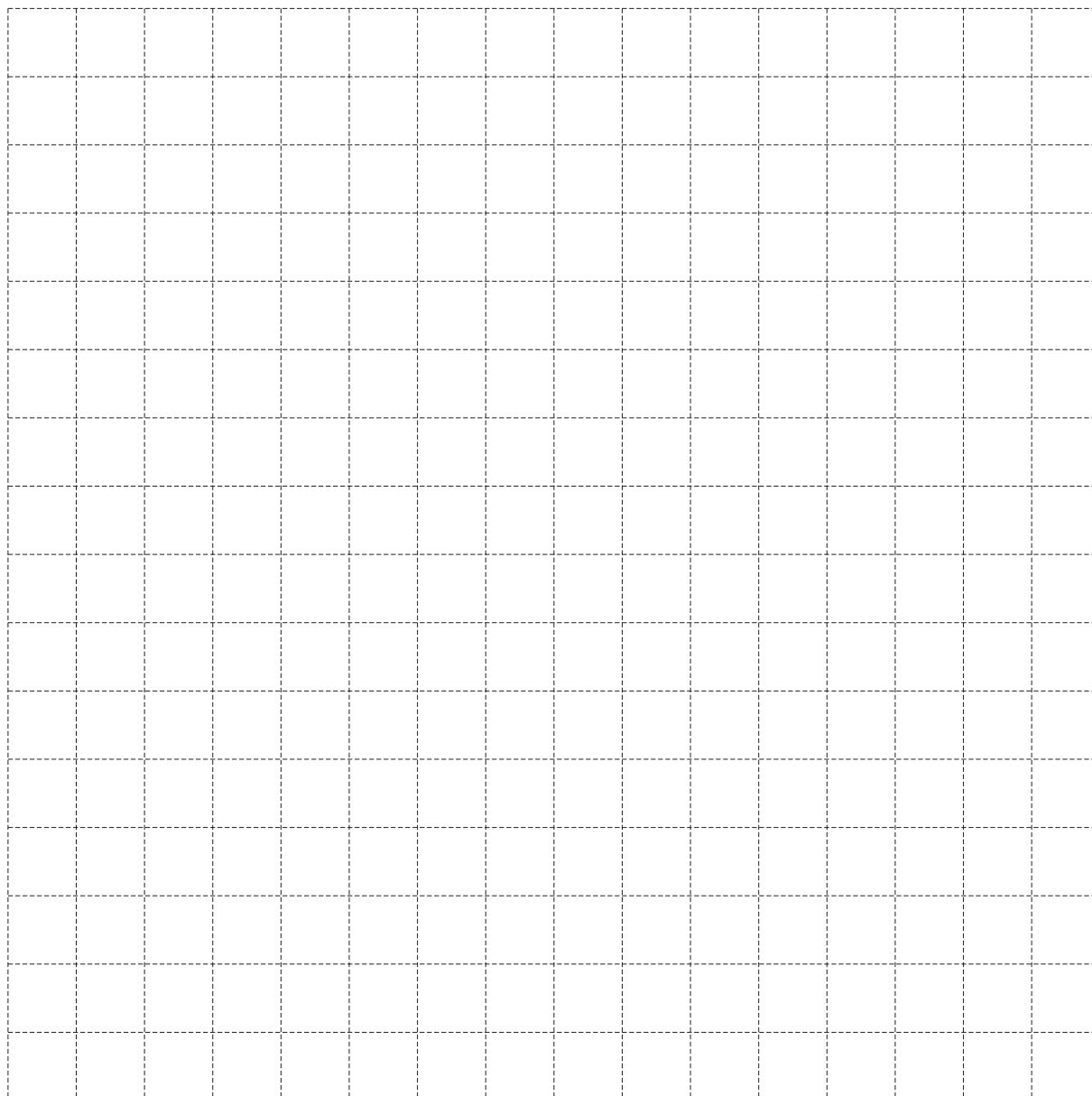
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- (a) Calculate the height, h , of the triangle.

$h =$ cm [3]

- (b) The triangle is one face of a square-based pyramid.

On the 1 cm^2 grid, draw a net of this pyramid.



- 15 Factorise completely.

$$18px - 27p$$

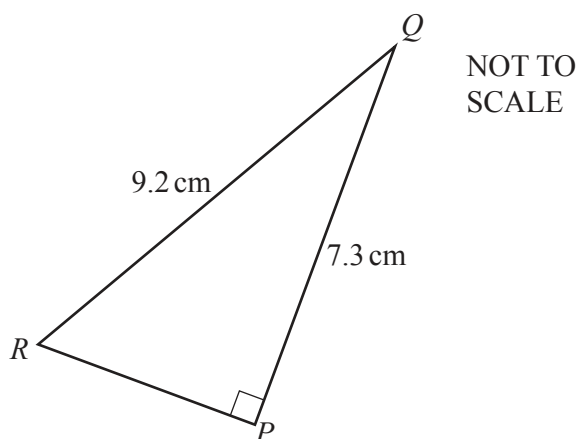
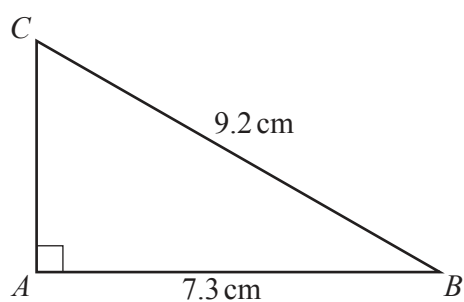
..... [2]

- 16 The n th term of a sequence is $n^2 - 1$.

Find the first three terms of this sequence.

.....,, [2]

17



The diagram shows two right-angled triangles, ABC and PQR .

- (a) Complete this statement with a geometrical term.

Triangle ABC is to triangle PQR . [1]

- (b) Calculate angle ABC .

Angle $ABC =$ [2]

9

- 18 Find the lowest common multiple (LCM) of 32 and 40.

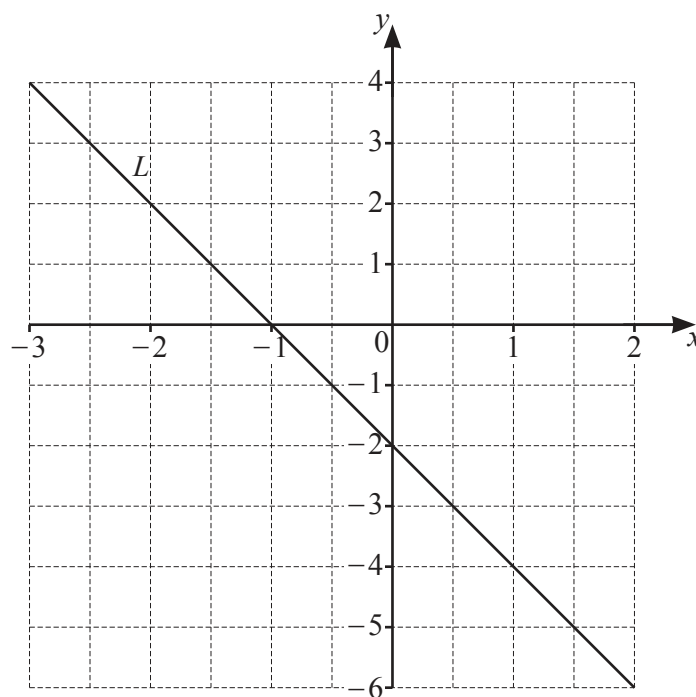
..... [2]

- 19 Joe thinks of a number, n , trebles it, and subtracts 5.
The result is 22.

Write this as an equation in terms of n , and solve the equation.

 $n =$ [3]

20



Find the gradient of line L .

..... [2]

10

- 21 Dominic asks 30 students in his class if they are right-handed or left-handed.
7 students are left-handed.

Work out the expected number of left-handed students in the whole school of 960 students.

..... [2]

- 22 **Without using a calculator**, work out $4\frac{1}{6} - 1\frac{7}{8}$.

You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

- 23 Solve the simultaneous equations.
You must show all your working.

$$4x - 3y = 26$$

$$5x + 6y = 13$$

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

$$y = \dots\dots\dots [3]$$

11

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