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MATHEMATICS**0580/11**

Paper 1 (Core)

May/June 2020**1 hour**

You must answer on the question paper.

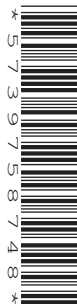
You will need: Geometrical instruments

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. Blank pages are indicated.

2

- 1 Write down the value of the 7 in the number 570 296.

..... [1]

- 2 The table shows the temperature, in °C, at midday on the first day of each month during one year in a city.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
9	11	15	19	23.5	27.5	29	28	25	19.5	14.5	10

Calculate the mean of these temperatures.

..... °C [2]

- 3 Write these numbers in order, starting with the smallest.

$$\frac{13}{201}$$

$$5.6\%$$

$$0.065$$

$$\frac{5}{89}$$

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

3

4 (a)



On each shape draw all the lines of symmetry.

[3]

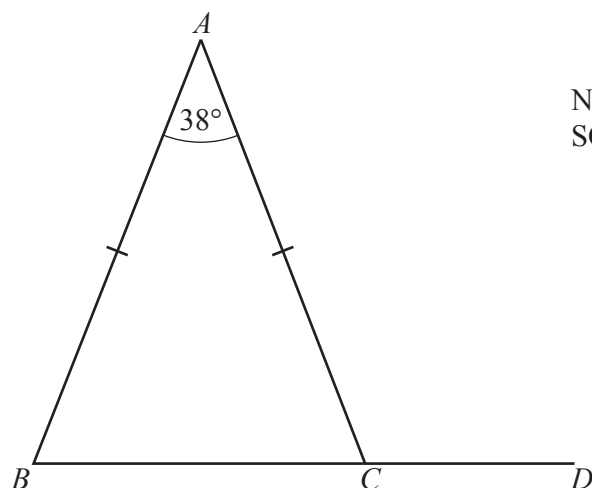
(b)



Write down the order of rotational symmetry of this shape.

..... [1]

5



NOT TO
SCALE

In the triangle ABC , $AB = AC$ and angle $BAC = 38^\circ$.
 BCD is a straight line.

Work out angle ACD .

Angle $ACD =$ [3]

4

- 6 (a) Diego flies from Madrid to Buenos Aires.
His flight leaves at 20 55 and arrives at 03 50 local time.
The local time in Buenos Aires is 5 hours behind the local time in Madrid.

Work out, in hours and minutes, the time the flight takes.

..... h min [2]

- (b) Diego changes 200 euros into Argentine Peso.
The exchange rate is 1 euro = 24.8 pesos.

Work out how many pesos he receives.

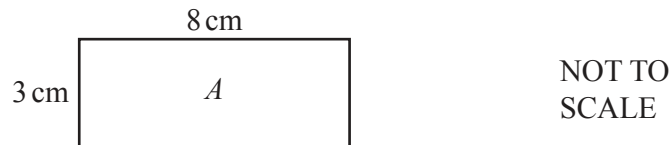
..... pesos [1]

- (c) The distance between Madrid and Buenos Aires is 10 050 km.
Diego's return flight takes 12 hours 30 minutes.

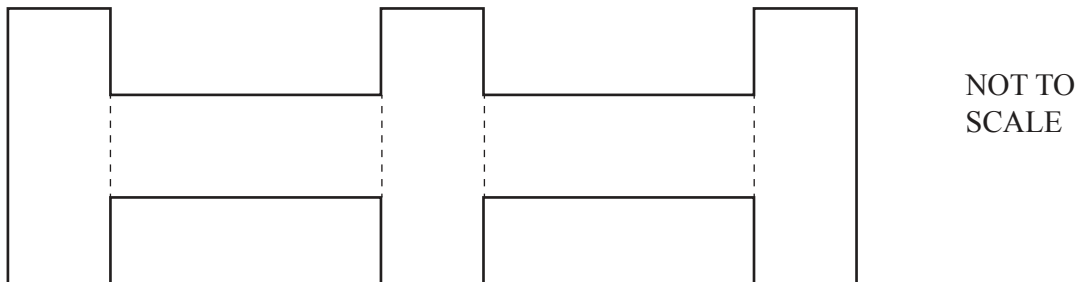
Calculate the average speed, in km/h, for the return flight.

..... km/h [1]

- 7 Rectangle A measures 3 cm by 8 cm.



Five rectangles congruent to A are joined to make a shape.



Work out the perimeter of this shape.

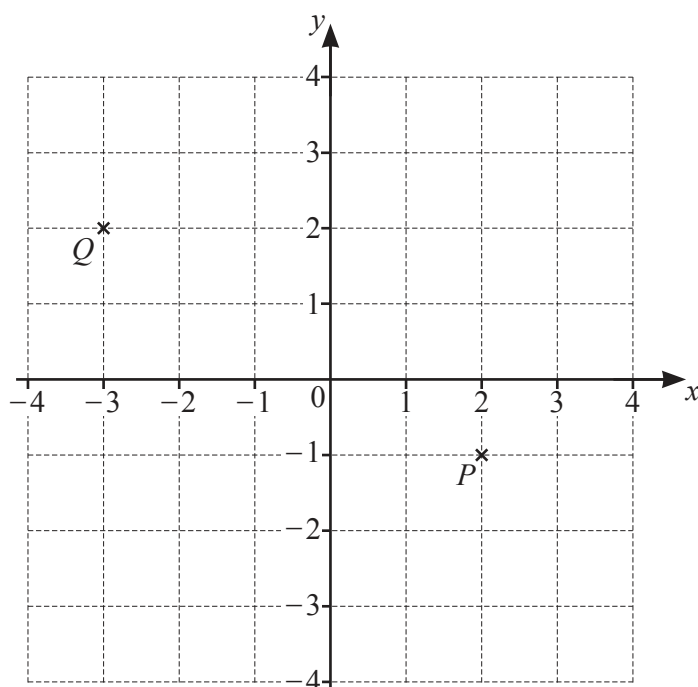
..... cm [2]

5

- 8 Find the highest **odd** number that is a factor of 60 and a factor of 90.

..... [1]

9



- (a) Write $\overrightarrow{PQ}$ as a column vector.

$\begin{pmatrix} \\ \end{pmatrix}$ [1]

- (b) Write $3\overrightarrow{PQ}$ as a single vector.

$\begin{pmatrix} \\ \end{pmatrix}$ [1]

- 10 Work out the size of one interior angle of a regular 9-sided polygon.

..... [2]

6

- 11** A cone has radius 4.5 cm and height 10.4 cm.

Calculate, in terms of π , the volume of the cone.

[The volume, V , of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$.]

..... cm^3 [2]

- 12 (a)** The n th term of a sequence is $60 - 8n$.

Find the largest number in this sequence.

..... [1]

- (b)** Here are the first five terms of a different sequence.

12 19 26 33 40

Find an expression for the n th term of this sequence.

..... [2]

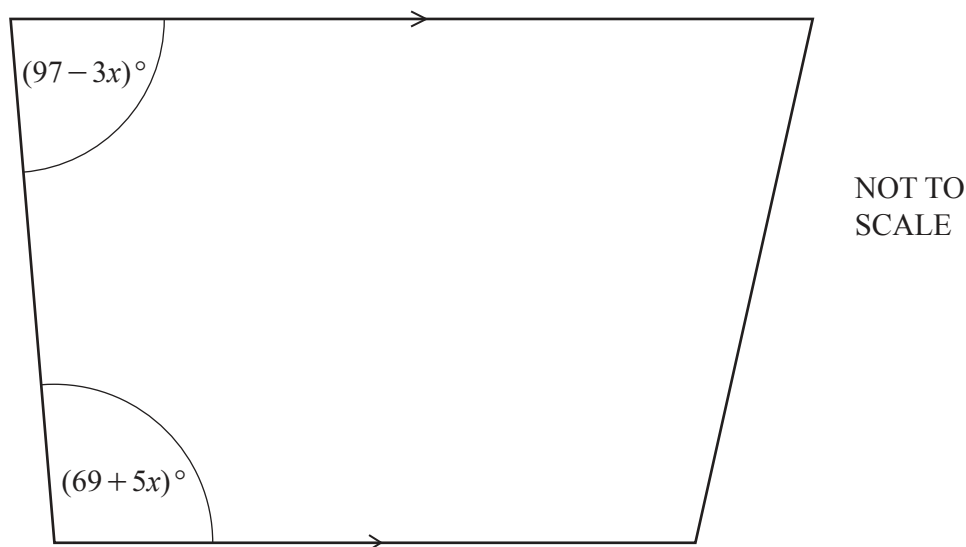
- 13** Factorise completely.

$$21a^2 + 28ab$$

..... [2]

7

- 14 The diagram shows a trapezium.



Work out the value of x .

$x =$ [3]

- 15 Simplify.

$$4p^5q^3 \times p^2q^{-4}$$

..... [2]

- 16 (a) Write the number 0.0605 in standard form.

..... [1]

- (b) Calculate $(1.63 \times 10^{12}) \times (2.47 \times 10^{-1})$.
Give your answer in standard form.

..... [1]

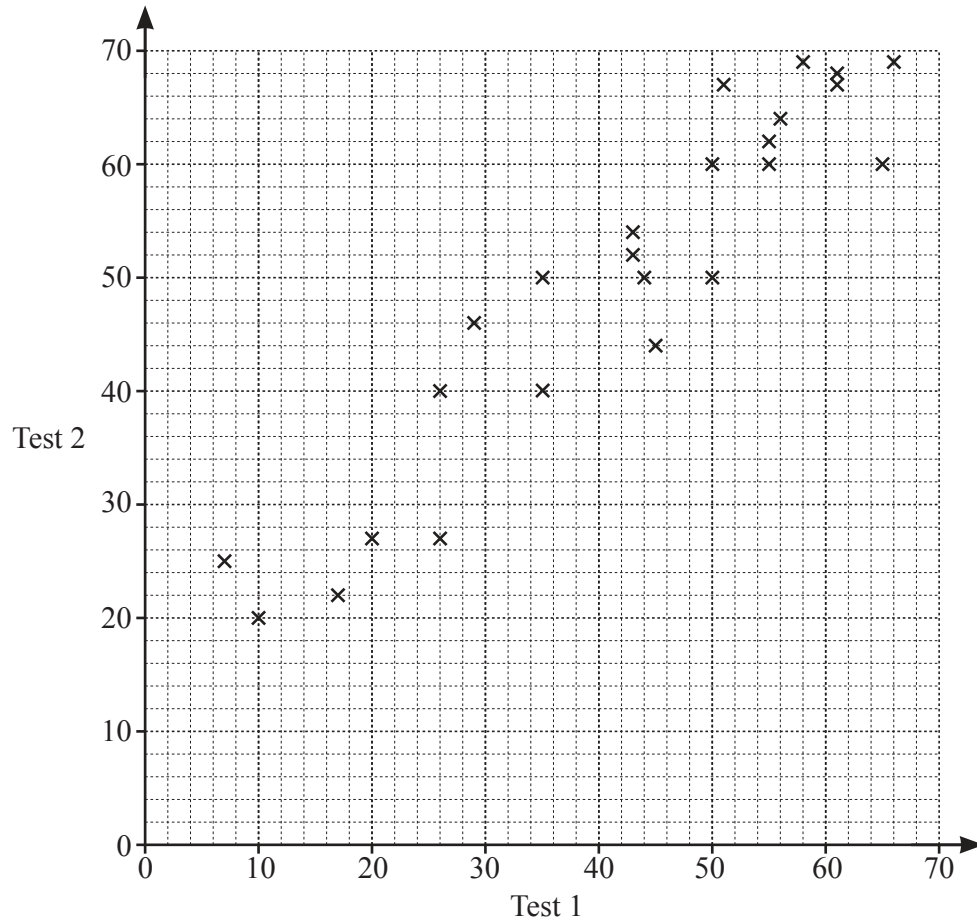
17 Expand and simplify.

$$(x-5)(x-7)$$

..... [2]

18 Mrs Salaman gives her class two mathematics tests.

The scatter diagram shows information about the marks each student scored.



(a) Write down the highest mark scored on test 1.

..... [1]

(b) Write down the type of correlation shown in the scatter diagram.

..... [1]

(c) Draw a line of best fit on the scatter diagram.

[1]

(d) Hamish scored a mark of 40 on test 1.
He was absent for test 2.

Use your line of best fit to find an estimate for his mark on test 2.

..... [1]

9

- 19 The length, l cm, of a sheet of paper is 29.7 cm, correct to the nearest millimetre.

Complete this statement about the value of l .

..... $\leq l <$ [2]

- 20 **Without using a calculator**, work out $\left(2\frac{1}{3} - \frac{7}{8}\right) \times \frac{6}{25}$.

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

..... [4]

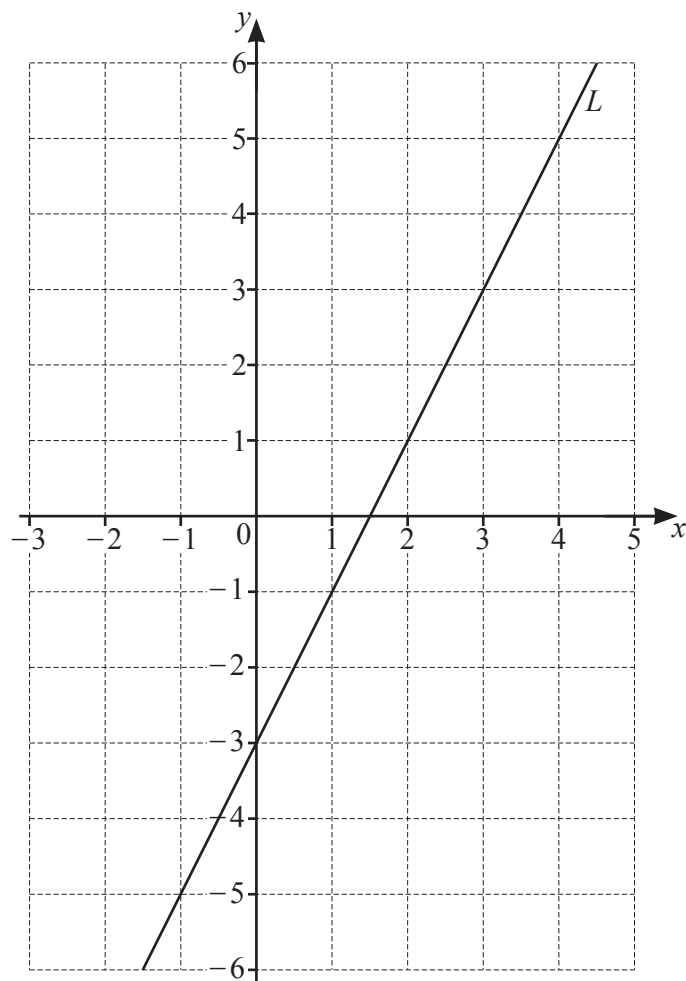
- 21 Lucia invests \$5000 at a rate of 4.5% per year compound interest.

Calculate the value of her investment at the end of 7 years.

\$ [2]

10

22



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

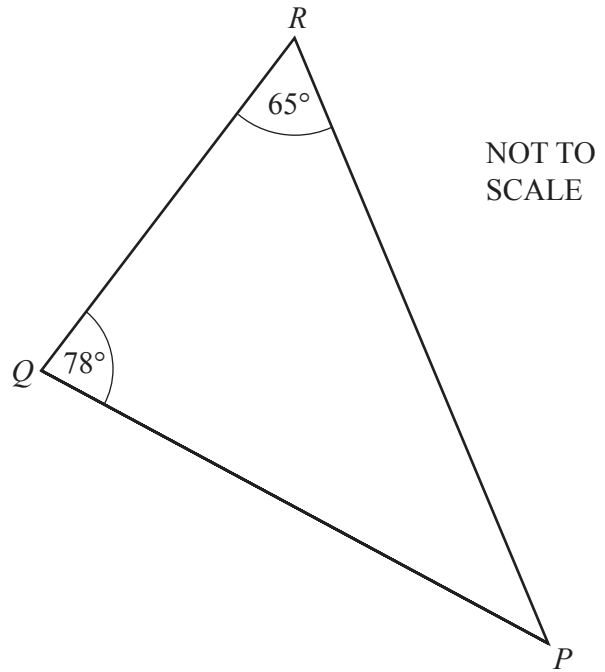
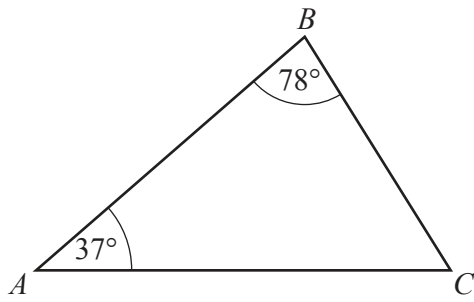
$y =$ [2]

- (b) On the grid, draw a line that is perpendicular to line L .

[1]

11

23



Explain why triangle ABC is similar to triangle PQR .

.....

.....

[2]

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