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MATHEMATICS

0580/01

Paper 1 (Core)

For examination from 2020

SPECIMEN PAPER

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.

- 1 Write seventeen thousand and seventeen in figures.

..... [1]

- 2 Find the number of minutes from 17 58 to 7.13 pm.

..... min [1]

- 3 The number of cars parked in a car park at 9 am is recorded for 10 days.

124 130 129 116 132 120 127 107 118 114

Complete the stem-and-leaf diagram.



Key: 12|3 represents 123 cars

[2]

- 4 (a) Write 6789 correct to the nearest 100.

..... [1]

- (b) Write 6789 correct to 3 significant figures.

..... [1]

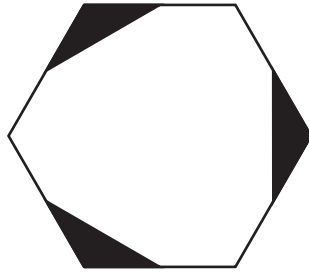
- 5 A cuboid measures 6 cm by 3 cm by 2 cm.

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



[3]

6



- (a) Write down the order of rotational symmetry of the shape.

..... [1]

- (b) Draw all the lines of symmetry on the shape.

[1]

- 7 (a) Write down a fraction which is equivalent to $\frac{3}{5}$.

..... [1]

- (b) Write down the reciprocal of 7.

..... [1]

- 8 A cube has a volume of 1000 cm^3 .

Calculate the surface area of the cube.

..... cm^2 [3]

- 9 Dan either walks or cycles to school.

The probability that he cycles to school is $\frac{1}{5}$.

- (a) Write down the probability that Dan walks to school.

..... [1]

- (b) There are 200 days in a school year.

Work out the expected number of days that Dan cycles to school in a school year.

..... [1]

- 10** Using a ruler and pair of compasses only, construct a triangle with sides 5 cm, 8 cm and 10 cm. Leave in your construction arcs.

[2]

- 11** Here is a list of numbers.

Put a ring around the number with the largest value.

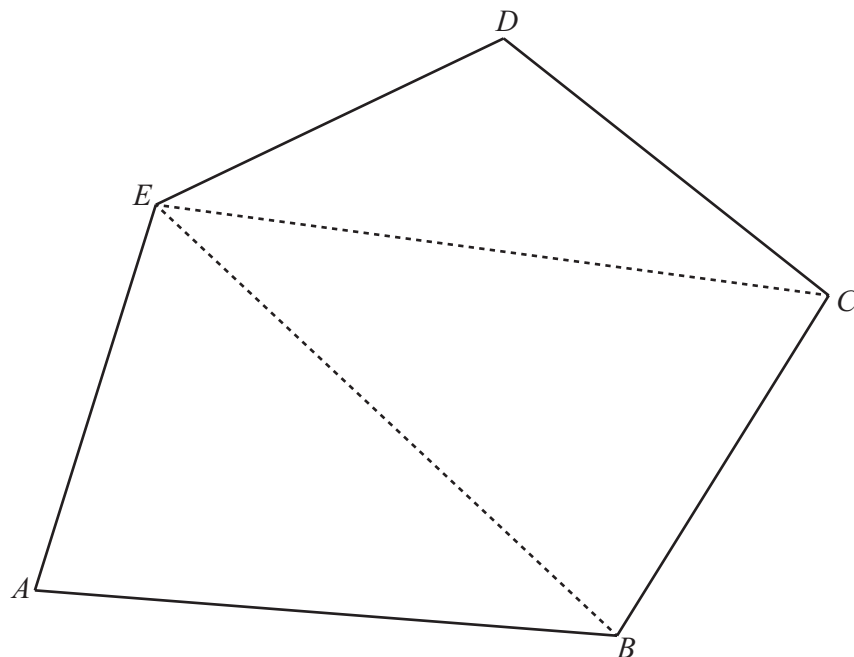
0.3030 $\frac{1}{3}$ 0.0330 $\frac{3}{10}$ 33% [1]

- 12** Complete these statements.

(a) 6 m is the same length as mm. [1]

(b) 7000 cm² is the same area as m². [1]

13



$ABCDE$ is a pentagon.

Explain why the diagram shows that the sum of the interior angles of a pentagon is 540° .
Do not measure any angles.

..... [1]

14 Simplify $x^3y^4 \times x^5y^3$.

..... [2]

15 Write 2020 in standard form.

..... [1]

16 Kim knows that one angle of an isosceles triangle is 48° .
He says that one of the other angles **must** be 66° .

Explain why Kim is wrong.

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

- 17 Explain why $\sqrt{3}$ is irrational.

..... [1]

- 18 The mass, m kilograms, of a horse is 429 kg, correct to the nearest kilogram.

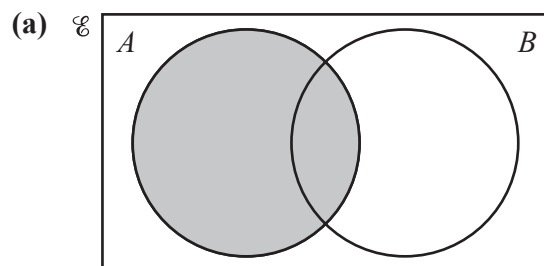
Complete this statement about the value of m .

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

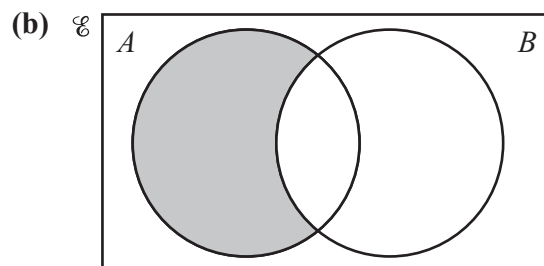
- 19 Rearrange the formula $5w - 3y + 7 = 0$ to make w the subject.

$w =$ [2]

- 20 Use set notation to describe the shaded regions in each Venn diagram.



..... [1]



..... [1]

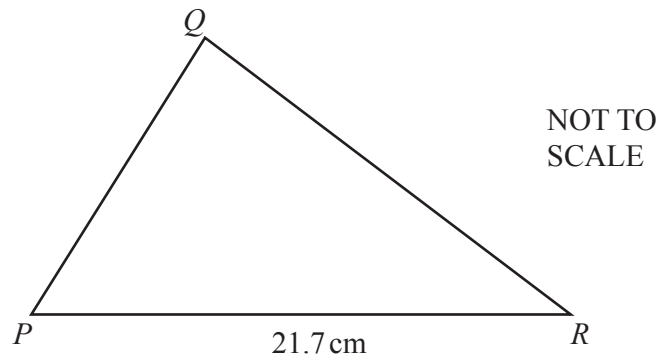
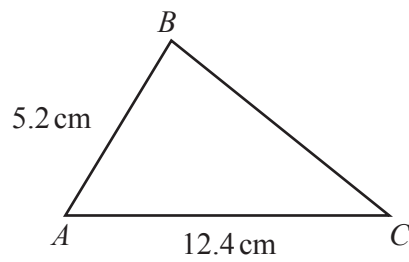
- 21 The radius of a sphere is 5.2 cm.

Work out the surface area of this sphere.

[The surface area, A , of a sphere with radius r is $A = 4\pi r^2$.]

.....cm² [2]

- 22 Triangle ABC is similar to triangle PQR .



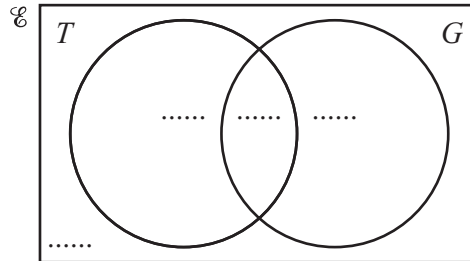
Find PQ .

$PQ =$ cm [2]

- 23 $\mathcal{E} = \{\text{children who go to the park}\}$
 $T = \{\text{children who play tennis}\}$
 $G = \{\text{children who play golf}\}$

120 children go to the park.
 50 play tennis.
 75 play golf.
 25 do not play tennis or golf.

- (a) Complete the Venn diagram.



[2]

- (b) Find $n(T \cap G)$.

..... [1]

- 24 (a) Factorise completely $18x - 24$.

..... [1]

- (b) Simplify $(w^5)^4$.

..... [1]

- 25** Without using your calculator, work out $1\frac{7}{12} + \frac{13}{20}$.

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

..... [3]

- 26** By rounding each number correct to 1 significant figure, estimate the value of $\sqrt{\frac{90\,006}{10.01^2}}$.

You must show all your working.

..... [2]

- 27 (a) The n th term of a sequence is $n^3 - 5$.

Write down the first three terms of this sequence.

.....,, [2]

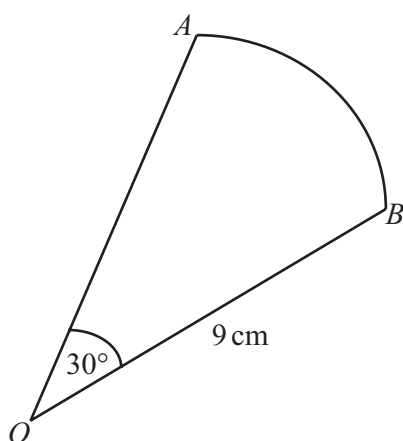
- (b) Here is a sequence of numbers.

3, 6, 11, 18, 27, ...

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

..... [2]

28



NOT TO
SCALE

OAB is a sector of a circle with radius 9 cm and centre O .
The angle at O is 30° .

Calculate the area of this sector.
Give your answer in terms of π .

..... cm^2 [2]

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