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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 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.

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1 Write seventeen thousand and sixty-seven in figures.

. [1]

2 Find the number of minutes from 7.38 am to 8.37 pm.

. min [1]

3 The number of cars parked in a car park at 9 am is recorded for 30 days.

4 0 2 1 6 3 2 7 0 1 8 1 4

Complete the stem-and-leaf diagram.

10 |.....

11 |.....

12 |.....

13 |.....

Key: 12|3 represents 123 cars

[2]

4 **(a)** Write 8.6 correct to the nearest 10

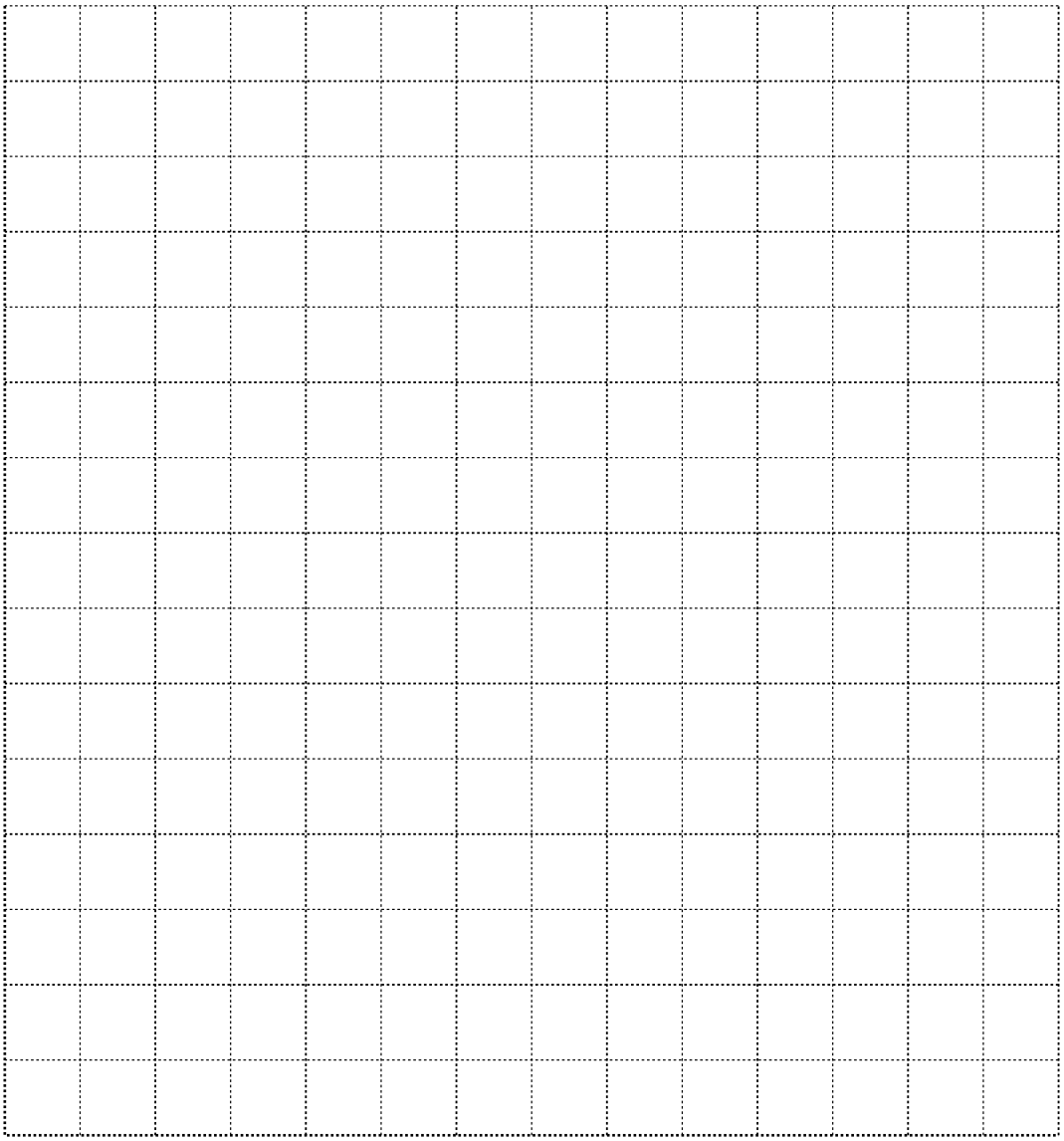
. [1]

(b) Write 8.6 correct to 3 significant figures.

. [1]

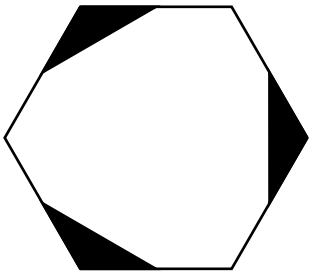
5 A cuboid measures 6 cm by 3 cm by 2 cm.

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 10 cm^3.

Calculate the surface area of the cube.

. cm^2 [3]

9 Daniel either walks or cycles to school.

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

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

. [1]

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

Work out the expected number of days that Daniel 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 lines.

[2]

11 Here is a list of numbers.

Put a ring round the number with the largest value.

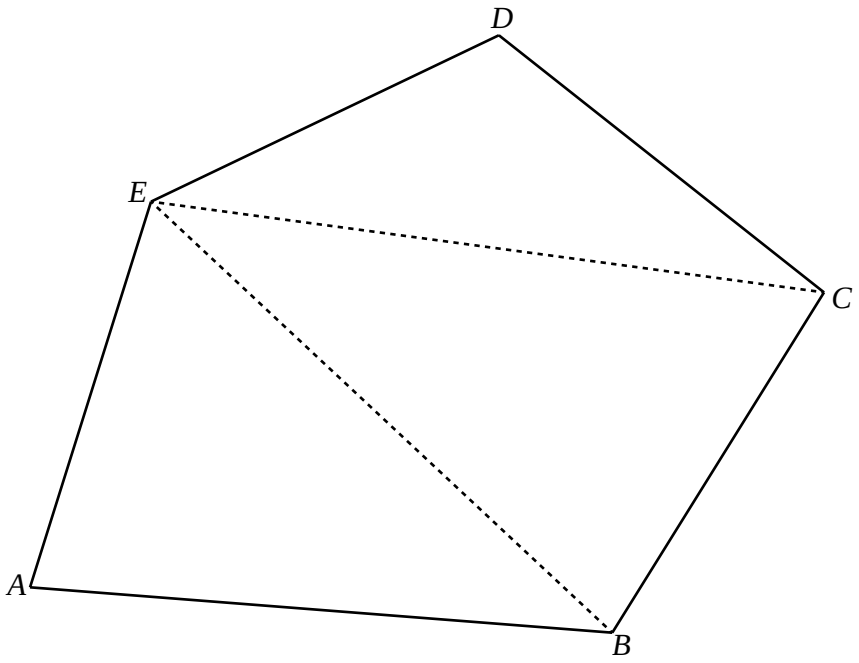
0.9 $\frac{1}{3}$ 0.8 $\frac{3}{10}$ 35% [1]

12 Complete these statements.

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

(b) 10 000 cm^2 is the same area as . . . . . m^2. [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 2 000 in standard form.

. . [1]

16 Kim knows that one angle of an isosceles triangle is 80°.
He says that one of the other angles **must** be 60°.

Explain why Kim is wrong.

. . .

. . . [2]

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

. . . [1]

18 The mass, m kilograms, of a box is 2 kg correct to the nearest kilogram.

Complete this statement about the value of m.

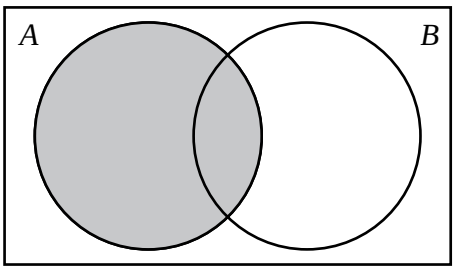
. $\leqslant m <$. [2]

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

$w =$ . . [2]

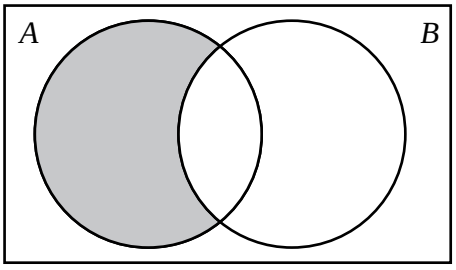
20 Use set notation to describe the shaded region in each Venn diagram.

(a) $\mathscr{E}$



. . [1]

(b) $\mathscr{E}$



. . [1]

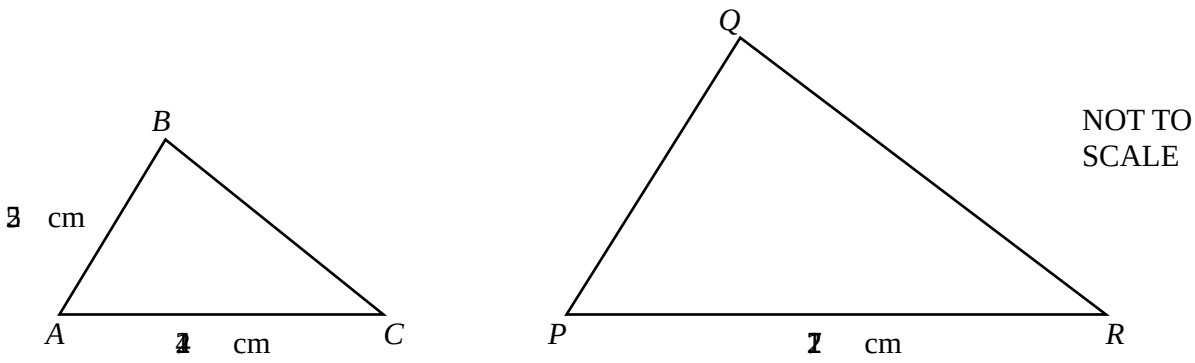
21 The radius of a sphere is 3 cm.

Work out the surface area of this sphere.

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

. cm^2 [2]

22 Triangle ABC is similar to triangle PQR.



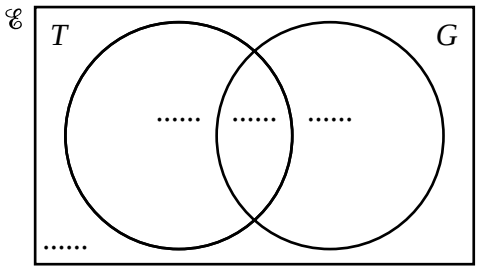
Find PQ.

PQ = . cm [2]

23 $\mathscr{E}$ = {children watching TV in the park}
T = {children who play tennis}
G = {children who play golf}

There are 20 children watching TV in the park.
There are 6 who play tennis.
There are 7 who play golf.
There are 2 who play tennis and golf.

(a) Complete the Venn diagram.



[2]

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

. [1]

24 **(a)** Factorise completely $x^3 - 4x$.

. [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 nth term of a sequence is $n^3 - 5$

Write down the first three terms of this sequence.

.....[2]

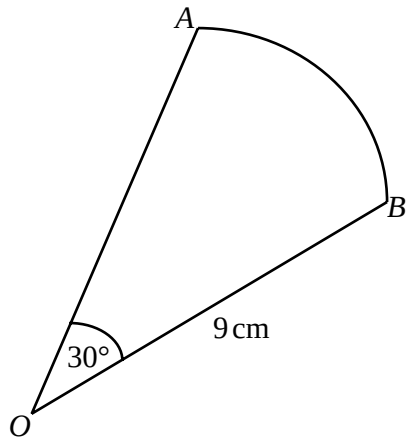
(b) Here is a sequence of numbers.

3, 6, 11, 18, 27, …

Find an expression for the nth 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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