OCR
Oxford Cambridge and RSA

Wednesday 8 November 2023 – Morning
GCSE (9–1) Mathematics
J560/01 Paper 1 (Foundation Tier)

Time allowed: 1 hour 30 minutes

F

You must have:
- the Formulae Sheet for Foundation Tier (inside this document)

You can use:
- a scientific or graphical calculator
- geometrical instruments
- tracing paper

Please write clearly in black ink. **Do not write in the barcodes.**

Centre number

Candidate number

First name(s)

Last name

INSTRUCTIONS
- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.
- Answer **all** the questions.
- Where appropriate, your answer should be supported with working. Marks might be given for using a correct method, even if your answer is wrong.
- Use the π button on your calculator or take π to be 3.142 unless the question says something different.
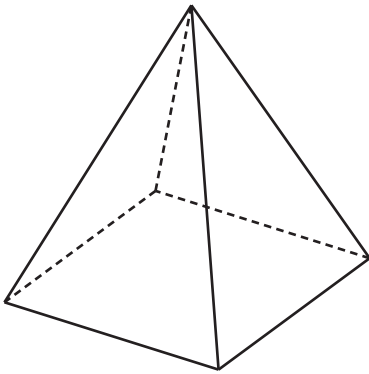
INFORMATION
- The total mark for this paper is **100**.
- The marks for each question are shown in brackets **[ ]**.
- This document has **24** pages.

ADVICE
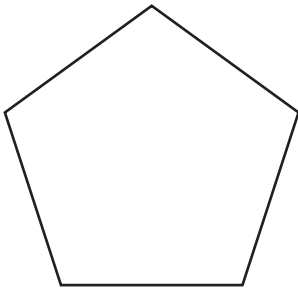- Read each question carefully before you start your answer.

OCR is an exempt Charity

Turn over

1 (a) Write down the mathematical name of this solid.
Choose from the list of names in the box.

cone	cube	cuboid	cylinder
	prism	pyramid	sphere

(a) .... **[1]**

(b) Write down the mathematical name of this polygon.

(b) .... **[1]**

(c) On the grid below, sketch a quadrilateral with these properties.

- All angles are equal

and
- the diagonals are **not** at right angles to each other.

[1]

2 **(a)** Round 3648 to the **nearest hundred**.

(a) .... **[1]**

(b) Round £3.2875 to the **nearest penny**.

(b) £ .... **[1]**

3 **(a)** What fraction of this shape is shaded?

(a) .... **[1]**

(b) The diagram below is made up of 100 small squares.
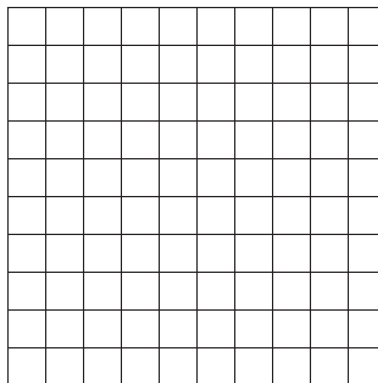
Shade 3% of the diagram. **[1]**

4 (a) Write down the **three** factors of 25.

(a) .... , ... , and .... **[2]**

(b) Write down a square number between 40 and 70.

(b) .... **[1]**

5 Find the number that is halfway between 4.2 and 6.

.... **[2]**

6 Four lines meet at a point.

Not to scale

39°

a

125°
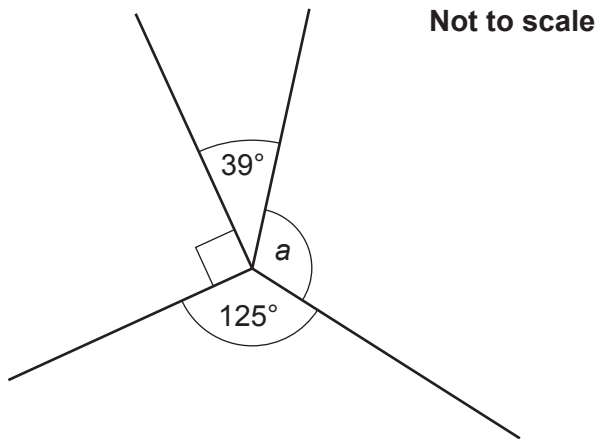
Work out the size of angle *a*.

a = ...° **[2]**

7 A painter mixes red paint and yellow paint in the ratio 2 : 3.
They make a total of 1.5 litres of paint.

Work out how much red paint they use.
Give your answer in millilitres.

.... ml **[3]**

Turn over

8 The diagram shows a cuboid with dimensions 12 cm, 5 cm and x cm.

12 cm

Not to scale

5 cm

x cm
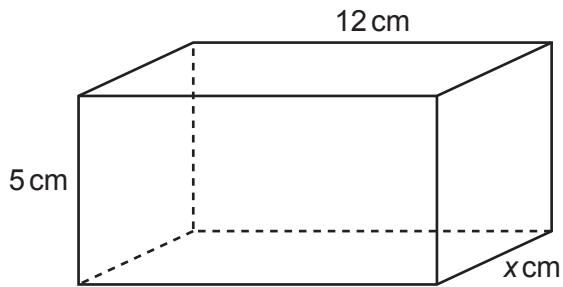
The volume of the cuboid is 240 cm^3.

Find the value of x.

$x =$ .... **[3]**

9 Heidi and Yoshi compete in the same car race.
Heidi completes the race in 6 hours.
Heidi's average speed was 50 miles per hour.
Yoshi's average speed was 48 miles per hour.

Calculate how long it took Yoshi to complete the race.
Give your answer in hours and minutes.

.... hours .... minutes **[4]**

10 Alex and Emma use this recipe to make scones.
The recipe shows the ingredients needed to make **16** scones.

Ingredients to make 16 scones	
400 g	flour
50 g	sugar
100 g	butter
80 g	sultanas
70 ml	milk
2	eggs

(a) Alex makes **24** scones.

He uses a tablespoon to measure the amount of milk he needs.
The size of a tablespoon is 15 ml.

How many tablespoons of milk should Alex use to make **24** scones?

(a) .... **[3]**

(b) Emma has 1 kg of flour and 240 g of sultanas.
She has lots of all of the other ingredients.

Work out the maximum number of scones that Emma can make.
You must show your working.

(b) .... **[4]**

11 140 people are asked if they have a bicycle (B) or a car (C).

- 22 people only have a bicycle.
- 72 people only have a car.
- 29 people have both a bicycle and a car.

(a) Show this information on the Venn diagram.
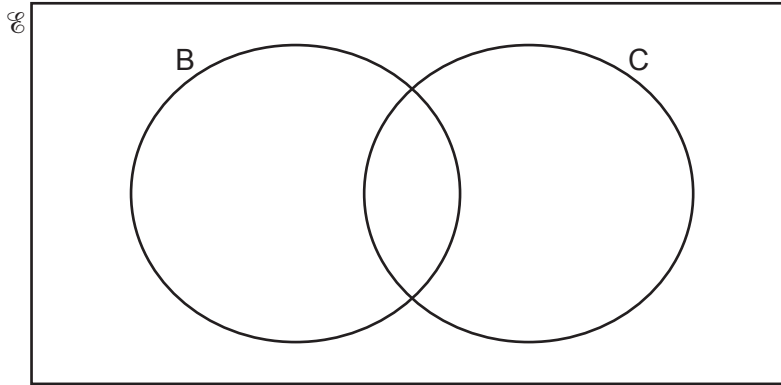
[1]

(b) (i) How many people do not have a bicycle or a car?

(b)(i) .... [1]

(ii) Write your answer in the correct place on the Venn diagram. [1]

(c) One of the 140 people is chosen at random.

Work out the probability they have a car.

(c) .... [2]

12 The costs to hire a motorhome are shown below.

```
Motorhome hire

First day              £130
Each extra day         £ 90
Each mile travelled    60p
```

Finley hired a motorhome and travelled 560 miles.
The total cost of hiring the motorhome was £916.

Calculate how many days Finley hired the motorhome for.
You must show your working.

.... days **[5]**

Turn over

13 A climber is in a competition.

Here are their scores after two events.

Event	Score	
1	24	out of 30 points
2	32	out of 38 points
3		out of 52 points

Event 3 is out of 52 points.

The climber's overall score is found by adding the three scores together.

Find the score the climber needs in event 3 to achieve 85% of the total points.

.... **[4]**

14 For each graph below, select its possible equation from this list.

A $y = {}^-3$ **B** $y = x$ **C** $y = x + 1$

D $y = x^2$ **E** $x = {}^-3$ **F** $y = x^3$

Write the letter of the equation beneath each graph.

....
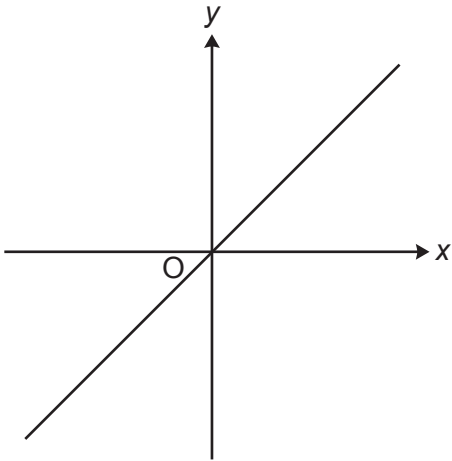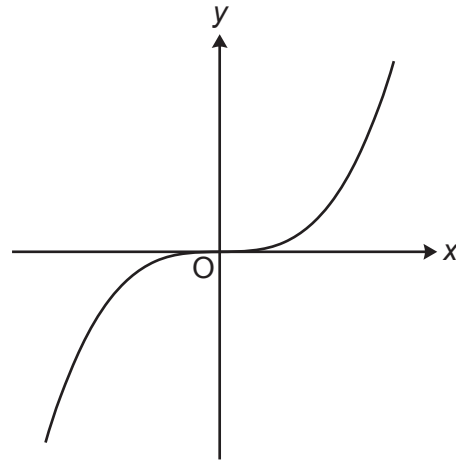
[2]

15 Here are two functions.

Function A: Input ⟶ ×5 ⟶ +4 ⟶ Output

Function B: Input ⟶ ×p ⟶ −8 ⟶ Output
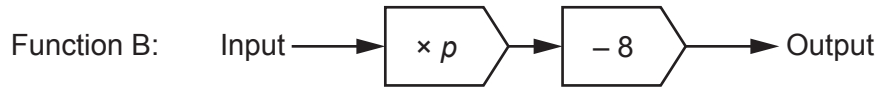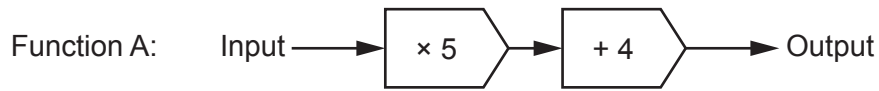
When the input of each function is 6, the output of Function A is equal to the output of Function B.

Work out the value of p in Function B.

$p =$ .... **[4]**

16 (a) Multiply out.

$$5a(2-a)$$

(a) .... **[2]**

(b) Solve.

$$5x+9>12$$

(b) .... **[2]**

(c) Solve by factorising.

$$x^2+7x+12=0$$

(c) $x =$ .... or $x =$ .... **[3]**

Turn over

17 A prime number is a whole number that has exactly two factors.

(a) Explain why 1 is not a prime number.

....

.... **[1]**

(b) a and b are prime numbers.

Write down the **6** factors of $a^2 b$.

(b) .... **[2]**

18 (a) The table shows the results for a sports club's 'A' team.

Result	Frequency
Win	18
Draw	10
Lose	12
Total	40

Complete a labelled pie chart to show these results.
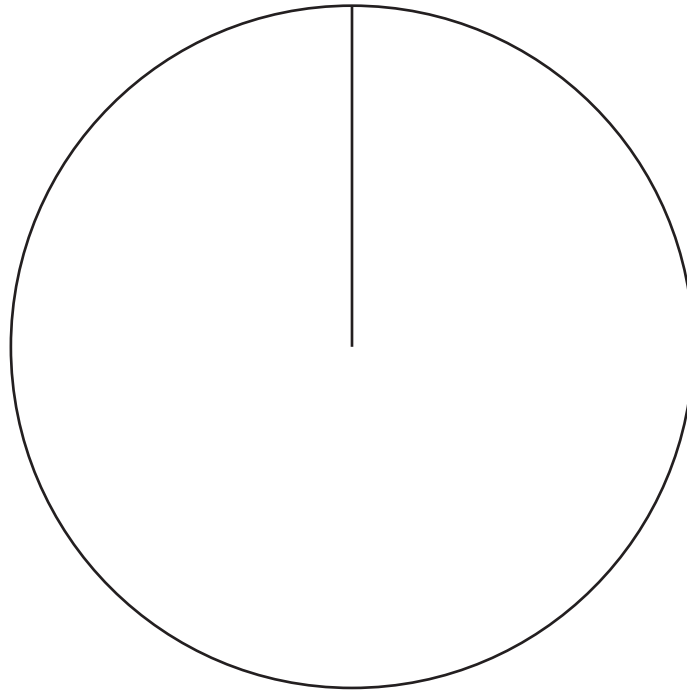
[4]

(b) Here are the results for the sports club's 'B' team and 'C' team.
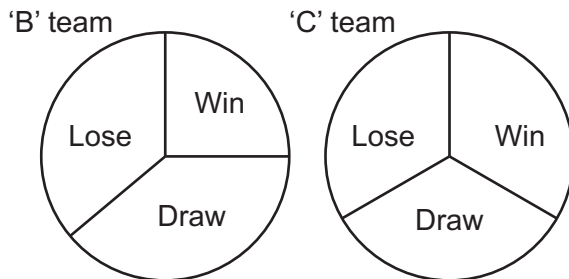
The 'C' team manager says

The pie charts show that the 'C' team won more games than the 'B' team.

Referring to the pie charts, explain why the 'C' team manager may not be correct.

....

.... **[1]**

Turn over

19 The graph shows Taylor's journey from home to an airport.
During the journey Taylor stops for petrol.
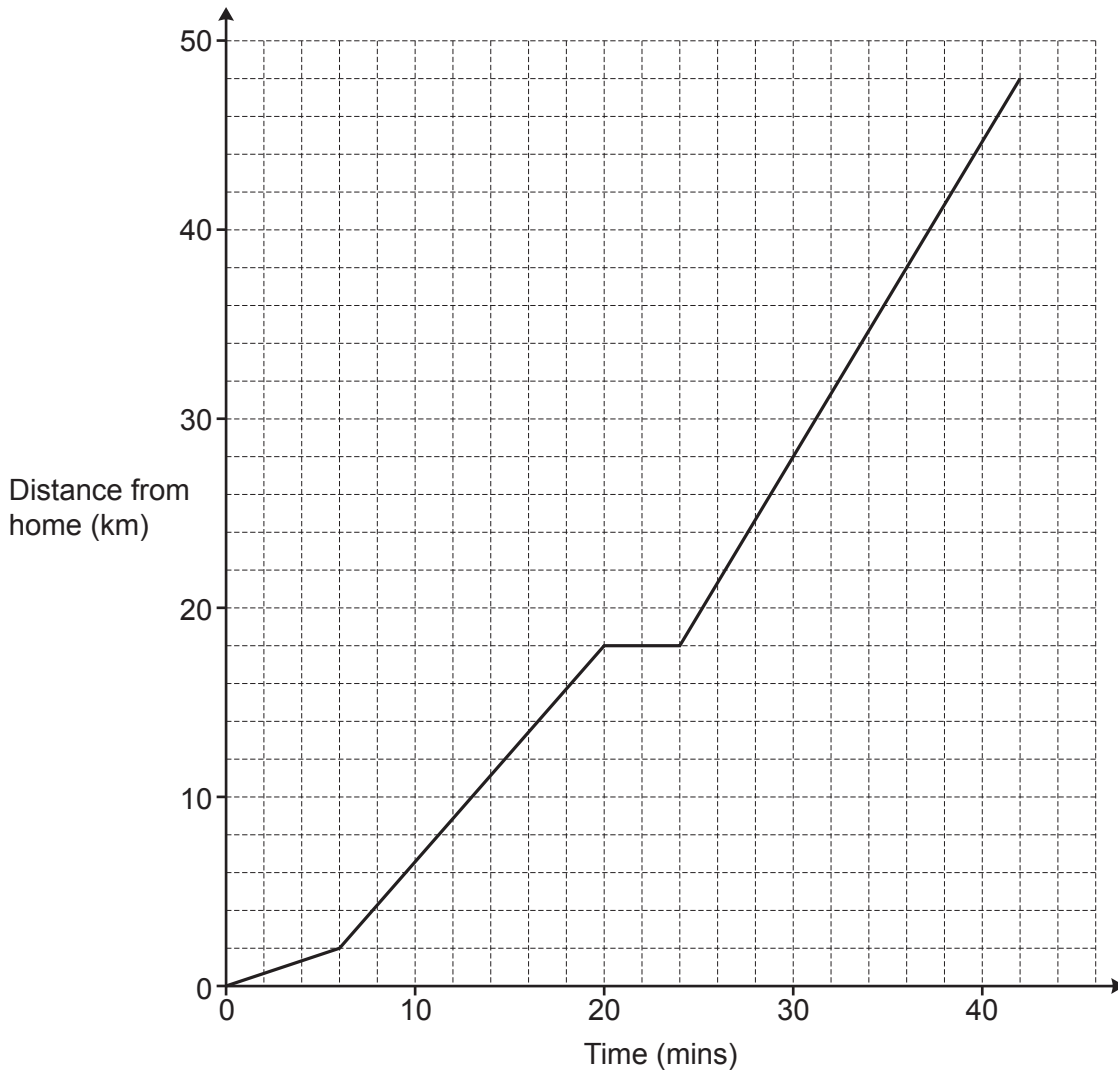
(a) For how long did Taylor stop for petrol?

(a) .... mins **[1]**

(b) Taylor drives the same route back home from the airport at an average speed of 45 km/h.
Taylor leaves the airport at 22:00.

Work out the time when Taylor arrives home.

(b) .... **[4]**

20 (a) Write an expression for the weight, in grams, of an object weighing *x* kilograms.

(a) .... g **[1]**

(b) Write an expression for the area, in m^2, of a garden of area *y* cm^2.

(b) .... m^2 **[1]**

21 (a) A student is using trigonometry to work out an angle, *B*, in a right-angled triangle.

They tell the teacher that $\sin B = \dfrac{5}{4}$.

Explain why this student must be wrong.

....

....

.... **[1]**

(b) Here is a right-angled triangle.

Not to scale

24 cm, *x*°, 40 cm
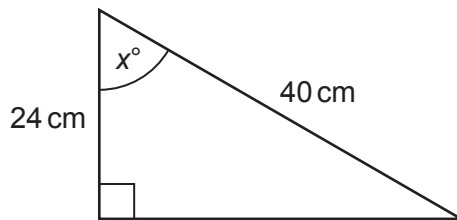
Work out the value of *x*.

x = ... **[3]**

Turn over

22 On a bus route there is a set of traffic lights and a level crossing.
The probability that the bus stops at the traffic lights is 0.7.
The probability that the bus stops at the level crossing is 0.2.

(a) Use the information to complete the tree diagram.

Traffic lights   **Level crossing**

                                            Stops
                                    ....
                          Stops
                  0.7
                                    ....

                                    ....
          ....
                  Does not stop
                                    ....
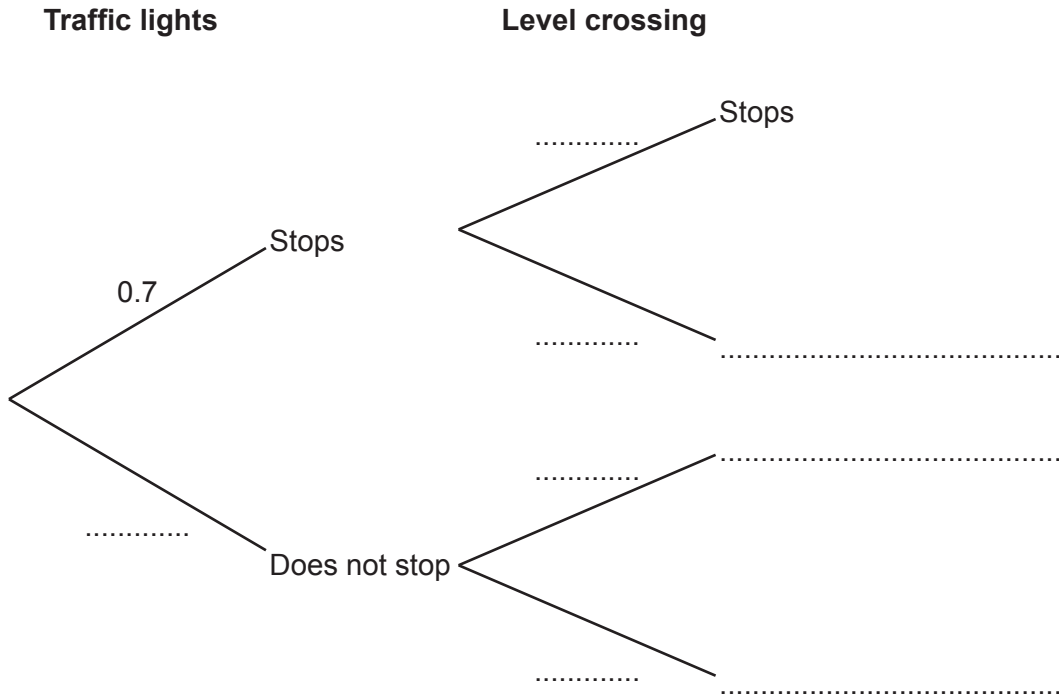
[3]

(b) Find the probability that the bus stops at either the traffic lights or at the level crossing but not both.

(b) .... **[3]**

23 (a) The measurements, in centimetres, of two triangles are shown in the table.

	Side 1	**Side 2**	**Side 3**
Triangle 1	2.5	3.2	4
Triangle 2	7	8.96	11.2

Are the two triangles mathematically similar?
Show how you decide.

.... because ....

.... **[3]**

(b) Are these two triangles definitely congruent?
Give a reason.
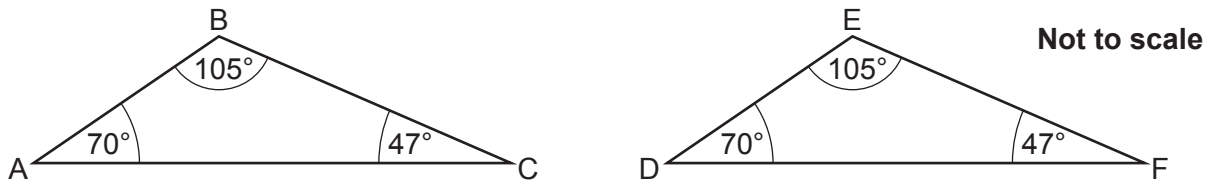
.... because ....

.... **[1]**

24 2 kg of carrots and 5 kg of potatoes cost £6.36.
3 kg of carrots and 2 kg of potatoes cost £5.25.

Find the cost of 1 kg of carrots and the cost of 1 kg of potatoes.
You must show your working.

1 kg of carrots cost £ ....

1 kg of potatoes cost £ ....

[5]

25 Riley and Sam are conducting surveys.
They are both given the same list of 12 463 people from which to select their sample.

Riley selects every 56th person.
Sam selects every 64th person.
They both start counting from the first name in the list.

Work out how many people will be selected to be in both surveys.
You must show your working.

.... **[5]**

Turn over

26 XOY is a sector of a circle, centre O.

Not to scale
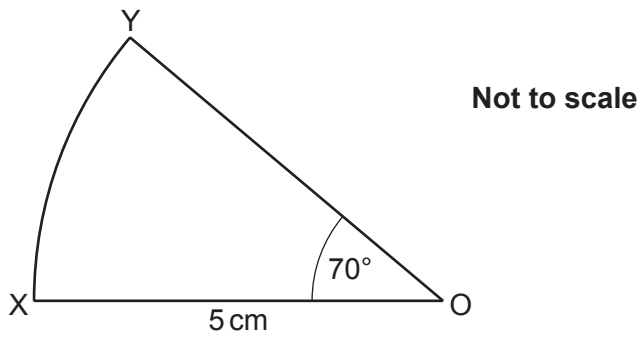
Show that the area of the sector is 15.3 cm^2, correct to **3** significant figures. **[3]**

END OF QUESTION PAPER

23

ADDITIONAL ANSWER SPACE

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).

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