OCR
Oxford Cambridge and RSA

Wednesday 6 November 2024 – Morning

GCSE (9–1) Mathematics

J560/01 Paper 1 (Foundation Tier)

Time allowed: 1 hour 30 minutes

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

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

F

* J 5 6 0 0 1 *

* 1 4 2 3 3 9 2 5 2 1 *

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

Centre number | | | | | | Candidate number | | | | |

First name(s) _____

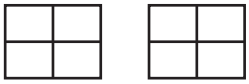
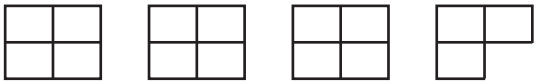
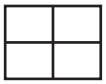
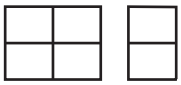
Last name _____

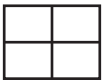
INSTRUCTIONS
- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided. If you need extra space use the lined page at the end of this booklet. The question numbers must be clearly shown.
- Answer **all** the questions.
- Where 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 **20** pages.

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

1 200 students at a school were asked how they travel to school.
The pictogram shows the results for four of the ways they travel to school.

Walk	
Bus	
Cycle	
Tram	
Car	

Key:  represents 20 students.

(a) How many students walk to school?

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

(b) How many **more** students travel by car to school than travel by tram to school?

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

(c) The rest of the 200 students cycle to school.

Complete the pictogram to show the number of students who cycle to school. **[3]**

(d) The total number of students at the school is 800.

What fraction of the students at the school were asked how they travel to school?
Give your answer in its simplest form.

(d) ..... **[2]**

2 **(a)** **(i)** Write down an odd number.

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

(ii) Write down a common multiple of 3 and 17.

(ii) ..... **[1]**

(b) Write 24 : 60 as a ratio in its simplest form.

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

3 Complete this table of fractions, decimals and percentages.

Fraction		Decimal		Percentage
$\frac{1}{5}$	=	0.2	=	
	=	0.03	=	3%
$\frac{145}{100}$	=	1.45	=	

[3]

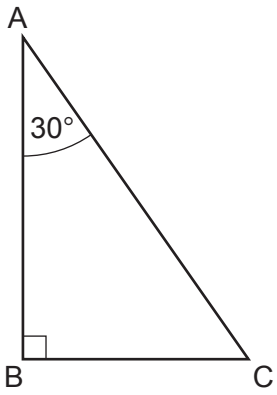
4 Write the following numbers in order of size, smallest first.

0.329 0.34 0.3041 0.346

..... , ... , ... , ... **[2]**

smallest

5 **(a)** The diagram shows a triangle, ABC.
The angle at A is 30°.



Not to scale

(i) What does the symbol at angle B mean?
Choose from this list.

An acute angle	The biggest angle	An obtuse angle	A reflex angle	A right angle

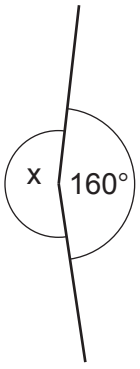
(a)(i) ..... **[1]**

(ii) Work out the angle at C.
Give a geometrical reason for your answer.

The angle at C is .....° because .....

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

(b) A student works out the size of angle *x* in this diagram.



Not to scale

The student says the angle is 240°.

Explain why the student's answer cannot be correct.

..... **[1]**

6 The circumference of a circle is 17 cm.

Calculate the diameter of the circle.
Give your answer correct to **1** decimal place.

..... cm **[3]**

7 Sketch the graph of $y = 4$ on the axes below.
Show clearly the value of any intercepts.

[2]

8 **(a)** Insert **two** of these symbols $+$, $-$, $\times$ or $\div$ to make this calculation correct.

$$5 \ldots\ldots (3 \ldots\ldots 1) = 20$$

[1]

(b) Calculate

$$\sqrt{\frac{12.9^2 + 83}{5^2}}$$

Give your answer correct to **3** significant figures.

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

9 Here is a list of five numbers.

14 2 26 43 9

(a) Find the range.

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

(b) A sixth number is added to the list.
The mean of the **six** numbers is 23.5.

Work out the sixth number.

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

10 Simplify.

$8j + 4k - 10j + 7k$

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

11 A recipe for cookies uses only butter, flour and sugar in the ratio 2 : 4 : 1.
Using this recipe, 160 g of butter is needed to make 10 cookies.

Using this recipe, work out how much **flour** is needed to make 25 cookies.

..... g **[3]**

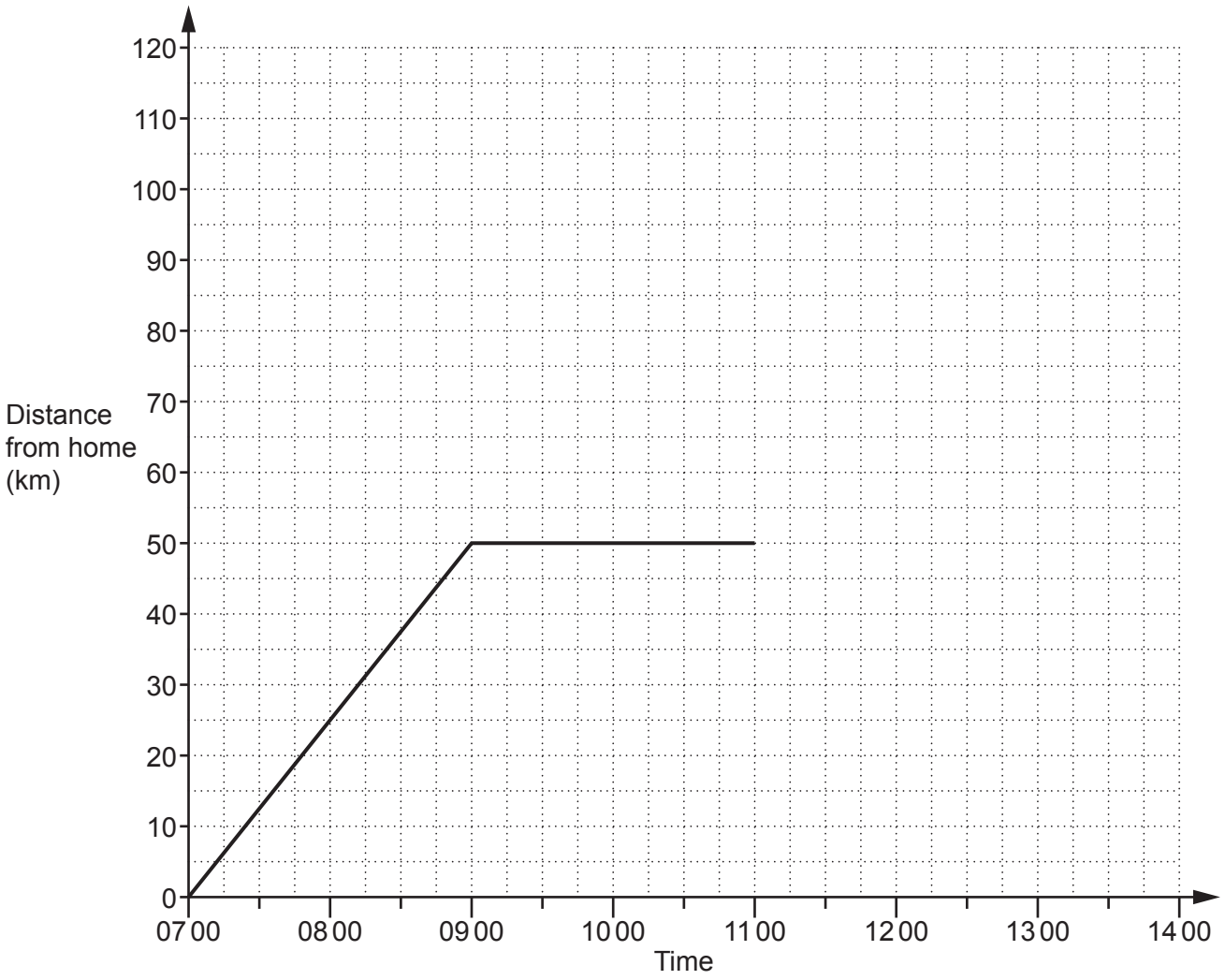
12 The deposit for a holiday is $\frac{2}{7}$ of the total cost.

A customer pays a deposit of £618.

Calculate the total cost of the holiday.

£ ..... **[3]**

13 Zayn drives from home to a shopping centre.
The graph shows information about the journey and the time spent at the shopping centre.



(a) State an assumption that has been made when the graph was drawn.

.....

..... **[1]**

(b) Write down the distance from Zayn's home to the shopping centre.

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

(c) Calculate Zayn's average speed, in km/h, from home to the shopping centre.

(c) ..... km/h **[2]**

(d) Zayn leaves the shopping centre at 11 00.
Zayn drives home without stopping.
The journey home takes $1\frac{3}{4}$ hours.

Complete the graph to show this information. **[2]**

14 Five adults and two children go to a theme park.
The cost of an adult ticket is £6 more than the cost of a child ticket.
The total cost of the seven tickets is £142.

Work out the cost of an adult ticket.
You must show your working.

£ ..... **[5]**

15 The cost of sending a child to nursery is £5.80 per hour on each weekday.
On Saturday the cost is $1\frac{1}{4}$ times the weekday hourly rate.

A child goes to nursery for:

- 6 hours on Wednesday
- 5 hours on Thursday
- 4 hours on Saturday.

The **total cost** for the three days is reduced by 5% as a special offer.

Work out the cost for the three days after the 5% reduction.
You must show your working,

£ ..... **[6]**

16 Leo pays £44.98 for 26 litres of diesel.
Mia puts 60 litres of the same diesel into her car.
Mia has £103 with which to pay for her diesel.

Does Mia have enough money to pay for her diesel?
Show how you decide.

..... because .....

..... **[4]**

17 Factorise fully.

(a) $6x^2 + 9x$

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

(b) $x^2 + 8x + 15$

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

18 **(a)** N is a number such that:

- $N = 3 \times 5 \times k$, where k is a prime number
- N is greater than 400.

Find the smallest possible value of N.

(a) $N =$ ..... **[3]**

(b) a and b are different prime numbers.

Explain why $a \times b$ is not a prime number.

.....

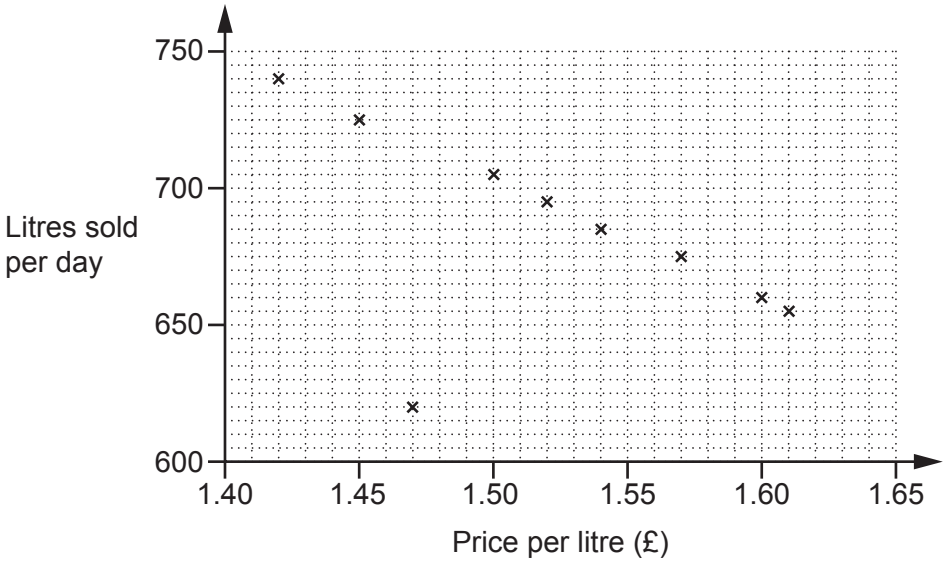
..... **[1]**

19 Each week the manager of a petrol station records the average daily sales, in litres, and the average price, in pounds, of a litre of petrol for that week.

The table shows their results for ten weeks.

Week	1	2	3	4	5	6	7	8	9	10
Price per litre (£)	1.42	1.45	1.47	1.50	1.54	1.60	1.57	1.52	1.61	1.46
Litres sold per day	740	725	620	705	685	660	675	695	655	715

The results for the first nine weeks are plotted on the scatter diagram.



(a) Plot the result for week 10. **[1]**

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

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

(c) In one week, there was a delay with petrol deliveries.

Circle the most likely point on the scatter diagram for that week. **[1]**

(d) **(i)** On the scatter diagram, draw a line of best fit. **[1]**

(ii) Use the line of best fit to estimate the average daily sales when the price per litre of petrol is £1.48.

(d)(ii) ..... litres **[1]**

(e) The manager says,

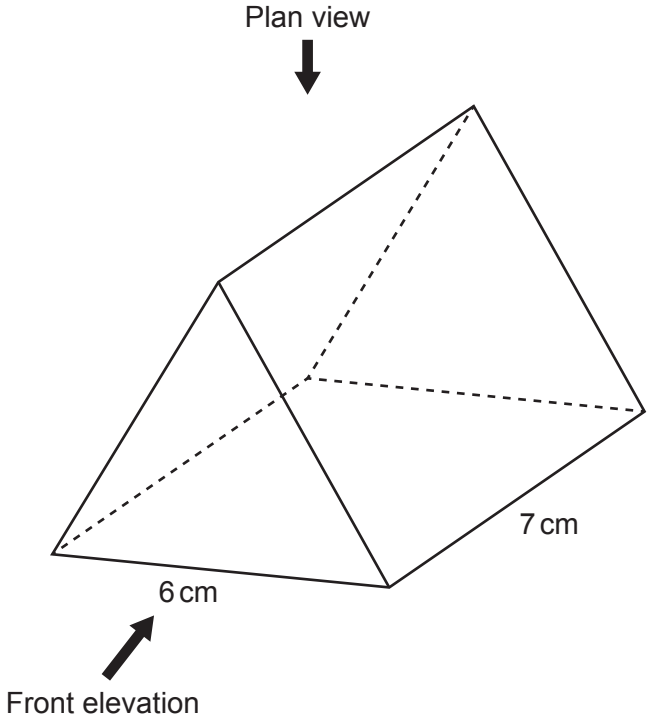
As the sales go down, the total amount of money we take stays roughly the same.

Find evidence to support this statement.

.....

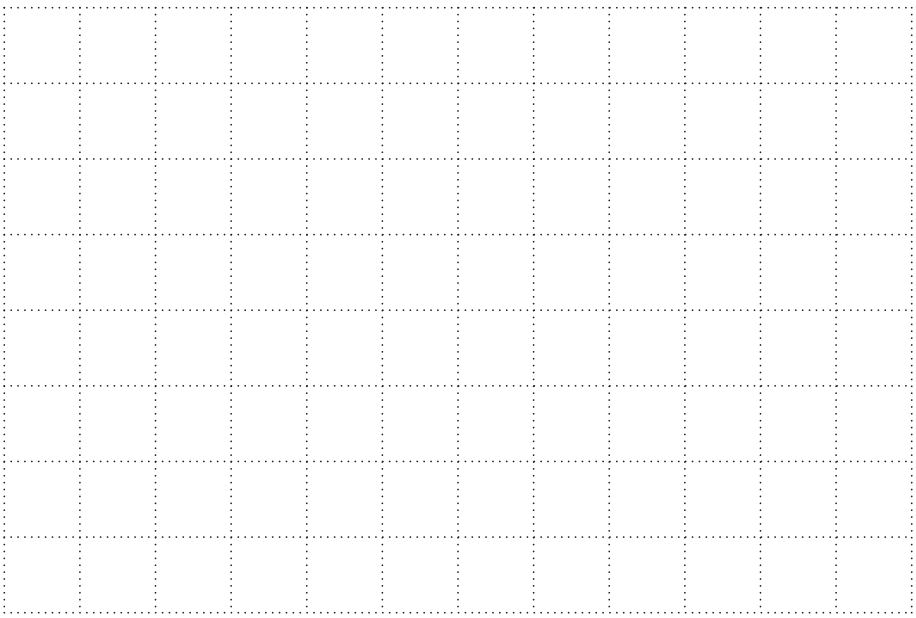
..... **[3]**

20 The diagram shows an equilateral triangular prism.
Each side of the equilateral triangle is 6 cm and the length of the prism is 7 cm.



Not to scale

(a) Draw an accurate plan view of the prism on the one-centimetre square grid below.



[3]

(b) Draw an accurate front elevation of the prism on the one-centimetre isometric grid below.

[2]

21 At the start of 2020, the value of a particular caravan was £25 000.
The value of the caravan then decreased by 12% each year.

Calculate the **total loss in value** of the caravan at the end of 3 years.

£ ..... **[4]**

22 The width, w, of a car parking space is 2.8 metres, correct to 1 decimal place.

Complete the error interval for the width, w.

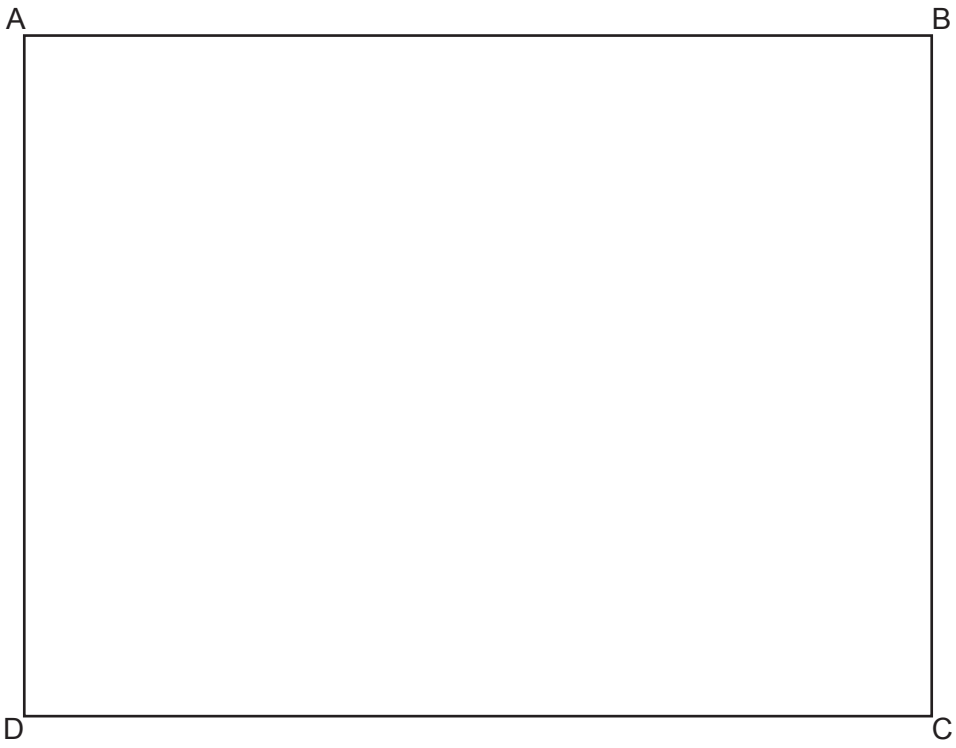
..... $\leqslant w <$ ..... **[2]**

23 Force is measured in newtons (N).
A force of 140 N is applied to a surface of area 8 cm^2.

Work out the pressure, in N/cm^2, applied to this surface.

..... N/cm^2 **[2]**

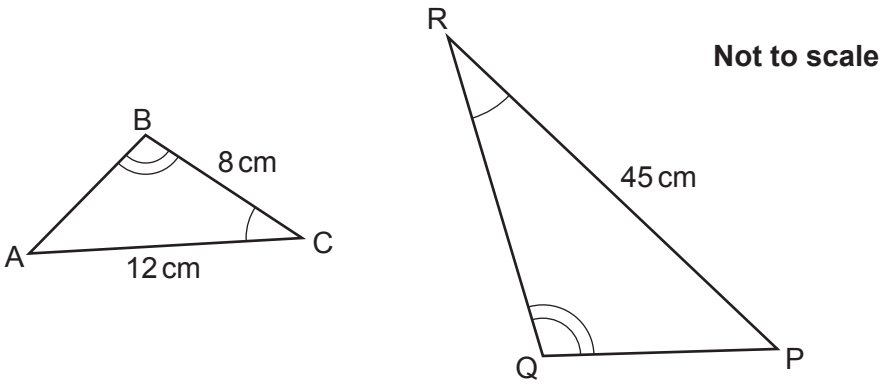
24 The diagram shows a rectangular garden ABCD.



The region of the garden that is closer to DA than DC is to be made into a patio.

Construct and shade the region for the patio.
Show all your construction lines. **[3]**

25 Triangles ABC and PQR are mathematically similar.
Angle ACB = Angle PRQ.
Angle ABC = Angle PQR.



Not to scale

The perimeter of triangle PQR is 99 cm.

Find the length of PQ.

PQ = ... cm **[4]**

END OF QUESTION PAPER