OCR
Oxford Cambridge and RSA

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Tuesday 2 November 2021 – Morning

GCSE (9–1) Mathematics

J560/01 Paper 1 (Foundation Tier)

Time allowed: 1 hour 30 minutes

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.

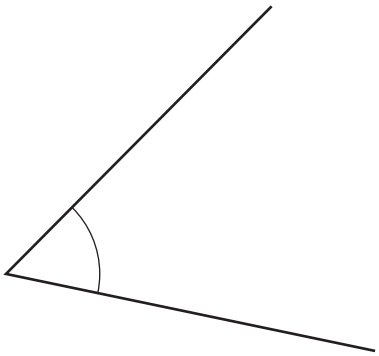
ADVICE
- Read each question carefully before you start your answer.

Answer **all** the questions.

1 **(a)** Measure the length of this line.

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

(b) The diagram shows an angle.



(i) Measure the angle.

(b)(i) ..... ° **[1]**

(ii) Write down the mathematical name of this type of angle.

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

2 Write down each of the following.

(a) An odd number.

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

(b) A square number.

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

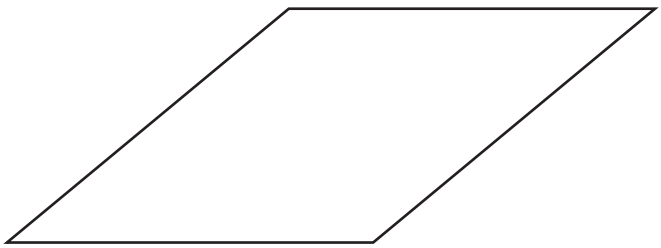
(c) A prime number between 30 and 40.

(c) ..... **[1]**

(d) A multiple of 8.

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

3 Here is a rhombus.



(a) On the diagram, draw **all** of the lines of symmetry. **[2]**

(b) Write down the order of rotation symmetry of the rhombus.

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

4 Here is a list of numbers.

6 9 2 3 9 1

(a) Work out the range of the numbers.

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

(b) Work out the mean of the numbers.

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

5 **(a)** Round 564 to the **nearest ten**.

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

(b) Round 438 749 to **3** significant figures.

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

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

0.529 0.54 0.51 0.502

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

7 Solve.

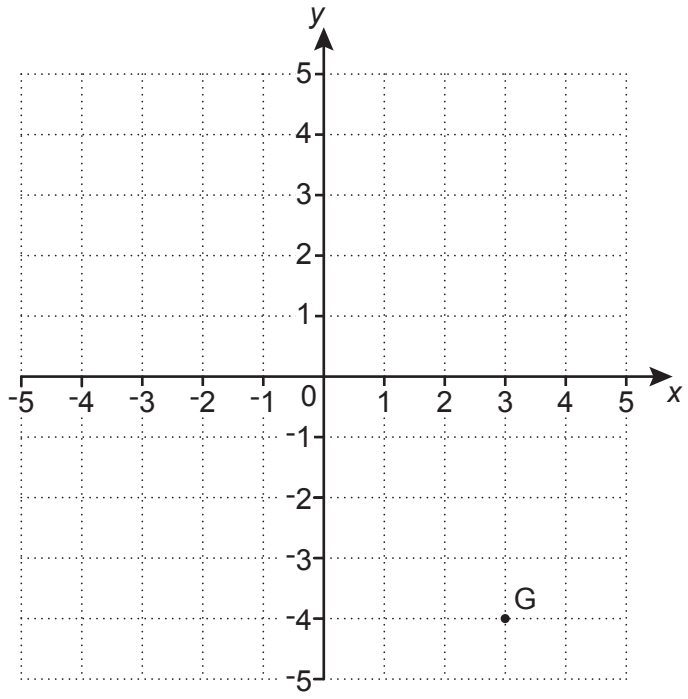
(a) $x - 14 = 30$

(a) $x =$ ..... **[1]**

(b) $6y + 7 = 28$

(b) $y =$ ..... **[2]**

8 Point G is shown on this grid.



(a) Write down the coordinates of point G.

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

(b) Plot point H on the grid at (-2, 4). **[1]**

9 A student thinks of a number.
They square it and then add 6.
Their answer is 295.

What number is the student thinking of?

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

10 **(a)** Simplify.

$3c^2d \times 2d$

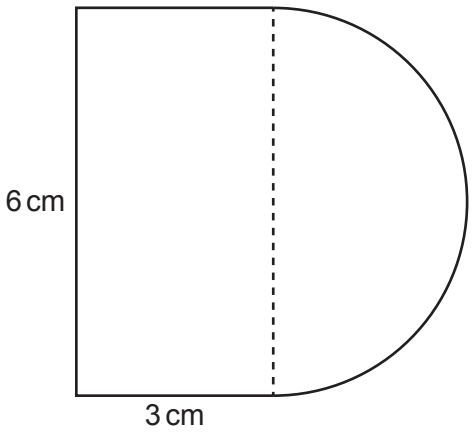
(a) ..... **[2]**

(b) Factorise.

$35x + 7x^2$

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

11 A rectangle, 6 cm by 3 cm, and a semi-circle are joined to make this shape.

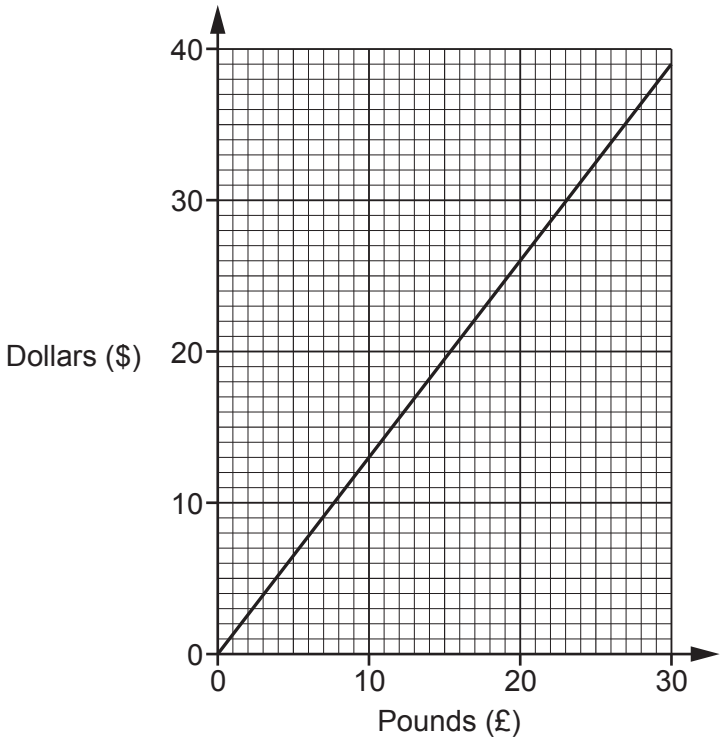


Not to scale

Work out the area of the shape.

.....cm^2 **[4]**

12 A conversion graph between pounds (£) and dollars ($) is shown below.



(a) Explain fully how the graph shows that the number of dollars is directly proportional to the number of pounds.

.....

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

(b) Use the conversion graph to change £20 into dollars.

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

(c) Some trainers cost £170 in the UK.
The same trainers cost $195 in the USA.

Show that the trainers cost less in the USA.

.....

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

(d) If the trainers are brought from the USA there is an extra charge for tax and delivery.

Alex wants to pay the lowest total amount for the trainers.

Write down the maximum extra charge for tax and delivery that Alex should be willing to pay.
Give your answer in dollars.

(d) $ ..... **[1]**

13 A biased five-sided spinner is numbered 1, 2, 3, 4 and 5.

The table shows the probability of the spinner landing on 1, 2 and 4.

Number	1	2	3	4	5
Probability	0.10	0.10		0.20	

The spinner is four times more likely to land on 5 than on 3.

Complete the table. **[4]**

14 **(a)** Here are the first four terms of a sequence.

8 15 22 29

(i) Write down the next term in the sequence.

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

(ii) Explain how you worked out your answer.

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

(b) The nth term of a **different** sequence is given by $4n + 2$.

Explain why 32 is **not** a term in this sequence.

.....

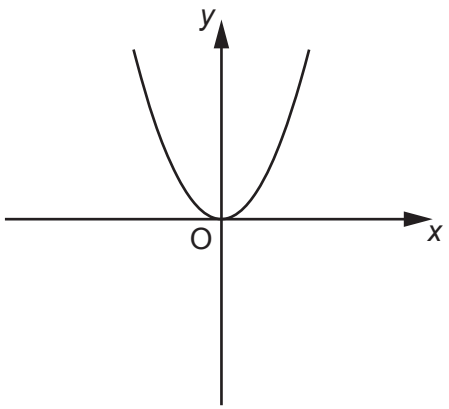
..... **[2]**

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

A $y = x^3$ **B** $y = -2$ **C** $y = -x$

D $x = -2$ **E** $y = x^2$ **F** $y = 2x + 1$

Write the letter of the equation beneath each graph.



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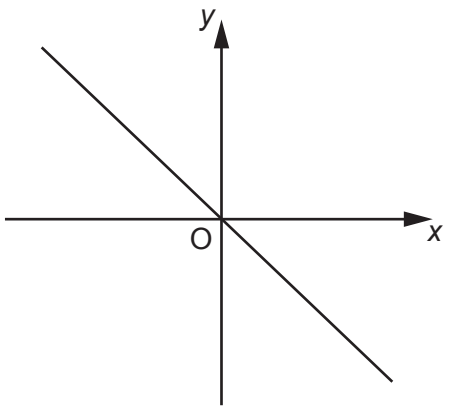

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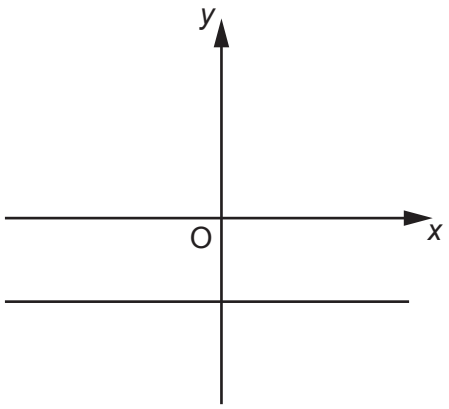

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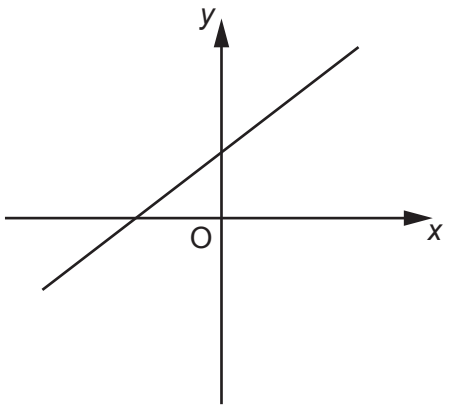


.....

[4]

16 Harper's wage is £1200 each month.

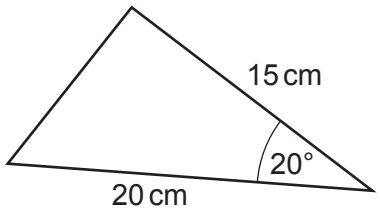
They spend $\frac{1}{4}$ of their wage on rent.

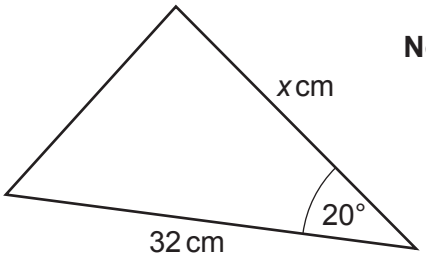
They spend £460 of their wage on other items.

What fraction of their wage does Harper have left?
Give your answer in its simplest form.

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

17 These two triangles are mathematically similar.





Not to scale

Work out the value of x.

$x =$ ..... **[2]**

18 Li throws two fair four-sided dice, each numbered 1, 2, 3 and 4.
Li multiplies together the two numbers that the dice land on to produce a score.

Find the probability that Li's score is a prime number.

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

19 **(a)** Fountain A squirts water every 24 minutes.
Fountain B squirts water every 42 minutes.
They squirt water together at 15:19.

Find the next time they squirt water together.

(a) ..... **[4]**

(b) A school sends 60 students from Year 8 and 105 students from Year 9 to a museum.

The school divides these students into groups using the following rules.

- The groups must all be the same size.
- All students in any group must be from the same year.
- There should be as few groups as possible.

Find the size of each group and the total number of groups.

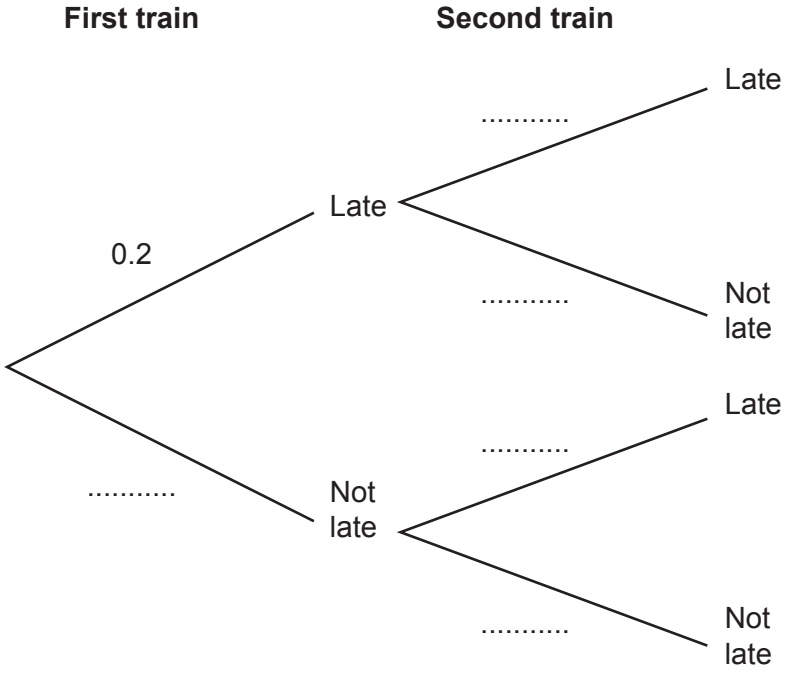
Size of each group = ...

Total number of groups = ... **[4]**

20 **(a)** Over a long period of time, it is found that the probability of a train from Bewford to London being late is 0.2.

(i) One morning there are two trains from Bewford to London.

Use the information to complete the tree diagram.



[2]

(ii) Work out the probability that both trains are **not late**.

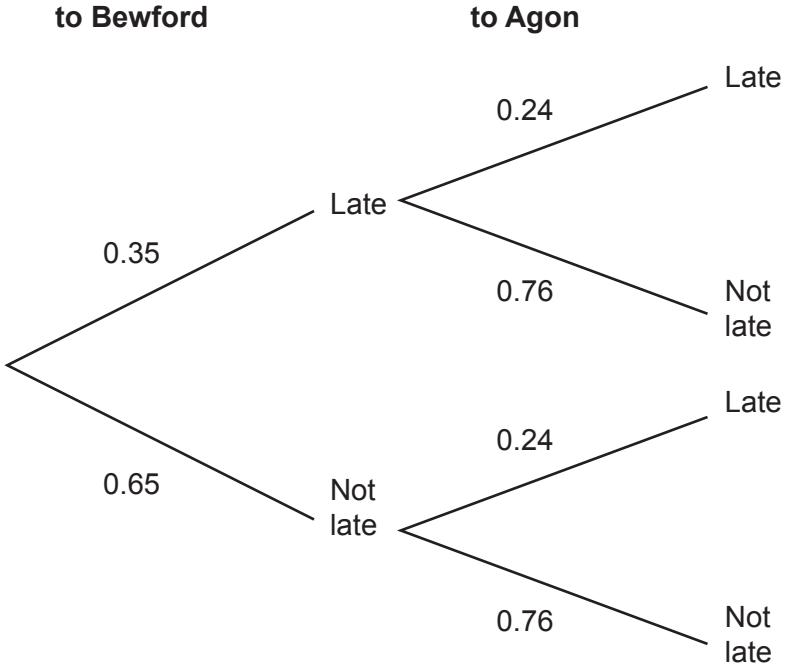
(a)(ii) ..... **[2]**

(iii) Give a reason why the probabilities used in the tree diagram for the second train may **not** be reliable.

.....

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

(b) Morgan takes a train from London to Bewford and then another train to Agon.
The tree diagram shows the probabilities of Morgan's trains being late or not late.



Morgan will **not catch** the train to Agon if the train to Bewford is late and the train to Agon is not late.

Work out the probability that Morgan will **catch** the train to Agon.

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

21 The price of a plane ticket is increased by 15% to £1426.

Find the original price of the plane ticket.

£ ..... **[3]**

22 Kai buys 5 drinks and 3 cakes for £16.35.
Azmi buys 2 drinks and 6 cakes for £14.70.

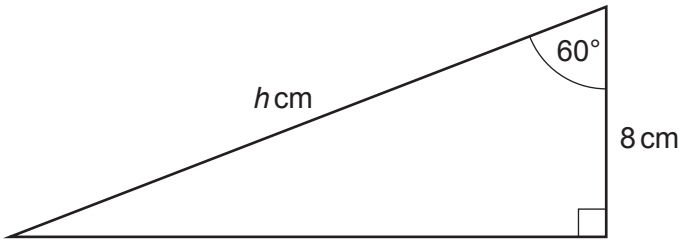
Assume that each drink costs the same and that each cake costs the same.

Calculate the cost of one drink and the cost of one cake.
You must show your working.

Cost of one drink £ .....

Cost of one cake £ ..... **[5]**

23 Here is a right-angled triangle.



Not to scale

Work out the value of h.

$h =$ ..... **[3]**

24 Charlie invests £9000 at a rate of 0.7% per year compound interest.

Calculate the total amount of **interest** Charlie will have earned after 5 years.
Give your answer correct to the **nearest penny**.

£ ..... **[4]**

25 Frankie and Taylor travel the same distance from town A to town B.

Frankie travels at an average speed of 52 kilometres per hour (km/h).
Taylor travels at an average speed of 15 metres per second (m/s).

The journey takes Frankie 4 hours.

Calculate how long the journey takes Taylor.
Give your answer in hours and minutes, correct to the **nearest minute**.
You must show your working.

..... hours ..... minutes **[6]**

END OF QUESTION PAPER

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).