OCR
Oxford Cambridge and RSA

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Friday 20 May 2022 – 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

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.
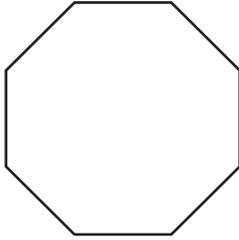
INFORMATION
• The total mark for this paper is **100**.
• The marks for each question are shown in brackets **[ ]**.
• This document has **24** pages.

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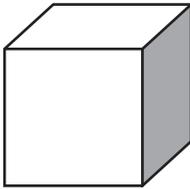• Read each question carefully before you start your answer.

Turn over

Answer **all** the questions.

1 **(a)** Write down the mathematical name of this polygon.

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

(b) How many edges does a cube have?

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

2 Here is a list of numbers.

6   9   2   12   3   8   3

(a) Write down the mode.

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

(b) Work out the range.

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

3 The diagram shows a pair of parallel lines.
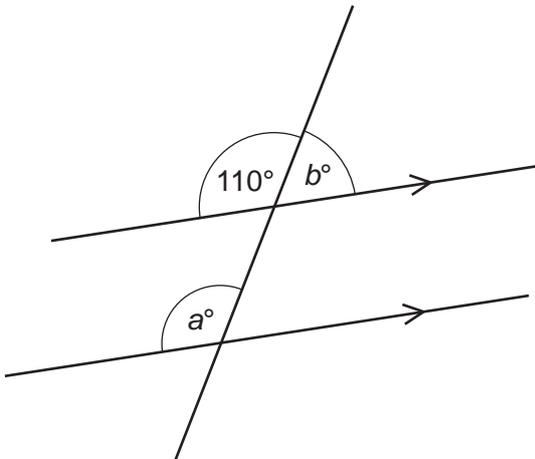
Not to scale

(a) Write down the value of *a*.

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

(b) Write down the value of *b*.

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

4 Jamie has some empty boxes.
Each box can hold 73 pencils.
Jamie has 590 pencils.
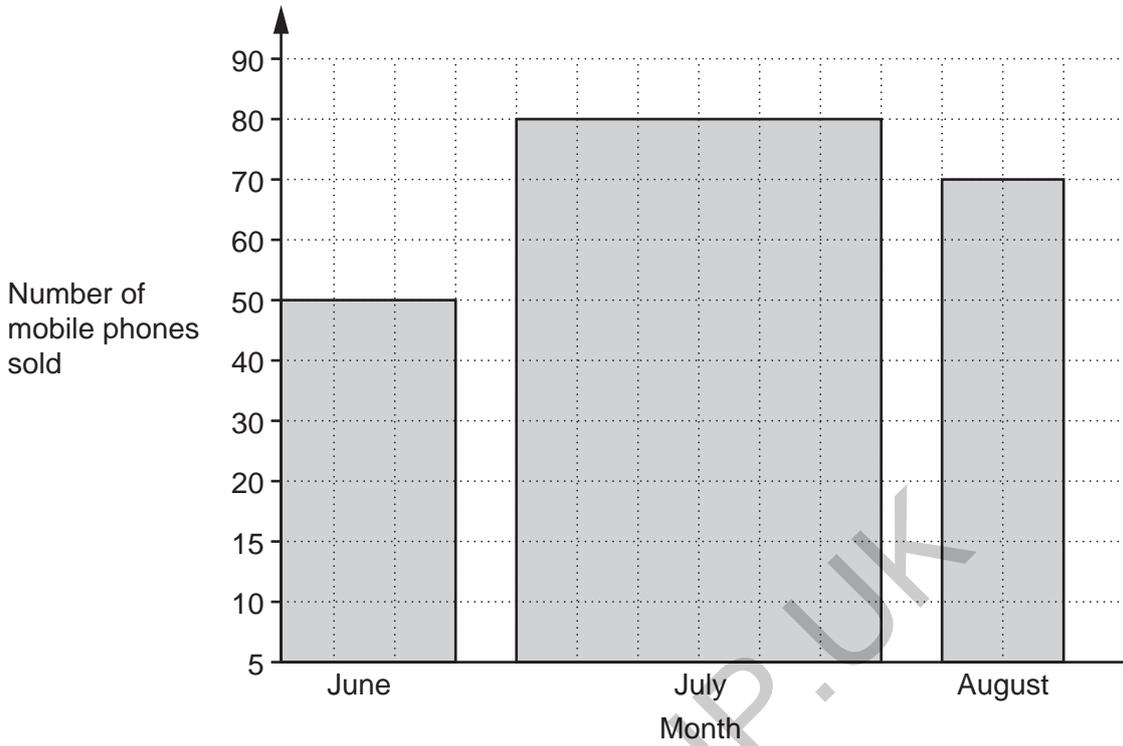
Jamie says that eight boxes are needed to hold all of the pencils.

Is Jamie correct?
You must show your working.

.... because ....

.... **[2]**

Turn over

5 This graph shows the number of mobile phones sold by a shop in June, July and August.

Give **two** reasons why the graph is misleading.

1 ....

....

2 ....

.... **[2]**

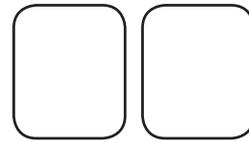**6** Ashley has these three number tiles.

$$\boxed{2} \quad \boxed{3} \quad \boxed{8}$$

(a) Which one of Ashley's tiles shows a cube number?
Write the number on the blank tile on the answer line.

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

(b) Write down a two-digit prime number that can be made using two of Ashley's tiles.

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

(c) Write down the three-digit number closest to 300 that can be made using all three of Ashley's tiles.

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

Turn over
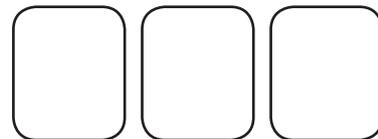
7 **(a)** Simplify.

$t + 5t - 4t$

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

(b) Factorise.

$x^2 + 2x$

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

8 Write the following in order of size, smallest first.

52.9% $\dfrac{530}{1000}$ $\dfrac{9}{17}$ 0.5209

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

9 A pattern is made out of blue tiles and yellow tiles.

$\frac{1}{3}$ of the tiles are blue.

There are 36 yellow tiles.

Work out the **total** number of tiles.

.... **[3]**

10 Work out, using your calculator.

$\sqrt{17.5^2 + 60^2}$

.... **[2]**

Turn over

11 120 new homes are built in a village.
Each home is either a house or a flat.
Each home either has a garage or does not have a garage.
64 of the houses have a garage and 26 of the flats have a garage.

This frequency tree shows the above information.

Home **Garage**

(House) Yes → 64
No

120

(Flat) Yes → 26
No
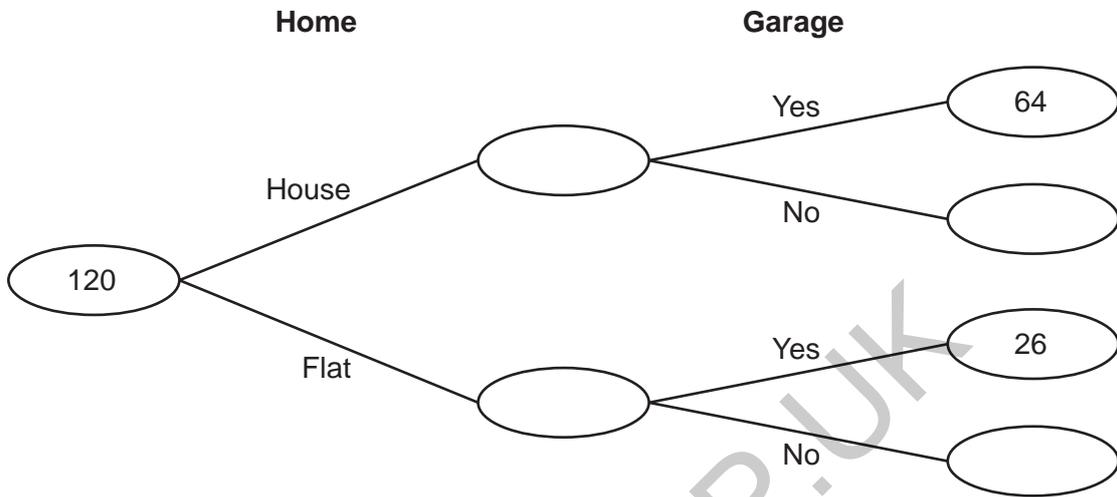
(a) $\frac{5}{8}$ of the homes are houses.

Complete the frequency tree. **[4]**

(b) Show that 75% of the homes have a garage.

....

....
[2]

12 The diagram shows Kai's garden.
The garden is a rectangle, 16 m by 10 m.

It has a lawn and a flowerbed.
The flowerbed is a circle of diameter 6 m.

Not to scale
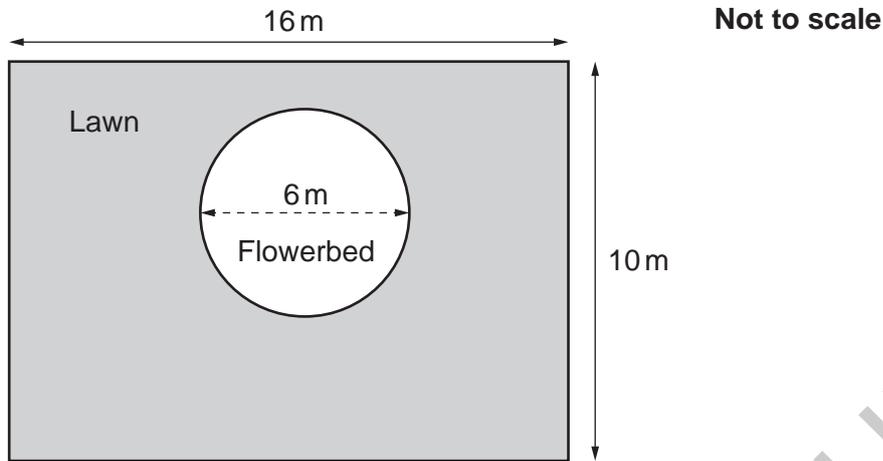
Work out the area of Kai's **lawn**.

.... m² **[4]**

Turn over

13 Here are the ticket prices for a zoo when bought at the gate.

Adult	£22
Child	£18
Family ticket (2 adults and up to 4 children)	£80

(a) Mr and Mrs Khan take their four children to the zoo.
They buy their tickets at the gate.

How much do Mr and Mrs Khan save by buying a family ticket?

(a) £ .... **[4]**

(b) All ticket prices are reduced by 15% if bought online rather than at the gate.
Mr and Mrs Morris take their one child to the same zoo.
They buy their tickets online.

What is the lowest possible **total cost** of their tickets?

(b) £ .... **[4]**

14 Here is a rule to work out the time, in minutes, needed to cook a turkey.

weight in kilograms → ×20 → +90 → time in minutes
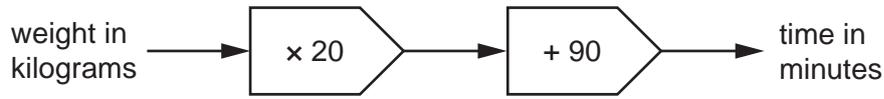
(a) Ling's turkey takes 150 minutes to cook.

Use the rule to work out the weight of Ling's turkey.

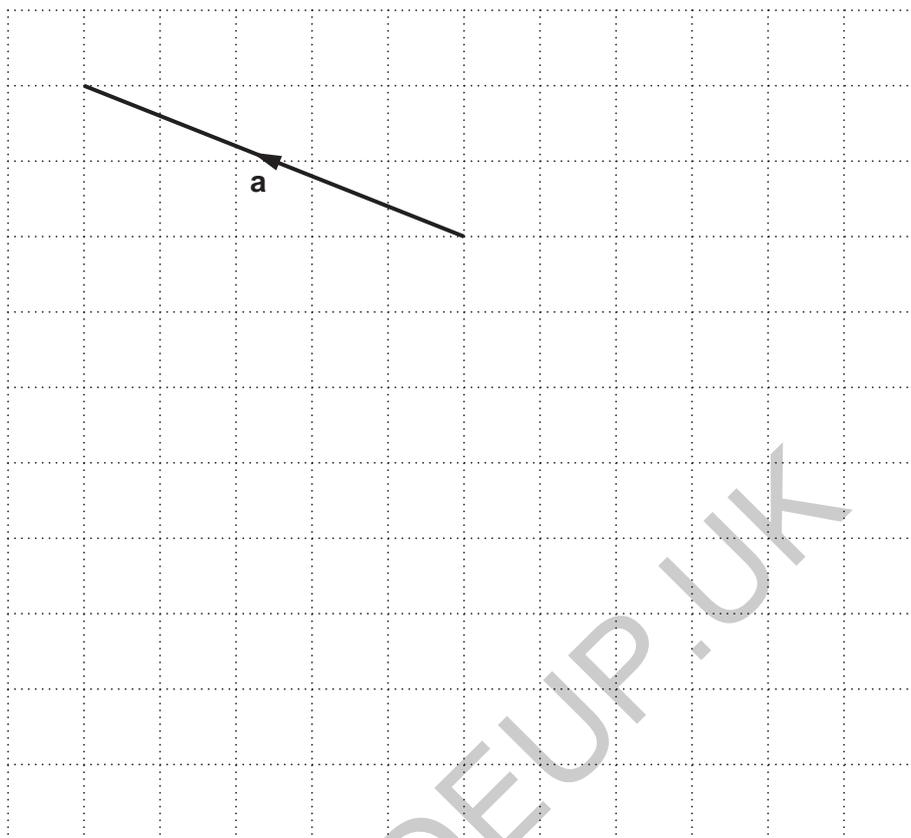**(a)** .... kg **[2]**

(b) James cooks a different turkey.
His turkey weighs 6 kg.
James wants to take his turkey out of the oven at 1:15 pm.

Use the rule to work out at what time James should put his turkey in the oven.
You must show your working.

(b) .... **[5]**

Turn over

15 Vector **a** is drawn on this grid.

(a) Write vector **a** as a column vector.

(a) $\begin{pmatrix} \\ \end{pmatrix}$ .... **[2]**
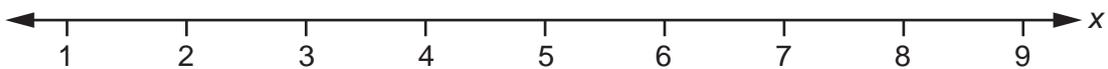
(b) On the grid above, draw the vector ⁻**a**. **[1]**

16 Alex and Blake share some money in the ratio 2 : 5.
Blake receives £150 more than Alex.

How much money does Alex receive?

£ .... **[3]**

17 Solve $2x + 5 \geqslant 11$.
Show your solution on the number line.

[4]

Turn over

18 (a) Write 6 050 000 in standard form.

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

(b) Write 4.58×10^{-3} as an ordinary number.

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

19 A coat is on sale in a shop at a special price of £149.40.
The shop says this is a saving of 17% on their normal price.

Work out the shop's normal price for the coat.

£ .... **[3]**

20 This list represents four numbers.

127   x $x + 1$ $2x$

The **mean** of the four numbers is 180.

Work out the numbers.
You must show your working.

127
....**[5]**

Turn over

21 The scatter diagram shows the midday temperature at 13 different heights on a mountain.
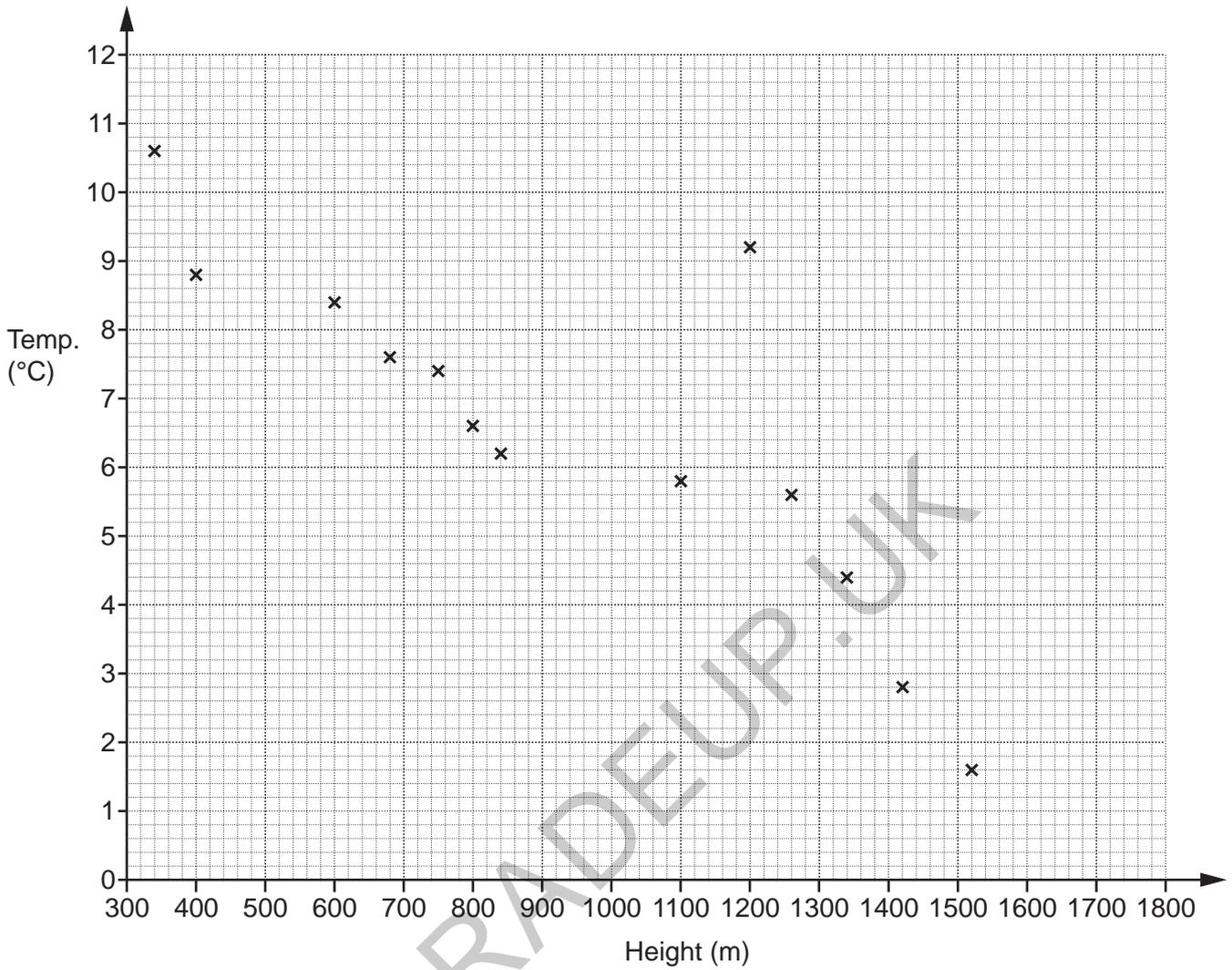
(a) The table has the information for 2 more heights.

Plot these on the scatter diagram.

Height (m)	500	1580
Temperature (°C)	8.8	1.2

[2]

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

(b) .... [1]

(c) By drawing a line of best fit, estimate the temperature at 1000 m.

(c) .... °C **[2]**

(d) Circle the outlier on the scatter diagram. **[1]**

(e) Explain why using the scatter diagram to estimate the temperature at 1800 m may be unreliable.

....

.... **[1]**

(f) Find the percentage of the 15 temperatures which are below 6 °C.

(f) .... % **[3]**

Turn over

22 (a) Complete this table for $y = x^2 - 5$.

x	-4	-3	-2	-1	0	1	2	3
y		4	-1	-4		-4	-1	4

[2]

(b) Draw the graph of $y = x^2 - 5$ for the values of x from -4 to 3.
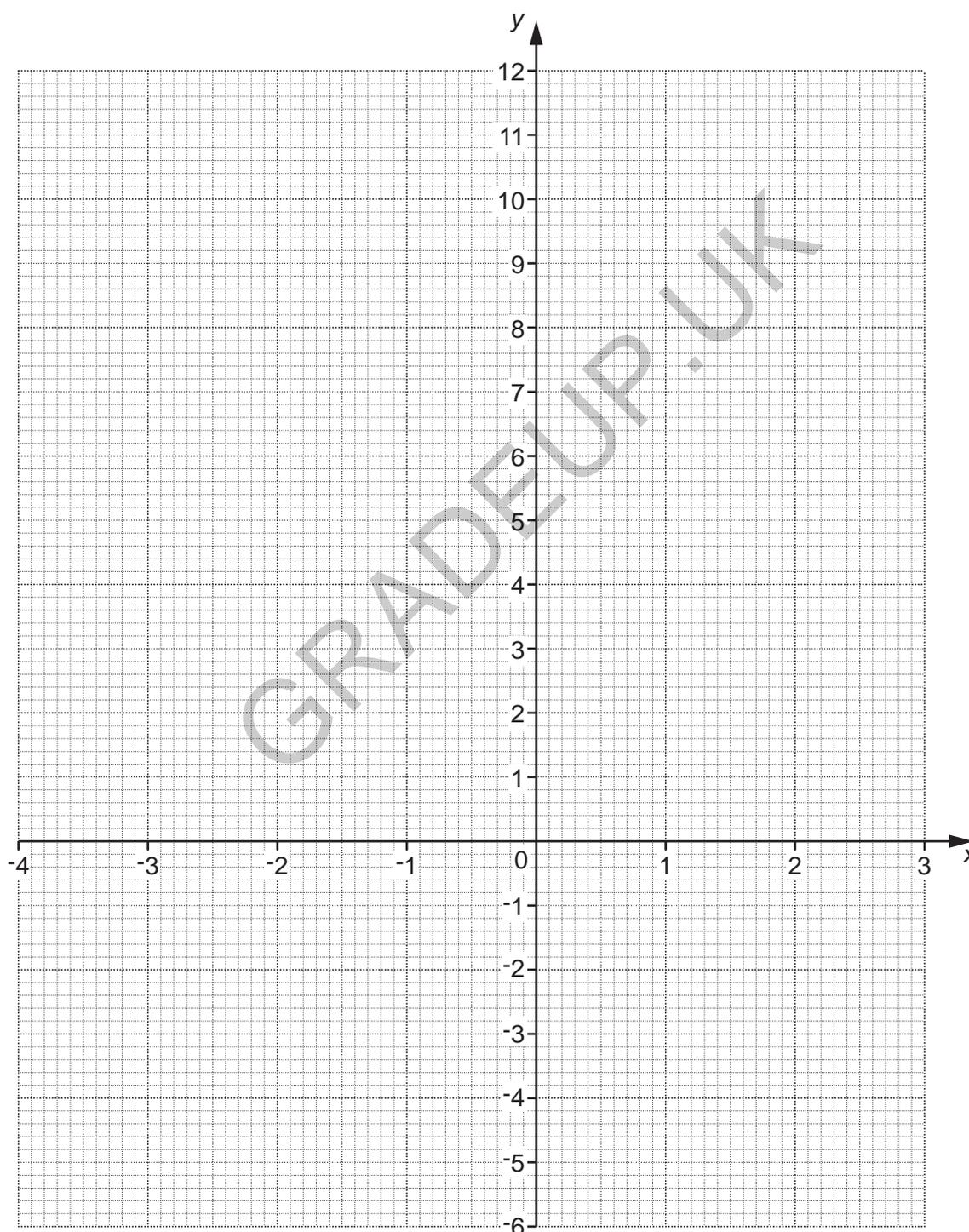
[3]

(c) Use the graph to solve the equation $x^2 - 5 = 0$.
Give your answers to **1** decimal place.

(c) $x =$ .... or $x =$ .... **[2]**

23 Four friends are going on holiday together.
They each take a suitcase.
The weight of each suitcase is 25 kg, correct to nearest kilogram.

(a) Complete the error interval for the weight, w kg, of **one** suitcase.

(a) .... $\leqslant w <$ .... **[2]**

(b) The friends must pay extra if the total weight of their four suitcases is more than 102.4 kg.

Can the friends be certain that they will **not** have to pay extra?
Show how you decide.

.... because ....

....

.... **[3]**

24 A machine can dig, on average, 2 cm of tunnel each minute.
It operates 24 hours each day.

(a) Work out how many days it should take to dig a tunnel of length 3.5 km.
Give your answer to the nearest day.

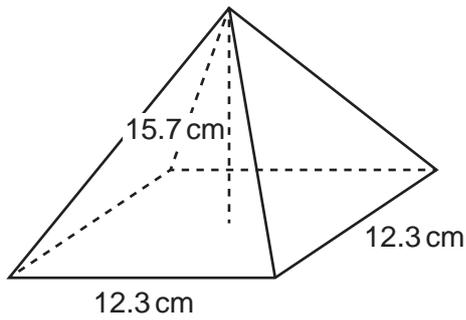**(a)** .... days **[4]**

(b) The machine actually digs an average of 2.5 cm of tunnel each minute for most of the time and an average of 1.5 cm each minute for the rest of the time.

How would this affect your answer to part **(a)**?

....

.... **[1]**

Turn over

25 The diagram shows a square-based pyramid and a sphere.
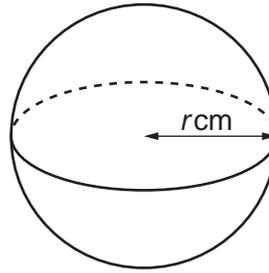
The pyramid has base length 12.3 cm and perpendicular height 15.7 cm.
The sphere has radius r cm.

The pyramid and the sphere have the same volume.

Work out the radius of the sphere.
You must show your working.

[The volume of a pyramid is $\frac{1}{3}$ × area of base × perpendicular height.

The volume V of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

.... cm **[5]**

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).

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