

Surname
First name(s)

Centre number

Candidate number
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GCSE

3320UC0-1

**Mathematics and Numeracy
(Double Award)
Unit 3: Calculator-allowed
Foundation Tier**

1 hour 45 minutes

**SAMPLE ASSESSMENT
MATERIALS**

Additional materials

The use of a calculator will be required for this examination.

A ruler, a protractor and a pair of compasses may be required.

Instructions to candidates

Use black ink or black ball-point pen. Do **not** use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces provided at the top of this page.

Answer **all** the questions in the spaces provided.

If you need more space, use the additional page(s) at the back of this booklet. Number the question(s) correctly.

Take π as 3.14 or use the π button on your calculator.

Information for candidates

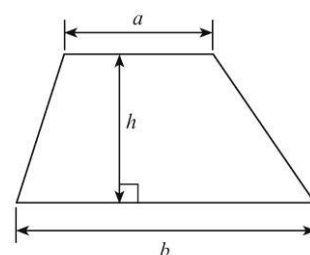
The number of marks is given in brackets at the end of each question or part-question.

In question 2(a), the assessment will take into account the quality of your mathematical organisation, communication and accuracy in writing.

For examiner's use only		
Question	Maximum mark	Mark awarded
1.	2	
2.	8	
3.	2	
4.	3	
5.	9	
6.	3	
7.	2	
8.	4	
9.	6	
10.	2	
11.	4	
12.	5	
13.	3	
14.	4	
15.	6	
16.	5	
17.	3	
18.	4	
Total	75	

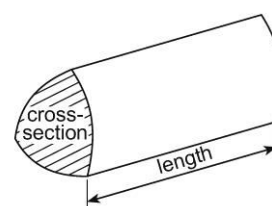
Formula List – Unit 3 Foundation Tier

Area of a trapezium = $\frac{1}{2}(a+b)h$



**Volume of an Object with a Uniform Cross-section
(e.g. Prism, Cylinder)**

Volume = area of cross section \times length



Answer **all** questions.

1. (a) The words of the Welsh national anthem, Hen Wlad fy Nhadau, were written by Evan James in January 1856.
In January 2024, Mathew sang the anthem in a school competition.

[1]

Examiner
only

How many years after Evan James wrote the words did Mathew sing in the competition?

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- (b) Kris has correctly answered four out of the five calculations shown below.
Circle the **incorrect** calculation.

[1]

$$54 + 9876 = 9930$$

$$123 \times 87 = 10701$$

$$1225 \div 35 = 35$$

$$246 \times 35 = 8650$$

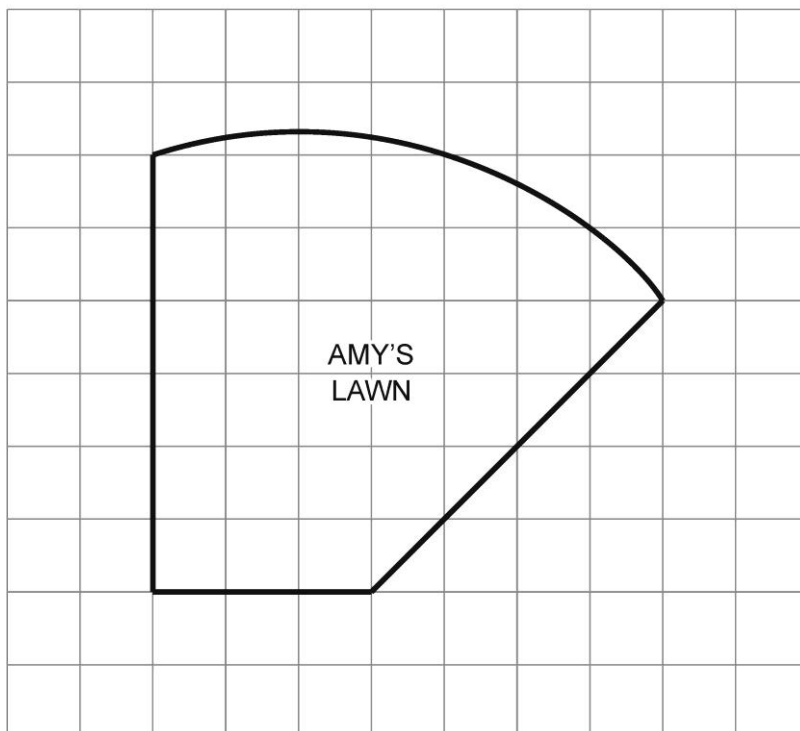
$$12345 - 6789 = 5556$$

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2. The shape below, drawn on a square grid, represents the lawn in Amy's garden.

[3 + 2 OCW]

Examiner
only



- (a) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Each square on the grid represents an area of 2.25 m^2 .
Estimate the area of Amy's lawn.

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- (b) Amy wants to improve her lawn by sowing new grass seeds.
Grass seed to cover 1 m² costs 94p.

[3]

Examiner
only

Calculate the total cost of the seeds that Amy needs.
Give your answer in **pounds** (£), correct to the nearest penny.

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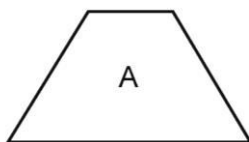
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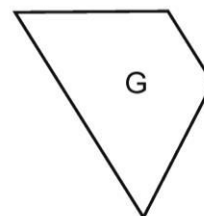
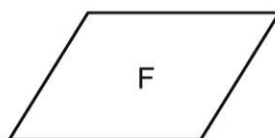
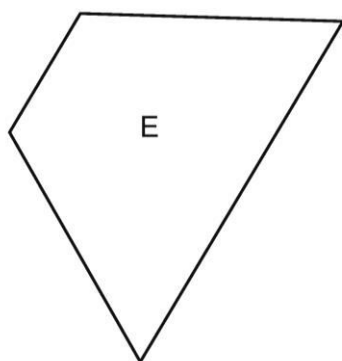
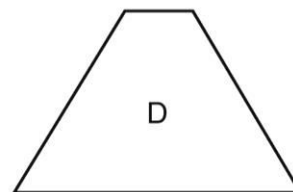
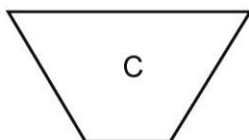
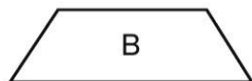
Total cost of the grass seeds = £.....

3.

[2] Examiner only



Which **two** of the following shapes are congruent to shape A?



The shapes which are congruent to shape A are:

..... and

4. Clara is making cheese sandwiches, ham sandwiches and tuna sandwiches to sell in her shop. [3]

Examiner
only

She makes a total of 180 sandwiches.

Use the following information to complete the table below.

- 124 sandwiches are made using brown bread
- 85 sandwiches contain cheese
- 18 tuna sandwiches are made with white bread
- 28 of the 40 ham sandwiches are made with brown bread.

	Cheese	Ham	Tuna	Total
White bread				
Brown bread				
Total				180

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5. The 32 pupils in a Year 11 class were asked to record their main method of travel to school on that day.

The options they recorded were Walking, Cycling, Bus, Train, Car, Other.

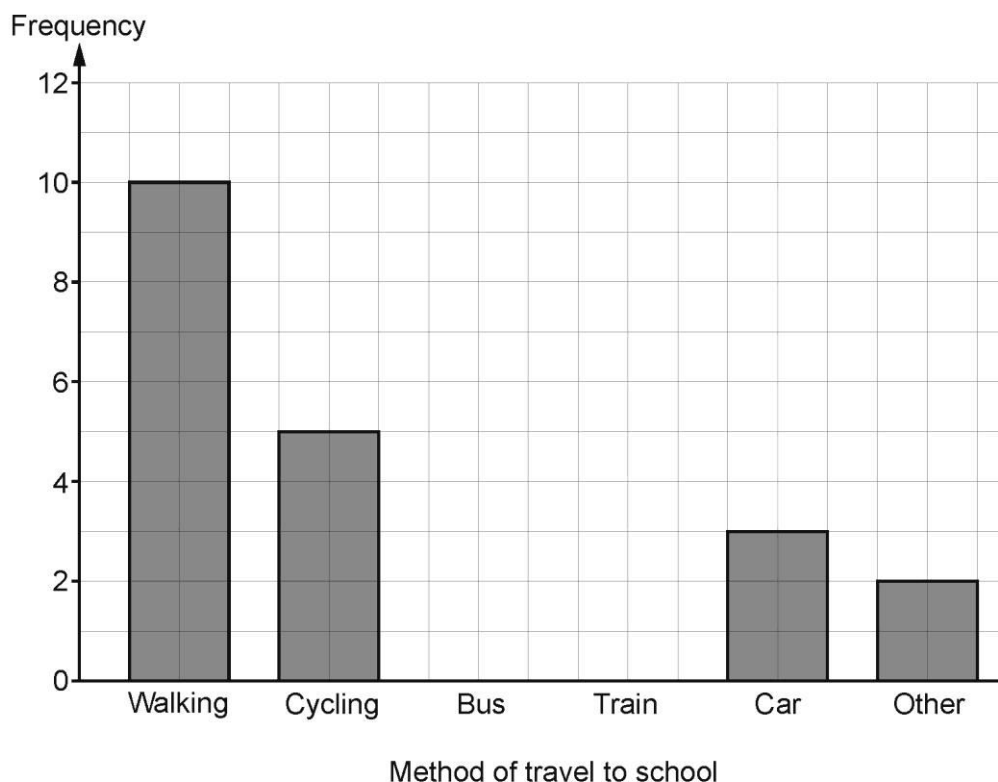
- (a) Some of the results are shown in the bar chart below.

[2]

From the 32 pupils in the class:

- 12 pupils recorded either Bus or Train
- the **modal** option was Bus.

Complete the bar chart by drawing the two missing bars.



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- (b) Seven of the students who had walked were asked to record their distances from home to school on that day.

The distances, measured in km, are shown below.

2.1 1.7 0.9 1.4 2.1 2.8 0.2

- (i) Find the median of these distances. [2]

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Median = km

- (ii) Find the range of these distances. [1]

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Range = km

- (iii) Find the mean of these distances. [3]

You must show all your working.

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Mean = km

- (iv) An eighth walking student stated that she walked 0.4 km to school each day.

[1] Examiner only

What will happen to the mean distance calculated in part (iii) if all eight students are included?

Tick the correct box.

The mean will increase	
The mean will stay the same	
The mean will decrease	

You must explain your choice.


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6. Using a ruler and protractor, complete an accurate drawing of the triangle FGH , in which:
- $GH = 8 \text{ cm}$
 - $\hat{F}GH = 60^\circ$
 - $\hat{F}HG = 36^\circ$

[3]

The side GH has been drawn for you.

G  H

7. Sam thinks of a number.

[2] Examiner only

$\frac{1}{3}$ of his number is 477.

What is Sam's number?

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8. (a) (i) A box contains a apples.
Write down, in terms of a , the number of apples in 8 boxes.

[1]

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- (ii) Yang is b years old. Catrin is 7 years younger than Yang.
Write down Catrin's age, in terms of b .

[1]

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- (b) (i) Solve $x - 7 = 38$

[1]

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- (ii) Solve $\frac{y}{4} = -17$

[1]

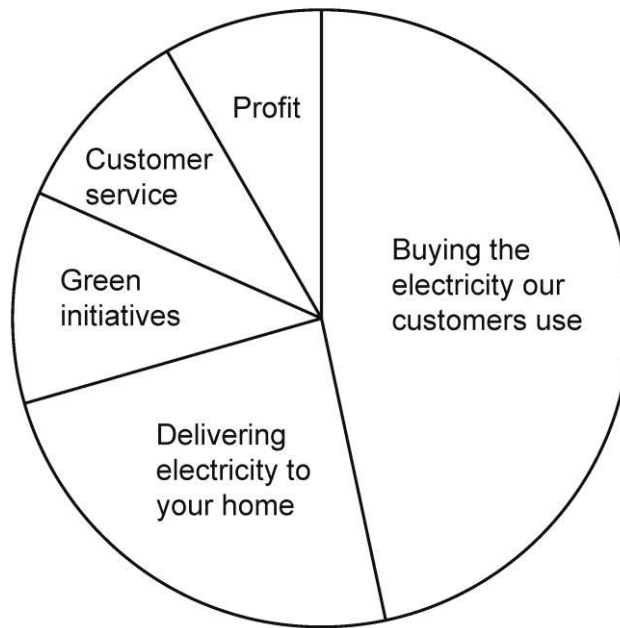
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9. Gwalia Electric is a company that supplies electricity.

(a) Last year, Gwalia Electric displayed the following information in a pie chart.

[3]



The pie chart represents a total of £2340 million.

How much money did Gwalia Electric spend on green initiatives last year?
Give your answer in millions of pounds.

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Money spent on green initiatives = £ million

- (b) Last year, Gwalia Electric had 1.08 million customers.
The previous year, Gwalia Electric had 800 000 customers.

[1]

What is the difference between these numbers of customers?
Circle your answer.

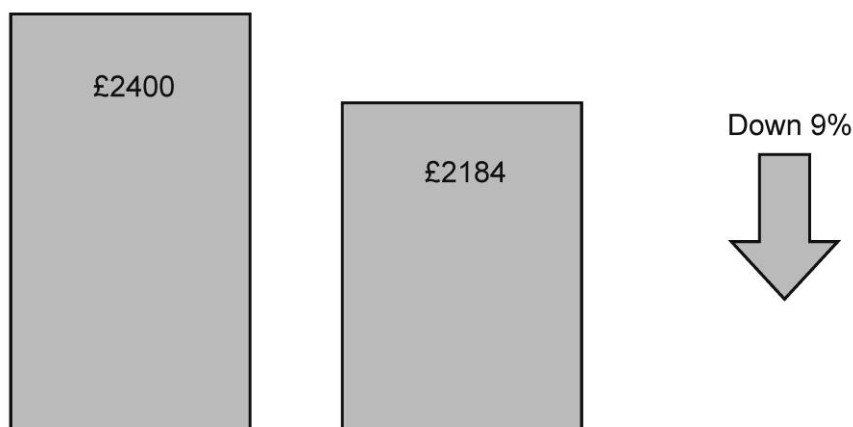
1 880 000 280 000 692 000 2 800 000 728 920

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- (c) In an advertisement, Gwalia Electric claims that the average annual household bill has decreased by 9% during the last year.
The advertisement contains the following display.

[2]



Is the decrease of 9% correct for the displayed numbers?
You must show all your working to support your answer.

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10. Calculate the following, giving your answer correct to 2 decimal places.

[2] Examiner only

$$\frac{25 - 3.7^2}{\sqrt{21}}$$

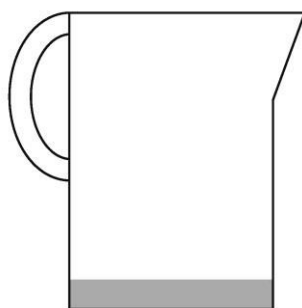
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11. A lemon drink is to be made by adding water to lemon cordial.



- (a) A measuring jug contains 170 ml of lemon cordial.
1.36 litres of water is added to make the lemon drink.

[2]

What is the volume of lemon drink in the jug?
Give your answer in millilitres.

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The volume of lemon drink in the jug is ml

(b) A cup holds 175 ml of lemon drink when full.

[2] Examiner
only

How many cups can be completely filled by using the lemon drink from the jug?

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- 12.** In a quiz, there are 60 questions.

A contestant scores

- + 6 points for each correct answer,
- 3 points for each incorrect answer,
- 2 points for each question not answered.

Elena and Faizal are two contestants in the quiz.

- (a) Elena answers 32 questions correctly, answers 16 questions incorrectly and does not answer 12 questions. [2]

What is her final score?

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- (b) After 59 questions, Faizal's score was 345 points. [3]
After 60 questions, Faizal's score was 343 points.

Explain, showing your calculations, how Faizal may have answered the 60 questions.

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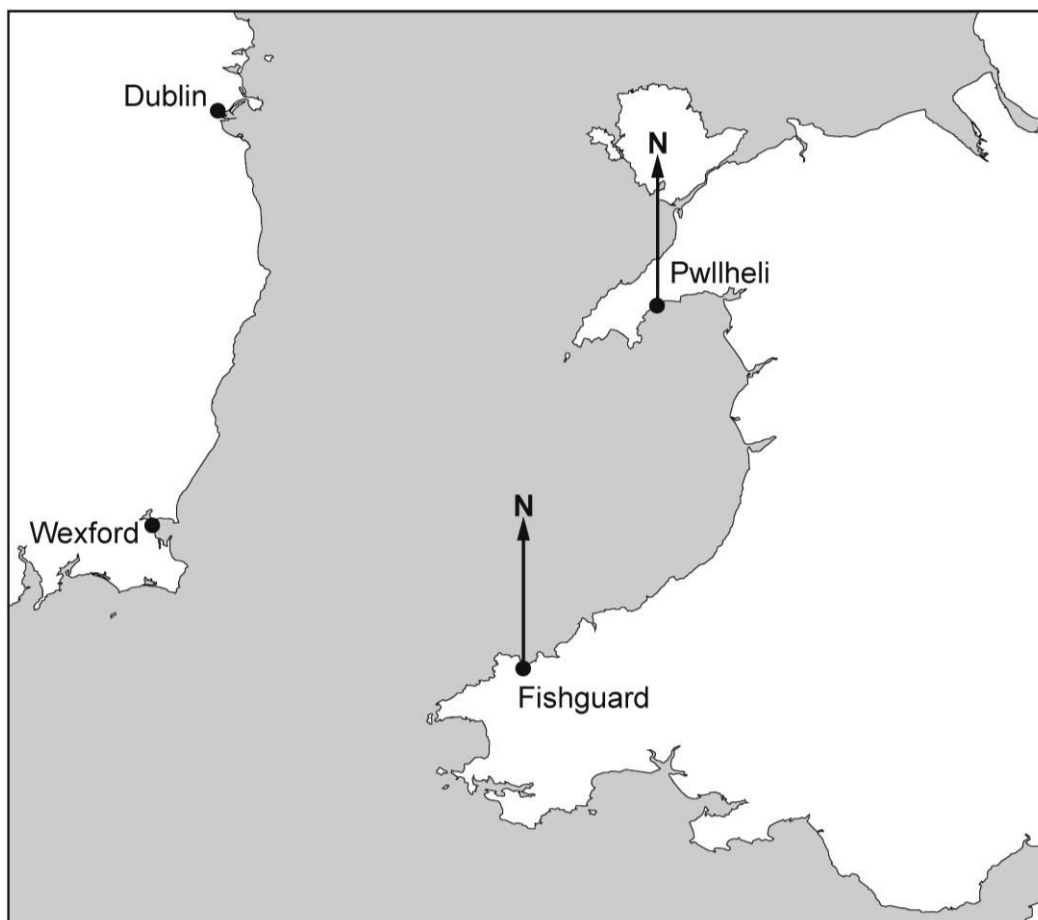
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13. A map of Wales and part of the Republic of Ireland is shown below.

[3]

Examiner
only



The village of Courtown in the Republic of Ireland is on a bearing of:

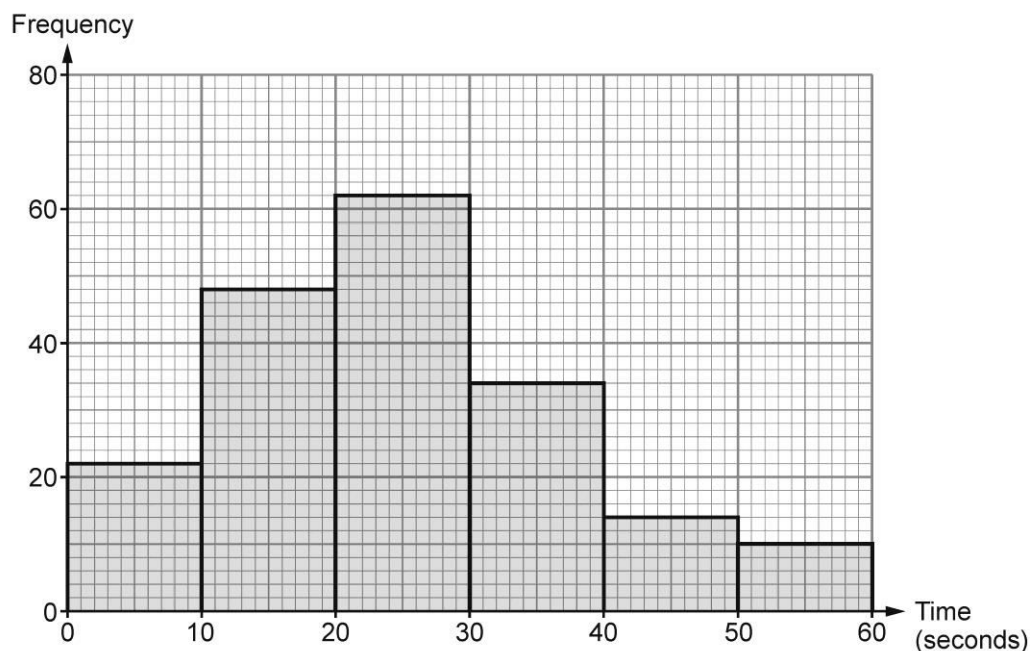
- 260° from Pwllheli and
- 310° from Fishguard.

Mark the position of Courtown on the map with a cross, X.

14. Mali works in a call centre.

The frequency diagram below shows the time it took Mali to answer each call she received on Tuesday.

On Tuesday, she answered all the calls within 60 seconds.



Mali said,

'I answered 80% of the calls received on Tuesday within 30 seconds or less.'

Is Mali correct?

Yes ☐ No ☐

You must show working to support your answer.

[4]

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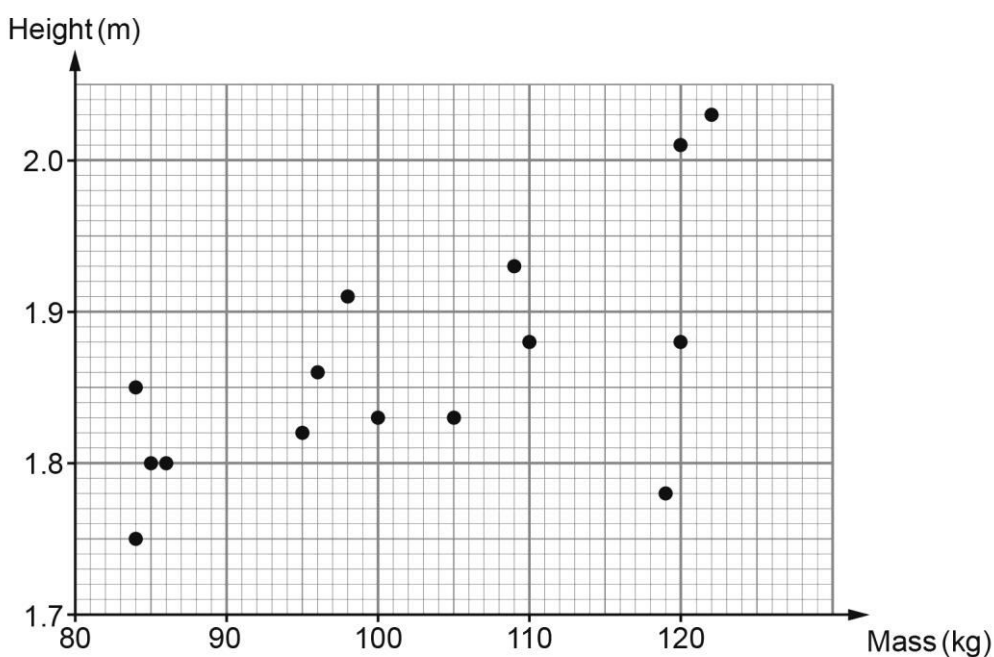
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15. A rugby team consists of 15 players.
The Welsh rugby team played the Irish rugby team in February 2024.

The scatter diagram below shows the height and mass of each of the 15 Welsh players who started the game against Ireland.



- (a) Two of the players, each with a mass greater than 90 kg, have the same mass. [2]

Find the difference between the heights of these two players.
Give your answer in centimetres.

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- (b) Siôn believes the scatter diagram shows that there is a positive correlation between the height and mass of the 15 Welsh players.

- (i) Explain what this means in the context of the scatter diagram. [1]

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(ii) Siôn's friend, Harri, looks at the scatter diagram and says;

'One player's height and mass don't follow the same pattern as for the rest of the players'.

Write the height and mass of this player.

[1]

Height =m Mass =kg

(c) Draw a line of best fit on the scatter diagram.

[1]

(d) Explain why it may not be appropriate to use your line of best fit to estimate the height of a rugby player with mass 125 kg.

[1]

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16. The area of triangle PQR , shown in the diagram below, is 36 cm^2 .

[5] Examiner only

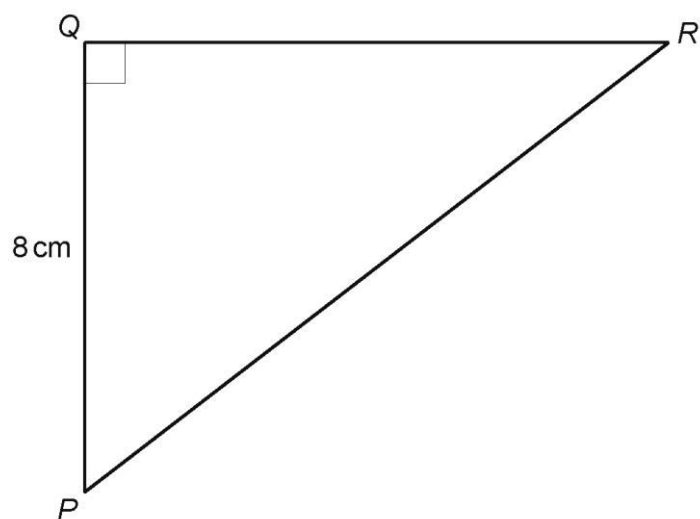


Diagram not drawn to scale

Calculate the length of PR .

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17. The scale diagram below shows a plan view of Gruff's garden.
The scale used is **1 cm represents 1 metre**.

[3]

Examiner
only

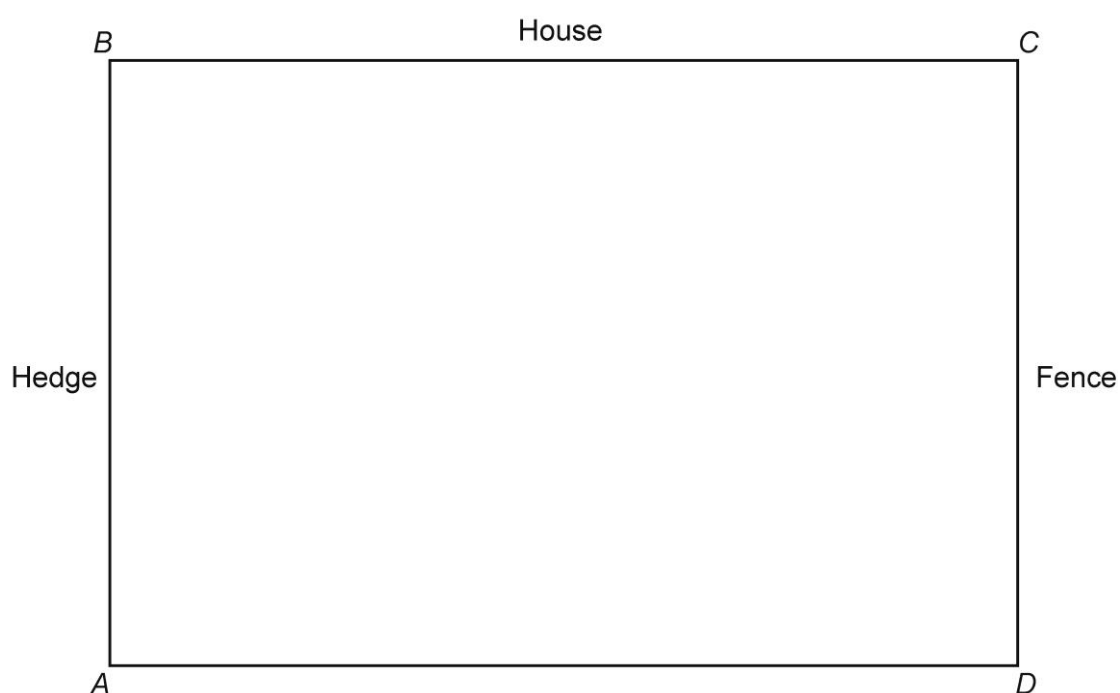
Gruff's house is along the side BC.
There is a hedge along AB.
There is a fence along CD.

Gruff wants to plant a tree in the garden.

The tree must be

- nearer to the fence than the house
- less than 7 metres from the corner A.

Draw suitable lines on the diagram and shade the region where the tree could be planted.



18. A solid metal cylinder has a radius of 2.3 cm and a height of 5 cm.

[4]

Examiner
only

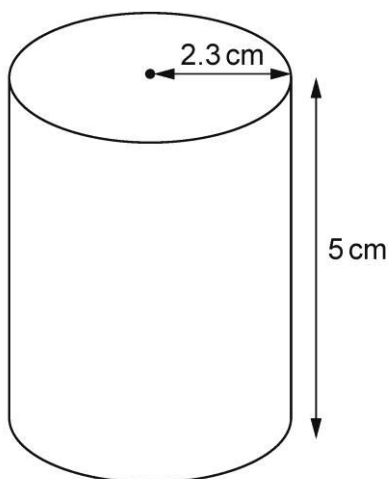


Diagram not drawn to scale

The mass of the cylinder is 423.1 g.
Find the density of the metal.
Give your answer in g/cm^3 .

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END OF QUESTIONS

