

Key Stage 4

Foundation

Geometry Revision









Name:

Teacher:

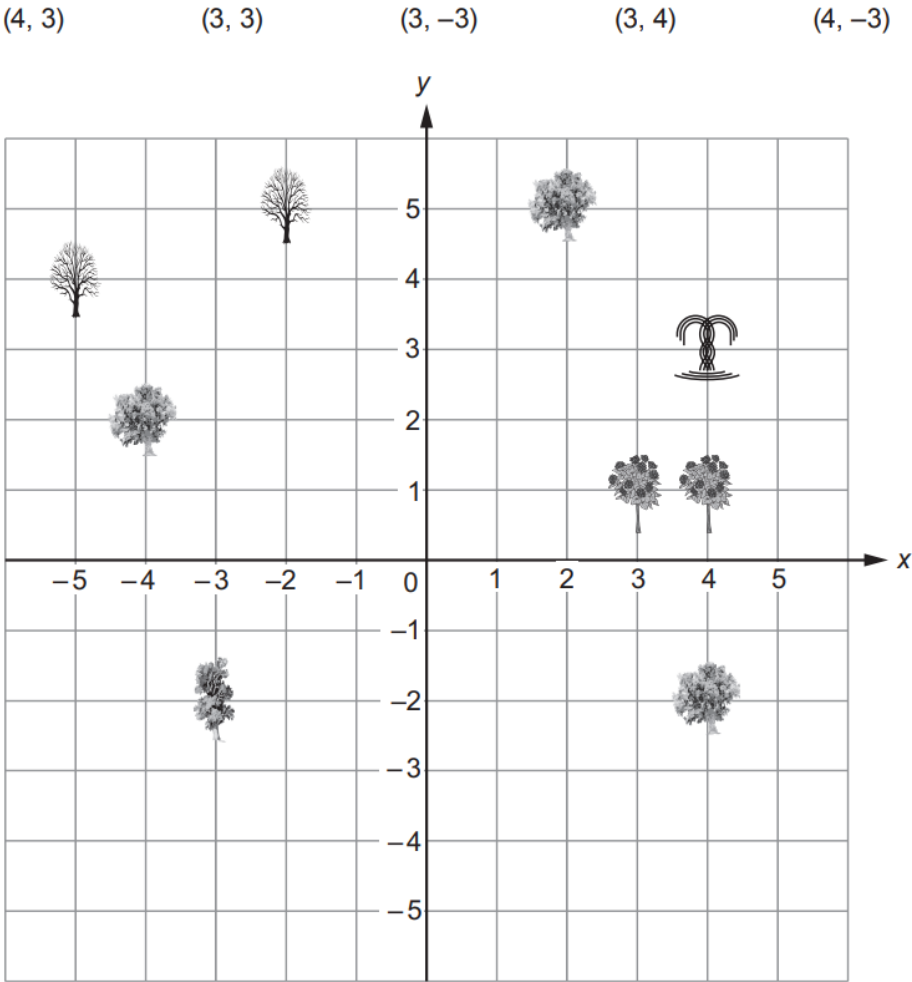
Numeracy Non-Calculator

1. A landscape gardener designs gardens. He uses a coordinate grid to show the position of plants and trees. He has started to create a plan for one of his customers. The table below shows some of the items that are to be put into the garden.

		
Wooden table & chairs	Fountain	Flowering shrub
		
Large tree	Winter tree	Flowering tree

- (a) What are the coordinates of the fountain?
Circle your answer.

[1]



- (b) The gardener is going to place
- the wooden table and chairs at $A (-1, 2)$
 - a flowering shrub at $B (1, 0)$.

Plot the **positions** of points A and B on the grid above.

[2]

- (c) The lawn in the garden is rectangular.
It has length 4.5 metres and width 3 metres.

- (i) What units should be used for the area of the lawn?
Circle your answer.

[1]

m cm m^2 m^3 yards

- (ii) What is the area of the lawn?

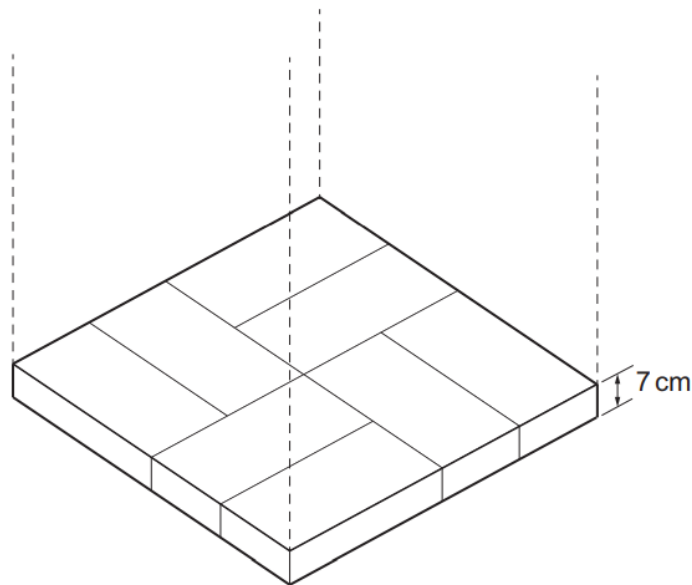
[2]

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- (d) The gardener has a stack of bricks to build a barbeque.
The stack is 154 cm tall.

Each layer of bricks has the pattern shown below.



The thickness of one layer of bricks is 7 cm.
How many bricks are there in the stack altogether?

[4]

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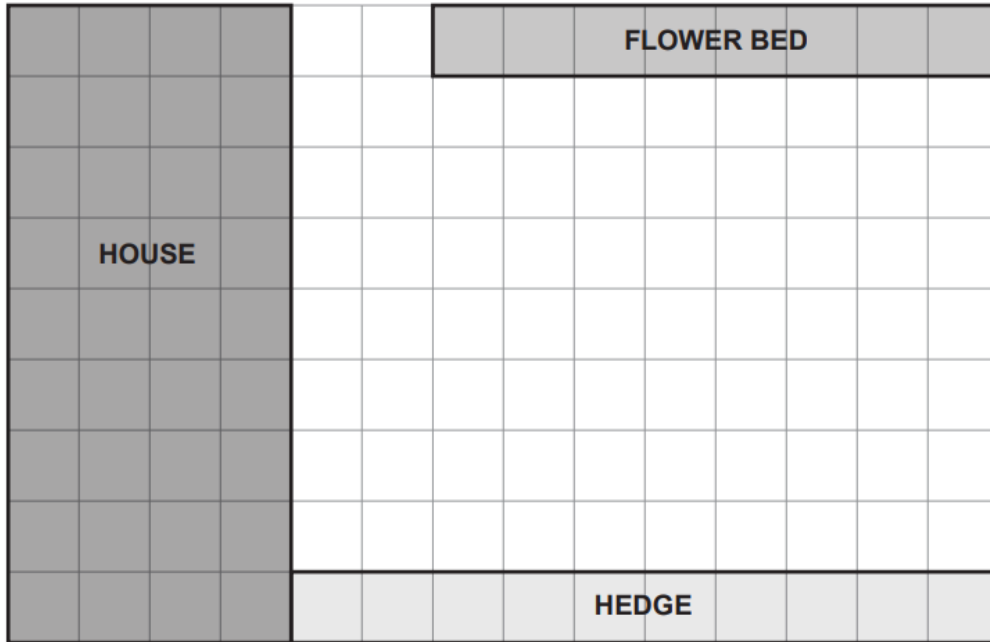
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1. Elwyn wants to put a shed in his garden.

- (a) The diagram below shows a plan of his garden.
The scale is 1 cm represents 1 m.
It shows the position of the house, the hedge and the flower bed.



Scale: 1 cm represents 1 m

The base of Elwyn's shed is rectangular. It is 4 m long and 3 m wide.

He wants the shed to be:

- at least 3 m from the house,
- at least 1 m from the hedge,
- exactly 2 m from the flower bed.

Draw a possible position for the shed on the diagram.

[3]

- (b) Elwyn wants to cover the base of the shed with carpet tiles.
The carpet tiles cost £15 for each 1 m^2 .
Calculate the total cost of the carpet tiles.

[3]

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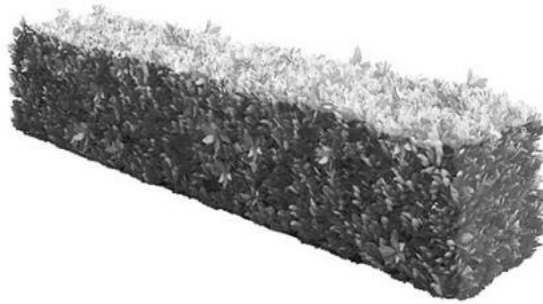
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(c) This is a picture of Elwyn's hedge.



Which of the words below best describes the shape of the hedge?
Circle your answer.

[1]

sphere

cylinder

cone

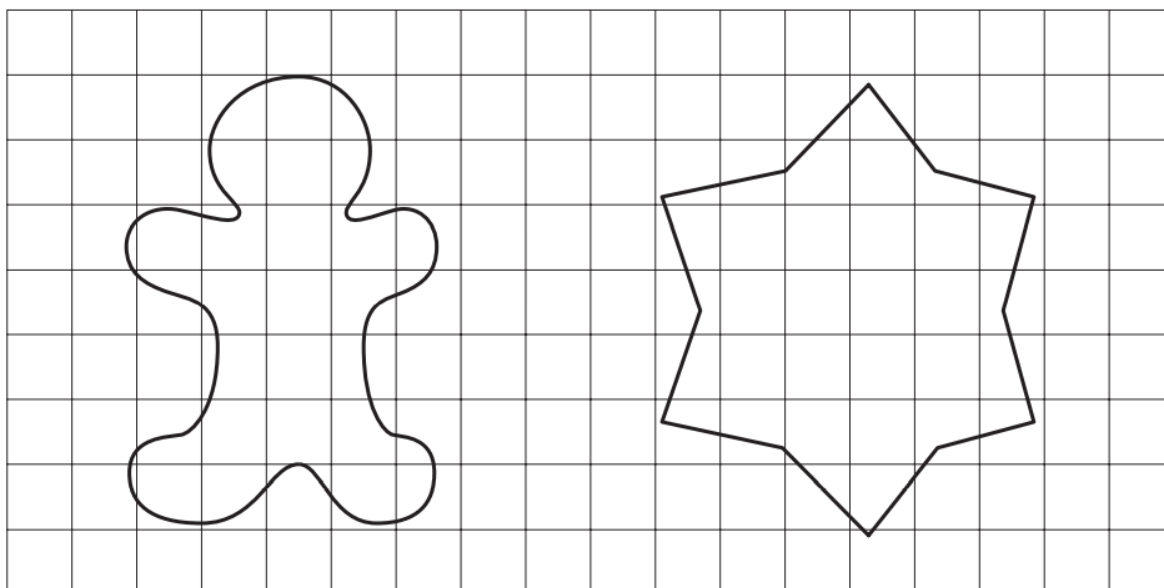
cube

cuboid

2. (a) Tamsin and Sophie make biscuits.
They plan to cover the top surface of each biscuit with the same thickness of chocolate.
The biscuits are shown on the centimetre squared grid below.

Tamsin's biscuit

Sophie's biscuit



Tamsin thinks that Sophie's biscuit will need more chocolate to cover it.
Estimate the area of each biscuit.
Decide whether or not Tamsin is correct.
Show all your working.

[3]

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- (c) Tomas makes rectangular biscuits.
The top of each biscuit has a surface area of 30 cm^2 .
Tomas covers the surface area of the top of each biscuit with chocolate.
The chocolate costs 3 pence per 10 cm^2 .
Calculate the cost of covering 200 of these biscuits with chocolate.

[3]

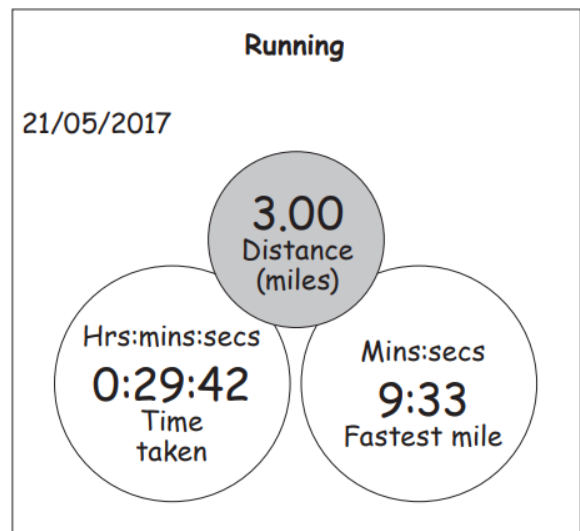
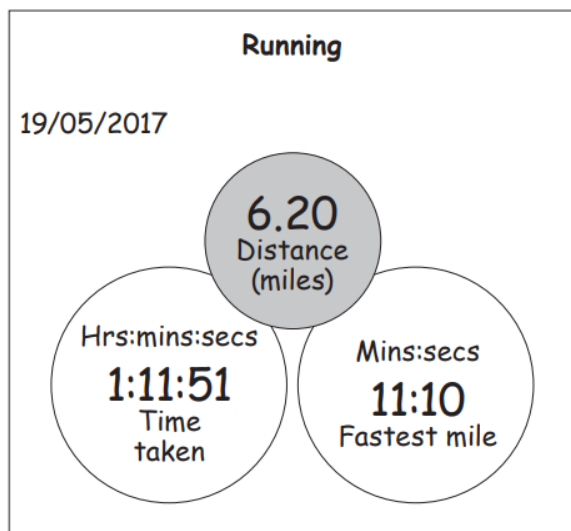
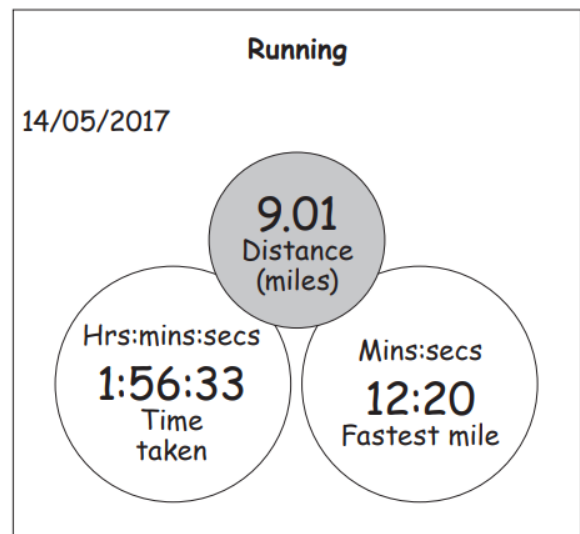
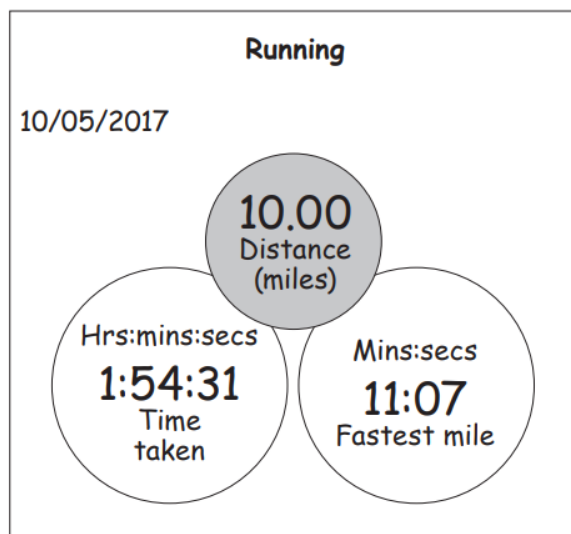
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3. Jo is a keen runner.
She tracks each of her runs using an app on her phone.
Information about her last four runs is shown below.



(a) In Jo's last four runs,

- (i) what was the shortest distance that she ran?

[1]

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- (ii) what was the longest time that she ran for?

[1]

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- (b) Circle either TRUE or FALSE for each of the following statements about Jo's **last 4 runs**. [2]

Jo always ran for more than half an hour	TRUE	FALSE
Jo ran a total of more than 25 miles	TRUE	FALSE
Jo's fastest mile run was under 10 minutes	TRUE	FALSE
Jo's furthest run took the longest time	TRUE	FALSE

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- (c) On the **10th May 2017**, Jo set a target time of 1 hour 45 minutes to complete her run. By how many minutes and seconds did Jo miss her target? [1]

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- (b) Gwenda knows that 5 miles is approximately 8 kilometres. How many kilometres is 90 miles? [2]

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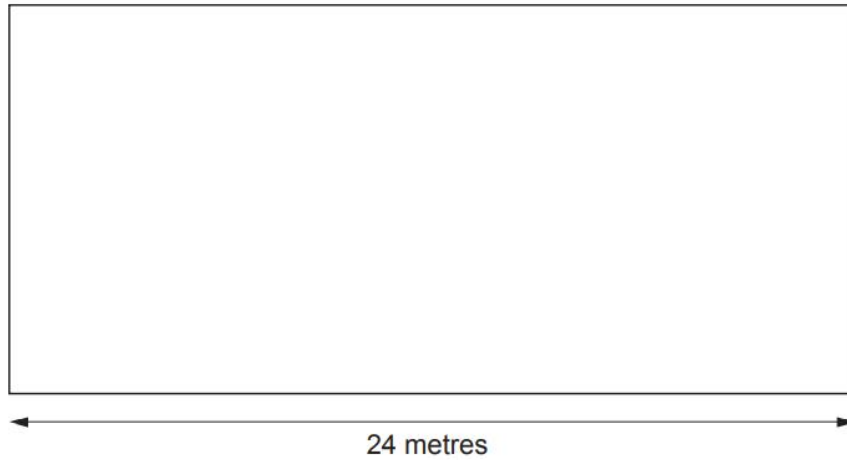
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4. (a) *The Marine Tennis Club* has 6 tennis courts.
Each court is rectangular in shape.

The diagram below is a **scale drawing** of one of the tennis courts.



The actual length of the tennis court is 24 metres.

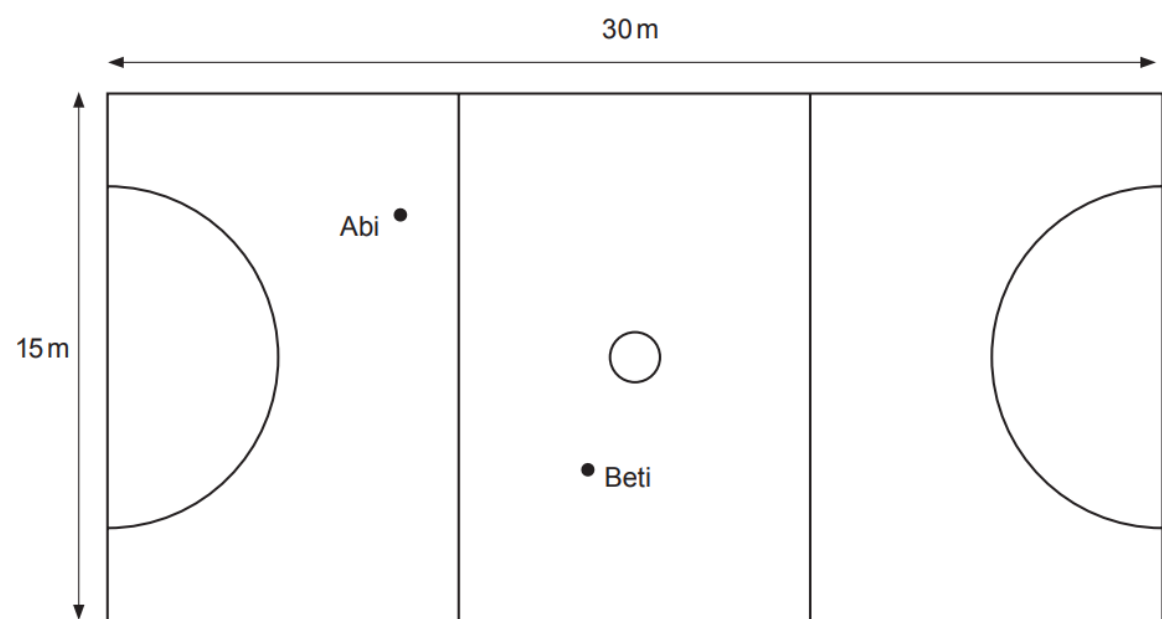
Using a ruler to measure the length of the scale diagram, find the **actual width** of the tennis court. [3]

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4. The diagram shows a scale drawing of a netball court.



- (a) All of the **straight** lines on the netball court are to be painted white.
What is the total length of the white lines that need to be painted? [2]

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- (b) The scale used in the diagram is **1 cm represents 2 m**.
Abi passes the ball to Bet.
Use the scale to work out the distance between Abi and Bet in metres. [2]

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- (c) Abi, Beti, Cala and Delaney played a practice game.
 Abi scored 9 goals.
 Beti scored 6 goals.
 Cala scored 5 goals.

The mean number of goals scored by all four players was 7.
 How many goals did Delaney score?

[4]

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- (d) The practice game started at 3:55 p.m.
 Cala scored her first goal after 12 minutes.
 At what time did Cala score her first goal?
 Circle your answer.

[1]

3:43 p.m. 15:67 04:07 3:07 p.m. 16:07

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5. Tractors need to have tyres of the correct size.
 All tyres have codes on them.
 The code on a tractor's front tyre is 320/85R20.
 The '320' means that the tyre is 320 mm wide.



- (a) What is 320 mm in cm?

[1]

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(b)



A company that sells the tractor tyres stacks them one on top of each other.

For safety reasons the piles are no more than 2 metres high.

What is the greatest number of tyres that can be stacked safely in a single pile? [3]

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Greatest number of tyres is

6. Every year, *Aber Young Farmers* club organises a sponsored walk.

(a) This year, the length of the walk is 20 miles.
Calculate the length of the walk in km.



[2]

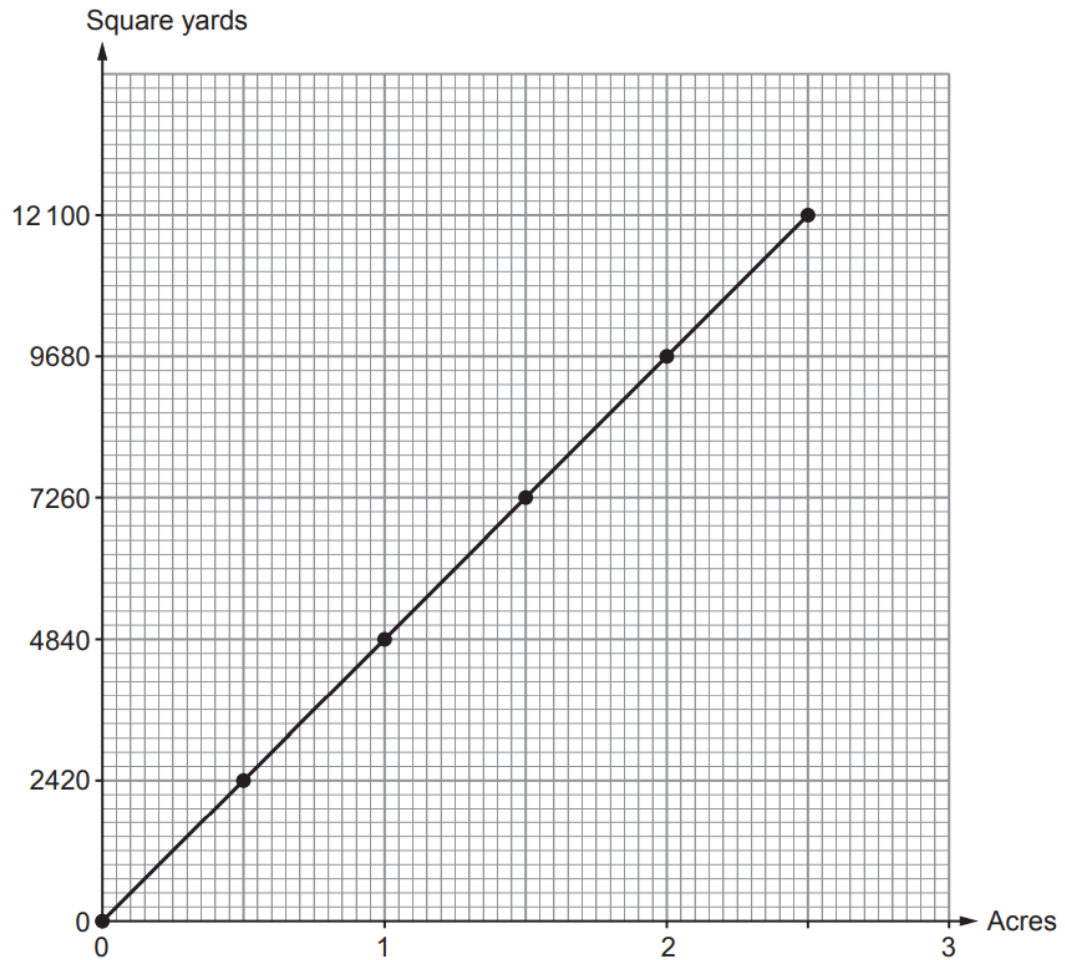
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5. Marcus is a farmer.
He has his own conversion graph to change between acres and square yards.



Complete each of the following statements.

- (a) 3 acres is equal to square yards. [1]

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- (b) 5.5 acres is equal to square yards. [2]

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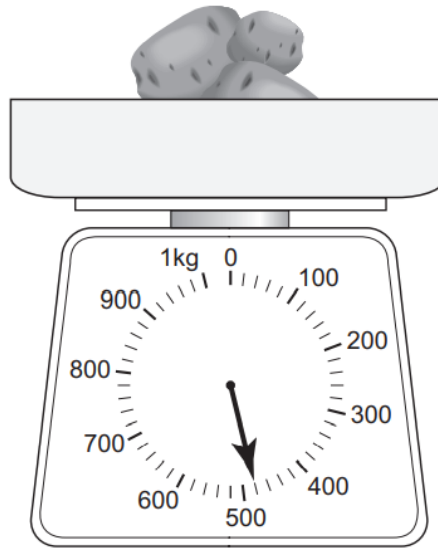
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5.

Huw is going to make vegetable soup for 6 people.

A recipe for 2 people uses 10 ounces of potatoes.

He has placed some potatoes on his weighing scales as shown below.



The weighing scales display the mass in grams.

Huw knows that 1 ounce is approximately 28 grams.

How many **more** grams of potatoes does Huw need to make vegetable soup for **6 people**? [5]

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Extra mass of potatoes needed is grams

8.

- (b) Gareth's luggage weighed 21.13 kg.
This was over the maximum of 20 kg allowed.

Gareth removed items from his luggage so that its mass was:

- as close to 20 kg as possible,
- **not greater** than 20 kg.

From the following list of items, which **two** items did Gareth remove?
You must show all your working.

[3]

Coat	Headphones	Jumper	Book	Hat
820 g	300 g	320 g	340 g	200 g

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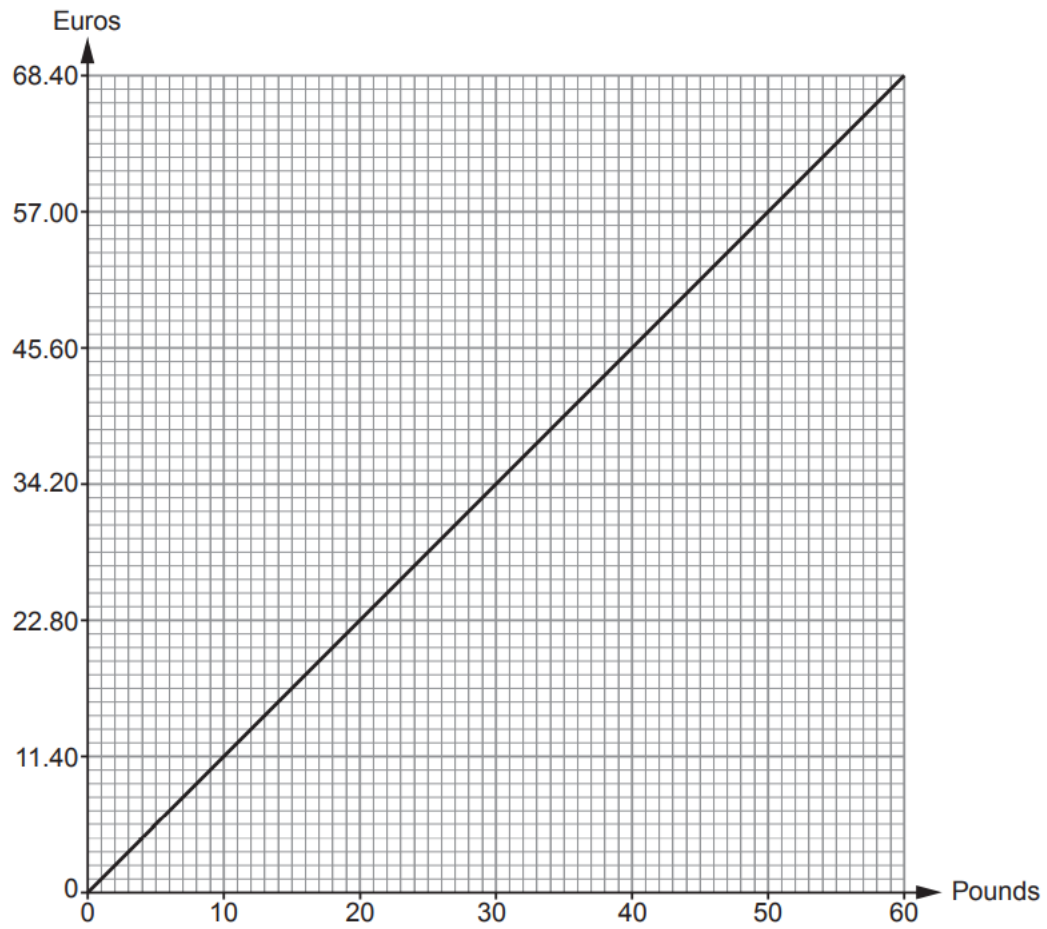
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- (c) Before going on holiday, Aled made a conversion graph to help him understand prices in euros.



Use Aled's conversion graph to answer the following questions.

- (i) A camera costs £90.
How much is this in euros? [2]

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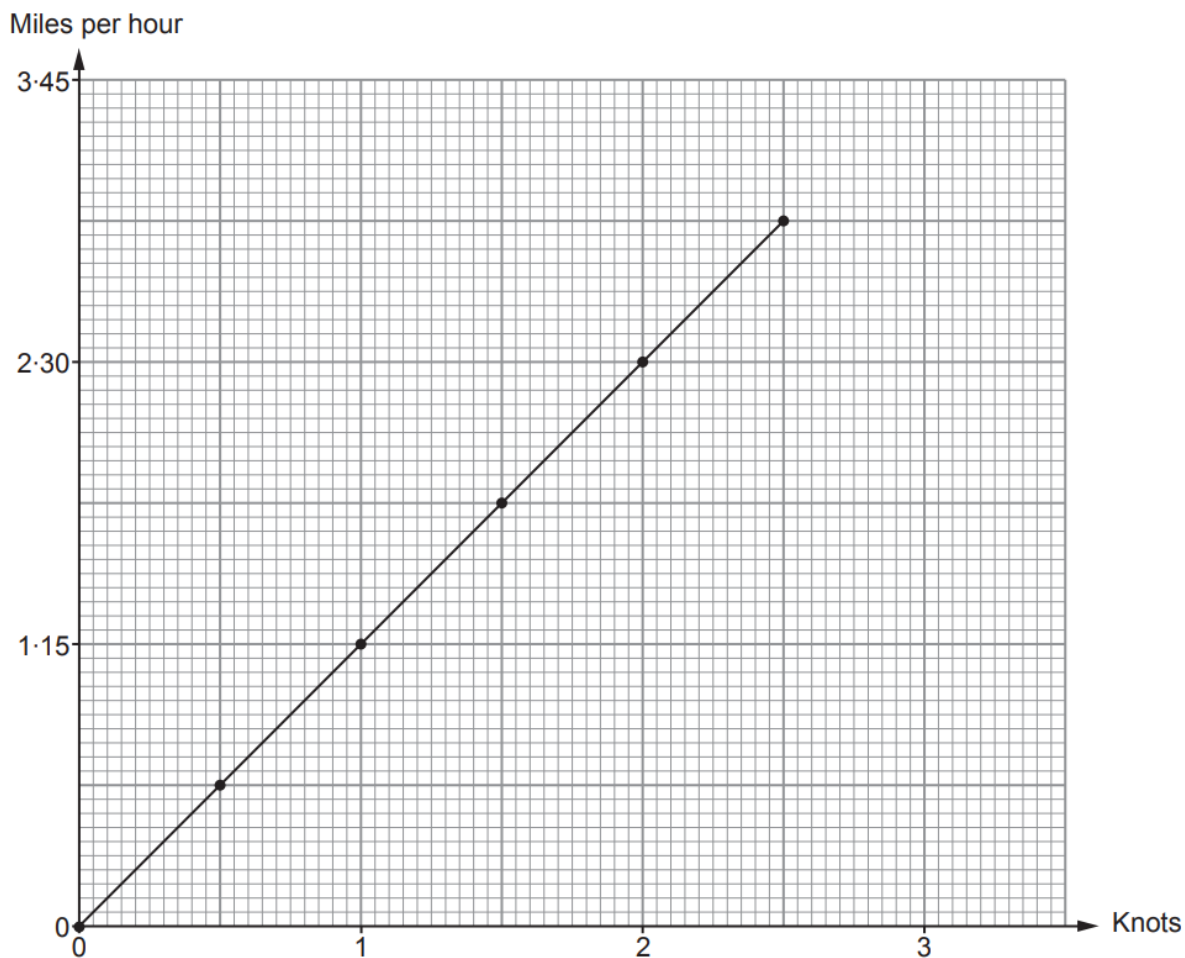
Camera costs euros

- (ii) A meal costs £25.
How much is this in euros? [2]

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Meal costs euros

9. Emily has drawn a conversion graph, as shown below.
She uses it to help her brother understand how to convert knots to miles per hour.



Complete each of the following statements.

- (a) 23 miles per hour is equal to knots. [1]

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- (b) 5 knots is equal to miles per hour. [2]

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9. Kari is making a jigsaw puzzle.
She has designed the pattern on a piece of paper.
Kari plans to make each piece of the jigsaw a different colour.

Part of her plan is shown below.

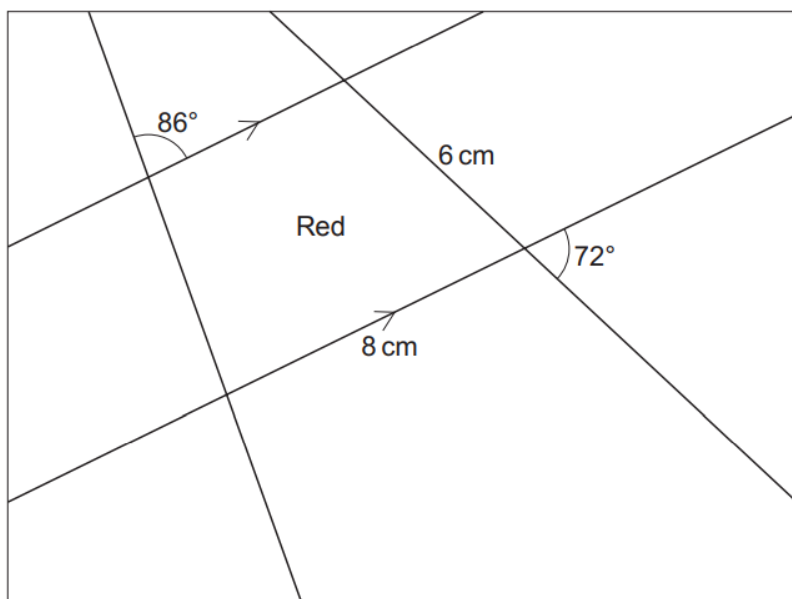


Diagram not drawn to scale

Kari now sketches a diagram of the red piece of the jigsaw, which is shown below.
She shows some extended lines and indicates all the angles she needs to find.

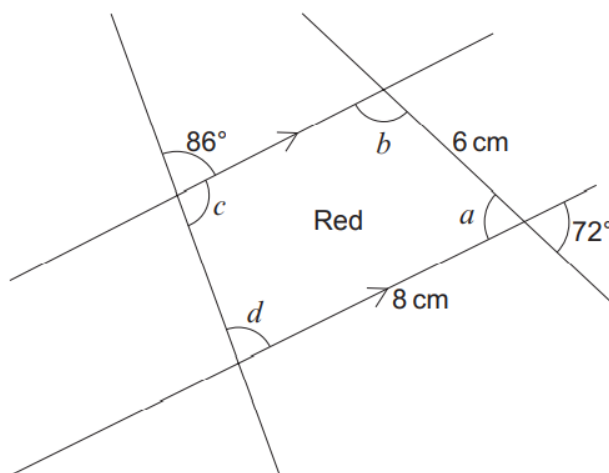


Diagram not drawn to scale

Find the 4 missing angles in the red piece of the jigsaw.

[6]

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$a =$ $^{\circ}$,
 $b =$ $^{\circ}$,
 $c =$ $^{\circ}$,
 $d =$ $^{\circ}$

10. Lazar wants to send a package to Germany.
 He looks at pricing charts for three different companies, *ParcelMax*, *DirectGo* and *Pack2save*.

ParcelMax
 Total cost =
 Sum of the 3 dimensions in cm \times £0.60

DirectGo
 Total cost =
 Volume measured in $\text{cm}^3 \times$ £0.01

Pack2save
 Total cost =
 Total area of all 6 faces measured in $\text{cm}^2 \times$ £0.02

Lazar’s parcel is a cuboid measuring 10 cm by 20 cm by 30 cm.

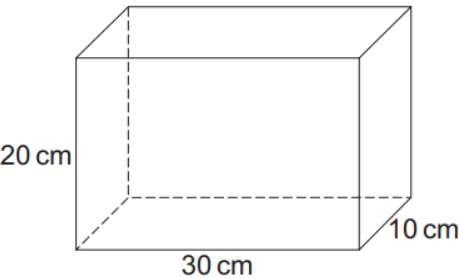


Diagram not drawn to scale

Find the cost of sending the parcel for each of the three different companies.
 Give each of your answers in pounds (£).

- (a) *ParcelMax* [2]

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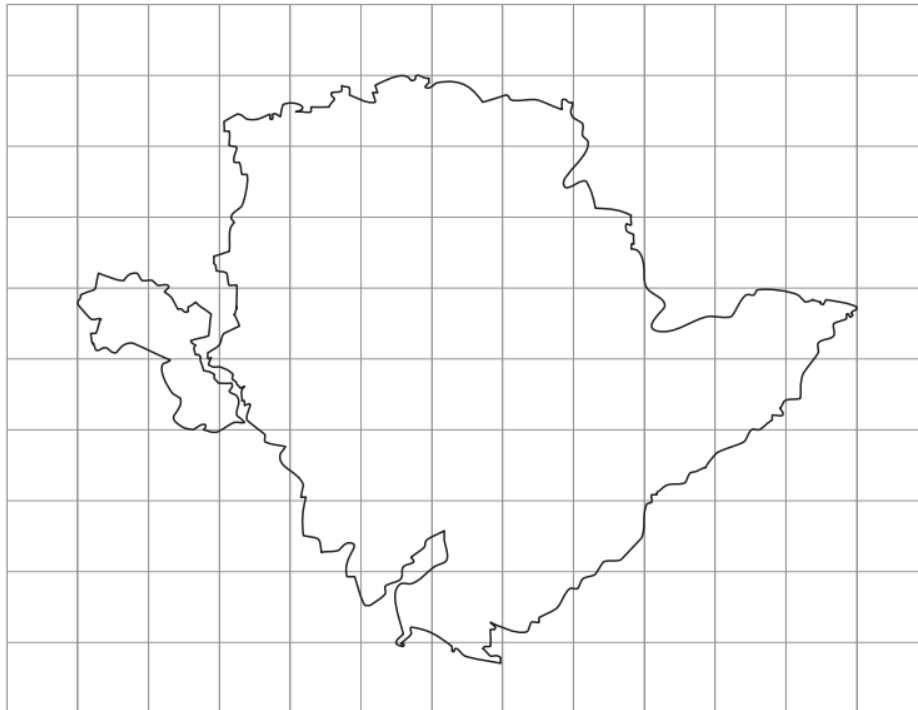
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[4]

Numeracy Calculator

1. (a) A map of Anglesey is drawn on the grid below.



Each square on the grid represents an area of **16 km²**.
Find the approximate area of Anglesey in km².

[3]

Area of Anglesey is km².

1. The chart below shows the road distances between some towns and cities. The distances are given in miles.

Abergavenny			
18	Newport		
45	53	Gloucester	
50	32	36	Bristol

Wyn lives in Abergavenny and works in Bristol.

- (a) Use the chart to find the road distance from Abergavenny to Bristol. [1]

- (b) Wyn works in Bristol for 5 days each week. Each day, he drives to and from work using the route shown on the map.

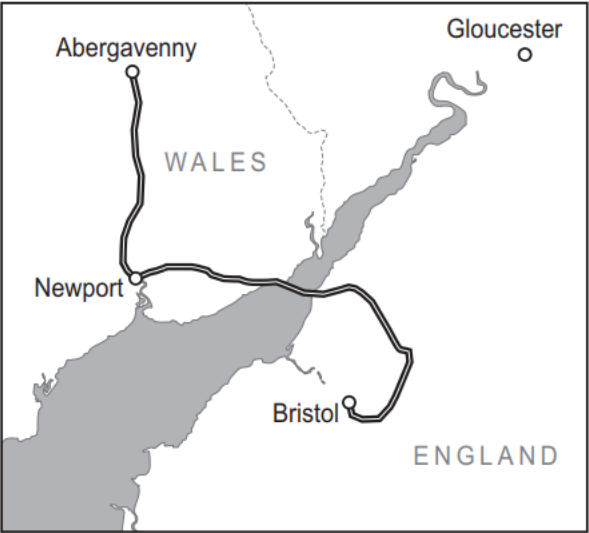


Diagram not drawn to scale

How many miles, in total, does he travel to and from work each week? [2]

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- (c) One day, Wyn had to use a different route through Gloucester to get to and from work.

Alternative Route

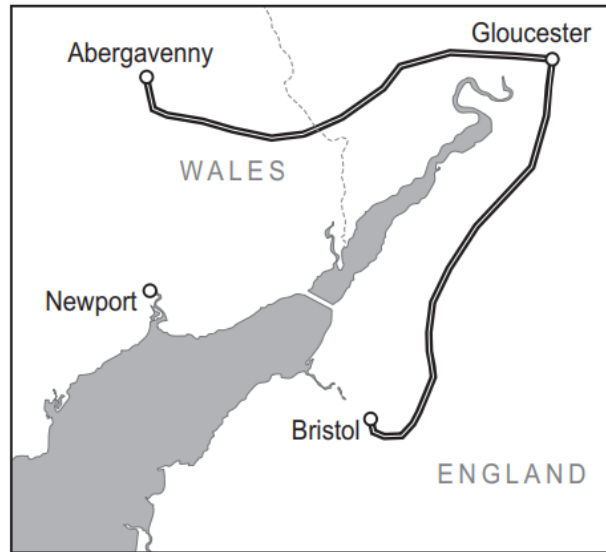


Diagram not drawn to scale

Use the chart to work out how many **extra** miles Wyn travelled that day.
You must show all your working.

[4]

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The company produces some postcards to advertise the business.
The postcards are rectangular.
The dimensions can be seen on the diagram below.

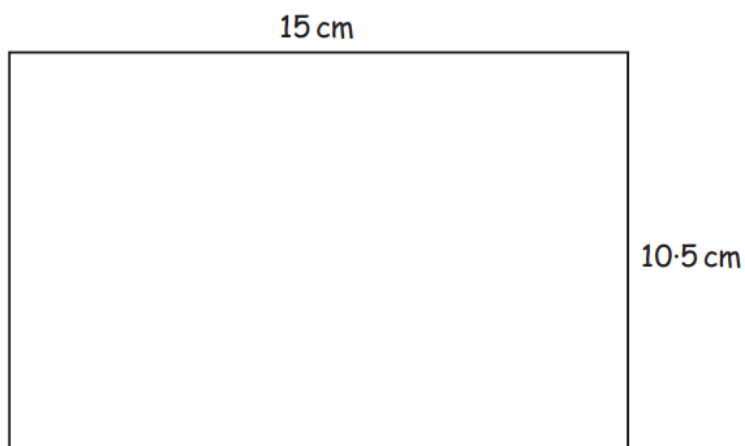


Diagram not drawn to scale

- (c) What is the perimeter of the postcard?
Circle your answer.

[1]

50.10 cm

25.5 cm

51 cm

157.5 cm²

157.5 cm

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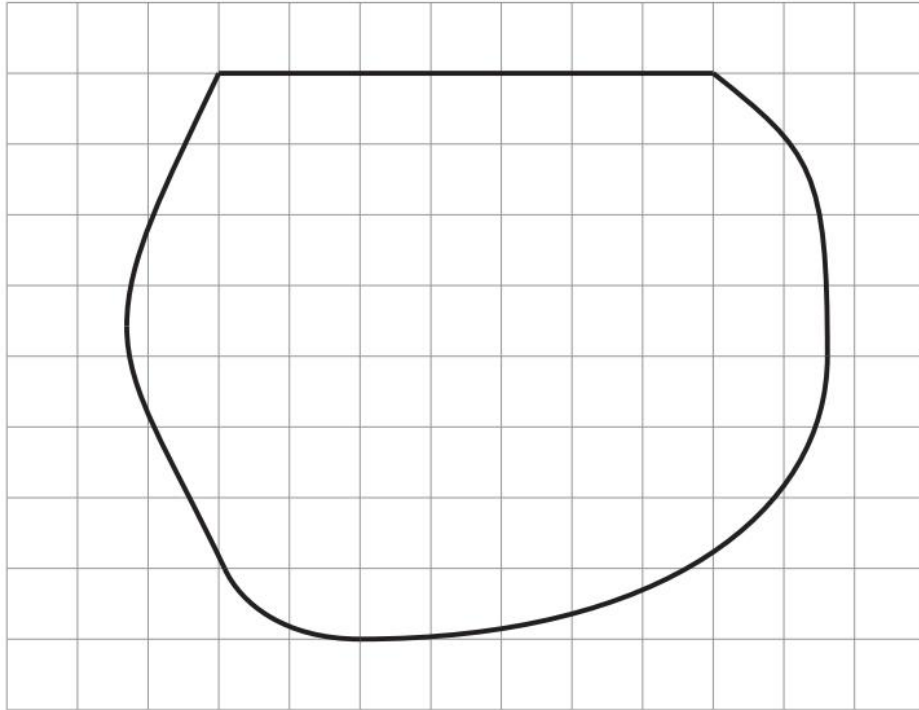
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3. Mr Owen wants to tidy up his garden.

- (a) The shape below is the outline of Mr Owen's garden drawn to scale on a square grid. The scale of the drawing is 1 cm represents 1 m.

Scale: 1 cm represents 1 m



Mr Owen pays a gardener £12.50 per m^2 to prepare the garden.
Calculate how much Mr Owen pays the gardener.

[4]

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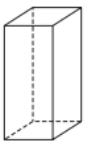



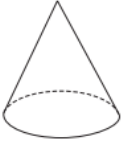

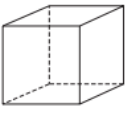
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Mr Owen pays the gardener £

3. Delyth runs her own business making and selling candles. She makes and sells four types of candle.

Type	Picture of candle	Diagram	Name of the 3-D solid	Volume of candle (cm ³)
A			240
B			283
C			CONE	270
D			CUBE	120

(a) Fill in the names of the 3-D solids in the table above. [2]

(b) Delyth uses a formula to work out the mass of wax that is needed to make one candle.

$$\text{Mass of wax in grams} = \frac{3 \times \text{volume of candle}}{5}$$

(i) What mass of wax will be needed to make a candle of type C? [2]

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Mass of the wax of a candle of type C is grams

(ii) Delyth has enough wax to make 50 candles of type A. How many type D candles can she make with the same amount of wax? [2]

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4. Jane lives in Cardiff and plans to travel to Bangor.

(a) Jane considers catching the train.

TRAIN TIMES: CARDIFF TO HOLYHEAD

Cardiff Central	05:10	07:21	09:21
Hereford	06:25	08:27	10:27
Chester	08:19	10:19	12:19
Bangor	09:33	11:38	13:28
Holyhead	10:22	12:22	14:22

Jane wants to arrive at Bangor before 1 p.m.
She could catch the 07:21 train from Cardiff Central.
How long would the train journey to Bangor take?

[1]

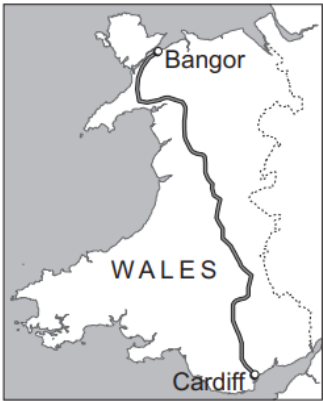
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(b) Jane decides to drive to Bangor.



**Cardiff to Bangor
JOURNEY DETAILS**

Distance 200 miles
Time (normal traffic) 4 hours 30 minutes

(i) Jane knows that her car travels 50 miles on one gallon of petrol.
The cost of petrol is £5.90 per gallon.
How much will the petrol cost for Jane to drive from her home to Bangor?
You must show all your working.

[2]

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- (ii) Jane needs to take a break after every 1 hour 15 minutes of driving.
How many breaks will she need to take before reaching Bangor? [1]

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- (iii) Jane decides to allow five and a half hours for the whole journey.
She needs to arrive in Bangor by 1 p.m.
What is the latest time she should leave Cardiff? [1]

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5. Here is a diagram of a snooker table.
The dotted lines on the diagram show the path of a ball as it bounces off the side of the table.

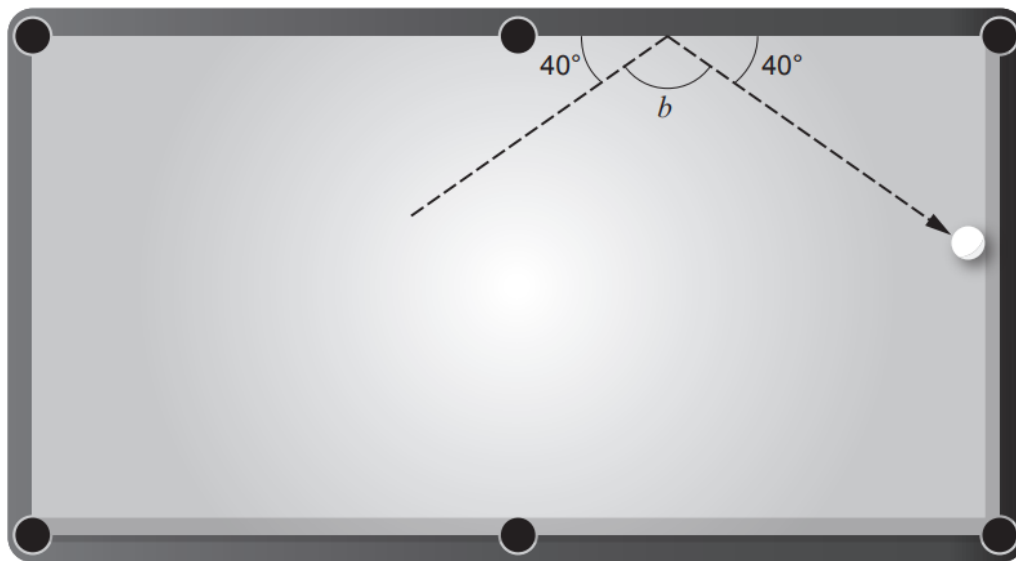


Diagram not drawn to scale

- (a) Find the size of angle b . [2]

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- (b) What is the special name given to angle b ? [1]

right angle obtuse angle acute angle reflex angle straight angle

- Luigi recorded that it rained on 28 of these days.
Rosina recorded that it rained on 40% of these 65 days.

'For the first 65 days of 2017, there were more days with rain where I live than where Rosina lives.'

You must show all your working.

[3]

6. Barrels are used to store liquid.
Glass containers are filled with liquid from a barrel.

The table opposite gives the capacity of some glass containers and their traditional names.



- (a) Complete the table to give the number of bottles equivalent to all the traditional sizes.

[2]

Capacity in litres	Number of bottles	Traditional name
0.75	1	Bottle
1.5	2	Magnum
3	Jéroboam
4.5	Réhoboam
6	8	Methuselah
9	12	Salmanazar
12	Balthazar

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- (b) A barrel contains just enough liquid to fill 3 Salmanazars and 1 Magnum.
Which of the following amounts does the barrel hold?
Circle your answer.

[1]

4 bottles 28.5 bottles 10.5 bottles 36 bottles 38 bottles

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- (c) A different barrel contains just enough liquid to fill 30 Magnums.
How many Salmanazars can be filled from this barrel?

[2]

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6. The diagram shows the plan of the floor of Nick's room.

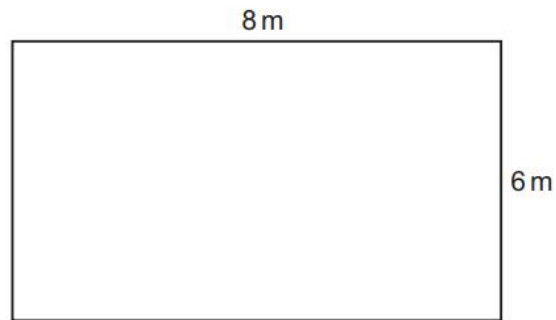
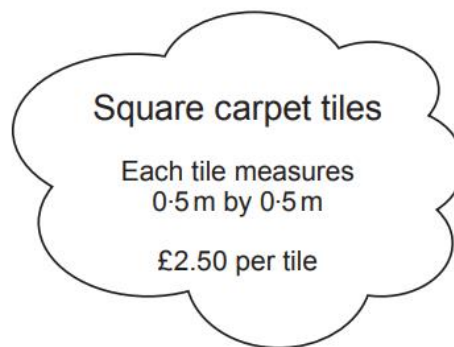


Diagram not drawn to scale

Nick is going to fit square carpet tiles to cover the floor.



How much will it cost Nick to cover his floor with these carpet tiles?
You must show all your working.

[4]

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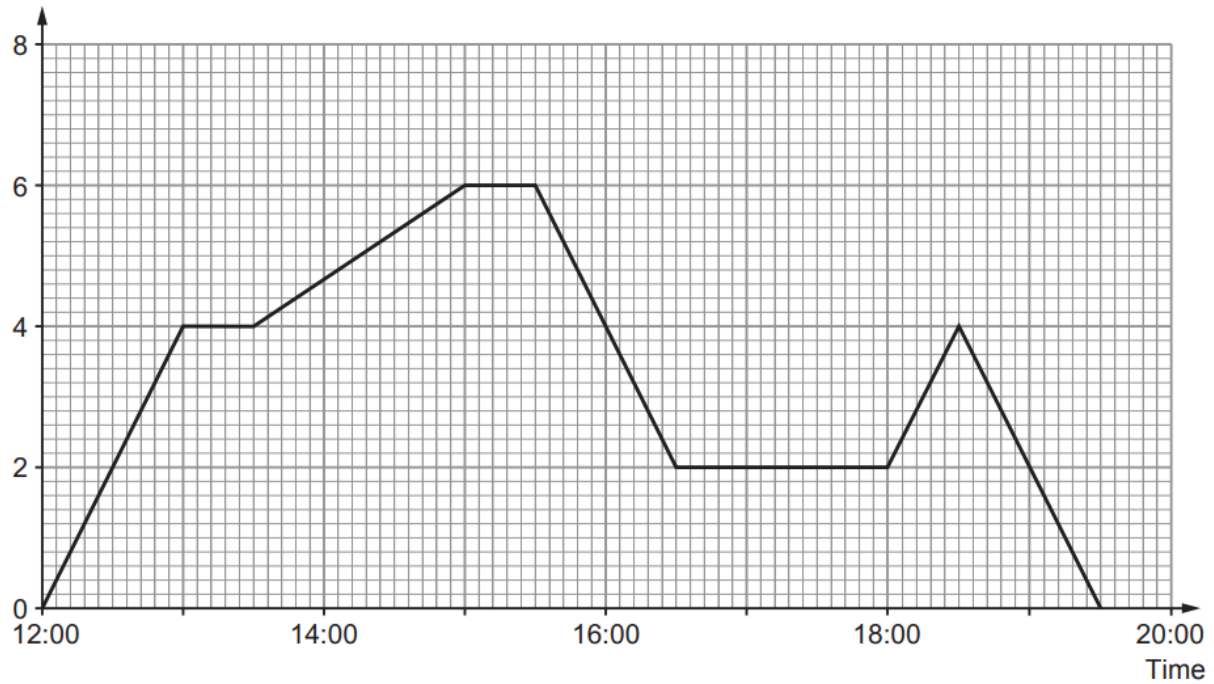
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7. The travel graph below shows a journey Gareth made yesterday.

Distance from home (km)



- (a) How far away from home was Gareth at 15:00?
Circle your answer.

[1]

0 km 2 km 4 km 6 km 8 km

- (b) At what time did Gareth arrive back home?
Circle your answer.

[1]

14:00 16:30 18:45 19:15 19:30

- (c) Sometime after 5p.m., Gareth headed for the supermarket.
The supermarket was closed when he got there so he headed straight back home.
At what time did Gareth arrive at the supermarket?
Circle your answer.

[1]

17:00 17:30 18:00 18:15 18:30 19:00

- (d) Gareth did not stop for the whole of the time between 15:00 and 15:30.
What could the travel graph tell you about his journey between these times?

[1]

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8. Glenda plans to drive from Flint to Cardiff.

On a long journey, her average speed is usually 42 mph.

Last time she drove from Flint to Cardiff it took her $3\frac{1}{2}$ hours.

- (a) Use this information to calculate the distance between Flint and Cardiff. [2]

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..... miles

- (b) Give a possible reason why your answer in (a) is only an estimate of the distance between Flint and Cardiff. [1]

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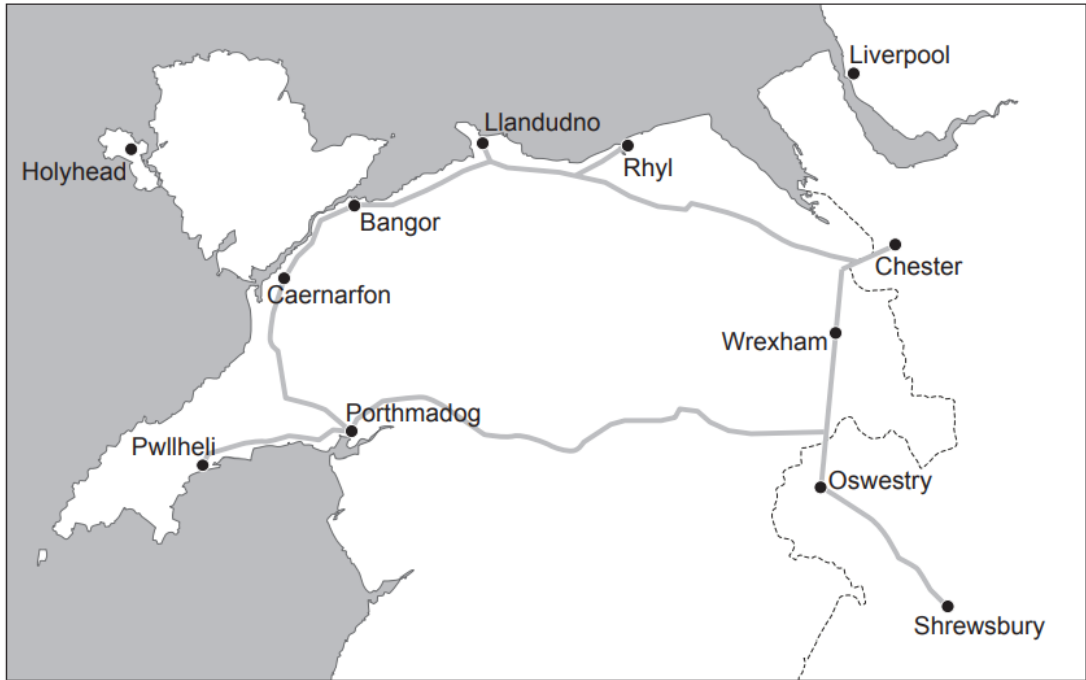
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9. A map of north Wales and the border with England is shown below.
The distance between Wrexham and Oswestry is approximately 22 km by road.



- (a) The straight-line distance between Wrexham and Oswestry on the map is 2.2 cm.
Which of the following represents the scale of the map?
Circle your answer.

[1]

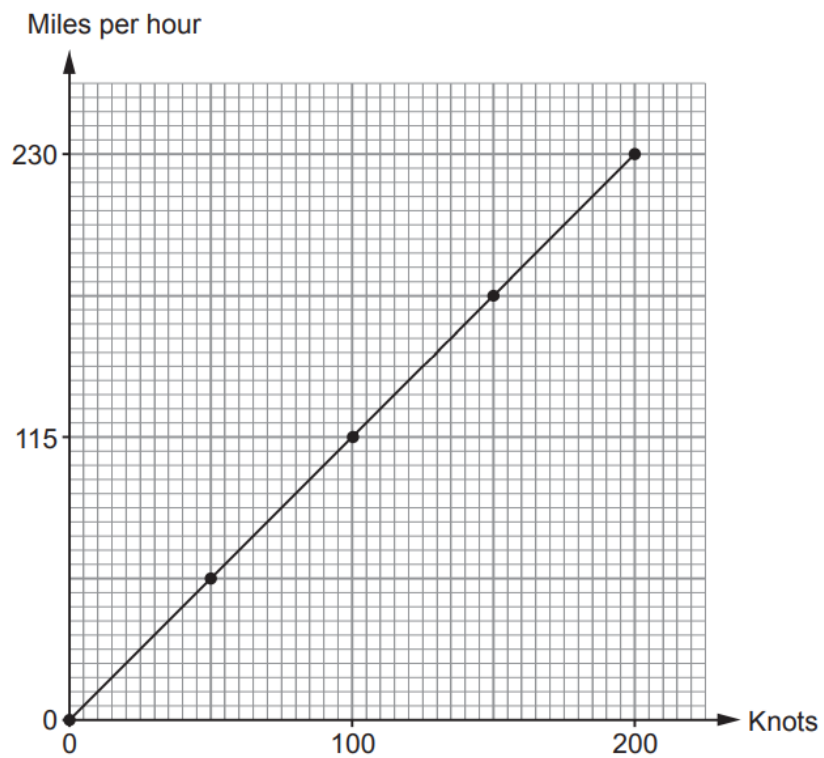
1 : 10 1 : 1000 1 : 10 000 1 : 100 000 1 : 1 000 000

- (b) Lauren travels by road directly from Wrexham to Oswestry.
This journey takes 25 minutes.
Calculate the average speed for Lauren's journey.
Give your answer in km/h.

[3]

Average speed km/h

10. Alun has made his own conversion graph to change knots to miles per hour.



- (a) Use Alun's conversion graph to write 150 knots in miles per hour.

[1]

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(b) Nikita thinks Alun's conversion graph may be inaccurate.

Nikita knows that 1000 knots is 1150.779 miles per hour, correct to 3 decimal places.

Convert 20 knots to miles per hour

- using Alun's conversion graph, and then
- using Nikita's values.

Calculate the difference, in miles per hour, between your answers.

Give your answer correct to 2 decimal places.

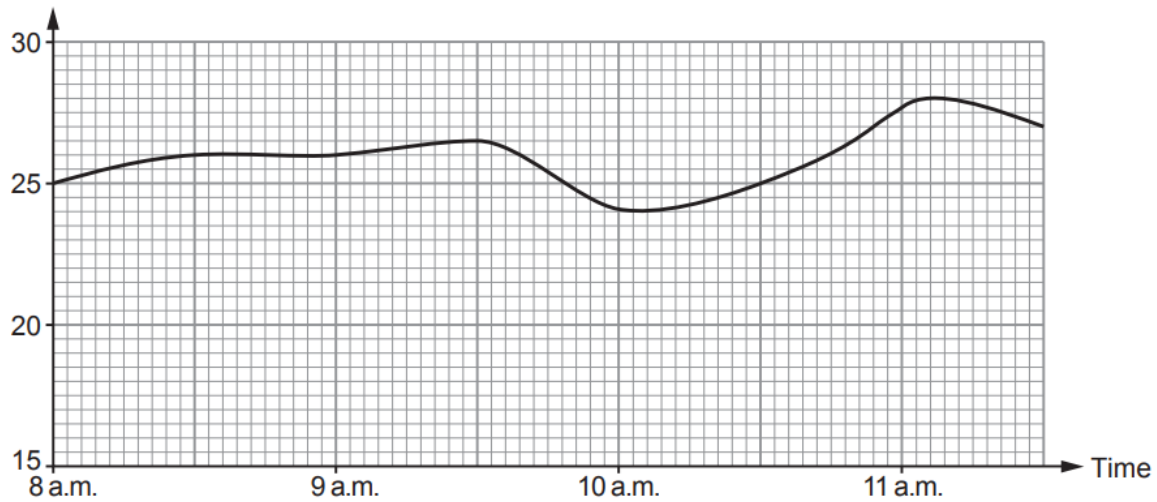
You must show all your working.

[4]

10.

- (b) Jamil works at the *Hafan Parc* swimming pool.
He records the temperature of the water in the pool from 8 a.m. to 11:30 a.m.
Jamil draws the following graph.

Temperature of the water ($^{\circ}\text{C}$)



Use the graph to answer the following questions about the temperature of the water between 8 a.m. and 11:30 a.m.

- (i) What is the range of the temperature of the water? [1]

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- (ii) For swimming, the most suitable temperature of the water in the pool is between 27°C and 28°C inclusive.
Find the length of time that the water in the pool was most suitable for swimming.
Give your answer in minutes. [1]

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The water was most suitable for minutes