**NOTICE TO CUSTOMER:**

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

**1** Here are some numbers.

13 14 15 17 31 34 35 42 43 49

**1 (a)** Which **two** of the numbers add up to 29?

.....

.....

Answer ..... and ..... *(1 mark)*

**1 (b)** Which number is 12 less than one of the other numbers?

.....

.....

Answer ..... *(1 mark)*

**1 (c)** Which number is half of one of the other numbers?

.....

.....

Answer ..... *(1 mark)*

**1 (d)** Which number is three times one of the other numbers?

.....

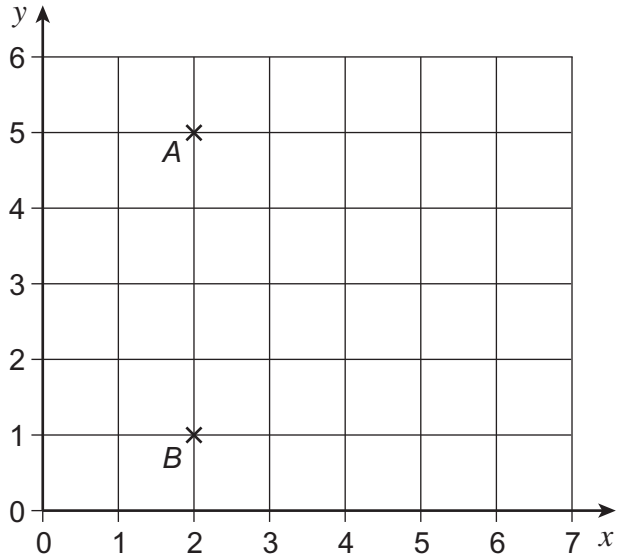
.....

Answer ..... *(1 mark)*

**1 (e)** Which number is a square number?

Answer ..... *(1 mark)*

**2** Points *A* and *B* are shown on the grid.




**2 (a)** Write down the coordinates of *A*.

Answer ( ..... , ..... ) *(1 mark)*

**2 (b)** Plot point *C* (6, 1) on the grid.

*(1 mark)*

**2 (c)** *ABCD* is a square.

Write down the coordinates of *D*.

Answer ( ..... , ..... ) *(1 mark)*

**2 (d)** Write down the coordinates of the centre of the square.

Answer ( ..... , ..... ) *(1 mark)*

**3** Hannah has a box of chocolates.
She gives half of the chocolates to Alex.
Alex eats five of them and has nine left.

How many chocolates are in the box at the start?

.....

.....

.....

Answer ..... *(2 marks)*

**11**

**4** Here are three numbers.

20 21 25

Complete these three statements.
The first one is done for you.

20 is the odd one out because it is the only even number.

21 is the odd one out because .....

.....

25 is the odd one out because .....

.....

*(2 marks)*

**5** Three different whole numbers add up to 31.

The first number is a multiple of 3.
The second number is a multiple of 4.
The third number is a multiple of 5.

What could the numbers be?

.....

.....

.....

.....

.....

.....

Answer First number .....

Second number .....

Third number ..... *(3 marks)*

**6** Megan has a part-time job.
She earns £8 an hour.
She wants to buy a concert ticket costing £40.

How many hours does she need to work to earn enough to buy the ticket?

.....

.....

Answer ..... hours *(2 marks)*

**7** An estate agent advertises four houses.

| House A | House B | House C | House D |
|---|---|---|---|
| £132 500 | £131 950 | £132 400 | £131 750 |

**7 (a)** Which house is the cheapest?

Answer ..... *(1 mark)*

**7 (b)** Which house is the most expensive?

Answer ..... *(1 mark)*

**7 (c)** What is the difference in price between the cheapest and the most expensive house?

.....

.....

.....

Answer £ ..... *(2 marks)*

**7 (d)** Jack buys House C.
He pays a 10% deposit.

How much is 10% of £132 400?

.....

.....

Answer £ ..... *(1 mark)*

12

**8 (a)** Write down $\sqrt{121}$

Answer ..... *(1 mark)*

**8 (b)** Work out $\frac{3}{5}$ of 45

.....

.....

.....

Answer ..... *(2 marks)*

**8 (c)** Work out 8% of 150

.....

.....

.....

Answer ..... *(2 marks)*

**9 (a)** Show clearly that the value of $17 - 5 \div 2 + 4$ is $18\frac{1}{2}$

.....

.....

.....

*(1 mark)*

**9 (b)** Use **one** pair of brackets to make this statement correct.

$$17 - 5 \div 2 + 4 = 10$$

.....

*(1 mark)*

**9 (c)** Use **two** pairs of brackets to make this statement correct.

$$17 - 5 \div 2 + 1 \times 4 = 16$$

.....

*(1 mark)*

***10** A school shop can buy pens at £2.40 for a pack of 10.
The shop sells pens at 50% profit.
The school wants to raise a total of £72 from the sale of pens.

How many packs of pens should the shop buy?

.....

.....

.....

.....

.....

Answer ..... *(4 marks)*

**11 (a)** Here are the first two terms of a sequence.

2 8 …….. ……..

The term-to-term rule of the sequence is | Multiply by 3 and add 2 |

Work out the next **two** terms of the sequence.

.....

.....

Answer..... and ..... *(2 marks)*

**11 (b)** The term-to-term rule of a different sequence is | Multiply by 2 and add 4 |

The third term of this sequence is 6.

…….. …….. 6 ……..

Work out the first term of this sequence.

.....

.....

.....

.....

Answer ..... *(4 marks)*

18

*12

| Electricity Bill Charges | |
|---|---|
| First 200 units | 24p per unit |
| Remaining units | 15p per unit |

Mrs Spark checks her electricity bill.
Here are her meter readings.

New reading: 5647 units
Old reading: 5345 units

Work out the total cost for the number of units used.

.....

.....

.....

.....

.....

.....

Answer £ ..... *(5 marks)*

**13** The number 57 can be written as the product of two prime numbers.

$57 = 3 \times 19$

Find **three** other numbers between 50 and 60 that can be written in this way.
You **must** show the products with each answer.

.....

.....

.....

.....

.....

.....

Answer .....

.....

..... *(3 marks)*

**14** Use approximations to estimate the value of $\dfrac{795.4}{2.1^2 \times 9.8}$

You **must** show your working.

.....

.....

.....

.....

Answer ..... *(3 marks)*

**15** A bag contains only red, blue and yellow counters.
There are three times as many blue counters as yellow counters.
There are 43 counters in the bag.

Some red counters are added to the bag.
There are now 50 counters in the bag.
The number of red counters has doubled.

How many yellow counters are in the bag?

.....

.....

.....

.....

.....

.....

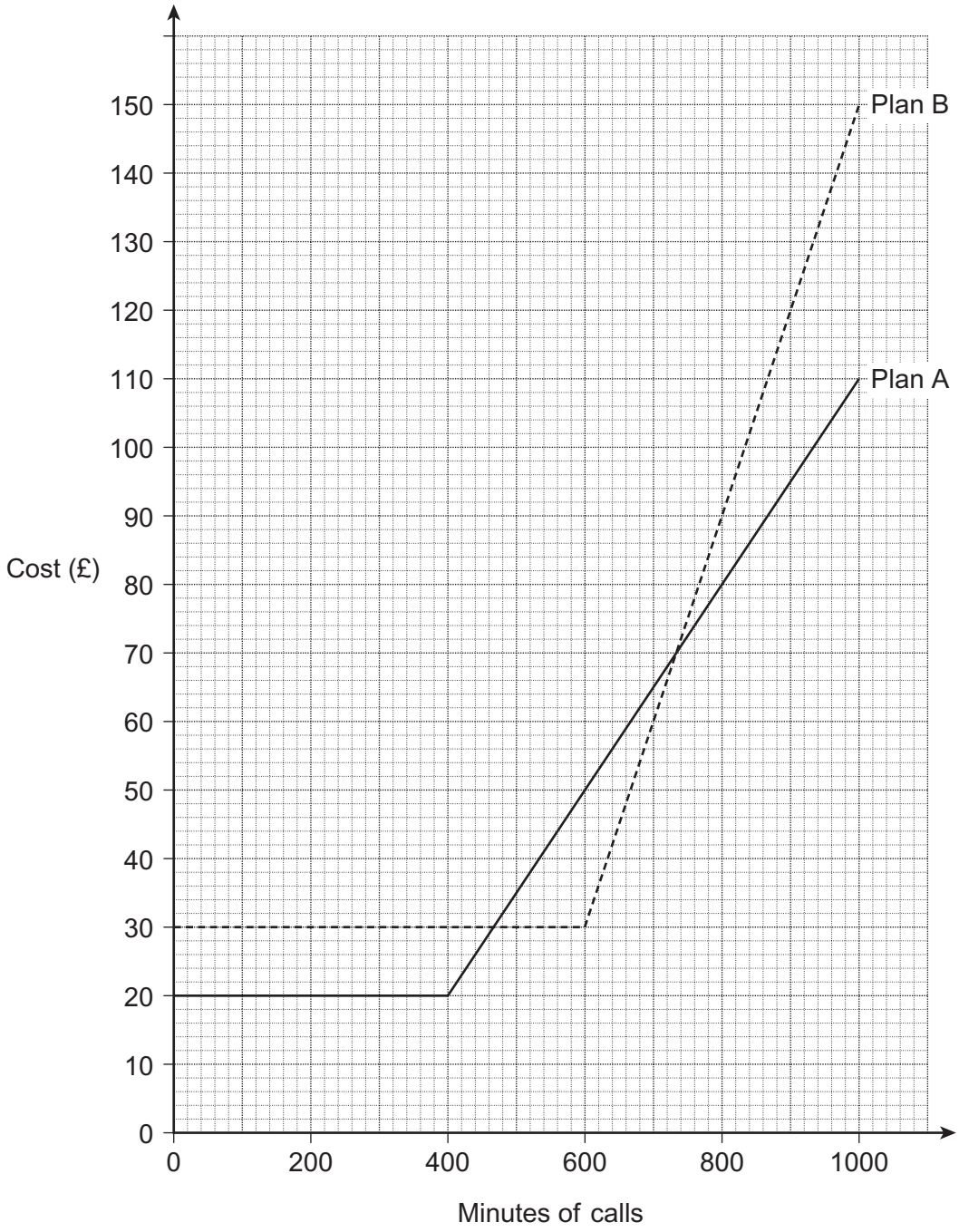
Answer ..... *(3 marks)*

14

**16** Plan A and Plan B are two monthly mobile phone plans.
Here are the details of Plan A.

| | |
|---|---|
| Monthly charge | £20 |
| 400 minutes of calls | Free |
| Each extra minute | 15p |

The graph shows the costs for both plans.



**16 (a)** Ben usually makes about 800 minutes of calls a month.

Which plan should he choose?
Give a reason for his choice.

.....

.....

*(2 marks)*

**16 (b)** Sarah chooses Plan B.

How much does she pay for each extra minute of calls?

.....

.....

Answer ..... *(3 marks)*

**17 (a)** Solve $5x + 3 = 3(x + 2)$

.....

.....

.....

.....

Answer $x$ = ..... *(3 marks)*

**17 (b)** $2(x + 16) + 4(x - 5)$ simplifies to $a(x + b)$

Work out the values of $a$ and $b$.

.....

.....

.....

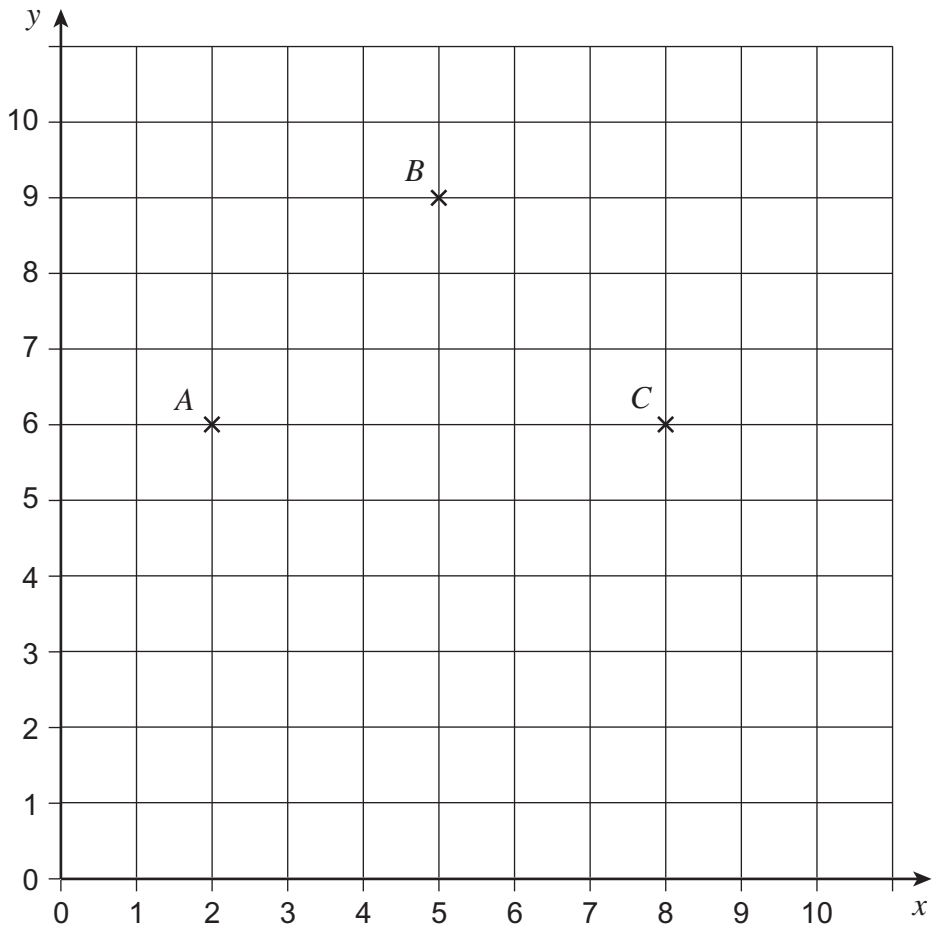
.....

Answer $a$ = ..... , $b$ = ..... *(3 marks)*

**END OF QUESTIONS**

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

**1** Here is a centimetre–square grid with points $A$, $B$ and $C$ plotted.




**1 (a)** Write down the coordinates of $A$.

Answer ( ..... , ..... ) *(1 mark)*

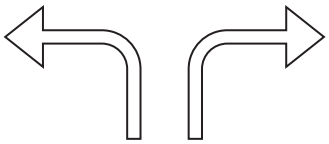
**1 (b)** Plot the point $D$ so that $ABCD$ is a square.

*(1 mark)*

2

**2** In each part, decide whether the diagram shows a reflection, a rotation or a translation. Circle your answer.

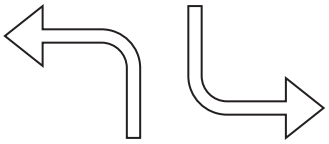
**2 (a)**



Reflection Rotation Translation

*(1 mark)*

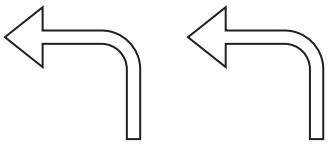
**2 (b)**



Reflection Rotation Translation

*(1 mark)*

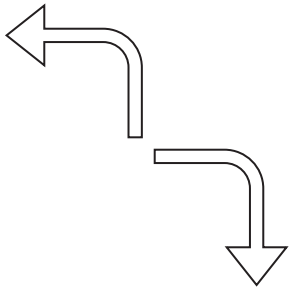
**2 (c)**



Reflection Rotation Translation

*(1 mark)*

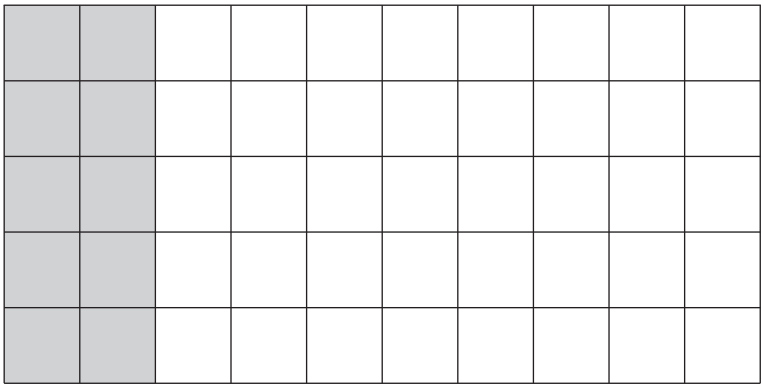
**2 (d)**



Reflection Rotation Translation

*(1 mark)*

**3**



**3 (a)** What fraction of the grid is shaded?
Give your answer in its simplest form.

.....

.....

Answer ..... *(2 marks)*

**3 (b)** How many **more** squares need to be shaded so that 60% of the grid is shaded?

.....

.....

.....

.....

Answer ..... *(3 marks)*

9

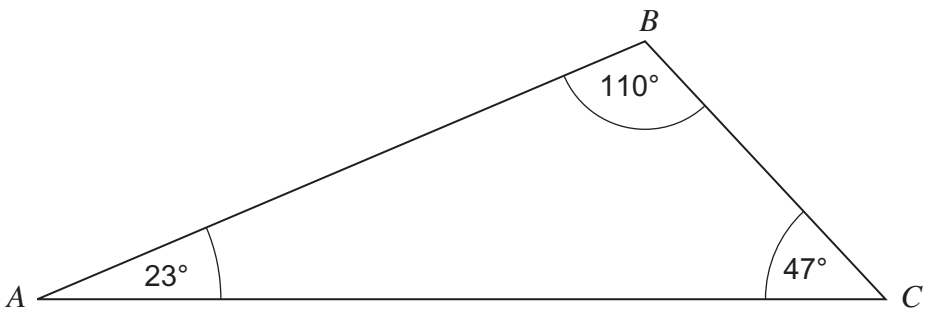
**4 (a)** Measure the length of line $AB$.


Answer ..... cm *(1 mark)*

**4 (b)** Mark the midpoint of line $CD$ with a cross ($\times$).


*(1 mark)*

**5** The diagram shows a triangle $ABC$.




**5 (a)** Circle the correct word to describe triangle $ABC$.

Scalene Isosceles Equilateral

*(1 mark)*

**5 (b)** Circle the correct word to describe angle $B$.

Acute Obtuse Reflex

*(1 mark)*

**Turn over for the next question**

4

**6 (a)** One cubic metre ($m^3$) of concrete weighs 2.4 tonnes.
A base for a shed uses 3.8 $m^3$ of concrete.

Work out how much this concrete weighs.

.....

.....

Answer ..... tonnes *(2 marks)*

**6 (b)** A base for a garage uses 12.5 tonnes of concrete.
A lorry delivers ready-mixed concrete in loads of 14 tonnes.

How many of these bases can be built with 10 loads of concrete?

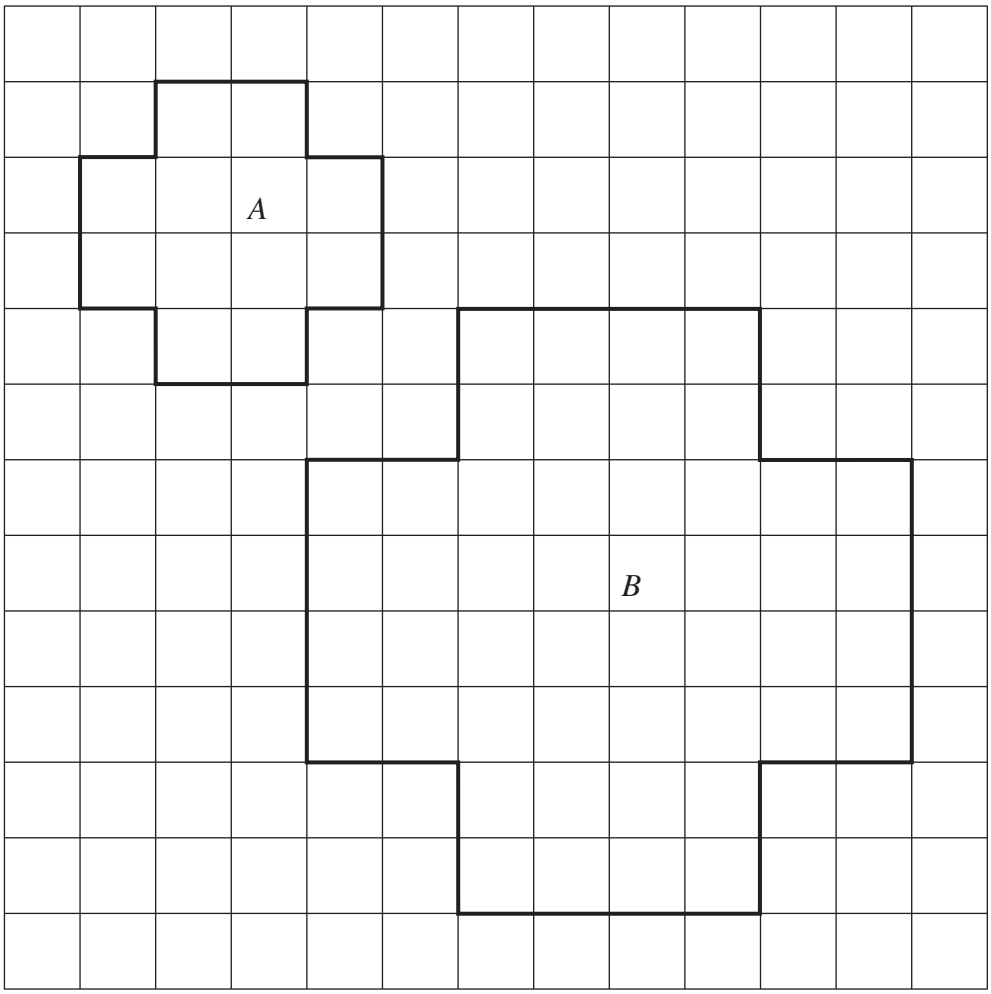
.....

.....

.....

Answer ..... *(3 marks)*

**7** Shape $A$ and shape $B$ are drawn on a centimetre grid.




**7 (a)** Work out the area of shape $A$.
State the units of your answer.

.....

Answer ..... *(2 marks)*

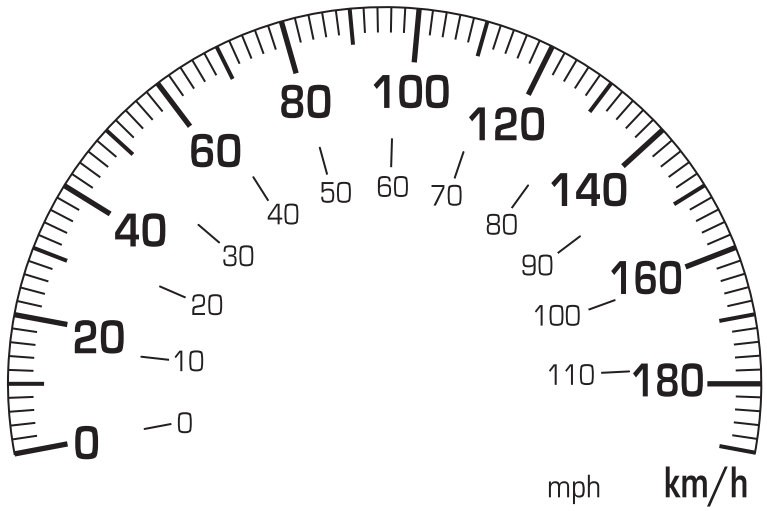
**7 (b)** Shape $B$ is an enlargement of shape $A$.

Write down the scale factor of the enlargement.

Answer ..... *(1 mark)*

8

***8** The diagram shows a speedometer on a car bought in France.




**8 (a)** The speed limit on a road in France is 110 kilometres per hour (km/h).

Use the speedometer to estimate this speed in miles per hour (mph).

Answer ..... mph *(1 mark)*

**8 (b)** The speed limit on a road in England is 30 mph.

Use the speedometer to estimate this speed in km/h.

Answer ..... km/h *(1 mark)*

**8 (c)** Marie has 56 litres of diesel in her car.
The car uses 1 litre of diesel for every 19 kilometres travelled.

She wants to drive to Paris, a distance of 1100 kilometres.

Does she have enough diesel for the journey?

.....

.....

.....

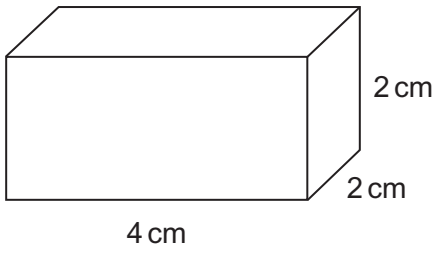
.....

*(3 marks)*

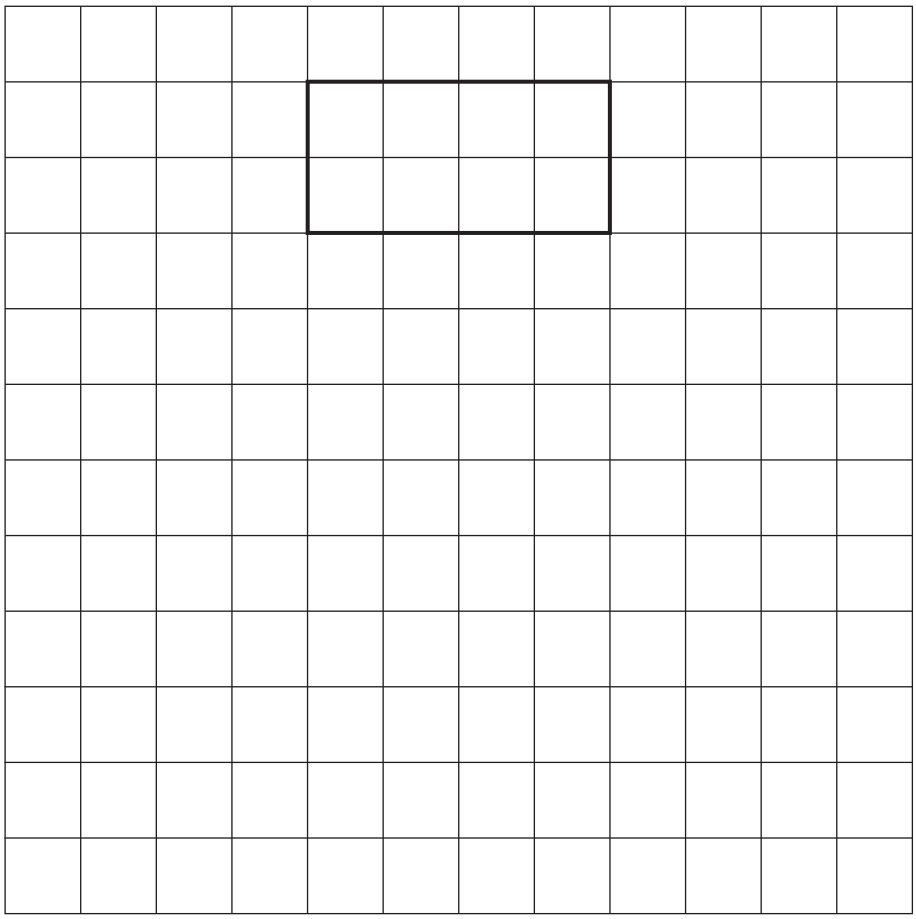
**Turn over for the next question**

5

**9** The diagram shows a cuboid.

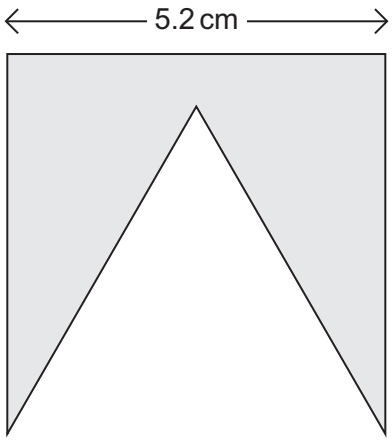



On the centimetre grid, complete a possible net for the cuboid.
One face has been drawn for you.



*(3 marks)*

**10** This shape is made by cutting out an equilateral triangle from a square.




Not drawn accurately

Work out the perimeter of the shape.

.....

.....

Answer ..... cm *(2 marks)*

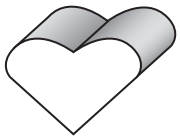
**Turn over for the next question**

5

***11** The diagram shows two different sweets and their weights.

8 grams

A



12 grams

B

The sweets are sold in bags.
Each bag contains 120 grams of sweets.

**11 (a)** How many of sweet A are needed to fill one bag?

.....

Answer ..... *(2 marks)*

**11 (b)** A 120-gram bag is filled with the same number of each sweet.

How many of each sweet are in the bag?

.....

.....

.....

.....

Answer ..... *(3 marks)*

**11 (c)** The 120-gram bags are put into boxes.
The total weight of the bags in each box is 6 kilograms.

How many bags are in each box?

.....

.....

.....

.....

.....

Answer ..... *(3 marks)*

**11 (d)** The 120-gram bags are sold for £1.99 each.
The sweets are also sold loose at 100 grams for £1.59

Which is better value?
You **must** show your working.

.....

.....

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.....

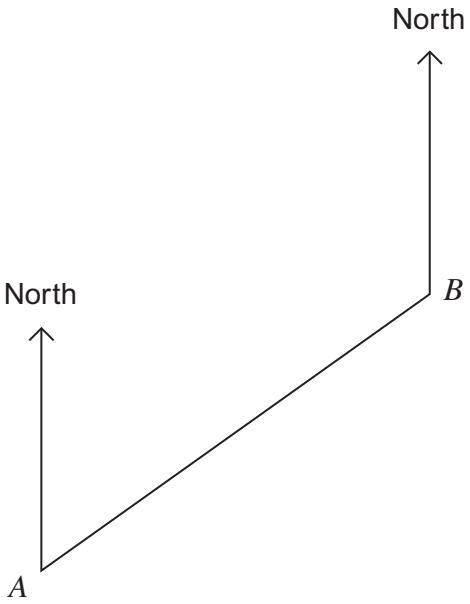
.....

.....

*(3 marks)*

**11**

**12** $A$ and $B$ are two towns.




**12 (a)** Measure the bearing of $B$ from $A$.

Answer ..... º *(1 mark)*

**12 (b)** Natasha says, "To work out a bearing in the opposite direction,

add 180º to the original bearing."

Use your answer to part (a) and Natasha's method to work out the bearing of $A$ from $B$.

.....

.....

Answer ..... º *(2 marks)*

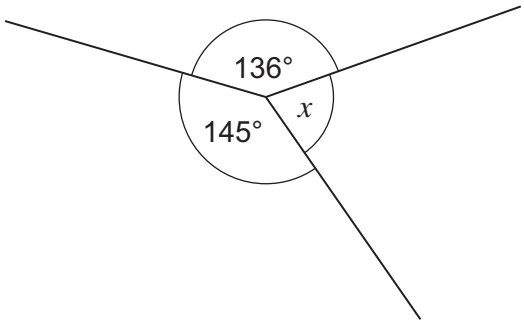
**12 (c)** Give a reason why Natasha's method can only be used for bearings up to 180º.

.....

.....

*(1 mark)*

**13 (a)** The diagram shows three angles at a point.




Not drawn accurately

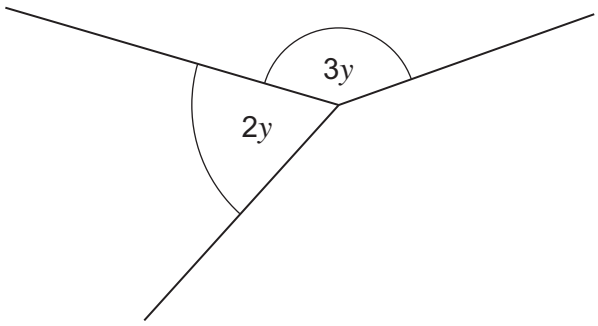
Work out the value of $x$.

.....

.....

Answer ..... degrees *(2 marks)*

**13 (b)** This diagram also shows three angles at a point.




Not drawn accurately

Work out the missing angle in terms of $y$.
Give your answer in its simplest form.

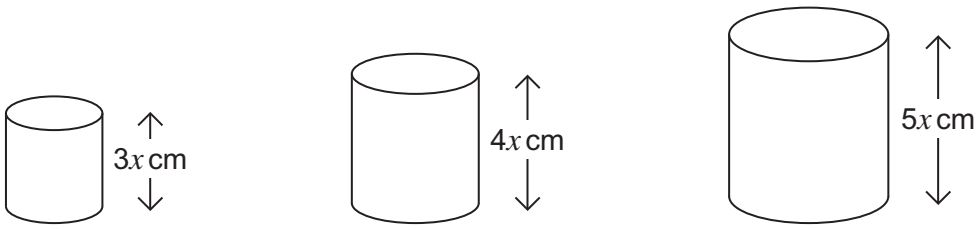
.....

.....

Answer ..... degrees *(2 marks)*

8

**14** Three cylinders are shown.




The sum of the three heights is 48 cm.

Work out the height of the tallest cylinder.

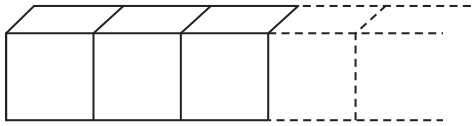
.....

.....

.....

Answer ..... cm *(4 marks)*

**15** A shape is made by joining centimetre cubes together in a row as shown.



The surface area of the shape is 34 $cm^2$.

Work out the number of cubes used to make the shape.

.....

.....

.....

Answer ..... *(3 marks)*

**16** Work out the area of a circle of radius 6 m.

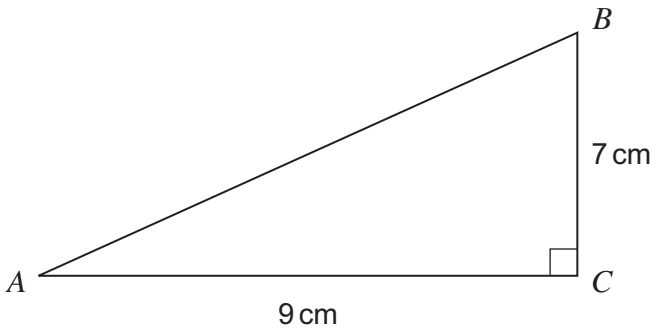
.....

.....

.....

Answer ..... $m^2$ *(2 marks)*

**17** Work out length $AB$ as a decimal.




Not drawn accurately

.....

.....

.....

Answer ..... cm *(3 marks)*

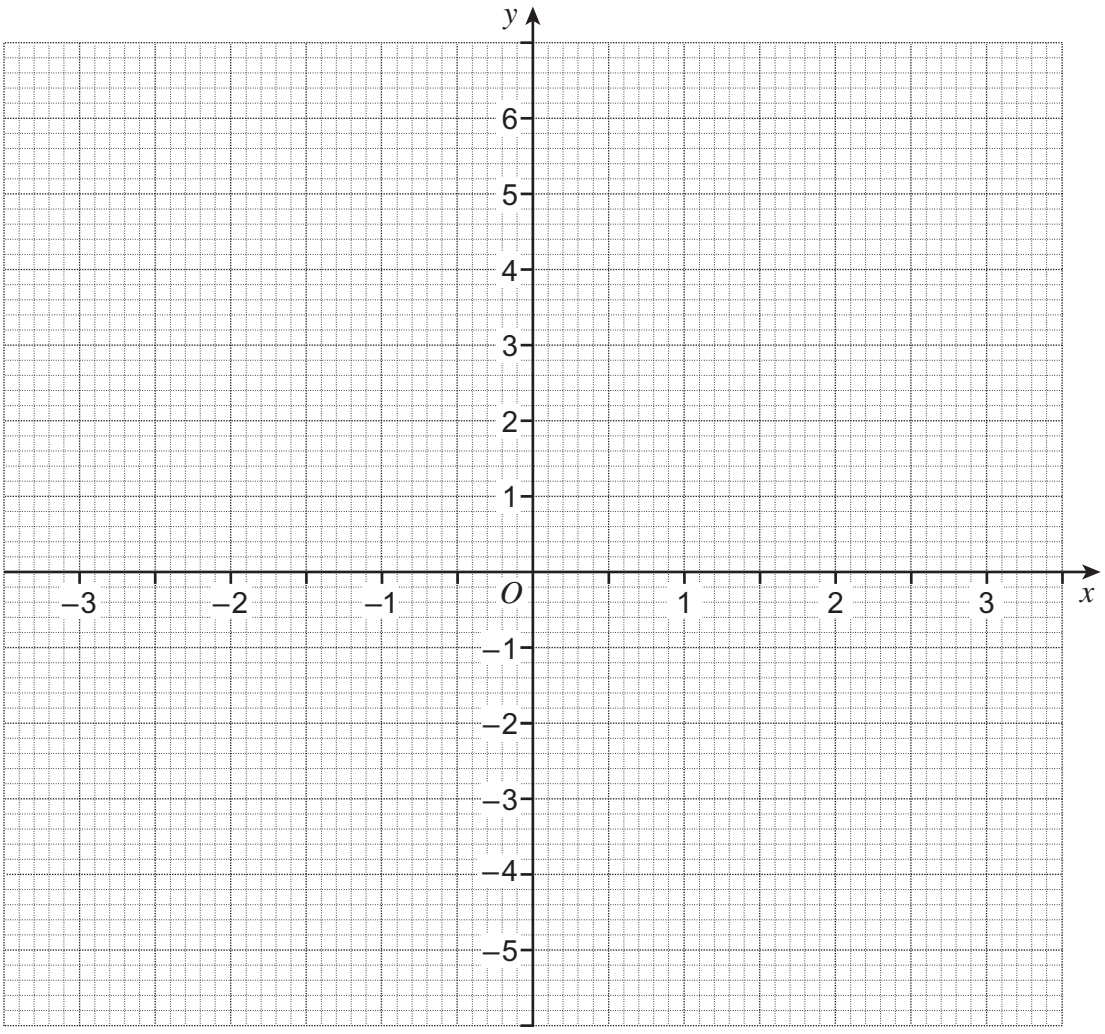
12

**18 (a)** Complete the table of values for $y = x^2 - 4$

| $x$ | –3 | –2 | –1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $y$ | 5 | 0 | –3 | | | 0 | |

*(2 marks)*

**18 (b)** Draw the graph of $y = x^2 - 4$ for values of $x$ from –3 to 3.




*(3 marks)*

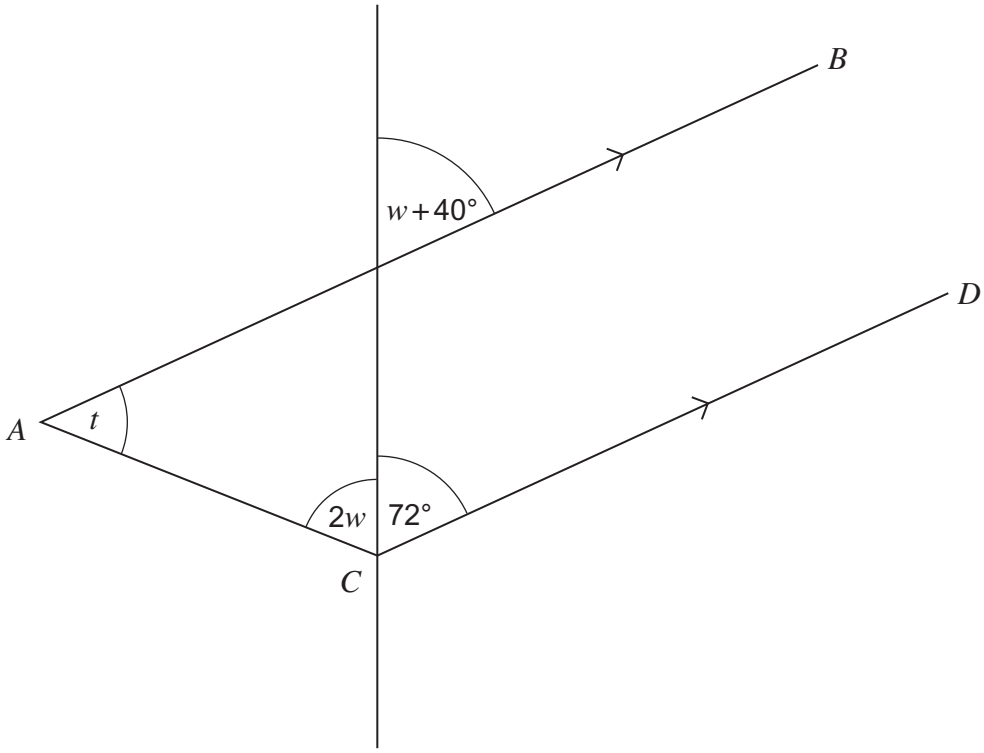
**18 (c)** Draw the graph of $y = 2$ on the grid opposite for values of $x$ from –3 to 3.

*(1 mark)*

**18 (d)** Write down the $x$-coordinates of the points of intersection of the two graphs.

Answer ..... and ..... *(2 marks)*

**19** $AB$ is parallel to $CD$.




Not drawn accurately

Work out the value of $t$.

.....

.....

.....

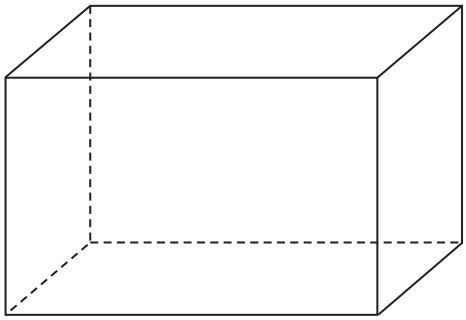
.....

.....

Answer ..... degrees *(5 marks)*

13

**20** The total length of the 12 edges of a cuboid is 52 cm.
The length, width and height are all different.



Work out possible dimensions of the cuboid.

.....

.....

.....

.....

.....

Length = ..... cm

Width = ..... cm

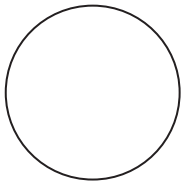
Height = ..... cm *(3 marks)*

**END OF QUESTIONS**

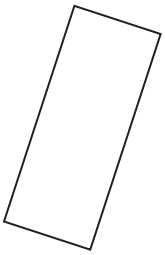
3

**1** Write down the name for each shape.
Choose from the names in the box.

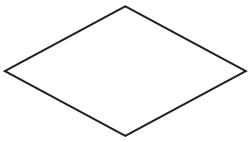
| | | |
|---|---|---|
| Square | Rhombus | Isosceles Triangle |
| Circle | Equilateral Triangle | Trapezium |
| Scalene Triangle | Pentagon | Rectangle |

**(a)** 

**(a)** _____ **[1]**

**(b)** 

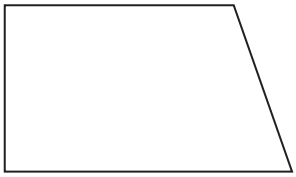
**(b)** _____ **[1]**

**(c)** 

**(c)** _____ **[1]**

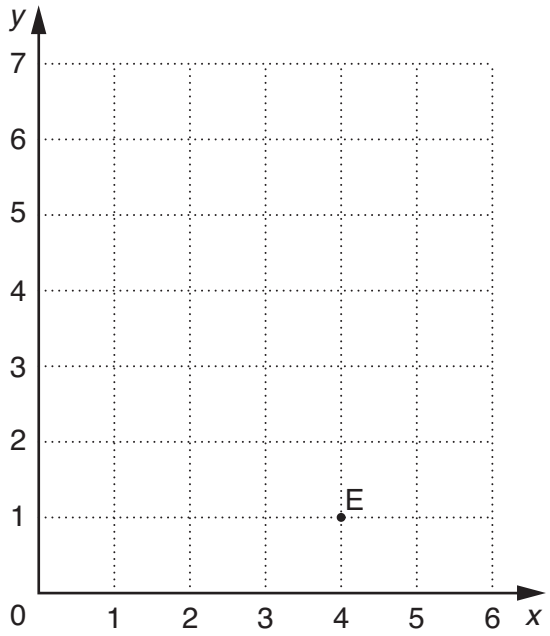
**(d)** 

**(d)** _____ **[1]**

**(e)** 

**(e)** _____ **[1]**

**2**




**(a)** Write down the coordinates of point E.

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

**(b)** Mark and label the points F (2, 3) and G (0, 6). **[2]**

**(c)** Julian thinks that F is the midpoint of the line joining E to G.

Explain why he is wrong.

_____

_____ **[1]**

**3** Fill in the six gaps in the table.

| Decimal | | Fraction | | Percentage |
|---|---|---|---|---|
| 0.5 | = | $\frac{1}{2}$ | = | _____ |
| 0.3 | = | _____ | = | 30% |
| _____ | = | $\frac{1}{4}$ | = | _____ |
| _____ | = | _____ | = | 9% |

**[6]**

**4** Complete the sentences.
Use words from this list.

| | | |
|---|---|---|
| **impossible** | **certain** | **fifty-fifty** |
| | **likely** | **unlikely** |

**(a)** It is _____ that when you spin an ordinary coin it lands on heads. **[1]**

**(b)** It is _____ that when you roll an ordinary 6-sided dice, you will get a number between 1 and 5. **[1]**

**(c)** It is _____ that, one day, your maths teacher will become Prime Minister. **[1]**

**(d)** It is _____ that if you drop a ball it will move downwards not upwards. **[1]**

**5**

| | | | |
|---|---|---|---|
| 8 | 9 | 10 | 14 |
| 15 | 20 | 120 | |

From these numbers write down

**(a)** the smallest even number,

**(a)** _____ **[1]**

**(b)** a factor of 30,

**(b)** _____ **[1]**

**(c)** a square number,

**(c)** _____ **[1]**

**(d)** a multiple of 7,

**(d)** _____ **[1]**

**(e)** a common multiple of 30 and 60.

**(e)** _____ **[1]**

**6** **(a)** **(i)** Write down the next number in this sequence.

1 7 13 19 _____ **[1]**

**(ii)** Describe the rule for continuing the sequence.

_____ **[1]**

**(b)** **(i)** Write down the next number in this sequence.

3 6 12 24 _____ **[1]**

**(ii)** Describe the rule for continuing the sequence.

_____ **[1]**

**7** **(a)** Complete these sentences.

**(i)** 1 kilogram is approximately equal to _____ pounds. **[1]**

**(ii)** 1 gallon is approximately equal to _____ litres. **[1]**

**(b)** Lewis is driving from Paris to Dunkerque.
He knows the distance is 300 kilometres.
He knows that 50 km is approximately 30 miles.

**(i)** Approximately how many miles is it from Paris to Dunkerque?

.....

.....

.....

**(b)(i)** _____ **[2]**

**(ii)** Lewis drives at an average speed of 60 km/hour.

How long does it take him to drive the 300 kilometres from Paris to Dunkerque?

.....

.....

**(ii)** _____ hours **[2]**

**8** A postal company decides whether an item is a Letter, a Large Letter or a Packet by its size.

| | |
|---|---|
| Letter | less than 240 mm long **and** less than 165 mm wide |
| Large Letter | less than 353 mm long **and** less than 250 mm wide |
| Packet | longer than 353 mm **or** wider than 250 mm |

**(a)** Lizzie has an item that is 290 mm long and 200 mm wide.

Is it a Letter, a Large Letter or a Packet?

**(a)** _____ **[1]**

**(b)** Sam has an item that is 290 mm square.

Explain why it is a Packet.

_____

_____ **[1]**

The cost of postage also depends on the weight of the item and whether it is *Premier* or *Standard service*, as shown in this table.

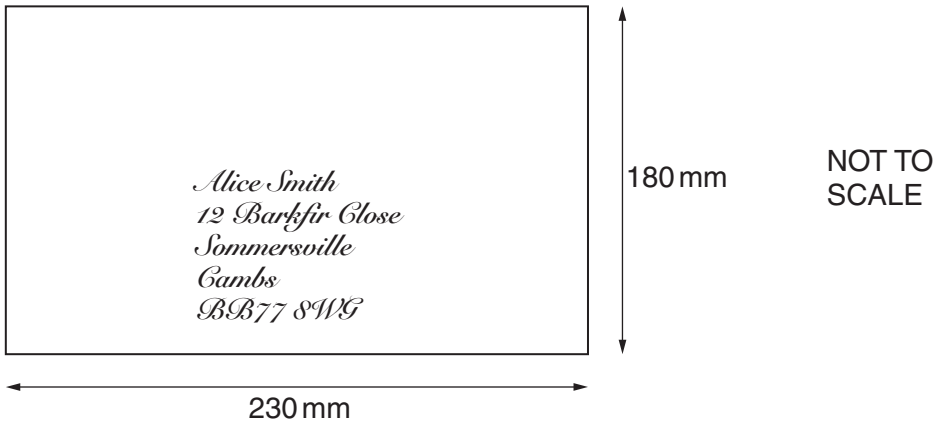
| | Weight | *Premier* | *Standard* |
|---|---|---|---|
| Letter | 0 - 100 g | 32 p | 23 p |
| | 101 - 250 g | 51 p | 42 p |
| Large Letter | 0 - 100 g | 44 p | 37 p |
| | 101 - 250 g | 65 p | 55 p |
| | 251 - 500 g | 90 p | 75 p |
| | 501 - 750 g | 131 p | 109 p |
| Packet | 0 - 100 g | 100 p | 84 p |
| | 101 - 250 g | 127 p | 109 p |
| | 251 - 500 g | 170 p | 139 p |
| | 501 - 750 g | 220 p | 177 p |
| | 751 - 1000 g | 270 p | 212 p |

**(c)** Tanweer wants to send a Packet that weighs 300 g by *Standard* service.

How much postage should he pay?

**(c)** _____ p **[1]**

**(d)** Jo wants to send this item by *Premier* service.
It weighs 200 g.




How much will Jo have to pay?
Show clearly how you decide.

.....

.....

.....

**(d)** _____ p **[3]**

**9** Solve.

**(a)** $4x = 28$

**(a)** _____ **[1]**

**(b)** $y - 6 = 7$

**(b)** _____ **[1]**

**(c)** $\frac{w}{5} = 4$

**(c)** _____ **[1]**

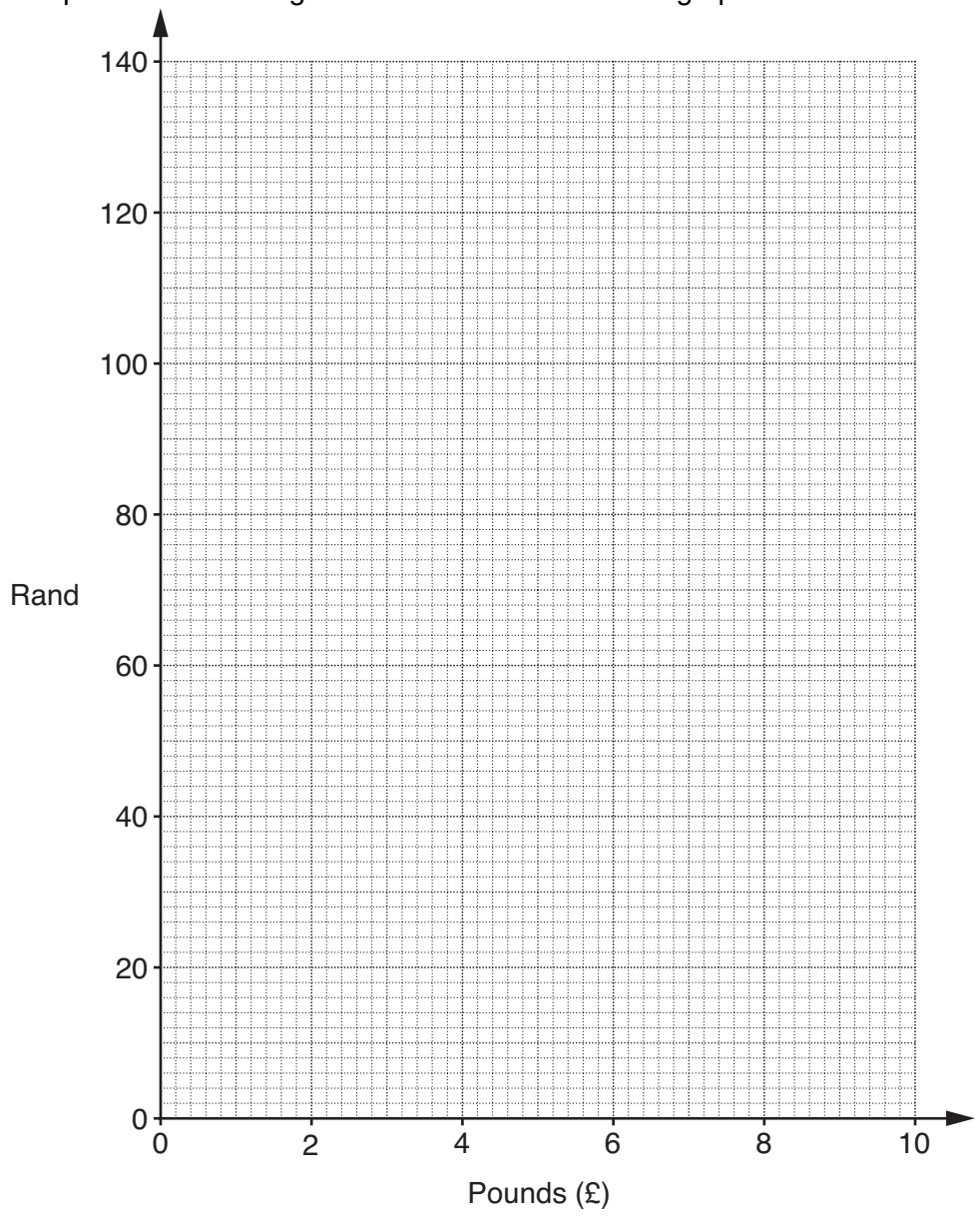
**(d)** $10z + 6 = 21$

**(d)** _____ **[2]**

**10** The currency used in South Africa is the Rand.
This table gives some conversions between Pounds (£) and Rand.

| Pounds | 4 | 6 | 10 |
|---|---|---|---|
| Rand | 54 | 81 | 135 |

**(a)** Plot these values on the grid.
Join the points with a straight line to make a conversion graph between Pounds and Rand.




**[3]**

**(b)** Use the graph to convert £7 into Rand.

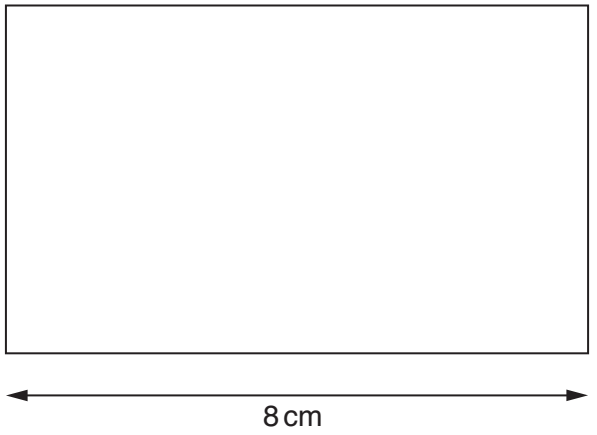
**(b)** _____ Rand **[1]**

**(c)** In South Africa a DVD costs 200 Rand.

What is 200 Rand in Pounds?

**(c)** £ _____ **[2]**

**11** **(a)** A rectangle is 8 cm long and 5 cm wide.




NOT TO SCALE

**(i)** Work out the area of this rectangle.

.....

.....

**(a)(i)** _____ $cm^2$ **[2]**

**(ii)** Work out the perimeter of this rectangle.

.....

.....

**(ii)** _____ cm **[1]**

**(b)** A second rectangle has an area of 28 $cm^2$.

Write down a possible pair of values for its length and width.

.....

**(b)** Length _____ cm Width _____ cm **[1]**

**(c)** A third rectangle is half as long and half as wide as the **rectangle in part (b)**.

What is the area of the third rectangle?

.....

.....

**(c)** _____ $cm^2$ **[2]**

**12** Francois asked nine of his friends how many hours of TV they watched one weekend.

Here are their answers.

2 7 12 2 4 14 2 9 2

**(a)** What is the range of these times?

.....

**(a)** _____ hours **[1]**

**(b)** Calculate the mean of these times.

.....

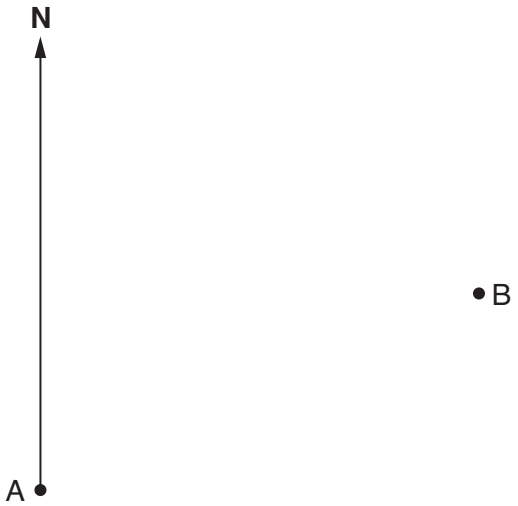
.....

.....

**(b)** _____ hours **[3]**

**13** This map shows two towns, Anyton (A) and Bayville (B).

Scale: 1 cm represents 5 miles.




**(a)** Find the distance from Anyton to Bayville in miles.

.....

**(a)** _____ miles **[2]**

**(b)** Measure the bearing of Bayville from Anyton.

**(b)** _____ ° **[1]**

**(c)** A third town, Collyborough (C), is 35 miles from Anyton on a bearing of 100°.

Mark and label C on the map. **[2]**

**14** Work out.

**(a)** $10^4$

.....

**(a)** _____ **[1]**

**(b)** $\sqrt[3]{125}$

.....

**(b)** _____ **[1]**

**(c)** $4^3 + 6^2$

.....

.....

**(c)** _____ **[2]**

**(d)** $\frac{5}{6} \times \frac{1}{10}$

Give your answer in its simplest form.

.....

.....

.....

**(d)** _____ **[2]**

**15** Linda works in a sandwich factory.

**(a)** She makes 30 sandwiches every hour.

How long does it take her to make 220 sandwiches?
Give your answer in hours and minutes.

.....

.....

.....

**(a)** _____hours _____minutes **[3]**

**(b)** Linda's wage is £360 a week.
She receives a 5% wage rise.

Work out Linda's new weekly wage.

.....

.....

.....

.....

**(b)** £ _____ **[3]**

**(c)** Linda makes cheese sandwiches and chicken sandwiches in the ratio 2 : 3.
She makes 200 sandwiches altogether.

How many of these are cheese sandwiches?

.....

.....

.....

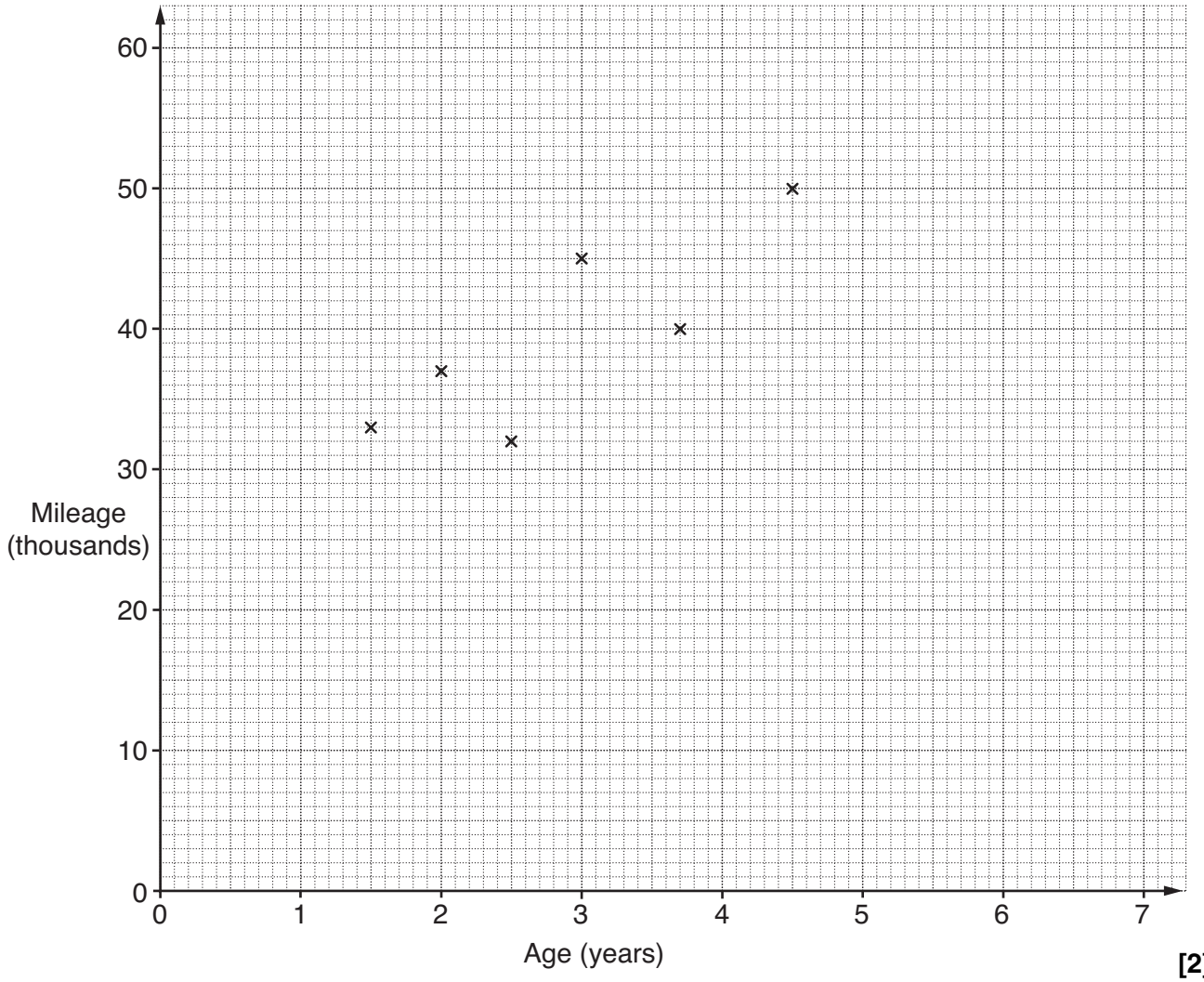
.....

**(c)** _____ **[2]**

**16** As part of a project, Robert records the ages and mileages of some cars.
His results are recorded in this table.

| Age (years) | 1.5 | 2 | 2.5 | 3 | 3.7 | 4.5 | 5.2 | 5.5 | 6 | 6.5 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mileage (thousands) | 33 | 37 | 32 | 45 | 40 | 50 | 56 | 54 | 58 | 57 | 60 |

**(a)** Complete the scatter diagram. The first 6 points have already been plotted.




**[2]**

**(b)** Describe the strength and type of correlation shown in your diagram.

**(b)** _____ **[2]**

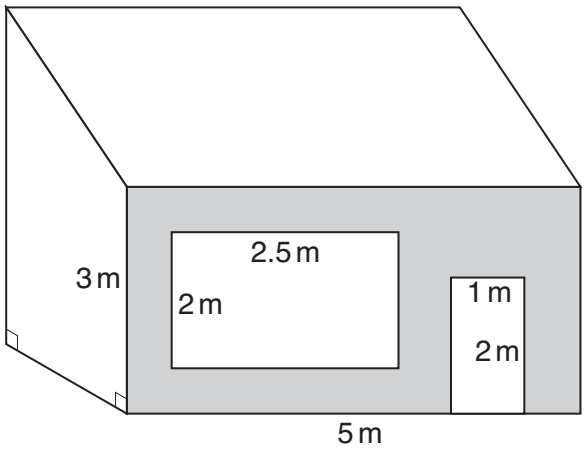
**(c) (i)** Draw a line of best fit for these data. **[1]**

**(ii)** Another car is 3.5 years old.

Use your line of best fit to estimate the mileage of this car.

**(c)(ii)** _____ thousand miles **[1]**

**17** The diagram shows a small shop.
The front of the shop, the window and the door are all rectangles.




Work out the shaded area of the front of the shop.
Give the units of your answer.

.....

.....

.....

**[3]**

**18** **(a)** Simplify.

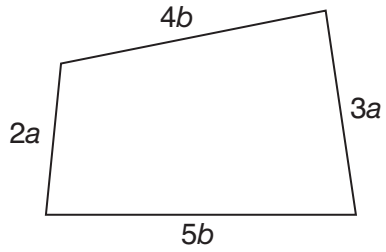
$$2xy - 3xy + 4xy$$

.....

.....

**(a)** _____ **[1]**

**(b)** Find an expression for the perimeter of this shape.
Give your answer as simply as possible in terms of $a$ and $b$.




.....

.....

.....

**(b)** _____ **[2]**

**(c)** Multiply out and simplify.

$$3(2x + 5) + 2(4x - 1)$$

.....

.....

.....

.....

**(c)** _____ **[2]**

**19** **Estimate** the answer to this calculation.

$$\frac{112 \times 5.8}{0.47}$$

Show clearly the values you use.

.....

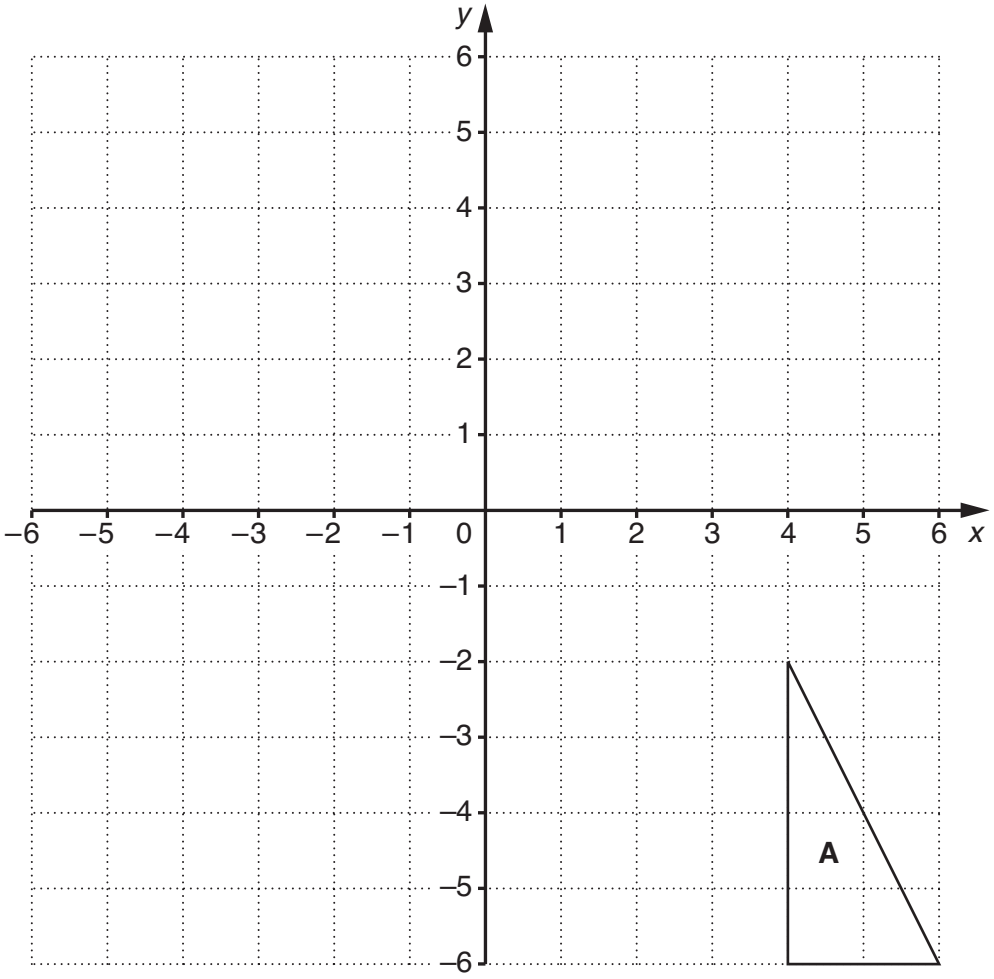
.....

.....

_____ **[2]**

**TURN OVER FOR QUESTION 20**

**20**




**(a)** Translate triangle **A** by $\begin{pmatrix} -2 \\ 7 \end{pmatrix}$.

Label the image **P**. **[2]**

**(b)** Enlarge triangle **A** by scale factor $\frac{1}{2}$ using centre (0, 0).

Label the image **Q**. **[2]**

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

**1 (a)** Write down **two** multiples of 5.

Answer ..... and ..... *(1 mark)*

**1 (b)** Write down **two** factors of 18.

Answer ..... and ..... *(1 mark)*

**1 (c)** Write down **two** square numbers that are greater than 10 but less than 50.

.....

Answer ..... and ..... *(2 marks)*

**2** Estimate the value of $29.6 \times 5.2$

.....

.....

Answer ..... *(2 marks)*

**3** Write a number in each box to make the calculation correct.

**3 (a)** ☐ + 28 = 45

.....

.....

.....

*(1 mark)*

**3 (b)** 100 – ☐ = 45

.....

.....

.....

*(1 mark)*

**3 (c)** 5 × ☐ = 45

.....

.....

.....

*(1 mark)*

**3 (d)** ☐ ÷ 4 = 45

.....

.....

.....

*(1 mark)*

**10**

***4** Naomi sees this offer.

| Soup | |
|---|---|
| Normal price | 85p per tin |
| Special offer | 3 tins for the price of 2 |

She buys six tins of soup using the special offer.

How much cheaper is this than paying the normal price?

.....

.....

.....

.....

Answer £ ..... *(3 marks)*

**5 (a)** Circle the number one thousand two hundred

120 1200 12 000 120 000 1 200 000

*(1 mark)*

**5 (b)** Circle the number one hundred and twenty thousand

120 1200 12 000 120 000 1 200 000

*(1 mark)*

**5 (c)** Circle the number which has the same value as one million.

$10^3$ $10^4$ $10^5$ $10^6$ $10^7$

*(1 mark)*

**6 (a)** Write 80% as a decimal.

Answer ..... *(1 mark)*

**6 (b)** Write 0.7 as a fraction.

Answer ..... *(1 mark)*

**6 (c)** Write $\frac{3}{4}$ as a decimal.

Answer ..... *(1 mark)*

**6 (d)** Write 80%, 0.7 and $\frac{3}{4}$ in order with the smallest first.

.....

.....

Answer ..... , ..... , ..... *(1 mark)*

***7** Paul earns £3000 per month.
He can afford to pay up to 15% of this on rent.

Can he afford to rent a flat that costs £420 a month?
You **must** show your working.

.....

.....

.....

.....

.....

.....

.....

*(4 marks)*

**14**

**8 (a)** Solve $\frac{x}{5} = 10$

.....

Answer $x$ = ..... *(1 mark)*

**8 (b)** Solve $2y - 3 = 8$

.....

.....

Answer $y$ = ..... *(2 marks)*

**8 (c)** Simplify fully $4m + 3p + m - 10p$

.....

.....

Answer ..... *(2 marks)*

**9** I am thinking of three **different** two-digit numbers.
The total of the numbers is 240.

What is the smallest possible value that one of the numbers could be?

.....

.....

.....

.....

.....

Answer ..... *(3 marks)*

**10** A, B, C and D represent different numbers.
The total for each row is shown.

| | | | | **Total** |
|---|---|---|---|---|
| A | A | A | A | 24 |
| A | A | B | B | 22 |
| A | B | B | C | 26 |
| A | B | C | D | 28 |

Work out the values of A, B, C and D.

.....

.....

.....

.....

A = .....

B = .....

C = .....

D = .....

*(4 marks)*

**Turn over for the next question**

**11** Work out the value of $5x - 4y$ when $x = 3$ and $y = \frac{1}{2}$

.....

.....

Answer ..... *(2 marks)*

**12** $n$ is a whole number.
Joe says that $n^2 - 1$ is never a multiple of 7.

Give an example to show that he is wrong.

.....

.....

.....

*(2 marks)*

**13** Solve the inequality $3a + 5 \geqslant 2$

.....

.....

.....

Answer ..... *(2 marks)*

**14** Steve buys 60 plants for £2.50 each.

He sells 25 of the plants for £5 each.
He sells 20 of the plants for £4 each.

He wants to make £100 profit.

What should he sell each of the remaining plants for?
You **must** show your working.

.....

.....

.....

.....

.....

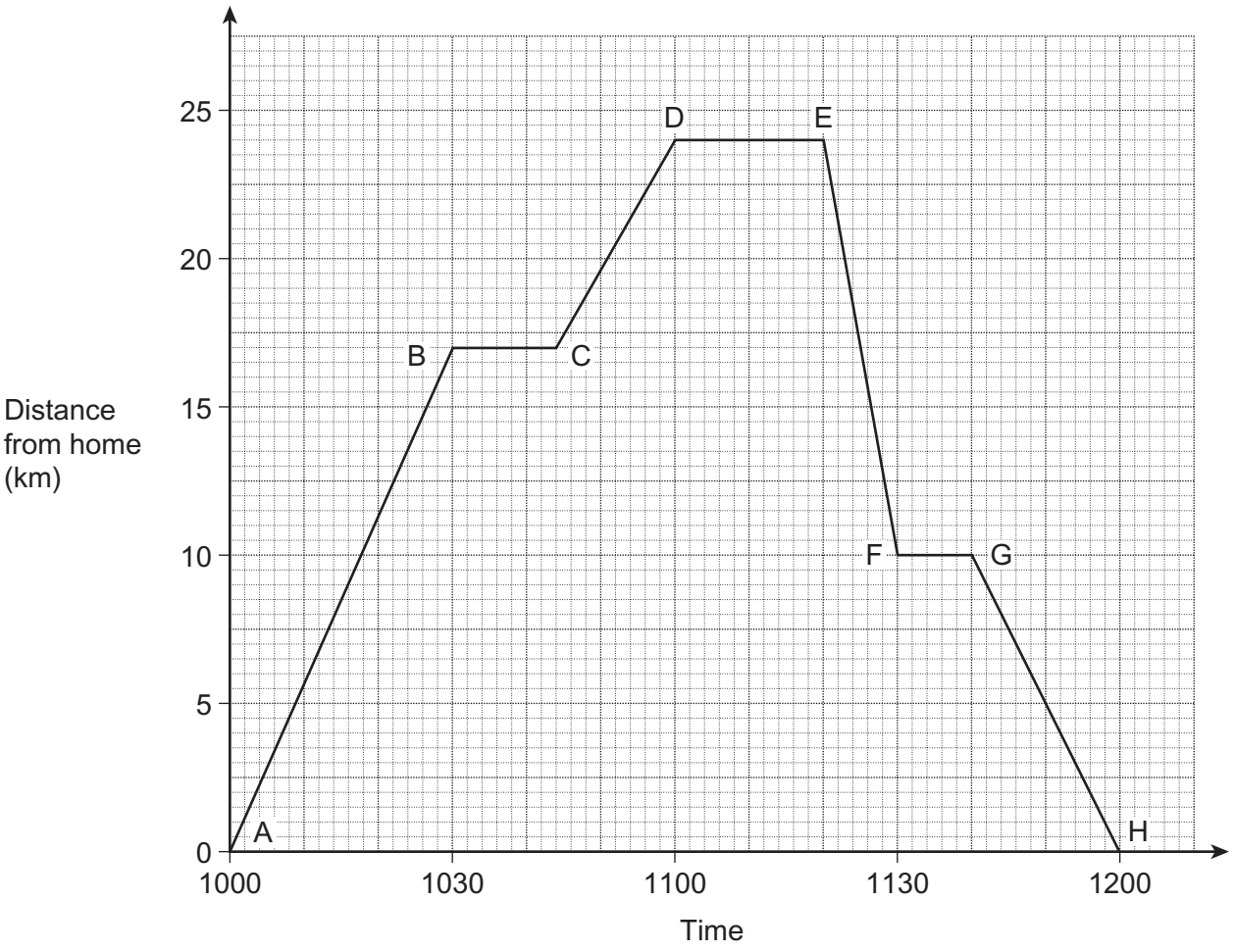
.....

Answer £ ..... *(6 marks)*

**Turn over for the next question**

12

**15** Amy leaves home in her car at 1000 and returns at 1200.
The graph shows her journey.




**15 (a)** How far does she travel in her car altogether?

.....

Answer ..... km *(1 mark)*

**15 (b)** For how long does the car stop altogether?

.....

.....

Answer ..... minutes *(2 marks)*

**15 (c)** On which part of her journey is she travelling at the fastest speed?
Give a reason for your answer.

.....

.....

.....

*(2 marks)*

**16** Here are some of the ingredients for a pie.

| | |
|---|---|
| Minced lamb | 450 g |
| Potatoes | 900 g |
| Carrots | 75 g |
| Stock | 300 ml |

Oliver has only 300 g of minced lamb.

How much of the other ingredients should he use?

.....

.....

.....

.....

Potatoes ..... g

Carrots ..... g

Stock ..... ml *(3 marks)*

8

**17** Expand $w(w + 6)$

.....

Answer ..... *(2 marks)*

**18 (a)** Write 126 as a product of prime factors.

.....

.....

.....

.....

Answer ..... *(2 marks)*

**18 (b)** Work out the Highest Common Factor (HCF) of 72 and 126.

.....

.....

.....

.....

.....

.....

Answer ..... *(2 marks)*

**19** Alice has £4.
Billie has twice as much as Alice.

Billie has two-thirds of the amount Chris has.
The amount Chris has is four-fifths of his age in years.

How old is Chris?

.....

.....

.....

.....

.....

.....

.....

.....

Answer ..... years *(4 marks)*

**END OF QUESTIONS**

10

**1** Work out.

**(a)** 288 + 57

.....

.....

**(a)** _____ **[1]**

**(b)** 206 – 91

.....

.....

**(b)** _____ **[1]**

**(c)** 14 × 6

.....

.....

**(c)** _____ **[1]**

**(d)** 126 ÷ 7

.....

.....

**(d)** _____ **[1]**

**2** **(a)** Complete these sentences with the correct **metric** unit.
Choose from the list below.

| | | | |
|---|---|---|---|
| millimetres | grams | tonnes | square metres |
| kilometres | litres | kilograms | metres |

**(i)** An adult male elephant weighs about 7 _____ . **[1]**

**(ii)** The length of an adult male elephant is about 6 _____ . **[1]**

**(iii)** An elephant's trunk can hold about 8 _____ of water. **[1]**

**(b)** A website about elephants has the following sentence.

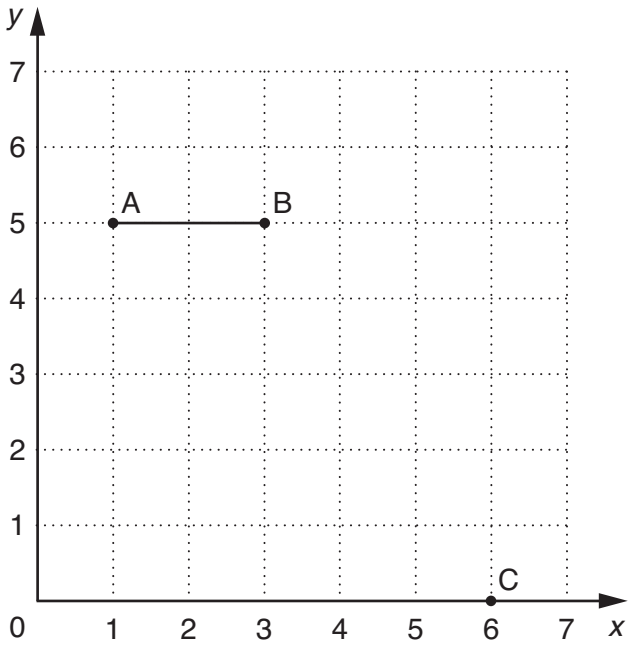
Elephants have poor eyesight and can only see a distance of 8 square metres.

Give a mathematical reason why this sentence **must** be wrong.

_____

_____ **[1]**

**3** Three points A, B and C are marked on this grid.
A line has been drawn from A to B.




**(a)** Write down the coordinates of point A.

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

Draw the line from B to C.

**(b)** Measure the length of the line BC.
Give your answer in millimetres.

**(b)** _____ mm **[2]**

**(c)** Mark the midpoint of the line BC. Label it M. **[1]**

**(d)** On the grid draw a line, through A, **parallel** to BC. **[1]**

**(e)** Points A, B and C are 3 corners of a parallelogram, ABCD.

Write down the coordinates of the fourth corner, D.

**(e)** ( _____ , _____ )**[1]**

**4** Two classes of Year 9 students had a History test.

**(a)** The marks for students in class 9R are given below.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 20 | 32 | 8 | 25 | 15 | 30 | 17 | 21 | 31 |
| 6 | 22 | 18 | 26 | 17 | 12 | 9 | 32 | 22 | 25 |
| 17 | 5 | 20 | 32 | 31 | 28 | 27 | 13 | 28 | 17 |

**(i)** What is the range of these marks?

.....

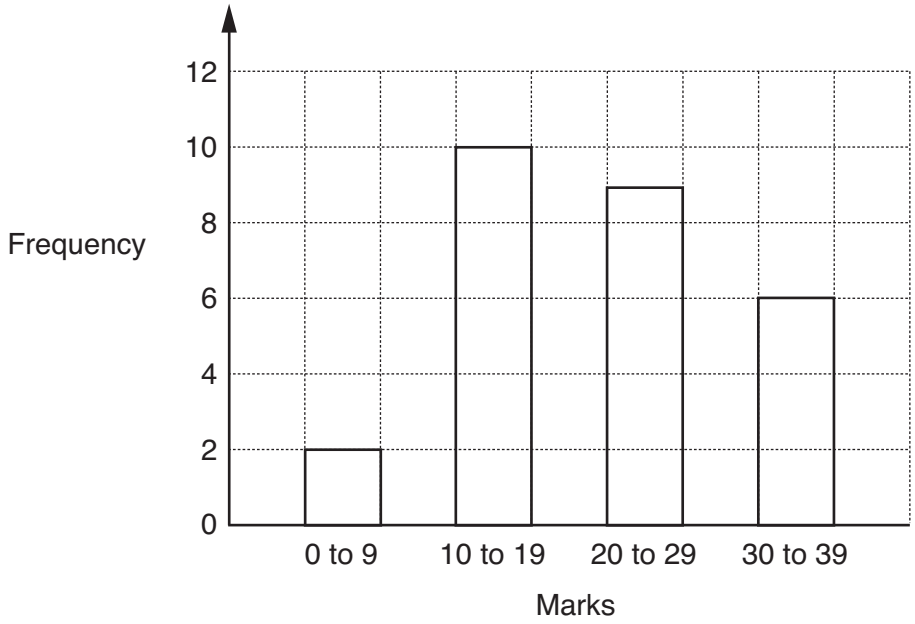
**(a)(i)** _____ **[1]**

**(ii)** Complete the frequency table to show the marks for class 9R.

| Mark | Tally | Frequency |
|---|---|---|
| 0 to 9 | | |
| 10 to 19 | | |
| 20 to 29 | | |
| 30 to 39 | | |

**[2]**

This bar chart shows the marks for class 9T in the History test.




**(b) (i)** What is the mode for this bar chart?

**(b)(i)** _____ to _____ **[1]**

**(ii)** Explain why the **actual** range of marks for students in class 9T cannot be found from the bar chart.

_____

_____ **[1]**

**5 (a)** Write 50% as a decimal.

**(a)** _____ **[1]**

**(b)** Write $\frac{3}{4}$ as a decimal.

**(b)** _____ **[1]**

**(c)** Write 25% as a fraction.

**(c)** _____ **[1]**

**(d)** Write 0.3 as a percentage.

**(d)** _____ % **[1]**

**6** **(a)** Sam and Lizzie have a trampoline.
Sam does 6 jumps every ten seconds.
Lizzie does 5 jumps every ten seconds.
Sam jumps for 2 minutes and then Lizzie jumps for 1 minute.

How many jumps do they do altogether?

.....

.....

.....

.....

**(a)** _____ **[4]**

**(b)** Lizzie can do 3 types of jump:

- Sitting jumps (S)
- Kneeling jumps (K)
- Upright jumps (U)

Sam can do 2 types of jump:

- Sitting jumps (S)
- Kneeling jumps (K)

They each demonstrate one type of jump to a friend.

**(i)** Complete this table to show the different combinations of jumps they could do.
The first row is done for you. You may not need all the rows.

| Lizzie | Sam |
|---|---|
| S | S |
| | |
| | |
| | |
| | |
| | |
| | |

**[2]**

**(ii)** Sam and Lizzie decide what jump to do at random.

What is the probability that they choose to do the same jump?

.....

**(b)(ii)** _____ **[2]**

**7** **(a)** Write 7.777 correct to 1 decimal place.

**(a)** _____ **[1]**

**(b)** **Estimate** the value of $\sqrt{40}$.

**(b)** _____ **[1]**

**(c)** Calculate.

$684 \div 18$

.....

.....

.....

.....

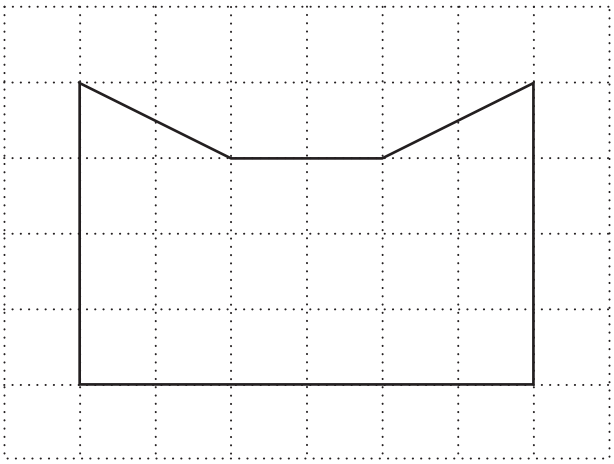
.....

.....

.....

**(c)** _____ **[3]**

**8 (a)**



The shape above is drawn on a centimetre grid.

**(i)** Find the area of the shape .

.....

**(a)(i)** _____ $cm^2$ **[1]**

**(ii)** Draw the line of symmetry on the shape. **[1]**

**(b)** A rectangle has area 24 $cm^2$.

**(i)** Write down one pair of possible values for its length and width.

.....

**(b)(i)** Length _____ cm and width _____ cm **[1]**

**(ii)** Work out the perimeter of your rectangle.

.....

**(ii)** _____ cm **[1]**

**(c)** There is a square where the value of its area (in $cm^2$) is the same as the value of its perimeter (in cm).

Find the length of a side of this square.

.....

.....

.....

.....

**(c)** _____cm **[2]**

**9** **(a)** Simplify.

**(i)** $6r - 2r$

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

**(ii)** $7v + 5w + 3v + w$

.....

**(ii)** _____ **[2]**

**(b)** Solve.

**(i)** $10x = 50$

**(b)(i)** _____ **[1]**

**(ii)** $2y - 7 = 10$

.....

**(ii)** _____ **[2]**

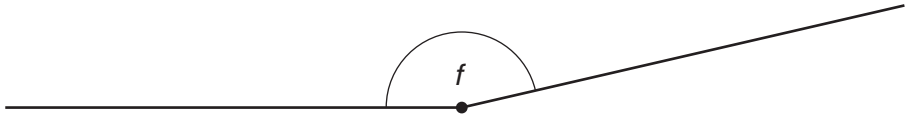
**10** **(a)** 68° is an example of an **acute** angle.

Write down an example of a **reflex** angle.

.....

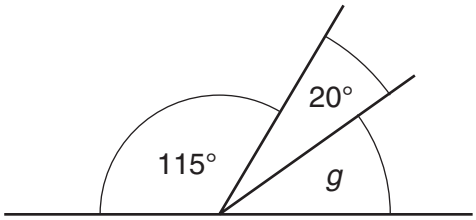
**(a)** _____ ° **[1]**

**(b)** **Measure** the size of the angle marked *f*.




**(b)** _____ ° **[1]**

**(c)**




NOT TO SCALE

**Calculate** the size of angle *g*.
Give a reason for your answer.

.....

.....

.....

*g* = _____ ° because _____

_____ **[2]**

**11** A box contains 15 organic vegetables.

- 1 marrow
- 1 turnip
- 3 onions
- 6 carrots
- 2 cucumbers
- 2 artichokes

Daljit takes one of the vegetables at random.

What is the probability that she takes

**(a)** the marrow,

.....

**(a)** _____ **[1]**

**(b)** a carrot?
Give your answer as a fraction in its lowest terms.

.....

.....

.....

**(b)** _____ **[2]**

**12** **(a)** Draw a circle, radius 3 cm, with centre O. **[1]**

O •

**(b)** Use ruler and compasses to construct a triangle with sides 7 cm, 6 cm and 5 cm.
You must show all your construction lines. **[3]**

**13** **(a)** Complete this table for $y = x + 1$.

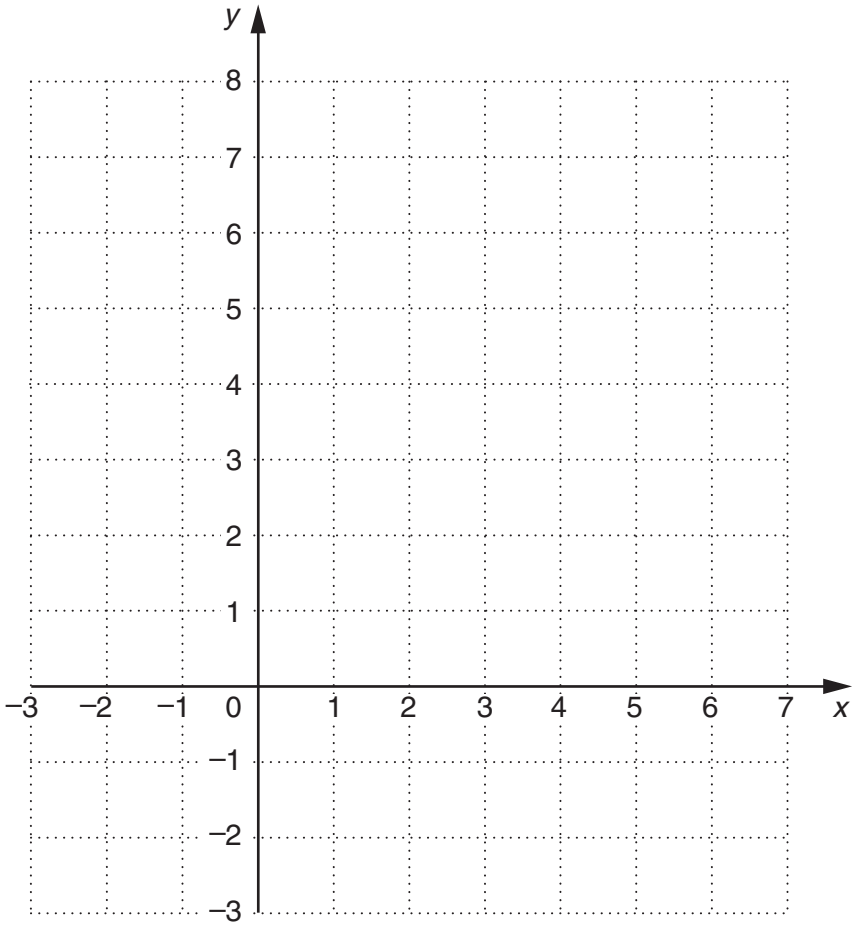
.....

.....

| $x$ | –2 | 0 | 3 | 6 |
|---|---|---|---|---|
| $y$ | | | 4 | |

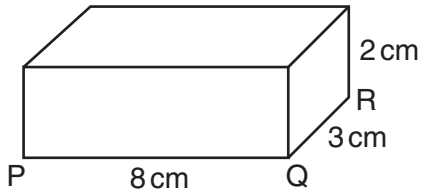
**[2]**

**(b)** On the grid, draw the graph of $y = x + 1$ for $x$ from –2 to 6.

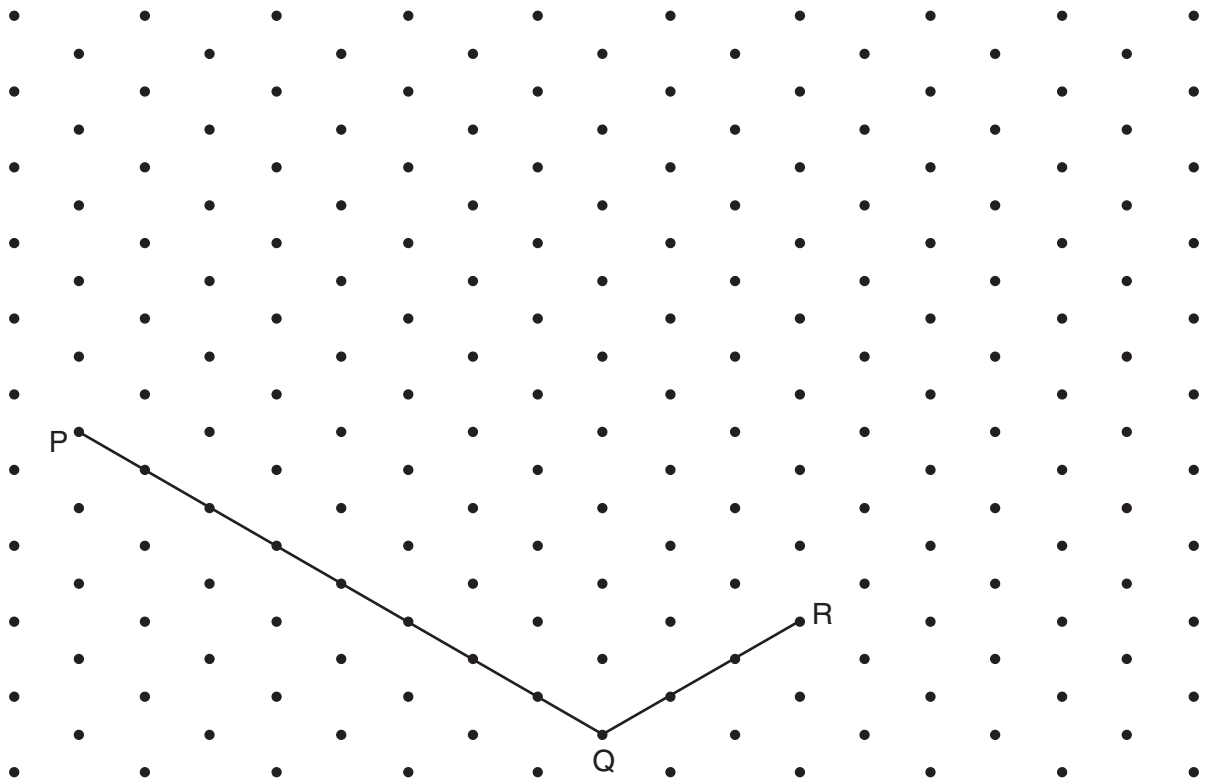



**[2]**

**14** This is a sketch of a cuboid.




**(a)** On the grid, draw a full-size isometric diagram of the cuboid.
The lines PQ and QR have been drawn for you.




**[2]**

**(b)** Calculate the volume of the cuboid.
Give the units of your answer.

.....

.....

**(b)** _____ **[3]**

**15** Solve these equations.

**(a)** $\frac{3x}{4} = 6$

.....

.....

.....

**(a)** _____ **[2]**

**(b)** $5(2x + 1) = 20$

.....

.....

.....

.....

.....

**(b)** _____ **[3]**

**16** **(a)** Show that $\frac{13}{50}$ is the same as 26%.

_____

_____ **[1]**

**(b)** By writing each of these three fractions as percentages, arrange them in order, smallest first.

$\frac{7}{20}$ $\frac{13}{50}$ $\frac{90}{300}$

Show your working clearly.

.....

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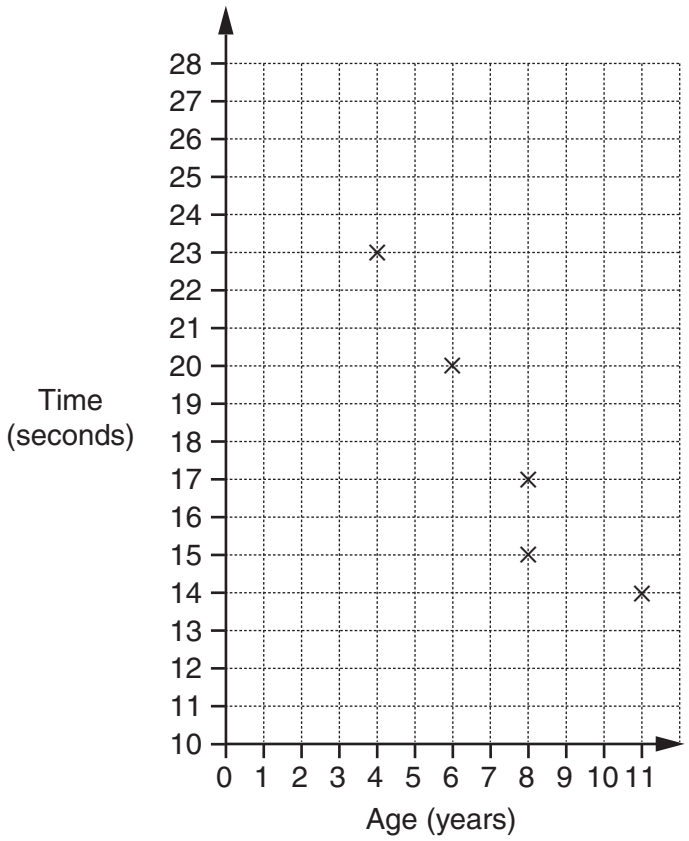
**(b)** _____ _____ _____**[3]**

*smallest*

**17** There are 10 children in a junior swimming club.
The table shows each child's age and their time to swim 30 metres.

| Age (years) | 8 | 4 | 11 | 8 | 6 | 10 | 5 | 4 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Time (seconds) | 17 | 23 | 14 | 15 | 20 | 13 | 22 | 21 | 15 | 16 |

**(a)** Complete the scatter diagram.
The first 5 points have already been plotted.




**[2]**

**(b)** Describe the correlation shown in the scatter diagram.

_____ **[1]**

**18** Ready salted crisps can be bought in

a pack of 6 bags for £1.38
or a pack of 10 bags for £2.20.

**(a)** Which of these two packs is better value for money?
Show your working clearly.

.....

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**(a)** _____ **[3]**

**(b)** A family pack contains only bags of smokey bacon crisps and bags of cheese and onion crisps.
The ratio of bags of smokey bacon to bags of cheese and onion is 3 : 2.

**(i)** Phil says that each family pack contains 3 bags of smokey bacon crisps and 2 bags of cheese and onion crisps.

Explain why Phil may be wrong.

_____

_____ **[1]**

**(ii)** Some family packs are opened and all the bags of crisps put into an empty container.
There are 160 bags of crisps altogether in the container.

How many bags of each flavour are there?

.....

.....

.....

.....

.....

**(b)(ii)** smokey bacon _____

cheese and onion _____ **[3]**

**19** A ball is thrown into the air.
The height, $h$ metres, of the ball above the ground after a time $t$ seconds is given by

$$h = 25t - 5t^2.$$

**(a)** Complete the table of values.

.....

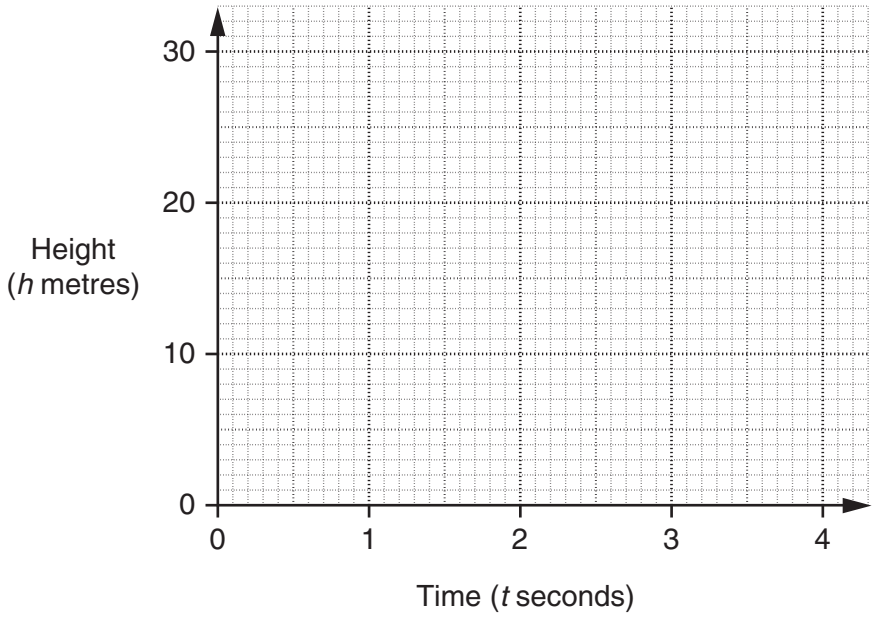
.....

.....

| $t$ | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| $h$ | 0 | | | 30 | 20 |

**[2]**

**(b)** Draw the graph of $h = 25t - 5t^2$ for $t$ from 0 to 4.




**[2]**

**(c)** Use your graph to estimate

**(i)** the maximum height of the ball above the ground,

**(c)(i)** _____ m **[1]**

**(ii)** the time when the ball is 15 m above the ground.

**(ii)** _____ s **[1]**

**20 (a)** In an orchard there are 90 English apple trees.
The table below shows the number of each type of tree.

| Type of tree | Frequency |
|---|---|
| Suntan | 24 |
| Victory | 15 |
| Pixie | 30 |
| Meridian | 21 |
| | Total = 90 |

Draw and label a pie chart to show this information.

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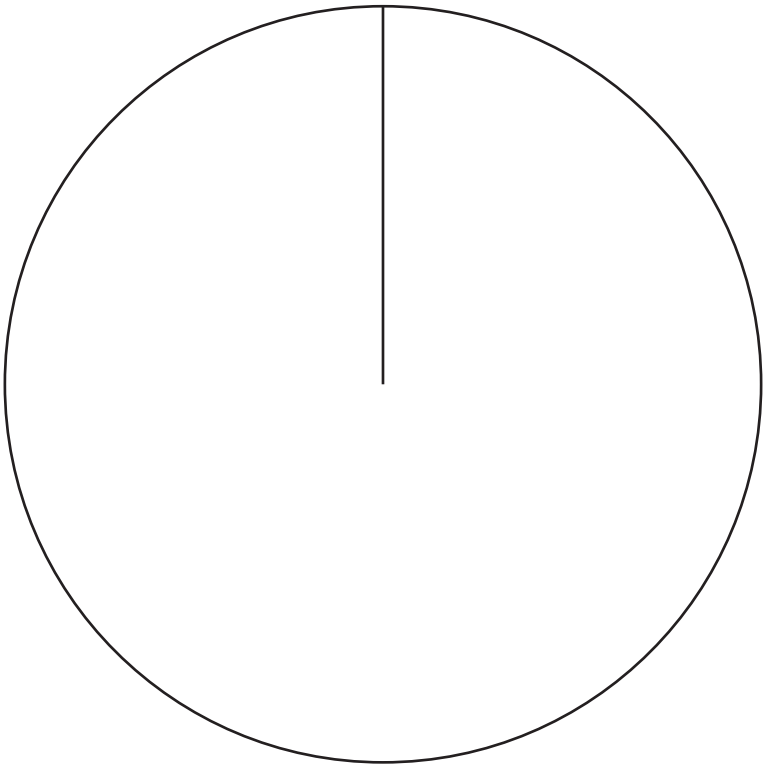
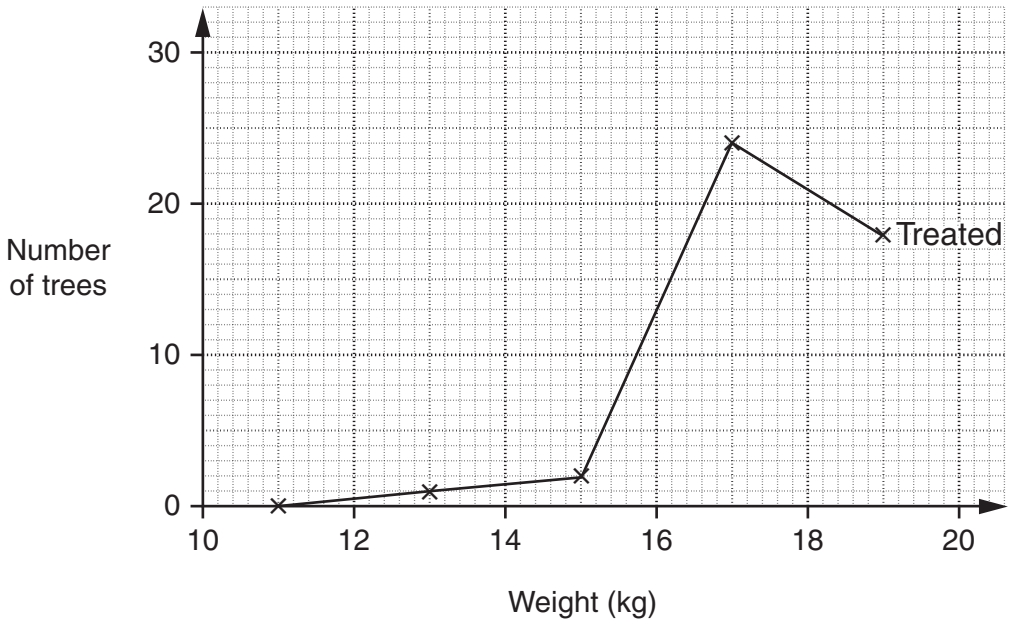


**[4]**

**(b)** In an experiment on pest control and the production of fruit, 45 apple trees were treated with a pesticide and 45 other apple trees were left untreated.
When the apples were picked, the total weight of apples from each tree was recorded.

The frequency polygon shows the distribution of weights of apples from the **treated** trees.




**(i)** The table shows the distribution of weights of apples from the **untreated** trees.

| Weight ($w$kg) | $10 < w \leqslant 12$ | $12 < w \leqslant 14$ | $14 < w \leqslant 16$ | $16 < w \leqslant 18$ | $18 < w \leqslant 20$ |
|---|---|---|---|---|---|
| Number of trees | 2 | 5 | 13 | 15 | 10 |

On the grid above, draw the frequency polygon for these data. **[2]**

**(ii)** Make one comment to compare the two distributions.

_____

_____ **[1]**