

The Lowry Academy



The best in everyone™

Name: \_\_\_\_\_

## Year 10 Foundation

End of Year Assessment Revision Resource

Part 1: Topics & Hegarty Maths Clips

Part 2: Practice Questions

# Topics & Hegarty Maths Clips

Topic	Strand	Hegarty Maths clips
Rearrange formulae	Algebra	280-86
Linear Graphs	Algebra	199-200, 205 - 213
$y = mx + c$	Algebra	206-16
Compound Measures	Geometry & Measure	716-19, 734-6, 725-32
Quadratic graphs, turning points and roots	Algebra	251-258
Linear Simultaneous Equations	Algebra	190-195, 218-19
Further graphs	Algebra	299-305
Probability	Probability	351-90
Standard Form	Number	122-129
Simple interest	Number	93
Ratio (further)	Ratio, Proportion & Rates of Change	330-7
Growth & Decay	Ratio, Proportion & Rates of Change	94, 800-11,
Statistics	Statistics	393-4, 413-21, 453-4

# Practice Questions

**Q1.**

Circle the fraction that is equivalent to 4.75

$$\frac{15}{4}$$

$$\frac{19}{4}$$

$$\frac{21}{4}$$

$$\frac{23}{4}$$

(Total 1 mark)

**Q2.**

(a) Solve  $x + 17 = 12$

\_\_\_\_\_

$$x = \underline{\hspace{10em}}$$

(1)

(b) Solve  $\frac{w}{4} = 12$

\_\_\_\_\_

\_\_\_\_\_

$$w = \underline{\hspace{10em}}$$

(1)

(c) Simplify fully  $\frac{9m}{12m}$

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

(Total 4 marks)

**Q3.**

Solve  $3x = 6$

Circle your answer.

$$x = 0.5$$

$$x = 2$$

$$x = 3$$

$$x = 18$$

(Total 1 mark)

#### Q4. CALCULATOR ALLOWED

Greg wants to buy a games console that costs £267.50

He already has £125

He will save £7.50 each week.

In how many weeks will he have saved enough?

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Answer \_\_\_\_\_

(Total 3 marks)

#### Q5.

Work out  $2\frac{1}{8} - \frac{2}{3}$

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Answer \_\_\_\_\_

(Total 3 marks)

#### Q6.

What is 6.2819 to 2 decimal places?

Circle your answer.

6.2

6.28

6.29

6.3

(Total 1 mark)

**Q7.**

Work out  $10 + (-4)$

Circle your answer.

-14

-6

6

14

(Total 1 mark)

**Q8.**

(a) Expand  $w(w + 6)$

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

(b) Factorise fully  $8y + 20$

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

(Total 4 marks)

**Q9.**

(a) Simplify fully  $56 : 24$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_ : \_\_\_\_\_

(2)

(b) Write the ratio  $5 : 4$  in the form  $n : 1$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_ : \_\_\_\_\_

(1)

(c) Share £180 in the ratio 1 : 9

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Answer £\_\_\_\_\_ and £\_\_\_\_\_

(2)

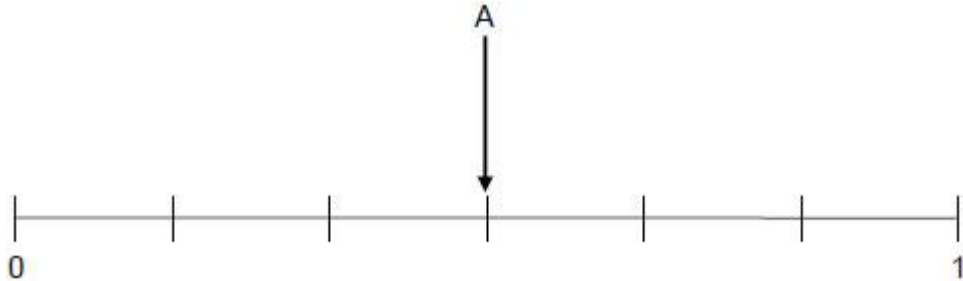
(Total 5 marks)

### Q10.

Here are three events for an ordinary fair dice.

- A Roll an odd number
- B Roll a number greater than 6
- C Roll an even number less than 3

Draw and label arrows to show the probabilities of events B and C on the probability scale.

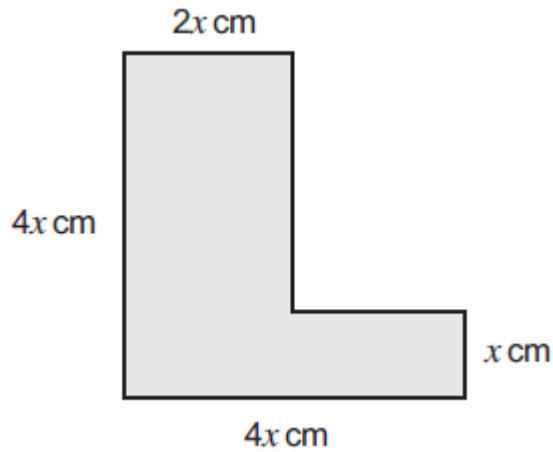


(Total 2 marks)

**Q11.**

The perimeter of this L-shape is 56 cm.

Not drawn accurately



Set up and solve an equation to work out the value of  $x$ .

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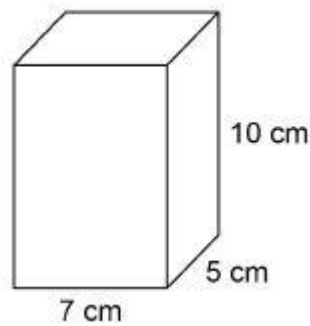
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$x =$  \_\_\_\_\_

**(Total 4 marks)**

**Q12.**

Here is a cuboid.



Work out the volume.

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Answer \_\_\_\_\_  $\text{cm}^3$

**(Total 2 marks)**

**Q13.**

Factorise fully  $2x^2 + 6x$

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q14.**

The height of a tree is 12 metres, correct to the nearest metre.

Circle the error interval.

$11.5 \text{ m} \leq \text{height} < 12.5 \text{ m}$

$11.5 \text{ m} \leq \text{height} \leq 12.5 \text{ m}$

$11.5 \text{ m} < \text{height} \leq 12.5 \text{ m}$

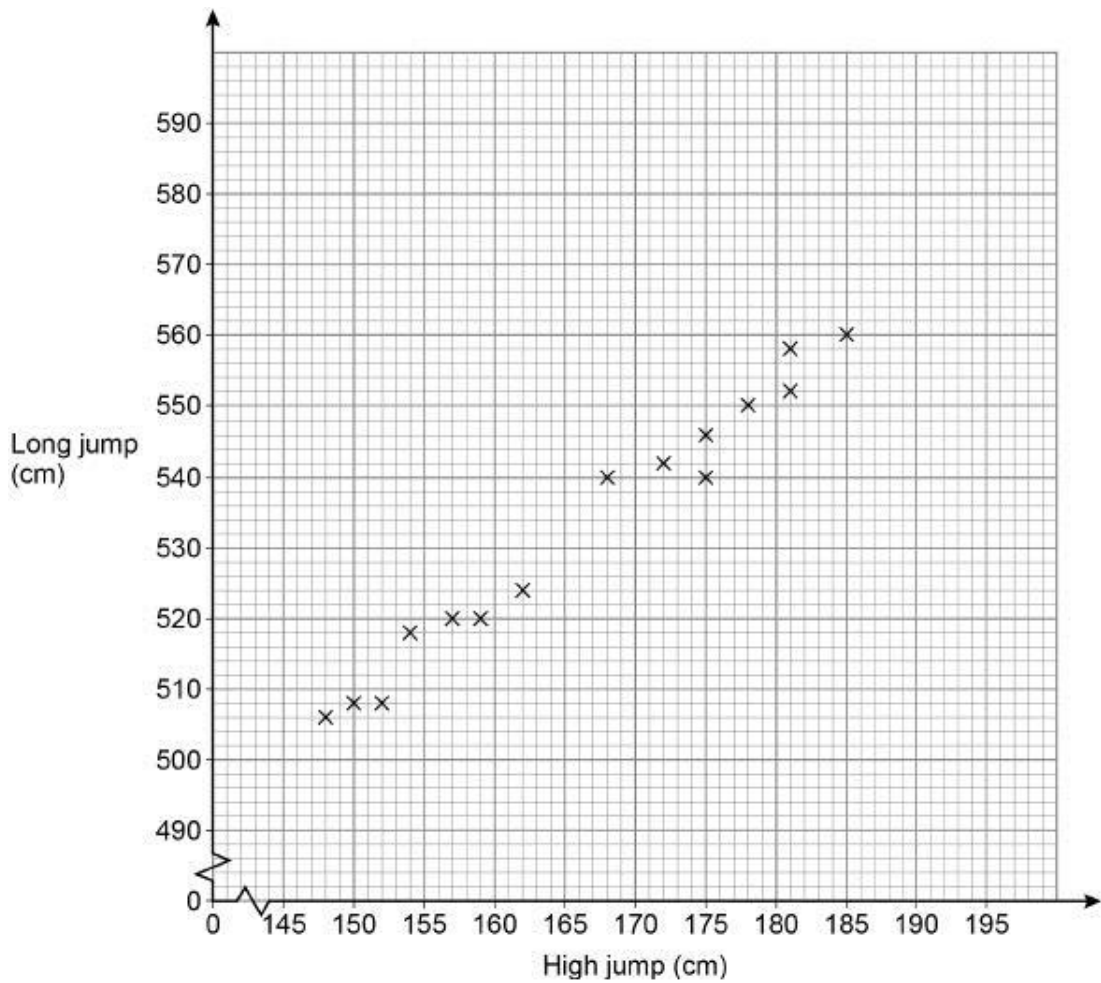
$11.5 \text{ m} < \text{height} < 12.5 \text{ m}$

**(Total 1 mark)**



**Q15.**

The scatter graph shows the best high jump and the best long jump for 15 boys.



(a) Write down the type of correlation shown.

Answer \_\_\_\_\_

(1)

(b) Liam has a best high jump of 166 cm

Use a line of best fit to estimate his best long jump.

Answer \_\_\_\_\_ cm

(2)

(c) Another boy has a best high jump of 195 cm

Give a reason why you should **not** use a line of best fit to estimate his best long jump.

\_\_\_\_\_  
\_\_\_\_\_

(1)

**(Total 4 marks)**

### Q16. CALCULATOR ALLOWED

Increase 4200 by 38%

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Answer \_\_\_\_\_

**(Total 2 marks)**

### Q17.

Solve  $5x - 2 > 3x + 11$

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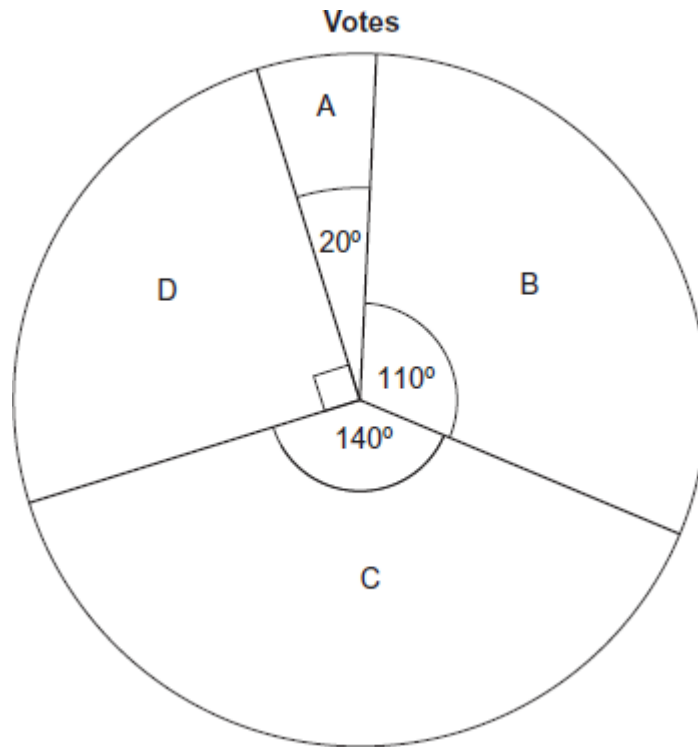
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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q18.**

The pie chart shows information about how people voted in an election.



1800 people voted for D.

How many **more** people voted for C than B?

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Answer \_\_\_\_\_

**(Total 3 marks)**

**Q19.**

Given  $5y + 4 = ay$

Work out the value of  $a$  when  $y = 2$

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$a =$  \_\_\_\_\_

**(Total 2 marks)**



**Q22.**

Write 360 000 in standard form.

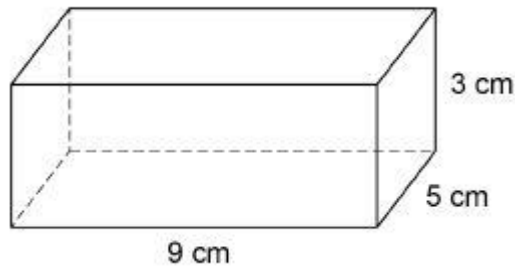
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Answer \_\_\_\_\_

(Total 1 mark)

**Q23.**

Here is a cuboid.



The two **largest** faces are blue.

The other four faces are green.

Is the total blue area greater than the total green area?

You **must** show your working.

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(Total 3 marks)

**Q24.**

The exterior angle of a regular polygon is  $45^\circ$

Circle the name of the regular polygon.

pentagon

hexagon

octagon

decagon

(Total 1 mark)

**Q25.**

The first 4 terms of a linear sequence are

3

11

19

27

Circle the expression for the  $n$ th term.

$8 - 5n$

$n + 8$

$8n + 3$

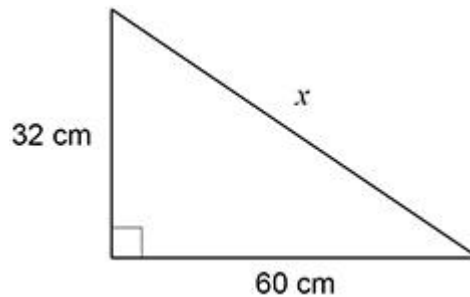
$8n - 5$

(Total 1 mark)

**Q26. CALCULATOR ALLOWED**

Use Pythagoras' theorem to work out the value of  $x$ .

Not drawn accurately



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Answer \_\_\_\_\_ cm

(Total 3 marks)

### Q27. CALCULATOR ALLOWED

David invests £5000 in a savings account.  
The account pays 3.2% compound interest per year.

Work out the value of his investment after 3 years.  
Give your answer to the nearest penny.

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Answer £ \_\_\_\_\_

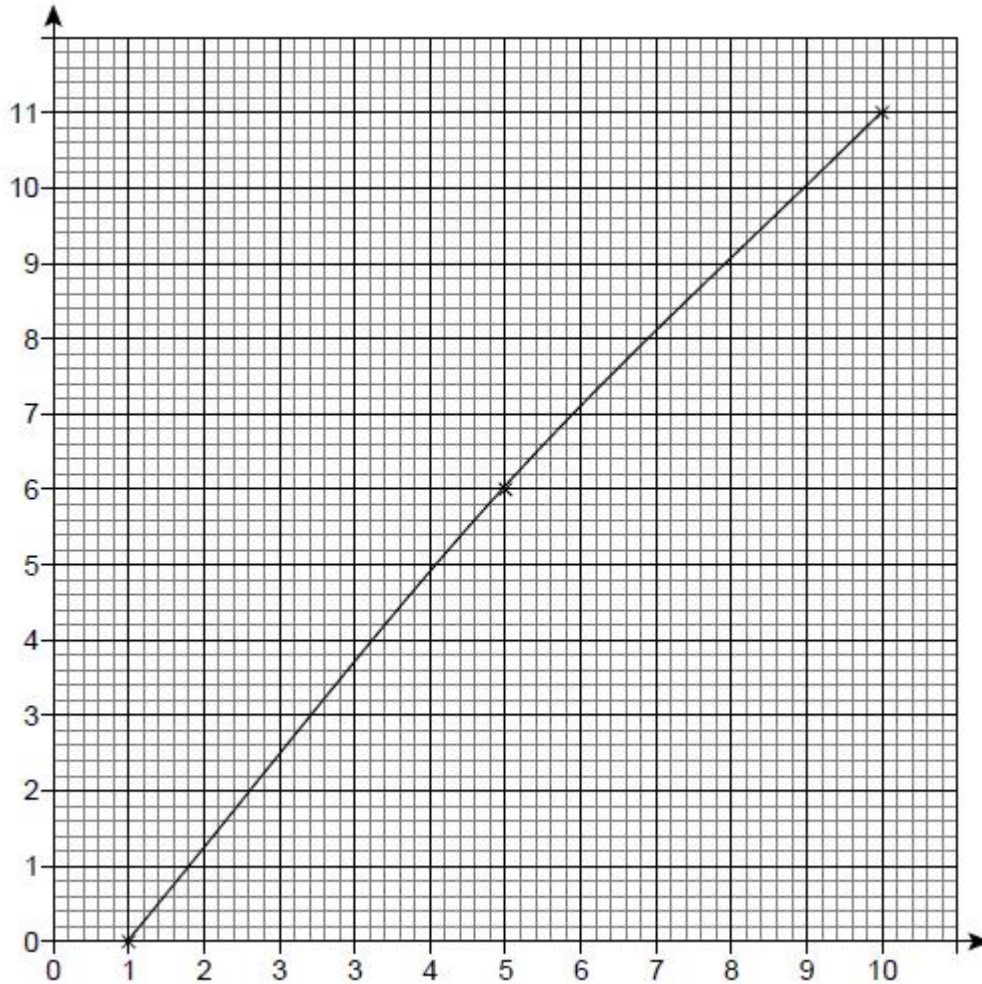
**(Total 4 marks)**

**Q28.**

Guy is using this table of results to draw the graph of  $y = x + 1$  for values of  $x$  from 0 to 10

$x$	0	5	10
$y$	1	6	11

This is his graph.



Write down **three** different mistakes he has made.

Mistake 1 \_\_\_\_\_

Mistake 2 \_\_\_\_\_

Mistake 3 \_\_\_\_\_

(Total 3 marks)



**Q29.**

Expand and simplify  $3(2x - 5) + 4(2x + 1)$

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q30.**

Solve the simultaneous equations

$$7x + 2y = 36$$

$$3x + 2y = 16$$

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$x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

**(Total 3 marks)**

**Q31.**

Rearrange  $x = 2y - 6$  to make  $y$  the subject.

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q32.**

Written as the product of its prime factors

$$672 = 2^5 \times 3 \times 7$$

- (a) Write 252 as the product of its prime factors.

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Answer \_\_\_\_\_

(2)

- (b) Work out the value of the highest common factor of 672 and 252

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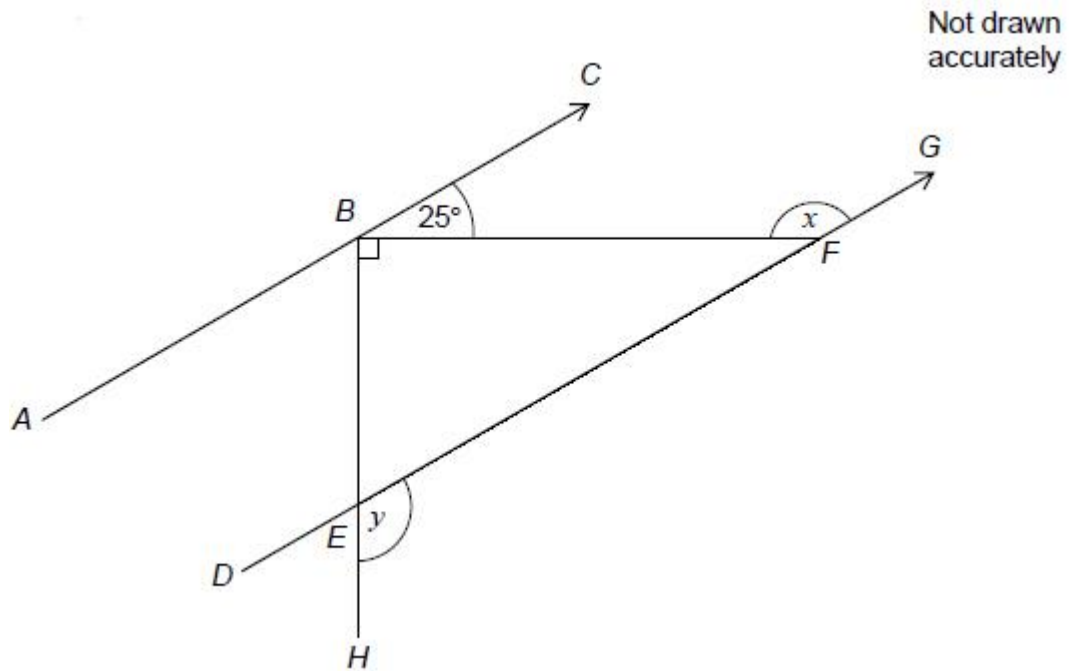
Answer \_\_\_\_\_

(1)

**(Total 3 marks)**

**Q33.**

$ABC$  and  $DEFG$  are parallel lines.  
 $BEH$  is a straight line.



- (a) Work out the size of angle  $x$ .

\_\_\_\_\_

Answer \_\_\_\_\_ degrees

(1)

- (b) Work out the size of angle  $y$ .  
You **must** show your working, which may be on the diagram.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_ degrees

(2)

(Total 3 marks)

### Q34. CALCULATOR ALLOWED

The table shows information about journeys A and B.

Complete the table.

	Distance travelled	Time taken	Average speed
A	32 miles		64 mph
B		1 hour 20 minutes	42 mph

(Total 2 marks)

### Q35.

John goes to work by car or by train.

- (a) The probability that John goes by car is 0.4

Work out the probability he goes by train.

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Answer \_\_\_\_\_

(1)

- (b) John works for 200 days each year.

How many days would you expect him to go to work by car?

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Answer \_\_\_\_\_

(2)

- (c) Ben also goes to work by car or by train.  
Out of 200 days, he went by car on 150 days.

Work out the relative frequency that Ben goes to work by car.

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Answer \_\_\_\_\_

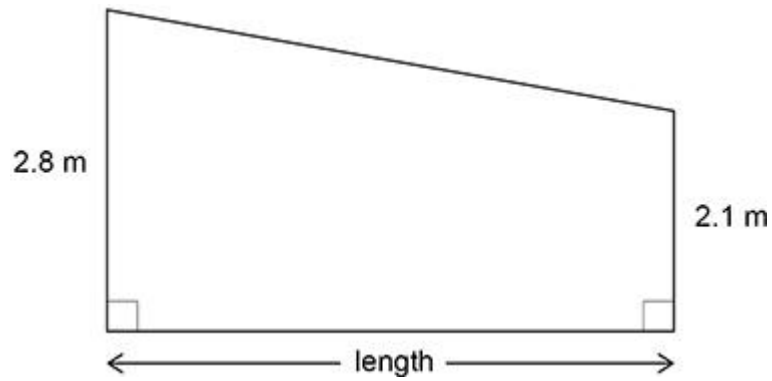
(1)

(Total 4 marks)

**Q36. CALCULATOR ALLOWED**

The diagram shows a wall.

Not drawn accurately



The area of the wall is  $39.2 \text{ m}^2$

Work out the length of the wall.

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Answer \_\_\_\_\_ m

**(Total 3 marks)**

**Q37.**

Solve  $6x - 11 = 13$

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$x =$  \_\_\_\_\_

**(Total 2 marks)**

**Q38.**

(a) Factorise  $x^2 - 9x + 20$

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Answer \_\_\_\_\_

**(2)**

(b) Solve  $x^2 - 9x + 20 = 0$

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Answer \_\_\_\_\_

**(1)**

**(Total 3 marks)**

## Answers

<b>1</b>	$\frac{19}{4}$
<b>2</b>	(a) -5 (b) 48 (c) $\frac{3}{4}$ or 0.75
<b>3</b>	$x = 2$
<b>4</b>	19
<b>5</b>	$\frac{35}{24}$ or $1\frac{11}{24}$ or equivalent answer
<b>6</b>	6.28
<b>7</b>	6
<b>8</b>	(a) $w^2 + 6w$ (b) $4(2y + 5)$
<b>9</b>	(a) 7 : 3 (b) 1.25 : 1 (c) 18 and 162
<b>10</b>	Arrow at 0 labelled B Arrow at $\frac{1}{6}$ labelled C
<b>11</b>	3.5 or $\frac{7}{2}$ or $3\frac{1}{2}$
<b>12</b>	350
<b>13</b>	$2x(x + 3)$
<b>14</b>	$11.5 \text{ m} \leq \text{height} < 12.5 \text{ m}$

<b>15</b>	<p>(a) Positive</p> <p>(b) Straight line of best fit passing through (150, [504, 512]) and (180, [550, 558])</p> <p>(c) Reason examples: <i>195 cm is outside the range of values</i> <i>You cannot extrapolate</i></p>
<b>16</b>	5796
<b>17</b>	$x > 6.5$
<b>18</b>	600
<b>19</b>	7
<b>20</b>	$\frac{33}{8}$ or $4\frac{1}{8}$
<b>21</b>	116(.00)
<b>22</b>	$3.6 \times 10^5$
<b>23</b>	<p>90 and 84 and Yes</p> <p>or</p> <p>45 and 42 and Yes</p>
<b>24</b>	octagon
<b>25</b>	$8n - 5$
<b>26</b>	68
<b>27</b>	5495.523...



<b>28</b>	<p>3 different mistakes identified</p> <p><i>B1 for each different mistake identified from</i></p> <p><i>It should be a straight line</i></p> <p><i>Point (0, 1) plotted incorrectly</i></p> <p><i>Two 3s on x-axis</i></p> <p><i>Axes not labelled</i></p> <p><i>Line not labelled (<math>y = x + 1</math>)</i></p>
<b>29</b>	$14x - 11$
<b>30</b>	$y = 0.5$ $x = 5$
<b>31</b>	$y = \frac{x+6}{2}$ or $y = \frac{x}{2} + 3$ or $y = \frac{1}{2}(x+6)$
<b>32</b>	<p>(a) <math>2 \times 2 \times 3 \times 3 \times 7</math> or <math>2^2 \times 3^2 \times 7</math></p> <p>(b) 84</p>
<b>33</b>	<p>(a) 155</p> <p>(b) 115</p>
<b>34</b>	<p>30 minutes or <math>\frac{1}{2}</math> hour</p> <p>56 (miles)</p>
<b>35</b>	<p>(a) 0.6 or 60% or <math>\frac{6}{10}</math></p> <p>(b) 80</p> <p>(c) 0.75 or 75% or <math>\frac{150}{200}</math></p>
<b>36</b>	16
<b>37</b>	4
<b>38</b>	<p>(a) <math>(x - 4)(x - 5)</math></p> <p>(b) 4 and 5</p>