



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

Year 10 Higher

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	Ratio, Proportion & Rates of Change	716-19, 734-6, 725-32
Quadratic graphs, turning points, and roots	Algebra	251-258
Further expanding & factorising	Algebra	166, 228
Linear Simultaneous Equations	Algebra	190-195
Further graphs	Algebra	299-205
Probability	Probability	351-90
Capture & Recapture	Statistics	872-3
Standard Form	Number	122-9
Proportion (further)	Ratio, Proportion & Rates of Change	343-7
Simple interest	Ratio, Proportion & Rates of Change	93
Growth & Decay	Ratio, Proportion & Rates of Change	94, 800-11,
Ratio (further)	Ratio, Proportion & Rates of Change	330-7
Recurring decimals	Number	53-4
Statistics - no higher	Statistics	393-4, 413-21, 453-4
Surds	Number	111-19
Bounds	Number	137-9

# Practice Questions

**Q1.**

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

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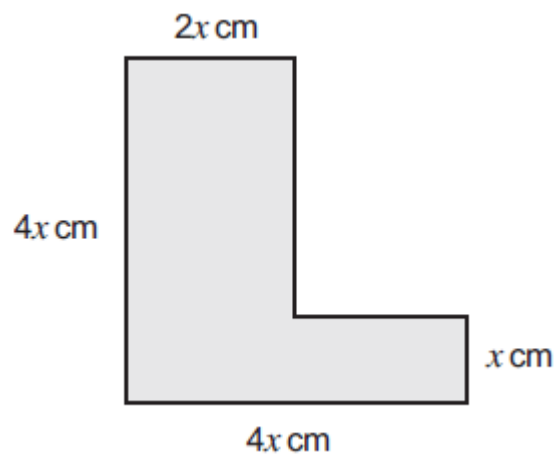
Answer \_\_\_\_\_

**(Total 3 marks)**

**Q2.**

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

**(Total 4 marks)**

**Q3.**

Given  $5y + 4 = ay$

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

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$a = \underline{\hspace{10cm}}$

**(Total 2 marks)****Q4.**

The equations of five straight lines are given below.

The line  $y = 3x - 1$  is parallel to two of the lines.Circle the equations of these **two** lines.

$y = 3x$

$y = -1$

$y = -3x - 1$

$y = 2x - 1$

$y = 3x + 1$

**(Total 2 marks)****Q5.**

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

Circle the error interval.

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

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

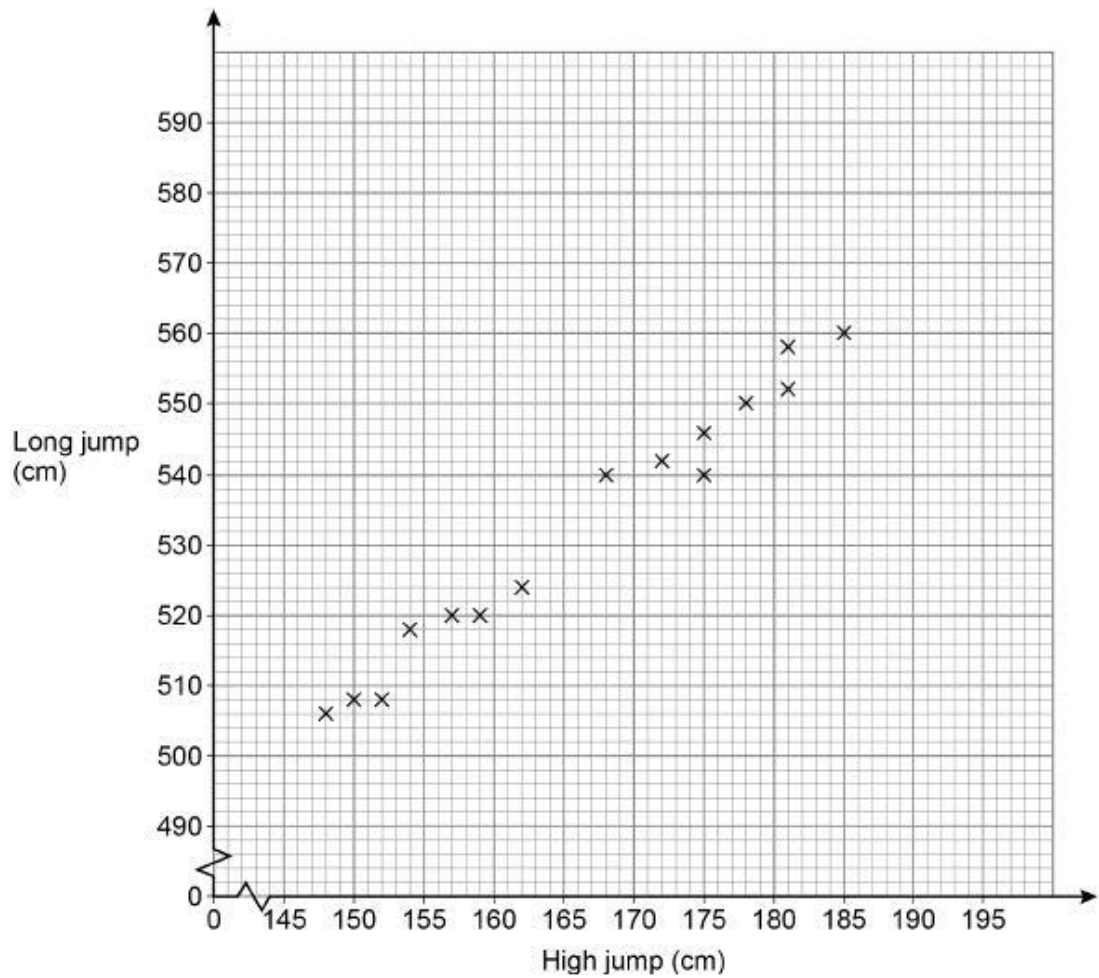
$11.5 \text{ m} < \text{height} \leq 12.5 \text{ m}$

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

**(Total 1 mark)**

**Q6.**

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)

**Q7.**

Increase 4200 by 38% **CALCULATOR ALLOWED**

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q8.**

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

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q9.**

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)**



**Q13.**

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

Circle the name of the regular polygon.

pentagon

hexagon

octagon

decagon

**(Total 1 mark)**

**Q14. 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 £ \_\_\_\_\_

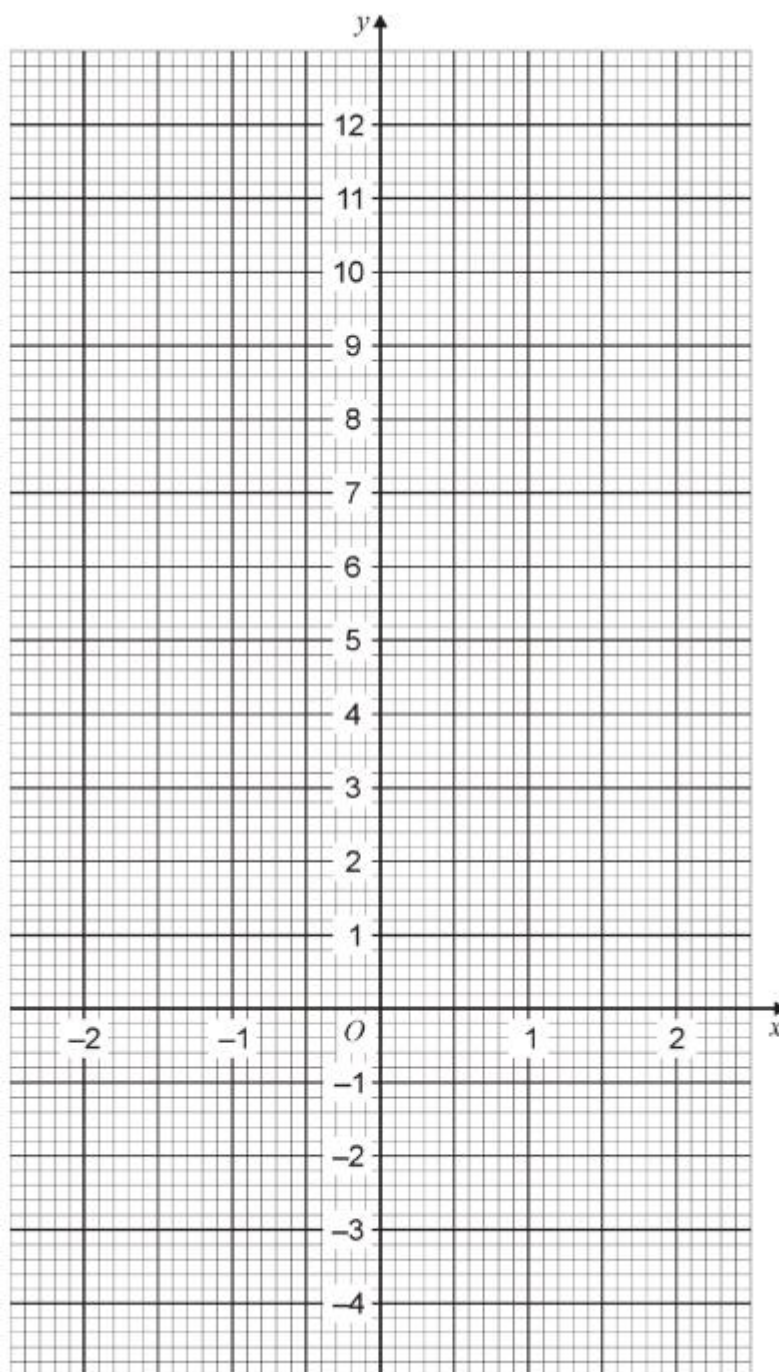
**(Total 4 marks)**



**Q15.**Complete the table of values for  $y = x^3 + 4$ 

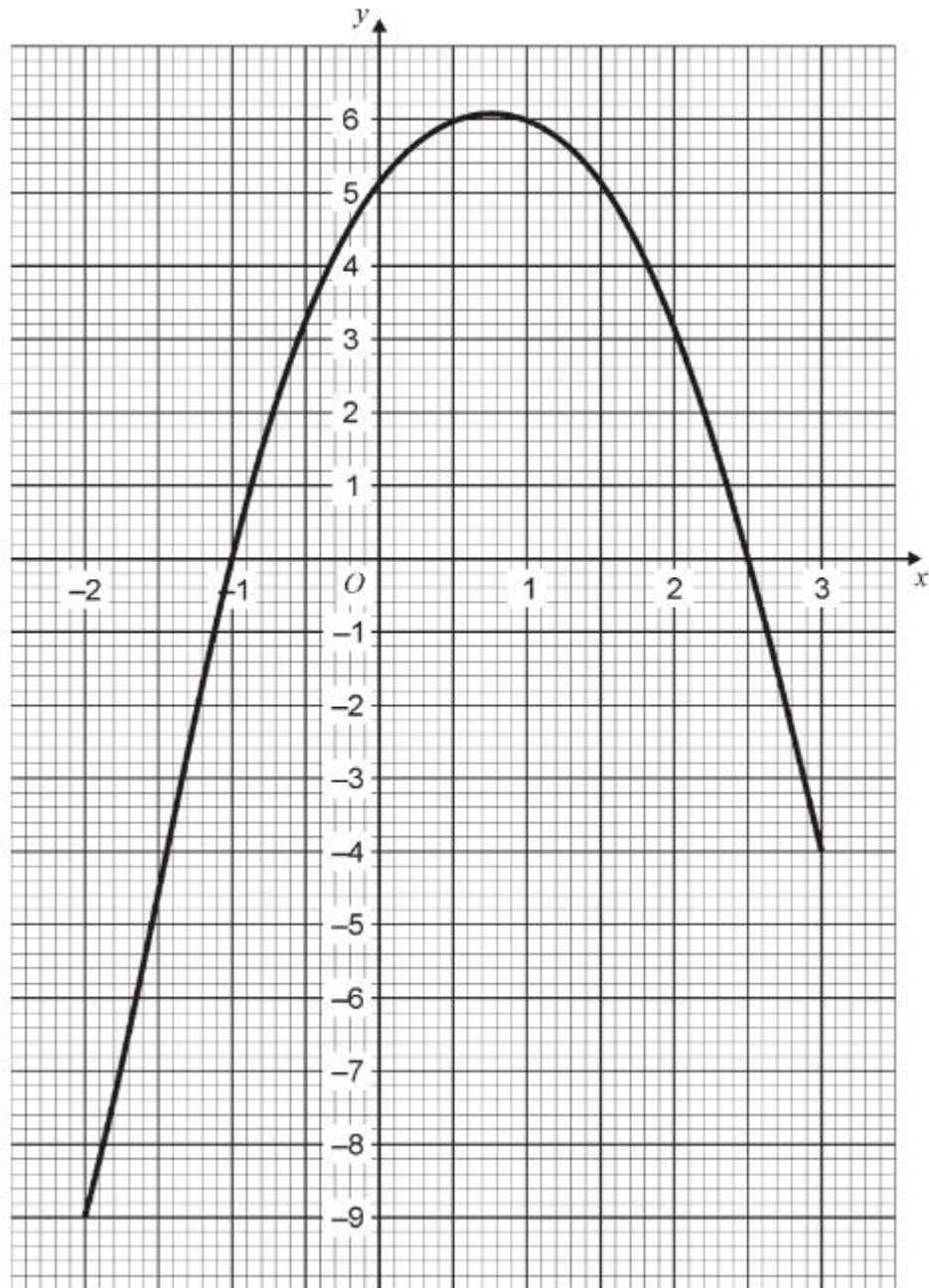
$x$	-2	-1	0	1	2
$y$		3	4		12

(2)

(b) On the grid below, plot the graph of  $y = x^3 + 4$  for values of  $x$  from -2 to 2

(2)

(c) The graph of  $y = 5 + 3x - 2x^2$  is shown for values of  $x$  from  $-2$  to  $3$



Write down the solutions of  $5 + 3x - 2x^2 = 0$

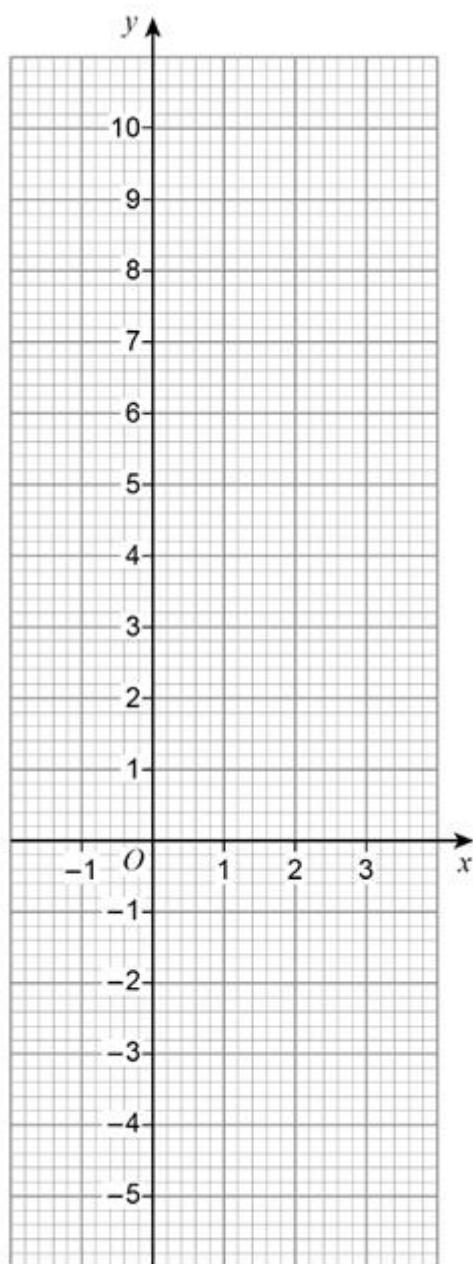
Answer \_\_\_\_\_ and \_\_\_\_\_

(2)

(Total 6 marks)

**Q16.**

Draw the graph of  $y = 3x - 1$  for values of  $x$  from  $-1$  to  $3$

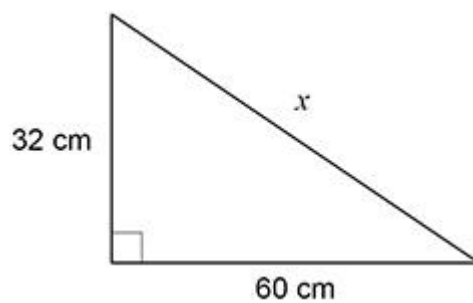


**(Total 3 marks)**

### Q17. CALCULATOR ALLOWED

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

Not drawn accurately



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Answer \_\_\_\_\_ cm  
(Total 3 marks)

### Q18.

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

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Answer \_\_\_\_\_  
(Total 2 marks)

**Q19.**

Solve the simultaneous equations

$$7x + 2y = 36$$

$$3x + 2y = 16$$

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$$x = \underline{\hspace{2cm}} \quad y = \underline{\hspace{2cm}}$$

**(Total 3 marks)**

**Q20.**

Rearrange  $y = \frac{3x-2}{x+1}$  to make  $x$  the subject.

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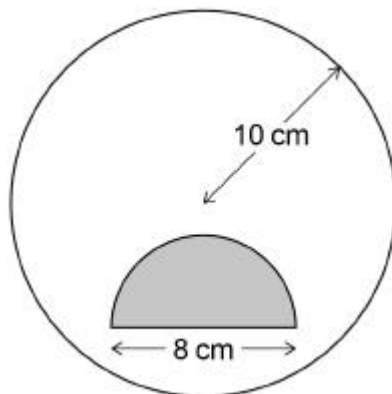
Answer  $\underline{\hspace{4cm}}$

**(Total 4 marks)**

### Q21. CALCULATOR ALLOWED

A shaded semicircle is inside a circle as shown.

Not drawn accurately



The **radius** of the circle is 10 cm

The **diameter** of the semicircle is 8 cm

How many times bigger is the unshaded area than the shaded area?

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Answer \_\_\_\_\_

(Total 4 marks)

**Q22.**

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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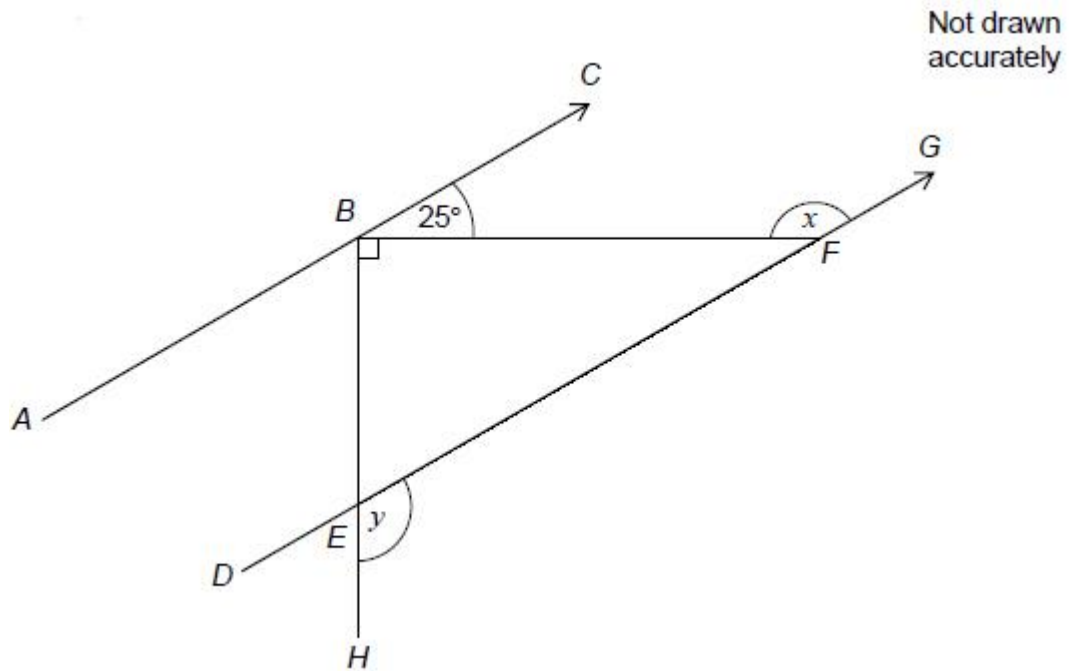
Answer \_\_\_\_\_

(1)

**(Total 3 marks)**

**Q23.**

*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)



**Q24.**

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)

**Q25. CALCULATOR ALLOWED**

$R$  is inversely proportional to  $A$ .

$$R = 12.1 \text{ when } A = 1.5$$

- (a) Work out a formula connecting  $R$  and  $A$ .

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Answer \_\_\_\_\_

(3)

- (b) Work out the value of  $R$  when  $A = 4$

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Answer \_\_\_\_\_

(2)

(Total 5 marks)

**Q26.**

Show that  $\frac{14}{\sqrt{7}}$  can be written in the form  $a\sqrt{b}$  where  $a$  and  $b$  are integers.

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(Total 2 marks)

**Q27.**

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

Give your answer as a mixed number.

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Answer \_\_\_\_\_

(Total 4 marks)

**Q28.**

Work out  $64^{\frac{2}{3}}$

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Answer \_\_\_\_\_

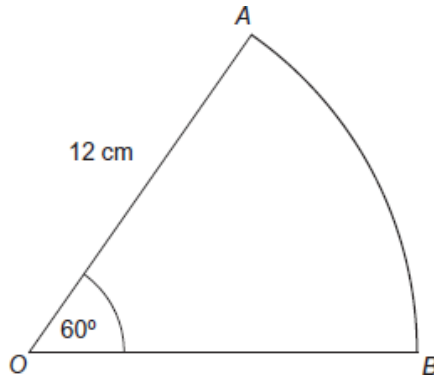
(Total 2 marks)



**Q30. CALCULATOR ALLOWED**

$OAB$  is a sector of a circle of radius 12 cm  
Angle  $AOB = 60^\circ$

Not drawn accurately



Work out the length of the arc  $AB$ .  
Give your answer in terms of  $\pi$ .

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

**(Total 2 marks)**

**Q31. CALCULATOR ALLOWED**

$$m = \frac{p - 2b}{2}$$

$p = 68.3$  correct to 1 decimal place.

$b = 8.7$  correct to 1 decimal place.

Work out the lower bound for  $m$ .

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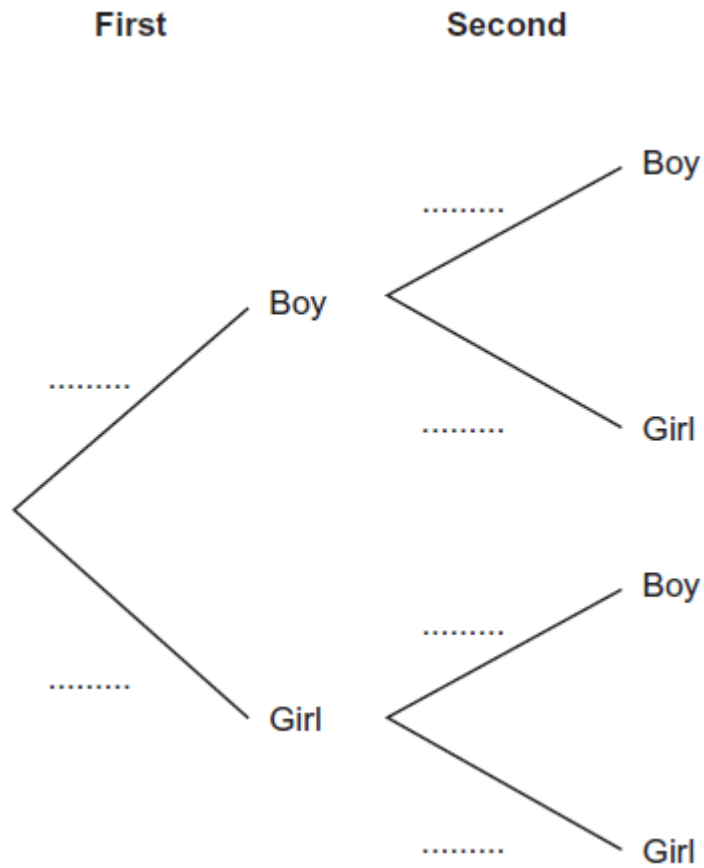
Answer \_\_\_\_\_

**(Total 3 marks)**

**Q32.**

A team has 7 boys and 3 girls.  
Stevie chooses two of the team at random.

(a) Complete the probability tree diagram.



(3)

(b) Work out the probability that he chooses one boy and one girl.

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Answer \_\_\_\_\_

(3)

(Total 6 marks)

**Q33.**

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)

**Q34.**

Solve  $\frac{x}{x+4} + \frac{7}{x-2} = 1$

You **must** show your working.

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

**(Total 4 marks)****Q35.**

(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)**

**Q36.**

Express  $0.\dot{5}$  as a fraction in its simplest form. You must show your working.

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Answer \_\_\_\_\_

**(Total 3 marks)**

**Q37.**

The mean mass of a squad of 19 hockey players is 82 kg

A player of mass 93 kg joins the squad.

Work out the mean mass of the squad now.

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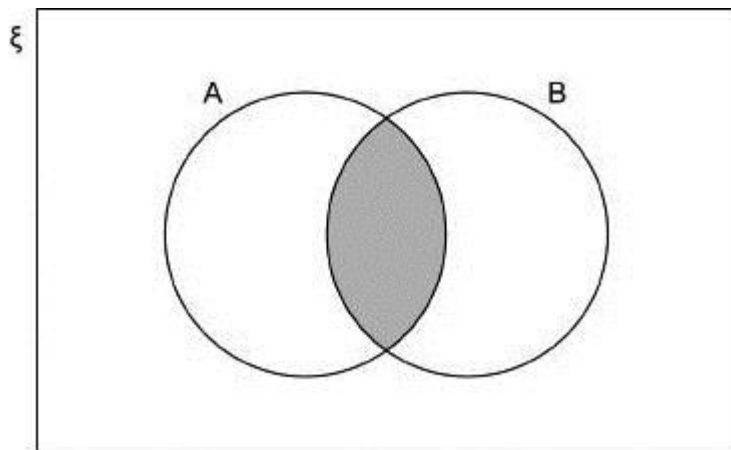
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Answer \_\_\_\_\_ kg

**(Total 3 marks)**



Q38.



Which of these represents the shaded region?

Circle your answer.

$A \cup B$

$(A \cap B)'$

$A \cap B$

$A' \cup B'$

(Total 1 mark)

Answers

1	$\frac{35}{24}$ or $1\frac{11}{24}$ oe
2	3.5 or $\frac{7}{2}$ or $3\frac{1}{2}$
3	7
4	$y = 3x$ and $y = 3x + 1$
5	$11.5 \text{ m} \leq \text{height} < 12.5 \text{ m}$
6	(a) Positive (b) Straight line of best fit passing through (150, [504, 512]) and (180, [550, 558]) (c) Examples reasons: <i>195 cm is outside the range of values</i> <i>You cannot extrapolate</i>
7	5796
8	$x > 6.5$
9	$8n - 5$
10	60
11	$12x^3 + 28x^2 - 75x - 175$
12	$3.6 \times 10^5$
13	octagon
14	5495.52
15	(a) -4 and 5 (b) 5 correctly plotted coordinates Smooth curve passing through your 5 points (c) -1 and 2.5
16	<b>Coordinates:</b> (-1, -4), (0, -1), (1, 2), (2, 5) and (3, 8)  Straight, ruled line from (-1, -4) to (3, 8)

17	68
18	$14x - 11$
19	$y = 0.5$ $x = 5$
20	$x = \frac{-y-2}{y-3}$ or $x = \frac{y+2}{3-y}$
21	$11\frac{1}{2}$ or 11.5
22	(a) $2 \times 2 \times 3 \times 3 \times 7$ or $2^2 \times 3^2 \times 7$ (b) 84
23	(a) 155 (b) 115
24	30 minutes or $\frac{1}{2}$ hour 56 (miles)
25	(a) $R = \frac{18.15}{A}$ or $R = \frac{1}{0.055A}$ (b) $4.5(375)$
26	$2\sqrt{7}$
27	$3\frac{3}{16}$
28	16
29	12.5
30	$4\pi$ or [12.56, 12.6] or $\pi 4$

31	25.375 or $\frac{203}{8}$ or $25\frac{3}{8}$
32	<p>(a)</p> <p style="margin-left: 100px;">Second: <math>\frac{6}{9}</math></p> <p style="margin-left: 80px;">First: <math>\frac{7}{10}</math></p> <p style="margin-left: 100px;">Second: <math>\frac{3}{9}</math></p> <p style="margin-left: 100px;">Second: <math>\frac{7}{9}</math></p> <p style="margin-left: 80px;">First: <math>\frac{3}{10}</math></p> <p style="margin-left: 100px;">Second: <math>\frac{2}{9}</math></p> <p>(b)</p> <p style="margin-left: 100px;"><math>\frac{42}{90}</math> or <math>\frac{21}{45}</math> or <math>\frac{7}{15}</math> or</p> <p style="margin-left: 100px;"><math>0.4\dot{6}</math> or 0.47</p>
33	<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>
34	<p>Working: <math>x^2 - 2x + 7x + 28 = x^2 + 4x - 2x - 8</math></p> <p>Answer: -12</p>
35	<p>(a) <math>(x - 4)(x - 5)</math></p> <p>(b) 4 and 5</p>
36	$\frac{5}{9}$
37	82.55 or 82.6
38	$A \cap B$