

Candidate evidence

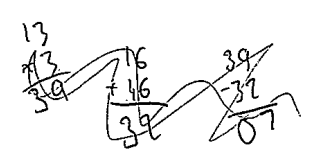
Question 1

Response 1

<p>1. Evaluate $2\frac{1}{6} \div \frac{8}{9}$.</p> <p>Give your answer in its simplest form.</p> $2\frac{1}{6} \div \frac{8}{9}$ $= \frac{13}{6} \div \frac{8}{9}$ $= \frac{13}{6} \times \frac{9}{8}$ $= \frac{117}{48}$	<p>2</p>
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Response 2

<p>1. Evaluate $2\frac{1}{6} \div \frac{8}{9}$.</p> <p>Give your answer in its simplest form.</p> $\frac{13}{6} \div \frac{8}{9} = \frac{13}{\cancel{6}_2} \times \frac{\cancel{9}^3}{8} = \frac{39}{16} = 1\frac{7}{16}$	<p>2</p>
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Response 3

1. Evaluate $2\frac{1}{6} \div \frac{8}{9}$.

Give your answer in its simplest form.

2

$$\begin{aligned}
 2\frac{1}{6} \div \frac{8}{9} &= \frac{13}{6} \div \frac{8}{9} \\
 &= \frac{13}{6} \times \frac{9}{8} \\
 &= \frac{104}{54} \\
 &= \frac{52}{27} \\
 &=
 \end{aligned}$$

$$\begin{aligned}
 13 \times 8 &= 104 \\
 6 \times 9 &= 54 \\
 104 \div 2 &= 52 \\
 54 \div 2 &= 27
 \end{aligned}$$

Question 2

Response 4

2. Expand and simplify $(x+7)^2 + 6(x^2 - 10)$.

3

$$\begin{aligned}
 &(x+7)^2 + 6(x^2 - 10) \\
 &= x^2 + 49 + 6x^2 - 60 \\
 &= 7x^2 - 11
 \end{aligned}$$

Response 5

2. Expand and simplify $(x+7)^2 + 6(x^2 - 10)$.	3		
$(x+7)(x+7) + 6(x^2 - 10)$			
$x^2 + 7x + 7x + 49 + 6x^2 - 60$			
$= 7x^3 + 14x - 11$			

Response 6

2. Expand and simplify $(x+7)^2 + 6(x^2 - 10)$.	3		
$(x+7)^2 + 6(x^2 - 10)$			
scribbles			
$= x^2 + 49 + 6x^2 - 60$			
<u>$= x^2 + 55x^2 - 60$</u>			
scribbles			
scribbles			
scribbles			

Question 3

Response 7

3. Solve, algebraically, the system of equations

$$2x + 3y = 8 \quad - \textcircled{1} \times 2$$

$$5x + 2y = -2 \quad - \textcircled{2} \times 3$$

$$4x + 6y = 16 \quad - \textcircled{3}$$

$$15x + 6y = -6 \quad - \textcircled{4}$$

Subtract eq 3 + 4

$$\begin{array}{r} \cancel{4x + 6y = 16} \\ + 15x + 6y = -6 \\ - \quad 4x + 6y = 16 \\ \hline 11x = 22 \\ x = 2 \end{array}$$

$$\cancel{2x + 3y = 8}$$

Sub $x=2$ into eq $\textcircled{1}$

$$2x + 3y = 8$$

$$2(2) + 3y = 8$$

$$4 + 3y = 8 \quad - 4$$

$$\cancel{3y = 4}$$

$$3y = 4$$

$$y = \frac{4}{3}$$

Response 8

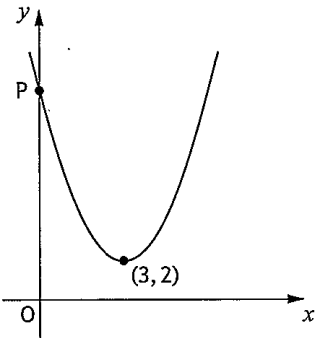
		MARKS	DO NOT WRITE IN THIS MARGIN
3. Solve, algebraically, the system of equations			
$2x + 3y = 8$ $5x + 2y = -2$		3	
$2x + 3y = 8$ $5x + 2y = -2$ $4x + 6y = 16$ $-15x - 6y = 6$ $11x = 22$ $x = 2$ $2(2) + 3y = 8$ $4 + 3y = 8$ $3y = 4$ $y = \frac{4}{3}$ $2(2) + 3y = 8$ $4 + 3y = 8$ $3y = 4$ $y = \frac{4}{3}$ $5(2) + 2y = -2$ $10 + 2y = -2$ $2y = -8$ $y = -4$ $x = 2$ $y = 4$			

Response 9

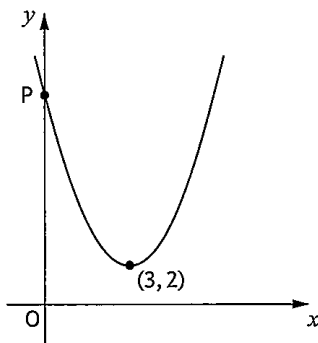
		MARKS	DO NOT WRITE IN THIS MARGIN
3. Solve, algebraically, the system of equations			
$2x + 3y = 8$ $5x + 2y = -2$		3	
<p>Handwritten work:</p> <p> $2x + 3y = 8$ $\times 5$ $5x + 2y = -2$ $\times 3$ $4x + 6y = 16$ $15x + 6y = -6$ </p> <p> $2x + 3y = 8$ $\times 5$ $5x + 2y = -2$ $\times 2$ $10x + 15y = 40$ $10x + 4y = -4$ $9y = 36$ $y = 4$ </p> <p> $9, 18, 27, 36$ sub into $2x + 3y = 8$ $2x + 3(4) = 8$ $2x + 12 = 8$ $2x = -4$ $x = -2$ </p> <p> $x = -2$ $y = 4$ </p>			

Question 4

Response 10

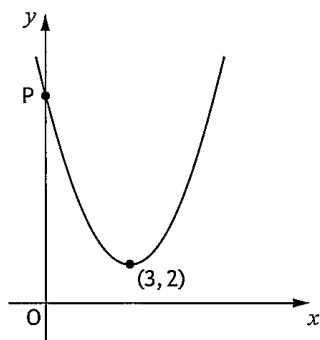
		MARKS	DO NOT WRITE IN THIS MARGIN
<p>4. The graph below shows part of a parabola of the form $y = (x + a)^2 + b$.</p> 			
(a)	(i) State the value of a .	1	
	$a = 3$		
	(ii) State the value of b .	1	
	$b = 2$		
(b)	P is the point $(0, c)$. Find the value of c .	1	
	$x = 0$ $y = (x + 3)^2 + 2$ $y = (x + 3)^2 + 2$ $y = (0 + 3)^2 + 2$ $y = 3^2 + 2$ $y = 9 + 2$ $y = 11$ $y\text{-int} = (0, 11)$		

Response 11

		MARKS	DO NOT WRITE IN THIS MARGIN
4. The graph below shows part of a parabola of the form $y = (x + a)^2 + b$.			
			
(a)	(i) State the value of a .	1	
	3		
	(ii) State the value of b .	1	
	-2		
(b)	P is the point $(0, c)$. Find the value of c .	1	
	me 11 When it is not possible $c = 5$		

Response 12

4. The graph below shows part of a parabola of the form $y = (x + a)^2 + b$.



- (a) (i) State the value of a .

$$a = -3$$

- (ii) State the value of b .

$$b = 2$$

- (b) P is the point $(0, c)$.

Find the value of c .

$$\Rightarrow y = 11$$

$$y = (x + 3)^2 + 2$$

Cuts y axis when $x = 0$

$$y = (0 + 3)^2 + 2$$

$$y = (0 + 3)(0 + 3) + 2$$

$$y = 9 + 2$$

$$y = 11$$

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Question 5

Response 13

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5. Determine the nature of the roots of the function $f(x) = 4x^2 + 6x - 1$.

$$a = 4$$

$$b = 6$$

$$c = -1$$

$$b^2 - 4ac$$

$$= 6^2 - 4(4)(-1)$$

$$= 36 + 16$$

$$= 52$$

460 since 52 is greater than 0 there is 2 real ~~roots~~ ~~distinct~~ roots.

Response 14

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5. Determine the nature of the roots of the function $f(x) = 4x^2 + 6x - 1$.

$$a = 4 \quad b = 6 \quad c = -1$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= -6 \pm \sqrt{6^2 - 4 \times 4 \times (-1)}$$

$$= -6 \pm \sqrt{36 + 16}$$

$$= -6 \pm \sqrt{52}$$

$$= -6 + \sqrt{52} \quad = -6 - \sqrt{52}$$

Response 15

	MARKS	DO NOT WRITE IN THIS MARGIN
<p>5. Determine the nature of the roots of the function $f(x) = 4x^2 + 6x - 1$.</p> $b^2 - 4AC$ $6^2 - 4 \times 4 \times (-1)$ $36 - 16$ $20 > 0, \text{ so } 2 \text{ real unequal roots}$	<p>2</p>	

Response 16

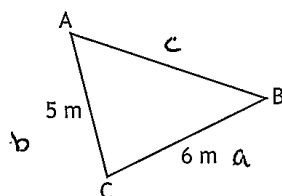
	MARKS	DO NOT WRITE IN THIS MARGIN
<p>5. Determine the nature of the roots of the function $f(x) = 4x^2 + 6x - 1$.</p> $a = 4$ $b = 6$ $c = 1$ $b^2 - 4ac$ $6^2 - 4 \times 4 \times 1 = 20$ <p>Since the discriminant is > 0 that means there are two distinct roots.</p>	<p>2</p>	

Question 6

Response 17

6. In triangle ABC:

- $AC = 5$ metres
- $BC = 6$ metres
- $\cos C = \frac{1}{5}$.



Calculate the length of AB.

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$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$c^2 = 6^2 + 5^2 - 2 \times 6 \times 5 \cos \frac{1}{5}$$

$$c^2 = 36 + 25 - 60 \cos \frac{1}{5}$$

$$c^2 = 61 - 60 \times \frac{1}{5}$$

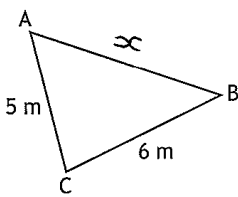
$$c^2 = 61 - 12$$

$$c^2 = 49$$

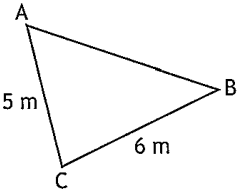
$$c = \sqrt{49}$$

$$c = 7 \text{ m}$$

Response 18

6. In triangle ABC:	MARKS
<ul style="list-style-type: none"> • AC = 5 metres • BC = 6 metres • $\cos C = \frac{1}{5}$.  <p>Calculate the length of AB.</p> <p> $a^2 = b^2 + c^2 - 2bc \cos A$ $c^2 = b^2 + a^2 - 2ba \cos C$ $= 5^2 + 6^2 - 2 \times 5 \times 6 \times \frac{1}{5}$ $= 25 + 36 - 60 \times \frac{1}{5}$ $= 61 - 12$ $= \underline{\underline{49m}}$ </p>	<div data-bbox="1236 369 1316 392" style="text-align: center;">DO NOT WRITE IN THIS MARGIN</div> <div data-bbox="1236 795 1316 840" style="text-align: center;">3</div>

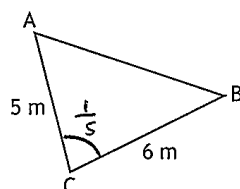
Response 19

	MARKS	DO NOT WRITE IN THIS MARGIN
<p>6. In triangle ABC:</p> <ul style="list-style-type: none"> • AC = 5 metres • BC = 6 metres • $\cos C = \frac{1}{5}$. <div style="text-align: center; margin: 20px 0;">  </div> <p>Calculate the length of AB.</p> $a^2 = b^2 + c^2 - 2bc \cos A$ $c^2 = a^2 + b^2 - 2ab \cos C$ $c^2 = 6^2 + 5^2 - 2 \times 5 \times 6 \times \frac{1}{5}$ $= 61 - 60 \times \frac{1}{5}$ $= 61 - 12$ $= 49$ $\sqrt{49}$ $= 7$	3	

Response 20

6. In triangle ABC:

- AC = 5 metres
- BC = 6 metres
- $\cos C = \frac{1}{5}$.



Calculate the length of AB.

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 = 5^2 + 6^2 - 2(5)(6) \cos\left(\frac{1}{5}\right)$$

$$25 + 36 - 60 \times \frac{1}{5}$$

$$61 - 60 \times \frac{1}{5}$$

$$1 \times \frac{1}{5}$$

$$0.20 \times 1 = 0.20$$

$$AB = 0.20 \text{ m}$$

MARKS

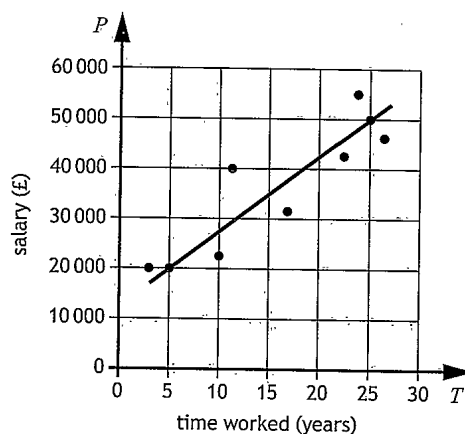
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Question 7

Response 21

7. A business recorded the salaries of a sample of its employees and the length of time they have worked for the business.
- The scattergraph shows the relationship between their salary, P pounds, and the length of time, T years, they have worked.



A line of the best fit has been drawn.

- (a) Find the equation of the line of best fit in terms of P and T .

Give the equation in its simplest form.

$$A(5, 20000), B(25, 50000)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{50000 - 20000}{25 - 5} = \frac{30000}{20} = 1500$$

$$y - b = m(x - a)$$

$$y - 20000 = 1500(x - 5)$$

$$y - 20000 = 1500x - 7500$$

$$y = 1500x + 12500$$

gradient = 1500
point = A(5, 20000)

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7. (continued)

- (b) Use your equation from part (a) to estimate the salary of an employee who has worked for the business for 8 years.

~~improvement in the~~

$$y = 1500x - 8$$

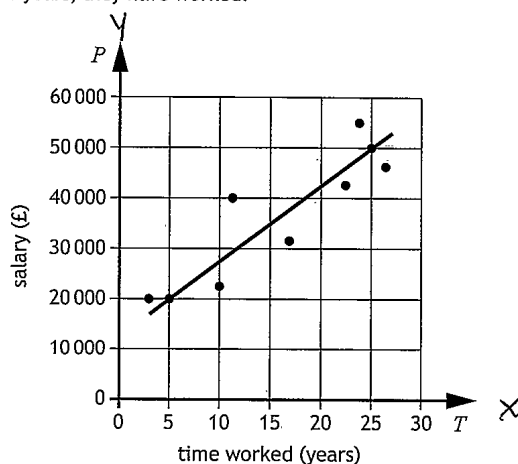
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1

Response 22

7. A business recorded the salaries of a sample of its employees and the length of time they have worked for the business.

The scattergraph shows the relationship between their salary, P pounds, and the length of time, T years, they have worked.



A line of the best fit has been drawn.

- (a) Find the equation of the line of best fit in terms of P and T .

Give the equation in its simplest form.

3

$$\begin{matrix} (5, 20000) & (25, 50000) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$m = 750$$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{50000 - 20000}{25 - 5} = \frac{30000}{20} = \frac{1500}{2} = \frac{750}{1}$$

$$y = mx + c \quad y = 750x + c$$

$$20000 = 750 \times 5 + c$$

$$20000 = 3750 + c$$

$$c = 16250$$

$$y = 750x + 16250$$

$$p = 750T + 16250$$

$$\begin{array}{r} 20000 \\ - 3750 \\ \hline 16250 \end{array}$$

$$700 \times 5 = 3500$$

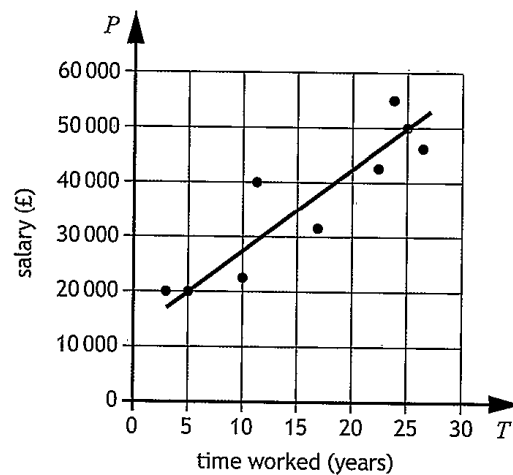
$$50 \times 5 = 250$$

MARKS		DO NOT WRITE IN THIS MARGIN
7. (continued)		
(b) Use your equation from part (a) to estimate the salary of an employee who has worked for the business for 8 years.		
$p = 750T + 16250$ $p = 750 \times 8 + 16250$ $p = 6000 + 16250$ $p = 22250$ $£22250$	$700 \times 8 = 5600$ $50 \times 8 = 400$ 6000 $\underline{16250}$ 22250	

Response 23

7. A business recorded the salaries of a sample of its employees and the length of time they have worked for the business.

The scattergraph shows the relationship between their salary, P pounds, and the length of time, T years, they have worked.



A line of the best fit has been drawn.

- (a) Find the equation of the line of best fit in terms of P and T .

Give the equation in its simplest form.

3

$$m = \frac{50,000 - 20,000}{25 - 5} = \frac{30,000}{20} = \frac{15,000}{10} = 1,500$$

$$y = mx + c$$

$$20,000 = 1500 \times 5 + c$$

$$20,000 = 7500 + c$$

$$c = 12,500$$

$$y = 1500x + 12,500$$

$$t = 1500p + 12,500$$

$$\begin{array}{r} 20,000 \\ - 7,500 \\ \hline 12,500 \end{array}$$

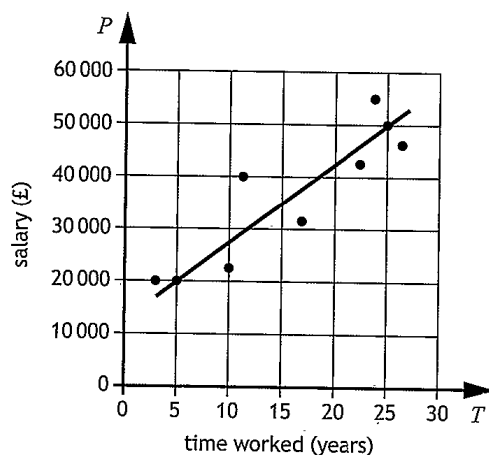
$$\begin{array}{r} 1500 \times 5 \\ \hline 7500 \end{array}$$

MARKS		DO NOT WRITE IN THIS MARGIN
7. (continued)		
(b) Use your equation from part (a) to estimate the salary of an employee who has worked for the business for 8 years.	1	
$\pounds 20,500$		

Response 24

7. A business recorded the salaries of a sample of its employees and the length of time they have worked for the business.

The scattergraph shows the relationship between their salary, P pounds, and the length of time, T years, they have worked.



A line of the best fit has been drawn.

- (a) Find the equation of the line of best fit in terms of P and T .
Give the equation in its simplest form.

3

$$\begin{array}{l}
 \begin{array}{cc} a & b \\ (5, 20\,000) & (25, 50\,000) \\ x_1 & y_1 \quad x_2 \quad y_2 \end{array} \\
 m = \frac{y_2 - y_1}{x_2 - x_1} \\
 = \frac{50\,000 - 20\,000}{25 - 5} \\
 = \frac{30\,000}{20} \\
 = 1500
 \end{array}
 \quad
 \begin{array}{l}
 y - b = m(x - a) \\
 y - 20\,000 = 1500(x - 5) \\
 y - 20\,000 = 1500x - 7500 \\
 y = 1500x + 14\,500 \\
 P = 1500T + 14\,500
 \end{array}$$

Handwritten calculations for the gradient m and the equation of the line of best fit are shown. The gradient is calculated as $m = \frac{50000 - 20000}{25 - 5} = \frac{30000}{20} = 1500$. The equation of the line is then found using the point-slope formula: $y - 20000 = 1500(x - 5)$, which simplifies to $y = 1500x + 14500$, or $P = 1500T + 14500$.

		MARKS	DO NOT WRITE IN THIS MARGIN
7. (continued)			
(b) Use your equation from part (a) to estimate the salary of an employee who has worked for the business for 8 years.		1	
$\begin{aligned} P &= 1500 \times 8 + 14750 \\ &= 12000 + 14750 \\ &= 26750 \\ &= \underline{\underline{\pounds 26,750}} \end{aligned}$			

Question 8

Response 25

<p>8. Express $\frac{12}{\sqrt{15}}$ with a rational denominator. Give your answer in its simplest form.</p> $\frac{12}{\sqrt{15}} \times \frac{\sqrt{15}}{\sqrt{15}}$ $= \frac{12\sqrt{15}}{15}$ $= \frac{3\sqrt{15}}{5}$ $= \frac{3\sqrt{15}}{5}$ $y = 1500x + 12500$ $y = 1500x + 12500$	2	
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Response 26

<p>8. Express $\frac{12}{\sqrt{15}}$ with a rational denominator. Give your answer in its simplest form.</p> $\frac{12}{\sqrt{15}} \times \frac{\sqrt{15}}{\sqrt{15}}$ $\frac{12\sqrt{15}}{15}$	2	
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Response 27

8. Express $\frac{12}{\sqrt{15}}$ with a rational denominator.

Give your answer in its simplest form.

2

$$\begin{aligned}\frac{12}{\sqrt{15}} &= \frac{12 \sqrt{15}}{\sqrt{15} \times \sqrt{15}} = \frac{12 \times \sqrt{15} \times \sqrt{15} \times 3}{15} = \frac{15\sqrt{15}}{15} \\ &= \sqrt{15}\end{aligned}$$

Question 9

Response 29

		MARKS	DO NOT WRITE IN THIS MARGIN
<p>9. A magazine company conducted a survey of the ages of its readers. A sample of ten readers' ages, in years, are shown below.</p> <p style="text-align: center;">33 55 38 47 36 41 42 41 35 34</p>			
<p>(a) Calculate the median and interquartile range of the ages of readers for this sample.</p> <p style="text-align: center;"> Q_1 Q_2 Q_3 </p> <p style="text-align: center;">31, 33, 35, 36, 38, 41, 41, 42, 47, 55</p> <p>33 55 38 47 36 41 42 41 35 34</p> <p>$Q_1 = 36.5$ $SIQR = \frac{Q_3 - Q_1}{2}$</p> <p>$Q_2 = 43$ $= \frac{49.5 - 36.5}{2}$</p> <p>$Q_3 = 49.5$ $= \frac{13}{2} = 6.5$</p> <p>Median = 43</p>		3	
<p>A newspaper company also conducted a survey of the ages of its readers. The median age of a sample of its readers was 41 years and the interquartile range was 9 years.</p>			
<p>(b) Make two valid comments comparing the ages of the readers of the magazine and the ages of the readers of the newspaper.</p> <p>On average the age of the magazine readers is higher than the age of the newspaper readers as $43 > 41$.</p> <p>On average, the ages of newspaper readers were more varied as $9 > 6.5$.</p>		2	

Response 30

		MARKS	DO NOT WRITE IN THIS MARGIN
<p>9. A magazine company conducted a survey of the ages of its readers. A sample of ten readers' ages, in years, are shown below.</p> <p style="text-align: center;">33 55 38 47 36 41 42 41 35 31</p> <p>(a) Calculate the median and interquartile range of the ages of readers for this sample.</p>		3	
<p>Handwritten work for (a):</p> <p>31 33 35 36 38 41 41 42 47 55</p> <p>35, 39, 40, 41</p> <p>MEDIAN: 39 (Q2)</p> <p>LOWER Q: 35 (Q1)</p> <p>UPPER Q: 42 (Q3)</p> <p>INTERQUARTILE RANGE: $Q3 - Q1$ $= 42 - 35$ $IQR = 7$</p>			
<p>bigger number = less consistent smaller number = more consistent</p> <p>A newspaper company also conducted a survey of the ages of its readers. The median age of a sample of its readers was 41 years and the interquartile range was 9 years.</p> <p>(b) Make two valid comments comparing the ages of the readers of the magazine and the ages of the readers of the newspaper.</p>		2	
<p>Handwritten work for (b):</p> <p>MEDIAN: since $41 > 39$, on average the newspaper company had readers of a higher age.</p> <p>IQR: since $9 > 7$, the newspaper company was less consistent.</p>			

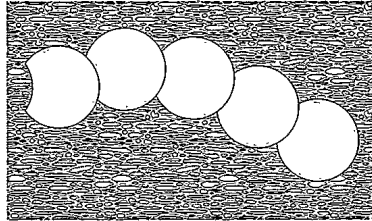
Response 31

	MARKS	DO NOT WRITE IN THIS MARGIN
<p>9. A magazine company conducted a survey of the ages of its readers. A sample of ten readers' ages, in years, are shown below.</p> <p style="text-align: center;">33 55 38 47 36 41 42 41 35 31</p> <p>(a) Calculate the median and interquartile range of the ages of readers for this sample.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: left;"> <p>median = <u>38</u></p> <p>interquartile range = $Q_3 - Q_1$</p> $\begin{array}{r} 41.5 \\ - 34.0 \\ \hline 07.5 \end{array}$ </div> <div style="text-align: center;"> <p>Q_1</p> <p>31 33 35 36 <u>38</u> 41 41 42 55</p> <p>34</p> <p>Q_3</p> <p>41.5</p> <p>$Q_3 - Q_1$</p> <p>$= 41.5 - 34$</p> <p>$= 7.5$</p> </div> <div style="text-align: right;"> <p>3</p> <p>82 42 55</p> <p>41</p> <p>42</p> <p>41</p> <p>38</p> <p>35</p> <p>31</p> </div> </div> <p>A newspaper company also conducted a survey of the ages of its readers. The median age of a sample of its readers was 41 years and the interquartile range was 9 years.</p> <p>(b) Make two valid comments comparing the ages of the readers of the magazine and the ages of the readers of the newspaper.</p> <p style="text-align: right;">2</p> <p style="font-size: 1.2em; margin-top: 20px;">The newspaper company had a higher average of age however the magazine company had a more consistant range of years worked.</p>		

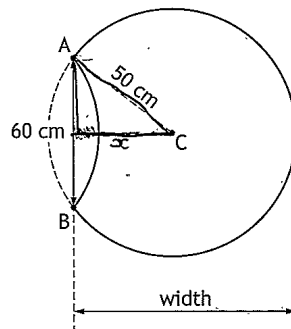
Question 10

Response 32

- *10. Alan buys some identical paving slabs to make a path.
Each slab is part of a circle.



The diagram below shows a single slab.



The circle, centre C, has a radius of 50 centimetres.

Length AB is 60 centimetres.

Calculate the width of the paving slab.

MARKS

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$$50^2 - 30^2 = x^2$$

$$20^2 = x^2$$

$$x = 20$$

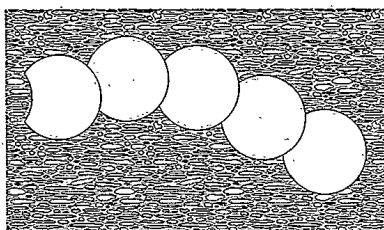
$$x = 20$$

~~Answer~~

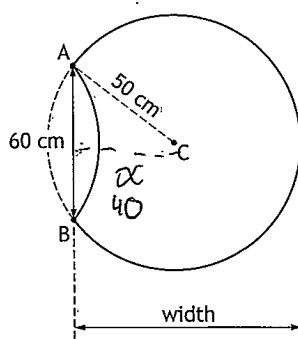
$$\begin{aligned} \text{Width} &= 20 + 50 \\ &= 70\text{cm} \end{aligned}$$

Response 33

10. Alan buys some identical paving slabs to make a path.
Each slab is part of a circle.



The diagram below shows a single slab.



The circle, centre C, has a radius of 50 centimetres.

Length AB is 60 centimetres.

Calculate the width of the paving slab.

Handwritten solution:

$$c^2 = a^2 - b^2$$

$$x^2 = 50^2 - 30^2$$

$$x^2 = 2500 - 900$$

$$x^2 = 1600$$

$$\sqrt{x} = \sqrt{1600}$$

$$x = 40 \times 2$$

$$\text{width} = 80 \text{ cm}$$

Additional handwritten work:

$$x^2 = 50^2 - 30^2$$

$$x^2 = 2500 - 900$$

$$x^2 = 1600$$

$$\sqrt{x} = \sqrt{1600}$$

$$x = 40 \times 2$$

$$\text{width} = 80 \text{ cm}$$

Vertical calculation on the right:

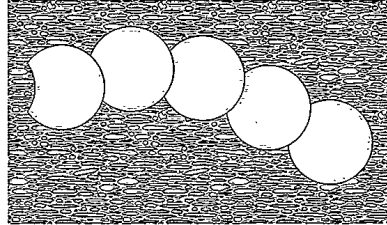
$$\begin{array}{r} 250 \\ - 900 \\ \hline 160 \end{array}$$

MARKS
DO NOT
WRITE IN
THIS
MARGIN

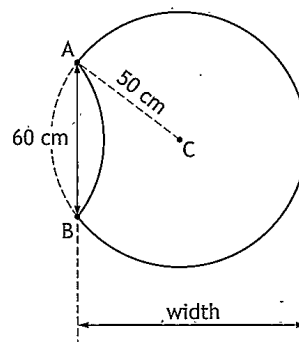
4

Response 34

10. Alan buys some identical paving slabs to make a path.
Each slab is part of a circle.

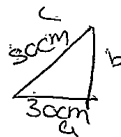


The diagram below shows a single slab.



The circle, centre C, has a radius of 50 centimetres.
Length AB is 60 centimetres.
Calculate the width of the paving slab.

4



$$\begin{aligned}
 b^2 &= c^2 - a^2 \\
 b^2 &= 50^2 - 30^2 \\
 b^2 &= 2500 - 900 \\
 b^2 &= 1600 \\
 b &= \sqrt{1600} \\
 b &= 40 \\
 b &= \underline{40}
 \end{aligned}$$

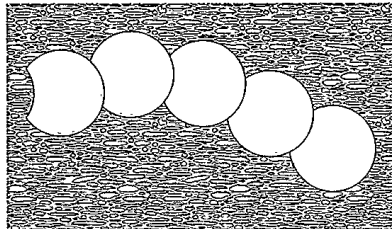
~~1/2~~

$$\begin{array}{r}
 50 \\
 + 40 \\
 \hline
 90
 \end{array}$$

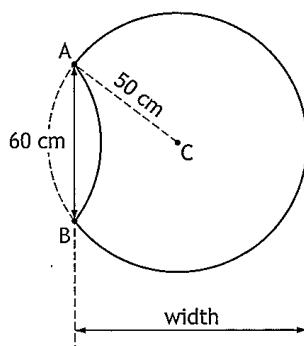
$$\text{width} = 90 \text{ cm}$$

Response 35

10. Alan buys some identical paving slabs to make a path.
Each slab is part of a circle.



The diagram below shows a single slab.



The circle, centre C, has a radius of 50 centimetres.
Length AB is 60 centimetres.
Calculate the width of the paving slab.

MARKS

DO NOT
WRITE IN
THIS
MARGIN

4



$$\begin{aligned}
 c^2 &= a^2 - b^2 \\
 c^2 &= 60^2 - 50^2 \\
 &= 36000 - 25000 \\
 &= 11000 \\
 &\sqrt{11000} \\
 &=
 \end{aligned}$$

$$\begin{array}{r}
 1015 \\
 \times 145 \\
 \hline
 0088 \\
 1560 \\
 10150 \\
 \hline
 14808
 \end{array}$$

$$\begin{array}{r}
 1015 \\
 \times 145 \\
 \hline
 0088 \\
 1560 \\
 10150 \\
 \hline
 14808
 \end{array}$$

$$\begin{array}{r}
 50 \\
 \times 50 \\
 \hline
 2500
 \end{array}$$

$$\begin{array}{r}
 60 \\
 \times 60 \\
 \hline
 3600
 \end{array}$$

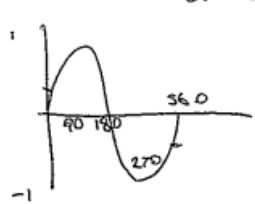
$$\begin{array}{r}
 1015 \\
 \times 145 \\
 \hline
 0088 \\
 1560 \\
 10150 \\
 \hline
 14808
 \end{array}$$

Question 11

Response 36

11. Given that $\sin 30^\circ = 0.5$, state the value of $\sin 330^\circ$.	MARKS 1	DO NOT WRITE IN THIS MARGIN
$\begin{array}{l} 30^\circ = 0.5 \\ 60^\circ = 1 \end{array}$ $60^\circ = 1$ $330^\circ = 5.5$		

Response 37

11. Given that $\sin 30^\circ = 0.5$, state the value of $\sin 330^\circ$.	MARKS 1	DO NOT WRITE IN THIS MARGIN
$\sin 30^\circ = 0.5$  $\sin 330 = -0.5$		

Question 12

Response 38

12. Simplify $\frac{5c^{-2}}{c^3 \times c^4}$. Give your answer with a positive power.	3
$\frac{5c^{-2}}{c^7} = 5c^{-9} = \frac{1}{5c^9}$	

Response 39

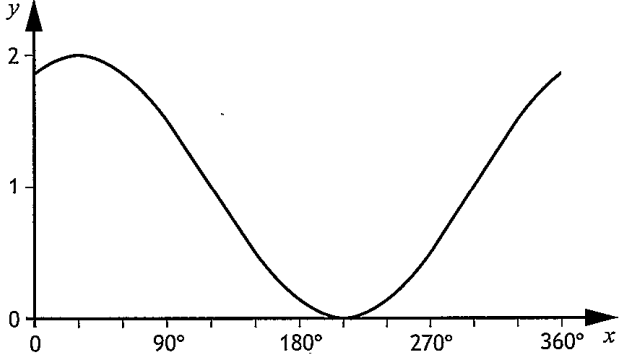
<p>12. Simplify $\frac{5c^{-2}}{c^3 \times c^4}$.</p> <p>Give your answer with a positive power.</p> $\frac{5c^{-2}}{c^3 \times c^4}$ $\frac{5c^{-2}}{c^7}$ $5c^5$	3
---	---

Response 40

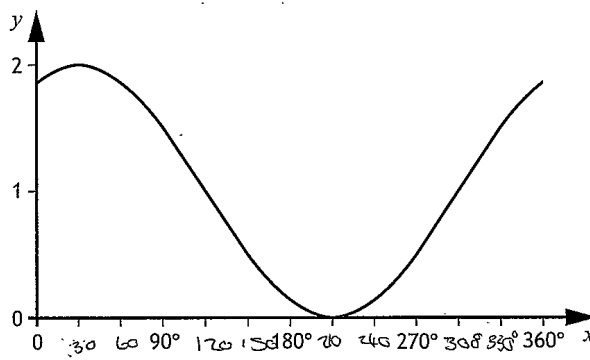
<p>12. Simplify $\frac{5c^{-2}}{c^3 \times c^4}$.</p> <p>Give your answer with a positive power.</p> $\frac{5c^{-2}}{1c^7} = 5c^{-5} = \frac{1}{5c^5}$	3
---	---

Question 13

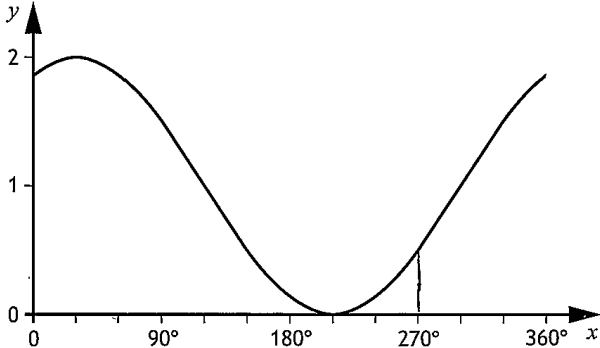
Response 41

MARKS		DO NOT WRITE IN THIS MARGIN
13. Part of the graph of $y = \cos(x + a)^\circ + b$ is shown.		
		
(a) State the value of a .	1	
2		
(b) State the value of b .	1	
1		

Response 42

		MARKS	DO NOT WRITE IN THIS MARGIN
<p>13. Part of the graph of $y = \cos(x + a)^\circ + b$ is shown.</p> 			
(a)	State the value of a .	1	
	30		
(b)	State the value of b .	1	
	1		

Response 43

		MARKS	DO NOT WRITE IN THIS MARGIN
13. Part of the graph of $y = \cos(x + a)^\circ + b$ is shown.			
			
(a) State the value of a .	<u>1</u>	1	
(b) State the value of b .	<u>90</u>	1	

Question 14

Response 44

	MARKS	DO NOT WRITE IN THIS MARGIN
<p>14. Solve, algebraically, the inequation $\frac{x+1}{3} - 2 > \frac{3x}{5}$.</p> $\times 5 \quad \frac{x+1}{3} - 2 > \frac{3x}{5} \times 3$ $\frac{5x+5}{15} - 30 > \frac{9x}{15}$ $\begin{array}{r} -5x \\ 5x+5-30 > 9x \end{array}$ $\begin{array}{r} 5-30 > 4x \\ \div 4 \quad \quad \div 4 \\ -25 > 4x \end{array}$ $x > \frac{-25}{4}$	3	

Response 45

MARKS	DO NOT WRITE IN THIS MARGIN
<p>14. Solve, algebraically, the inequation $\frac{x+1}{3} - 2 > \frac{3x}{5}$.</p> $\frac{x+1}{3} - 2 > \frac{3x}{5}$ $\frac{x+1}{3} - 6 > \frac{6x}{5}$ $15x+15-90 > 6x$ $15x+15 > 6x+90$ $15x > 6x+75$ $9x > 75$ $x < \frac{75}{9}$	<p>3</p>

Response 46

<p>14. Solve, algebraically, the inequation $\frac{x+1}{3} - 2 > \frac{3x}{5}$.</p> $3x + 3 - 2 > 15x$ $3x + 1 > 15x$ $1 > 12x$	MARKS	DO NOT WRITE IN THIS MARGIN
	3	

Response 47

<p>14. Solve, algebraically, the inequation $\frac{x+1}{3} - 2 > \frac{3x}{5}$.</p> $\times 3 \quad \frac{x+1}{3} - 2 > \frac{3x}{5} \quad \times 5$ $3x + 3 - 6 > 15x$ $3x - 3 > 15x$ $-3 > 12x$ $-\frac{3}{12} > x$	MARKS	DO NOT WRITE IN THIS MARGIN
	3	