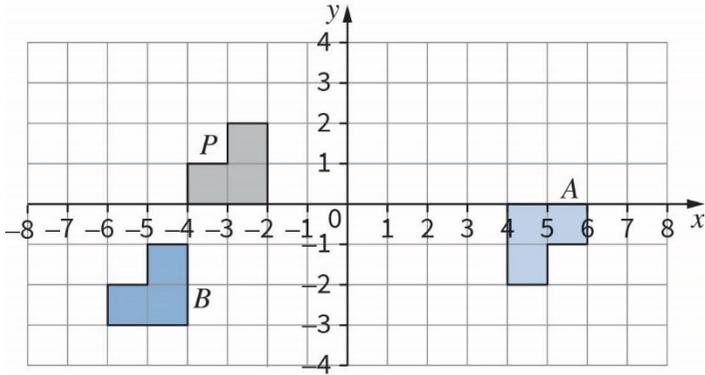
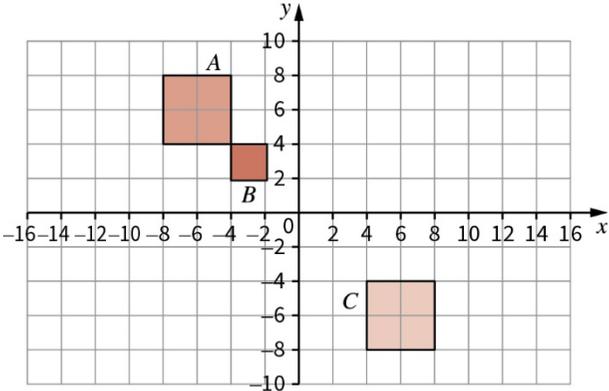


Oxford Revise | Edexcel GCSE Maths Higher | Answers

Chapter 23 Transformations

Question	Answer	Extra information	Marks
23.1 (a) and (b)		<p>Shape A drawn with correct size and orientation</p> <p>Shape B drawn with correct size and orientation</p>	<p>1</p> <p>1</p>
23.2 (a)	Translation by $\begin{pmatrix} 12 \\ 0 \end{pmatrix}$	<p>Described as a translation</p> <p>Correct vector</p>	<p>1</p> <p>1</p>
23.2 (b)	Reflection in the line $y = x$	<p>Described as a reflection</p> <p>Correct mirror line</p>	<p>1</p> <p>1</p>
23.2 (c)	Rotation of 90° clockwise about $(6, -4)$	<p>Described as a rotation</p> <p>angle</p> <p>centre of rotation</p>	<p>1</p> <p>1</p> <p>1</p>

Question	Answer	Extra information	Marks
23.3 (a)		<p>2 marks for completely correct shape Q 2 marks for completely correct shape R 1 mark for completely correct shape S</p>	5
23.3 (b)	Rotation of 180° about $(8, 2)$	<p>Rotation 180° $(8, 2)$</p>	<p>1 1 1</p>

Question	Answer	Extra information	Marks
23.4 (a) and (b)		<p>2 marks for completely correct shape <i>B</i> 2 marks for completely correct shape <i>C</i></p>	<p>2 2</p>
23.4 (c)	<p>Any correct transformation, eg. a reflection in the line $y = x$, translation by vector $\begin{pmatrix} 12 \\ 12 \end{pmatrix}$</p>	<p>Any two correct answers Bonus mark for both correct</p>	<p>2 1</p>

Question	Answer	Extra information	Marks
23.5		<p>Correct orientation after rotation 1 Fully correct rotation 1 Correct size after enlargement 1 Fully correct enlargement 1</p>	
23.6	Enlargement, scale factor -2 , about $(0, 0)$	<p>Enlargement 1 scale factor 1 centre of rotation 1</p>	

Question	Answer	Extra information	Marks
23.7	<p>Rotation of 180° about $(2, 0)$</p>	<p>Rotation 180° About $(2, 0)$</p> <p>If no marks scored, award 1 mark for a correct reflection seen for Q or R</p>	<p>1 1 1</p>
23.8	<p>The point with coordinates $(6, 4)$ is invariant</p>	<p>Complete method to show the transformations with the image correctly placed. $(6, 4)$</p>	<p>1 1</p>

Question	Answer	Extra information	Marks																				
23.9		At least 3 image points correct Fully correct	1 1																				
23.10	Line L has a gradient of -3 Putting $3x + y = 0$ into $y = mx + c$ form gives $y = -3x$ This line also has a gradient of -3 so Sajid is correct	Rearrange $3x + y = 0$ to give $y = -3x$ Correct explanation	1 1																				
23.11 (a)	<table border="1"> <thead> <tr> <th>Length (x cm)</th> <th>Frequency, f</th> <th>Midpoint</th> <th>$f \times$ Midpoint</th> </tr> </thead> <tbody> <tr> <td>$0 < x \leq 8$</td> <td>50</td> <td>4</td> <td>200</td> </tr> <tr> <td>$8 < x \leq 16$</td> <td>30</td> <td>12</td> <td>360</td> </tr> <tr> <td>$16 < x \leq 24$</td> <td>20</td> <td>20</td> <td>400</td> </tr> <tr> <td>Total</td> <td>100</td> <td></td> <td>960</td> </tr> </tbody> </table>	Length (x cm)	Frequency, f	Midpoint	$f \times$ Midpoint	$0 < x \leq 8$	50	4	200	$8 < x \leq 16$	30	12	360	$16 < x \leq 24$	20	20	400	Total	100		960	20 or 360 or 90 Fully correct table	1 1
Length (x cm)	Frequency, f	Midpoint	$f \times$ Midpoint																				
$0 < x \leq 8$	50	4	200																				
$8 < x \leq 16$	30	12	360																				
$16 < x \leq 24$	20	20	400																				
Total	100		960																				
23.11 (b)	$0 < x \leq 8$		1																				
23.11 (c)	Estimated mean length = $960 \div 100 = 9.6$ cm	Divide total in the last column by 100 9.6 cm	1 1																				