

TRANSFORMATIONS

Pearson Edexcel - Tuesday 19 May 2020 - Paper 1 (Non-Calculator) Foundation Tier

1.

11	Reflection	M1	for a correct reflection of the shape in any line or a correct reflection of at least 3 vertices	Allow hand-drawn
		A1	cao	

Pearson Edexcel - Thursday 4 June 2020 - Paper 2 (Calculator) Foundation Tier

2.

18	Rotation 180° about (-1, 0)	C2	rotation 180° about (-1, 0) or enlargement sf -1 centre (-1, 0)	Award no marks if more than one transformation is given
		(C1)	rotation 180° or rotation about (-1, 0) OR enlargement sf -1 or enlargement centre (-1, 0)	

Pearson Edexcel - Tuesday 21 May 2019 - Paper 1 (Non-Calculator) Foundation Tier

3.

26	$c = -6$ $d = -1$	M1	for reflection in x -axis shown on diagram	Vertices (3, -2), (5, -2), (3, -5) One correct value is M1A1 regardless of second value or diagram
		A1	for $c = -6$ or $d = -1$	
		A1	for both $c = -6$ and $d = -1$	
			SCB2 for $c = -1$ and $d = -6$	

Pearson Edexcel - Tuesday 6 November 2018 - Paper 1 (Non-Calculator) Foundation Tier

4.

19	Shape drawn	B2	for shape with vertices at (4, -3), (5, -4), (5, -5), (4, -5)	Shape does not have to be shaded. Allow some tolerance on vertices as long as they are nearest to the desired points. This is shown by the orientation of the shape.
		(B1)	for rotation of 180° about wrong centre)	

Pearson Edexcel - Thursday 8 November 2018 - Paper 2 (Calculator) Foundation Tier

5.

16	Reflection in x -axis	B1	for reflection	Award no marks if more than one transformation is given
		B1	for x -axis or $y = 0$	

Pearson Edexcel - Monday 12 November 2018 - Paper 3 (Calculator) Foundation Tier

6.

10	Reflection drawn	C1	for accurate reflection drawn	Can be hand drawn. Need not be shaded.
----	------------------	----	-------------------------------	---

Pearson Edexcel - Thursday 7 June 2018 - Paper 2 (Calculator) Foundation Tier

7.

18	Correct description	B2 (B1)	reflection and y axis or reflection and $x = 0$ reflection or y axis or $x = 0$	If more than 1 transformation given award B0
----	---------------------	------------	--	---

Pearson Edexcel - Monday 6 November 2017 - Paper 2 (Calculator) Foundation Tier

8.

20 (a)		$(-2, 1)$ $(-4, 1)$ $(-2, 2)$ $(-5, 2)$	B1	Shape labelled A
(b)		$(1, -4)$ $(3, -4)$ $(1, -5)$ $(4, -5)$	B1	Shape labelled B

Pearson Edexcel - Wednesday 8 November 2017 - Paper 3 (Calculator) Foundation Tier

9.

14		Reflection in the x -axis (or $y = 0$)	B1 B1	for reflection for x -axis (or $y = 0$) NB: award no marks if more than one transformation is given
----	--	---	----------	--

Pearson Edexcel – Specimen 2 - Paper 2 (Calculator) Foundation Tier

10.

22		Translation by $\begin{pmatrix} 4 \\ -3 \end{pmatrix}$	B1 B1	for translation $\begin{pmatrix} 4 \\ -3 \end{pmatrix}$
----	--	---	----------	--

Pearson Edexcel – Specimen 1 - Paper 1 (Non-Calculator) Foundation Tier

11.

17		rotation	M1 A1	for triangle in correct orientation or rotation 90° anticlockwise cao
----	--	----------	----------	---

OCR – Tuesday 03 November 2020- Morning - Paper 1 (Calculator) Foundation Tier

12.

2	(a)		Fully correct	2	B1 for correct orientation in incorrect position	Condone good freehand By eye
	(b)		Fully correct	2	B1 for correct orientation in an incorrect position or correct 90° anti-clockwise rotation about P	Condone good freehand By eye

OCR Monday 11 November 2019 – Afternoon (Calculator) Foundation Tier

13.

8	(a)		Correct ruled rotation	2	B1 for correct rotation but lines unruled or Ruled but one vertex just outside tolerance or rotation of 180° about another point and ruled and with vertices in tolerance	Use overlay as a guide. Set screen to zoom 57%. Vertices to be within overlay circles
	(b)		Correct ruled enlargement	2	B1 for correct unruled enlargement or ruled enlargement with one vertex just outside tolerance enlargement sf 2 but from different point	Use overlay as a guide. Set screen to zoom 57%. Vertices to be within overlay circles for all marks For B1, enlargement must fit on grid

OCR Tuesday 21 May 2019 – Morning (Calculator) Foundation Tier

14.

1	(a)		[Irregular] Hexagon	1	Condone poor spelling
	(b)		3	1	

15.

11	(a)		Rotation 90[°] clockwise oe [Centre] (0,0)	1 1 1	Do not accept turn for rotation Condone missing brackets, accept origin or O do not accept $\frac{0}{0}$ or vector More than 1 transformation scores 0
	(b)	(i)	Triangle at (-5, 2) (-2, 2) (-2, 4)	2	Red overlay B1 for reflection in $x = k$ or $y = 0$. Blue overlay or base on green line Condone freehand in both (b)(i) and (ii)
		(ii)	Triangle at (-3, 0) (-3, -2) (0, -2)	2	Red overlay B1 for $\begin{pmatrix} -5 \\ j \end{pmatrix}$ or $\begin{pmatrix} k \\ -4 \end{pmatrix}$ base on blue line or left side on green line

OCR Thursday 6 June 2019 – Morning (Non-Calculator) Foundation Tier

16.

14	(a)		Image at (2, -1), (5, -1) and (5, 5)	3	B2 for two vertices correct or M1 for enlargement SF3 with wrong centre or correct centre with wrong SF ≠ 1	Use overlay, mark intention, condone freehand Must be completely on the grid
	(b)		Enlargement [sf] $\frac{1}{3}$ (-4, -4)	3	B1 for each	Extra transformations spoils all marks Extra properties, treat as choice Condone P Accept -4, -4 Accept centre as a vector

OCR Tuesday 6 November 2018 – Morning (Calculator) Foundation Tier

17.

10			Vertices at (4, 8) (8, 2) (4, 2)	3	B2 for 2 vertices correct M1 correct enlargement incorrect position	Condone freehand if vertices $\pm 2\text{mm}$ by eye
----	--	--	----------------------------------	---	--	--

OCR Thursday 8 November 2018 – Morning (Non-Calculator) Foundation Tier

18.

1	(a)		Correct 2 lines of symmetry (only)	1		Accept dotted lines
	(b)		2	1		

19.

19	(a)	(i)	Triangle drawn at (-3, -2), (-5, -2) (-3, -6)	2	M1 for rotation 180° but wrong centre or 3 correct points not joined	Use overlay condone good freehand, mark intention If triangle B transformed then treat as misread in both parts (i) and (ii)
		(ii)	Triangle drawn at (7, -5), (5, -5), (5, -1)	2	M1 for translation by $\begin{pmatrix} 2 \\ k \end{pmatrix}$ or $\begin{pmatrix} k \\ -7 \end{pmatrix}$ or 3 correct points not joined	Use overlay condone good freehand, mark intention
	(b)		Enlargement $\frac{1}{2}$ oe (-1, 2)	3	B1 for each element	Marks spoilt if extra transformations Treat extra descriptors as choice Condone omission of brackets Accept centre as a vector

OCR Monday 24 May 2018 – Morning (Calculator) Foundation Tier

20.

8	(a)		Triangle at (3, -1) (5, -1) (4, -3)	2	B1 for triangle with correct orientation and size but incorrect location	Tolerance 2mm in both parts For both parts mark to their labels unlabelled triangles score 0
	(b)		Triangle at (1, 1) (3, 1) (2, 3)	2	B1 for reflection in $x = k$ or in $y = -1$	Overlay with red lines for B1 or base on the red line $y = 1$ SC2 for 2 unlabelled triangles in correct positions

21.

9			Enlargement [SF] 2 [Centre] (0, 0)	1 1 1	Accept origin or O	Allow enlarge(d) /enlarging More than 1 transformation scores 0
---	--	--	------------------------------------	-------------	--------------------	--

OCR Thursday 2 November 2017– Morning (Calculator) Foundation Tier

22.

9			Correct enlargement (6, 3) (12, 3) (12, 9) (9, 12) (6, 9)	3	B2 for correct enlargement incorrect centre or enlargement scale factor 2 from correct centre OR M1 for 3 points correctly plotted	Condone good freehand
---	--	--	---	---	--	-----------------------

Pearson Edexcel – Sample Papers - Paper 1 (Non-Calculator) Foundation Tier

23.

29		Rotation of 90° clockwise about (0,0)	M1 For two of 'rotation', (0,0), 90° clockwise oe A1 Correct transformation
----	--	--	---

OCR Tuesday 13 June 2017 – Morning (Calculator) Foundation Tier

24.

14	(a)	Correct triangle	2	B1 for a correct horizontal or a correct vertical movement of A	Vertices in circles of overlay. Accept good freehand.
	(b)	Rotation [centre] (0,0) oe 90 clockwise oe	B1 B1 B1	Not turn Accept origin or O but not vector Accept ~ 90 or 270 [anti-clockwise]	Second and third marks may still be scored if "Rotation" incorrect 0 marks for evidence of a second transformation

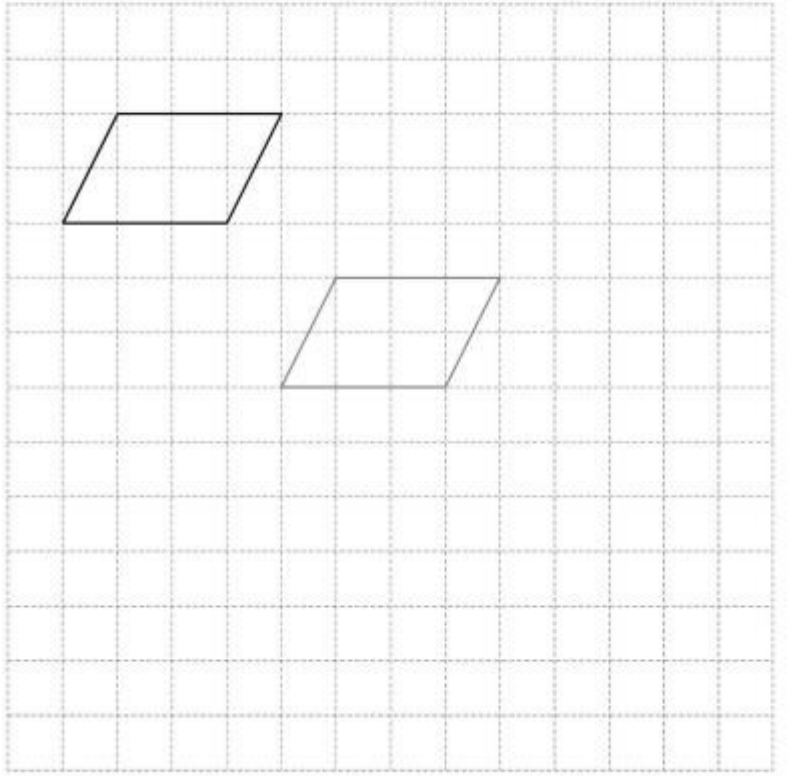
OCR Sample Question Paper 2 – Morning/Afternoon (Non - Calculator) Foundation Tier

25.

14	(a)	$[p =] 5$ $[q =] -5$	2 1 AO1.2 1 AO1.3a	B1 for each	
	(b)	$c = 3a$ $d = a + b$ $e = a - b$	3 3 AO1.3a	B1 for each	

AQA Tuesday 19 May 2020 – Morning (Non-Calculator) Foundation Tier

26.

Q	Answer	Mark	Comments
13	Parallelogram in correct position	B2	B1 answer 4 squares left or answer 3 squares up or answer 4 squares right & 3 squares down
	Additional Guidance		
			B2
	Mark intention of straight lines Mark intention for position of vertices		
Answer not congruent to original shape		B0	

AQA Thursday 4 June 2020 – Morning (Calculator) Foundation Tier

27.

Q	Answer	Mark	Comments
17(a)	reflection	B1	

Q	Answer	Mark	Comments
17(b)	rotation	B1	

AQA Monday 8 June 2020 – Morning (Calculator) Foundation Tier

28.

Q	Answer	Mark	Comments
4	A and C	B1	

AQA Thursday 11 June 2019 – Morning (Calculator) Foundation Tier

29.

18	Isosceles triangle with base 2 cm and height 3 cm in any orientation	B2	± ¼ square on base or height B1 isosceles triangle with base 2 cm or height 3 cm in any orientation or acute angled triangle with base 2 cm and height 3 cm in any orientation	
	Additional Guidance			
	Mark intention for isosceles triangle within tolerance, lines do not need to be ruled			
	Enlargement can be drawn wholly or partially inside the original			
	Correct vertices not connected			B1
	Right angled isosceles triangle		B0	

30.

<p>12</p>		<p>B1 reflection in any horizontal line eg</p> <p>B2 or reflection in y-axis ie</p> <p>or $(-4, -1)$, $(-4, -4)$ and $(-2, -1)$ plotted with no incorrect points</p>
<p>Additional Guidance</p>		
<p>Mark intention</p>		

AQA Monday 12 November 2018 – Morning (Calculator) Foundation Tier

31.

15	Rotation	B1	
	90° anticlockwise or 270° clockwise or $\frac{1}{4}$ turn anticlockwise or $\frac{3}{4}$ turn clockwise	B1	
	Origin or (0, 0) or O	B1	
	Additional Guidance		
	Accept rotate etc for rotation		
	Do not accept turn for first B1		
	Combined transformations		B0B0B0

AQA Monday 12 November 2018 – Morning (Calculator) Foundation Tier

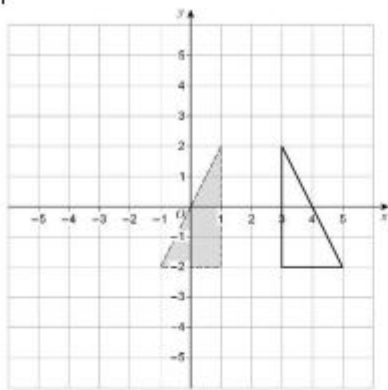
32.

20	up	B1	
	Additional Guidance		

AQA Thursday 24 May 2018 – Morning (Non-Calculator) Foundation Tier

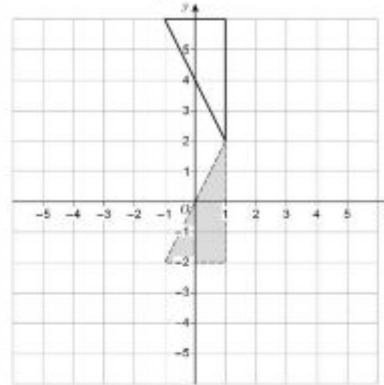
33.

21(a)



B1 for all three vertices correctly plotted
but not joined

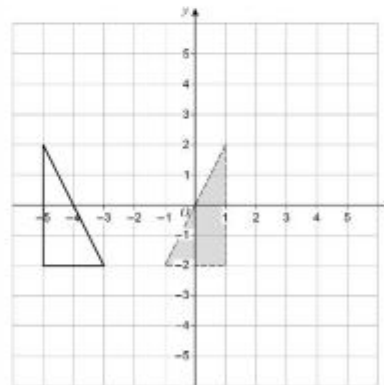
or reflection in $y = 2$



B2

or reflection in $x = a$, $-2.5 \leq a \leq 2.5$

eg



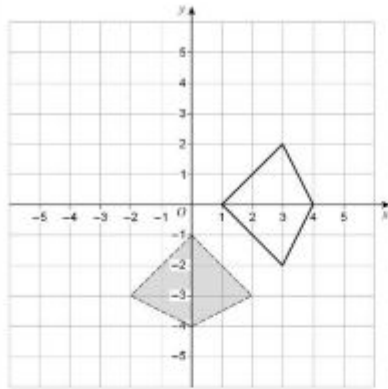
Additional Guidance

Tolerance – half a square for all three vertices

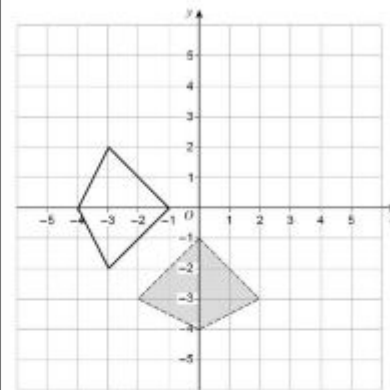
Vertices must be joined with intended straight lines for B2

B1 answers must lie wholly on the grid

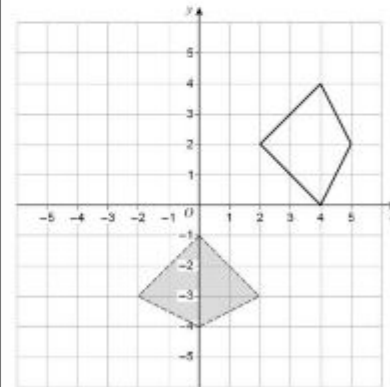
21(b)



B2



or any rotation of 90° anticlockwise
eg



B1 for all four vertices correctly plotted but
not joined
or for rotation 90° clockwise about (0, 0)

Additional Guidance

Tolerance – half a square for all four vertices

Vertices must be joined with intended straight lines for B2

B1 answers must lie wholly on the grid

AQA Monday 6 November 2017 – Morning (Calculator) Foundation Tier

34.

24	Enlargement	B1	
	Scale factor (\times) $\frac{1}{3}$	B1	
	Centre (5, 1)	B1	
	Additional Guidance		
	Enlarge (\times) $\frac{1}{3}$ (5, 1)		B1B1B1
	Reduction or makes bigger or unenlargement or increase or negative enlargement		1st B0
	Any other transformation mentioned or implied such as reflection, rotation or translation loses the mark for enlargement eg enlarged and moved up 4 or enlarged and $\begin{pmatrix} -2 \\ 2 \end{pmatrix}$		1st B0
	Do not accept + 3 for scale factor		2nd B0