



MATHS

BOOKS - SELINA MATHS (ENGLISH)

REFLECTION

Question

1. The triangle $A(1,2), B(4,4)$ and $C(3,7)$ is first reflected in the line $y = 0$ onto triangle $A'B'C'$ and then triangle $A'B'C'$ is reflected in the

origin onto triangle $A''B''C''$. Write down the co-ordinates of :

A' , B' and C'



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2. The triangle $A(1,2), B(4,4)$ and $C(3,7)$ is first reflected in the line $y = 0$ onto triangle $A'B'C'$ and then triangle $A'B'C'$ is reflected in the origin onto triangle $A''B''C''$. Write down the co-ordinates of :

A'' , B'' and C''



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3. A point P is reflected in the x - axis . Co - ordinates of its image are (8,-6).

Find the co - ordinates of P.



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4. A point P is reflected in the x - axis . Co - ordinates of its image are (8,-6).

Find the co - ordinates of the image of P under reflection in the y - axis.



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5. Point $(-5,0)$ and $(4,0)$ are invariant point under reflection in the line L_1 , point $(0,-6)$ and $(0,5)$ are invariant on reflection in the line L_2 .

Name or write equation for the line L_1 and L_2 .



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6. Point $(-5,0)$ and $(4,0)$ are invariant point under reflection in the line L_1 , point $(0,-6)$ and $(0,5)$ are invariant on reflection in the line L_2 .

Write down the image of $P(2,6)$ and $Q(-8,-3)$ on reflection in L_1 . Name the images as P' and Q' respectively.



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7. Point $(-5,0)$ and $(4,0)$ are invariant point under reflection in the line L_1 , point $(0,-6)$ and $(0,5)$ are invariant on reflection in the line L_2 .

Write down the image of P and Q on reflection in L_2 . Name the images as P'' and Q'' respectively.



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8. Point $(-5,0)$ and $(4,0)$ are invariant point under reflection in the line L_1 , point $(0,-6)$ and $(0,5)$ are invariant on reflection in the line L_2 .

State or describe a single transformation that maps Q' onto Q'' .



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9. Find the reflection of the point $P(-1,3)$ in the line $x = 2$





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10. Find the reflection of the point $Q(2,1)$ in the line $y + 3 = 0$



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11. The point $P(5,1)$ and $Q(-2,-2)$ are reflected in line $x = 2$. Use graph paper to find the images P' and Q' of points P and Q respectively in line $x = 2$. Take 2 cm equal to 2 units.



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12. Use a graph paper for this question . (Take two divisions = 1 unit on both the axes.)

Plot the points P (3,2) and Q(-3,-2) . From P and Q , draw perpendiculars PM and QN on the x - axis.

Write the co - ordinates of points M and N.



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13. Use a graph paper for this question . (Take two divisions = 1 unit on both the axes.)

Plot the points P (3,2) and Q(-3,-2) . From P and Q , draw perpendiculars PM and QN on the x - axis.

Name the image of P on reflection in the origin.



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14. Use a graph paper for this question . (Take two divisions = 1 unit on both the axes.)

Plot the points P (3,2) and Q(-3,-2) . From P and Q , draw perpendiculars PM and QN on the x - axis.

Assign the special name to geometrical figure PMQN and find its area.



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15. Use a graph paper for this question . (Take two divisions = 1 unit on both the axes.)

Plot the points P (3,2) and (-3,-2) . From P and Q , draw perpendiculars PM and QN on the a - axis.

Write the co-ordinates of the point to which M is mapped on reflection in :
x - axis.



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16. Use a graph paper for this question . (Take two divisions = 1 unit on both the axes.)

Plot the points P (3,2) and (-3,-2) . From P and Q , draw perpendiculars PM and QN on the a - axis.

Write the co-ordinates of the point to which M is mapped on reflection in :
y - axis.



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17. Use a graph paper for this question . (Take two divisions = 1 unit on both the axes.)

Plot the points P (3,2) and (-3,-2) . From P and Q , draw perpendiculars PM and QN on the a - axis.

Write the co-ordinates of the point to which M is mapped on reflection in :
origin



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18. Use graph paper for this question.

The points $A(2, 3)$, $B(4, 5)$ and $C(7, 2)$ are the vertices of $\triangle ABC$

Write down the co-ordinates of A' , B' , C' if $\triangle A'B'C'$ is the image of $\triangle ABC$, when reflected in the origin.



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19. Use graph paper for this question.

The points $A(2, 3)$, $B(4, 5)$ and $C(7, 2)$ are the

vertices of $\triangle ABC$

Write down the co-ordinates of A'' , B'' , C'' if $\triangle A''B''C''$ is the image of $\triangle ABC$, when reflected in the x-axis.



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20. Use graph paper for this question.

The points $A(2, 3)$, $B(4, 5)$ and $C(7, 2)$ are the vertices of $\triangle ABC$

Mention the special name of the quadrilateral $BCC''B''$ and find its area.



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Exercise 12 A

1. Fill in the blanks :

Point	Transformation	Image
$(5, -7)$	$(-5, 7)$



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2. Fill in the blanks :

Point	Transformation	Image
$(4, 2)$	Reflection in x - axis



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3. Fill in the blanks :

Point	Transformation	Image
.....	Reflection in y - axis	(0, 6)



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4. Complete the table :

Point	Transformation	Image
(6, - 6)	(- 6, 6)



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5. Complete the table :

Point	Transformation	Image
$(4, - 8)$	$(- 4, - 8)$



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6. A point P is its own image under the reflection in a line l. Describe the position of the point P with respect to the line l.



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7. State the co-ordinates of the following points under reflection in x-axis :

(i) (3,-2) (ii) (-5,4) (iii) (0,0)



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8. State the co-ordinates of the following points under reflection in y-axis :

(i) (6, -3) (ii) (-1, 0) (iii) (-8, -2)



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9. State the co-ordinates of the following points under reflection in origin:

(i) $(-2, -4)$ (ii) $(-2, 7)$ (iii) $(0, 0)$



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10. State the co-ordinates of the following points under reflection in the line $x = 0$:

(i) $(-6, 4)$ (ii) $(0, 5)$ (iii) $(3, -4)$



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11. State the co-ordinates of the following points under reflection in the line $y = 0$,

(i) $(-3, 0)$ (ii) $(8, -5)$ (iii) $(-1, -3)$



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12. A point P is reflected in the x-axis. Co-ordinates of its image are $(-4, 5)$.

Find the co-ordinates of P.



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13. A point P is reflected in the x-axis. Co-ordinates of its image are $(-4, 5)$.

Find the co-ordinates of the image of P under reflection in the y-axis.



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14. A point P is reflected in the origin. Co-ordinates of its image are $(-2, 7)$.

Find the co-ordinate of P.



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15. A point P is reflected in the origin. Co-ordinates of its image are $(-2, 7)$.

Find the co-ordinates of the image of P under reflection in the x -axis.



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16. The point $P(a, b)$ is first reflected in the origin and then reflected in the y -axis to P' . If P' has co-ordinates $(4, 6)$, evaluate a and b .



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17. The point $P(x, y)$ is first reflected in the x -axis and then reflected in the origin to P' . If P' has co-ordinates $(-8, 5)$, evaluate x and y .



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18. The point $A(-3, 2)$ is reflected in the x -axis to the point A' . Point A' is then reflected in the origin to point A'' .

Write down the co-ordinates of A'' .



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19. The point $A(-3, 2)$ is reflected in the x -axis to the point A' . Point A' is then reflected in the origin to point A'' .

Write down a single transformation that maps A onto A'' .



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20. The point $A(4, 6)$ is first reflected in the origin to point A' . Point A' is then reflected in

the y-axis to point A'' .

Write down the co-ordinates of A''



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21. The point $A(4, 6)$ is first reflected in the origin to point A' . Point A' is then reflected in the y-axis to point A'' .

Write down a single transformation that maps A onto A''



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22. The triangle ABC, where A is (2, 6), B is (-3, 5) and C is (4, 7), is reflected in the y-axis to triangle A'B'C'. Triangle A'B'C' is then reflected in the origin to triangle A''B''C''.

Write down the co-ordinates of A'', B'' and C''.



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23. The triangle ABC, where A is (2, 6), B is (-3, 5) and C is (4, 7), is reflected in the y-axis to triangle A'B'C'. Triangle A'B'C' is then reflected in the origin to triangle A''B''C''.

Write down a single transformation that maps triangle ABC onto triangle A"B"C".



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24. P and Q have co-ordinates $(-2, 3)$ and $(5, 4)$ respectively. Reflect P in the x-axis to P' and Q in the y-axis to Q'. State the co-ordinates of P' and Q'.



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25. On a graph paper, plot the triangle ABC, whose vertices are at the points A (3,1) , B (5,0) and C (7,4) .

On the same diagram , draw the image of the triangle ABC under reflection in the origin O (0,0)



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26. Point A (4,-1) is reflected as A' in the y - axis .

Point B on reflection in the x - axis is mapped

as $B'(-2,5)$. Write the co-ordinates of A' and B .



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27. The point $(-5,0)$ on reflection in a line is mapped as $(5,0)$ and the point $(-2,-6)$ on reflection in the same line is mapped as $(2,-6)$

Name the line of reflection.



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28. The point $(-5,0)$ on reflection in a line is mapped as $(5,0)$ and the point $(-2,-6)$ on reflection in the same line is mapped as $(2,-6)$

(a) Name the line of reflection. (b) Write the co-ordinates of the image of $(5,-8)$ in the line obtained in (a).



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Exercise 12 B

1. Attempt this question on graph paper.

Plot A (3, 2) and B (5, 4) on graph paper. Take 2 cm = 1 unit on both the axes.



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2. Attempt this question on graph paper.

Reflect A and B in the x-axis to A' and B' respectively. Plot these points also on the same graph paper.



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3. Attempt this question on graph paper.

Write down :

the geometrical name of the figure $ABB'A'$



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4. Attempt this question on graph paper.

Write down :

the measure of angle ABB'



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5. Attempt this question on graph paper.

Write down :

the image A'' of A' . When A' is reflected in the origin.



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6. Attempt this question on graph paper.

Write down :

the single transformation that maps A' to A'' .



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7. Points $(3, 0)$ and $(-1, 0)$ are invariant points under reflection in the line L_1 points $(0, -3)$ and $(0, 1)$ are invariant points on reflection in line L_2

Name or write equations for the lines L_1 and L_2



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8. Points $(3, 0)$ and $(-1, 0)$ are invariant points under reflection in the line L_1 points $(0, -3)$

and $(0, 1)$ are invariant points on reflection in line L_2

Write down the images of points P $(3, 4)$ and Q $(-5, -2)$ on reflection in L_1 Name the images as P' and Q' respectively.



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9. Points $(3, 0)$ and $(-1, 0)$ are invariant points under reflection in the line L_1 points $(0, -3)$ and $(0, 1)$ are invariant points on reflection in line L_2

Write down the images of P (3,4) and Q (-5,-2) on reflection in L_2 Name the images as P" and Q" respectively.



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10. Points (3, 0) and (-1,0) are invariant points under reflection in the line L_1 points (0, -3) and (0, 1) are invariant points on reflection in line L_2

State or describe a single transformation that maps P' onto P".



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11. Point P (a, b) is reflected in the x-axis to P' (5,-2). Write down the values of a and b.



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12. P'' is the image of P(3, -5) when reflected in the y-axis. Write down the co-ordinates of P'' .



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13. Name a single transformation that maps P' to P'' .



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14. The point $(-2, 0)$ on reflection in a line is mapped to $(2, 0)$ and the point $(5, -6)$ on reflection in the same line is mapped to $(-5, -6)$. State the name of the mirror line and write its equation.



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15. The point $(-2, 0)$ on reflection in a line is mapped to $(2, 0)$ and the point $(5, -6)$ on reflection in the same line is mapped to $(-5, -6)$. State the co-ordinates of the image of $(-8, -5)$ in the mirror line.



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16. The points $P(4, 1)$ and $Q(-2, 4)$ are reflected in line $y = 3$. Find the co-ordinates of P' , the image of P and Q' , the image of Q .



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17. A point $P(-2, 3)$ is reflected in line $x = 2$ to point P' . Find the co-ordinates of P' .



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18. A point $P(a, b)$ is reflected in the x -axis to $P'(2, -3)$. Write down the values of a and b . P'' is the image of P , reflected in the y -axis. Write down the co-ordinates of P'' . Find the co-

ordinates of P'' , when P is reflected in the line, parallel to y -axis, such that $x = 4$.



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19. Points A and B have co-ordinates $(3, 4)$ and $(0, 2)$ respectively. Find the image :

A' of A under reflection in the x -axis.



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20. Points A and B have co-ordinates (3, 4) and (0, 2) respectively. Find the image :

B' of B under reflection in the line AA'.



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21. Points A and B have co-ordinates (3, 4) and (0, 2) respectively. Find the image :

A'' of A under reflection in the y-axis.



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22. Points A and B have co-ordinates (3, 4) and (0, 2) respectively. Find the image :

B" of B under reflection in the x-axis ".



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23. Plot the points A (3, 5) and B(-2,-4) Use 1 cm = 1 unit on both the axes.



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24. A' is the image of A(2,3) when reflected in the x-axis. Write down the co-ordinates of A' .



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25. B' is the image of B(3,2) when reflected in the y-axis . Write down the co-ordinates of B' .



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26. Write down the geometrical name of the figure $AA'BB'$.



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27. Name two invariant points under reflection in the x-axis.



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28. The point $P(5, 3)$ was reflected in the origin to get the image P' .

Write down the co-ordinates of P'



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29. The point $P(5, 3)$ was reflected in the origin to get the image P' .

If M is the foot of the perpendicular from P to the x -axis, find the co-ordinates of M .



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30. The point $P(5, 3)$ was reflected in the origin to get the image P' .

If N is the foot of the perpendicular from P' to the x -axis, find the co-ordinates of N .



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31. The point $P(5, 3)$ was reflected in the origin to get the image P' .

Name the figure $PMP'N$.



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32. The point $P(5, 3)$ was reflected in the origin to get the image P' .

Find the area of the figure $PMP'N$.



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33. The point $P(3, 4)$ is reflected to P' in the x -axis, and O' is the image of O (the origin) when reflected in the line PP' . Write :
the co-ordinates of P' and O' ,



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34. The point $P(3, 4)$ is reflected to P' in the x -axis, and O' is the image of O (the origin) when reflected in the line PP' . Write :

the length of the segments PP' and OO'



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35. The point $P(3, 4)$ is reflected to P' in the x -axis, and O' is the image of O (the origin) when

reflected in the line PP' . Write :

the perimeter of the quadrilateral $POP'O'$



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36. The point $P(3, 4)$ is reflected to P' in the x -axis, and O' is the image of O (the origin) when reflected in the line PP' . Write :

the geometrical name of the figure $POP'O'$



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37. A (1, 1), B (5, 1), C (4, 2) and D (2, 2) are vertices of a quadrilateral. Name the quadrilateral ABCD. A, B, C, and D are reflected in the origin on to A', B', C' and D' respectively. Locate A', B', C' and D' on the graph sheet and write their co-ordinates. Are D, A, A' and D' collinear ?



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38. P and Q have co-ordinates (0, 5) and (-2, 4).

P is invariant when reflected in an axis. Name the axis.



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39. P and Q have co-ordinates (0, 5) and (-2, 4).

Find the image of Q on reflection in the axis found in (a).



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40. Point P (0, k) on reflection in the origin is invariant. Write the value of k.



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41. P and Q have co-ordinates (0, 5) and (-2, 4).

Write the co-ordinates of the image of Q, obtained by reflecting it in the origin followed by reflection in x-axis.



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42. The point P (2,-4) is reflected about the line $x = 0$ to get the image Q. Find the co-ordinates of Q.



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43. The point P(2,-4) is reflected about the line $y = 0$ to get the image R. Find the co-ordinates of R.



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44. Name the figure PQR.



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45. The point P (2, -4) is reflected about the line $x = 0$ to get the image Q. The point Q is reflected about the line $y = 0$ to get the image R.

Find the area of figure PQR.



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46. Using a graph paper, plot the points A (6, 4) and B(0, 4).

Reflect A and B in the origin to get the images A' and B'.



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47. Using a graph paper, plot the points A (6, 4) and B(0, 4).

Write the co-ordinates of A' and B'.



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48. Using a graph paper, plot the points A (6, 4) and B(0, 4).

State the geometrical name for the figure ABA'B'.



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49. Using a graph paper, plot the points A (6, 4) and B(0, 4).

Find its perimeter.



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50. Use graph paper for this question.

(Take 2 cm = 1 unit along both x-axis and y-axis.)

Plot the points $O(0, 0)$, $A(-4, 4)$, $B(-3, 0)$ and $C(0, -3)$

Reflect points A and B on the y-axis and name them A' and B' respectively. Write down their co-ordinates.



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51. Use graph paper for this question.

(Take 2 cm = 1 unit along both x-axis and y-axis.)

Plot the points $O(0, 0)$, $A(-4, 4)$, $B(-3, 0)$ and $C(0, -3)$.



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52. Use graph paper for this question.

(Take 2 cm = 1 unit along both x-axis and y-axis.)

Plot the points $O(0, 0)$, $A(-4, 4)$, $B(-3, 0)$ and $C(0, -3)$

State the line of symmetry of this figure.



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53. Use a graph paper for this question.

(Take 2 cm = 1 unit on both x and y axes)

Plot the following points :

$A(0, 4)$, $B(2, 3)$, $C(1, 1)$ and $D(2, 0)$.



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54. Use a graph paper for this question.

(Take 2 cm = 1 unit on both x and y axes)

Reflect points B(2,3), C(1,1), D(2,0) on the y-axis and write down their coordinates. Name the images as B', C', D' respectively.



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55. Use a graph paper for this question.

(Take 2 cm = 1 unit on both x and y axes) where

A (0, 4), B (2, 3), C (1, 1) and D (2, 0) and reflect points B', C', D' on y-axis

Join the points A, B, C, D, D', C', B' and A in order, so as to form a closed figure. Write down the equation of the line about which if this closed figure obtained is folded, the two parts of the figure exactly coincide.



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