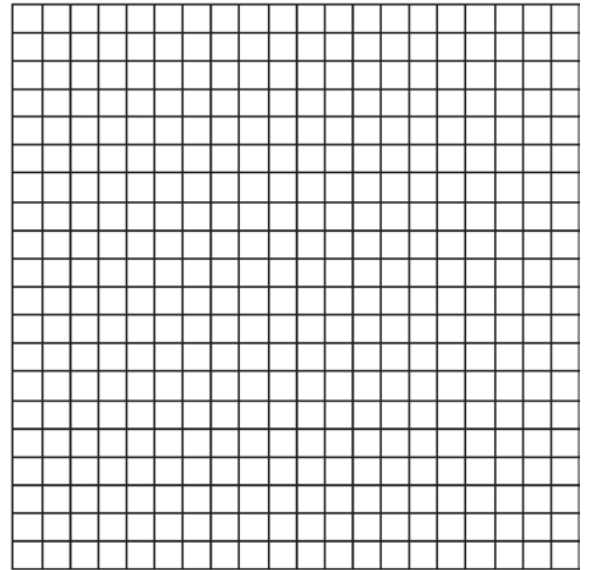
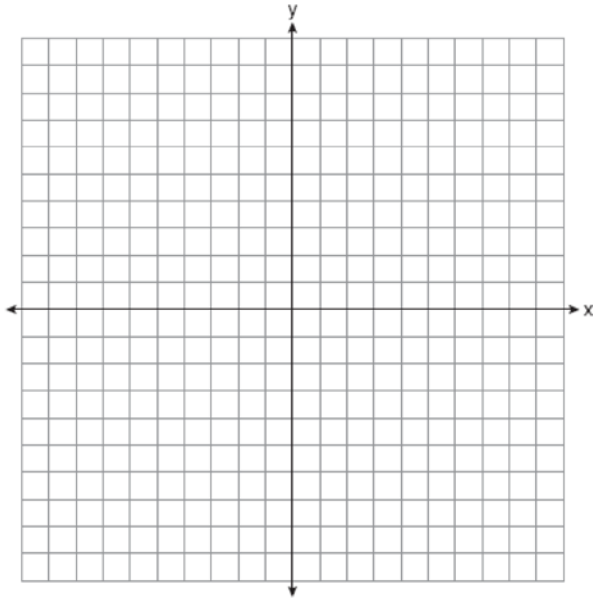
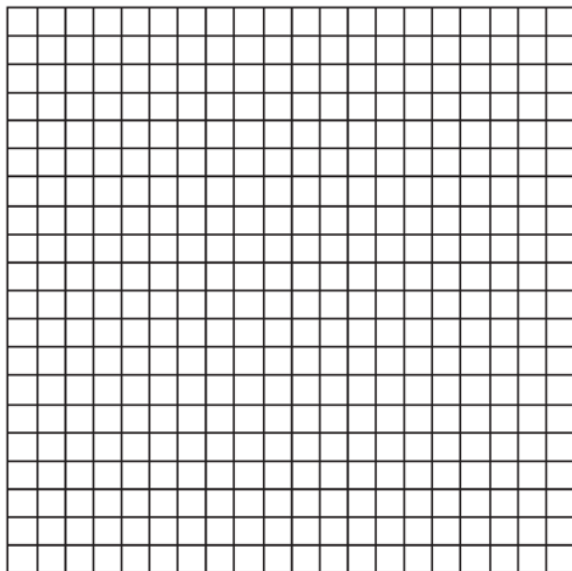


**G.G.54: Reflections 2: Define, investigate, justify, and apply isometries in the plane (rotations, reflections, translations, glide reflections)**

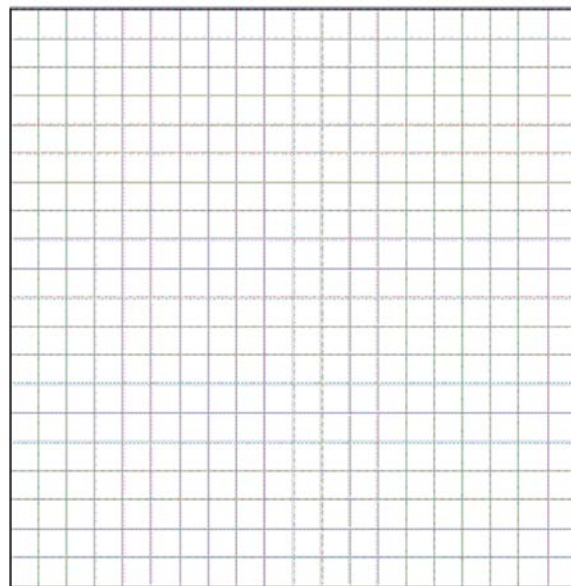
- 1 The image of  $\overline{RS}$  after a reflection through the origin is  $\overline{R'S'}$ . If the coordinates of the endpoints of  $\overline{RS}$  are  $R(2, -3)$  and  $S(5, 1)$ , state and label the coordinates of  $R'$  and  $S'$ . [The use of the set of axes below is optional.]
- 2 The coordinates of the endpoints of  $\overline{AB}$  are  $A(0, 2)$  and  $B(4, 6)$ . Graph and state the coordinates of  $A'$  and  $B'$ , the images of  $A$  and  $B$  after  $\overline{AB}$  is reflected in the  $x$ -axis.



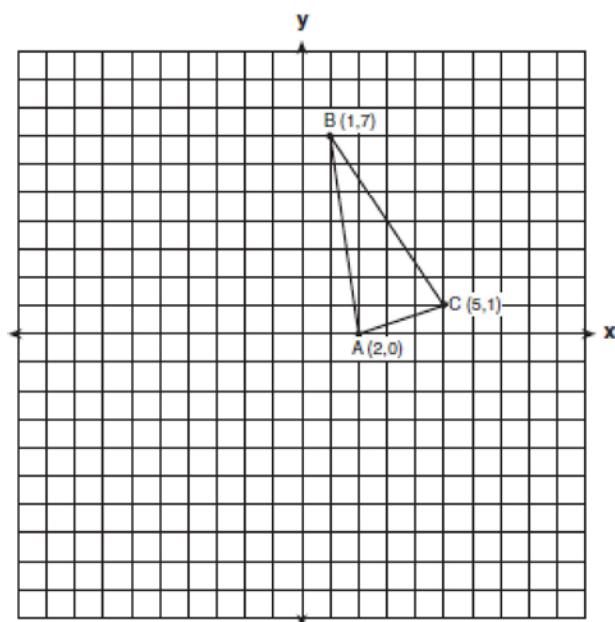
- 3 Triangle  $SUN$  has coordinates  $S(0,6)$ ,  $U(3,5)$ , and  $N(3,0)$ . On the accompanying grid, draw and label  $\triangle SUN$ . Then, graph and state the coordinates of  $\triangle S'U'N'$ , the image of  $\triangle SUN$  after a reflection in the  $y$ -axis.



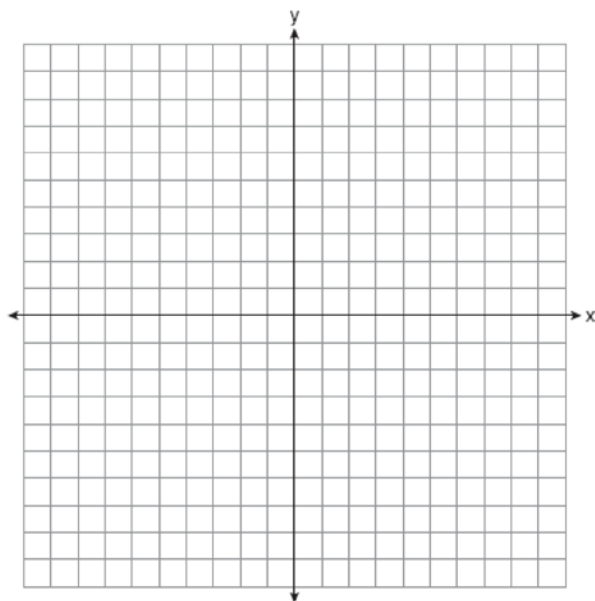
- 5 Triangle  $ABC$  has vertices  $A(-2,2)$ ,  $B(-1,-3)$ , and  $C(4,0)$ . Find the coordinates of the vertices of  $\triangle A'B'C'$ , the image of  $\triangle ABC$  after the transformation  $r_{x\text{-axis}}$ . [The use of the grid is optional.]



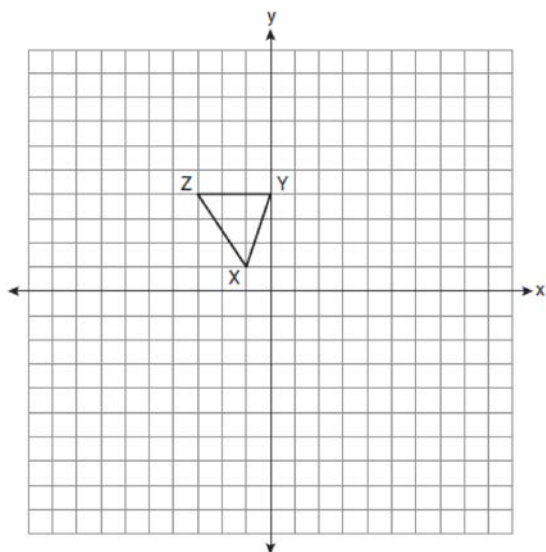
- 4 Triangle  $ABC$  has coordinates  $A(2,0)$ ,  $B(1,7)$ , and  $C(5,1)$ . On the accompanying set of axes, graph, label, and state the coordinates of  $\triangle A'B'C'$ , the reflection of  $\triangle ABC$  in the  $y$ -axis.



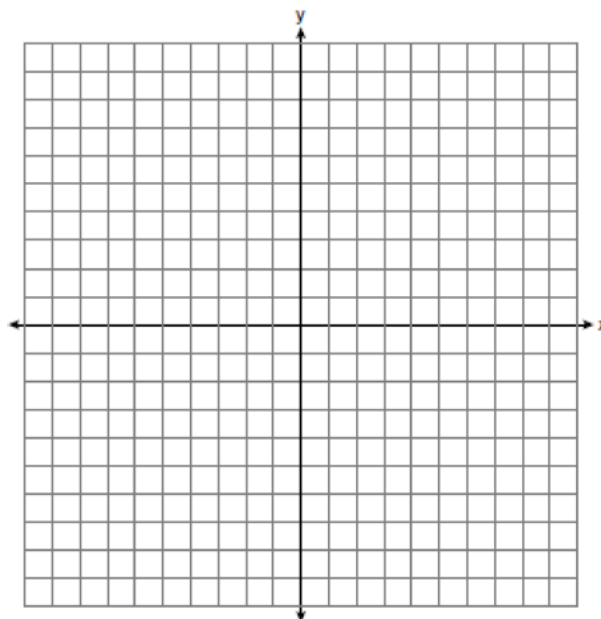
- 6 Triangle  $ABC$  has vertices  $A(-1,1)$ ,  $B(1,3)$ , and  $C(4,1)$ . The image of  $\triangle ABC$  after the transformation  $r_{y=x}$  is  $\triangle A'B'C'$ . State and label the coordinates of  $\triangle A'B'C'$ . [The use of the set of axes below is optional.]



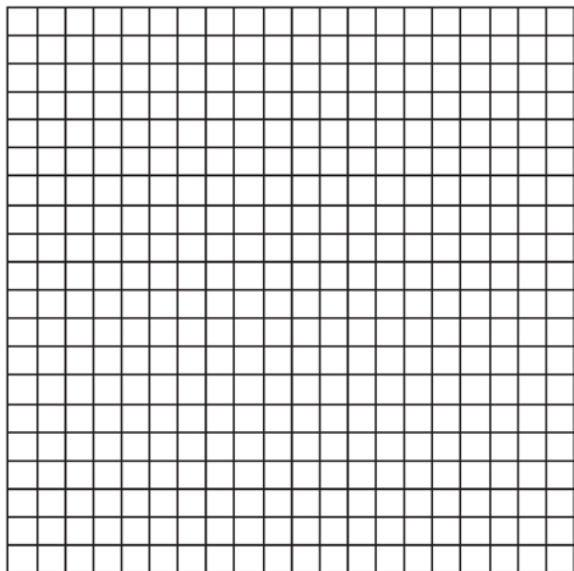
- 7 Triangle  $XYZ$ , shown in the diagram below, is reflected over the line  $x = 2$ . State the coordinates of  $\triangle X'Y'Z'$ , the image of  $\triangle XYZ$ .



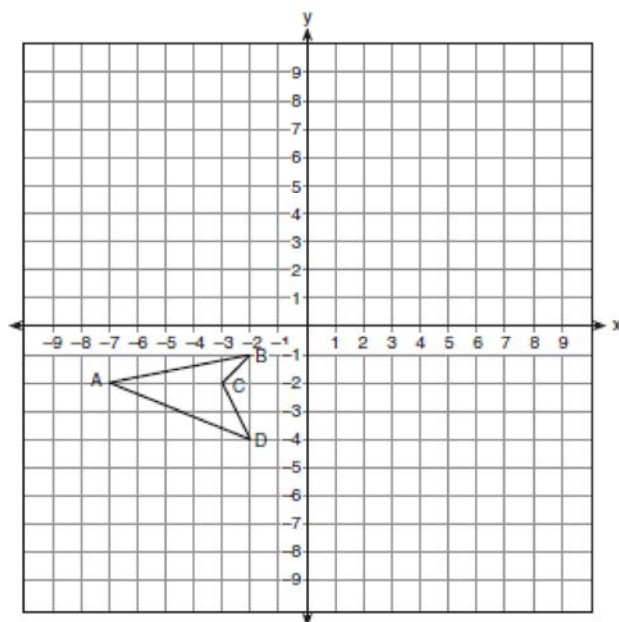
- 8 Carson is a decorator. He often sketches his room designs on the coordinate plane. He has graphed a square table on his grid so that its corners are at the coordinates  $A(2,6)$ ,  $B(7,8)$ ,  $C(9,3)$ , and  $D(4,1)$ . To graph a second identical table, he reflects  $ABCD$  over the  $y$ -axis. On the accompanying set of coordinate axes, sketch and label  $ABCD$  and its image  $A'B'C'D'$ , which show the locations of the two tables. Then find the number of square units in the area of  $ABCD$ .



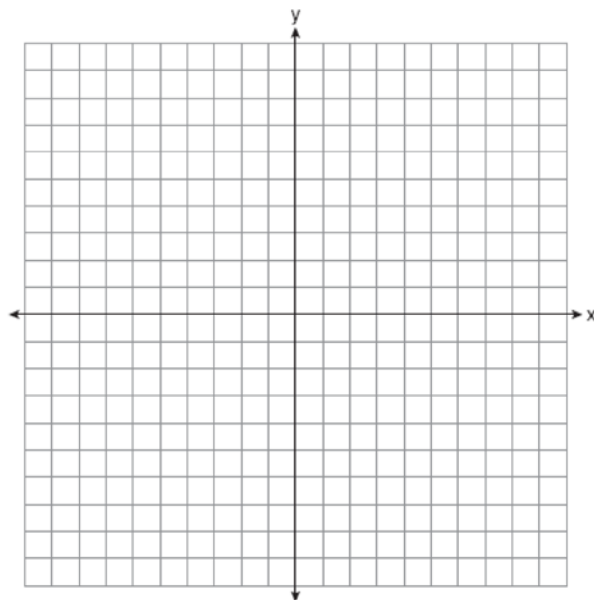
- 9 On the accompanying grid, draw and label quadrilateral  $ABCD$  with points  $A(1,2)$ ,  $B(6,1)$ ,  $C(7,6)$ , and  $D(3,7)$ . On the same set of axes, plot and label quadrilateral  $A'B'C'D'$ , the reflection of quadrilateral  $ABCD$  in the  $y$ -axis. Determine the area, in square units, of quadrilateral  $A'B'C'D'$ .



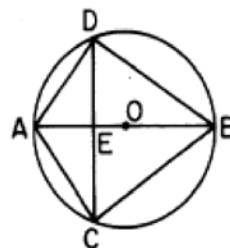
- 10 On the accompanying set of axes, draw the reflection of  $ABCD$  in the  $y$ -axis. Label and state the coordinates of the reflected figure.



- 11 Two parabolic arches are to be built. The equation of the first arch can be expressed as  $y = -x^2 + 9$ , with a range of  $0 \leq y \leq 9$ , and the second arch is created by the transformation  $T_{7,0}$ . On the accompanying set of axes, graph the equations of the two arches. Graph the line of symmetry formed by the parabola and its transformation and label it with the proper equation.

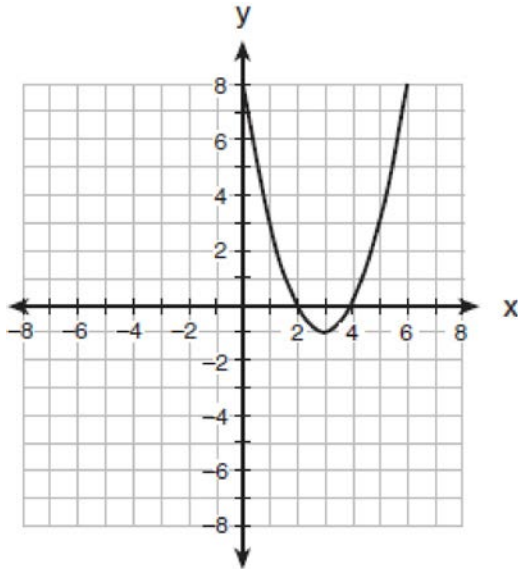


- 12 In the accompanying diagram of circle  $O$ , diameter  $\overline{AB}$  is perpendicular to chord  $\overline{CD}$  at point  $E$ . What is the image of  $\overline{AC}$  in  $\overline{AB}$ ?



- 1)  $\overline{AD}$
- 2)  $\overline{BD}$
- 3)  $\overline{ED}$
- 4)  $\overline{AE}$

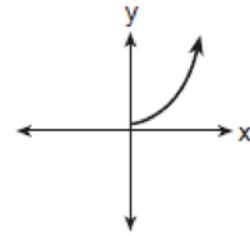
- 13 The parabola shown in the accompanying diagram undergoes a reflection in the  $y$ -axis.



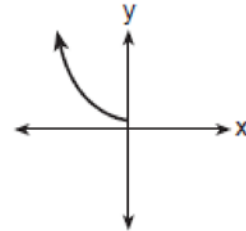
What will be the coordinates of the turning point after the reflection?

- 1)  $(3, -1)$
- 2)  $(3, 1)$
- 3)  $(-3, 1)$
- 4)  $(-3, -1)$

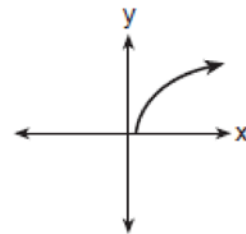
- 14 The accompanying graph shows the relationship between kinetic energy,  $y$ , and velocity,  $x$ .



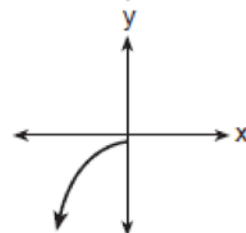
The reflection of this graph in the line  $y = x$  is



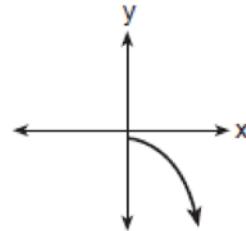
1)



2)



3)

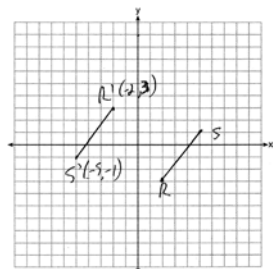


4)

**G.G.54: Reflections 2: Define, investigate, justify, and apply isometries in the plane (rotations, reflections, translations, glide reflections)**

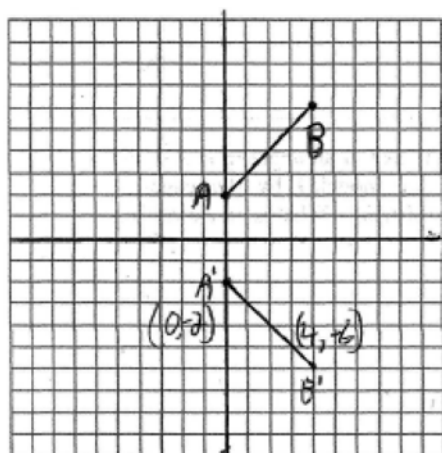
**Answer Section**

1 ANS:



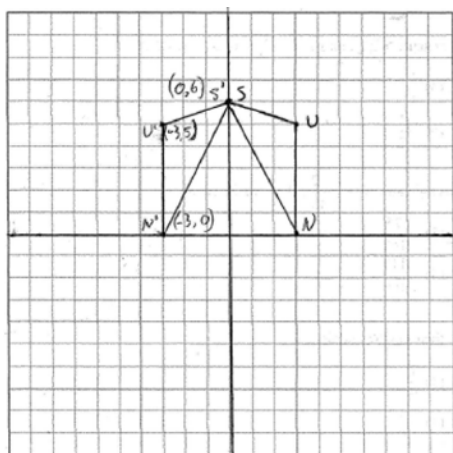
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2 ANS:



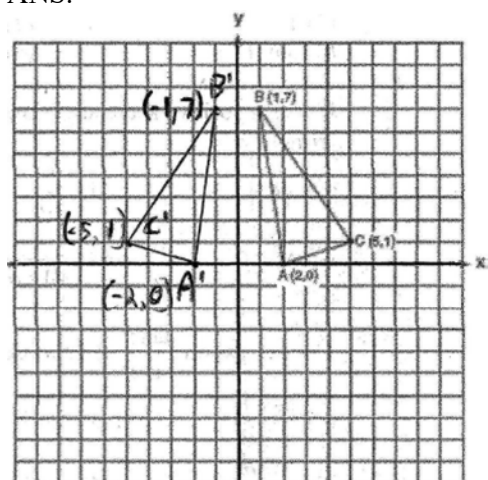
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3 ANS:



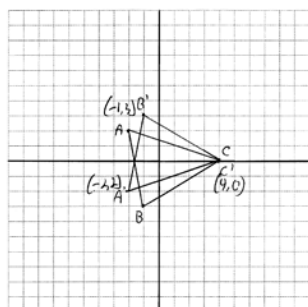
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4 ANS:



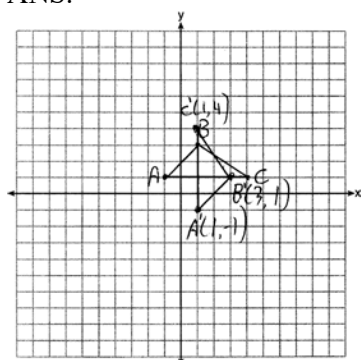
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5 ANS:



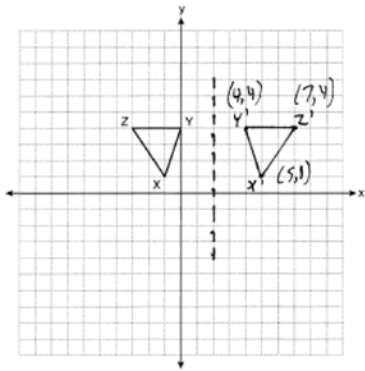
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6 ANS:



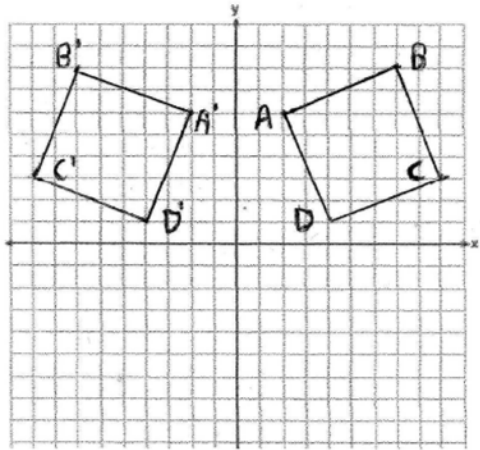
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7 ANS:



REF: 061032ge

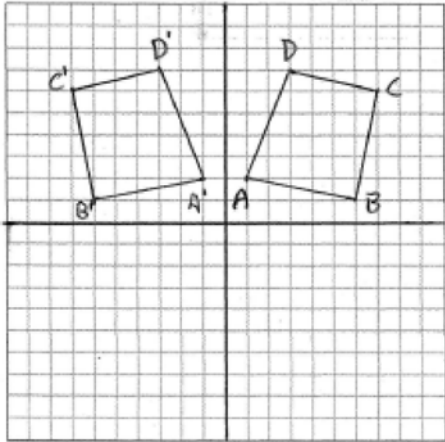
8 ANS:



29

REF: 060739a

9 ANS:

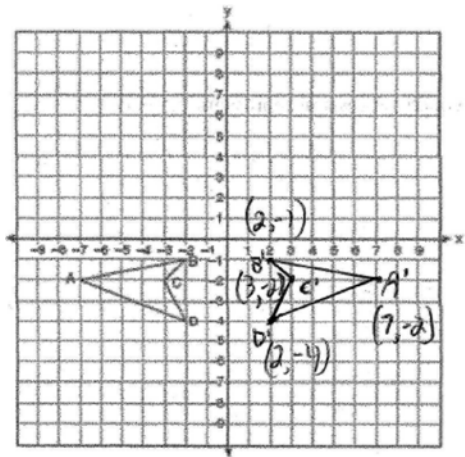


24

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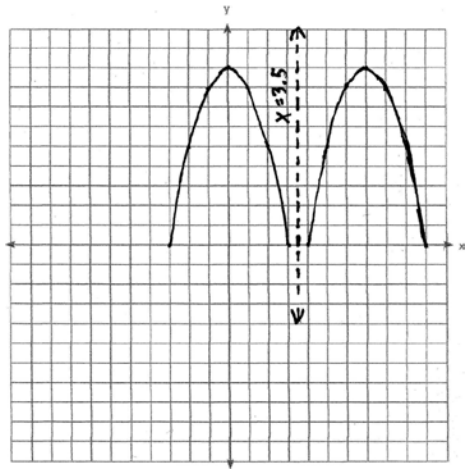


10 ANS:



REF: 060537a

11 ANS:



REF: 060129b

12 ANS: 1

REF: 069018siii

13 ANS: 4

REF: 010901b

14 ANS: 2

REF: 080820b