G.G.61: Investigate, justify, and apply the analytical representations for translations, rotations about the origin of 90º and 180º, reflections over the lines x=0, y=0, and y=x, and dilations centered at the origin

1. fall0818ge, P.I. G.G.61
A polygon is transformed according to the rule: $(x, y) \rightarrow (x + 2, y)$. Every point of the polygon moves two units in which direction?

[A] down [B] right [C] left [D] up

2. 080908b, P.I. G.G.61
Which type of transformation is $(x, y) \rightarrow (x + 2, y - 2)$?

[A] dilation [B] reflection

[C] translation [D] rotation

3. 060402a, P.I. G.G.61
What is the image of (x, y) after a translation of 3 units right and 7 units down?

[A] $(x - 3, y + 7)$ [B] $(x + 3, y - 7)$

[C] $(x - 3, y - 7)$ [D] $(x + 3, y + 7)$

4. 069903a, P.I. G.G.61
What is the image of point (2,5) under the translation that shifts (x,y) to $(x + 3, y - 2)$?

[A] (5,8) [B] (5,3) [C] (0,8) [D] (0,3)

5. 080409a, P.I. G.G.61
What are the coordinates of P', the image of P(-4, 0) under the translation $(x - 3, y + 6)$?

[A] (1,6) [B] (7,-6)

[C] (-7,6) [D] (2,-3)

6. 010509a, P.I. G.G.61
The image of point (3,-5) under the translation that shifts (x,y) to $(x - 1, y - 3)$ is

[A] (2,-8) [B] (-4,8)

[C] (-3,15) [D] (2,8)

7. 080609a, P.I. G.G.61
What is the image of point (-3, 4) under the translation that shifts (x,y) to $(x - 3, y + 2)$?

[A] (6,6) [B] (-6,8)

[C] (0,6) [D] (-6,6)

8. 010719b, P.I. G.G.61
Which transformation represents a dilation?

[A] $(8,4) \rightarrow (11,7)$ [B] $(8,4) \rightarrow (-8,4)$

[C] $(8,4) \rightarrow (4,2)$ [D] $(8,4) \rightarrow (-4,-8)$

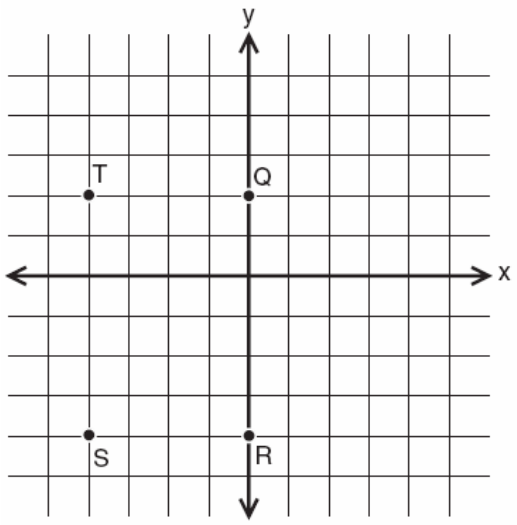
9. 010507b, P.I. G.G.61
Which transformation is an example of an opposite isometry?

[A] $(x,y) \rightarrow (y,x)$ [B] $(x,y) \rightarrow (y,-x)$

[C] $(x,y) \rightarrow (3x,3y)$

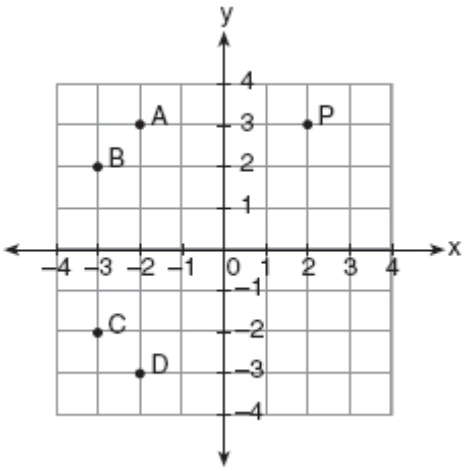
[D] $(x,y) \rightarrow (x+3,y-6)$

10. 080211a, P.I. G.G.61
If $x = -2$ and $y = -1$, which point on the accompanying set of axes represents the translation $(x,y) \rightarrow (x+2,y-3)$?



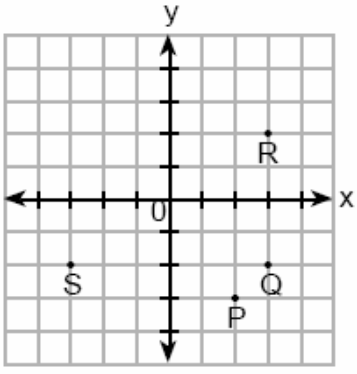
[A] *S* [B] *Q* [C] *R* [D] *T*

11. 010418a, P.I. G.G.61
In the accompanying graph, if point *P* has coordinates (a,b), which point has coordinates $(-b,a)$?



[A] *B* [B] *D* [C] *A* [D] *C*

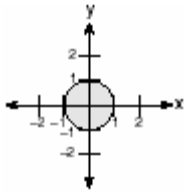
12. 069908a, P.I. G.G.61
If $x = -3$ and $y = 2$, which point on the accompanying graph represents $(-x, -y)$?



[A] *R* [B] *S* [C] *Q* [D] *P*

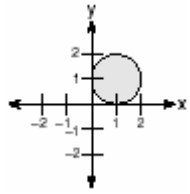
13. 060405b, P.I. G.G.61

In the accompanying graph, the shaded region represents set A of all points (x,y) such that $x^2 + y^2 \le 1$. The transformation T maps point (x, y) to point $(2x, 4y)$.

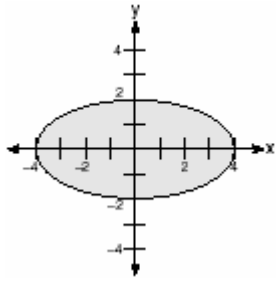


Which graph shows the mapping of set A by the transformation T?

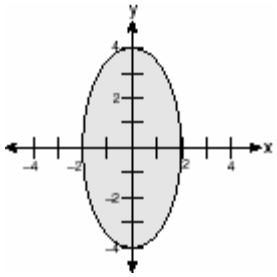
[A]



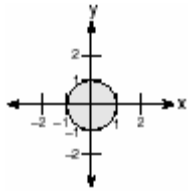
[B]



[C]

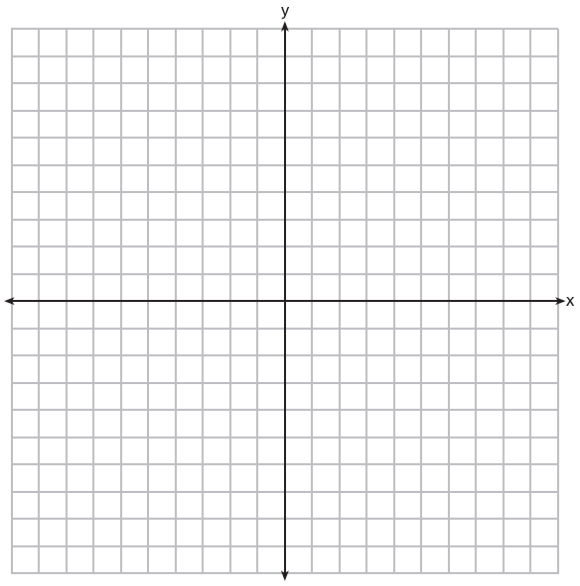


[D]



14. 080838a, P.I. G.G.61

On the accompanying set of axes, draw ΔABC, whose coordinates are $A(-7,9)$, $B(-2,8)$, and $C(-3,4)$. Then draw, label, and state the coordinates of $\Delta A'B'C'$, the image of ΔABC after the transformation that maps (x, y) to $(-x,-y)$. Based on your diagram, identify the type of transformation that was performed.



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[1] B

[2] C

[3] B

[4] B

[5] C

[6] A

[7] D

[8] C

[9] A

[10] C

[11] A

[12] C

[13] C

[14] [4] ΔABC and $\Delta A'B'C'$ are graphed and labeled correctly, and the coordinates of $\Delta A'B'C'$ are stated as $A'(7,-9)$, $B'(2,-8)$, and $C'(3,-4)$, and point reflection or dilation with a factor of -1. (Note: rotation or rotation of 180° is an acceptable answer.)
[3] ΔABC and $\Delta A'B'C'$ are graphed and labeled correctly, but the coordinates of $\Delta A'B'C'$ are not stated or are stated incorrectly but a correct transformation is stated.
or [3] ΔABC and $\Delta A'B'C'$ are graphed and labeled correctly, and the coordinates of $\Delta A'B'C'$ are stated correctly, but the type of transformation is not stated or is stated incorrectly.
or [3] ΔABC is not graphed, but $\Delta A'B'C'$ is graphed and labeled correctly, and its coordinates are stated correctly, and a correct transformation is stated.
or [3] ΔABC is graphed incorrectly, but $\Delta A'B'C'$ is graphed and labeled appropriately, its coordinates are stated appropriately, and an appropriate type of transformation is stated.
[2] ΔABC is graphed correctly, but one conceptual error is made, such as graphing an incorrect transformation, but the points are labeled appropriately, its coordinates are stated appropriately, and an appropriate type of transformation is stated.
or [2] ΔABC is not graphed, but $\Delta A'B'C'$ is graphed and labeled correctly, and its coordinates are stated correctly, but the type of transformation is not stated or is stated incorrectly.
or [2] ΔABC and $\Delta A'B'C'$ are graphed and labeled correctly, but the coordinates of and the type of transformation are not stated or are stated incorrectly
or [2] ΔABC and $\Delta A'B'C'$ are not graphed, but the correct coordinates of $\Delta A'B'C'$ and a correct transformation are stated.
[1] Either ΔABC or $\Delta A'B'C'$ is graphed correctly, but the coordinates of $\Delta A'B'C'$ and the type of transformation are not stated or are stated incorrectly.
or [1] $A'(7,-9)$, $B'(2,-8)$, and $C'(3,-4)$, but

no further correct work is shown.
or [1] A correct transformation is stated, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.