



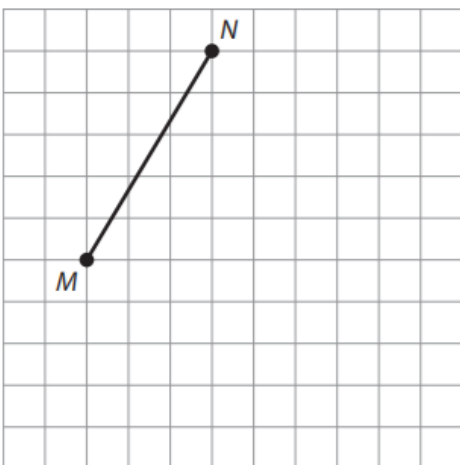
SAMPLES OF STANDARDS STUDENTS ARE LEARNING THIS NINE WEEKS:

8th Grade Math

STANDARDS: 8.G.1, 8.G.2, 8.G.3, 8.G.4, 8.G.5

8.G.1: Verify experimentally the properties of rotations, reflections, and translations
a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.

\overline{MN} is shown on the grid below.



\overline{MN} is translated 4 units down and 3 units to the right to form \overline{PQ} .

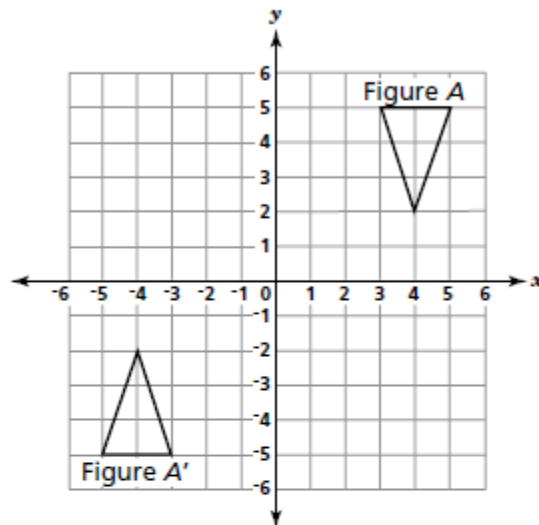
Which statement describes the length of \overline{PQ} ?

- A** The length is 7 units more than the length of \overline{MN} .
- B** The length is 1 unit more than the length of \overline{MN} .
- C** The length is 1 unit less than the length of \overline{MN} .
- D** The length is the same as the length of \overline{MN} .

Correct Answer is D.

8.G.2: Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

Figure *A* and its image after a transformation, Figure *A'*, are shown on the coordinate plane below.

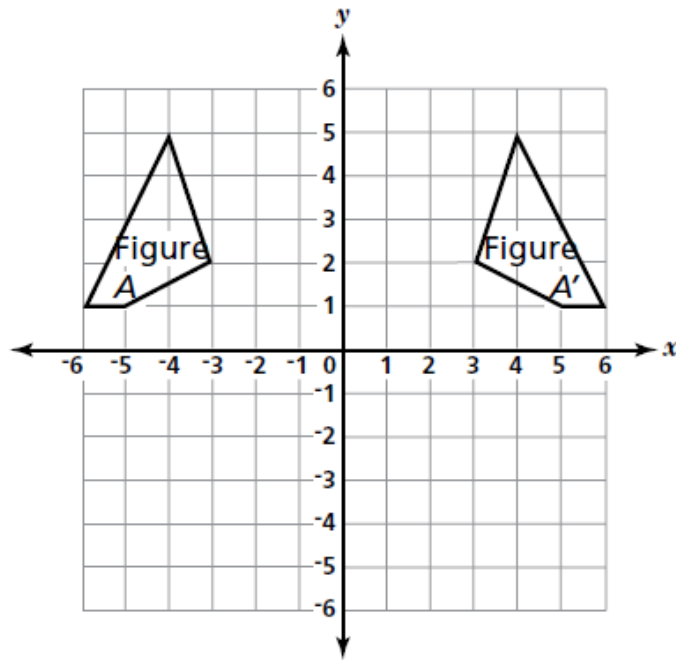


Which transformations map Figure *A* onto Figure *A'*? Mark all that apply.

- A** a translation of 8 units to the left followed by a rotation of 90° counter-clockwise about the origin
- B** a translation of 8 units to the left followed by a rotation of 90° clockwise about the origin
- C** a reflection across the x -axis followed by a translation 8 units to the left
- D** a translation of 8 units to the left followed by a translation 8 units up
- E** a reflection across the x -axis followed by a reflection across the y -axis

Correct Answers are C and E.

Figure A and its image after a transformation, Figure A', are shown on the coordinate plane below. The two figures are congruent.



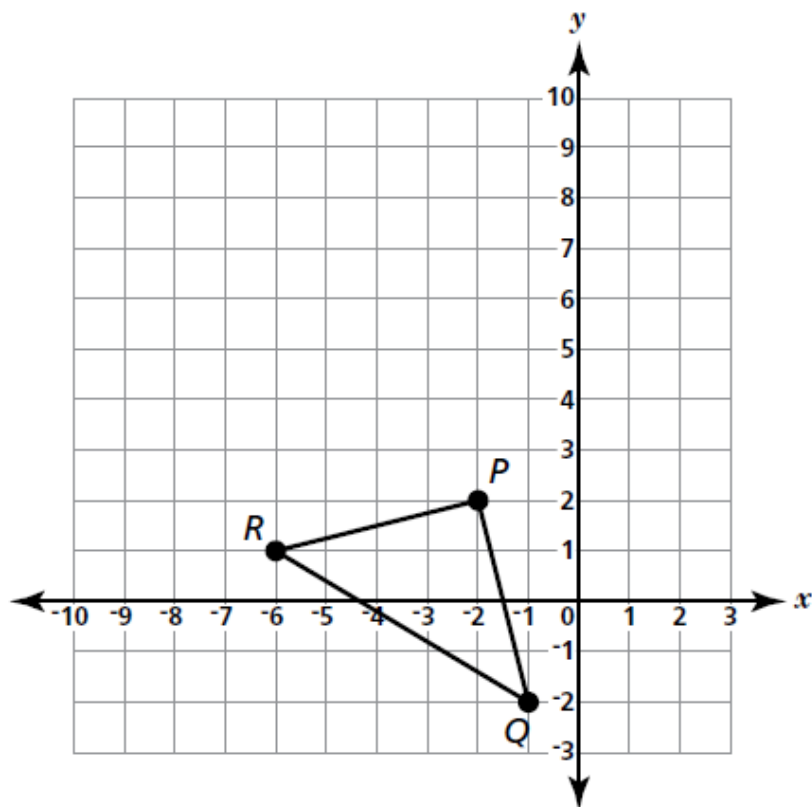
Which transformation has been performed to create the congruent Figure A'?

- A reflection over the x-axis
- B reflection over the y-axis
- C translation 8 units to the right
- D clockwise rotation of 90° about the origin

Answer B is correct.

8.G.3: Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

Refer to the graph below.



Part A

Which set of coordinates results when $\triangle PQR$ is translated 1 unit up and 3 units to the right?

- A $P'(1, 1), Q'(2, -3), R'(2, 0)$
- B $P'(1, 3), Q'(2, -1), R'(-3, 2)$
- C $P'(-5, 3), Q'(-4, -1), R'(-9, 2)$
- D $P'(-5, 1), Q'(-4, -3), R'(-9, 0)$

Part B

Which set of coordinates results when $\triangle PQR$ is reflected across the x -axis?

- A $P'(2, 2), Q'(1, -2), R'(6, 1)$
- B $P'(2, -2), Q'(1, 2), R'(6, -1)$
- C $P'(-2, -2), Q'(-1, 2), R'(-6, -1)$
- D $P'(2, 2), Q'(1, 2), R'(6, 1)$

Part C

Which set of coordinates results when $\triangle PQR$ is dilated about the origin with a scale factor of 2?

- A $P'(-4, 4), Q'(-2, -4), R'(-12, 2)$
- B $P'(-1, 1), Q'(-0.5, 1), R'(-3, 0.5)$
- C $P'(4, 4), Q'(2, 4), R'(12, 2)$
- D $P'(-3, 6), Q'(-1, -2), R'(-11, 4)$

Part D

Which set of coordinates results when $\triangle PQR$ is rotated 180° counterclockwise about the origin?

- A $P'(2, 2), Q'(-2, 1), R'(1, 6)$
- B $P'(2, -2), Q'(1, 2), R'(6, -1)$
- C $P'(2, 2), Q'(1, -2), R'(6, 1)$
- D $P'(-2, -2), Q'(2, 1), R'(-1, -6)$

Correct Answers:

Part A: B

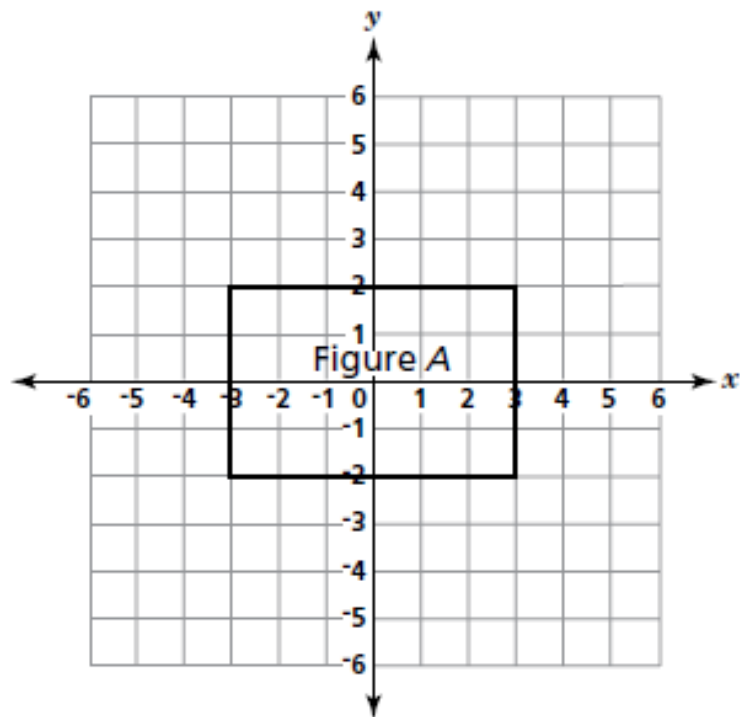
Part B: C

Part C: A

Part D: B

8.G.4: Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

Hector drew Figure A below.



Part A

If Hector dilates Figure A with the center of dilation at $(0, 0)$ and a scale factor of 2, what will be the coordinates of the vertices of the similar figure that results?

- A $(-2, -3), (-2, 3), (2, 3),$ and $(2, -3)$
- B $(-3, -2), (-3, 2), (3, 2),$ and $(3, -2)$
- C $(-4, -6), (-4, 6), (4, 6),$ and $(4, -6)$
- D $(-6, -4), (-6, 4), (6, 4),$ and $(6, -4)$

Part B

If Hector translates Figure A 1 unit to the left, what will be the coordinates of the vertices of the similar figure that results?

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

Part C

If Hector rotates Figure A 90° counterclockwise about the origin, what will be the coordinates of the similar figure that results?

- A $(-4, 0), (-4, 6), (0, 6),$ and $(0, 0)$
- B $(0, -3), (0, 3), (4, 3),$ and $(4, -3)$
- C $(-3, -2), (-3, 2), (3, 2),$ and $(3, -2)$
- D $(-2, -3), (-2, 3), (2, 3),$ and $(2, -3)$

Part D

If Hector reflects Figure A across the x -axis, what will be the coordinates of the similar figure that results?

- A $(3, -2), (3, 2), (9, 2),$ and $(9, -2)$
- B $(-3, 2), (-3, 6), (3, 6),$ and $(3, 2)$
- C $(-3, -2), (-3, 2), (3, 2),$ and $(3, -2)$
- D $(-2, -3), (-2, 3), (2, 3),$ and $(2, -3)$

Correct Answers:

Part A: D

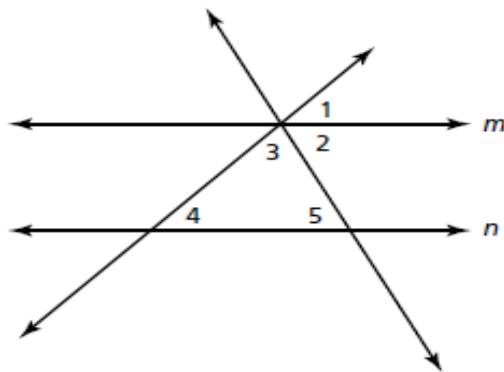
Part B: A

Part C: D

Part D: C

8.G.5: Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.

29 In the figure below, lines m and n are parallel, $m\angle 2 = 62^\circ$ and $m\angle 3 = 73^\circ$.



Part A

What is $m\angle 5$? How do you know? Fill in the blanks to complete the statement.

Answers $\angle 2$ and $\angle 5$ are _____ angles, so $m\angle 5 =$ _____.

Part B

Based on your answer to Part A, what is $m\angle 4$? How do you know? Fill in the blanks to complete the statement.

Answers The sum of the measures of $\angle 3$, $\angle 4$, and $\angle 5$ is _____, because the angles form a _____, so $m\angle 4 =$ _____ $- 73^\circ -$ _____ $=$ _____.

Part C

What is another way you could have found $m\angle 4$? Explain your reasoning.

Correct Answers are Below:

Part A: $\angle 2$ and $\angle 5$ are alternate interior angles, so $m\angle 5 = 62^\circ$.

Part B: The sum of the measures of $\angle 3$, $\angle 4$, and $\angle 5$ is 180° , because the angles form a triangle, so $m\angle 4 = 180^\circ - 73^\circ - 62^\circ = 45^\circ$.

Part C: Possible explanation: The sum of the measures of $\angle 1$, $\angle 2$, and $\angle 3$ is 180° , because the angles form a straight line, so $m\angle 1 = 180^\circ - 62^\circ - 73^\circ = 45^\circ$. $\angle 1$ and $\angle 4$ are corresponding angles, so the measures of these two angles are equal. This means that $m\angle 4 = 45^\circ$.