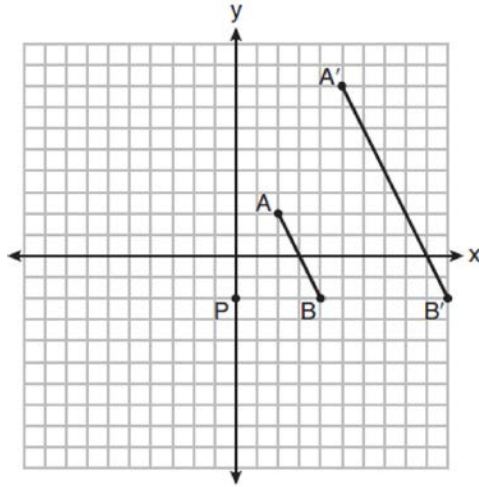


G.SRT.A.1: Line Dilations 2

- 1 On the set of axes below, \overline{AB} is dilated by a scale factor of $\frac{5}{2}$ centered at point P .



Which statement is always true?

- 1) $\overline{PA} \cong \overline{AA'}$
 - 2) $\overline{AB} \parallel \overline{A'B'}$
 - 3) $AB = A'B'$
 - 4) $\frac{5}{2}(A'B') = AB$
- 2 A line segment is dilated by a scale factor of 2 centered at a point not on the line segment. Which statement regarding the relationship between the given line segment and its image is true?
- 1) The line segments are perpendicular, and the image is one-half of the length of the given line segment.
 - 2) The line segments are perpendicular, and the image is twice the length of the given line segment.
 - 3) The line segments are parallel, and the image is twice the length of the given line segment.
 - 4) The line segments are parallel, and the image is one-half of the length of the given line segment.

- 3 The line whose equation is $3x - 5y = 4$ is dilated by a scale factor of $\frac{5}{3}$ centered at the origin. Which statement is correct?
- 1) The image of the line has the same slope as the pre-image but a different y -intercept.
 - 2) The image of the line has the same y -intercept as the pre-image but a different slope.
 - 3) The image of the line has the same slope and the same y -intercept as the pre-image.
 - 4) The image of the line has a different slope and a different y -intercept from the pre-image.

- 4 If the line represented by $y = -\frac{1}{4}x - 2$ is dilated by a scale factor of 4 centered at the origin, which statement about the image is true?
- 1) The slope is $-\frac{1}{4}$ and the y -intercept is -8 .
 - 2) The slope is $-\frac{1}{4}$ and the y -intercept is -2 .
 - 3) The slope is -1 and the y -intercept is -8 .
 - 4) The slope is -1 and the y -intercept is -2 .

- 5 A line that passes through the points whose coordinates are $(1, 1)$ and $(5, 7)$ is dilated by a scale factor of 3 and centered at the origin. The image of the line
- 1) is perpendicular to the original line
 - 2) is parallel to the original line
 - 3) passes through the origin
 - 4) is the original line

- 6 A line is dilated by a scale factor of $\frac{1}{3}$ centered at a point on the line. Which statement is correct about the image of the line?
- 1) Its slope is changed by a scale factor of $\frac{1}{3}$.
 - 2) Its y -intercept is changed by a scale factor of $\frac{1}{3}$.
 - 3) Its slope and y -intercept are changed by a scale factor of $\frac{1}{3}$.
 - 4) The image of the line and the pre-image are the same line.
- 7 An equation of line p is $y = \frac{1}{3}x + 4$. An equation of line q is $y = \frac{2}{3}x + 8$. Which statement about lines p and q is true?
- 1) A dilation of $\frac{1}{2}$ centered at the origin will map line q onto line p .
 - 2) A dilation of 2 centered at the origin will map line p onto line q .
 - 3) Line q is not the image of line p after a dilation because the lines are not parallel.
 - 4) Line q is not the image of line p after a dilation because the lines do not pass through the origin.
- 8 The line $-3x + 4y = 8$ is transformed by a dilation centered at the origin. Which linear equation could represent its image?
- 1) $y = \frac{4}{3}x + 8$
 - 2) $y = \frac{3}{4}x + 8$
 - 3) $y = -\frac{3}{4}x - 8$
 - 4) $y = -\frac{4}{3}x - 8$
- 9 The line $3y = -2x + 8$ is transformed by a dilation centered at the origin. Which linear equation could be its image?
- 1) $2x + 3y = 5$
 - 2) $2x - 3y = 5$
 - 3) $3x + 2y = 5$
 - 4) $3x - 2y = 5$
- 10 The line represented by the equation $4y = 3x + 7$ is transformed by a dilation centered at the origin. Which linear equation could represent its image?
- 1) $3x - 4y = 9$
 - 2) $3x + 4y = 9$
 - 3) $4x - 3y = 9$
 - 4) $4x + 3y = 9$

G.SRT.A.1: Line Dilations 2**Answer Section**

1 ANS: 2 REF: 081901geo

2 ANS: 3 REF: 061706geo

3 ANS: 1 REF: 011814geo

4 ANS: 1

A dilation by a scale factor of 4 centered at the origin preserves parallelism and $(0, -2) \rightarrow (0, -8)$.

REF: 081910geo

5 ANS: 2 REF: 011610geo

6 ANS: 4 REF: 062223geo

7 ANS: 3 REF: 082212geo

8 ANS: 2

The slope of $-3x + 4y = 8$ is $\frac{3}{4}$.

REF: 061907geo

9 ANS: 1

The line $3y = -2x + 8$ does not pass through the center of dilation, so the dilated line will be distinct from $3y = -2x + 8$. Since a dilation preserves parallelism, the line $3y = -2x + 8$ and its image $2x + 3y = 5$ are parallel, with slopes of $-\frac{2}{3}$.

REF: 061522geo

10 ANS: 1

Since a dilation preserves parallelism, the line $4y = 3x + 7$ and its image $3x - 4y = 9$ are parallel, with slopes of $\frac{3}{4}$.

REF: 081710geo