

Name _____
Mr. Schlansky

Date _____
Geometry

Line Dilations Practice

1. 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.

2. 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

3. The line whose equation is $3x - 5y = 4$ is dilated by a scale factor of $\frac{5}{3}$ centered at the origin.

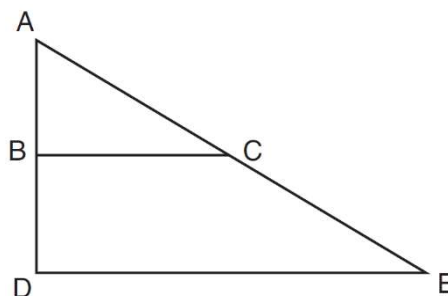
Which statement is correct?

- 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. The image of $\triangle ABC$ after a dilation of scale factor k centered at point A is $\triangle ADE$, as shown in the diagram below.

Which statement is always true?

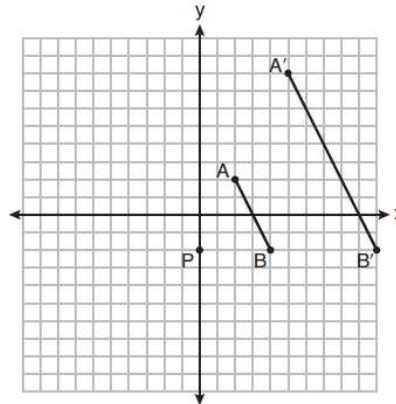
- 1) $2AB = AD$
- 2) $\overline{AD} \perp \overline{DE}$
- 3) $AC = CE$
- 4) $\overline{BC} \parallel \overline{DE}$



5. 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) $\frac{5}{2}(A'B') = AB$



6. 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) $3x - 2y = 5$

7. 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) $3x - 4y = 9$ | 3) $4x - 3y = 9$ |
| 2) $3x + 4y = 9$ | 4) $4x + 3y = 9$ |

8. The line $-3x + 4y = 8$ is transformed by a dilation centered at the origin. Which linear equation could represent its image?

- | | |
|---------------------------|----------------------------|
| 1) $y = \frac{4}{3}x + 8$ | 3) $y = -\frac{3}{4}x - 8$ |
| 2) $y = \frac{3}{4}x + 8$ | 4) $y = -\frac{4}{3}x - 8$ |

9. 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 .

10. Line $y = 3x - 1$ is transformed by a dilation with a scale factor of 2 and centered at $(3, 8)$. The line's image is

- 1) $y = 3x - 8$
- 2) $y = 3x - 4$
- 3) $y = 3x - 2$
- 4) $y = 3x - 1$

11. The line $y = 2x - 4$ is dilated by a scale factor of $\frac{3}{2}$ and centered at the origin. Which equation represents the image of the line after the dilation?

- 1) $y = 2x - 4$
- 2) $y = 2x - 6$
- 3) $y = 3x - 4$
- 4) $y = 3x - 6$

12. Line MN is dilated by a scale factor of 2 centered at the point $(0, 6)$. If \overleftrightarrow{MN} is represented by $y = -3x + 6$, which equation can represent $\overleftrightarrow{M'N'}$, the image of \overleftrightarrow{MN} ?

- 1) $y = -3x + 12$
- 2) $y = -3x + 6$
- 3) $y = -6x + 12$
- 4) $y = -6x + 6$

13. Line $y - 2x = 4$ is transformed by a dilation with a scale factor of 2 centered at the origin. What is the equation of the line's image?

14. The equation of a line is given by the equation $2x + 2y = 6$. Write an equation for the image of the line after a dilation of 2 centered at $(3,0)$.

15. The equation of line l is $y + 2x = 1$. Line m is the image of line l after a dilation of 3 centered at the origin. What is the equation of line m .

16. Line n is represented by the equation $3x + 4y = 20$. Determine and state the equation of line p , the image of line n , after a dilation of scale factor $\frac{1}{3}$ centered at the point $(4, 2)$. [The use of the set of axes below is optional.] Explain your answer.

17. Aliyah says that when the line $4x + 3y = 24$ is dilated by a scale factor of 2 centered at the point $(3, 4)$, the equation of the dilated line is $y = -\frac{4}{3}x + 16$. Is Aliyah correct? Explain why. [The use of the set of axes below is optional.]