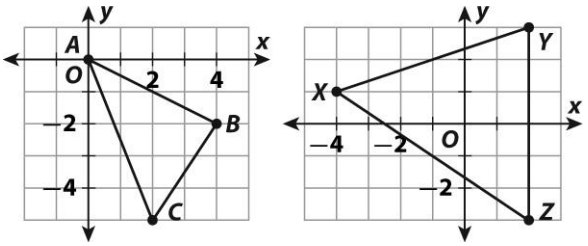
Name _____ Date _____ Class _____

UNIT 5

Transformational Geometry

Use the two triangles for 1–11.



1. ΔABC is translated 2 units right and 1 unit down. What is the new location of point *C?*

   A (1, −7) C (2, −5)

   B (1, −3) D (4, −6)

2. Which property changes when a figure is translated?

   A side lengths

   B angle measures

   C location

   D perimeter

3. Which translation moves a triangle 4 units to the right and 8 units up?

   A $(x, y) \rightarrow (x + 4, y + 8)$

   B $(x, y) \rightarrow (x - 4, y + 8)$

   C $(x, y) \rightarrow (x + 8, y + 4)$

   D $(x, y) \rightarrow (x + 8, y - 4)$

4. ΔABC is reflected across the *x*-axis. What is the new location of point *B?*

   A (−4, −2) C (4, −2)

   B (−4, 2) D (4, 2)

5. Which property changes when a figure is reflected across a line?

   A side lengths

   B angle measures

   C perimeter

   D orientation

6. ΔABC is rotated 90° clockwise about the origin. In what quadrant is $\Delta A'B'C'$, the image of the original triangle?

   A Quadrant I

   B Quadrant II

   C Quadrant III

   D Quadrant IV

7. ΔABC is rotated 90° counterclockwise with the origin as center of rotation. Where is the image of point *A?*

   A (0, 0) C (2, −4)

   B (4, −2) D (2, 4)

8. What is the result of the transformation below?

   $(x, y) \rightarrow (-x, y)$

   A reflection across the *x*-axis

   B reflection across the *y*-axis

   C 90° rotation clockwise

   D 90° rotation counterclockwise

9. ΔXYZ is dilated using a scale factor of 3. What is the length of $Y'Z'$?

   A 2 C 6

   B 3 D 18

10. ΔABC is dilated using a scale factor of 2. What happens to its angle measures?

    A They double in size.

    B They do not change.

    C They become half as great.

    D It depends on the center of the dilation.

11. ΔABC is dilated using a scale factor of 2.5. Which property does **not** change?

    A side lengths

    B angle measures

    C area

    D perimeter

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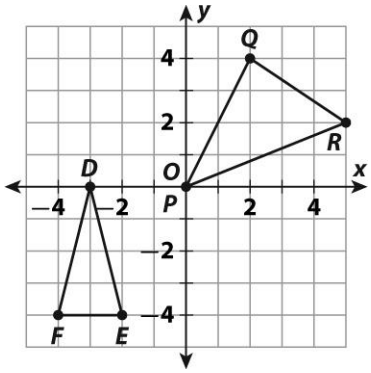
UNIT 5

Transformational Geometry

Use the triangles for 12–21. Write ordered pairs to show the new locations of the vertices.



12. Translate $\triangle DEF$ 5 units to the right.

    D'(_____), E'(_____), F'(_____)

13. Reflect $\triangle DEF$ across the x-axis. Which point does not move?

    _____

14. Rotate $\triangle DEF$ 180°. Use point D as the center of rotation.

    D'(_____), E'(_____), F'(_____)

15. Write the coordinates of the vertices of $\triangle DEF$.

    D(_____), E(_____), F(_____)

    Now apply the transformation below.

    $(x, y) \rightarrow (-x, y)$

    D'(_____), E'(_____), F'(_____)

16. Apply the translation below to $\triangle DEF$.

    $(x, y) \rightarrow (x - 10, y + 8)$

    D'(_____), E'(_____), F'(_____)

17. Translate $\triangle PQR$ 2 units left and 3 units down.

    P'(_____), Q'(_____), R'(_____)

18. Reflect $\triangle PQR$ across the y-axis.

    P'(_____), Q'(_____), R'(_____)

19. Rotate $\triangle PQR$ 90° clockwise. Use point P as the center of rotation.

    P'(_____), Q'(_____), R'(_____)

20. Write the coordinates of the vertices of $\triangle PQR$.

    P(_____), Q(_____), R(_____)

    Now apply the transformation below.

    $(x, y) \rightarrow (-x, -y)$

    P'(_____), Q'(_____), R'(_____)

21. Apply the transformation below to $\triangle PQR$. Describe the result.

    $(x, y) \rightarrow (2x, 2y)$

    P'(_____), Q'(_____), R'(_____)

    _____

    _____

Use the information below for 22–24.

Square $ABCD$ has vertices at $(-6, 0)$, $(0, 6)$, $(6, 0)$, and $(0, -6)$.

22. Dilate $ABCD$ by a scale factor of 3. Use the origin as the center of the dilation. What are the coordinates of points A', B', C', and D'?

    _____

23. What is the ratio of $C'D'$ to CD?

    _____

24. The area of $ABCD$ is 72 square units. Find the area of $A'B'C'D'$.

    _____

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