name: Key _____ date: _____ class: _____
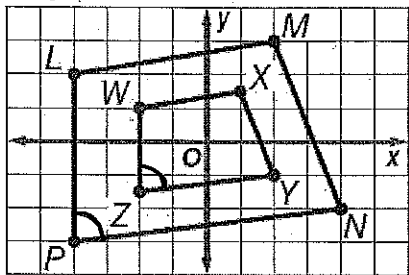
transformations test

1. In the picture below, quadrilateral LMNP was dilated to form quadrilateral WXYZ. Which of the following must be true?


    a. ∠L is congruent to ∠X
    b. ∠L is congruent to ∠Z
    (c.) ∠P is congruent to ∠Z
    d. ∠P is congruent to ∠Y

2. Figure STUV was dilated with the center of dilation at the origin and a scale factor of ½ to create S'T'U'V'. Which of the following is **NOT** true of the figures in the diagram?
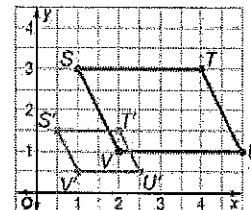
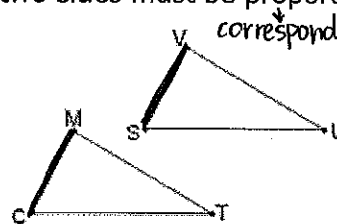   a. m∠V=m∠V' *(true)*
    (b.) $\overline{ST} = \overline{S'T'}$ *(they're not congruent!)*
    c. $STUV$ is similar to S'T'U'V' because a dilated image is similar to the original figure. *(true)*
    d. The ratio of SV/S'V' is equivalent to the ratio of TU/T'U' *(true)*

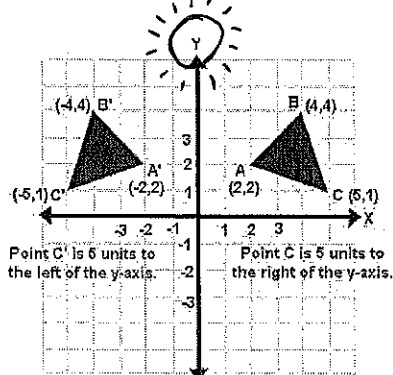**3.** If the two triangles below are congruent, what is the value of x?

    $x = 14$
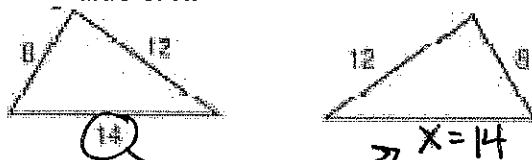
    a. 12   b. 16   (c.) 14   d. 28

**4.** The two triangles below are congruent, which two sides must be proportional?

corresponding

    (A.) CM and SV
    B. CM and MT
    C. CT and VU
    D. CT and MT

5. Using the image below, which of the following is true?

not true!

    A. The figures are congruent because they are a reflection over the x-axis.
    B. The figures are congruent because they are a translation -4 units horizontally.
    C. The figures are congruent because they are a rotation.
    (D.) The figures are congruent because they are a reflection across the y-axis.

6. Using the image below, which sequence of transformations is performed?

original

+6 horizontal
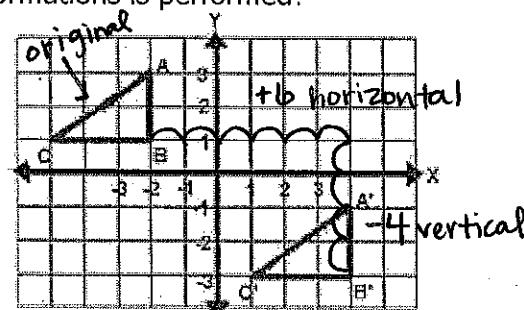
-4 vertical

    a. The original figure was translated 6 units horizontally and 4 units vertically.
    b. The original figure was translated 4 units horizontally and 6 units vertically.
   (c.) The original figure was translated 6 units horizontally and -4 units vertically.
    d. The original figure was translated -4 units horizontally and 6 units vertically.

7. Which of the following is not a <u>congruence</u> transformation?   *this makes it smaller*
   - (a.) A dilation with a scale factor of <u>0.5</u>
   - b. A translation 1 unit horizontally
   - c. A reflection over the x-axis
   - d. A dilation with a scale factor of 1

   multiplying by 1 doesn't change anything, so this would be congruent

8. The figure below shows a translation of ΔDEF to ΔD'E'F'. Which of the following statements is FALSE?
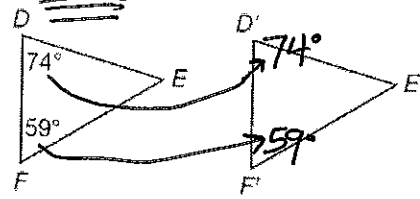
   - a. ∠F' = 59° *(true)*
   - (b.) $\overline{E'F'}$ is congruent to $\overline{DF}$ *(false!)*
   - c. ∠D' = 74° *(true)*
   - d. $\overline{E'F'}$ is congruent to $\overline{EF}$ *(true)*

9. If ΔABC has vertices at A(1, 1), B(4, 5) and C(6,2). If the figures is reflected over the x-axis, what are the coordinates of the vertices of triangle A'B'C'?
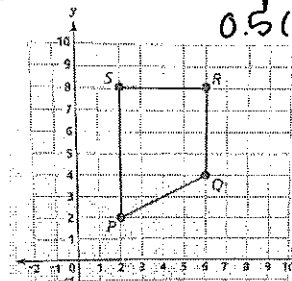   - A. A'(-1,-1), B'(-4, -5), C' (-6, -2)
   - B. A'(-1, 1), B'(-4, 5), C' (-6, 2)
   - C. A' (-1,1), B' (-5, 4), C' (-2, 6)
   - (D.) A' (1,-1), B' (4, -5), C' (6, -2)

   reflect over x-axis: keep x and change y to opposite (+/-)

   $A(1,1) \rightarrow A'(1,-1)$
   $B(4,5) \rightarrow B'(4,-5)$
 $C(6,2) \rightarrow C'(6,-2)$

10. Look at the figure PQRS. If it is <u>dilated</u> with a scale factor of <u>0.5</u> and the center of dilation at (0,0), what are the coordinates of the vertices of the image P'Q'R'S'?   *multiply x and y by 0.5 (or ½)*

    P(2,2)
    Q(6,4)
    R(6,8)
    S(2,8)

    P'(1, 1)
    Q'(3,2)
    R'(3,4)
    S'(1,4)

    - A. P' (1.5, 1.5), Q'(2.5, 1.5), R'(2.5, 3.5), S'(0.5, 3.5)
    - B. P' (2.5, 2.5), Q'(6.5, 4.5), R'(6.5, 8.5), S'(2.5, 8.5)
    - C. P' (4,4), Q'(12,8), R'(12,16), S'(4,16)
   - (D.) P' (1,1), Q'(3,2), R'(3,4), S'(1,4)

11. Which set of coordinates results when triangle PQR is translated <u>1 unit vertically</u> and <u>3 units horizontally</u>?   *up 1*   *right 3*
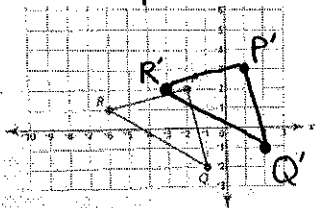
    - A. P'(1,1), Q'(2,-3), R' (2,0)
    - (B.) P'(1,3), Q'(2, -1), R' (-3,2)
    - C. P'(-5,3), Q' (-4,-1), R' (-9, 2)
    - D. P' (-5, 1), Q' (-4, -3), R' (-9,0)

12. Hector <u>dilates</u> Figure A with the center of dilation at the origin and a <u>scale factor of 2</u> and then <u>translates</u> the figure 1 unit to the <u>left.</u> What will be the coordinates of the vertices of the new image?

    multiply x and y by 2, and then subtract 1 from x.
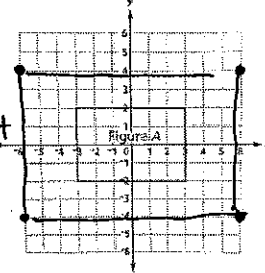
    - (A.) (-7,-4), (-7, 4), (5,4), and (5,-4)
    - B. (-6, -6), (-6, 2), (6,2), and (6, -6)
    - C. (-6, -5), (-6, 3), (6,3), and (6, -5)
   - D. (-8, -4), (-8, 4), (4,4), and (4, -4)

13. Roger has a 3-inch by 5-inch photograph. He is a good painter and wants to make a painting that looks exactly like the photograph but larger. Which one of the following canvases should he buy for this painting?

    A. 15 inches by 45 inches
    B. 18 inches by 20 inches
    C. 24 inches by 40 inches
    D. 30 inches by 75 inches

3 by 5   *×8*   *×8*   *24 by 40*

14. Describe the sequence of transformations that is represented by the rule $(x,y) \rightarrow (2x-3, 2y)$
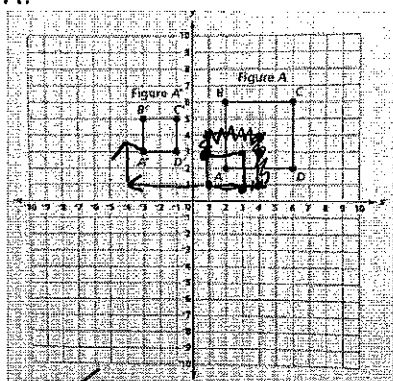
dilation, scale factor of 2

    a. A reflection over the x-axis and a dilation with a scale factor of 2.
    b. A dilation with a scale factor of 2 and a translation 3 units to the left.
    c. A dilation with a scale factor of 2 and a translation 3 units down.
    d. A reflection over the y-axis and a dilation with a scale factor of 2.

15. In the coordinate plane below, Figure D′ is similar to Figure D. What two transformations were performed on Figure D resulting in Figure D′?
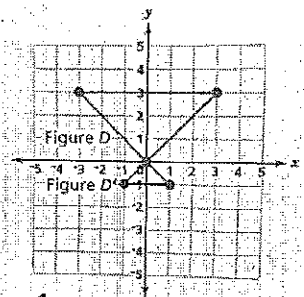
    A. A reflection over the y-axis and a dilation about the origin with a scale factor of ½.

    B. A reflection over the x-axis and a dilation about the origin with a scale factor of 1/3.

    C. A dilation about the origin with a scale factor of ½ and a reflection over the y-axis.

    D. A dilation about the origin with a scale factor of 1/3 and a reflection over the y-axis.

16. Which sequence of transformations is performed so that Figure A′ is similar to Figure A?

    A. Figure A′ is the result of dilating Figure A about the origin with a scale factor of 2 and then translating it 4 units to the left and 2 units up.

    B. Figure A′ is the result of dilating Figure A about the origin with a scale factor of ½ and then translating it 4 units to the left and 2 units up.

    C. Figure A′ is the result of dilating Figure A about the origin with a scale factor of ½ and then reflecting it over the y-axis.

    D. Figure A′ is the result of dilating Figure A about the origin with a scale factor of ½ and then reflecting it over the line x=y.