Homework: Investigation 4A   **Name:**

4.02

9. Many photocopy machines allow you to scale (reduce or enlarge) a picture. You enter the desired percent and press Copy.

   a. If you enter 80%, by what factor do you scale the picture?

   b. To scale a picture by the factor $\frac{3}{4}$, what percent should you enter?
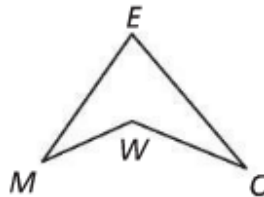
10. Label the two scalings as *same* or *different*.

    a. scaling by 2 and scaling by $\frac{1}{2}$

    b. scaling by $\frac{1}{3}$ and scaling by 30%

    c. scaling by $\frac{3}{5}$ and scaling by 0.6

    d. scaling by 1 and scaling by 100%

11. Give a scale factor that changes the quadrilateral *MEOW* as indicated.

    a. shrinks it

    b. enlarges it

    c. shrinks it very slightly
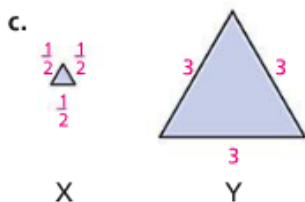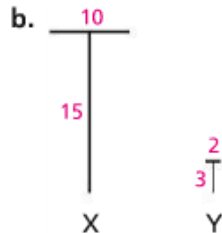
    d. keeps it the same size

12. A rectangle has width 12 inches and length 24 inches. You scale it using the following factors. In each case, what are the dimensions of the scaled rectangle?

    a. $\frac{1}{3}$ b. $\frac{1}{4}$ c. 0.3   d. 2.5   e. 0.25

13. Examine each pair of figures below.

    • What scale factor can you apply to figure X to get figure Y?
    • What scale factor can you apply to figure Y to get figure X?
    • How are the two scale factors you found related?

**14.** **Standardized Test Prep** Jamal scales a triangle by the factor 4. How many copies of the original triangle can he use to fill the scaled copy?

A. 4   **B.** 8   **C.** 12   **D.** 16

15. **Take It Further** Suppose you scale a picture by the factor $\frac{1}{2}$. Then you scale your scaled picture by the factor $\frac{1}{4}$. By what overall factor have you scaled the original picture?

4.03

For Exercises 4–6, use graph paper to scale the pictures by the given scale factor.

4.

scale factor = 2.5

5.

scale factor = 0.5

6.

scale factor = 2

7. **Standardized Test Prep** A rectangle has dimensions 25 cm by 10 cm. It is scaled by the factor $\frac{3}{5}$. What is the perimeter of the scaled rectangle?

A. 35 cm   **B.** 42 cm   **C.** 70 cm   **D.** 90 cm

4.04

5. Can a 3 foot-by-9 foot rectangle be a scaled copy of a 3 foot-by-1 foot rectangle? Explain.

6. You scale a square by the factor 2.5. The resulting square has a side length of 8 inches. What is the length of a side of the original square?

7. One triangle has side lengths of 21, 15, and 18. Another triangle has side lengths of 12, 14, and 16. Are these triangles scaled copies? How can you tell?

8. Carefully trace the triangles below. Cut out the traced triangles. Decide whether any two of the triangles are scaled copies of each other. Use any of the methods discussed in class.
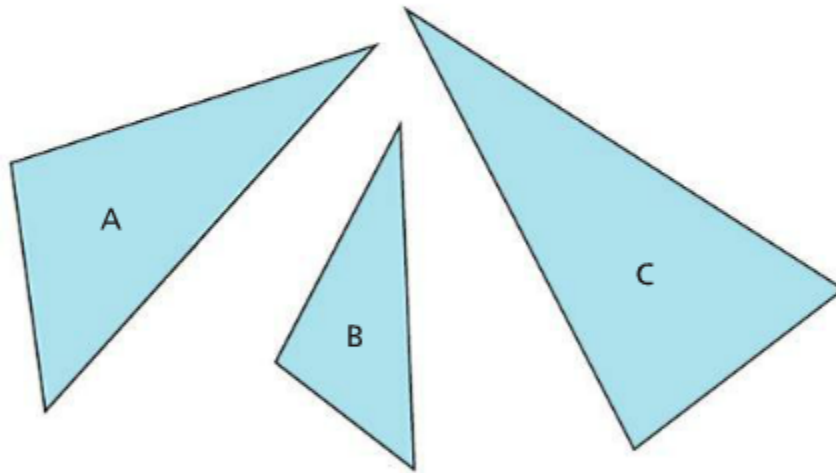
9. **Standardized Test Prep** Elisha has two triangles. One triangle has side lengths of 3 cm, 5 cm, and 7 cm. The other triangle has side lengths of 40 cm, 24 cm, and 56 cm. Are the two triangles scaled copies of each other? If so, what scale factor transforms the first triangle into the second triangle?

A. No, the two triangles are not scaled copies of each other.

B. yes; 8   **C.** yes; $\frac{40}{3}$ **D.** yes; $\frac{24}{5}$

4.05

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7. Two angles of one triangle measure 28° and 31°. Another triangle has two angles that measure 117° and 31°. Are the triangles scaled copies? How can you tell?

8. How can you tell whether two squares are scaled copies of each other?

9. Draw two quadrilaterals that are not scaled copies but in which the sides of one quadrilateral are twice as long as the corresponding sides of the other quadrilateral.

10. Explain why the figures in each pair below are scaled copies of each other, or give a counterexample to show that they need not be scaled copies.

    a. two quadrilaterals

    b. two squares

    c. two quadrilaterals with equal corresponding angle measures

    d. two triangles

    e. two isosceles triangles

    f. two isosceles right triangles

    g. two equilateral triangles

    h. two rhombuses

    i. two regular polygons with the same number of sides

11. Must any two figures of each type below be scaled copies of each other? Explain why or give a counterexample.

    a. rectangles   b. parallelograms

    c. trapezoids   d. isosceles trapezoids

    e. regular hexagons   f. octagons

    g. circles   h. cubes

    i. spheres   j. cylinders

    k. boxes   l. cones

12. **Standardized Test Prep** Which two figures are not necessarily scaled copies of each other?

    A. two rhombuses   B. two squares

    C. two circles   D. two isosceles right triangles