M7+ Unit 5: Dilations, Similarity, and Introducing Slope Study Guide

Name_____ Core _____ Date_____

1. Select all statements that are *not* true.

   a. Dilations of a triangle are similar to the original triangle.

   b. Dilations always increase the length of line segments.

   c. Dilations of an angle are congruent to the original angle.

   d. Dilations of a triangle are congruent to the original.

   e. Dilations take parallel lines to parallel lies.

   f. Dilations decrease the measures of angles.

They can decrease also

Angle measures stay the same

2. Which pair of triangles must be similar?

   a. Triangle 1 and 2 each have a 45° angle.

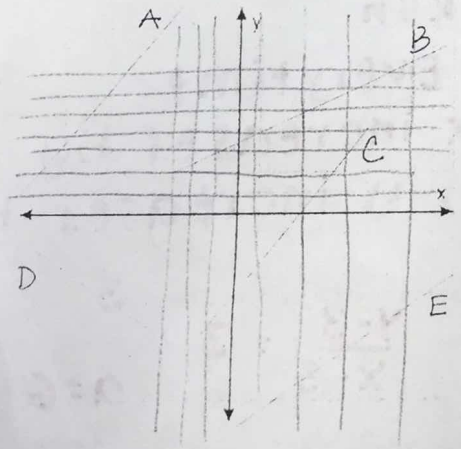
   b. Triangles 3 and 4 are both isosceles. They each have a 50° angle.

   c. Triangle 5 has a 40° angle and a 35° angle. Triangle 6 has a 40° angle and a 105° angle.

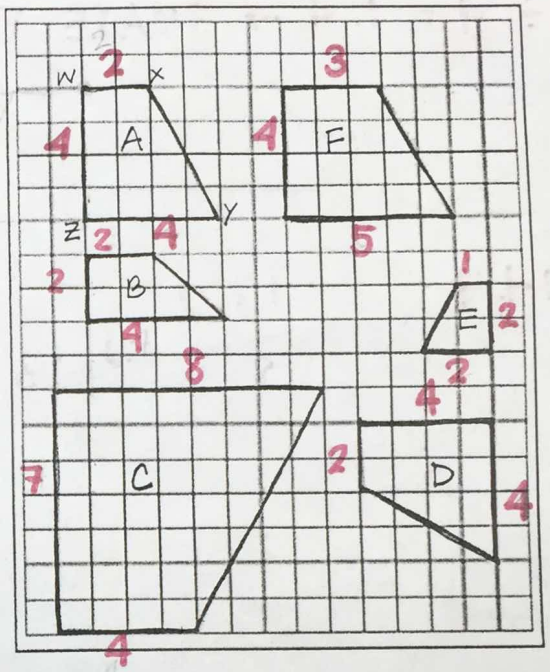
   d. Triangle 7 has a 50° angle and a 45° angle. Triangle 8 has a 45° angle and a 105° angle.

All 3 angles must be equal.

3. Select all the lines that have a slope of $\frac{4}{3}$.



4.



a. Which Polygons are similar to Polygon A?

E and D

SF: $\frac{1}{2}$ SF = 1

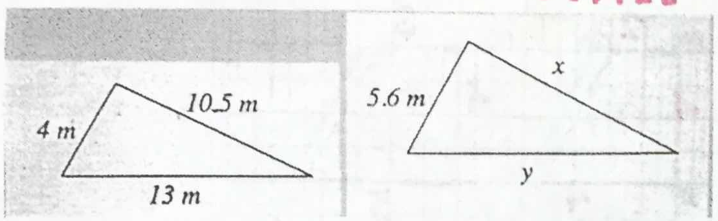
b. Choose one of the polygons that are similar to polygon A, and describe a sequence of transformations that take polygon A to your selected polygon.

From A to E:

1. Reflect over WZ
2. Translate 12 right and 6 down
3. Dilate with SF $\frac{1}{2}$ using point W as the center.

5. The triangles below are similar. Find the values of x and y.

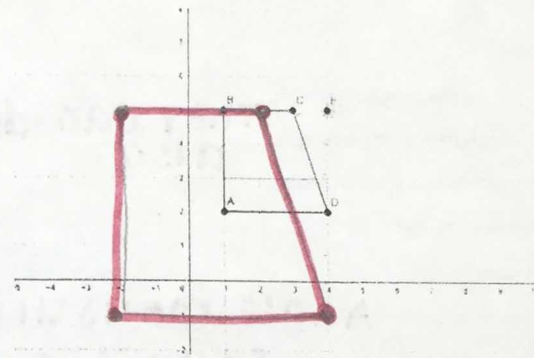
5.6 ÷ 4 = 1.4 → SCALE FACTOR!!



10.5 × 1.4 → x = 14.7

y = 18.2 ↘ 13 × 1.4

7. Dilate figure ABCD using E as the center of dilation with a scale factor of 2.



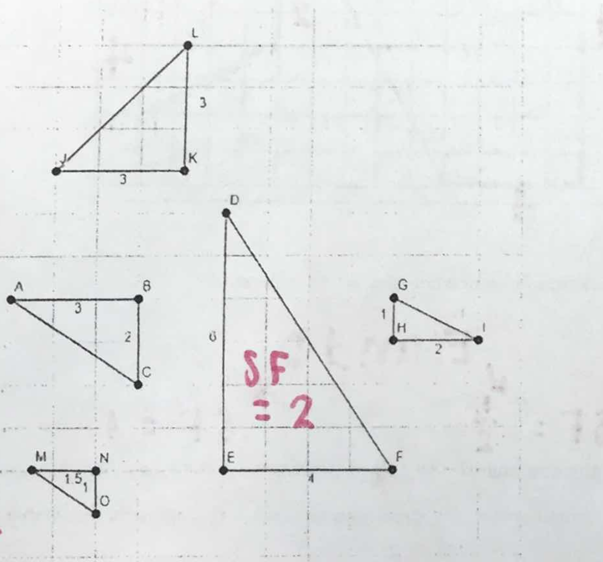
$x_1\ y_1 \quad x_2\ y_2$

(3,3) (7,15)

SLOPE:

$\frac{y_2-y_1}{x_2-x_1} = \frac{15-3}{7-3} = \frac{12}{4} = \frac{3}{1} = 3$

6.



SF = 2

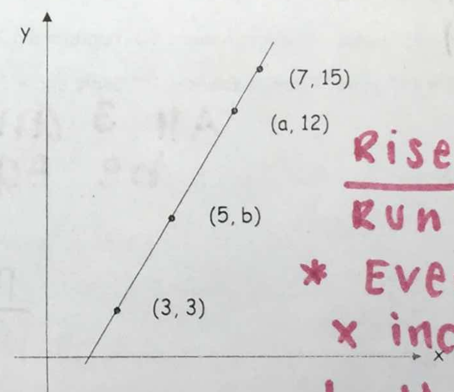
SF = $\frac{1}{2}$

a. Name all the triangles that are similar to triangle ABC. For each answer you give, tell the scale factor. DEF and MNO

b. Describe a sequence of transformations that would take triangle ABC to triangle MNO. ① Translate $\frac{1}{2}$ right and 4 down

② Dilate with SF $\frac{1}{2}$ using point A as the center

8. All the points in the picture are on the same line.



$\frac{Rise}{Run}$

* Everytime x increases by 1, y increases by 3

a. Find the slope of the line. Explain or show your reasoning. 3

b. Write and equation for the line. $\frac{y-3}{x-3} = 3$

c. Find the values for a and b. Explain or show your reasoning. a = 6 b = 9

d. What is the y-coordinate when x = 0? Explain or show your reasoning.

dec-rease of 3 (0, y) (3, 3) decr-ease of 9 y = −6