

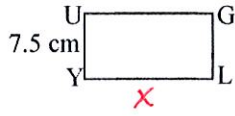
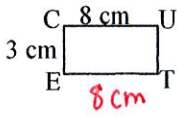
Name _____

Date _____

Day 1 – Dilations and Scale Factor

Dilations as Proportions

Ex) Rectangle CUTE was dilated to create rectangle UGLY. Find the length of LY.



$$\frac{3}{8} \times \frac{7.5}{x}$$

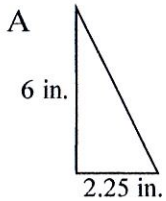
$$3x = 60$$

$$x = 20$$

LY = 20

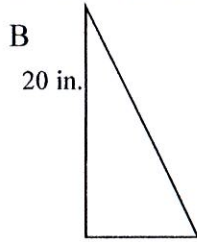
Ex) Determine which of the following figures could be a dilation of the triangle to the right.

(There could be more than one answer)



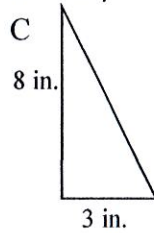
$$\frac{6}{2.25} = 2.666666667$$

yes



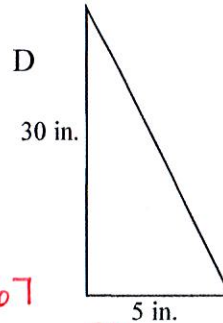
$$\frac{20}{10} = 2$$

NO



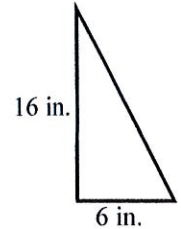
$$\frac{8}{3} = 2.666666667$$

yes



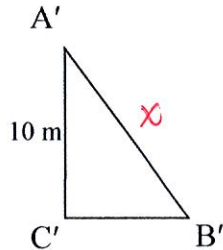
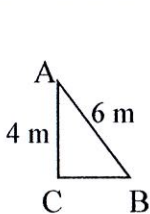
$$\frac{30}{5} = 6$$

NO



$$\frac{16}{6} = \frac{8}{3} = 2.666666667$$

1. Find the length of $\overline{A'B'}$ after the dilation.



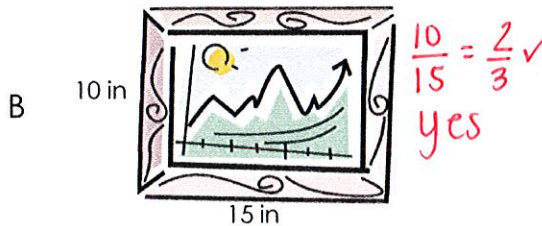
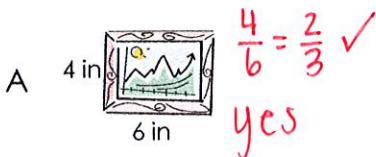
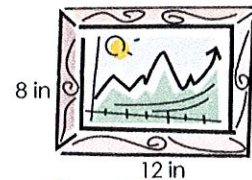
$$\frac{4}{6} \times \frac{10}{x}$$

$$4x = 60$$

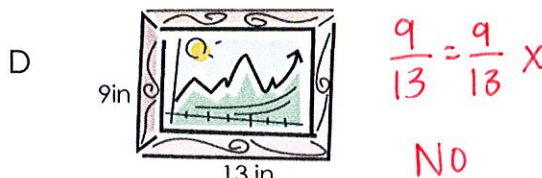
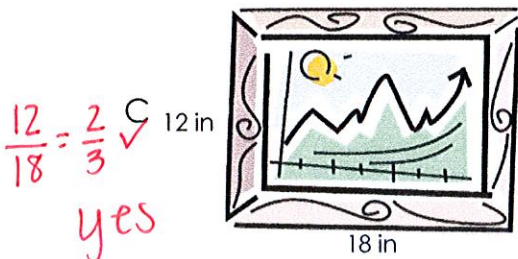
$$x = 15$$

A'B' = 15m

2. Which of the following could **NOT** be an enlargement or reduction (dilation) of the original painting shown at right?



$$\frac{8}{12} = \frac{2}{3}$$



Word Problems:

Write the equation for each and solve. Show all work.

1. Two rectangles are similar. The first is 4 in. wide and 16 in. long. The second is 8 in. wide.

- a) Find the length of the second rectangle.

$$\frac{4}{16} \times \frac{8}{x} \quad x = 32 \quad \boxed{32 \text{ in long}}$$

$$4x = 128$$

- b) How do the perimeters of the two rectangles compare? How does this compare to the scale factor?

$$1^{\text{st}} \quad 2(4) + 2(16) = 40 \text{ in}$$

$$2^{\text{nd}} \quad 2(8) + 2(32) = 80 \text{ in}$$

the perimeter is twice as big. This matches our scale factor of 2.

$$\text{scale factor} = \frac{32}{16} = 2$$

- c) How do the areas of the two rectangles compare? How does this compare to the scale factor?

$$1^{\text{st}} \quad 4(16) = 64 \text{ in}^2$$

$$2^{\text{nd}} \quad 8(32) = 256 \text{ in}^2$$

the area was 4 times bigger. This would be our scale factor squared (but they do not match).

2. Two triangles are similar. The first has a base of 12 in. and a height of 8 in. The second has a base of 36 inches.

- a) Find the height of the triangle.

$$\frac{12}{8} \times \frac{36}{x} \quad x = 24 \quad \boxed{24 \text{ in}}$$

$$12x = 288$$

- b) How do the areas of the two triangles compare? How does this compare to the scale factor?

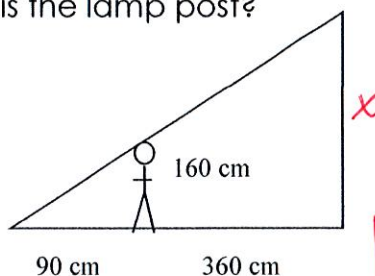
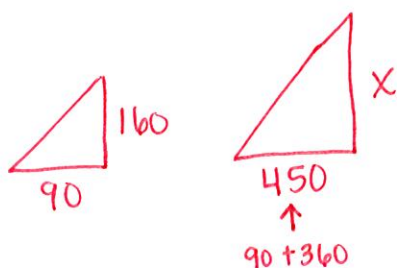
$$1^{\text{st}} \quad \frac{1}{2}(12)(8) = 48$$

$$2^{\text{nd}} \quad \frac{1}{2}(36)(24) = 432$$

The area was 9 times bigger. This would be our scale factor squared (but they do not match)

$$\text{scale factor} = \frac{36}{12} = 3$$

- 3) A girl 160 cm tall, stands 360 cm from a lamp post at night. Her shadow from the light is 90 cm long. How high is the lamp post?



$$\frac{160}{90} = \frac{x}{450}$$

$$90x = 72000$$

$$x = 800$$

The lamp is 800 cm high