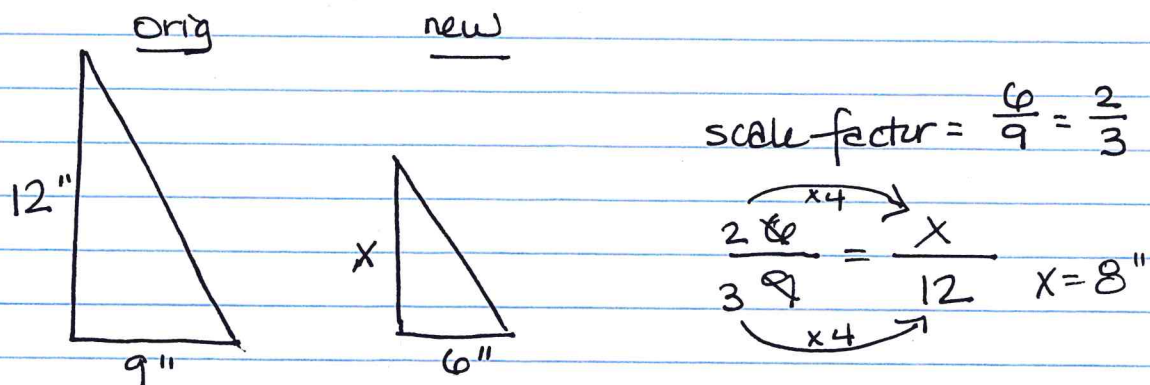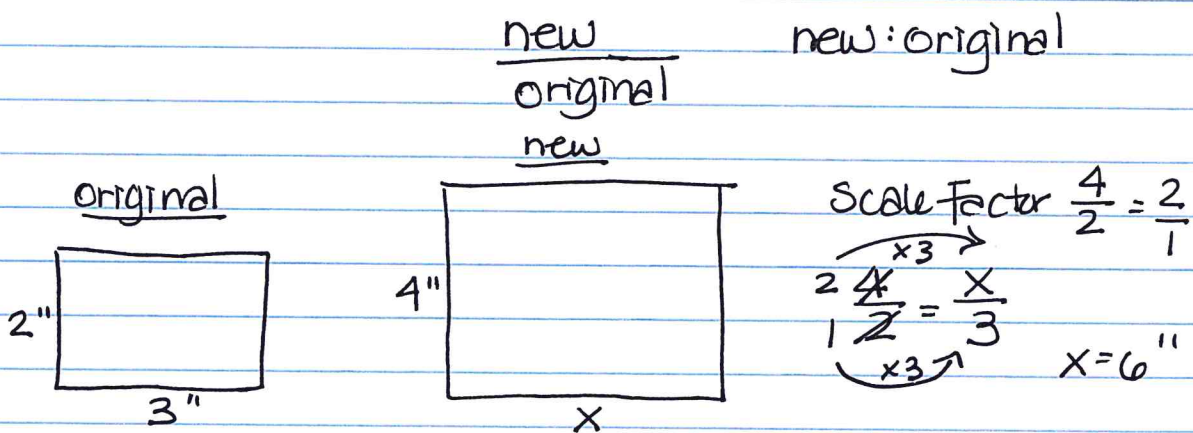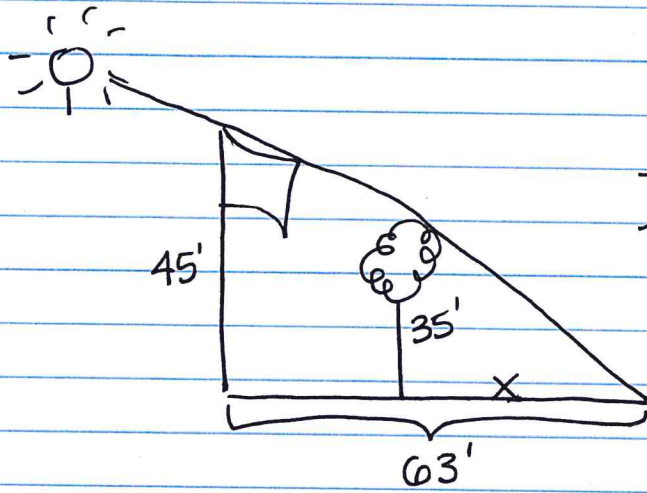# Scale Factor and Similar Figures

Similar Figures: Figures that have exactly the same shape but not necessarily the same size. We say that the sides are proportional because every side on figure 1 has the same ratio or proportion with every side on figure 2.

Corresponding sides: The two sides from the two similar figures that match up. Two figures are similar if all corresponding sides have the same scale factor.

The scale factor (multiplier) is the ratio of any set of corresponding sides. The ratio must be written in the correct order.

$$\frac{new}{original} \qquad new : original$$

original

2"

3"

new

4"

X

Scale Factor $\frac{4}{2} = \frac{2}{1}$

$$\frac{2}{1} \overset{\times 3}{\underset{\times 3}{\frac{4}{2}}} = \frac{X}{3}$$

$X = 6"$

orig

12"

9"

new

X

6"

scale factor $= \frac{6}{9} = \frac{2}{3}$

$$\frac{2}{3} \overset{\times 4}{\underset{\times 4}{\frac{6}{9}}} = \frac{X}{12}$$

$X = 8"$

45'

35'

63'

x

$$\frac{\cancel{45}^{5}}{\cancel{63}_{7}} = \frac{35}{x}$$

5 ×7

×7

7 ×7

x = 49'