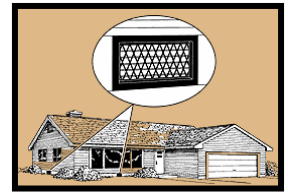


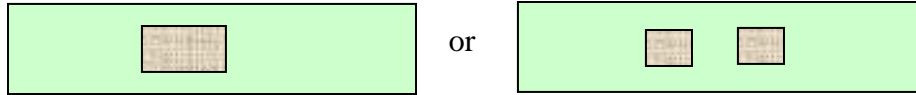
Lesson 5-4: Proportional Parts

Hands-On Activity: *I need to vent!*



Objective:

We want to install rectangular screen vents in the foundation wall of a shed. We'd like to get the most for our money, so we need to consider the amount of airflow and the cost of the materials. The vents being considered are type A which measures 8" x 12" and type B measures 6" x 9". The cost of the vents will include only the framing (the screening material is negligible). We will need to install either one vent of type A or two vents of type B.



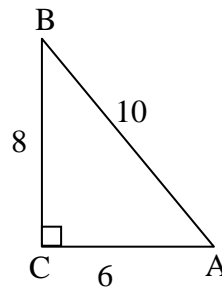
Back-up for your brain: Remember about similar figures and related proportions.

Example of proportional parts of a triangle:

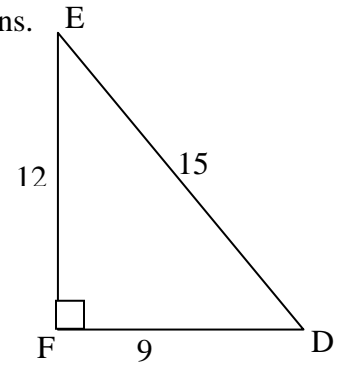
$$\triangle ABC \sim \triangle DEF \text{ with } \frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF} = \frac{2}{3}$$

$$\frac{\text{perimeter}_{\triangle ABC}}{\text{perimeter}_{\triangle DEF}} = \frac{?}{?}$$

$$\frac{\text{area}_{\triangle ABC}}{\text{area}_{\triangle DEF}} = \frac{?}{?} = \left(\frac{?}{?}\right)^2$$



Perimeter = 24
Area = 24 sq. units



Perimeter = 36
Area = 54 sq. units

Procedure:

1. Draw a diagram of each type of vent and label the sides.
2. Find the ratio of the side lengths for type A/ type B.
3. What is the ratio of the perimeters of the vents.? This will represent the cost of materials.
4. What is the ratio of the areas of the vents? This will represent the allowable airflow.
5. Is the area ratio substantially greater than the perimeter ratio?

What does this mean? Will it be better to install on type A vent or two type B vents?