Scale factor problems :

Scale

A scale shows the relationship between similar models or drawings. You can use ratios and proportions to solve problems involving scales.

Example 1

- Javier made a scale model of his car using a scale of 1:7. If the length of Javier's model car is 1.54 feet, what is the length of the original car?

  Use the scale to set up a proportion and solve for the unknown.

$$\frac{1}{7} = \frac{1.54}{x}$$

  Then cross-multiply and solve the resulting equation for x.

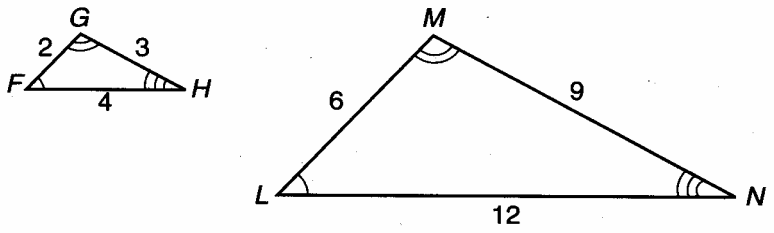
$$1 \bullet x = 7 \bullet 1.54$$
$$x = 10.78$$

  The length of the original car is 10.78 feet.

Solving applied problems using similar triangles :

Similar triangle

Triangles that have the same shape but not necessarily the same size are similar. The corresponding angles of similar triangles are congruent, and the lengths of their corresponding sides are proportional. Study the following diagram to understand the proportionality of each set of sides in similar triangles.



Corresponding angles: $\angle F \cong \angle L$ $\angle G \cong \angle M$ $\angle H \cong \angle N$

Corresponding sides: $\frac{FG}{LM} = \frac{2}{6} = \frac{1}{3}$ $\frac{GH}{MN} = \frac{3}{9} = \frac{1}{3}$ $\frac{FH}{LN} = \frac{4}{12} = \frac{1}{3}$

Therefore, $\triangle FGH \sim \triangle LMN$.