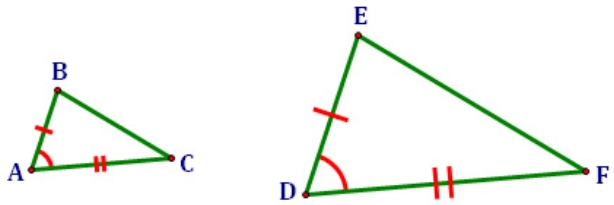


Pre-Algebra Similar Triangles

Similar Triangle Parts

In similar triangles,

- Corresponding sides are proportional.
- Corresponding angles are congruent.



In working with similar triangles is crucial to line up corresponding vertices. Once this is done, the rest of the picture becomes clear. In the picture above,

- Point **A** corresponds to Point **D**.
- Point **B** corresponds to Point **E**.
- Point **C** corresponds to Point **F**.

Naming Similar Triangles

Based on the above Correspondences, we can say:

$$\begin{aligned} \triangle ABC \sim \triangle DEF & \text{ or } \triangle BCA \sim \triangle EFD & \text{ or } \triangle CAB \sim \triangle FDE & \text{ or } \\ \triangle ACB \sim \triangle DFE & \text{ or } \triangle BAC \sim \triangle EDF & \text{ or } \triangle CBA \sim \triangle FED \end{aligned}$$

All of these are correct because they match corresponding parts in the naming. Each of these similarities implies the following relationships between parts of the two triangles:

Angles: $\angle A \cong \angle D$ and $\angle B \cong \angle E$ and $\angle C \cong \angle F$

Sides: $\frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD}$

The relationships among the sides of the triangles allow us to calculate information about some of the sides based on information about other sides. For example, if we know that $AB = 6$, $DE = 12$ and $CA = 10$, we can calculate $x = FD$ as follows:

$$\frac{AB}{DE} = \frac{CA}{FD} \implies \frac{6}{12} = \frac{10}{x}$$

$$6x = 120$$

$$x = 20$$