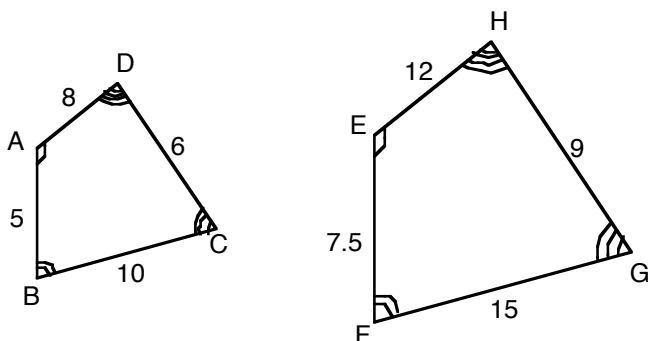


Section 7.2 Exploring Similar Polygons

Objective To identify similar figures and to solve problems involving similar figures.

Definition of Similar Polygons Two polygons are similar if and only if their corresponding angles are congruent and the measures of their corresponding sides are proportional.



The symbol \sim means is similar to. We write *quadrilateral* $ABCD \sim$ *quadrilateral* $EFGH$. Just in congruence, the order of the letters indicates the vertices that correspond. We can make the following statements about quadrilaterals $ABCD$ and $EFGH$.

$$\angle A \cong \angle E \quad \angle B \cong \angle F \quad \angle C \cong \angle G \quad \angle D \cong \angle H$$

$$\frac{AB}{EF} = \frac{BC}{FG} = \frac{CD}{GH} = \frac{DA}{HE} = \frac{2}{3}$$

Scale Factor The ratio of the lengths of two corresponding sides of two similar polygons is called the scale factor.

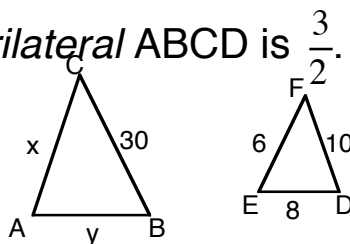
From above, the scale factor of *quadrilateral* $ABCD \sim$ *quadrilateral* $EFGH$ is $\frac{2}{3}$.

The scale factor of *quadrilateral* $EFGH$ to *quadrilateral* $ABCD$ is $\frac{3}{2}$.

Example

$$\triangle ABC \sim \triangle DEF$$

Find the values of x and y .



A square has vertices $D(0,0)$, $E(5,0)$, $F(0,5)$ and $G(5,5)$. If the coordinates of each vertex are multiplied by 3, will the new figure be similar to the original?

Transformations

A **dilation** is a transformation that will produce a