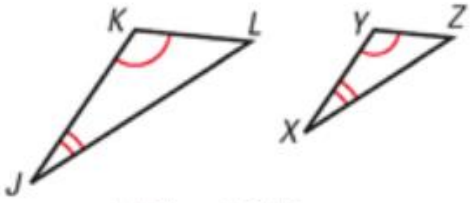
6.3 Prove Triangles Similar by AA

POSTULATE 22 Angle-Angle (AA) Similarity Postulate

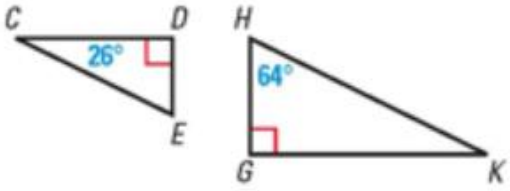
If two angles of one triangle are congruent to two angles of another triangle, then the two triangles are similar.



$\triangle JKL \sim \triangle XYZ$

EXAMPLE 1 Use the AA Similarity Postulate

Determine whether the triangles are similar. If they are, write a similarity statement. Explain your reasoning.



Solution

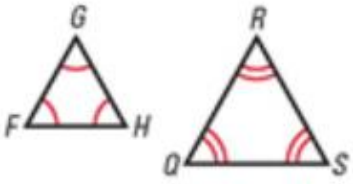
Because they are both right angles, $\angle D$ and $\angle G$ are congruent.

By the Triangle Sum Theorem, $26° + 90° + m\angle E = 180°$, so $m\angle E = 64°$. Therefore, $\angle E$ and $\angle H$ are congruent.

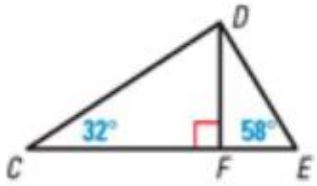
▶ So, $\triangle CDE \sim \triangle KGH$ by the AA Similarity Postulate.

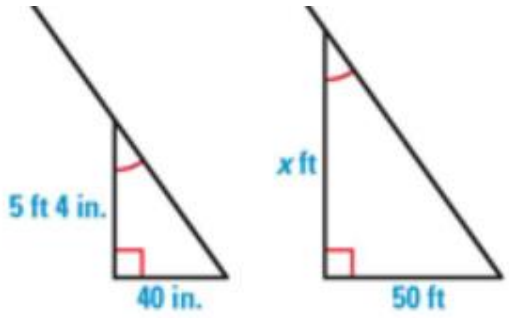
Show that the triangles are similar. Write a similarity statement.

1. $\triangle FGH$ and $\triangle RQS$



2. $\triangle CDF$ and $\triangle DEF$





You can use a proportion to find the height x. Write 5 feet 4 inches as 64 inches so that you can form two ratios of feet to inches.

$$\frac{x \text{ ft}}{64 \text{ in.}} = \frac{50 \text{ ft}}{40 \text{ in.}}$$ **Write proportion of side lengths.**

$$40x = 64(50)$$ **Cross Products Property**

$$x = 80$$ **Solve for *x*.**

▶ The flagpole is 80 feet tall. The correct answer is C. (A) (B) (C) (D)