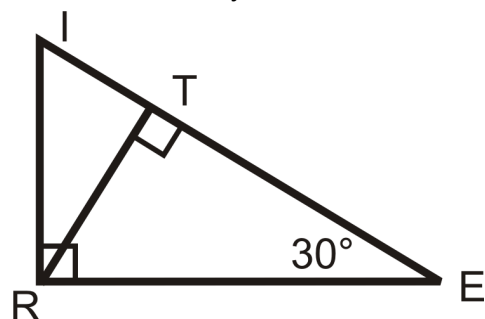


Example A

Write the similarity statement for the triangles below.



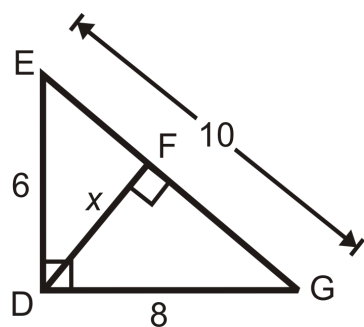
If $m\angle E = 30^\circ$, then $m\angle I = 60^\circ$ and $m\angle TRE = 60^\circ$. $m\angle IRT = 30^\circ$ because it is complementary to $\angle TRE$. Line up the congruent angles in the similarity statement.

$$\triangle IRE \sim \triangle ITR \sim \triangle RTE$$

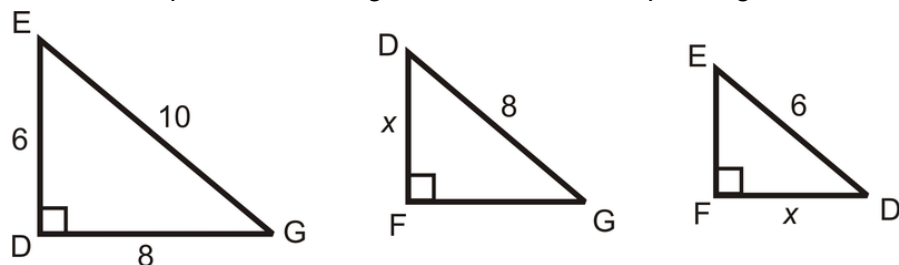
We can also use the side proportions to find the length of the altitude.

Example B

Find the value of x .



First, let's separate the triangles to find the corresponding sides.



Now we can set up a proportion.

$$\frac{\text{shorter leg in } \triangle EDG}{\text{shorter leg in } \triangle DFG} = \frac{\text{hypotenuse in } \triangle EDG}{\text{hypotenuse in } \triangle DFG}$$

$$\frac{6}{x} = \frac{10}{8}$$

$$48 = 10x$$

$$4.8 = x$$

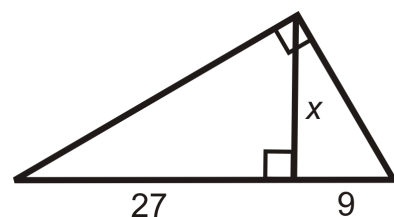
Example C

Find the geometric mean of 24 and 36.

$$x = \sqrt{24 \cdot 36} = \sqrt{12 \cdot 2 \cdot 12 \cdot 3} = 12\sqrt{6}$$

Example D

Find the value of x .



Using similar triangles, we have the proportion

$$\frac{\text{shortest leg of smallest } \triangle}{\text{shortest leg of middle } \triangle} = \frac{\text{longer leg of smallest } \triangle}{\text{longer leg of middle } \triangle}$$

$$\frac{9}{x} = \frac{x}{27}$$

$$x^2 = 243$$

$$x = \sqrt{243} = 9\sqrt{3}$$