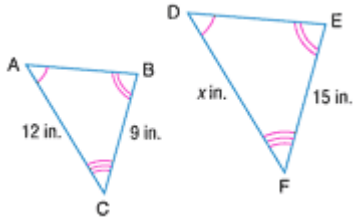


Lesson 9-7

Example 1 Find Measures of Similar Triangles
If $\triangle ABC \sim \triangle DEF$, what is the value of x ?



The corresponding sides are proportional.

$$\frac{BC}{EF} = \frac{AC}{DF}$$

Write a proportion.

$$\frac{9}{15} = \frac{12}{x}$$

Replace BC with 9, EF with 15, AC with 12, and DF with x .

$$9 \cdot x = 15 \cdot 12$$

Find the cross products.

$$9x = 180$$

Simplify.

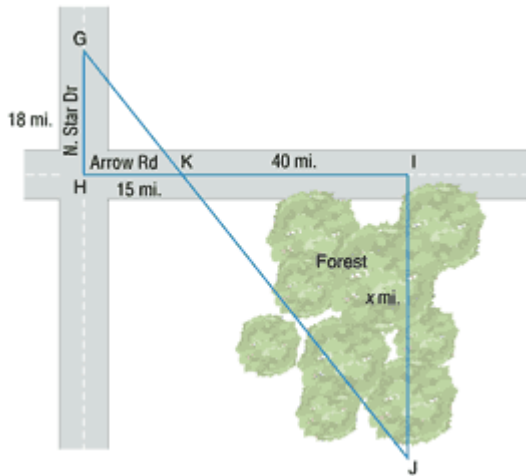
$$x = 20$$

Mentally divide each side by 9.

The value of x is 20.

Example 2 Use Indirect Measurement

MAPS In the figure, $\triangle GHK \sim \triangle JIK$. Find the distance across the forest.



$$\frac{IK}{KH} = \frac{IJ}{HG}$$

Write a proportion.

$$\frac{40}{15} = \frac{x}{18}$$

Substitution

$$40 \cdot 18 = 15 \cdot x$$

Find the cross products.

$$720 = 15x$$

Multiply.

$$48 = x$$

Divide each side by 15.

The distance across the forest is 48 miles.

Example 3 **Use Shadow Reckoning**

BUILDING **A large office building casts a 150-foot shadow at the same time a nearby pedestrian casts a 3 foot shadow. If the pedestrian is 6 feet tall, how tall is the office building?**

Explore You know the lengths of the shadows and the height of the pedestrian. You need to find the height of the office building.

Plan Write a proportion that compares the corresponding sides of the similar triangles. Then solve the proportion.

Solve

pedestrian's height	→	$\frac{6}{h} = \frac{3}{150}$	←	pedestrian's shadow	
building's height	→		←	building's shadow	Write a proportion.
		$6 \cdot 150 = h \cdot 3$			Find the cross products.
		$900 = 3h$			Multiply.
		$300 = h$			Mentally divide each side by 3.

The height of the office building is 300 feet.

Examine Use estimation. The pedestrian's height is twice the height of his shadow. The height of the office building should be twice the height of its shadow, or 300 feet.