

A C C

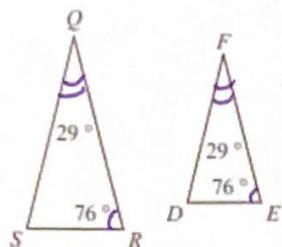
7 . 3

W A R M

U P

State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

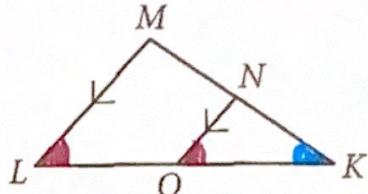
1.



$$\begin{aligned} \angle E &\cong \angle R \\ \angle Q &\cong \angle F \end{aligned} \} \text{ given}$$

$\triangle QRS \sim \triangle FED$ by AA Similarity

2.

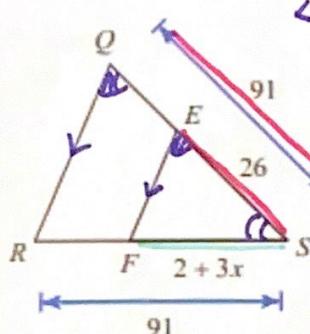


$$\begin{aligned} \angle K &\cong \angle K \text{ Reflexive} \\ \angle L &\cong \angle NOK \text{ // lines form } \cong \text{ corr. } \angle s \end{aligned}$$

$\triangle KNO \sim \triangle KML$

Identify the Similar triangles, how you know they are similar, find x.

3.



$$\angle Q \cong \angle FES \text{ // lines form } \cong \text{ corr. angles}$$

$$\angle S \cong \angle S \text{ Reflexive}$$

Must use full \triangle sides

$$\frac{26}{91} = \frac{2+3x}{91}$$

$$2366 = 91(2+3x)$$

$$2366 = 182 + 273x$$

$$2184 = 273x$$

$$8 = x$$

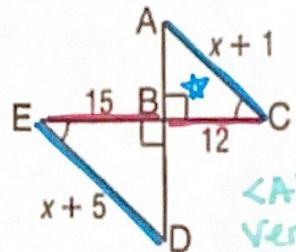
Indirect Measurement

$\triangle QSR \sim \triangle EFS$

Bc AA Similarity

$$x = 8$$

4.



$$\begin{aligned} \angle ABC &\cong \angle DBE \text{ Vertical } \angle s \text{ are } \cong \\ \angle E &\cong \angle C \text{ given} \end{aligned}$$

$\triangle ABC \sim \triangle DBE$

BC AA Similarity

$$x = 15$$

$$\frac{x+1}{x+5} = \frac{12}{15}$$

$$15(x+1) = 12(x+5)$$

$$15x + 15 = 12x + 60$$

$$3x = 45$$

$$x = 15$$

Example 5. A flagpole that is 11 feet tall casts a 5 and a half foot shadow. At the same time of day, a nearby building casts a 10 ft, 7 in shadow. How tall is the building?

$$\begin{aligned} 132\text{in} &= 11 \text{ft} \\ 5\text{ft} &= 60\text{in} \\ 60+6 &= 66\text{in} \\ 12 \times 5 + 6 &= 66\text{in} \end{aligned}$$

$$\begin{aligned} ? &= \text{?} \\ 10\text{ft } 7\text{in} &= 120\text{in} + 7\text{in} \\ 120+7 &= 127\text{in} \\ 127\text{in} &= 127\text{in} \end{aligned}$$

$$\frac{x}{132} = \frac{127}{66}$$

$$x = 254\text{in}$$

Convert to ft AND inches

$$254 \div 12$$

$$21.166$$

so 21 ft and 2 in

$$21\text{ ft} = 252\text{ in}$$

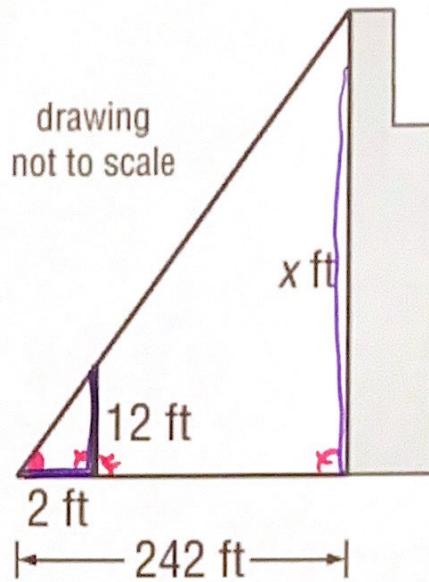
2 inches more than 21 ft

Example 6. Josh wanted to measure the height of the Sears Tower in Chicago. He used a 12-foot light pole and measured its shadow at 1 p.m. The length of the shadow was 2 feet. Then he measured the length of the Sears Tower's shadow and it was 242 feet at the same time. What is the height of the Sears Tower?

$$\frac{x}{12} = \frac{242}{2}$$

$$x = 1452 \text{ ft}$$

No converting because
it was all in
the same
unit of
measure.



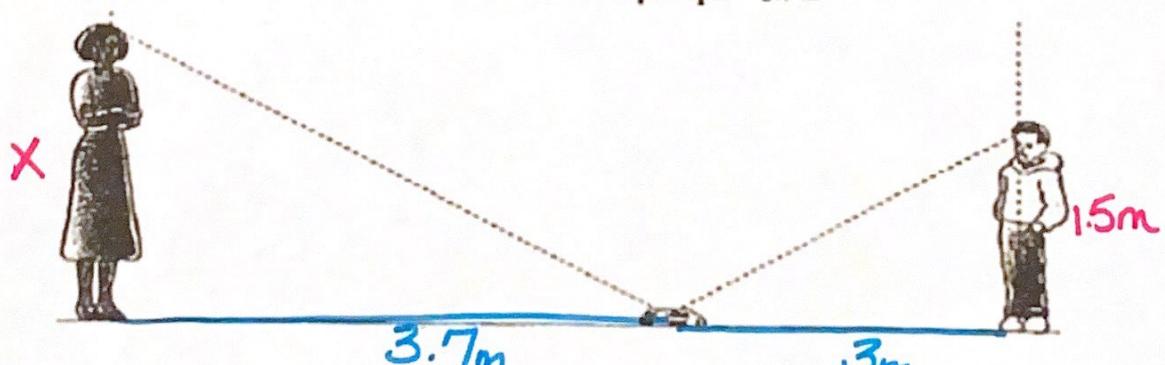
Example 7.

The principal asked Hank to demonstrate what he was learning in math class. Hank decided to use the mirror method to estimate the principal's height. Here are the measurements Hank recorded. Use them to find the principal's height.

Height from the ground to Hank's eyes = 1.5 m

Distance from the center of the mirror to Hank = 3 m

Distance from the center of the mirror to the principal = 3.7 m



$$\frac{x}{1.5} = \frac{3.7}{3}$$

$$x = 1.85$$

The principal is 1.85m tall