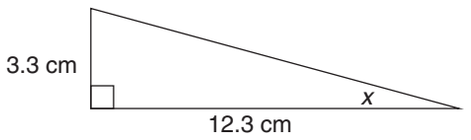
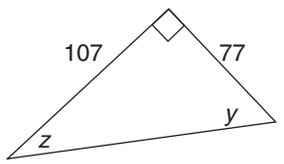
Check Up

1. Use the tangent table to determine the unknown angle measures.

a.

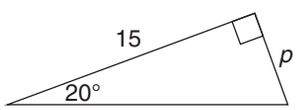


b.

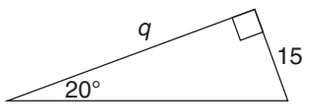


2. Use the tangent table to determine the unknown side lengths. Express your answers to the nearest tenth.

a.



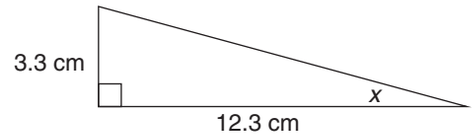
b.



Compare your answers.

1. Use the tangent table to determine the unknown angle measures.

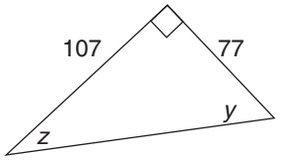
a.



$$\tan x = \frac{\text{length opposite } x}{\text{length adjacent to } x}$$
$$\tan x = \frac{3.3 \text{ cm}}{12.3 \text{ cm}}$$
$$\tan x \doteq 0.27$$

Looking at the table, it can be seen that $\tan 15^\circ \doteq 0.27$, so $x \doteq 15^\circ$.

b.



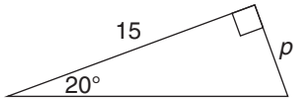
$$\tan y = \frac{\text{length opposite } y}{\text{length adjacent to } y}$$
$$\tan y = \frac{107}{77}$$
$$\tan y \doteq 1.39$$

Looking at the table, it can be seen that $\tan 55^\circ \doteq 1.43$. This is the closest value to 1.39, so $y \doteq 55^\circ$.

$$\tan z = \frac{\text{length opposite } z}{\text{length adjacent to } z}$$
$$\tan z = \frac{77}{107}$$
$$\tan z \doteq 0.72$$

Looking at the table, it can be seen that $\tan 35^\circ \doteq 0.70$. This is the closest value to 0.72, so $z \doteq 35^\circ$.

2. Use the tangent table to determine the unknown side lengths. Express your answers to the nearest tenth.

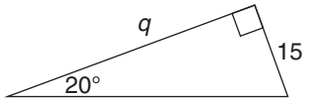
a. 

$$\tan 20^\circ = \frac{\text{length opposite } 20^\circ}{\text{length adjacent to } 20^\circ}$$

$$0.36 \doteq \frac{p}{15}$$

$$0.36 \cdot 15 \doteq \frac{p}{15} \cdot 15$$

$$5.4 \doteq p$$

b. 

$$\tan 20^\circ = \frac{\text{length opposite } 20^\circ}{\text{length adjacent to } 20^\circ}$$

$$0.36 \doteq \frac{15}{q}$$

$$0.36 \cdot q \doteq \frac{15}{q} \cdot q$$

$$0.36q \doteq 15$$

$$\frac{0.36q}{0.36} \doteq \frac{15}{0.36}$$

$$q \doteq 41.7$$

E. Using the Tangent Ratio with a Calculator

Until now, you have been referencing the tangent table to determine an angle measure from a tangent ratio or the tangent ratio from an angle measure. The table you've been using provides the approximated information for some angles, but not for all possible angles. Fortunately, most scientific and most graphing calculators are able to provide this information for all angles and ratios.

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To determine the tangent ratio of an angle, use the "tan" function.