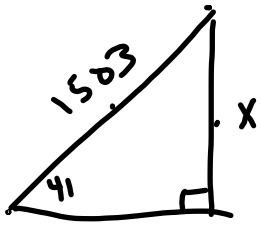
ACP Geometry
Right Triangle Trigonometry Practice II

Name: _____
Date: _____

Use trigonometry to solve each word problem. Draw a diagram if necessary.

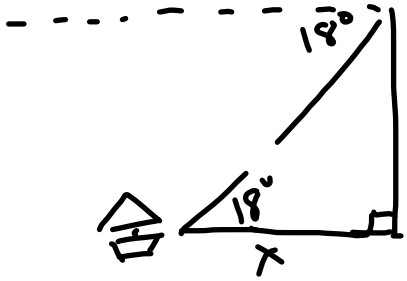
Meteorology A meteorologist measures the angle of elevation of a weather balloon as 41°. A radio signal from the balloon indicates that it is 1503 m from his location. To the nearest meter, how high above the ground is the balloon?



$\sin 41 = \frac{x}{1503}$

$x = 986\ m.$

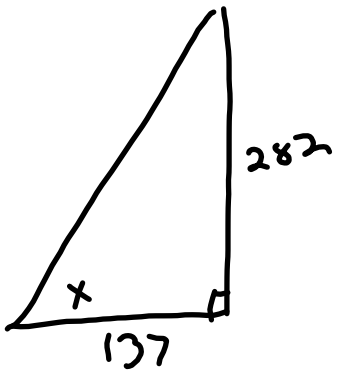
Indirect Measurement Miguel looks out from the crown of the Statue of Liberty approximately 250 ft above ground. He sights a ship coming into New York harbor and measures the angle of depression as 18°. Find the distance from the base of the statue to the ship to the nearest foot.



$\tan 18 = \frac{250}{x}$

$x = 769\ ft.$

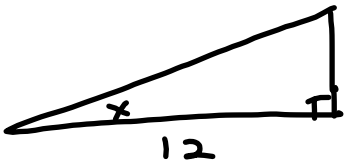
Flagpole The world's tallest unsupported flagpole is a 282-ft-tall steel pole in Surrey, British Columbia. The shortest shadow cast by the pole during the year is 137 ft long. To the nearest degree, what is the angle of elevation of the sun when the shortest shadow is cast?



$\tan^{-1} x = \frac{282}{137}$

$x = 64°$

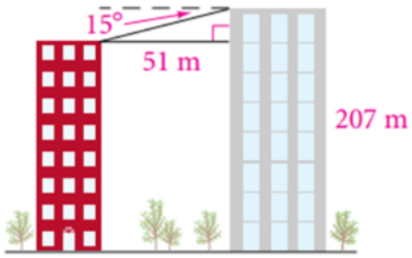
Engineering The Americans with Disabilities Act states that wheelchair ramps can have a slope no greater than $\frac{1}{12}$. Find the angle of elevation of a ramp with this slope. Round your answer to the nearest tenth.



$\tan^{-1} x = \frac{1}{12}$

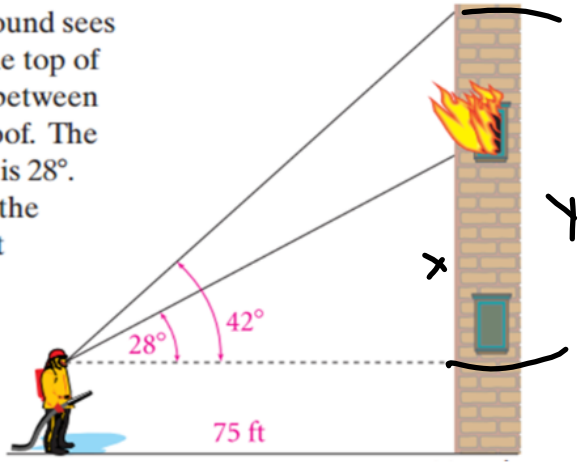
$x = 4.8^\circ$

Construction Two office buildings are 51 m apart. The height of the taller building is 207 m. The angle of depression from the top of the taller building to the top of the shorter building is 15°. Find the height of the shorter building to the nearest meter.



Aerial Television A blimp is providing aerial television views of a football game. The television camera sights the stadium at a 7° angle of depression. The blimp's altitude is 400 m. What is the line-of-sight distance from the TV camera to the stadium, to the nearest hundred meters?

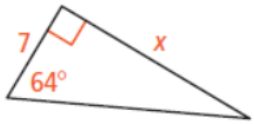
Firefighting A firefighter on the ground sees fire break through a window near the top of the building. There is voice contact between the ground and firefighters on the roof. The angle of elevation to the windowsill is 28°. The angle of elevation to the top of the building is 42°. The firefighter is 75 ft from the building and her eyes are 5 ft above the ground. What roof-to-windowsill distance can she report to the firefighters on the roof?

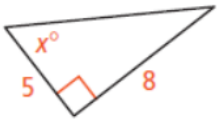


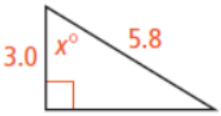
Recreation A skateboarding ramp is 12 in. high and rises at an angle of 17°. How long is the base of the ramp? Round to the nearest inch.

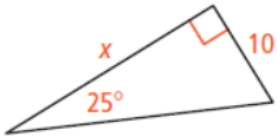
Public Transportation An escalator in the subway station has a vertical rise of 195 ft 9.5 in., and rises at an angle of 10.4°. How long is the escalator? Round to the nearest foot.

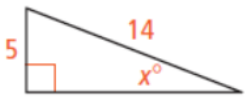
Find each missing measure. Round to the nearest tenth.

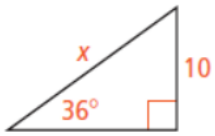
1. 

2. 

3. 

4. 

5. 

6. 

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