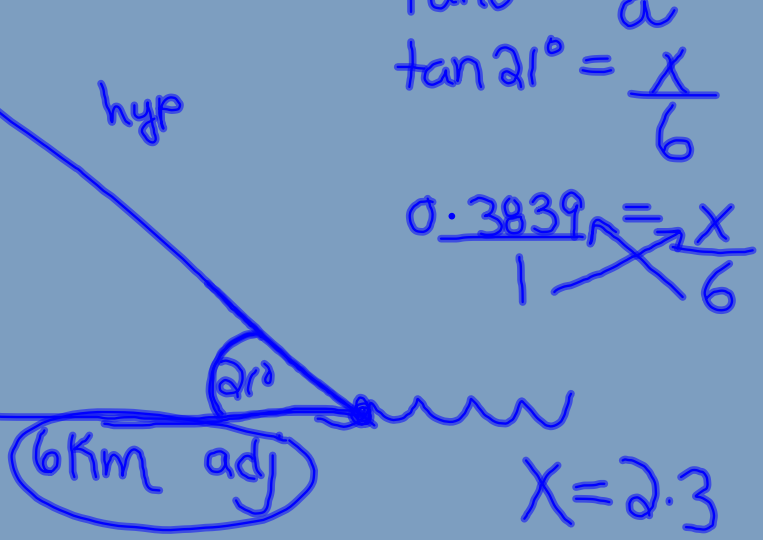


An angle of depression from the top of a water tower to a lake in the distance is 21° . If the lake is 6 km from the base of the the water tower, how tall is the water tower?

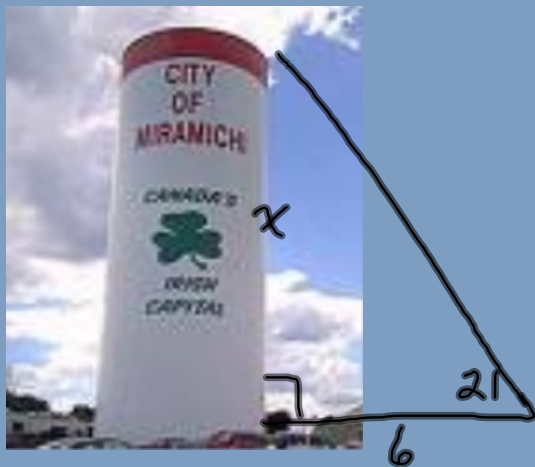


$$\tan \theta = \frac{o}{a}$$
$$\tan 21^\circ = \frac{X}{6}$$

$$0.3839 = \frac{X}{6}$$

$$X = 2.3$$

An angle of depression from the top of a water tower to a lake in the distance is 21° . If the lake is 6 km from the base of the the water tower, how tall is the water tower?



$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 21 = \frac{x}{6}$$

$$0.3839 = \frac{x}{6}$$

$$x = 2.3$$

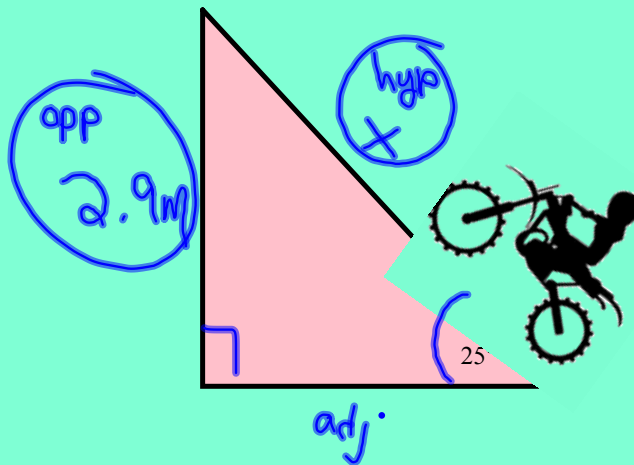
The tower is
2.3 km tall.

...??...



$$\frac{3x}{1/3} = \frac{12}{3} \cdot \frac{1}{3}$$

In order to jump eight cars safely on his dirt bike, Ted must use a ramp. A bug on the ground follows the path in which Ted must travel, the angle of elevation is 25° . Assuming the ramp is 2.9 m high, how long is the ramp?



$$\begin{aligned} \sin \theta &= \frac{o}{h} \\ \sin 25^\circ &= \frac{2.9}{x} \\ 0.4226 &= \frac{2.9}{x} \quad x = 6.9 \\ \frac{0.4226}{0.4226} \cdot \frac{2.9}{0.4226} &= \frac{2.9}{0.4226} \end{aligned}$$



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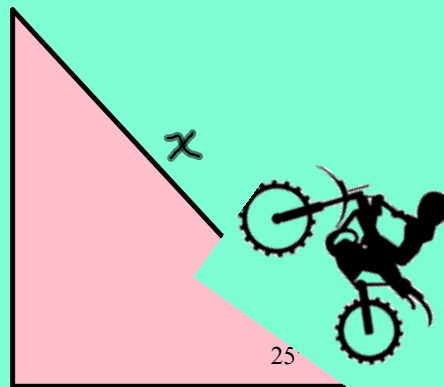
$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 25 = \frac{2.9}{x}$$

$$0.4226 = \frac{2.9}{x}$$

$$0.4226x = 2.9$$

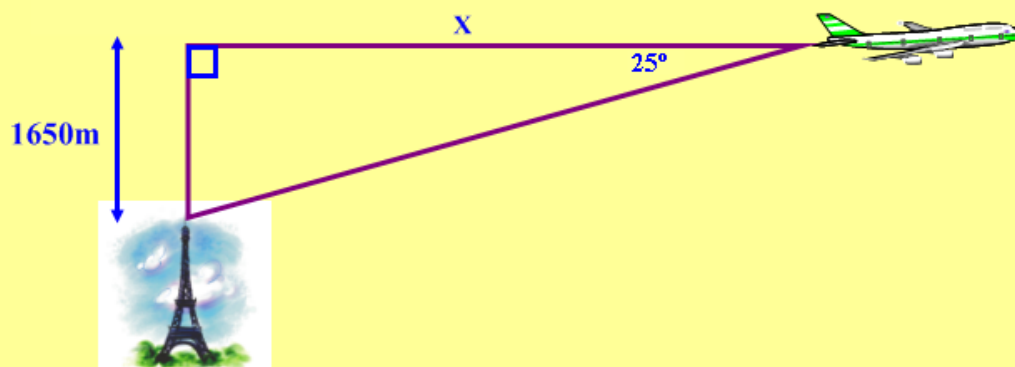
$$x = 6.9$$



The ramp is 6.9m long.

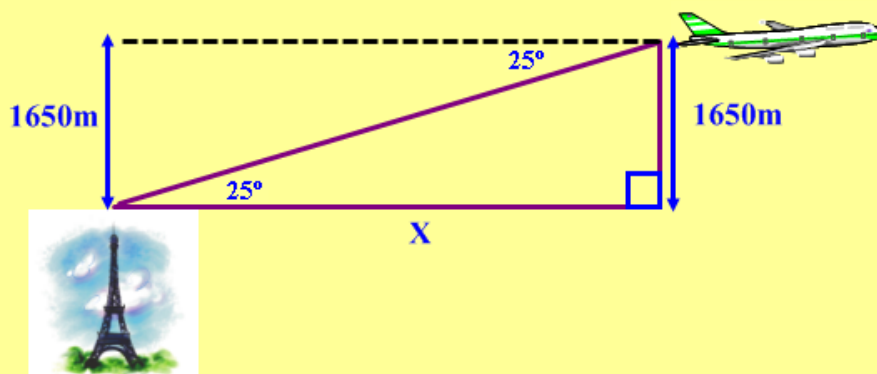
Warm Up Questions !!

- #1 The angle of depression from a plane in the air to the top of a tower is 25° . The altitude of the plane is 1650m higher than the top of the tower. What is the horizontal distance from the plane to the tower?

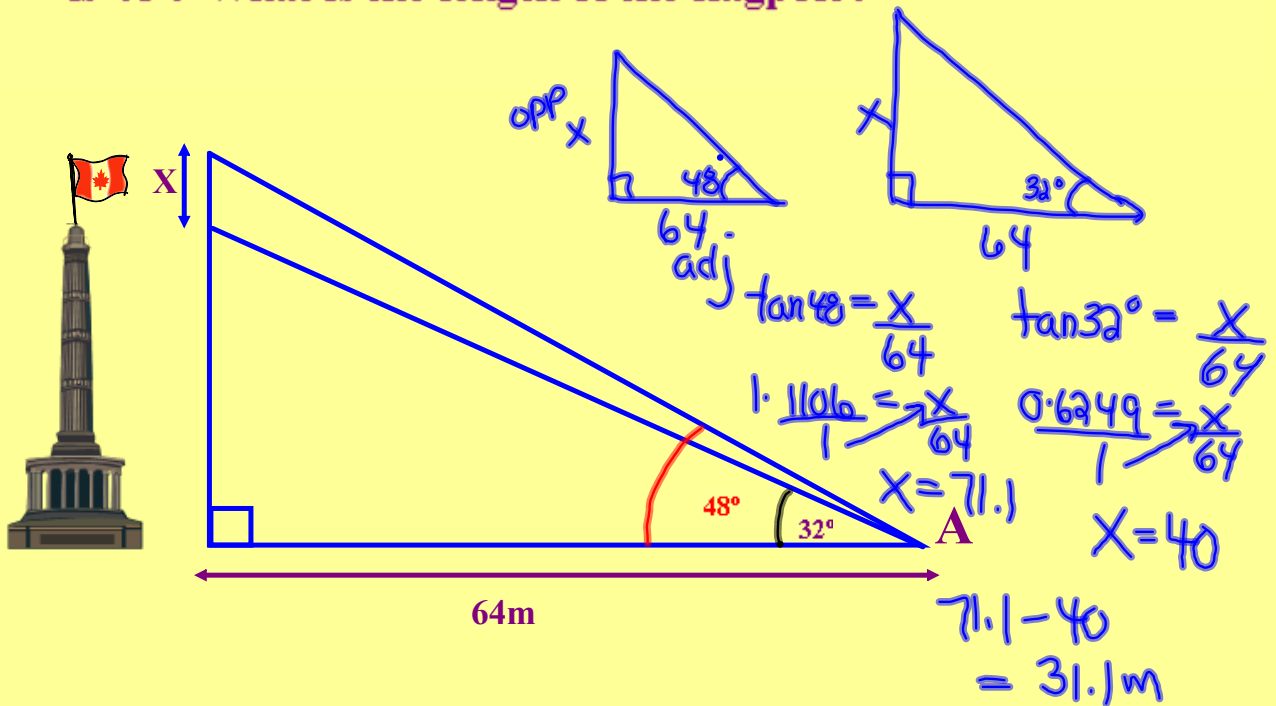


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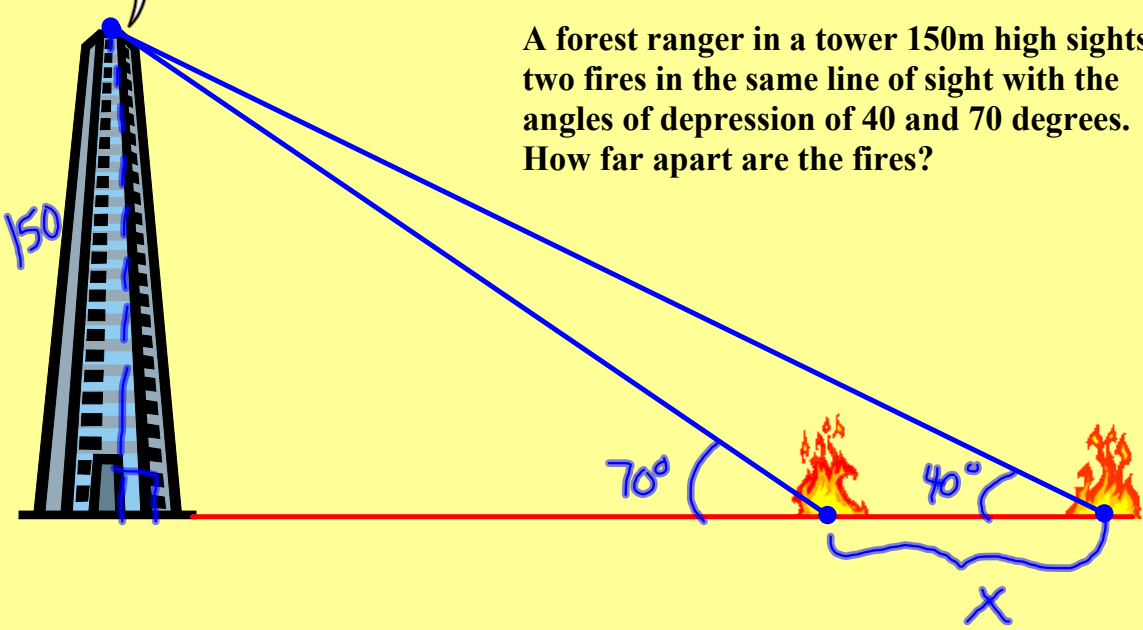
#2 The angle of elevation to the top of a building from point A is 32° . Point A is located 64.0m from the base of the building. A flagpole is on the top of the building. The angle of elevation from point A to the top of the flagpole is 48° . What is the length of the flagpole?



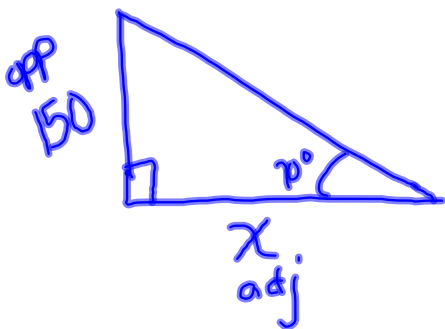
#3

A forest ranger in a tower 150m high sights two fires in the same line of sight with the angles of depression of 40 and 70 degrees. How far apart are the fires?

FIRE!



A forest ranger in a tower 150m high sights two fires in the same line of sight with the angles of depression of 40 and 70 degrees. How far apart are the fires?



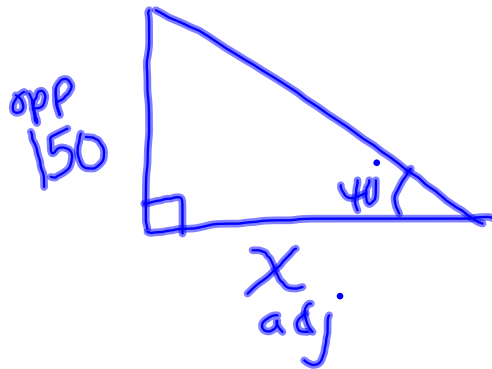
$$\tan \theta = \frac{o}{a}$$

$$\tan 70^\circ = \frac{150}{X}$$

$$2.7475 = \frac{150}{X}$$

$$\frac{2.7475X}{2.7475} = \frac{150}{2.7475}$$

$$X = 54.6$$



$$\tan 40^\circ = \frac{150}{X}$$

$$\frac{0.8391}{1} = \frac{150}{X}$$

$$\frac{0.8391X}{0.8391} = \frac{150}{0.8391}$$

$$X = 178.8$$

$$178.8 - 54.6 = 124.2m$$

