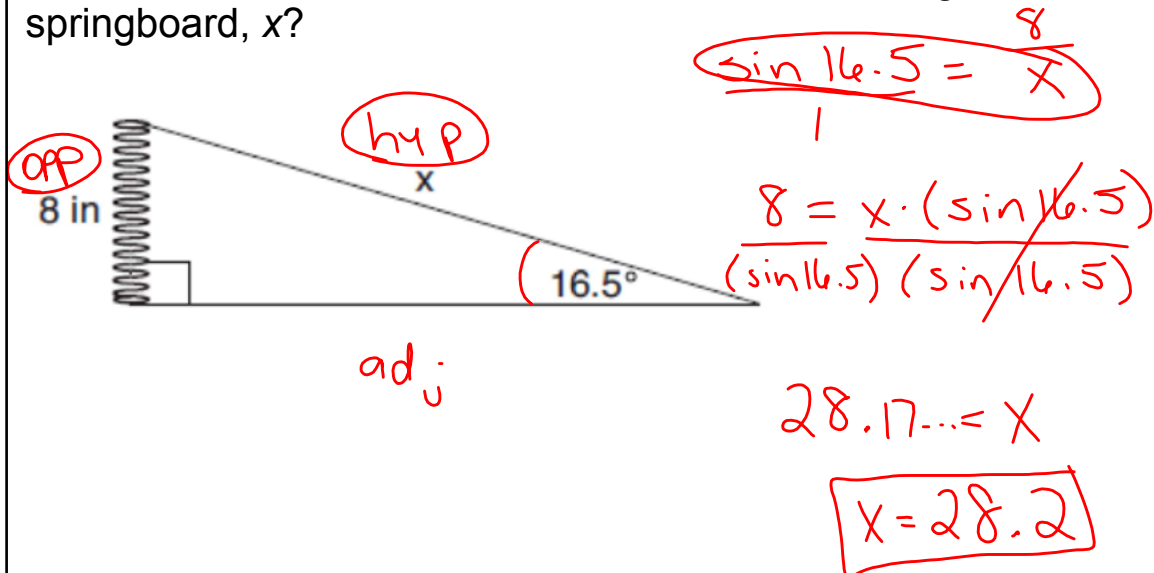


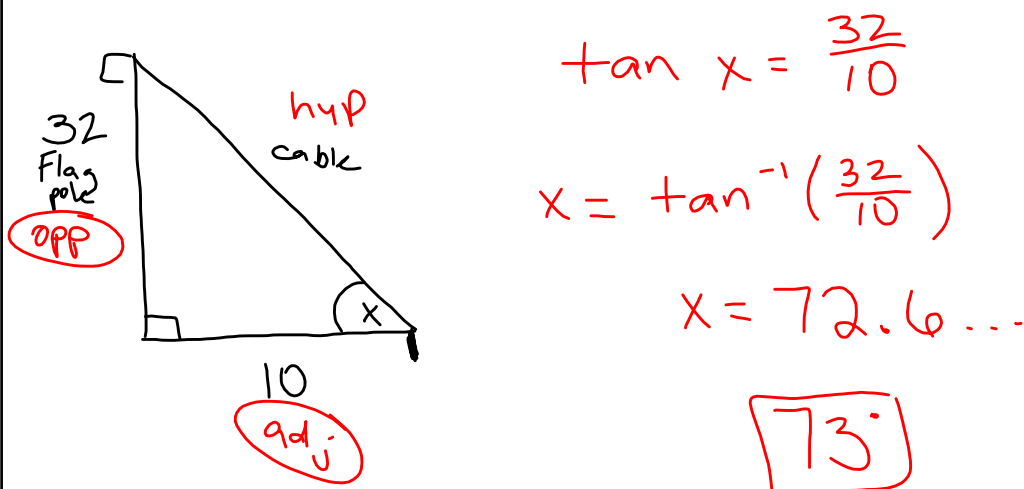
DO NOW

Yolanda is making a springboard to use for gymnastics. She has 8-inch-tall springs and wants to form a 16.5° angle with the base, as modeled in the diagram below.

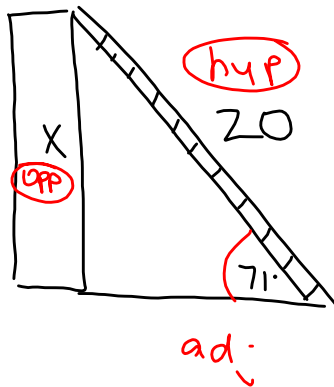
To the nearest tenth of an inch, what will be the length of the springboard, x ?



A cable is used to secure a flagpole that is 32 feet tall. The cable is attached to the top of the flagpole, and to a stake 10 feet from the base of the flagpole. What angle does the cable make with the ground? Give your answer to the nearest degree.



A ladder 20 feet long leans against a building, forming an angle of 71° with the level ground. To the nearest foot, how high up the wall of the building does the ladder touch the building?



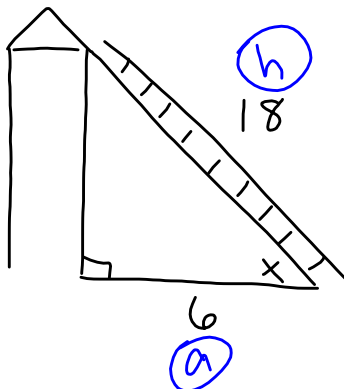
$$20 \cdot \sin 71 = \frac{x}{20} \cdot 20$$

$$20(\sin 71) = x$$

$$18.910.. = x$$

$$\boxed{19 = x}$$

Bob places an 18-foot ladder 6 feet from the base of his house and leans it up against the side of his house. Find, to the nearest degree, the measure of the angle the bottom of the ladder makes with the ground.



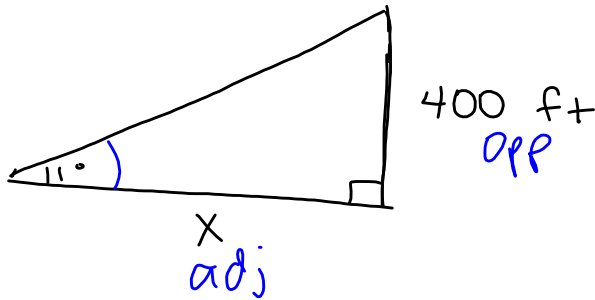
$$\cos x = \frac{6}{18}$$

$$\cos^{-1} \left(\frac{6}{18} \right)$$

$$x = 70.5...$$

$$\boxed{71^\circ}$$

Draw and label a diagram of the path of an airplane climbing at an angle of 11° with the ground. Find, to the nearest foot, the ground distance the airplane has traveled when it has attained an altitude of 400 feet.



$$x \cdot \tan 11 = \frac{400 \cdot x}{x}$$

$$\frac{(\tan 11) \cdot x}{(\tan 11)} = \frac{400}{(\tan 11)}$$

$$x = 2057.82 \dots$$

$$\boxed{2,058}$$