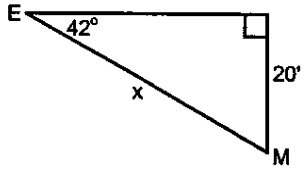
Name _____ Date _____

Problem Solving with Trigonometric Ratios

Draw a picture and solve the story problem using trigonometric ratios.

Example: An eagle spotted a mouse 20 feet below at an angle of 42 degrees with the horizon. If the eagle flies along its line of sight, how far will it have to fly to reach its prey?



$$\sin 42° = \frac{20}{x}$$

$$x = \frac{20}{\sin 42} = 29.889 = 29.9 \text{ feet}$$

1. A 20-foot ladder is leaning against a wall. The base of the ladder is 3 feet from the wall. What angle does the ladder make with the ground?

2. How tall is a bridge if a 6-foot-tall person standing 100 feet away can see the top of the bridge at an angle of 30 degrees to the horizon?

3. An air force pilot must descend 1500 feet over a distance of 9000 feet to land smoothly on an aircraft carrier. What is the plane's angle of descent?

4. In a movie theater 150 feet long, the floor is sloped so there is a difference of 30 feet between the front and back of the theater. What is the angle of depression?

5. A bow hunter is perched in a tree 15 feet off the ground. If he sees his prey on the ground at an angle of 30 degrees, how far will the arrow have to travel to hit his target?