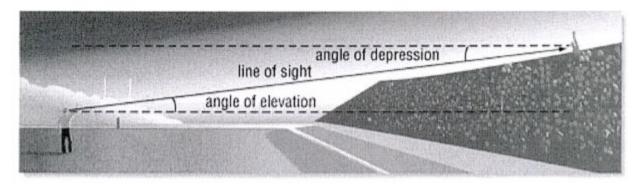**Angle of Elevation**

Angle of Depression

1. Leah wants to see a castle in an amusement park. She sights the top of the castle at an angle of elevation of $38°$. She knows that the castle is 190 feet tall. If Leah is 5.5 feet tall, how far is she from the castle to the nearest foot?
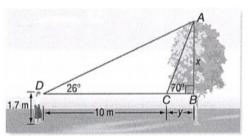

2. The cross bar of a goalpost is 10 feet high. If a field goal attempt is made 25 yards from the base of the goalpost that clears the goal by 1 foot, what is the smallest angle of elevation at which the ball could have been kicked to the nearest degree?

3. A search and rescue team is airlifting people from the scene of a boating accident when they observe another person in need of help. If the angle of depression to this other person is $42°$ and the helicopter is 18 feet above the water, what is the horizontal distance from the rescuers to this person to the nearest foot?

4. A lifeguard is watching a beach from a line of sight 6 feet above the ground. She sees a swimmer at an angle of depression of $8°$. How far away from the tower is the swimmer?

Angles of Elevation or Depression to **two** different objects can be used to estimate the distance between those objects. Similarly, the angles from two different positions of observation to the same object can be used to estimate the object's height.

5. To estimate the height of a tree she wants removed, Mrs. Long sights the tree's top at a $70°$ angle of elevation. She then steps back 10 meters and sights the top at a $26°$ angle. If mrs. Long's line of sight is 1.7 meters above the ground, how tall is the tree to the nearest meter?

6. Two buildings are sited from atop a 200-meter skyscraper. Building A is sited at a $35°$ angle of depression, while Building B is sited at a $36°$ angle of depression. How far apart are the two buildings to the nearest meter?