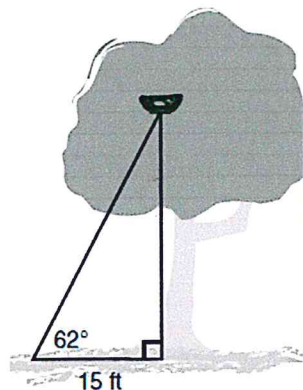


F.7 – Angles of Elevation and Depression

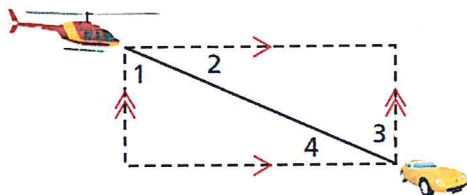
Lisa sees a bird's nest high in a tree. She decides to use trigonometry to estimate how high is the nest.

1. Lisa walks 15 feet from the base of the tree. She measures an angle of elevation from the ground to the nest of 62° . Find how high the nest is above the ground, to the nearest foot.



2. Lisa spots the mother bird on a branch above the nest. She measures an angle of elevation to the bird of 67° . Find how high the mother bird is above the ground, to the nearest foot.

Use the diagram for problems 3 and 4.



3. Which angles are not angles of elevation or depression?

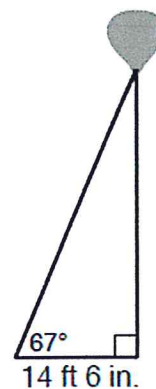
4. The angle of depression from the helicopter to the car is 30° . Find $m\angle 1$, $m\angle 2$, $m\angle 3$, and $m\angle 4$.

$$m\angle 1 = \underline{\hspace{2cm}} \quad m\angle 2 = \underline{\hspace{2cm}}$$

$$m\angle 3 = \underline{\hspace{2cm}} \quad m\angle 4 = \underline{\hspace{2cm}}$$

To attract customers to his car dealership, Frank tethers a large red balloon to the ground. (Note: Assume the cord that attaches to the balloon makes a straight segment.)

5. The sun is directly overhead. The shadow of the balloon falls 14 feet 6 inches from the tether. Frank sights an angle of elevation of 67° . Find the height of the balloon.



6. Find the length of the cord that tethers the balloon.

7. The wind picks up and the angle of elevation changes to 59° . Find the height of the balloon.