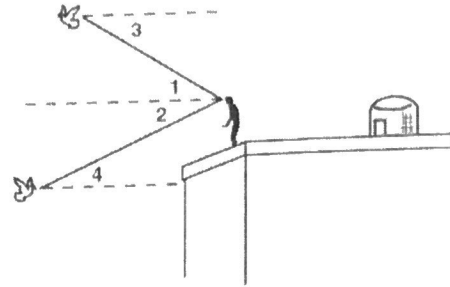


Additional Practice

Marco breeds and trains homing pigeons on the roof of his building. Classify each angle as an angle of elevation or an angle of depression.

1. 1 E
2. 2 D
3. 3 D
4. 4 E



To attract customers to his car dealership, Frank tethers a large red balloon to the ground. In Exercises 5–7, give answers in feet and inches to the nearest inch. (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.



34 ft 2 in

37 ft 1 in

31 ft 10 in

Lindsey shouts down to Pete from her third-story window.

8. Lindsey is 9.2 meters up, and the angle of depression from Lindsey to Pete is 79° . Find the distance from Pete to the base of the building to the nearest tenth of a meter.

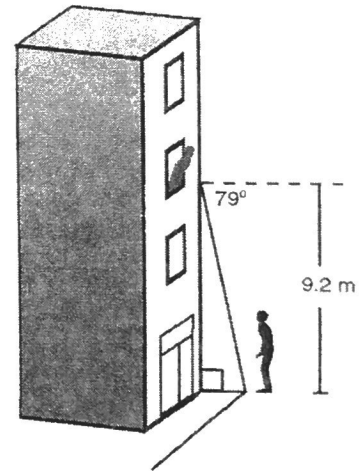
1.8 m

9. To see Lindsey better, Pete walks out into the street so he is 4.3 meters from the base of the building. Find the angle of depression from Lindsey to Pete to the nearest degree.

65°

10. Mr. Shea lives in Lindsey's building. While Pete is still out in the street, Mr. Shea leans out his window to tell Lindsey and Pete to stop all the shouting. The angle of elevation from Pete to Mr. Shea is 72° . Tell whether Mr. Shea lives above or below Lindsey.

Mr. Shea lives above Lindsey.



Problem Solving

1. Mayuko is sitting 30 feet high in a football stadium. The angle of depression to the center of the field is 14° . What is the horizontal distance between Mayuko and the center of the field? Round to the nearest foot.

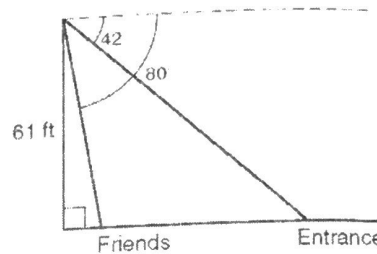
120 ft

3. Shane is 61 feet high on a ride at an amusement park. The angle of depression to the park entrance is 42° , and the angle of depression to his friends standing below is 80° . How far from the entrance are his friends standing? Round to the nearest foot.

57 ft

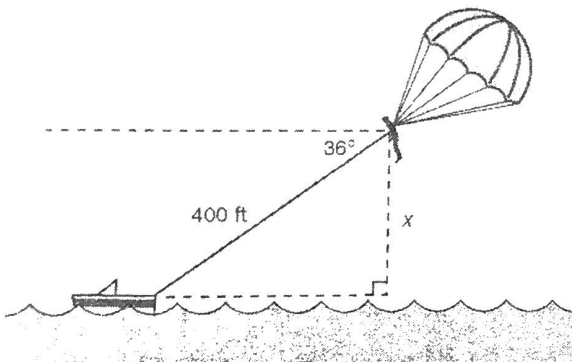
2. A surveyor 50 meters from the base of a cliff measures the angle of elevation to the top of the cliff as 72° . What is the height of the cliff? Round to the nearest meter.

154 m



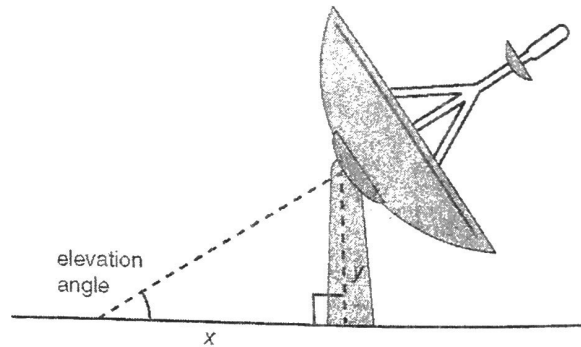
Choose the best answer.

4. The figure shows a person parasailing. What is x , the height of the parasailer, to the nearest foot?



- (A) 235 ft C 290 ft
B 245 ft D 323 ft

5. The elevation angle from the ground to the object to which the satellite dish is pointed is 32° . If $x = 2.5$ meters, which is the best estimate for y , the height of the satellite stand?



- F 0.8 m (H) 1.6 m
G 1.3 m J 2.1 m

6. A lifeguard is in an observation chair and spots a person who needs help. The angle of depression to the person is 22° . The eye level of the lifeguard is 10 feet above the ground. What is the horizontal distance between the lifeguard and the person? Round to the nearest foot.

- A 4 ft (C) 25 ft
B 11 ft D 27 ft

7. At a topiary garden, Emily is 8 feet from a shrub that is shaped like a dolphin. From where she is looking, the angle of elevation to the top of the shrub is 46° . If she is 5 feet tall, which is the best estimate for the height of the shrub?

- F 6 ft H 10 ft
G 8 ft (J) 13 ft