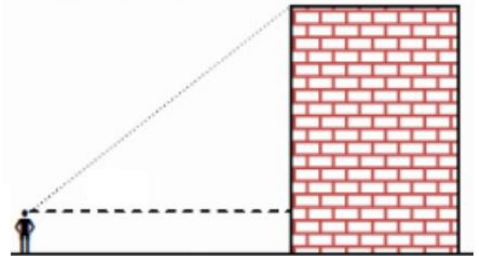




- I can use trigonometric ratios in real world situations.

If you look up at an object, the angle your line of sight makes with a horizontal line is called the **angle of elevation**. If you look down at an object, the angle your line of sight makes with a horizontal line is called the **angle of depression**.

1. Michael, whose eyes are six feet off the ground, is standing 36 feet away from the base of the building, and he looks up at a 50° angle of elevation to a point on the edge of the building's roof. To the nearest foot, how tall is the building?

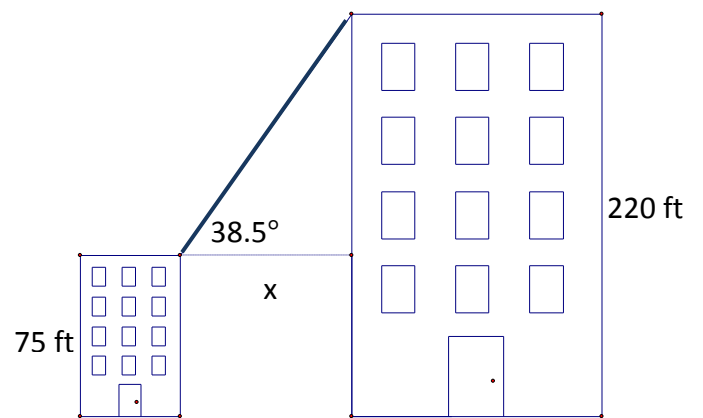


2. When the angle of elevation to the sun is 52° , a tree casts a shadow that is 9 meters long. What is the height of the tree? Round to the nearest tenth of a meter.

3. A person snorkeling sees a turtle on the ocean floor at an angle of depression of 38° . She is 14 feet above the ocean floor. How far from the turtle is she? Round to the nearest foot.

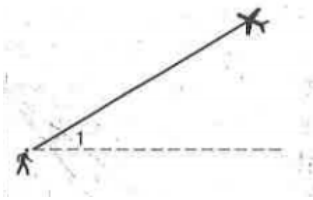
4. A ladder leaning against a building makes an angle of 65° with the ground and reaches a point on the building 20 feet above the ground. What is the length of the ladder to the nearest foot?

5. You are standing on top of a 75 foot building looking up at the top of a 220 foot building. The angle of elevation you measure is 38.5° . How far apart are the buildings?

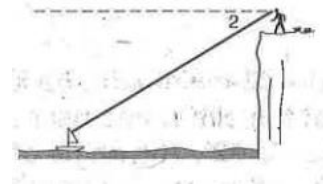


Classify each angle as an angle of elevation or an angle of depression.

1. $\angle 1$

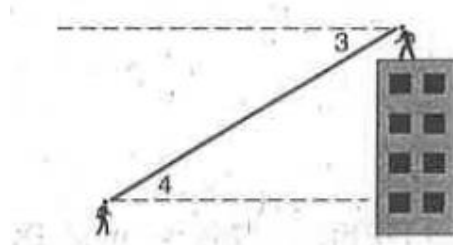


2. $\angle 2$



Use the figure below for problems #3 – 4. Classify each angle as an angle of elevation or depression.

3. $\angle 3$



4. $\angle 4$

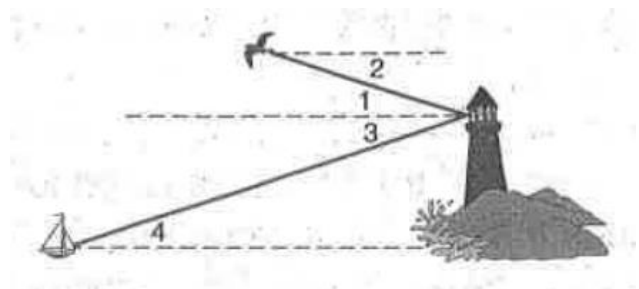
Use the figure below for problems #5 – 8. Classify each angle as an angle of elevation or depression.

5. $\angle 1$

6. $\angle 2$

7. $\angle 3$

8. $\angle 4$



9. 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.

10. Maria is looking out a 17 foot high window and sees two deer. The angle of depression to the deer is 26° . What is the horizontal distance from Maria to the deer? Round to the nearest foot.

11. A dog, who is 8 meters from the base of a tree, spots a squirrel in the tree at an angle of elevation of 40° . What is the direct-line distance between the dog and the squirrel? Round to the nearest tenth.

12. Tammi Jo, whose eyes are five feet off the ground, is standing 50 feet away from the base of a building, and she looks up at a 73° angle of elevation to a point on the edge of the building's roof. To the nearest tenth of a foot, how tall is the building?

13. The angle of elevation from the base of the waterslide to the top of the slide is about 13° . The length of the slide is about 58.2 meters. Estimate the height h of the slide.

14. Pat is out flying a kite on a nice spring day. He lets all 175 feet of string out on the kite and estimates the angle of elevation of the kite to be 33.6° . How high off the ground is the kite?

Answers: 1) Elevation 2) Depression 3) Depression 4) Elevation 5) Elevation 6) Depression

7) Depression 8) Elevation 9) 154 m 10) 35 ft 11) 10.4 m 12) 168.5 ft 13) 13.1 m 14) 96.8 ft