

NAME: _____

P.I. A.A.44: Find the measure of a side of a right triangle, given an acute angle and the length of another side

1. A slide 4.7 m long makes an angle of 25° with the ground. How high is the top of the slide above the ground?

[A] 52 ft [B] 56 ft
[C] 127 ft [D] 123 ft
2. An airplane over the Pacific sights an atoll at a 17° angle of depression. If the plane is 445 m above water, how many kilometers is it from a point 445 m above the atoll?
3. A lookout spots a fire from a 36 meter tower. The angle of depression from the tower to the fire is 22 degrees. To the nearest meter, how far is the fire from the base of the tower?
4. Liola drives 20 km up a hill that is at a grade of 10° . What horizontal distance, to the nearest tenth of kilometer, has she covered?

[A] 19.2 km [B] 18.6 km
[C] 21 km [D] 19.7 km
5. To find the height of a pole, a surveyor moves 80 feet away from the base of the pole and then, with a transit 4 feet tall, measures the angle of elevation to the top of the pole to be 57° . What is the height of the pole? Round answer to the nearest foot.

[A] 52 ft [B] 56 ft
[C] 127 ft [D] 123 ft
6. Sean and Jackie made a shady area by stretching a bedspread over a clothesline. The bedspread was 2.5 m long and made an angle of 43° with the ground where it was anchored at each side. How wide was the shady area?

[A] 2.8 m [B] 1.3 m
[C] 0.3 m [D] 1.8 m
7. A slide 2.6 m long makes an angle of 33° with the ground. How high is the top of the slide above the ground?

[A] 1.42 m [B] 1.5 m
[C] 2.18 m [D] 1.69 m

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8. From an airplane 6000 ft above the ground, you see a landing strip at an angle of depression of 24.5° . Measuring the distance along the ground, how far are you from the landing strip? Round your answer to the nearest hundredth.
9. Suppose the angle of elevation from a swimmer to the top of a cliff is 45° . The swimmer is x feet from the bottom of the cliff and the cliff is y feet high. Find two possible values for x and y .
10. A 30 ft ladder resting against a building makes a 60° angle with the ground. Find the height from the ground at which the ladder touches the building to the nearest foot.
11. The Americans with Disabilities Act states that wheelchair ramps can have a slope no greater than $\frac{1}{12}$. Write a problem that uses this information and involves the entrance to a building in your neighborhood. Include your solution.
12. A man 6 ft tall walks 75 ft from the base of a tree. He uses a protractor to measure the angle from his eye to the top of the tree. He finds it to be about 25° . Find the height of the tree to the nearest foot.
13. Which of the following *cannot* be the lengths of a 30° - 60° - 90° triangle?
- [A] $\frac{7}{3}, \frac{14}{3}, \frac{7}{3}\sqrt{3}$ [B] 8, 4, $8\sqrt{3}$
- [C] 5, 10, $5\sqrt{3}$ [D] 4, 8, $4\sqrt{3}$
14. The shorter leg of a 30° - 60° - 90° triangle is 4.4 inches long. Find the perimeter.
- [A] 20.82 in. [B] 30.48 in.
- [C] 19.42 in. [D] 24.89 in.

[1] 1.99 m

[2] 1.46 km

[3] 89 meters

[4] D

[5] C

[6] D

[7] A

[8] 13,165.80 ft

Answers may vary. Sample:

[9] $x = 30$, $y = 30$; $x = 40$, $y = 40$

[10] about 26 ft

[11] Check students' work.

[12] 41 ft

[13] B

[14] A