

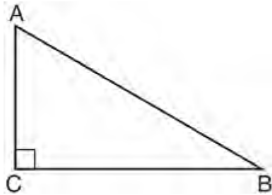
Name _____ Per _____

LO: I can solve problems involving special right triangles and trig ratios.

 DO NOW On the back of this packet (1) Review Problems: sin and cos relationship
calculator

- 81 Which expression is always equivalent to $\sin x$ when $0^\circ < x < 90^\circ$?
- 1 $\cos(90^\circ - x)$
 - 2 $\cos(45^\circ - x)$
 - 3 $\cos(2x)$
 - 4 $\cos x$

- 82 In scalene triangle ABC shown in the diagram below, $m\angle C = 90^\circ$.



Which equation is always true?

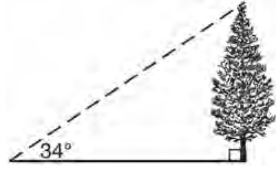
- 1 $\sin A = \sin B$
 - 2 $\cos A = \cos B$
 - 3 $\cos A = \sin C$
 - 4 $\sin A = \cos B$
- 84 Explain why $\cos(x) = \sin(90 - x)$ for x such that $0 < x < 90$.

- 83 In right triangle ABC with the right angle at C , $\sin A = 2x + 0.1$ and $\cos B = 4x - 0.7$. Determine and state the value of x . Explain your answer.

(2)
calculator

Review: Applications

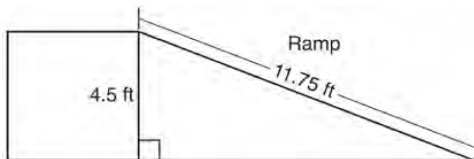
- 88 As shown in the diagram below, the angle of elevation from a point on the ground to the top of the tree is 34° .



If the point is 20 feet from the base of the tree, what is the height of the tree, to the *nearest tenth of a foot*?

- 1 29.7
 - 2 16.6
 - 3 13.5
 - 4 11.2
- 89 A man who is 5 feet 9 inches tall casts a shadow of 8 feet 6 inches. Assuming that the man is standing perpendicular to the ground, what is the angle of elevation from the end of the shadow to the top of the man's head, to the *nearest tenth of a degree*?
- 1 34.1
 - 2 34.5
 - 3 42.6
 - 4 55.9

- 90 The diagram below shows a ramp connecting the ground to a loading platform 4.5 feet above the ground. The ramp measures 11.75 feet from the ground to the top of the loading platform.

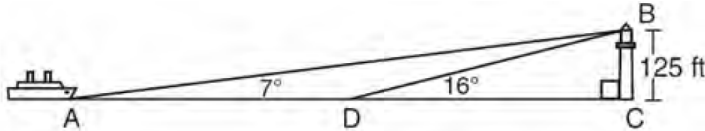


Determine and state, to the *nearest degree*, the angle of elevation formed by the ramp and the ground.

(3)
calculator

Review: Applications

- 85 As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A , the angle of elevation from the ship to the light was 7° . A short time later, at point D , the angle of elevation was 16° .

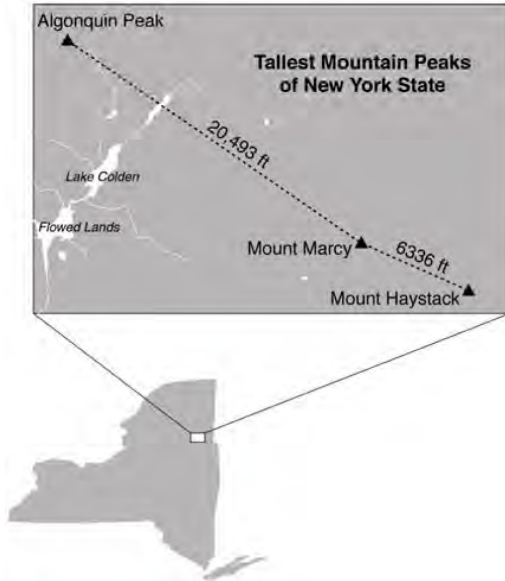


To the *nearest foot*, determine and state how far the ship traveled from point A to point D .

(4)
calculator

Review: Applications

- 86 The map below shows the three tallest mountain peaks in New York State: Mount Marcy, Algonquin Peak, and Mount Haystack. Mount Haystack, the shortest peak, is 4960 feet tall. Surveyors have determined the horizontal distance between Mount Haystack and Mount Marcy is 6336 feet and the horizontal distance between Mount Marcy and Algonquin Peak is 20,493 feet.

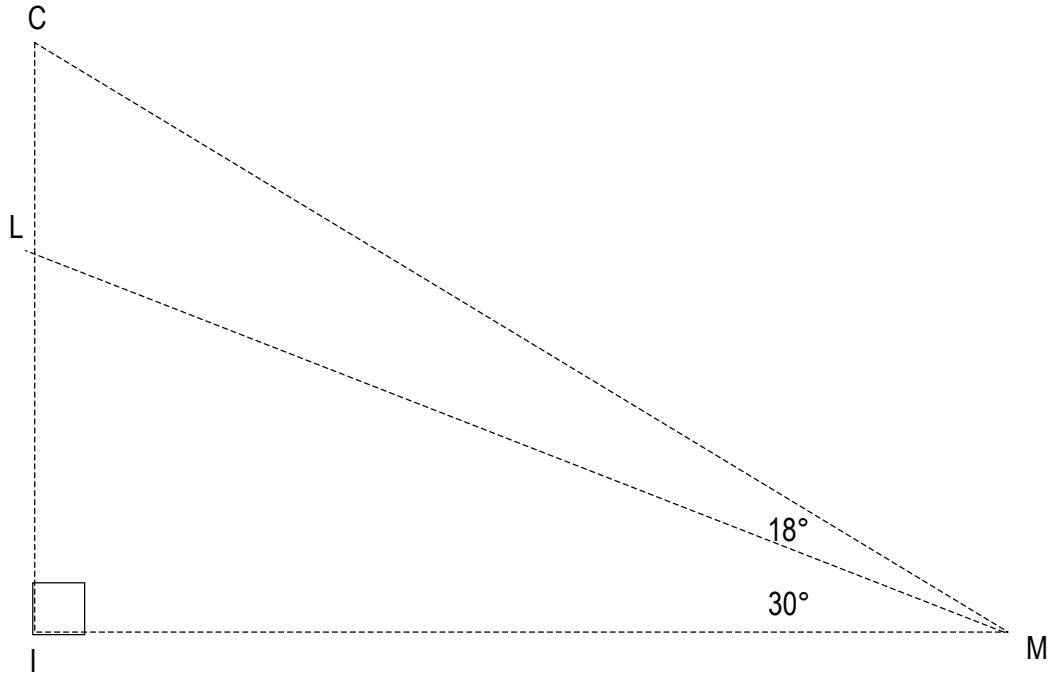


The angle of depression from the peak of Mount Marcy to the peak of Mount Haystack is 3.47 degrees. The angle of elevation from the peak of Algonquin Peak to the peak of Mount Marcy is 0.64 degrees. What are the heights, to the *nearest foot*, of Mount Marcy and Algonquin Peak? Justify your answer.

(5)
calculator

Review: Applications

The villain, Maim, is climbing down a building from point C at the top to point I at the bottom. Spiderman shoots a dart net at Maim when he is at point C, but misses. He shoots again and nets Maim at point L. If Spiderman is 160 feet from the building, how far did Maim get from point C to L before he was caught in a net?



Things you must know/be able to do:

Angle of elevation/depression

Special right triangles 30-60-90 and 45-45-90

Definition of sine, cosine, and tangent

Using sine, cosine, and tangent to find lengths and angles

Relationship between sine and cosine