

Day 2 HOMEWORK

Period _____

Using what you know about trigonometric ratios answer the following questions:

- 1) Can the sine of an angle ever equal 2?
Explain. (Hint draw a picture and write 2 as a fraction.)
- 2) $\sin x = 1/3$. What is the cosine of x ? Hint draw a picture!!!
- 3) Find an angle where the $\cos x = \sin x$.
- 4) Draw and label with lengths all three sides of a right triangle that has a 40° angle and a hypotenuse of 10 cm.

Questions 9-18: Give approximate answers to the following questions ROUNDING TO THE NEAREST TENTH. You MUST draw a picture, show your work, then give an answer WITH UNITS!!!

- 5) A plane is flying at an altitude of 12,000 m. From the pilot, the angle of depression to the airport tower is 32° . How far is the tower from a point on the ground directly beneath the plane?
- 6) A car is traveling up a slight grade with an angle of elevation of 2° . After traveling 1 mile, what is the vertical change in feet? (1 mile = 5,280 ft)

Picture:

Work:

Answer:

7) A 300 m cable is attached to the top of an antenna. The angle of elevation to the top of the antenna is 15° . How high is the antenna?

Picture:

Work:

Answer:

8) A great white shark swims 22 feet below sea level. If the shark is 67.7 feet from the sailboat, what is the angle of depression of the boat to the shark?

9) A bird is flying at a height of 40 feet and spots an 8-ft high ledge on which to perch. If the top of the ledge is at a 22° angle of depression from the bird, how far must the bird fly before it can land? (Careful!)

Picture:

Work:

Answer:

10) A person is standing 30 meters from the base of a traffic light. If the angle of elevation from the person's feet to the top of the traffic light is 25° (from the horizontal), find the height of the traffic light.

- 11) Suppose you have been assigned to measure the height of the local water tower. Climbing makes you dizzy, so you decide to do the whole job at ground level. From a point 47.3 meters from the base of the water tower, you find that you must look up at an angle of 53° to see the top of the tower. How tall is the tower?

Picture:

Work:

Answer:

- 13) From a point on the North Rim of the Grand Canyon, a surveyor, sighting the South Rim a little below the North Rim, measures the angle of depression to be 1.3° . From an aerial photograph, he determines that the horizontal distance between the two points is 1600 meters. How many meters is the South Rim below the North Rim?

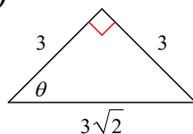
Picture:

Work:

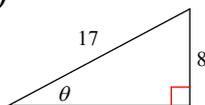
Answer:

Find the value of the trig function indicated.

- 15) $\tan \theta$



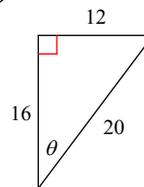
- 17) $\tan \theta$



- 12) Scientists estimate the heights of features on the moon by measuring the lengths of the shadows they cast on the moon's surface. From a photograph, you find that the shadow cast on the inside of a crater by its rim is 325 meters long. At the time the photograph was taken, the sun's angle to the horizontal surface was 23.6° . How high does the rim rise above the inside of the crater?

- 14) A submarine at the surface of the ocean makes an emergency dive, its path making an angle of 21° with the surface. If it goes for 300 meters along its downward path, how deep will be? What horizontal distance is it from its starting point?

- 16) $\cos \theta$



- 18) $\sin \theta$

