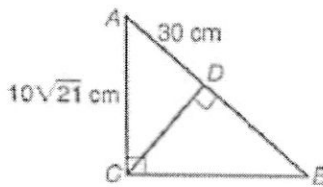


Choose the best answer.

1. Which segment has a length of 40cm ?

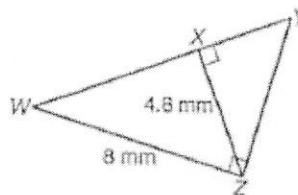
- (a) \overline{AB} (b) \overline{CB}
 (c) \overline{CD} (d) \overline{DB}



1. _____

2. What is the perimeter of the largest triangle?

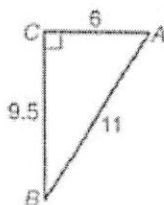
- (a) 19.2mm (b) 24mm
 (c) 30.4mm (d) 96mm



2. _____

3. Which is approximately equal to $\sin A$?

- (a) 0.55 (b) 0.63
 (c) 0.86 (d) 1.58



3. _____

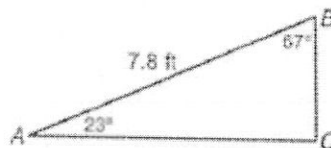
4. What is the value of A if $\sin A = \frac{\sqrt{3}}{2}$?

- (a) 30° (b) 60° (c) 45° (d) 90°

4. _____

5. Which expression can be used to find AC ?

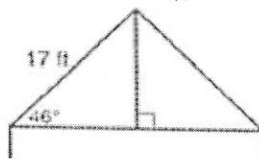
- (a) $7.8(\sin 23^\circ)$ ft (b) $7.8(\cos 67^\circ)$ ft
 (c) $7.8(\cos 23^\circ)$ ft (d) $7.8(\tan 67^\circ)$ ft



5. _____

6. A cottage has a gable roof. To the nearest foot, how wide is the cottage?

- (a) 12 ft (b) 24 ft
 (c) 35 ft (d) 70 ft



6. _____

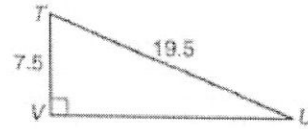
7. A skateboard ramp has a slope of $\frac{2}{5}$. Which is the angle the ramp makes with the ground?

- (a) 22° (b) 24° (c) 66° (d) 52°

7. _____

8. Which expression can be used to find $m\angle U$?

- (a) $\sin^{-1}(0.38)$ (b) $\cos^{-1}(0.38)$
 (c) $\tan^{-1}(0.38)$ (d) $\sin^{-1}(0.92)$



8. _____

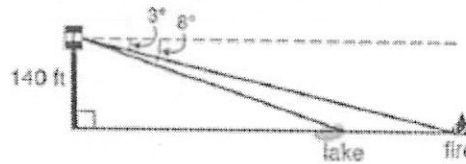
9. A utility worker is installing a 25 ft telephone pole. The work order indicates that two guy wires (a wire running from the ground to the top of the pole) should be placed opposite each other and at a 65° angle of elevation to the pole. To the nearest tenth of a foot, how far apart are the guy wires.

- (a) 11.7 ft (b) 23.3 ft (c) 27.6 ft (d) 43.6 ft

9. _____

10. A forest ranger in a 140 ft observation tower sees a fire moving in a direct path toward a lake. The angle of depression to the fire is 3° , and the angle of depression to the lake is 8° . To the nearest foot, how close is the fire to the base of the observation tower?

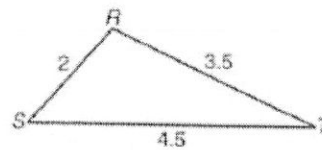
- (a) 997 ft (b) 2671 ft
 (c) 1675 ft (d) 2061 ft



10. _____

11. Which expression can be used to find $m\angle R$?

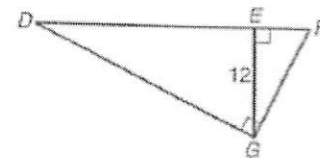
- (a) $\cos^{-1}\left(-\frac{14}{4}\right)$ (b) $\cos\left(-\frac{4}{14}\right)$
 (c) $\cos^{-1}\left(\frac{4}{14}\right)$ (d) $\cos^{-1}\left(-\frac{4}{14}\right)$



11. _____

12. The altitude to the hypotenuse of a right triangle has a length of 12. What could be the lengths of the two segments of the hypotenuse?

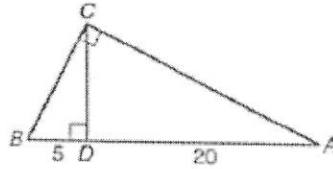
- (a) 2 and 6 (b) 24 and 6 (c) 2 and 8 (d) 30 and 6



12. _____

13. What is the area of $\triangle ABC$?

- (a) 100 (b) 125
(c) 250 (d) 1250



13. _____

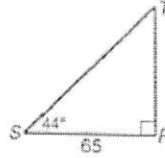
14. Which trigonometric ratio is defined as $\frac{\text{opposite leg}}{\text{adjacent leg}}$?

- (a) cosine (b) hypotenuse (c) sine (d) tangent

14. _____

15. To the nearest whole number, what is TR ?

- (a) 45 (b) 67
(c) 63 (d) 90



15. _____

16. A skateboard ramp makes a 27° angle with the ground. To the nearest foot, how high is the ramp?

- (a) 15 *ft* (b) 16 *ft* (c) 29 *ft* (d) 62 *ft*

16. _____

17. A wheelchair ramp has a rise from the ground of 1 *ft* . The ramp has a length of 14 *ft* . To the nearest degree, find the angle the ramp makes with the sidewalk.

- (a) 4° (b) 6° (c) 12° (d) 15°

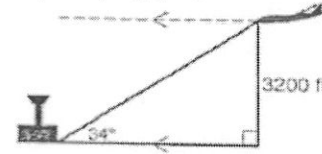
17. _____

18. When the angle of elevation of the sun is 50° , a flagpole casts a shadow that is 16.8 *ft* long. What is the height of the flagpole to the nearest foot?

- (a) 14 *ft* (b) 20 *ft* (c) 25 *ft* (d) 41 *ft*

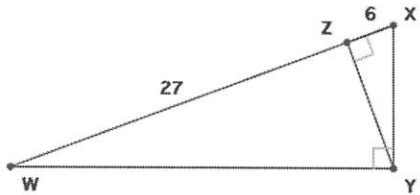
18. _____

19. An air-traffic controller at an airport sights a plane at an angle of elevation of 34° . The pilot reports that the plane's altitude is 3200 ft . To the nearest foot, what is the horizontal distance between the plane and the airport?



- (a) 4744 ft (b) 2159 ft
 (c) 650 ft (d) 3267 ft

20. Using the Geometric Mean, Find XY , ZY , WY .



21. Using Right Triangle Trig, Solve the following SUPER DUPER REALISTIC REAL WORLD problem.

Far, far away in *mathmagical* land stood a Prince named Teddy staring out the window. If you looked close enough you could see the sadness in his eyes as the love of his life [Princess Stephanie] was missing. (and I don't mean she has yet to exist... she was missing because someone **STOLE** her)

As it turns out, a mean ogre from *ihatemathland* kidnapped the princess and was holding her in the tallest room of the castle. Prince Teddy said to himself "I must go and save her... we need to do math together forever," so he jumped on his horse and rode to the castle. As Prince Teddy got closer to the castle, he wondered "how close do I have to be in order to throw my 78 ft rope and still have it reach the window where my Princess Stephanie awaits me?" Prince Teddy approximates he will throw the rope at approximately a 23° angle of elevation. Please help Prince Teddy approximate how far away he would need to stand without being seen by Mr. Mean Math Hating Ogre. Just think – you will be part of romantic history!!!