

**Geometry**  
**Review for Unit 6 Test**

Name: Key  
Date: \_\_\_\_\_

1. In any right triangle, the  $\sin 42^\circ = \cos 48^\circ$

2. In any right triangle, the  $\cos \theta = \sin (90^\circ - \theta)$

3.  $\sin \theta = \frac{32}{71}$

4.  $\cos \theta = \frac{29}{33}$

5.  $\tan \theta = \frac{117}{109}$

$\cos(90 - \theta) = \frac{32}{71}$

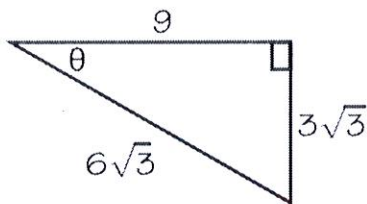
$\sin(90 - \theta) = \frac{29}{33}$

$\tan(90 - \theta) = \frac{109}{117}$

6. In  $\triangle ABC$ :  $m\angle C = 90^\circ$ . If  $\sin A = 12x + 2$  and  $\cos B = 7x + 4$ , then  $x = \frac{2}{5}$

$12x + 2 = 7x + 4$   
 $5x = 2$   
 $x = \frac{2}{5}$

7. Find sine, cosine, and tangent of  $\theta$ .

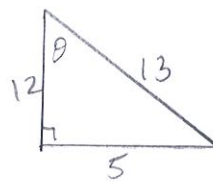


$\sin \theta = \frac{3\sqrt{3}}{6\sqrt{3}} = \frac{1}{2}$

$\cos \theta = \frac{9}{6\sqrt{3}} = \frac{3}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{2 \cdot 3} = \frac{\sqrt{3}}{2}$

$\tan \theta = \frac{3\sqrt{3}}{9} = \frac{\sqrt{3}}{3}$

8. If the  $\sin \theta = \frac{5}{13}$  find  $\cos \theta$  and  $\tan \theta$ .

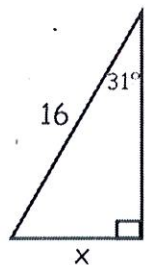


$\cos \theta = \frac{12}{13}$

$\tan \theta = \frac{5}{12}$

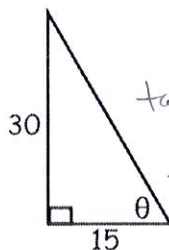
$5^2 + b^2 = 13^2$   
 $b^2 = 144$   
 $b = 12$

9.  $x = 8.24$



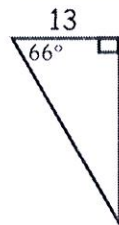
$\sin 31 = \frac{x}{16}$   
 $16 \sin 31 = x$

10.  $\theta = 63^\circ$



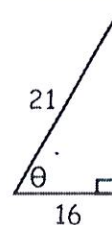
$\tan \theta = \frac{30}{15}$   
 $\tan^{-1}(\frac{30}{15}) = \theta$

11.  $x = 29.2$



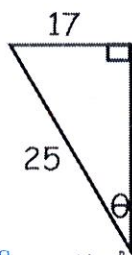
$\tan 66 = \frac{x}{13}$   
 $13 \tan 66 = x$

12.  $\theta = 40^\circ$



$\cos \theta = \frac{16}{21}$   
 $\cos^{-1}(\frac{16}{21}) = \theta$

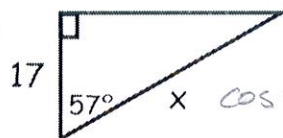
13.



$\sin \theta = \frac{17}{25}$   
 $\sin^{-1}(\frac{17}{25}) = \theta$

$\theta = 43^\circ$

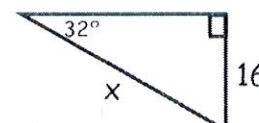
14.



$\cos 57 = \frac{17}{x}$   
 $x = \frac{17}{\cos 57}$

$x = 31.21$

15.



$\sin 32 = \frac{16}{x}$

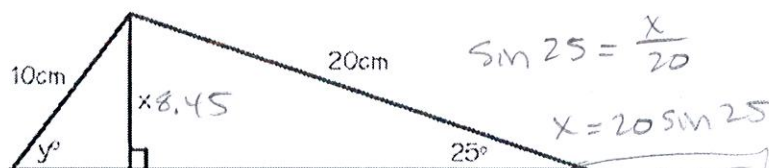
$x = 30.19$

$x = \frac{16}{\sin 32}$

16. Find the values of  $x$  and  $y$ .

$x = 8.45$

$y = 58^\circ$



$\sin 25 = \frac{x}{20}$

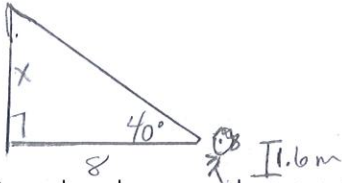
$x = 20 \sin 25$

$x = 8.45$

$\sin y = \frac{8.45}{10}$

$\sin^{-1}(\frac{8.45}{10}) = y$   $y = 58^\circ$

17. You are standing on the ground looking up at a bird's nest in a tree. You estimate that you are standing 8 meters away from the base of the tree and the angle of elevation when you are looking up at the nest is  $40^\circ$ . Your eyes are about 1.6 meters off the ground. How high off the ground is the nest?



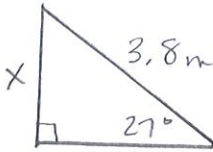
$$\tan 40 = \frac{x}{8}$$

$$x = 8 \tan 40$$

$$6.71 + 1.6 \approx \boxed{8.31\text{m}}$$

$$x \approx 6.7$$

18. A slide 3.8 meters long makes an angle of  $27^\circ$  with the ground. How high is the top of the slide above the ground?

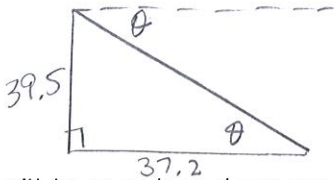


$$\sin 27^\circ = \frac{x}{3.8}$$

$$3.8 \sin 27 = x$$

$$x \approx \boxed{1.73\text{m}}$$

19. To illuminate the entrance of Pope High School, a spot light is mounted on a 39.5 foot pole. The base of the pole is 37.2 feet from the entrance. What is the angle of depression of the spot light?

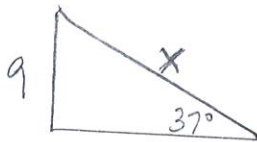


$$\tan \theta = \frac{39.5}{37.2}$$

$$\tan^{-1}\left(\frac{39.5}{37.2}\right) = \theta$$

$$\theta \approx \boxed{47^\circ}$$

20. A ramp is built to reach a doorway that is 9 feet off the ground. The ramp makes a  $37^\circ$  angle with the driveway. How long is the ramp?

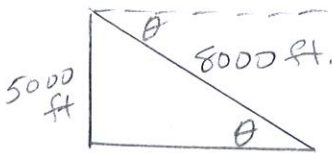


$$\sin 37^\circ = \frac{9}{x}$$

$$x = \frac{9}{\sin 37}$$

$$x \approx \boxed{14.95\text{ft.}}$$

21. A plane is coming in for a landing at the airport. If the airport is in a direct line of site 8000 ft. from the plane and the plane is at an altitude of 5000 ft., what is the angle of depression?

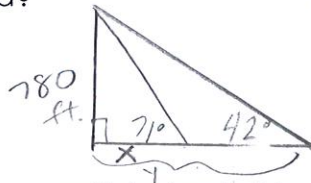


$$\sin \theta = \frac{5000}{8000}$$

$$\sin^{-1}\left(\frac{5000}{8000}\right) = \theta$$

$$\theta \approx \boxed{39^\circ}$$

22. You are a block away from a skyscraper that is 780 feet tall. Your friend is between the skyscraper and yourself. The angle of elevation from your position to the top of the skyscraper is  $42^\circ$ . The angle of elevation from your friend's position to the top of the skyscraper is  $71^\circ$ . To the nearest foot, how far are you from your friend?



$$\tan 42 = \frac{780}{y}$$

$$y = \frac{780}{\tan 42}$$

$$y \approx \boxed{866.28}$$

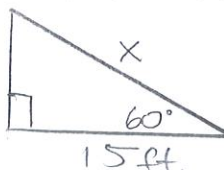
$$\tan 71 = \frac{780}{x}$$

$$x = \frac{780}{\tan 71}$$

$$x \approx \boxed{268.58}$$

$$y - x = 866.28 - 268.58 \approx \boxed{597.7\text{ft.}}$$

23. A damsel is in distress and is being held captive in a tower. Her knight in shining armor is on the ground below with a ladder. When the knight stands 15 feet from the base of the tower and looks up at his precious damsel, the angle of elevation to her window is 60 degrees. How long does the ladder have to be in order to reach her?



$$\cos 60 = \frac{15}{x}$$

$$x = \frac{15}{\cos 60}$$

$$x = \boxed{30\text{ft.}}$$