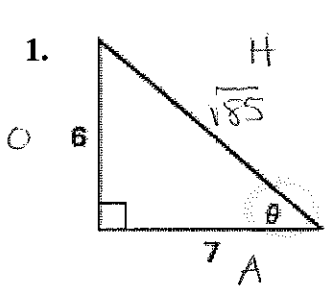**TRIG PRACTICE**

Name: __Hirsch__

Date: _____ Period: _____

Evaluate the six trigonometric function of the angle Θ.

1.

$6^2 + 7^2 = C^2$
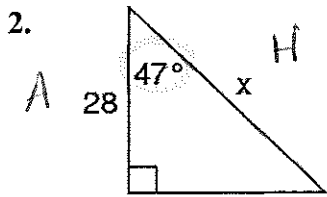$36 + 49 = C^2$
$85 = C^2$
$C = \sqrt{85}$

$\sin \Theta = \dfrac{O}{H} = \dfrac{6}{\sqrt{85}} = \boxed{\dfrac{6\sqrt{85}}{85}}$

$\cos \Theta = \dfrac{A}{H} = \dfrac{7}{\sqrt{85}} = \boxed{\dfrac{7\sqrt{85}}{85}}$
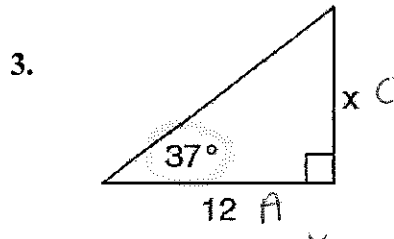
$\tan \Theta = \dfrac{O}{A} = \boxed{\dfrac{6}{7}}$

Find the missing side:

2.

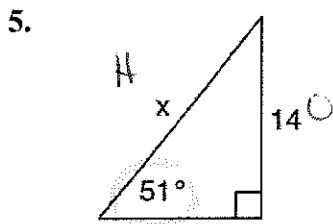
$\cos 47 = \dfrac{28}{x}$

$x = \dfrac{28}{\cos 47} = \boxed{41.056}$

3.

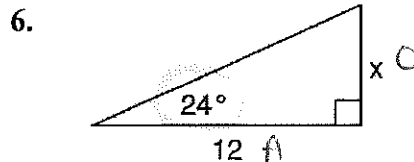$\tan 37 = \dfrac{x}{12}$

$x = 12 \tan 37 = \boxed{9.042}$

4.

$\sin 21 = \dfrac{x}{22}$

$x = 22 \sin 21 = \boxed{7.884}$

5.

$\sin 51 = \dfrac{14}{x}$

$x = \dfrac{14}{\sin 51} = \boxed{18.015}$

6.

$\tan 24 = \dfrac{x}{12}$

$x = 12 \tan 24$
$x = \boxed{5.343}$

7.
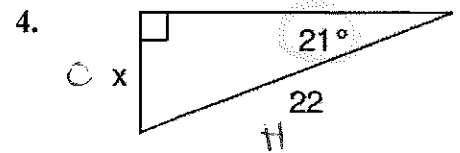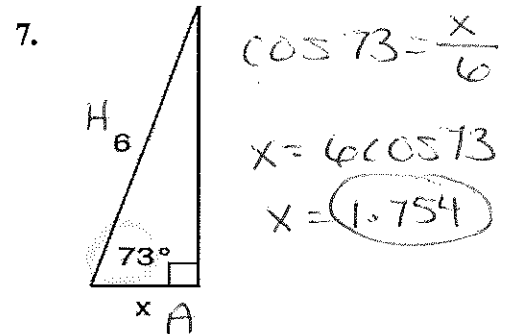
$\cos 73 = \dfrac{x}{6}$

$x = 6 \cos 73$

$x = \boxed{1.754}$
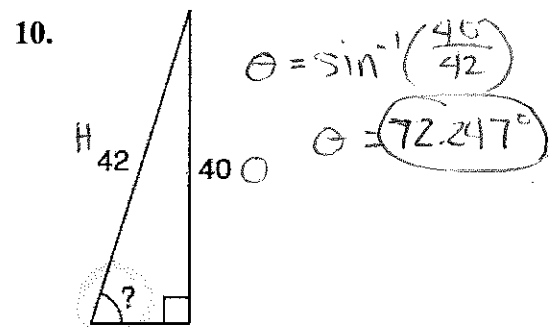
Find the missing Angle:

8.

$\Theta = \tan^{-1}\left(\dfrac{27}{38}\right)$

$\Theta = \boxed{35.395°}$

9.

$\Theta = \cos^{-1}\left(\dfrac{13}{20}\right)$

$\Theta = \boxed{49.458°}$

10.
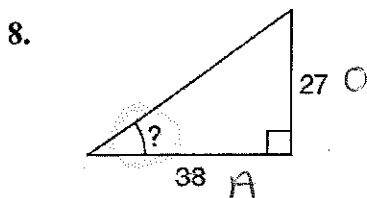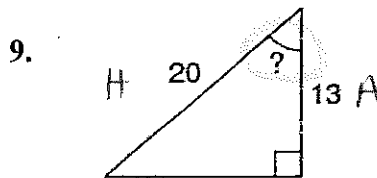
$\Theta = \sin^{-1}\left(\dfrac{40}{42}\right)$
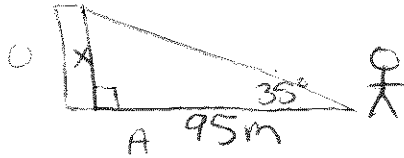
$\Theta = \boxed{72.247°}$

Complementary Angles:

11. $\sin 40 = \cos$ __50__

12. $\cos 55 = \sin$ __35__

13. $\cos 32 = \sin$ __58__

14. Sam is trying to calculate the height of a tower. He is standing 95 meters from the base of a tower. The angle of elevation from Sam's position on the ground to the top of the tower is 35°. Calculate the height of the tower to the nearest tenth of a meter.

$\tan 35 = \dfrac{x}{95}$

$x = 95 \tan 35$

$x = 66.5 \text{ m}$

The height of the tower is 66.5m.

15. A kite is flying 70 feet above the ground and is attached to a string tied to a stake on the ground. The angle of elevation formed by the string and the ground is 40°. Find the length of the string to the nearest foot.
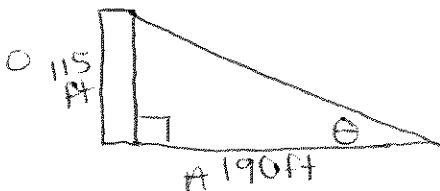
$\sin 40 = \dfrac{70}{x}$

$x = \dfrac{70}{\sin 40}$

$x = 108.9 \text{ ft}$

The length of the string is 109 ft.

16. A building that is 115 feet tall casts a shadow that is 190 feet long. Determine the angle at which the rays of the sun hit the ground to the nearest degree. (Find the angle of elevation).
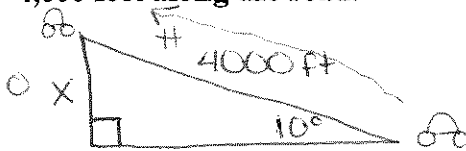
$\tan \theta = \dfrac{115}{190}$

$\theta = \tan^{-1}\left(\dfrac{115}{190}\right)$

$\theta = 31.185°$

The angle at which the sun's rays hit the ground is 31.185° or ㉛.

17. A road has an incline of 10°. To the nearest foot, find the increase in altitude of a car after driving 4,000 feet along the road.
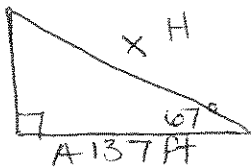
$\sin 10 = \dfrac{x}{4000}$

$x = 4000 \sin 10$

$x = 69.459$

The increase in altitude is 69 ft.

18. A guy wire is attached to a pole for support. If the angle of elevation to the pole is 67° and the wire is attached to the ground at a point 137 feet from the base of the pole, what is the length of the guy wire (round to 2 decimal places)?
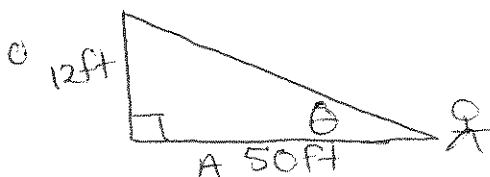
$\cos 67 = \dfrac{137}{x}$

$x = \dfrac{137}{\cos 67}$

$x = 350.6247$

The length of the guy wire is 350.62 ft.

19. A diver stands on level ground 50 feet from the base of the 12 foot high dive. What is the approximate measure of the angle of elevation between the diver and the diving board (round to the nearest whole number)?
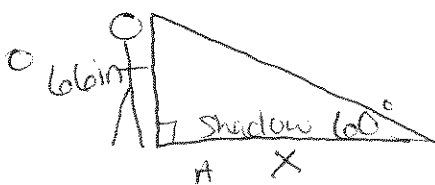
$\tan \theta = \dfrac{12}{50}$

$\theta = \tan^{-1}\left(\dfrac{12}{50}\right)$

$\theta = 13.496°$

The angle of elevation between the diver and the diving board is 13°.

20. A 66 inch tall person walking down the street notices his shadow. If the angle of elevation from the tip of the shadow to the sun is 60°, what is the length of the shadow (round to 2 decimal places)?

$\tan 60 = \dfrac{66}{x}$

$x = \dfrac{66}{\tan 60}$

$x = 22\sqrt{3} = 38.105$

The length of the shadow is 38.11 in.