

Warm up

1. Find the complement and supplement of:

a.  $55^\circ$

b.  $\frac{\pi}{5}$

2. Convert to DMS

a.  $\frac{3\pi}{7}$

b.  $45.27^\circ$

3. Convert  $135^\circ$  to radians in terms of  $\pi$  without a calculator.

4. Find the ratio of the following:

a.  $\sin \frac{\pi}{4}$

b.  $\sec \frac{\pi}{3}$

c.  $\cot 30^\circ$

d.  $\csc 45^\circ$


Jan 14-6:55 AM


**GO COUGARS!**


**Homework Questions**


p284

In Exercises 1-4, find the exact values of the six trigonometric functions of the angle  $\theta$  shown in the figure. Use the Pythagorean Theorem to find the third side of the triangle.

1. 

2. 

3. 

4. 

In Exercises 5-16, sketch a right triangle corresponding to the trigonometric function of the acute angle  $\theta$ . Use the Pythagorean Theorem to determine the third side of the triangle and then find the other trigonometric functions of  $\theta$ .

5.  $\sin \theta = \frac{1}{2}$                       16.  $\cos \theta = \frac{2}{3}$   
 6.  $\cos \theta = \frac{1}{2}$                       17.  $\sin \theta = \frac{1}{2}$   
 7.  $\sin \theta = \frac{1}{3}$                       18.  $\cos \theta = \frac{2}{3}$   
 8.  $\cos \theta = \frac{1}{3}$                       19.  $\sin \theta = \frac{1}{2}$

In Exercises 17-26, construct an appropriate triangle to complete the table.  $\theta$  is a positive acute angle.

Function	$\theta$ (deg)	$\theta$ (rad)	Function Value
27. $\sin$	$30^\circ$		
28. $\cos$	$45^\circ$		
29. $\tan$		$\frac{\pi}{3}$	
30. $\sec$		$\frac{\pi}{4}$	

Function	$\theta$ (deg)	$\theta$ (rad)	Function Value
31. $\cos$		$\frac{\pi}{3}$	
32. $\sin$		$\frac{\pi}{4}$	
33. $\tan$		$\frac{\pi}{6}$	
34. $\sec$		$\frac{\pi}{4}$	
35. $\cos$		$\frac{\pi}{3}$	

In Exercises 37-43, complete the identity.

37.  $\sin \theta = \frac{1}{2}$                       42.  $\cos \theta = \frac{1}{2}$   
 38.  $\sin \theta = \frac{\sqrt{3}}{2}$                       43.  $\cos \theta = \frac{\sqrt{3}}{2}$   
 39.  $\sin \theta = \frac{1}{\sqrt{2}}$                       44.  $\cos \theta = \frac{1}{\sqrt{2}}$   
 40.  $\sin \theta = \frac{\sqrt{2}}{2}$                       45.  $\cos \theta = \frac{\sqrt{2}}{2}$   
 41.  $\sin \theta = \frac{1}{\sqrt{3}}$                       46.  $\cos \theta = \frac{1}{\sqrt{3}}$

In Exercises 47-56, find each value of  $\theta$  in degrees ( $0^\circ < \theta < 90^\circ$ ) and radians ( $0 < \theta < \pi/2$ ) without using a calculator.

47.  $\sin \theta = \frac{1}{2}$                       (a)  $\sin \theta = 2$   
 48.  $\cos \theta = \frac{1}{2}$                       (b)  $\cos \theta = 1$   
 49.  $\tan \theta = \frac{1}{\sqrt{3}}$                       (c)  $\tan \theta = 1$   
 50.  $\sec \theta = \frac{2}{\sqrt{3}}$                       (d)  $\sec \theta = 1$

**Workbook Answers**

1. 3150 cm/min  
 3. 17001.03 rev/hr  
 5. 66659.4 mph  
 7. 23023.3 rev/hr

1. A flywheel with a 15-cm diameter is rotating at a rate of 7 rad/sec. What is the linear speed of a point at its rim, in centimeters per minute?

3. This text was printed on a four-color WebSet offset press. A cylinder on this press has a 13.37-in diameter. The linear speed of a point on the cylinder's surface is 16.53 feet per second. What is the speed of the cylinder in revolutions per hour?

3. The earth is 93,000,000 mi from the sun and traverses its orbit, which is nearly circular every 365.25 days. What is the linear speed of the earth in its orbit, in miles per hour?

Miguel Indurain won the 1995 Tour de France bicycle race. The wheel of his bicycle had a 67-cm diameter. His average linear speed during the 13<sup>th</sup> stage in the race was 48.483 km/h. How quickly did his wheel spin in revolutions per hour?

Feb 2-9:51 PM

## 4.3 Day 2 Right Triangle Trig

mode of your calculator

non-common trig ratios/values

finding theta of non-common ratios/values

angles of elevation and depression

Dec 20-9:50 AM

Finding approximate ratios/values for those not memorized from the unit circle

we use the calculator!

trig.func(angle) = ratio

$$\sin 41^\circ = .6561$$

$$\tan 18^\circ 31' 52'' = .3352$$

$$\cos \frac{\pi}{5} = .8090$$

$$\begin{aligned} \sec 32^\circ &= \frac{1}{\cos 32} \\ \text{deg} &= 1.179 \end{aligned}$$

$$\begin{aligned} \cot 1.2 &= \frac{1}{\tan 1.2} \\ \text{radian} &= .389 \end{aligned}$$

$$\begin{aligned} \csc \frac{3\pi}{8} &= \frac{1}{\sin \frac{3\pi}{8}} \\ \text{radian} &= 1.082 \end{aligned}$$

Dec 20-9:51 AM

Now find theta when given a ratio/value

Use your calculator to find  $\sin \theta = .3214$

$$0^\circ < \theta < 90^\circ$$

(degrees)

$$18.75$$

$$0 < \theta < \frac{\pi}{2}$$

(radians)

$$.33 \text{ rad}$$

$$\sin^{-1}(.3214)$$

Dec 20-9:57 AM

More examples:

in radians

in degrees

$$\tan \theta = 1.2563$$

$$\tan^{-1}(1.2563)$$

$$\sec \theta = 1.3514$$

$$\frac{1}{\cos \theta} = 1.3514$$

$$\cos \theta = \frac{1}{1.3514}$$

$$\csc \theta = 1.5826$$

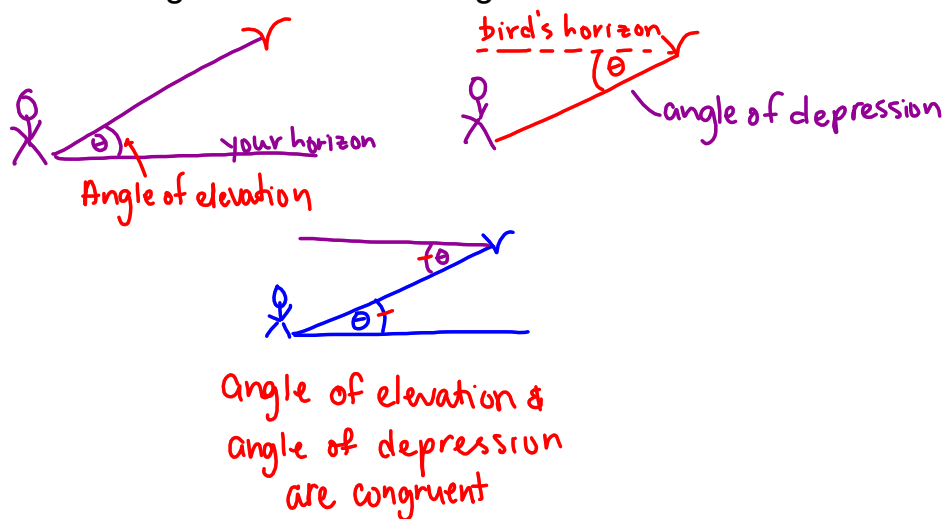
$$\cos^{-1} = \frac{1}{1.3514} = .74 \text{ rad} \quad 47.27^\circ$$

$$\sin^{-1} \frac{1}{1.5826} = .68 \text{ rad} \quad 39.18^\circ$$

Dec 20-10:03 AM

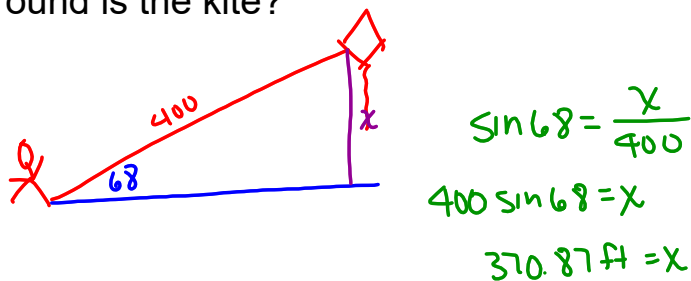
Angle of Elevation - the angle made with the horizon when you are looking up at something

Angle of Depression - the angle made with the horizon when you are looking down at something



Jan 9-2:16 PM

You are flying a kite and have let out 400 ft of string. The string makes an angle of 68 degrees with the horizon. How far above the ground is the kite?



Jan 9-2:17 PM

# HOMework



p 284 57-61 odd,  
77, 79, 81, 82

Workbook p 91

### Workbook answers

- |                      |                      |
|----------------------|----------------------|
| 1. 3150 cm/min       | 2. 54 meters/min     |
| 3. 17001.03 rev/hour | 4. 1047.2 mph        |
| 5. 66659.4 mph       | 6. approx 10 mph     |
| 7. 23023.3 rev/hr    | 8. 132.72 rad/12 sec |

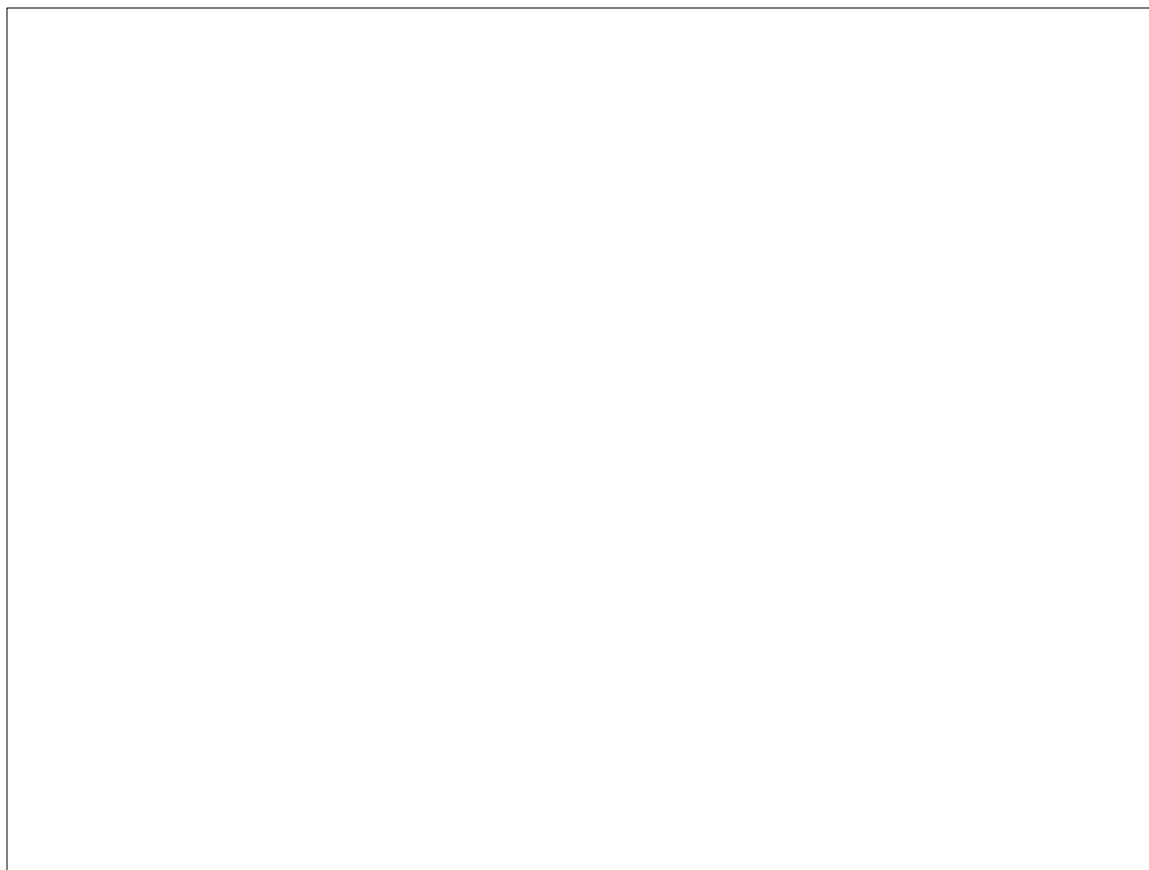
Aug 29-6:38 AM

## Block Day Part 2

### Calculator Practice in Pairs

Workbook p 78 1-24

Jan 15-1:36 PM



Jan 17-7:19 AM