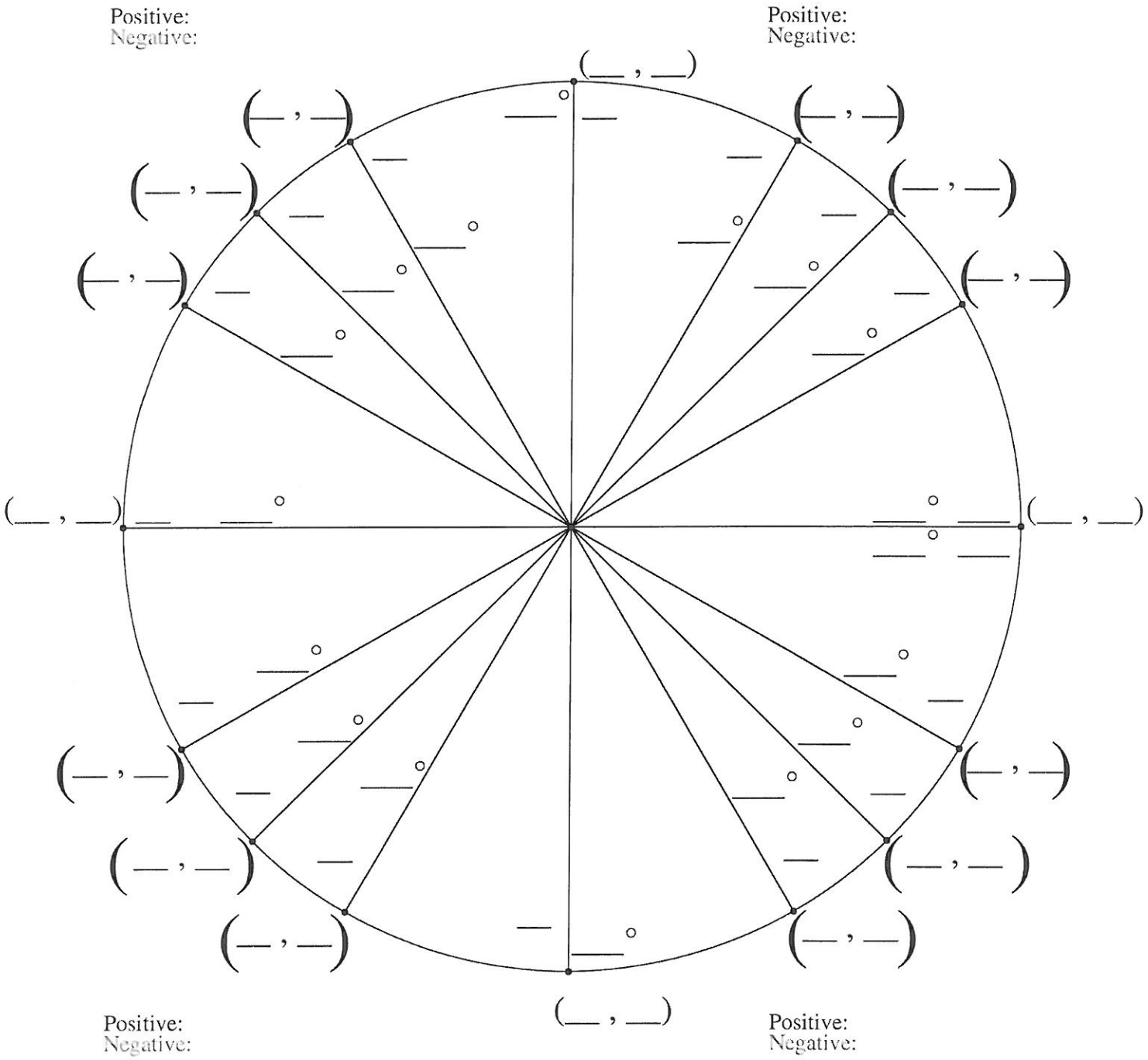
Fill in The Unit Circle



EmbeddedMath.com

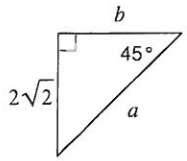
Kuta Software - Infinite Geometry Name_____

Special Right Triangles

Date_____ Period____

Find the missing side lengths. Leave your answers as radicals in simplest form.

1)



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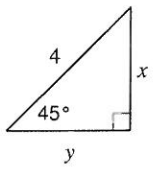

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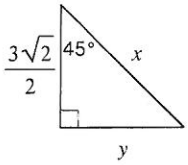

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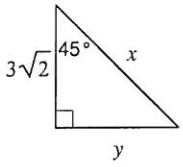

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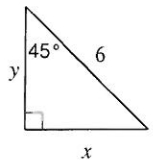

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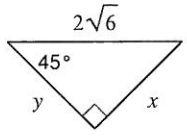

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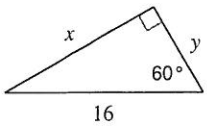

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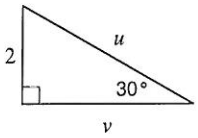

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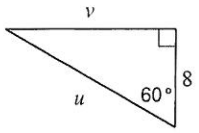

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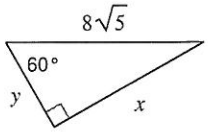

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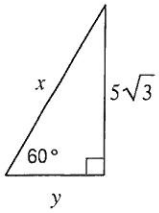

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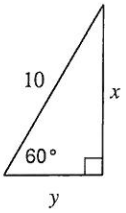

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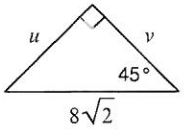

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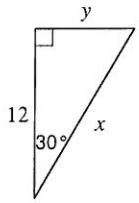

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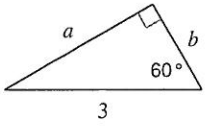

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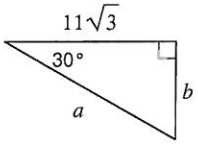

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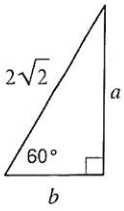

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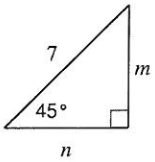


Unit Circle WS Day 2 Degrees v. Radians Conversions Initials: _____

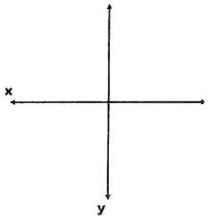
#1-8, Convert each degree measure into radians and each radian measure into degrees.

1. 45° 2. $\frac{\pi}{6}$ 3. 330° 4. $\frac{3\pi}{4}$

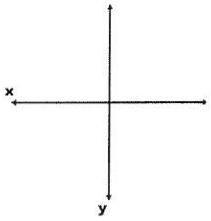
5. $\frac{2\pi}{3}$ 6. 270° 7. $\frac{10\pi}{3}$ 8. 225°

#9-14, Draw each angle in *standard position*.

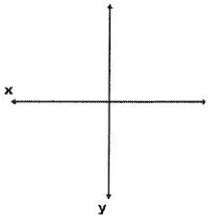
9. -200°



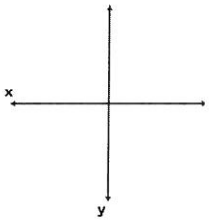
10. $\frac{7\pi}{12}$



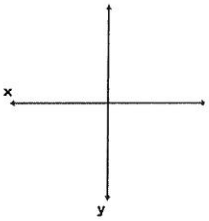
11. 1 rad.



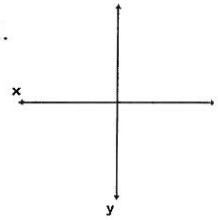
12. 3 rad.



13. 5 rad.

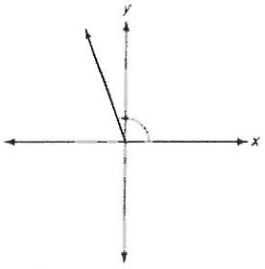


14. -2 rad.

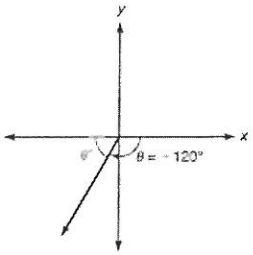


#15-22, Find the *reference angle*. Use the appropriate unit

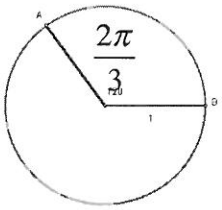
15. $\theta = 110°$



16. $\theta = -120°$



17.



18. $\theta = \frac{7\pi}{6}$ 19. $\theta = 400°$ 20. $\theta = 315°$ 21. $\theta = \frac{11\pi}{6}$ 22. $\theta = \frac{5\pi}{4}$

#23-25, Find a *positive* and *negative* coterminal angle for each given angle.

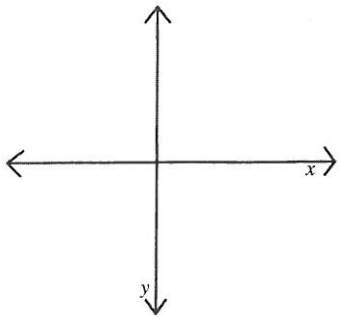
23. 135° 24 $\frac{-3\pi}{4}$ 25. 50°

_____ _____ _____ _____ _____ _____

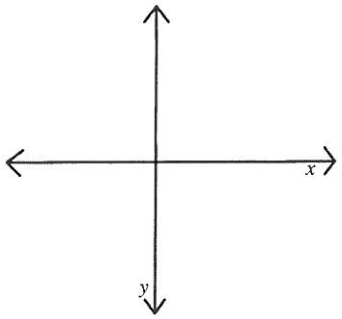
Unit Circle Day 3 WS I am Reviewing & Labeling My Unit Circle, _____

#1-4, Draw an angle with the given measure in ***standard position.***

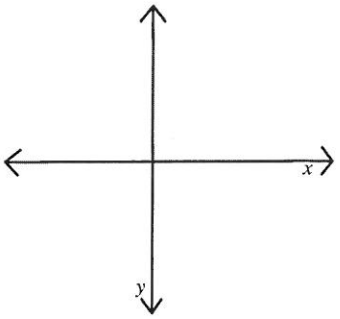
1. 230°



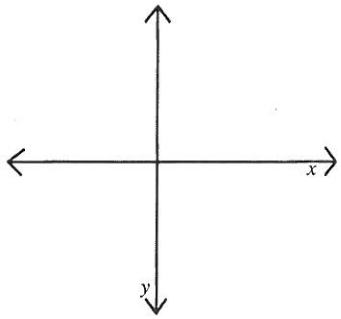
2. $\frac{7\pi}{6}$



3. $-\frac{11\pi}{12}$



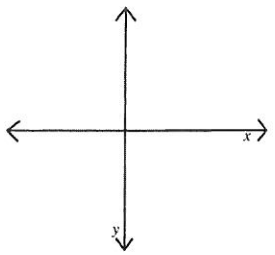
4. 4 radians



#5-9, Find a positive and negative ***coterminal angle*** for each given angle. Draw a picture if necessary.

5. 95°

6. -210°



7. $\frac{5\pi}{3}$

8. $-\frac{\pi}{4}$

9. $\frac{7\pi}{6}$

#10-13, Convert each degree measure into radians and each radian measure into degrees.

10. 225°

11. $\frac{7\pi}{6}$

12. 110°

13. $\frac{2\pi}{3}$

#14-18, Find the measure of the ***reference angle*** for each given angle, in degrees and radians.

14. $\theta = \frac{7\pi}{6}$

15. θ = -60°

16. θ = 230°

17. $\theta = \frac{2\pi}{3}$

18. $\theta = \frac{15\pi}{8}$

19. How many times with the length of a circle's radius fit around its circumference? _____

20. An angle which measures 1 radian is equal to about _____ degrees.

Unit Circle Day 4 Trigonometry My name is:_____

Given the measure of an angle (in degrees or radians), find the trigonometric ratio for each in exact form. *Use you Beautiful Unit Circle*

1. Sin 30° =
2. Cos 300° =
3. Sin 210° =
4. Sin 225° =
5. Tan 45° =
6. Tan 330° =
7. Cos $\frac{5\pi}{4}$ =
8. Sin $\frac{7\pi}{6}$ =
9. Cos $\frac{5\pi}{6}$ =
10. Cos $\frac{2\pi}{3}$
11. Tan $\frac{5\pi}{6}$ =
12. Tan $\frac{\pi}{4}$ =

Unit Circle Day 4 Trigonometry My name is:_____

Given the measure of an angle (in degrees or radians), find the trigonometric ratio for each in exact form. *Use you Beautiful Unit Circle*

1. Sin 30° =
2. Cos 300° =
3. Sin 210° =
4. Sin 225° =
5. Tan 45° =
6. Tan 330° =
7. Cos $\frac{5\pi}{4}$ =
8. Sin $\frac{7\pi}{6}$ =
9. Cos $\frac{5\pi}{6}$ =
10. Cos $\frac{2\pi}{3}$
11. Tan $\frac{5\pi}{6}$ =
12. Tan $\frac{\pi}{4}$ =

Unit Circle Day 5 Trig & Inverse Trig By, _____

#1-3, Use your *unit circle* to answer the following questions.

1. In which quadrants is *sine* positive? _____ In which quadrants is *sine* negative? _____
2. In which quadrants is *cosine* positive? _____ In which quadrants is *cosine* negative? _____
3. In which quadrants is *tangent* positive? _____ In which quadrants is *tangent* negative? _____

#4-7, Find each Trig ratio for angle measure.

4. Angle = 120°	5. $\theta = \frac{7\pi}{4}$	6. θ = -120	7. $\theta = \frac{7\pi}{3}$
Sin Angle =	Sin θ =	Sin θ =	Sin θ =
Cos Angle =	Cos θ =	Cos θ =	Cos θ =
Tan Angle=	Tan θ =	Tan θ =	Tan θ =

8. 1 radian ≈ _____ degrees.

#9-12, Find the value of θ in degrees without a calculator (use Unit Circle). There is more than one answer.

9. $\sin\theta = \frac{-1}{2}$ 10. $\cos\theta = \frac{-\sqrt{2}}{2}$ 11. $\sin\theta = \frac{\sqrt{2}}{2}$ 12. $\tan\theta = \sqrt{3}$

#13-16, Find the value of θ in radians without a calculator (use Unit Circle). There is more than one answer.

13. $\sin\theta = \frac{-\sqrt{2}}{2}$ 14. $\cos\theta = \frac{\sqrt{3}}{2}$ 15. $\cos\theta = \frac{-1}{2}$ 16. $\tan\theta$ = -1

17. Name the angle in QI in radians

18. Name an angle in QIII in degrees

Sine/Cosine Curve Lab
Advanced Math

1. Complete the sine and cosine tables
2. Graph the sine and cosine curves on the appropriate grids using each table.
3. What similarities do you see in the graphs?

4. What differences do you see in the graphs?

5. What do you think happens to the sine and cosine curves beyond 2π ?

6. Identify the domain and range for the sine curve.

   Domain:

   Range:

7. Identify the domain and range for the cosine curve.

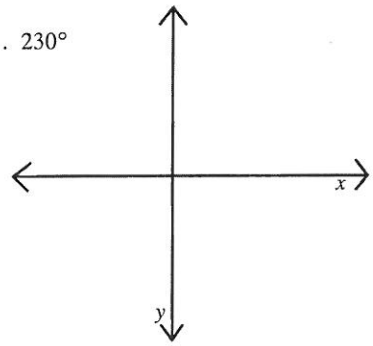
   Domain:

   Range:

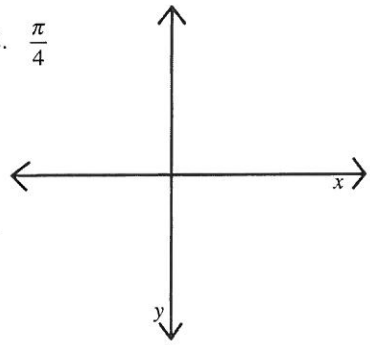
Mod 8C: *Unit Circle* WS 1 Name: _____ Per: _____

Draw an angle with the given measure in *standard position*.

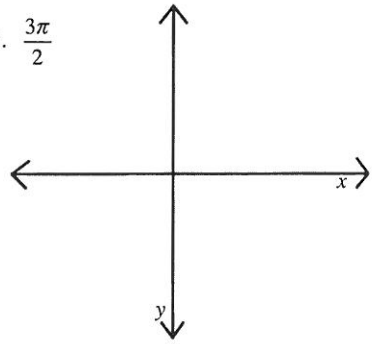
1. 230°



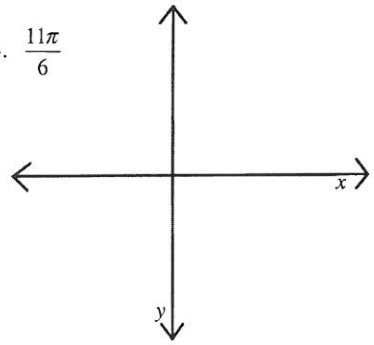
2. $\frac{\pi}{4}$



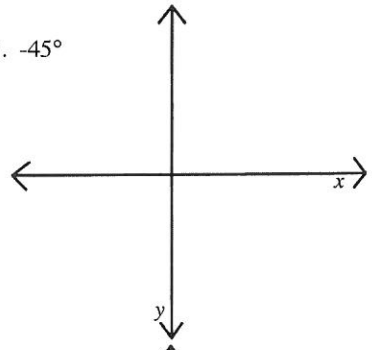
3. $\frac{3\pi}{2}$



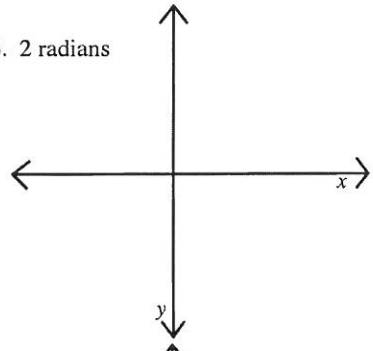
4. $\frac{11\pi}{6}$



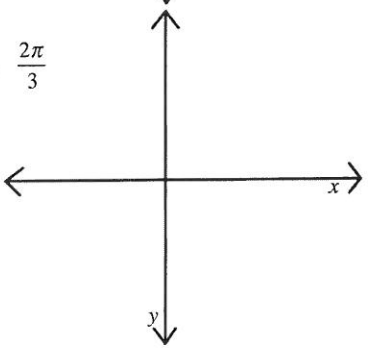
5. -45°



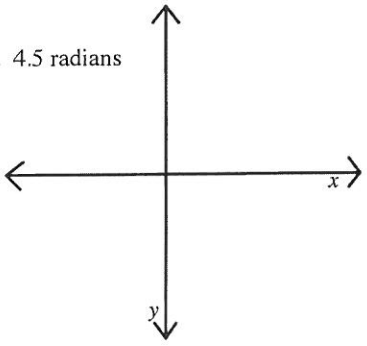
6. 2 radians



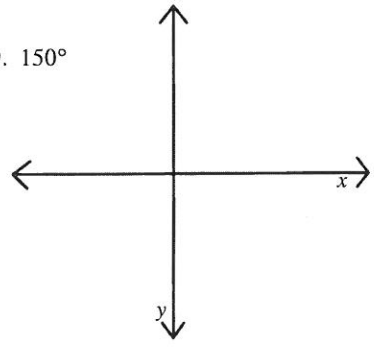
7. $\frac{2\pi}{3}$



8. 4.5 radians



9. 150°



Find the *coterminal* and *reference* angles for each given angle.

10. 225° _____ _____

11. $\frac{3\pi}{4}$ _____ _____

12. -30° _____ _____

13. $\frac{2\pi}{3}$ _____ _____

14. 53° _____ _____

Convert each *degree measure* into *radians* and each *radian measure* into *degrees*.

15. 45° _____

16. $\frac{\pi}{6}$ _____

17. 330° _____

18. $\frac{3\pi}{4}$ _____

19. $\frac{\pi}{2}$ _____

20. $\frac{2\pi}{3}$ _____

21. 270° _____

22. $\frac{5\pi}{3}$ _____

23. 225° _____

24. 60° _____

25. What is a *unit circle*? Draw a picture and write a sentence to describe.

Mod 8C: *Unit Circle* WS Name: Per:

Use your *unit circle* to answer the following questions.

1. In which quadrants is *sine* positive? _____ In which quadrants is *sine* negative? _____

2. In which quadrants is *cosine* positive? _____ In which quadrants is *cosine* negative? _____

3. In which quadrants is *tangent* positive? _____ In which quadrants is *tangent* negative? _____

Assume all angles are between 0 and 2π. Evaluate in degrees and radians. (*Hint*: Remember to look in all four quadrants.)

4. $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ _____ _____

5. $\sin^{-1}\left(-\frac{1}{2}\right)$ _____ _____

6. $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$ _____ _____

7. $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$ _____ _____

8. $\cos^{-1}\left(\frac{1}{2}\right)$ _____ _____

9. $\tan^{-1}(1)$ _____ _____

10. $\sin^{-1}\left(\frac{-\sqrt{3}}{2}\right)$ _____ _____

11. $\cos^{-1}\left(\frac{-\sqrt{3}}{2}\right)$ _____ _____

** *12-14 are bonus problems for the adventurous mathematician* ☺

12. San Antonio, TX is located 30° north of the equator. If the earth's radius is 3959 miles, then how many miles is San Antonio from the equator?

_____

13. A pendulum is 18 feet long. Its central angle is 44°, and the pendulum makes one back and forth swing every 12 seconds. To the nearest foot, how far does the pendulum swing in one minute?

14. The tires of a bicycle have a diameter of 26 inches. In the lowest gear, one complete revolution of the pedals causes the back wheel to rotate through an angle of 106°.

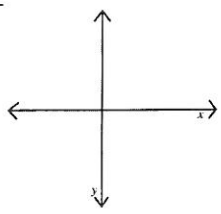
A. How far does this cause the bike to move? B. If James bikes 2 miles to work, then how many times did the wheels rotate?

Mod 8C Unit Circle Study Guide Name: Per:

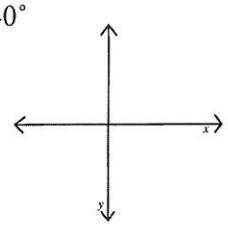
1. Define a *unit circle*. Using words, describe how you could construct a unit circle with the help of two specific triangles.

2. Draw the angle given below, convert to radians (or degrees) and label the *reference angle*.

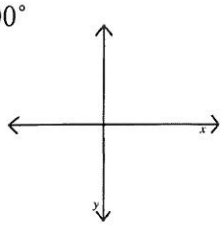
a. $\frac{5\pi}{4}$



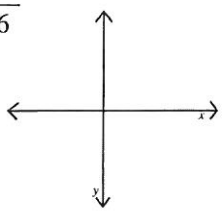
b. 240°



c. 300°



d. $\frac{5\pi}{6}$



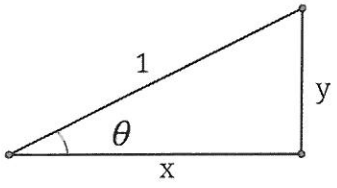
Radians/degree conversion:

a. b. c. d.

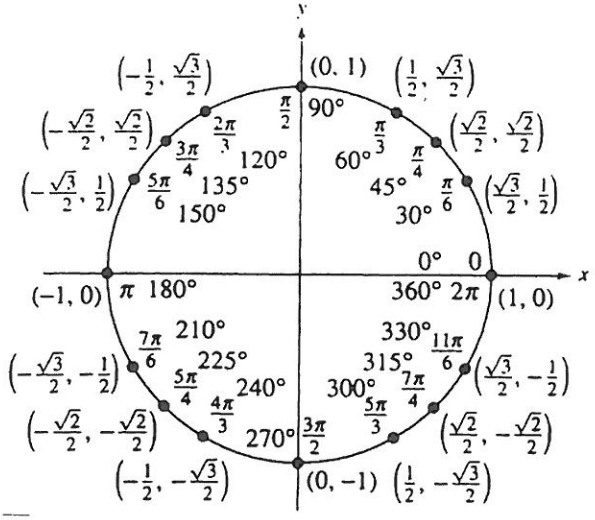
3. Using the Unit Circle and a sketch of the reference angle-based triangle, find the *exact* value of the following:

a. cos(240°) b. $\sin\left(\frac{5\pi}{4}\right)$ c. sin(30°) d. $\tan\left(\frac{7\pi}{4}\right)$

4. Use your knowledge of trigonometric functions and the unit circle to complete the chart below.



value:	+ quad	- quad
sin θ		
cos θ		
tan θ		



5. Assume all angles are between 0 and 2π. *Evaluate in degrees and radians.*
(*Hint*: Remember to look in all four quadrants.)

a. $\sin^{-1}\left(\frac{-\sqrt{3}}{2}\right)$	b. $\tan^{-1}(-1)$	c. $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$	d. $\cos^{-1}\left(-\frac{1}{2}\right)$
d:	d:	d:	d:
r:	r:	r:	r:

6. Bonus questions:

a. Given that Bozeman, Montana sits on the 45.6° north of the equator and the radius of the earth is 3,959 miles, how far are we away from the equator?

b. The Millenium Wheel, the world's tallest ferris wheel, in London, England, has a diameter of 120 meters.
   - If Mr. Fulton and his dog Cooper got into one of the cabins and the ferris wheel rotated 87° before an electrical outage forced the ferris wheel to stop, how far did Mr. Fulton's cabin travel?
   - How far will Mr. Fulton have traveled in one complete rotation of the wheel?