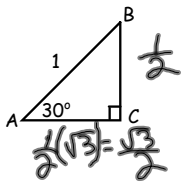
Lesson 55

Aim: What is the unit circle and value of angles in quadrants?

HW: Read pages 362 - 366
On page 366 # 4,5,6,7,11 to 14,17,22,23

Day 2 **HW: p.372 # 6,8,14,16,18,20,22,24,26,27**

Do Now:
1) Find in simplest radical form AC and BC
2) Find the Exact Value (NOT a DECIMAL!) of Sin A, Cos A and Tan A



$\frac{1}{2}$

$2(\sqrt{3}) = \sqrt{3}$

$\sin A = \frac{\frac{1}{2}}{1} = \frac{1}{2}$

$\cos A \quad \frac{\frac{\sqrt{3}}{2}}{1} = \frac{\sqrt{3}}{2}$

$\tan = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} =$

$\frac{1}{2} \div \frac{\sqrt{3}}{2} = \frac{1}{2} \times \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}}$

$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

$\sin \frac{16}{20} = \frac{4}{5} = .8$

$\cos \frac{12}{20} = \frac{3}{5} = .6$

$\tan \frac{16}{12} \quad \frac{4}{3} = 1.33$

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4. Same as 180°
6. Same as 240°
7. In quadrant II **8.** I
9. II **10.** III **11.** IV
12. IV **13.** II **14.** I
15. IV **16.** I **17.** IV
18. 30° **20.** 280° **23.** 90°

25. 180° **32.** 12.5

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14. $\sin = \frac{4}{5}, \cos = \frac{3}{5}, \tan = \frac{4}{3}$

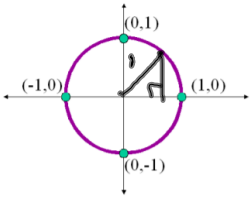
16. $\sin = \frac{5}{13}, \cos = \frac{12}{13}, \tan = \frac{5}{12}$

A circle with center at (0, 0) and radius 1 is called a unit circle.

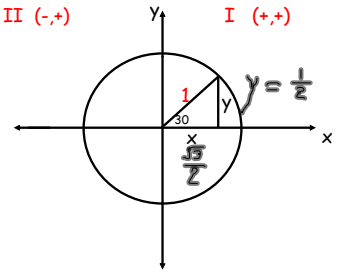
Remember the equation of this circle would be

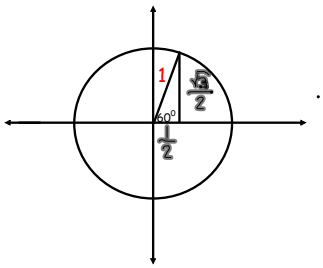
$$x^2 + y^2 = 1$$

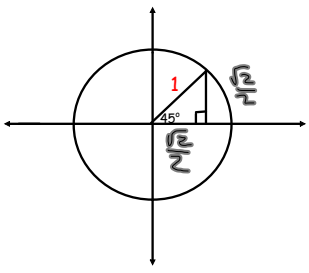
Unit Circle



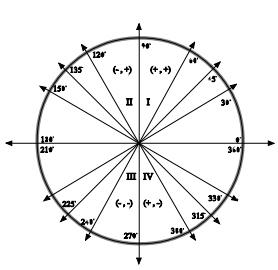
So points on this circle must satisfy this equation.

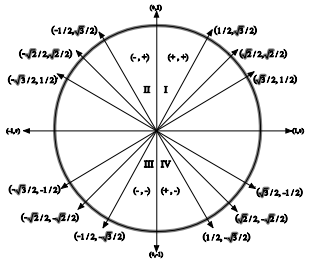




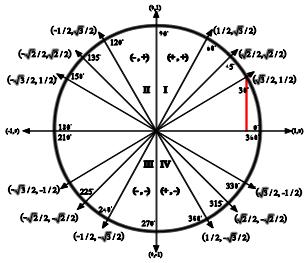


Function	30	45	60
Sin	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
Cos	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
Tan	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$





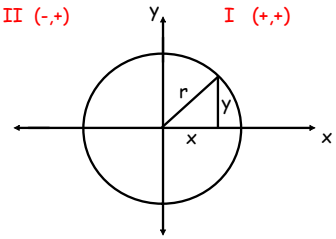
Remember the radius = 1



(x,y)

In general, the horizontal side of a triangle is x,
the vertical side of a triangle is y and
the hypotenuse is r (radius)

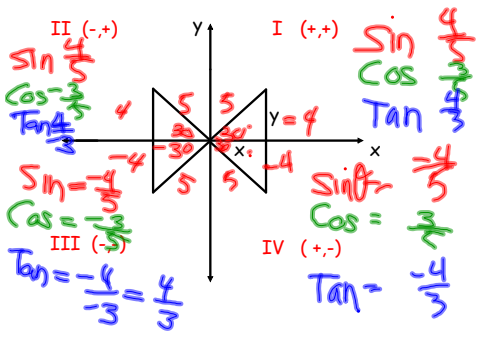
II (-,+) I (+,+)



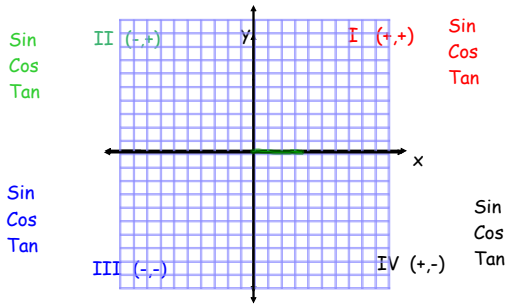
opposite

hypotenuse

adjacent



A point on the terminal side of an acute angle is (4,3) (x,y)



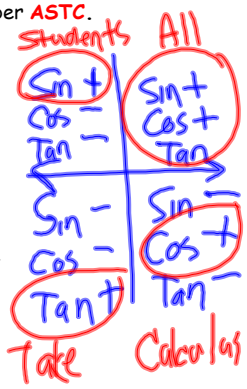
We can use the saying
"**A**ll **S**tudents **T**ake **C**lasses" to remember **ASTC**.
Which reminds us that:

In quadrant I **A**ll three functions are positive,

In quadrant II **S**ine is positive

In quadrant III **T**angent is positive

In quadrant IV **C**osine is positive



Determine the signs of the following functions:

a) sin 30

b) sin 200

c) sin 140

d) cos 225

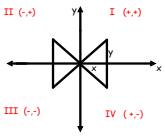
e) cos 345

f) cos 195

g) tan 200

h) tan 300

Find the correct quadrant when:



a) $\cos\theta > 0$

b) $\cos\theta < 0$

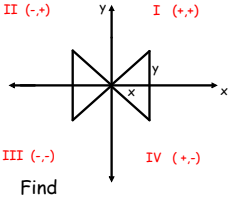
c) $\sin\theta > 0$ and $\cos\theta > 0$

d) $\sin\theta < 0$ and $\cos\theta < 0$

e) $\sin\theta > 0$ and $\cos\theta < 0$

f) $\cos\theta > 0$ and $\tan\theta < 0$

g) $\tan\theta > 0$ and $\sin\theta < 0$



Find

a. y coordinate (-6/10, y)

b. $\cos\theta$

c. $\sin\theta$

d. $\tan\theta$