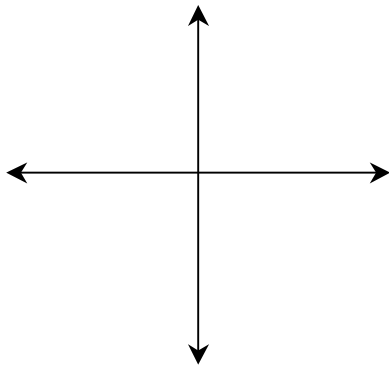


# Trigonometric Ratios of Any Angle

- Use a calculator to find the values in the table to the right:
- Sketch the four angles below.

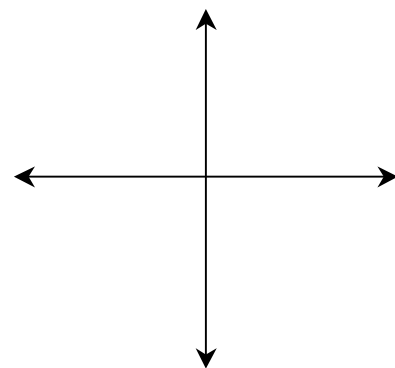


$\theta$	$\sin \theta$	$\cos \theta$	$\tan \theta$
$30^\circ$			
$150^\circ$			
$210^\circ$			
$330^\circ$			

- What do you notice about the trig ratios in the table?
- What do the angles have in common when you sketch them?

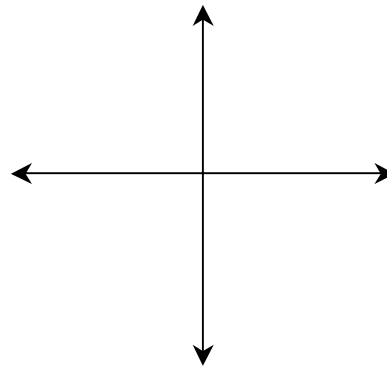
- Repeat the same process with the 45's below. What do you notice...(questions 3&4)?

$\theta$	$\sin \theta$	$\cos \theta$	$\tan \theta$
$45^\circ$			
$135^\circ$			
$225^\circ$			
$315^\circ$			



6. Repeat the same process with the 60's below. What do you notice...(questions 3&4)?

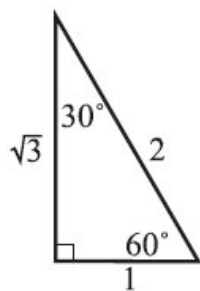
$\theta$	$\sin \theta$	$\cos \theta$	$\tan \theta$
$60^\circ$			
$120^\circ$			
$240^\circ$			
$300^\circ$			



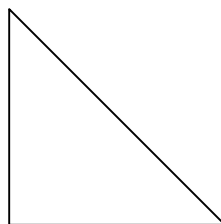
7. Summarize the three charts. What do we learn from this? (make this good... it's the whole point)

8. The side ratios of a 30-60-90 triangle are listed below. Fill in the sides of a 45-45-90 triangle and then relate these two triangles to your tables and question 7 above. (In other words, find exact values for EVERYTHING you've just done).

**30-60-90 Triangle**



**45-45-90 Triangle**

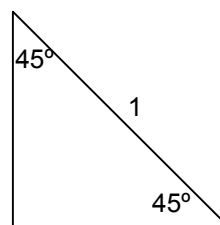
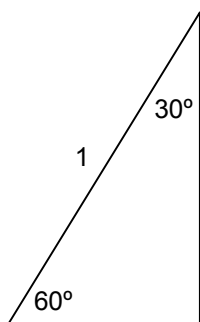




11. Complete the following table for the “quadrantal angles”.

$\theta$	$0^\circ$	$90^\circ$	$180^\circ$	$270^\circ$	$360^\circ$
$\sin \theta$					
$\cos \theta$					
$\tan \theta$					

12. Solve the two triangles below (find the remaining sides). Notice that the two triangles are just a 30-60-90 and 45-45-90 with a hypotenuse of 1.



13. Given the ratios you have just found, state the following values (base your answers on the triangles in question 12).

a)  $\sin 60^\circ$

d)  $\tan 45^\circ$

b)  $\cos 45^\circ$

e)  $\cos 60^\circ$

c)  $\tan 30^\circ$

f)  $\sin 30^\circ$

14. Compare your answers in question 13, with the charts from the previous pages. What do you notice. Most importantly... why does this happen?