

Trig 5.1

Convert measurements
between d/m/s and decimals

Find the number of degrees in a
given rotation

Identify coterminal angles

angle

vertex

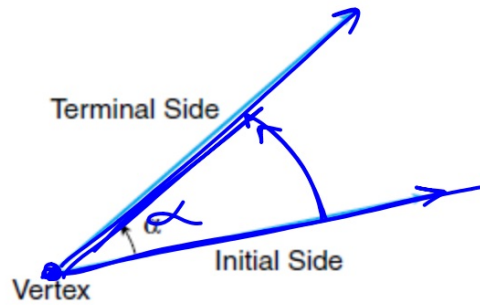
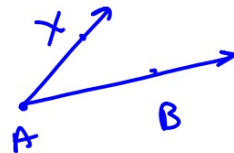
initial side

terminal side

standard position

degree

minute / seconds



α
 θ

1 degree = 60 min dms

clockwise 1 min = 60 sec.

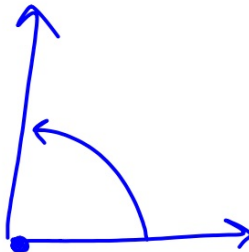
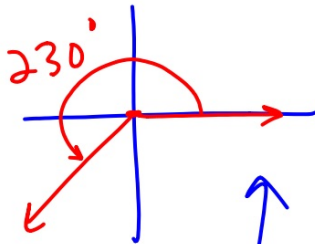
counterclockwise (default)

coterminal angles

quadrantal angle

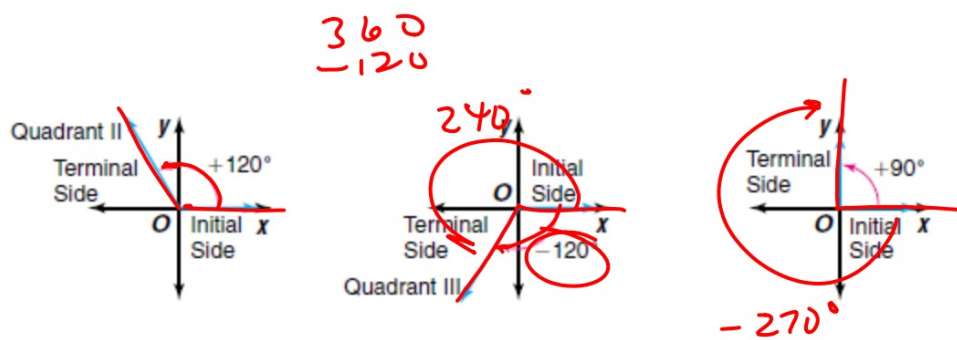
reference angle (to horizontal)

activity: plates



1/4 of a circle
360
12.5°

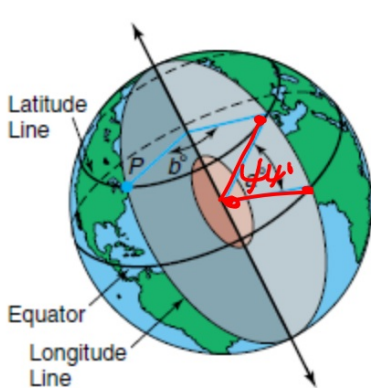
12° 30'
60
12° 30'



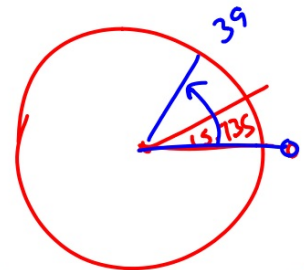
clockwise

counterclockwise (default)

sec>>min>>degrees



minutes
seconds



1 NAVIGATION Refer to the application at the beginning of the lesson.

a. Change north latitude 15.735° to degrees, minutes, and seconds.

b. Write north latitude $39^\circ 5' 34''$ as a decimal rounded to the nearest thousandth.

$\times 60$

$\div 60$

mins

$\frac{34}{60}$

$0.5666\dots$
 $\frac{5.5666}{60}$

$39.092777\dots$

$39.093'$

$15^\circ + (44)' + (6)''$

$.735(60)$ 44.1
 $(.1)(60)$

Latitude 44 (restaurant in SF)

(of) ~~x~~ 0.95 of a degree

Change each measure to degrees, minutes, and seconds.

→ 5.34.95° 34° 57°

6. -72.775° = -72° 46.5

Write each measure as a decimal to the nearest thousandth.

7. -128° 30' 45"

$$\begin{array}{r} \overline{60} \\ 30.\overline{75} \\ \underline{60} \end{array}$$

-128.5125°

8. 29° 6' 6"

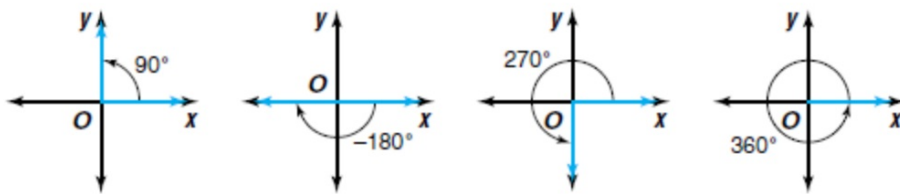
6.10

-72° 46' 30"

29.101666..

29.102°

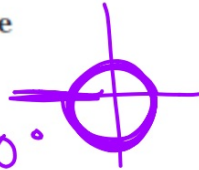
One complete rotation = 360 degrees



2 Give the angle measure represented by each rotation.

a. 5.5 rotations clockwise

$$5.5(360) = -1980^\circ$$



b. 3.3 rotations counterclockwise

$$3.3(360) = 1188^\circ$$



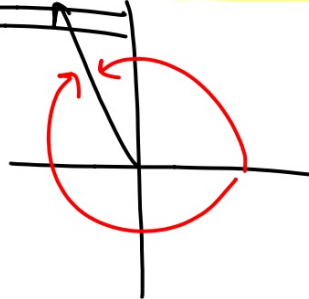
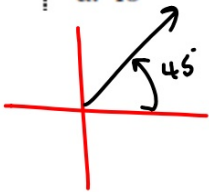
coterminal = same terminal side

- 3 Identify all angles that are coterminal with each angle. Then find one positive angle and one negative angle that are coterminal with the angle.

a. 45°

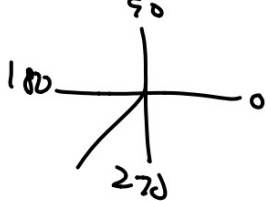
$$45 + 360n$$

where n is an integer



$$405^\circ$$
$$-315^\circ$$

b. 225°



$$225 + 360n$$

$$n \in \mathbb{Z}$$

$$585^\circ$$
$$-135^\circ$$

Give the angle measure represented by each rotation.

9. 2 rotations clockwise

10. 4.5 rotations counterclockwise

Identify **all** angles that are coterminal with each angle. Then find one positive angle and one negative angle that are coterminal with each angle.

11. 22°

12. -170°

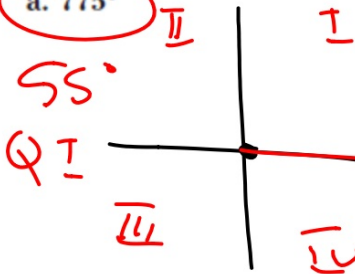
$$-170 + 360n \quad n \in \mathbb{Z}$$

$$190^\circ$$

$$-530^\circ$$

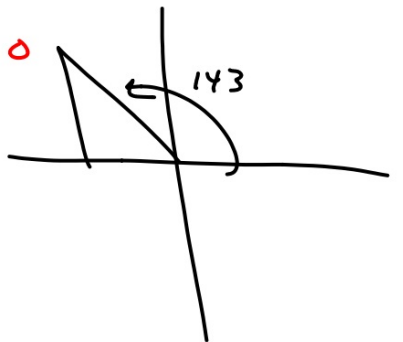
4 If each angle is in standard position, determine a coterminal angle that is between 0° and 360° . State the quadrant in which the terminal side lies.

a. 775°

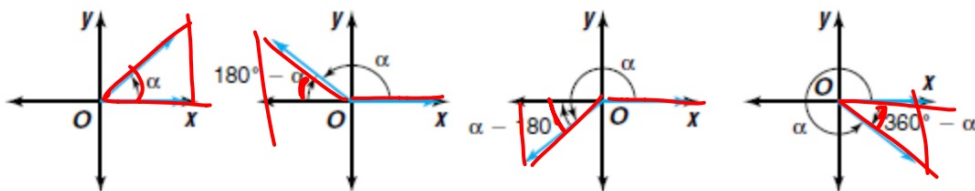


b. -1297°

143°
Q II



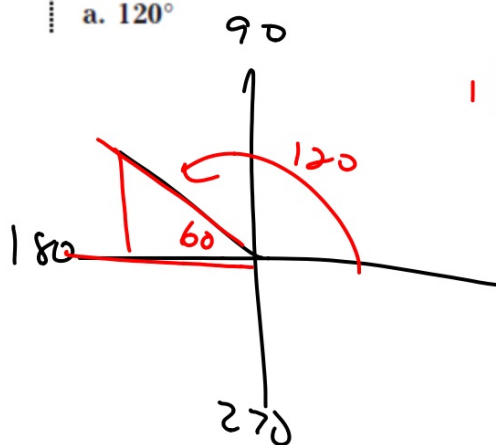
Reference angles...always go to the X axis!



$$120 + ? = 180$$

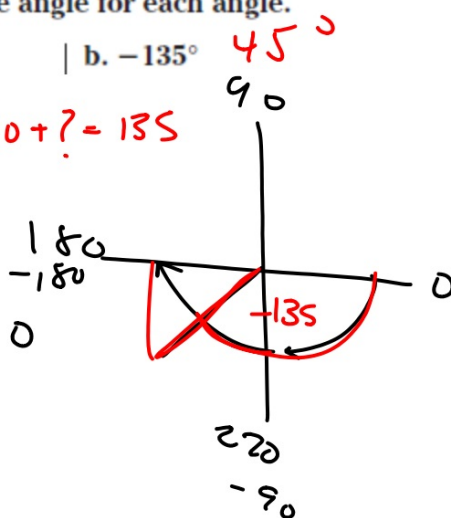
5 Find the measure of the reference angle for each angle.

a. 120°



b. -135°

$$180 + ? = 135$$



19-570th

Find the measure of the reference angle for each angle.

15. 227°

16. -210°