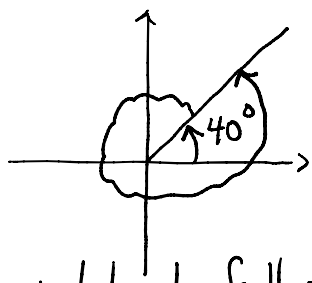
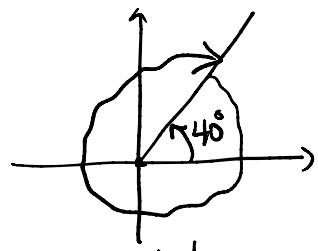
Coterminal Angles – stop on the same terminal arm

(there are infinite answers)



rotate 1 full turn counter clockwise

$40 + 360 = 400°$



rotate -360 clockwise

$40 - 360 = -320°$

The measure of any angle that is coterminal can be written as

$$\text{ANGLE} + 360k \quad , \quad k \in I$$

ex.1 Determine the measure of all coterminal angles in standard position between -800 and 800 with angle $85°$

$85 + 360 = 445 + 360 = \cancel{805}$

$85 - 360 = -275 - 360 = -635 - 360$ ✗

an expression for ALL angles coterminal

$$85 + 360k \quad , \quad k \in I$$

The <u>principal angle</u> is the lowest positive angle that is coterminal with the given angle

ex.2 Determine the principal angle for -908

→ principal between 0 and 360

$-908 + 360$ until you get a number greater than 0

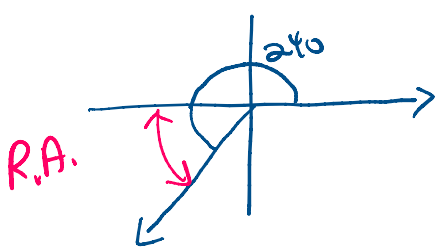
$= 172$

special angles/triangles

ex.3 Determine the <u>exact</u> values of the trig ratios for -840.

→ Determine principal angle

$-840 + 360 + \cdots = 240$



RA $= 240 - 180 = 60 \rightarrow$ special Δ

$\sin 60 \overset{OR}{=} \sin 240 \overset{OR}{=} \sin -840 = \frac{\sqrt{3}}{2}$

$\cos 60 = \frac{1}{2}$

$\tan 60 = \frac{\sqrt{3}}{1} = \sqrt{3}$

p 445 # 5-7, 10, 11, 13(2), 16 OR 17