Example 2

a. Identify all coterminal angles to 86°.

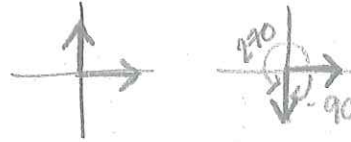$$86 + 360k$$

Quadrant Angle: Terminal side is on an axis

b. Find one positive and one negative angle that are coterminal to 86°.

$$86 + 360 = 446°$$
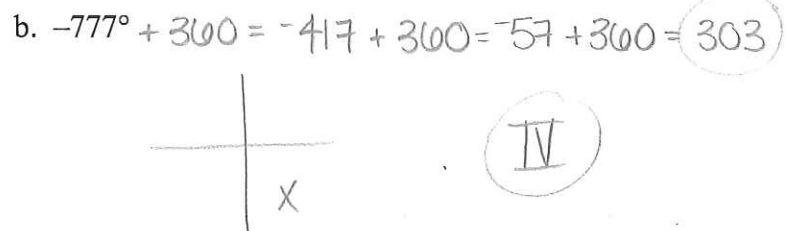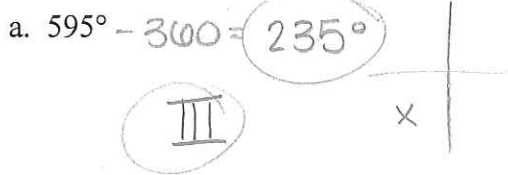$$86 - 360 = -274°$$

Coterminal Angle: Same ∠s, diff meas.

Ex : 50, 410, 770

$x + 360, \ x + 720, \ x + 1080, \ ...$

Example 3

Given the angle, determine a coterminal angle that is between 0° and 360° and state the quadrant in which the terminal side lies.

a. $595° - 360 = \boxed{235°}$

$\boxed{III}$ ×

b. $-777° + 360 = -417 + 360 = -57 + 360 = \boxed{303}$

$\boxed{IV}$ ×

Example 4

a. Give the angle measure represented by 9.5 rotations clockwise.
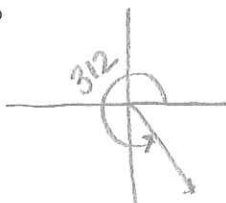
$$-9.5 \times 360 = -3420$$

b. Give the angle measure represented by 6.75 rotations counterclockwise.

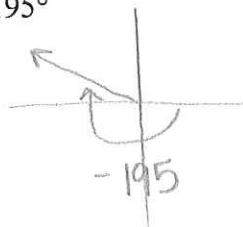$$6.75 \times 360 = 2430$$

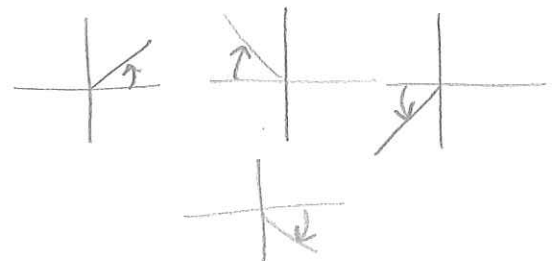**Example 5**

Find the reference angle for each angle

a. 312°

b. −195°

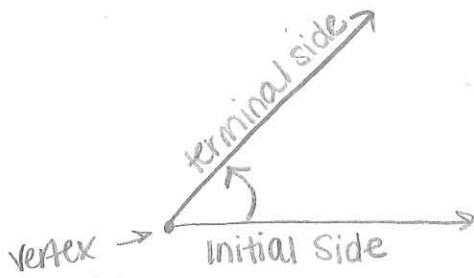**Reference Angle:** acute ∠ formed by terminal side & x-axis

$$300 - 312 = \boxed{48°}$$

$\boxed{15°}$

vertex → initial side, terminal side

Vertex: point where two rays meet

Initial Side: fixed ray

Terminal Side: rotating ray

Counterclockwise   * positive angle

120

Clockwise   * negative angle

-120
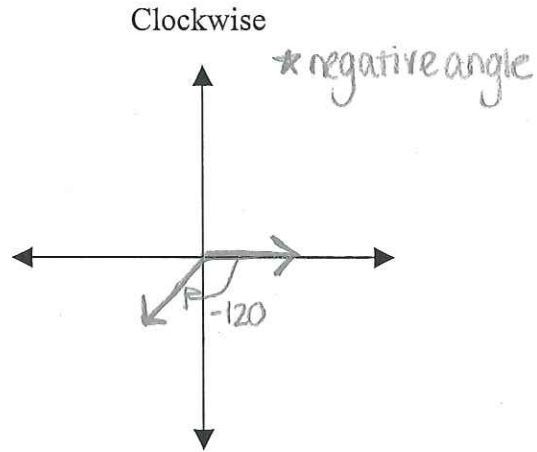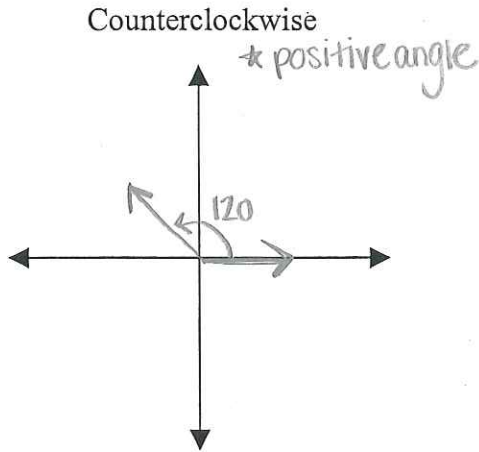
Example 1

a. A bearing from a plane to a tower is 329.125°. Change this to degree, minutes, and seconds.

$$329.125 = 329° + .125(60)$$
$$= 329° + 7.5'$$
$$= 329° + 7' + .5(60)$$
$$= 329° + 7' + 30''$$

$$\boxed{329° \, 7' \, 30''}$$

Standard Position: vertex at origin, initial side on x-axis

Degree: unit used to measure angles

Minutes: degree subdivided into 60 parts $(1° = 60')$

Seconds: minute subdivided in 60 parts $(1' = 60'')$

$\times 60$

$(1° = 3600'')$

b. Change 35°12'7" into a decimal rounded to the nearest thousandth.

$$35°12'7'' = 35 + 12\left(\frac{1}{60}\right) + 7\left(\frac{1}{3600}\right)$$
$$= 35 + 0.2 + .002$$
$$= \boxed{35.202°}$$