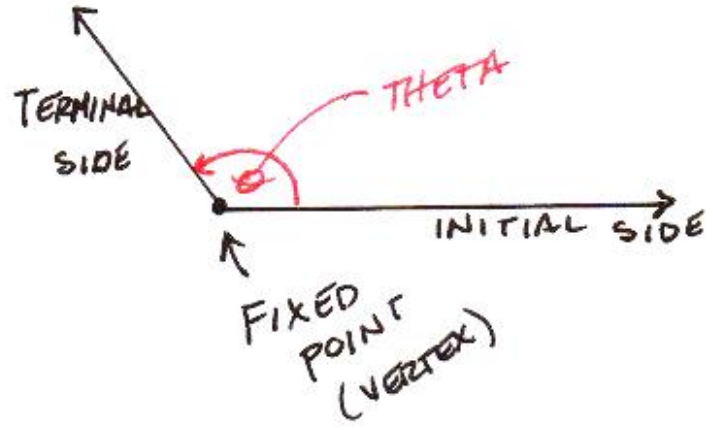
SEC 2.1 ANGLES & ARCS

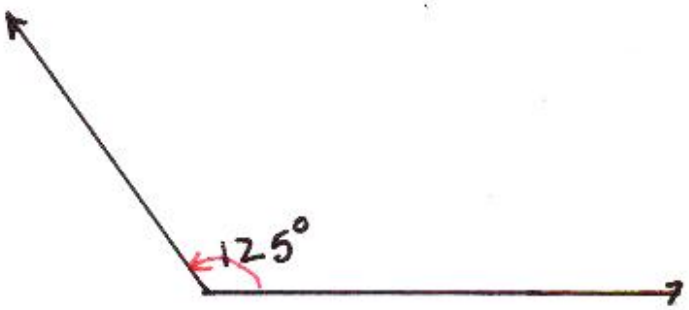
1. DEFINITION OF AN ANGLE: AN ANGLE IS FORMED BY ROTATING A RAY IN A COUNTER-CLOCKWISE DIRECTION (CALLED THE INITIAL SIDE) AROUND A FIXED POINT TO A SECOND RAY (CALLED THE TERMINAL SIDE).



2. DEGREE: ONE DEGREE IS THE MEASURE OF ROTATING AN ANGLE $\frac{1}{360}$ OF A COMPLETE ROTATION.

3. PROTRACTOR: TOOL THAT MEASURE THE DEGREES ON AN ANGLE.

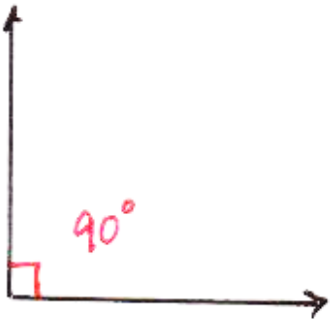
EXAMPLE:



4. KINDS OF ANGLES

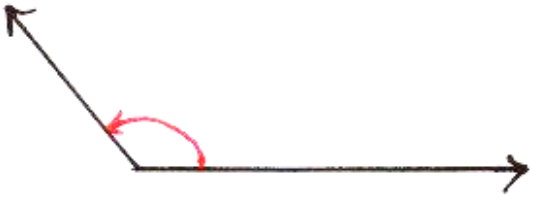
A) STRAIGHT ANGLE

B) RIGHT ANGLE:

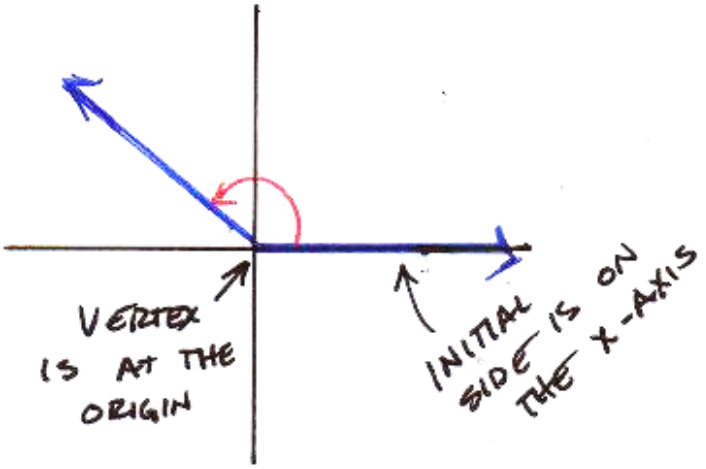


C) ACUTE ANGLE: LESS THAN 90°

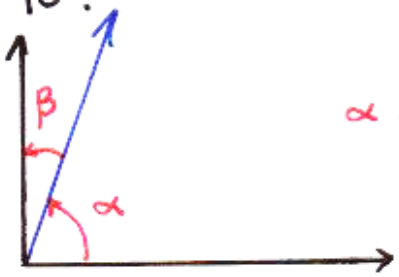
D) OBTUSE ANGLE: GREATER THAN 90° BUT LESS THAN 180°



5. STANDARD POSITION:



6. COMPLEMENTARY ANGLES: THE SUM OF TWO ANGLES IS $90°$.



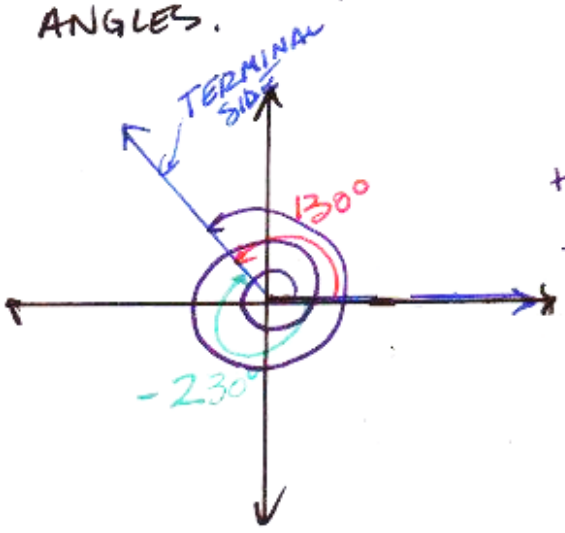
$\alpha + \beta = 90°$

7. SUPPLEMENTARY ANGLES: THE SUM OF TWO ANGLES IS $180°$.

$\alpha + \beta = 180°$

8. COTERMINAL ANGLES: FROM STANDARD POSITION IF TWO ANGLES HAVE THE SAME TERMINAL SIDE, THEY ARE CO-TERMINAL ANGLES.

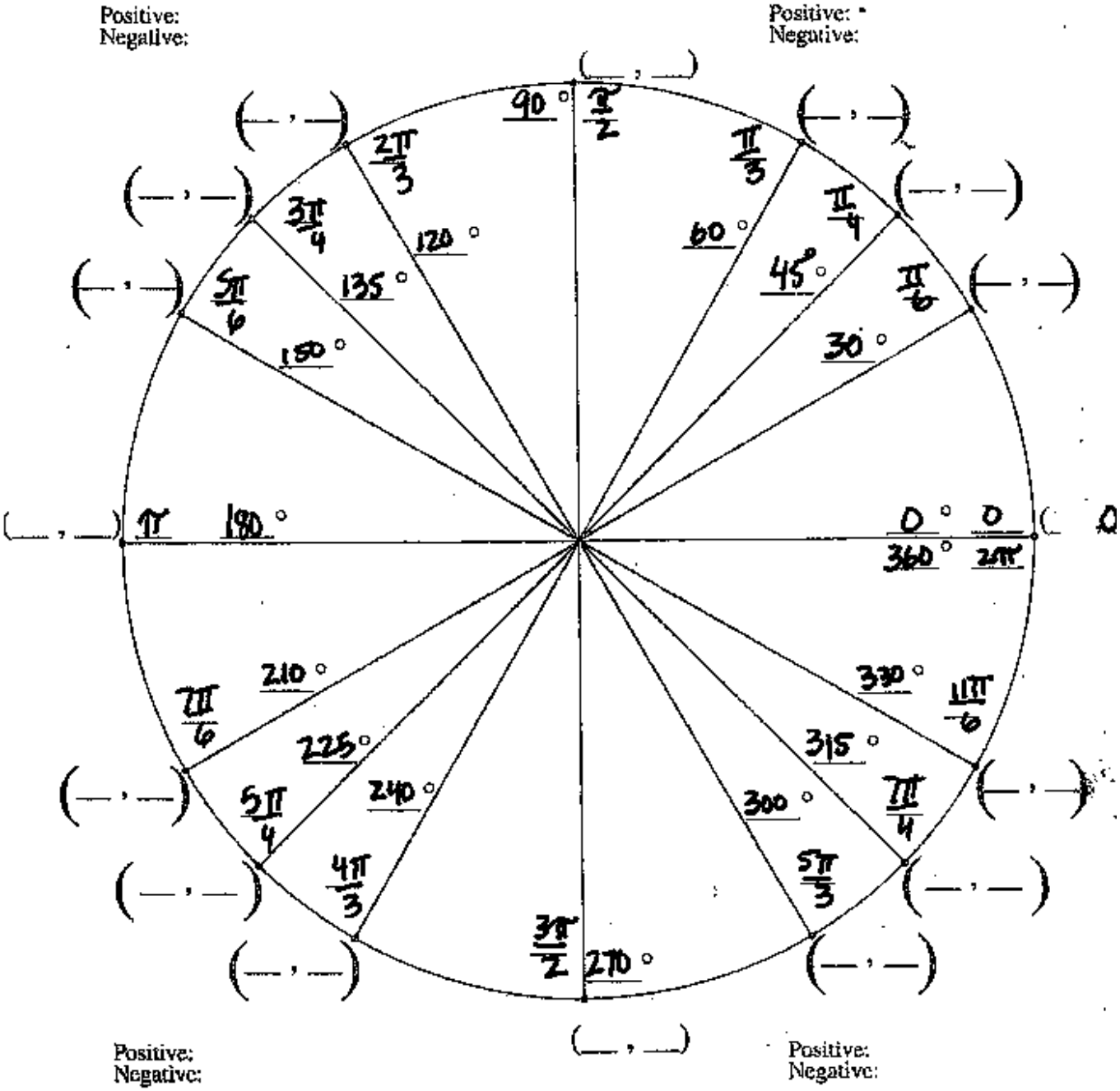
$x° + k \cdot 360°$



1
360
+360
130
850°

130
-360
-230°

Fill in The Unit Circle



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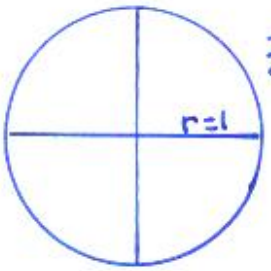
9. DEGREES, MINUTES, SECONDS

EX. $126^\circ\ 12'\ 17''$

$$126^\circ + \frac{12}{60} + \frac{17}{3600} \approx 126.2047222$$

126°: WHOLE #; $\frac{12}{60}$: MINUTES; $\frac{17}{3600}$: SECONDS

10. RADIAN MEASURE:



$360^\circ = 2\pi(1)$

$360^\circ = 2\pi$ RADIANS

$\frac{360}{2} = \frac{2\pi}{2}$ $\quad 180^\circ = \pi$ RADIANS

$\frac{180^\circ}{2} = \frac{\pi}{2}$ $\quad 90^\circ = \frac{\pi}{2}$ RADIANS

$\frac{90^\circ}{2} = \frac{\pi}{2} \cdot \frac{1}{2}$ $\quad 45^\circ = \frac{\pi}{4}$ RADIANS

$\frac{90^\circ}{3} = \frac{\pi}{2} \cdot \frac{1}{3}$ $\quad 30^\circ = \frac{\pi}{6}$ RADIANS

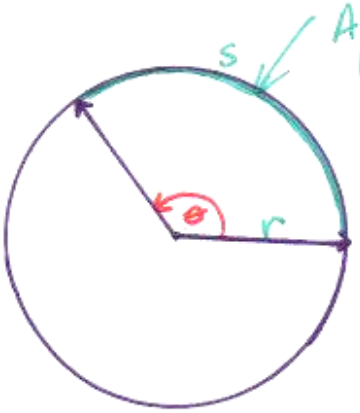
11. ANY ANGLE IN DEGREES, CONVERT TO RADIANS.

$$275^\circ \times \frac{\pi}{180^\circ} = \frac{275\pi}{180^\circ} = \boxed{\frac{55\pi}{36}}$$

12. CONVERT FROM RADIANS TO DEGREES.

$$-\frac{3\pi}{4} \times \frac{180^\circ}{\pi} = \boxed{-135^\circ}$$

13. ARC LENGTH: THE LENGTH OF A PORTION OF A CIRCLE.



ARC LENGTH

$s = r\theta$

RADIUS

MUST BE IN RADIANS

14. ANGULAR SPEED: ω IS THE ANGLE THRU WHICH A POINT ON A CIRCLE MOVES PER UNIT TIME:

$$\omega = \frac{\theta}{t}$$

(EXAMPLE #7) P. 122

15 LINEAR SPEED: v IS DISTANCE TRAVELED PER UNIT OF TIME.

$$v = \frac{s}{t}$$

(EXAMPLE #8) P. 123