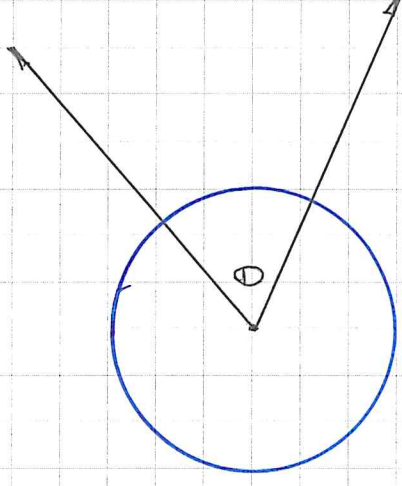


4.1 Angle Measure (II) - Radians

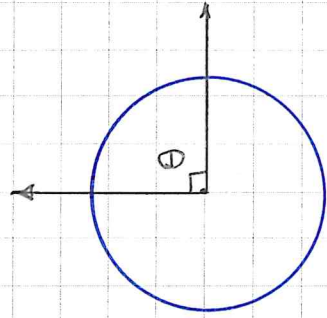
DEFINITION: The radian measure of an angle whose vertex is at the center of a circle is found by forming the ratio of the length of the intercepted arc to the radius of the circle.



The radian measure of θ is given by:

- Notes:
- 1) r and s are assumed to be in the same units.
 - 2) Radians are pure numbers.
 - 3) Radian measure does not depend on the size of the circle.

Ex. ① Find the radian measure of 90° .



Recall: $C = 2\pi r$. So $s =$

Thus $\theta =$

Ex. ② Complete the chart:

θ°	0°	90°	180°	45°	360°	60°	30°
θ^r							

FORMULA: The following proportion can be used to convert between radians and degrees.

Ex. ③ Find the radian measure of:

a) 150°

b) $(\frac{1}{2})^\circ$

Ex. ④ Find the degree measure of:

a) $\frac{2\pi}{3}$

b) $\frac{11\pi}{6}$

c) 1

FORMULA: Since $\theta = \frac{s}{r}$, it follows that
(When θ is measured in radians.)

Ex. ⑤ Use $s = r\theta$ to approximate the distance to the sun
if it is known that $s = 811,000$ miles and $\theta = (1/2)^\circ$

