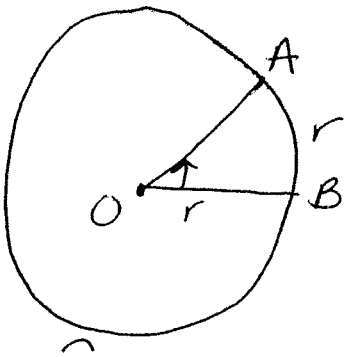
2. Write a description of an angle that measures 1 radian. Illustrate this concept with a sketch. How can this concept be used to show that an angle of 360° is equivalent to an angle that measures 2Π radians? 180° to Π radians? How can these 'benchmark' angles measures be used to convert from degrees to radians and vice versa? Include specific examples.

When an angle measures 1 radian this means that when in a circle it intercepts an arc equal in length to the radius of the circle.



length $\overset{\frown}{AB}$ = r = radius

m∠AOB = 1 radian

You know that the circumference of a circle is $2\pi r$ so divide by r and r's cancel. You get $360° = 2\pi$ radians. Well you know that the full circle is 2π and that 180° is half of 360° so divide $\frac{2\pi}{2}$ and you get π radians = 180°

These benchmark angle measures can be used to convert from degrees to radians by

ex. $150° = ?$ radians

1. $\frac{150}{360} = .4166 \rightarrow \frac{5}{12}$ of a revolution

   The $\frac{5}{12}$ means that if you were to divide a circle up into 12 equal sections $150°$ would be at the 5^{th} section.

2. $12 \div 2 = 6 \rightarrow$ because you know that at $180°$ it equals π radians which is half of 360. So you divide the denominator in half, to get 6.

3. $\frac{5\pi}{6}$ radians $= 150°$

When you know the radian measure you can multiply the denominator by 2. Then multiply your fraction by 360 to get the degree measure.

ex. $\frac{7\pi}{6}$ $\quad 6 \cdot 2 = 12 \quad \frac{7}{12} \times 360 = 210$

$$\frac{7\pi}{6} = 210°$$