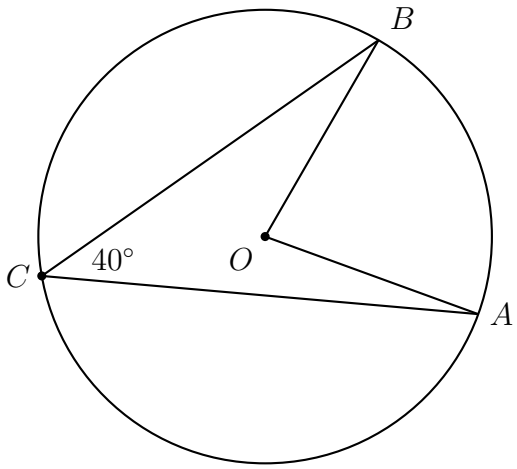
8.1 Radians

1. Do Now: Given circle O with $m\angle ACB = 40°$.

   (a) Find the $m\overset{\frown}{AB}$.

   (b) Write down the $m\angle AOB$.

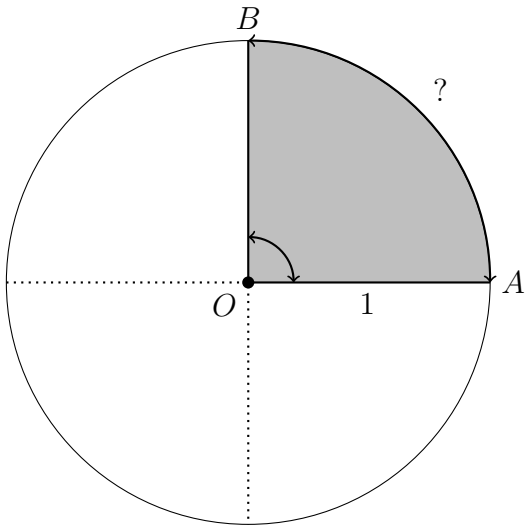


2. Do Now: A *unit* circle with a radius $r = 1$ is divided in quarters. One sector, AOB, is shaded as shown.

   (a) Find the circumference in terms of π. ($C = 2\pi r$)

   (b) Write down $m\angle AOB$ in *degrees*.

   (c) Find the *length* of the arc $\overset{\frown}{AB}$ in terms of π.



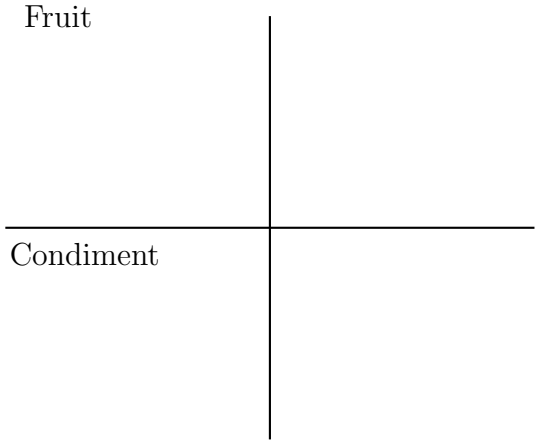
3. Groupwork warmup: Write the names of the people in your group and fill in the table

   Group order: shortest first name to longest

   (a) Group members:

   (b) On the left write down your favorite fruit and condiment.

   (c) Write the group consensus favorite fruit and condiment.

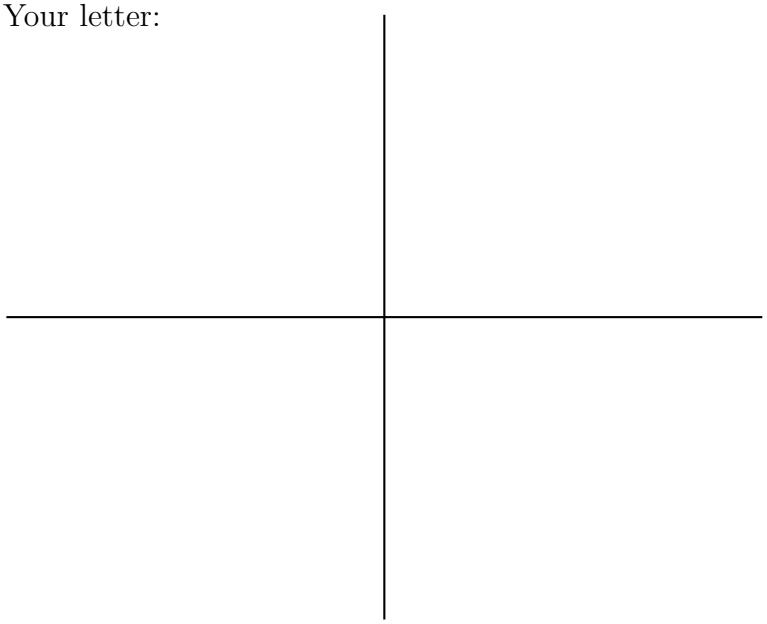


   (condiments are ketchup, mustard, salt, sugar, honey, whipped cream, etc.)

4. Groupwork challenge: Each member picks a different color and Greek letter, writing it in the upper left quadrant.

   Display screen and copy/paste each team member's letter into a different quadrant.

   Your letter:



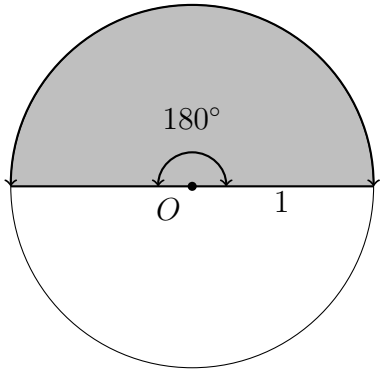
   Example Greek letters are π, θ, α, Δ, β

   Group order: longest last name to shortest

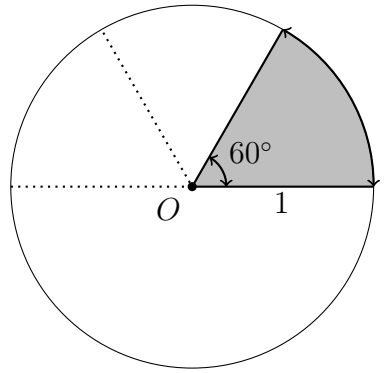
5. Lesson: The length of the arc of a unit circle is a measure of the central angle called *radians*. The circumference of the full circle is $2\pi = 360°$.

   Mark each angle with its radian measure.

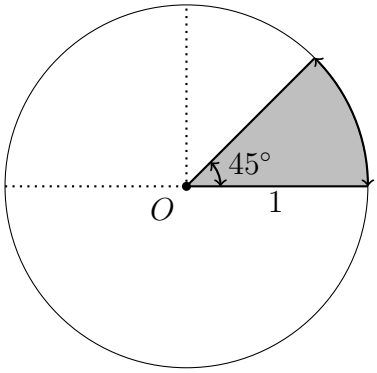
   (a) One half of a circle 180°

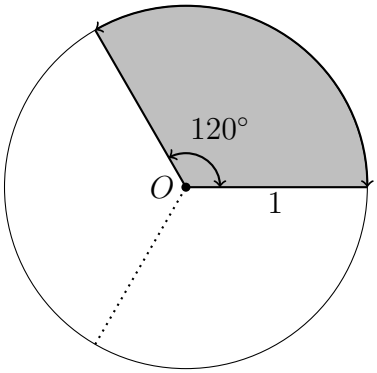
   (b) One sixth of the circle 60°

   (c) One eighth of the circle 45°

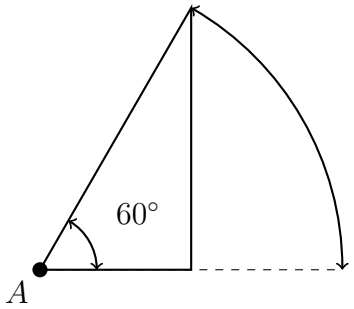
   (d) Two thirds of a circle 180°

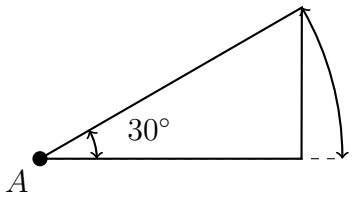
6. Lesson: Algebra view of *radians* to *degrees* using the formula $2\pi = 360°$ or $\pi = 180°$. Apply the appropriate formula.

$r = d \times \dfrac{\pi}{180}$ $\qquad$ $d = r \times \dfrac{180}{\pi}$

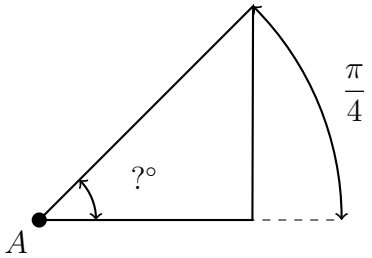
(a) $60° = ?$ radians



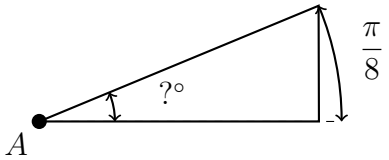
(b) $30° = ?$ radians



(c) $\dfrac{\pi}{4} = ?$ degrees



(d) $\dfrac{\pi}{8} = ?$ degrees



7. Right $\triangle ABC$ is drawn in *standard position* with vertex A on the origin and right $\angle C$ on the x-axis, as shown.

(a) Find the length of the hypotenuse AB using the Pythagorean Theorem $a^2 + b^2 = c^2$. (leave as a radical)

(b) Find the slope of the line segment $\overline{AB}$ as a decimal.