

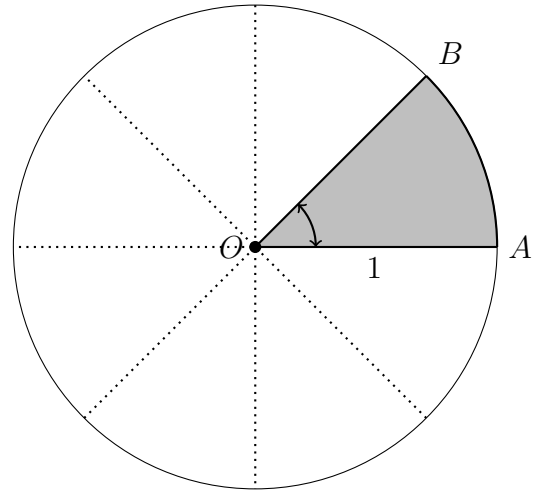
## 8.6 Quiz Circle Sectors

1. The shaded sector of the unit circle is *one eighth* of the whole circle, as shown.  
(Circle circumference and area formulas:  $C = 2\pi r$ ,  $A = \pi r^2$ )

(a) Find  $m\angle AOB$  in *degrees*.

(b) Find the length of the arc  $\widehat{AB}$  in terms of  $\pi$ .

(c) Find the area of the shaded sector in terms of  $\pi$ .



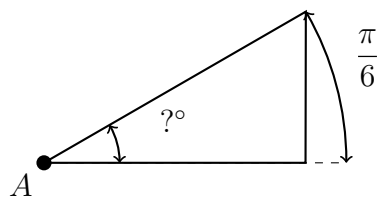
2. Convert units of *radians* and *degrees* ( $2\pi = 360^\circ$ ,  $\pi = 180^\circ$ ).

Apply the appropriate formula.

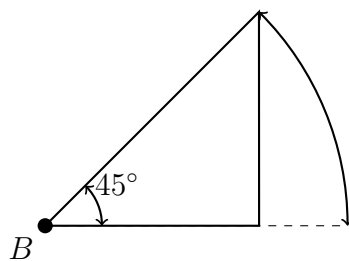
$$d = r \times \frac{180}{\pi}$$

$$r = d \times \frac{\pi}{180}$$

(a)  $m\angle A = \frac{\pi}{6} = ?$  degrees



(b)  $m\angle B = 45^\circ = ?$  radians  
(in terms of  $\pi$ )

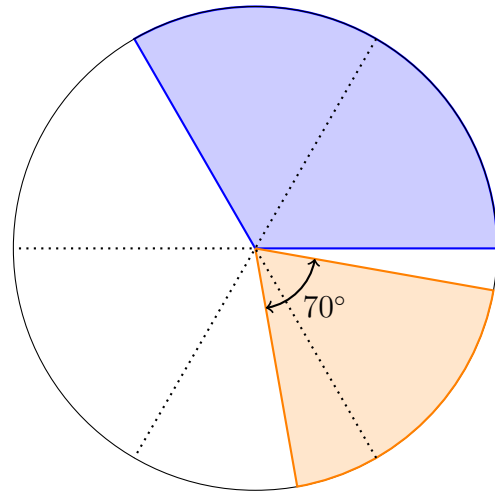


3. Given a triangle  $\triangle ABC$  having angles with measures  $m\angle A = 37^\circ$  and  $m\angle B = 78^\circ$ . Find the measure of the third angle,  $m\angle C$ .

4. The *pie chart* below shows the proportion of two subsets of a population, one represented in blue and one in orange. Dotted lines divide the circle in six equal sectors for reference.

(a) Estimate the area of the blue sector as a fraction of the circle and as a decimal.

(b) The central angle of the orange sector measures  $70^\circ$ . Find the fraction of circle's area shaded orange as a fraction and a decimal.



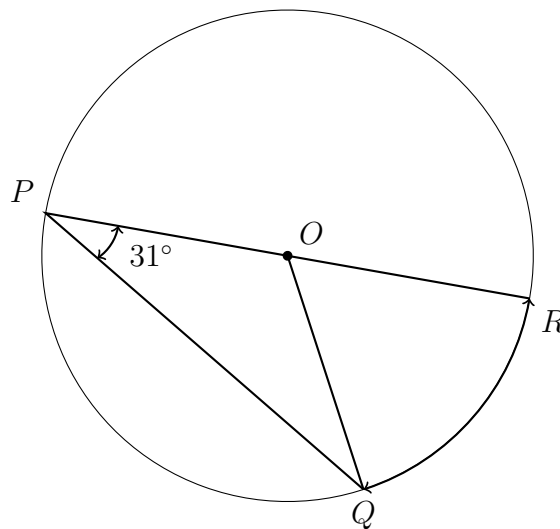
5. Given circle with center  $O$  and  $m\angle QPR = 31^\circ$ . Find the measure of each arc or angle.

(a)  $m\widehat{QR}$

(b)  $m\angle QOR$

(c)  $m\angle POQ$

(d)  $m\angle PQO$

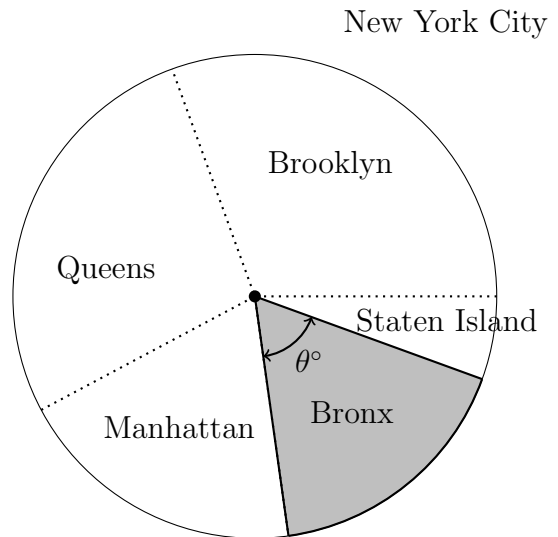


6. The *pie chart* below represents the population of the city of New York, with each borough's population a proportional sector.

Population of NY City is 8,336,000  
Population of the Bronx is 1,420,000

- (a) Find the fraction of New Yorkers,  $x$ , who reside in the Bronx as a percentage.

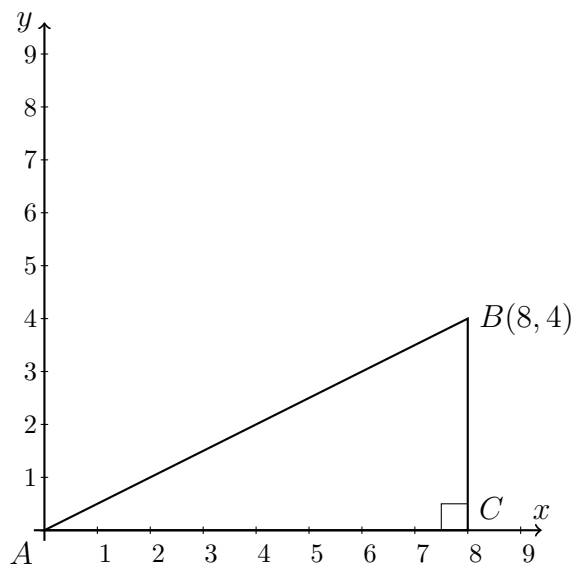
- (b) Find the central angle of the shaded area,  $\theta = x \times 360^\circ$



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.

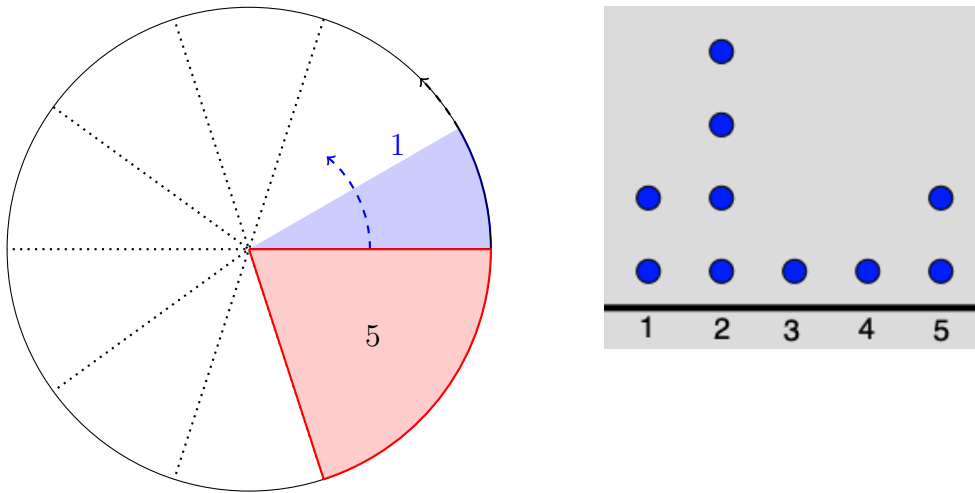
- (a) Find the length of the hypotenuse  $AB$  using the Pythagorean Theorem  $a^2 + b^2 = c^2$ . (leave as a radical)

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



8. Ten values from one to five are displayed as a dot plot below on the right.

The data is to be represented as a *pie chart*. The red sector has been drawn to represent data with value equalling five. (Dotted lines divide the circle in ten equal sectors for reference.)



- (a) Shade the appropriate portion of the pie chart in blue to represent the data with value equalling one.
- (b) Complete the rest of the pie chart using other colors to mark sectors for the data equalling two, three, and four.



9. Convert between units.

General method: if  $A = B$  multiply by  $\frac{A}{B}$  or  $\frac{B}{A}$ . For example,  $\pi$  radians = 180 degrees, therefore

$$r = d \times \frac{\pi}{180} \text{ and } d = r \times \frac{180}{\pi}$$

(a)  $135^\circ = ?$  radians

(c) 1 mile = 5,280 feet

14,520 feet =

(b)  $\frac{3\pi}{5} = ?$  degrees

(d)  $\frac{1}{4}$  mile =

10. Line segment  $\overline{AB}$ ,  $A(0, 2)$ ,  $B(8, 8)$ , is the diameter of circle  $M$ .

- (a) On the grid, mark and label as a coordinate pair the midpoint of the segment, the circle center  $M$ .
- (b) Calculate the length of  $\overline{AB}$  and hence, the radius of the circle.
- (c) Write down the equation of the circle.
- (d) Sketch the circle on the grid or draw it with Geogebra or Graspable Math.

