

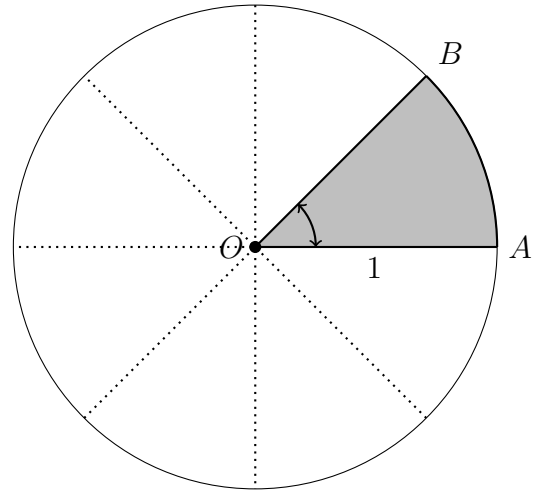
8.6 Quiz Circle Sectors

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 π .

(c) Find the area of the shaded sector in terms of π .



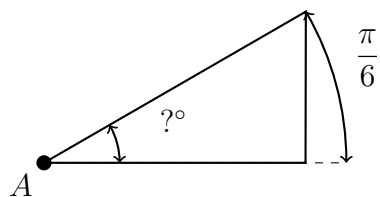
2. Convert units of *radians* and *degrees* ($2\pi = 360^\circ$, $\pi = 180^\circ$).

Apply the appropriate formula.

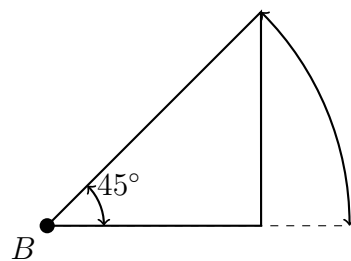
$$d = r \times \frac{180}{\pi}$$

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

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



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

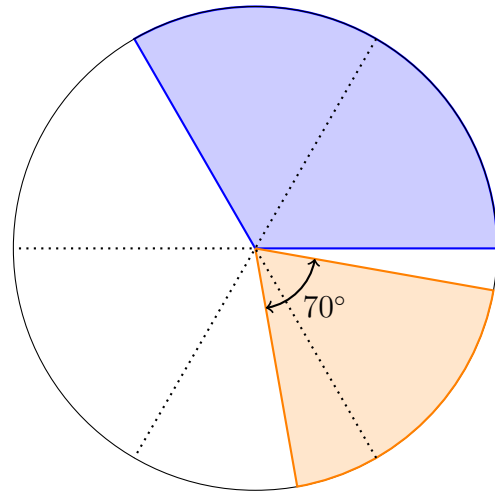


3. Given a triangle $\triangle ABC$ having angles with measures $m\angle A = 37^\circ$ and $m\angle B = 78^\circ$. Find the measure of the third angle, $m\angle C$.

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° . Find the fraction of circle's area shaded orange as a fraction and a decimal.



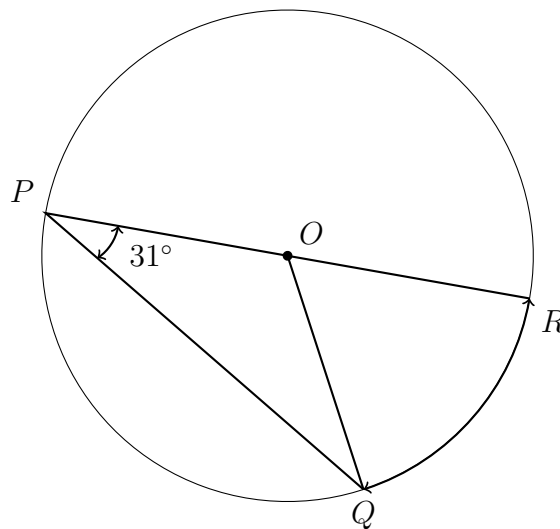
5. Given circle with center O and $m\angle QPR = 31^\circ$. Find the measure of each arc or angle.

(a) $m\widehat{QR}$

(b) $m\angle QOR$

(c) $m\angle POQ$

(d) $m\angle PQO$

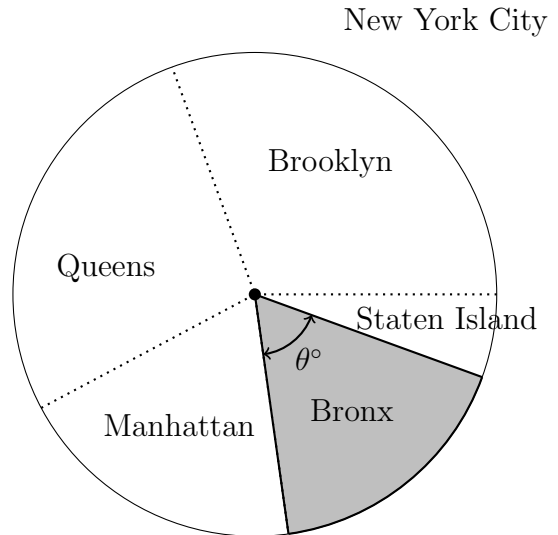


6. The *pie chart* below represents the population of the city of New York, with each borough's population a proportional sector.

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.

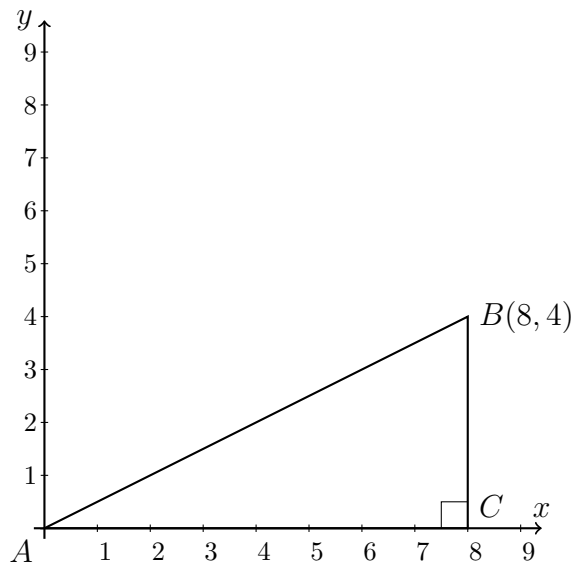
- (b) Find the central angle of the shaded area, $\theta = x \times 360^\circ$



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.

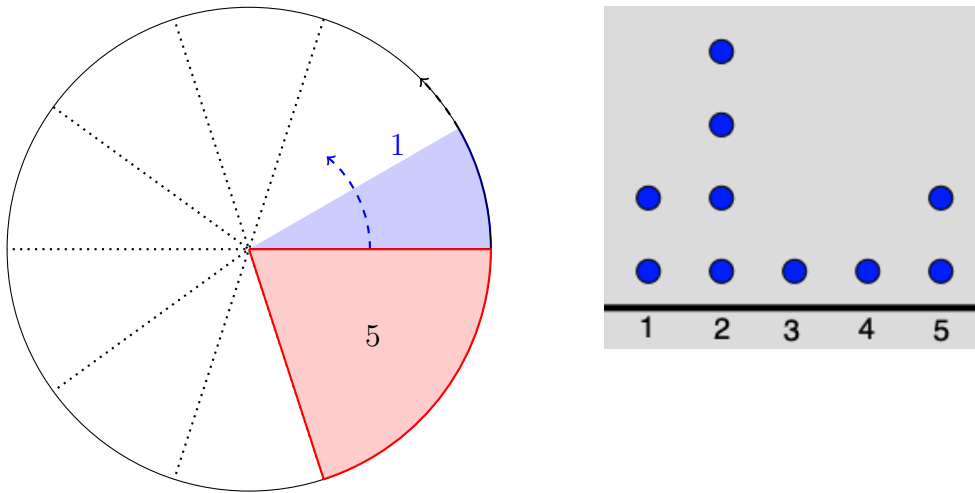
- (a) Find the length of the hypotenuse AB using the Pythagorean Theorem $a^2 + b^2 = c^2$. (leave as a radical)

- (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, π radians = 180 degrees
so

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

(a) $35^\circ = ?$ radians

(e) 1 euro = 1.21 dollars

50 euro =

(b) $\frac{\pi}{9} = ?$ degrees

(f) 50 dollars =

(c) 1 foot = 12 inches

4.25 feet =

(g) 1 mile = 5,280 feet

11,000 feet =

(d) 70 inches =

(h) $\frac{3}{4}$ mile =

10. Line segment \overline{AB} , $A(2, 1)$, $B(10, 7)$, 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.

