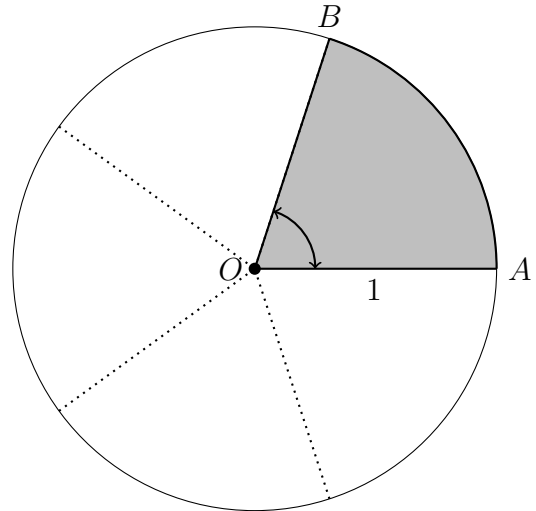## 8.5 PreQuiz Circle Sectors

1. The shaded sector of the unit circle is *one fifth* 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 $\overparen{AB}$ in terms of π.

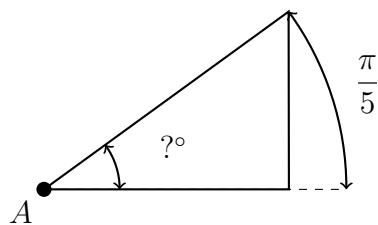   (c) Find the area of the shaded sector in terms of π.

2. Convert units of *radians* and *degrees* ($2\pi = 360°$, $\pi = 180°$).
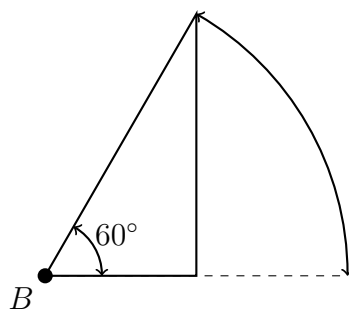
   Apply the appropriate formula.

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

   (a) $m\angle A = \dfrac{\pi}{5} = ?$ degrees

   (b) $m\angle B = 60° = ?$ radians
   (in terms of π)

3. Given a triangle $\triangle ABC$ having angles with measures $m\angle A = 42°$ and $m\angle B = 89°$. 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 ten 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 50°. Find the fraction of circle's area shaded orange as a fraction and a decimal.
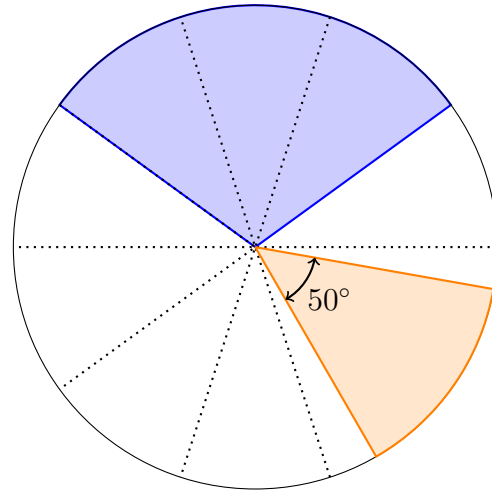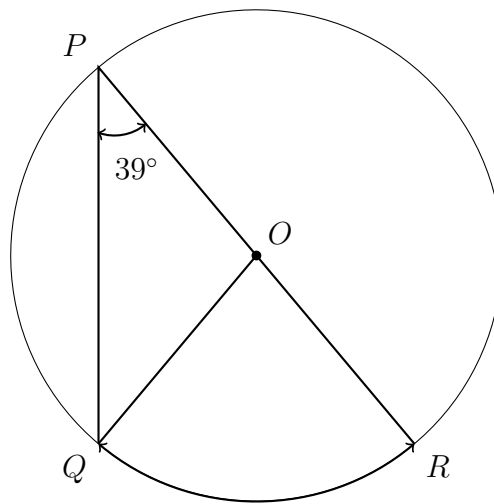
5. Given circle with center O and $m\angle QPR = 39°$. Find the measure of each arc or angle.

(a) $m\widehat{QR}$

(b) $m\angle PQO$
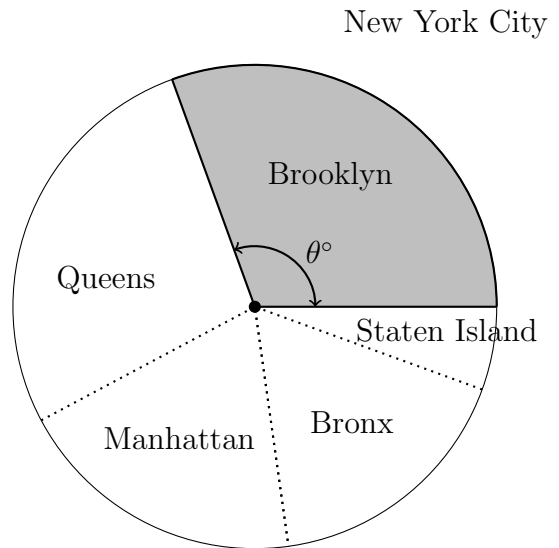
(c) $m\angle QOR$

(d) $m\angle POQ$

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

New York City

Population of Brooklyn is 1,629,000

(a) Find the fraction of New Yorkers, x, who reside in Brooklyn as a percentage.
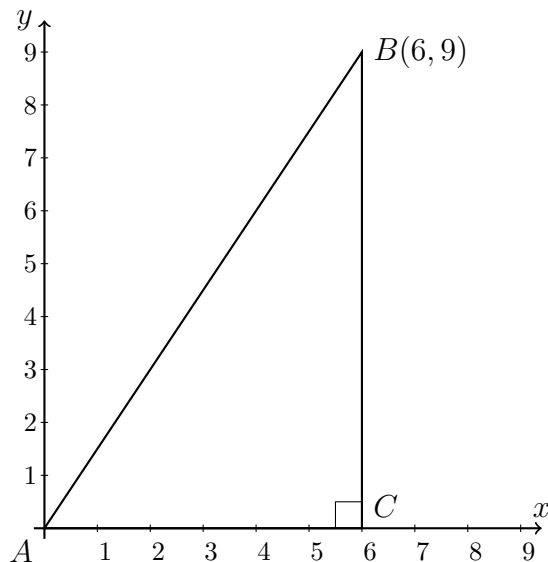
(b) Find the central angle of the shaded area, $\theta = x \times 360°$

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. Convert between units.

General method: if $A = B$ multiply by $\dfrac{A}{B}$ or $\dfrac{B}{A}$. For example, π radians $= 180$ degrees so

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

(a) $35° = ?$ radians

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

(c) 1 foot $= 12$ inches

   4.25 feet $=$

(d) 70 inches $=$

(e) 1 euro $= 1.21$ dollars

   50 euro $=$

(f) 50 dollars $=$

(g) 1 mile $= 5{,}280$ feet

   $11{,}000$ feet $=$

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

9. 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.