

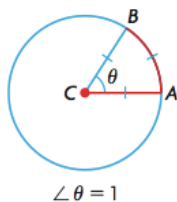
### 8.1 Understanding Angles p. 514

Name \_\_\_\_\_

Date \_\_\_\_\_

**Goal:** Estimate and determine benchmarks for angle measure.

1. **radian:** The measure of the central angle of a circle subtended by an arc that is the same length as the radius of the circle.

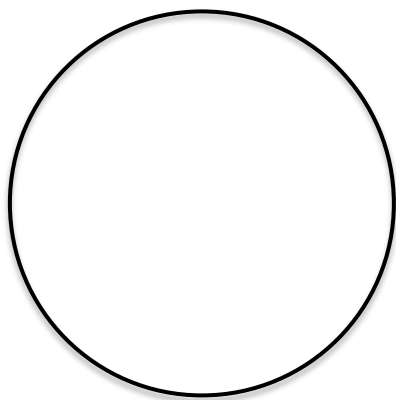


**Key Ideas:**

- Angles can be measured using different units. These include degrees, radians, gradients and minutes and seconds.
- Any angle measures presented a real numbers without units are considered to be in radians.

#### Units of Measurement for Angles

- Degrees: devised in ancient Babylon; \_\_\_\_\_
- Gradients: devised in 18th century; \_\_\_\_\_
- Radians: devised by mathematicians and scientists; \_\_\_\_\_



$$\theta = 1 \text{ radian} \approx 57.296^\circ$$

$$2\pi \text{ radians} \approx 6.28 \text{ radians} = 360^\circ$$

$$\pi \text{ radians} \approx 3.14 \text{ radians} = 180^\circ$$

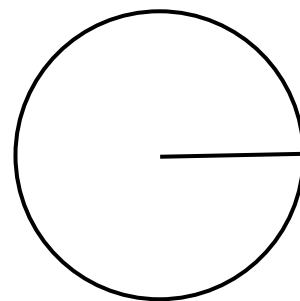
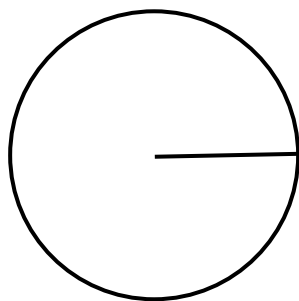
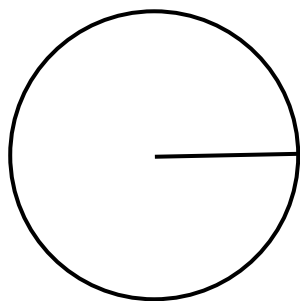
**Example 1:** Relating degrees to radians in a circle.

**Example 2:** Calculate the value of each angle in **radian** measure, to the nearest tenth, and then sketch each angle.

a.  $100^\circ$

b.  $290^\circ$

c.  $590^\circ$

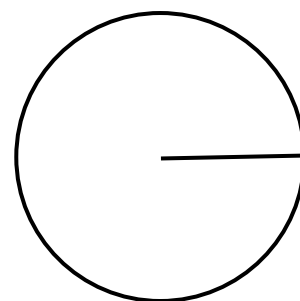
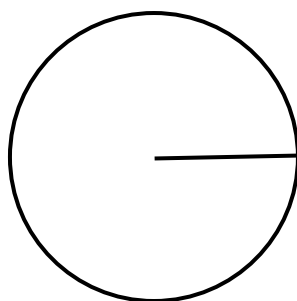
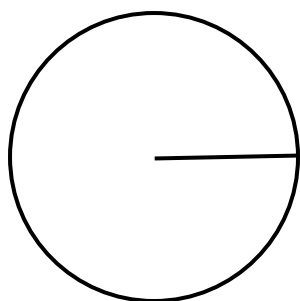


**Example 3:** Calculate the value of each angle in **degree** measure, to the nearest degree, and then sketch each angle.

a. 5.7696

b. 0.7854

c. 14.8353



**Example 4:** For each pair of angle measures, determine which measure is greater.

a.  $3\pi$  radians or 8 radians

b.  $400^\circ$  or 6.5 radians