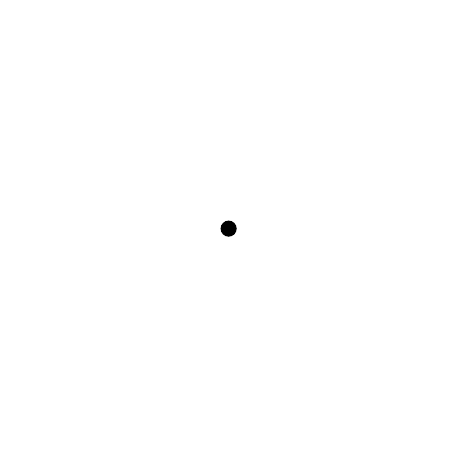
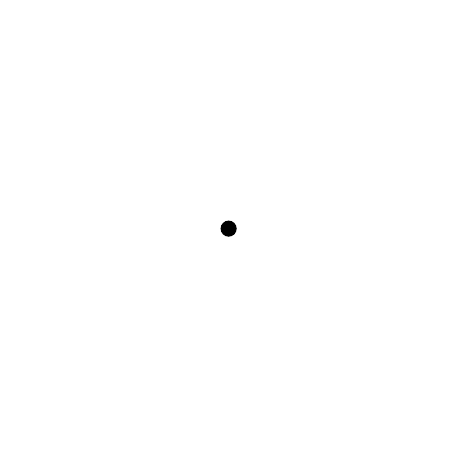
## Unit 7 Lesson 8: Arcs and Sectors

### 1 Math Talk: Fractions of a Circle (Warm up)

#### Student Task Statement

Evaluate each problem mentally.

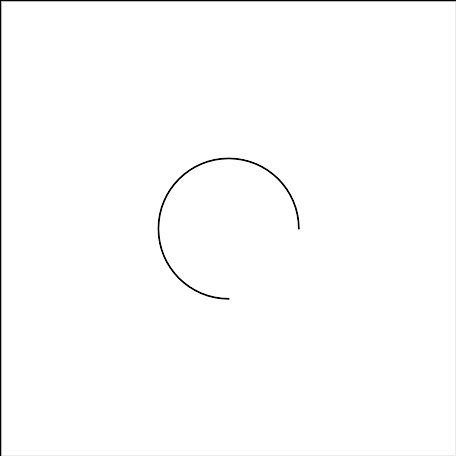
* Find the area of the shaded portion of the circle.
* 
* Find the length of the highlighted portion of the circle’s circumference.
* 
* Find the area of the shaded portion of the circle.
* 
* Find the length of the highlighted portion of the circle’s circumference.
* 

### 2 Sector Areas and Arc Lengths

#### Student Task Statement

A **sector** of a circle is the region enclosed by 2 radii.

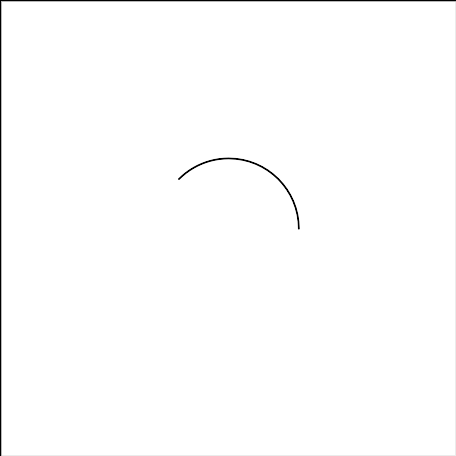
A



B

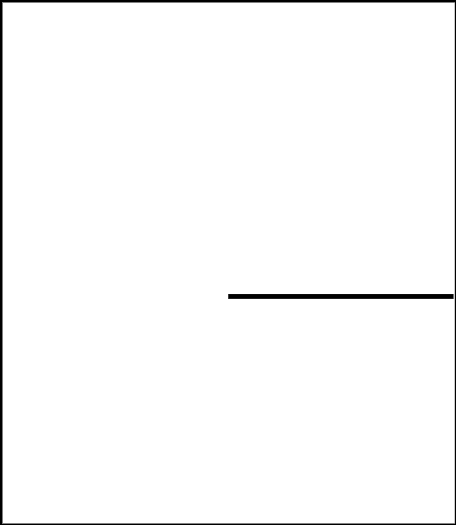


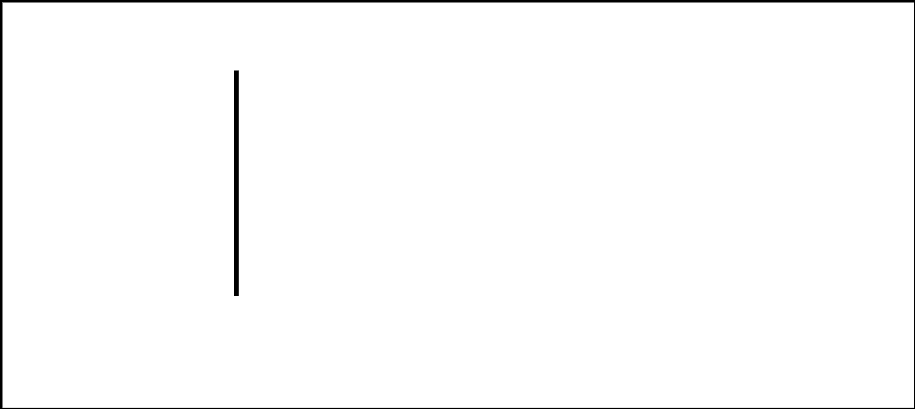
C



For each circle, find the area of the shaded sector and the length of the arc that outlines the sector. All units are centimeters. Give your answers in terms of .

#### Activity Synthesis



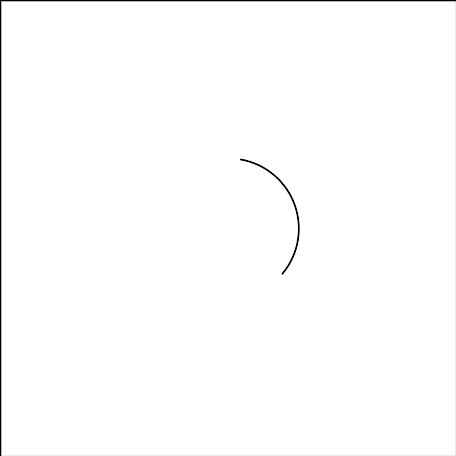


### 3 Build a Method

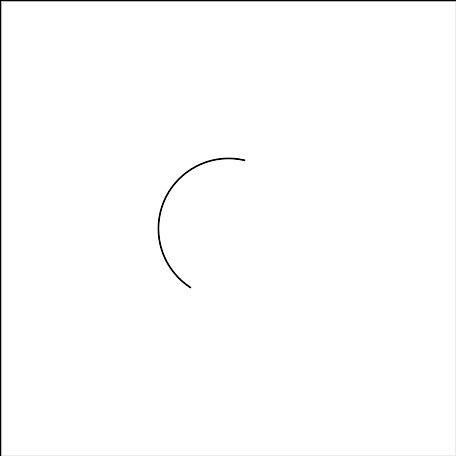
#### Student Task Statement

Mai says, “I know how to find the area of a sector or the length of an arc for central angles like 180 degrees or 90 degrees. But I don’t know how to do it for central angles that make up more complicated fractions of the circle.”

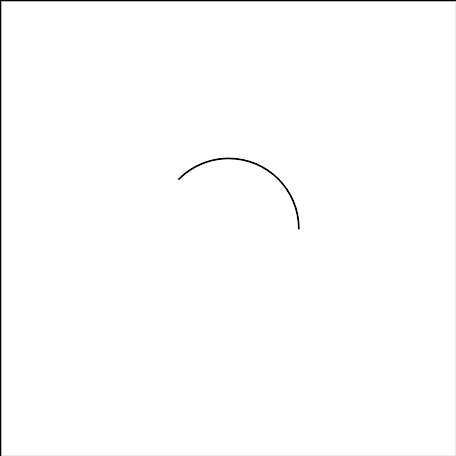
1. In the diagram, the sector’s central angle measures degrees and the circle’s radius is units. Use the diagram to tell Mai how to find the *area of a sector* and the *length of an arc* for any angle and radius measure.

* 

1. This image shows a circle with radius and central angle measurements. Find the area of the shaded sector, and the length of the arc defined by the sector.

* 

#### Images for Activity Synthesis





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