

The Radian Sector

ID: 19070

Time required

60 minutes

Activity Overview

In this activity, students will explore properties of sectors. Students will derive the formula for the arc length of a sector and the area of a sector.

Topic: Circles

- Sector Area
- Arc Length of a Sector
- Radian Measure

Teacher Preparation and Notes

- Students should know that all circles are similar and that 1° is $\frac{\pi}{180}$ radians prior to the activity.
- Students should know that similar figures are proportional.
- Notes for using the TI-Nspire™ Navigator™ System are included throughout the activity. The use of the Navigator System is not necessary for completion of this activity.
- To download the student and solution TI-Nspire documents (.tns files) and student worksheet, go to education.ti.com/exchange and enter “19070” in the keyword search box.

Associated Materials

- TheRadianSector_Student.doc
- TheRadianSector.tns

Suggested Related Activities

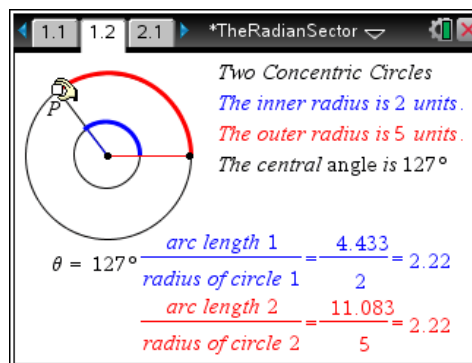
To download any activity listed, go to education.ti.com/exchange and enter the number in the keyword search box.

- Arc Length and Sectors (TI-Nspire technology) — 13137

Problem 1 – Concentric Circles

On page 1.2, students are asked to move point P to four different values of θ . Encourage your students to use values for the central angle that are in a variety of quadrants.

Students will discover that the arc length and radius of the two circles are proportional.

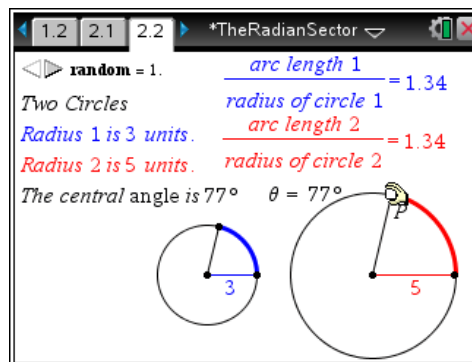


TI-Nspire™ Navigator™ Opportunity: Class Capture
 See Note 1 at the end of this lesson.

Problem 2 – Random Circles

On page 2.2, students will complete the same exercise as in problem 1, but now the circles are no longer concentric.

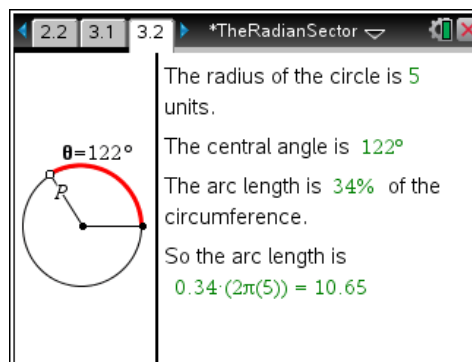
Students will discover that the arc length and radius of the two circles are proportional and the constant of proportionality is the radian measure of the central angle.



TI-Nspire™ Navigator™ Opportunity: Quick Poll
 See Note 2 at the end of this lesson.

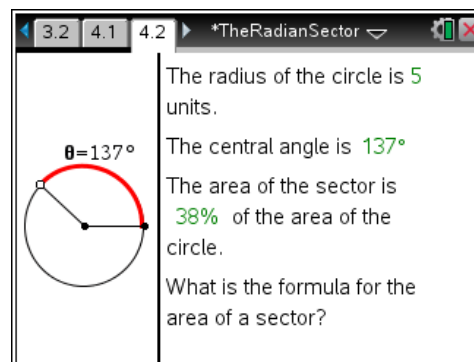
Problem 3 – Arc Length

On page 3.2, students will discover the formula for the arc length of a sector as a percent of the Circumference.



Problem 4 – Sector Area

On page 4.2, students will discover the formula for the area of a sector based on the same methods as in Problem 3.

**TI-Nspire™ Navigator™ Opportunities****Note 1****Problem 1, Class Capture**

This would be a good place to use Class Capture to verify that students are entering the correct values into the table and answering the questions correctly.

Note 3**Problem 2, Quick Poll**

You may choose to use Quick Poll to assess student understanding. The worksheet questions can be used as a guide for possible questions to ask.