

Area of a Sector

Open the GeoGebra interactive worksheet Circles and Sectors.

In the Applet a cookie is being cut up into fractional pieces and the accompanying circle shows the sector pieces of the circle along with the central angle.

Activity 1

1. Change the number of sectors (sections of the circle) by dragging the slider N keeping the radius fixed.
2. Observe how the central angle changes.
3. Using the number of sectors below move slider N and record the information in the table below. (Table 1)

Table 1

Number of Sectors	Central Angle	Fraction of the circle for each sector
2		
3		
4		
5		

4. What did you notice between about the relationship between the number of sectors, the central angle, and the fraction of the circle for each sector? Use the check boxes to verify your relationship. Write a conjecture from table one.
5. Does your statement hold when you change the radius of the circle? Why or why not?
6. What happens if the number of sectors becomes 1?

Activity 2

1. Check all boxes in the GeoGebra file.
2. Change the number of sectors by dragging the slider N keeping the radius fixed.
3. Observe the changes in the central angle, and corresponding area of the sector and circle.
4. Record your result in the table 2.
5. Repeat steps 1 to 3 four more times and record your result again.

Table 2

Number of Sectors	Central Angle	Area of Sector	Area of Circle
2			
3			
4			
5			
6			

6. What is relationship between the area of the sector and the area of the circle?
7. What is the relationship between the area of the sector and the number of sectors in the circle?
8. What relationship did you notice between the central angle and area of the sector?
9. Write down a formula to find the area of a sector given the central angle.
10. What happens if we change the radius of the circle? Does the relationship still hold? Why or why not?
11. What happens if there is only 1 sector?