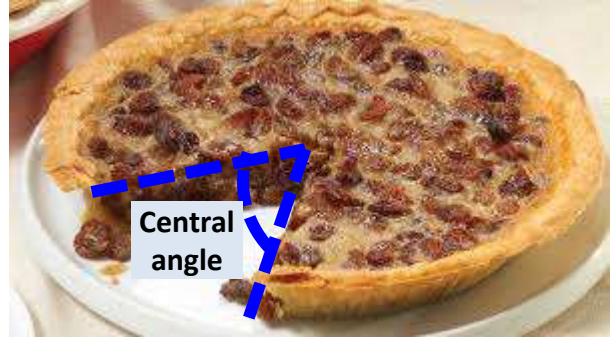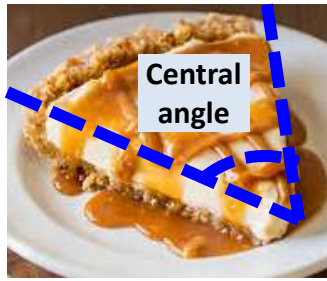# Sectors of a circle

A sector is like a piece of pie. It is part of a pie (or circle), but not the whole pie (or circle). How big it is depends on the central angle (how big of a piece they cut from the center.

Circumference – is like the crust of a pie, it goes around the outside edge. How long it is depends on the width of the pie (the circle's radius).

$$C = 2\pi r$$ **C is the circle's circumference and r is the radius**

Arc Length – is like the crust of your piece of pie. We find it by taking our slice's crust only. When our pie was cut, they cut it at some angle that is called a central angle. Our piece's crust length is only part of the circumference of the whole pie. It uses the following formula:

$$\text{Arc Length} = \frac{central\ angle}{360}(C)$$ **where C is the circumference central angle is our slice and 360 is the whole way around**

Area of a sector – is like the amount of pie filling we get with our slice of the pie. Again it is only part of the whole area of the pie (circle). The entire area of the pie (circle) is given by

$$A = \pi r^2$$ **A is the circle's area and r is the radius**

Our piece of the pie has less than the whole area of the pie. The amount of pie filling we have in our piece is given by

$$\text{Sector Area} = \frac{central\ angle}{360}(A)$$ **where A is the circle's area central angle is our slice and 360 is the whole way around**

The hostess cuts brings out an apple pie with a 12 inch diameter. She cuts you a slice with a central angle of 70°.

1.   What is the circumference of the entire pie?   C = _____ inches

2.   What is the total area of the pie?   A = _____ square inches

3.   How much crust is on your piece of pie?   Arc Length = _____ inches

4.   How much pie filling is in your piece of pie?   A = _____ square inches

5.   How much crust is left on the pie?   Arc Length = _____ inches

6.   How much pie filling is left in the pie?   A = _____ square inches

The hostess cuts brings out a coconut cream pie with a 10 inch diameter. She cuts you a slice with a central angle of 85°.

7.   What is the circumference of the entire pie?   C = _____ inches

8.   What is the total area of the pie?   A = _____ square inches

9.   How much crust is on your piece of pie?   Arc Length = _____ inches

10. How much pie filling is in your piece of pie?   A = _____ square inches

11. How much crust is left on the pie?   Arc Length = _____ inches

12. How much pie filling is left in the pie?   A = _____ square inches