

1. A degree can be divided into smaller units called minutes. Just like there are 60 minutes in an hour, there are 60 minutes in a degree. Minutes can be divided into smaller units called seconds. There are 60 seconds in a minute. $15^{\circ}11'29''$ is pronounced "15 degrees, 11 minutes, and 29 seconds." $60^{\circ}30'$ is the same angle as 60.5° since 30 minutes is $\frac{1}{2}$ of a degree. Some scientific calculators have buttons that allow you to convert between decimal degrees and minutes. Explain how to do the following conversions if your calculator can only add, subtract, multiply, and divide.

Convert to a decimal in degrees, rounded to 4 decimal places:

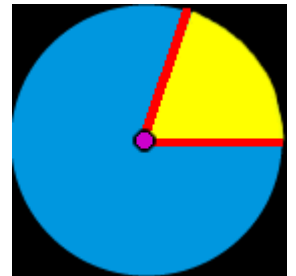
a) $6^{\circ}49'$

b) $50^{\circ}6'21''$

Convert to degrees, minutes, and seconds:

c) 21.256°

2. A sector of a circle is defined to be the region enclosed by two radii and an arc. Think of a sector as a slice of a pie (as in pumpkin, not pi as in 3.14....). The sector is colored yellow in the picture at right.



a) If a sector has a central angle of $\frac{\pi}{7}$ and a radius of 6 inches, what is the area of the sector?

b) Find a general formula for the area of a sector with central angle θ and radius r .

3. The radius of the earth is about 3960 miles. Use this fact to explain the joke in Sunday's Foxtrot comic strip.

