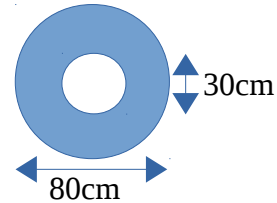


Circles

All of these require use of a calculator.

1. Calculate the area and circumference of circles with radius 1m, 2m and 3m.

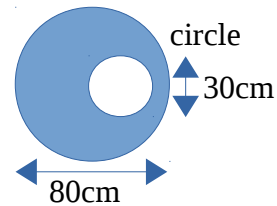
2. A circular piece of aluminum has a diameter of 80cm. Someone has drilled a 30cm diameter hole at the center of the circle (as shown here, except that the two circles are meant to be *concentric* – ie., have the same center.) This is called an *annulus*.



What is the area of the annulus?

What is the total circumference of the annulus (inside perimeter plus outside perimeter)?

3. Suppose someone else made a 30cm diameter hole in a with diameter 80cm, but misaligned the circles even worse than in the diagram in question 2.



What is the area of this shape? What is its total circumference?

4. Consider a quiche which approximates a flat cylinder 12cm across and 3cm high. Calculate its volume. Calculate the surface area of topping (the top face of the cylinder) and pastry (the bottom and side(s) of the cylinder). If someone were to eat exactly half of the quiche, what would the volume of the remainder? (Easy) What would be the surface area of topping, pastry and exposed filling? What if that person took only $\frac{1}{4}$ of the quiche, as a slice from the center? What is someone wanted one third of the original quiche, again as a slice from the center?