

Connecting Formulas for Area and Circumference

Figure 1 shows a circle of radius r . Its circumference can be computed by using the formula $2 \times r \times \pi$. The circle is divided into 12 equal sectors. Half of them have been colored, the other half are white.

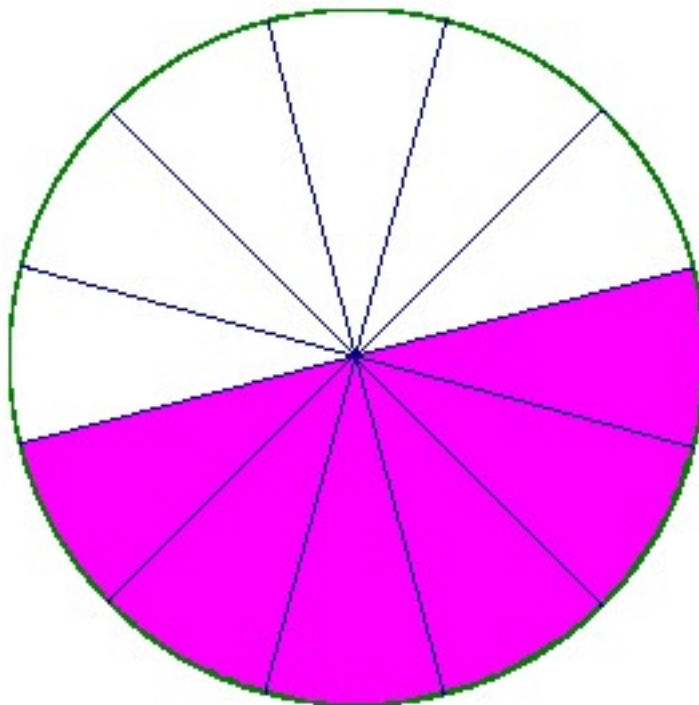


Figure 1. A circle cut into 12 slices.

Imagine that you cut out the 12 sectors and rearrange them to form a shape that resembles a parallelogram as shown in figure 2. The area of the circle is the same as the area of this shape. To compute the area of this shape we will use the fact that it resembles a parallelogram, although its "base" is not quite a straight line. We will use the formula for the area of a parallelogram, $\text{Area} = \text{base} \times \text{height}$.

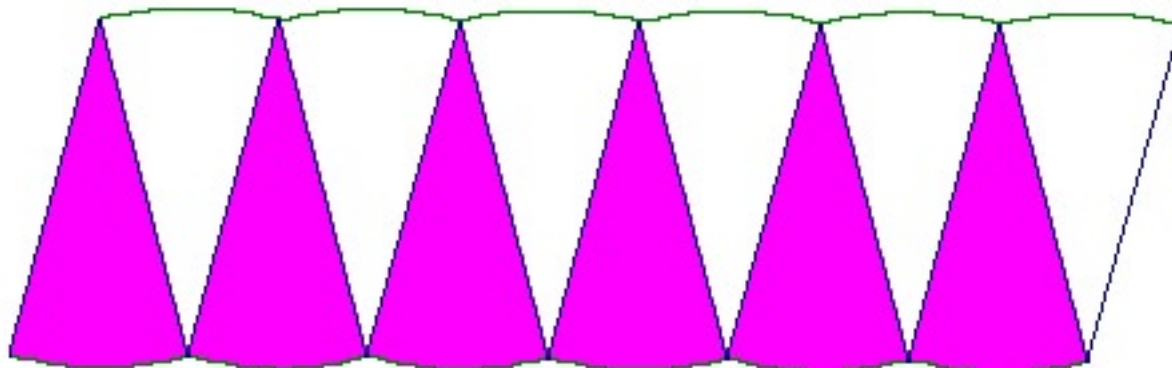


Figure 2. The slices of the circle rearranged.