

Circumference

There are several definitions that we should already be familiar with.

Circumference is the distance around the outside of a circular figure. A **diameter** is a straight line segment which extends from one boundary of the circle to the other. The diameter must go through the center. The ratio would be C/d .

A **radius** is a line segment which extends from the center of the circle to the boundary of the circle. A radius is half the length of a diameter. Another way to think about it is that it takes 2 radii to make a diameter. The ratio would be $C/2r$.

Pi is the **relationship** between circumference and diameter. It takes a little more than three diameters to make a circumference and is written as approximately 3.14 or $22/7$. The sign for Pi is π .

Which formula should we use?

To find the circumference, first we have to determine whether we know the radius or the diameter.

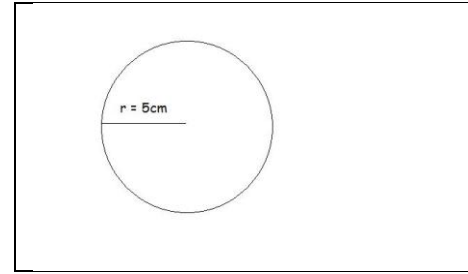
If we know the diameter, we will use the formula: $C = \pi d$.

If we know the radius, we will use the formula: $C = 2\pi r$.

What do I need to remember about solving any measurement problem? We always **draw** the picture, **label** the picture with what we know, **write** the formula, and then **show** all of our work, step by step.

Example 1: What is the circumference of a circle when the radius is 5 cm?

Step 1: Draw the picture	$C = 2 \pi r$ or $C = \pi 2 r$
Step 2: Label the picture	$C = 2(3.14)(5)$
Step 3: Write the formula	$C = 6.28(5)$
Step 4: Show all our work	$C = 31.4 \text{ cm}$



So, the circumference of a circle with a radius of 5 cm is 31.4 cm.

Note: If you have a diameter, insert it in place of $2r$

Area of Circles

Area is the number of square units needed to cover a surface. This also means that our units are squared like cm^2 , ft^2 , in^2 .

The formula that we need to use is $A = \pi r^2$

This means that we must know what the radius measures in order to find the area of the circle. So if we are given the **diameter** instead of the **radius**, we have to remember that the radius is half the diameter.

For example, if we know that the diameter is 10, then the radius is 5. If we know that the diameter is 4, then the radius is 2.

Procedure: We always **draw** the picture, **label** the picture with what we know, **write** the formula, and then **show** all of our work, step by step.

Example 1: What is the area of a circle when the radius is 5 cm?

Step 1: Draw the picture	$A = \pi r^2$
Step 2: Label the picture	$A = 3.14(5)^2$
Step 3: Write the formula	$A = 3.14(25)$
Step 4: Show all our work	$A = 78.5 \text{ cm}^2$

So, the area of a circle with a radius of 5 cm is 78.5 cm^2 . Note: If you have a diameter, divide that number by 2 to find the radius.