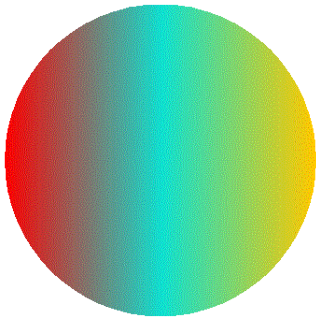


The Circle

The circle is a fascinating shape. It seems so simple, but its characteristics seem to be as immeasurable as Pi!

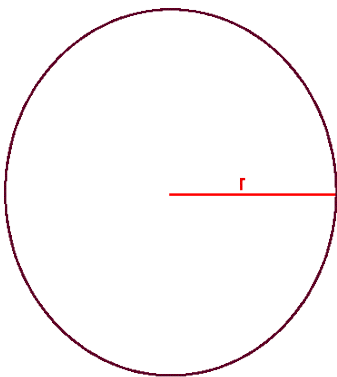


Before commencing tutoring of specific circle geometry formula, I highly recommend some 'field work first'. It is important that your child know the profound impact the circle has on their lives!

Have them look around them, either outside or in their home, or even in just one room of your home. How many circles or shapes including circles, can they find?

The list should be astonishing! The circle is used all around us.

Okay, so let's move on to the formula, your K6 student must know and become proficient at!

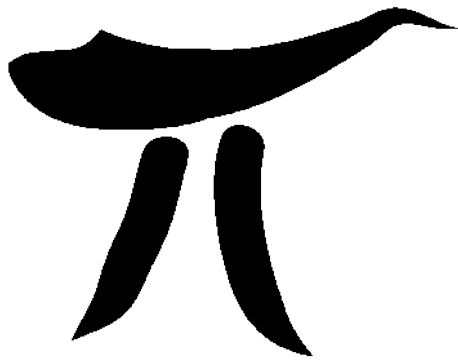


First things First!

Have your child practice drawing freehand circles. They don't need to be perfect, just realistic.

Ensure your child is comfortable using a compass.

When studying the geometry at this level, it is assumed that your child is comfortable with the units of measurement required. Units, units squared, and units cubed.



It is very important that your child is comfortable with the symbol π and that they know it represents a Real Number.

If you require more information regarding Pi, please visit us at www.K6Math.com in the Geometry Section!

The Math Part!

Terminology

Circle

A circle is a set of points which lie an equal distance from the center point of the circle.

Radius

The length of a line segment from the circles centre to its outer curve.

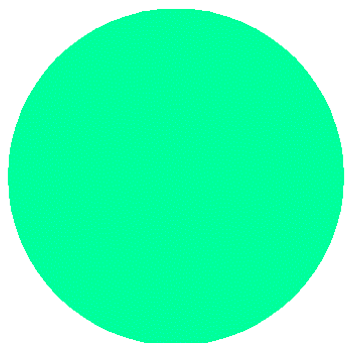
Diameter

Two radii joined together at centre of circle at an angle of 180°

Circumference

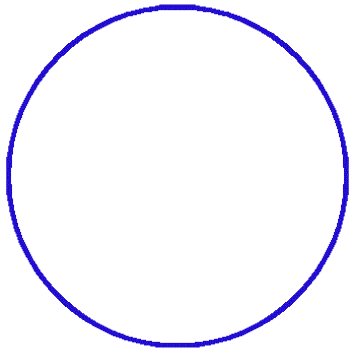
The length of the circles curve.

Basic Formula



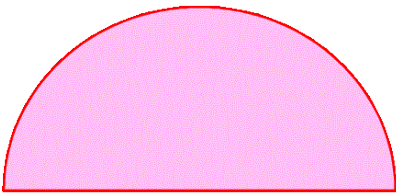
Area (A) in this picture is what is colored Green. It is the space inside the curve.

$$A = \pi \cdot r^2$$



Circumference (C) in this picture is what is colored Blue. It is the length of the entire circle.

$$C = 2\pi.r$$



Semicircle/Half-Circle

This is half a circle connected with the circles diameter.

In this picture:

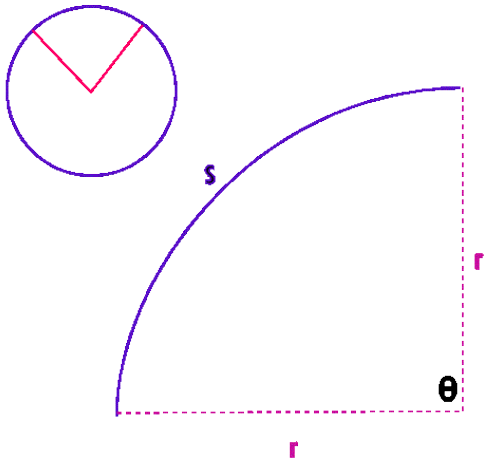
- The red line is the perimeter of the semicircle.
- The pink is the area of the semicircle.

Perimeter = $\frac{1}{2}$ of circles + radius x 2

$$P = \pi.r + 2r$$

Area = $\frac{1}{2}$ of circles

$$A = \frac{1}{2} \pi.r^2$$



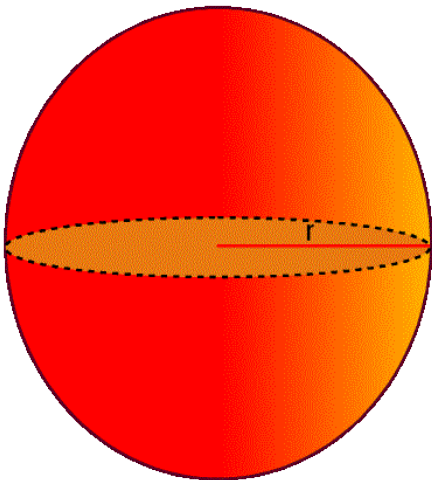
Arc

This is any portion of the circle between two radii.

In this diagram it is the purple curve (S).

N.B. This formula is for when angle measurement is given in degrees.

$$S = \frac{r \cdot \theta \cdot \pi}{180}$$



Sphere

A three dimensional (3d) circle, such as a ball!

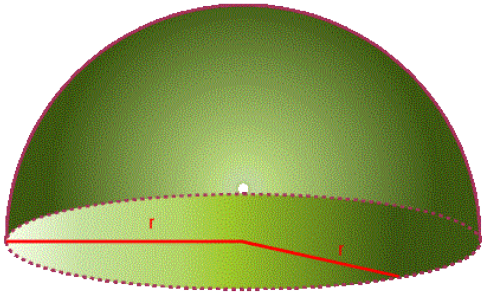
Surface Area: The radiating orange surface.

$$SA = 4\pi \cdot r^2$$

Volume: How much space is contained within the surface area e.g. how much air in a ball.

$$V = \frac{4}{3} \pi r^3$$

The orange disc in this diagram is a circle with radius r.



Hemisphere

A three dimensional (3d) semicircle. It is exactly half a sphere as a semicircle is half a circle.

Surface Area: The radiating green surface. This is half the spheres surface area, plus the disk at center.

$$SA = 3\pi.r^2$$

Volume: How much space is contained within the surface area e.g. how much air in a ball.

$$V = \frac{2}{3}\pi r^3$$