

**Example: Volume of a Cone****Problem:**

Find the volume of a cone with radius 20 centimeters and slant height 24 centimeters. Notice that we do not know the height of the cone.

**Solution:**

The height of the cone, the radius, and the slant height make a right triangle.

We can use the Pythagorean Theorem to write the equation  $20^2 + h^2 = 24^2$ .

Simplify and solve this equation to get  $h$  is approximately 13.2665.

Now that we have all the dimensions, we can begin to find the volume. First we must identify the base. In this case, it is the circle with radius 20.

Find the area of the base.

The area of a circle is  $\pi$  times the radius squared. This circle has a radius of 20, so the area is  $400\pi$ .

Now we can find the volume using the formula for the volume of a cone.

The volume of a cone is one-third times the area of the base times the height of the figure. In this case, the area of the base is  $400\pi$  and the height is approximately 13.2665. Since the height is an approximate value and is rounded off, we will also multiply by  $\pi$  for the final answer of 5557.06.

Write the final answer with the appropriate label. The volume of this cone is 5557.06 centimeters cubed.