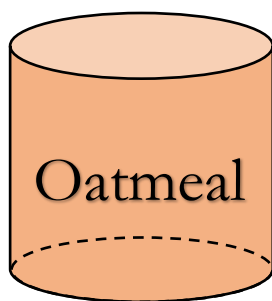
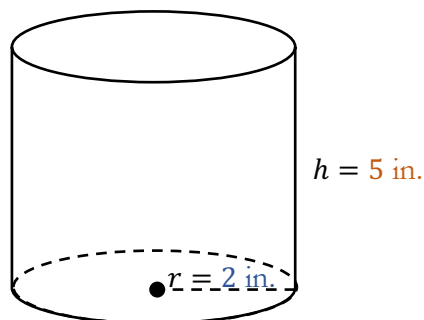


Dry oatmeal comes in a cylindrical container with a radius of 2 in. and a height of 5 in. Figure out how much oatmeal can fit in the container.



Damien's "Substitution" Method

I label the height and radius so I know what to put in the formula.



$$V = \pi r^2 h$$

$$V = \pi (2)^2 (5)$$

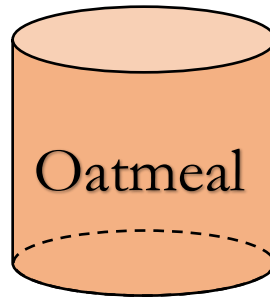
$$V = \pi (4) (5)$$

$$V = 20\pi \text{ in.}^3$$

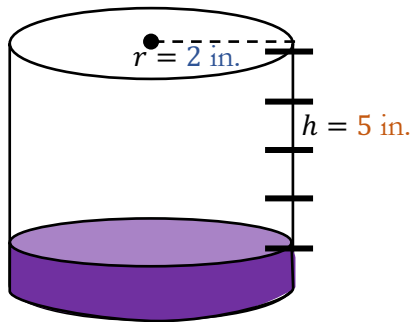


I substitute the values into the formula and calculate.

Dry oatmeal comes in a cylindrical container with a radius of 2 in. and a height of 5 in.  
Figure out how much oatmeal can fit in the container.



Sydney's "Disk" Method



$$V = Bh$$

$$V = (\pi r^2)h$$

$$V = (\pi(2)^2)5$$

$$V = (4\pi)5$$

$$V = 20\pi \text{ in.}^3$$

I know the bottom layer is a circular disk with a height of 1 in., so

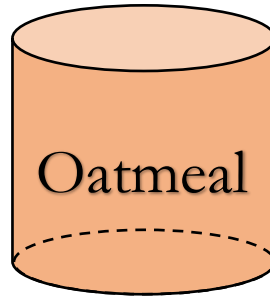
I will need to stack that 5 times to fill the cylinder.

If I think of B as the area of the base, it is the area of the disk.

I substitute the values into the formula and calculate.

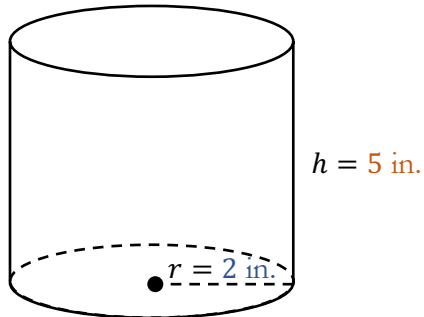


Dry oatmeal comes in a cylindrical container with a radius of 2 in. and a height of 5 in.  
Figure out how much oatmeal can fit in the container.



### Damien's "Substitution" Method

I label the height and radius so I know what to put in the formula.



I substitute the values into the formula and calculate.

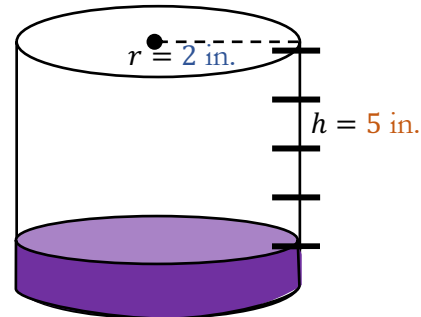
$$V = \pi r^2 h$$

$$V = \pi(2)^2(5)$$

$$V = \pi(4)(5)$$

$$V = 20\pi \text{ in.}^3$$

### Sydney's "Disk" Method



I know the bottom layer is a circular disk with a height of 1 in., so I will need to stack that 5 times to fill the cylinder.

If I think of B as the area of the base, it is the area of the disk.

I substitute the values into the formula and calculate.

$$V = Bh$$

$$V = (\pi r^2)h$$

$$V = (\pi(2)^2)5$$

$$V = (4\pi)5$$

$$V = 20\pi \text{ in.}^3$$



## V.2: *Volume*

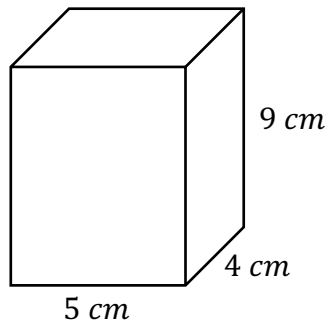
1) What are the similarities and differences between Damien and Sydney's methods?

Similarities	Differences

2) Can two cylinders with different dimensions have the same volume? Explain why or why not.

3) Will Sydney's method of slicing and stacking work for any 3-D shape, or will it only work for cylinders?

4) Find the volume of the following figure.



Dry oatmeal comes in a cylindrical container with a height of 5 in.

Figure 1 shows my

Sydney had a great idea!

Damian

I never thought about the volume of a figure as stacking layers, but I see that it works since Sydney and I got the same answers when she used layers and I used the formula for volume.

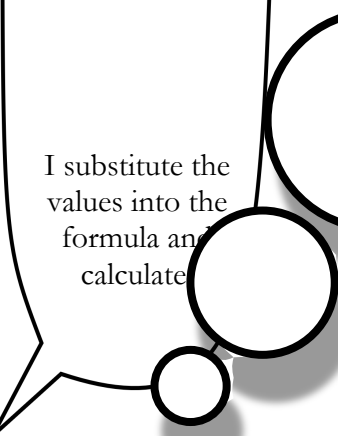
Neat!

I label the height and radius so I know what to put in the formula.

I think of the cylinder as a stack of disks, so I can find the volume by multiplying the area of the base by the height of the cylinder.

If I think of B as the area of the base, it is the area of the disk.

I substitute the values into the formula and calculate.



I substitute the values into the formula and calculate.

$$\begin{aligned} V &= \pi(2)^2(5) \\ V &= \pi(4)(5) \\ V &= 20\pi \text{ in.}^3 \end{aligned}$$

$$\begin{aligned} V &= (\pi(2)^2)(5) \\ V &= (4\pi)5 \\ V &= 20\pi \text{ in.}^3 \end{aligned}$$

