

# Do Now

Sketch a net for a triangular prism.



# Stacking rectangles

Use one set of linking cubes to build a rectangle with a length of 5 cubes and a width of 3 cubes.

If this were truly a rectangle, what would you see when you looked at it from the side?

Since it has a third dimension (height) it is a rectangular prism.

How many cubes did it take to build this rectangular prism?

Volume is defined as the number of cubes that fit inside a three dimensional figure. Since it took 15 cubes to build this prism, the volume is 15 cubic units.

# Stacking rectangles

How does the area of this rectangular face compare to the volume of the rectangular prism?

Why are they equal?

Stack your team's four rectangular prisms.

What is the volume of this new rectangular prism (in other words, how many cubes are contained in the prism)?

Volume =  $Bh$ , where  $B$  is the area of the base of the prism.

In our example, the base is a rectangle so

$B = bh = 5 \times 3 = 15$  and  $h = 4$  so  $V = 15 \times 4 = 60$  cubes.

# Stacking cylinders

Each one of these cans of delicious canned chicken has a circular base with an area of approximately 8 square inches.

If the can has a height of 1 inch, what is the volume, in cubic inches of the can?

If I stack 6 cans, what is the total volume?

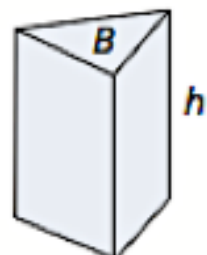
Volume is the number of cubic units contained in a three-dimensional figure.

Volume of a Prism or Cylinder

$$V = B \cdot h$$

where  $B$  is the area of the base and  $h$  is the height.

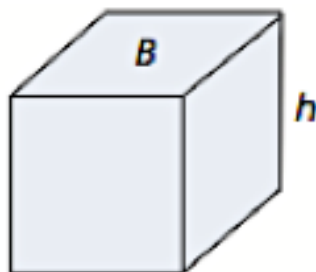
You can use this formula to find the volume of any prism or cylinder.



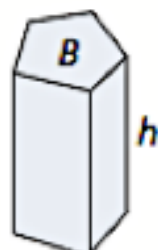
Triangular  
prism



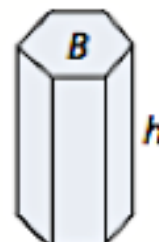
Rectangular  
prism



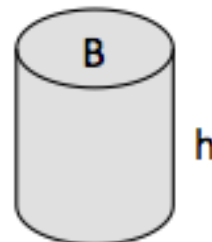
Cube



Pentagonal  
prism



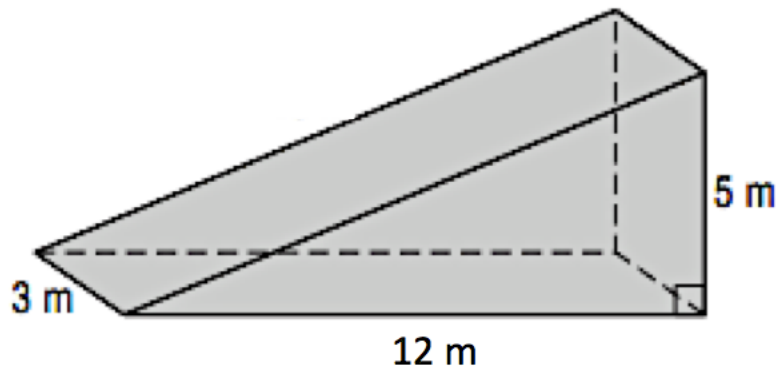
Hexagonal  
prism

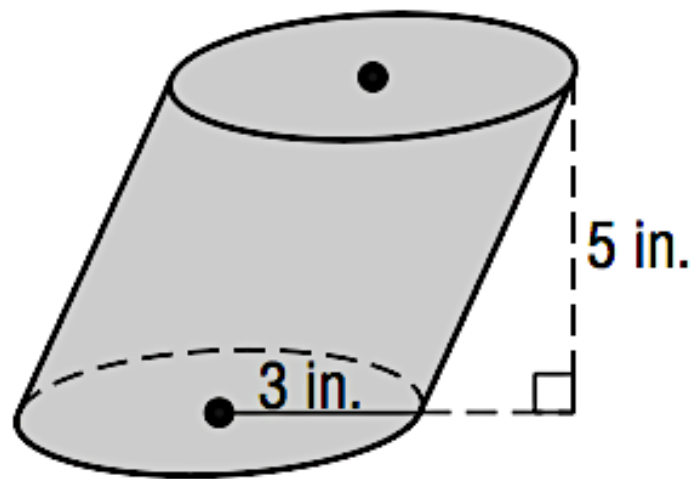


Cylinder

Remember your area formulas for different shapes:

Formulas: Triangle Area =  $\frac{1}{2}bh$     Parallelogram Area =  $bh$     Trapezoid area =  $\frac{1}{2}(b_1+b_2)h$   
Circumference =  $\pi d$     Circle Area =  $\pi r^2$      $\pi \approx 3.14$     for rough estimates:  $\pi \approx 3$





Each one of the concrete drainage pipes shown has a length of 12 feet. The outer diameter of the pipe is 5.2 feet, and the inner diameter is 4.8 feet. What is the volume of one of these pipes?

