

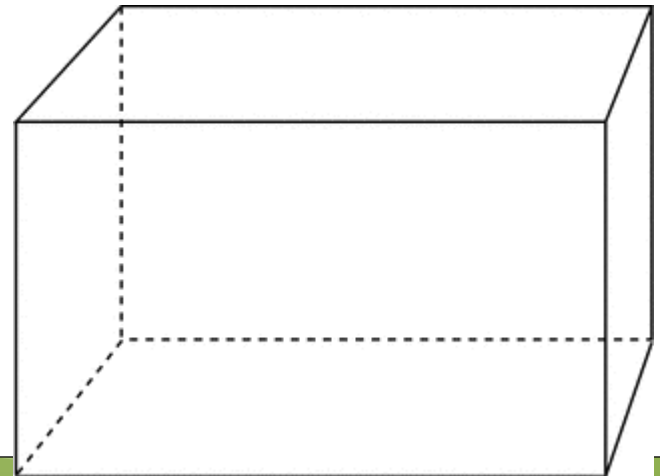
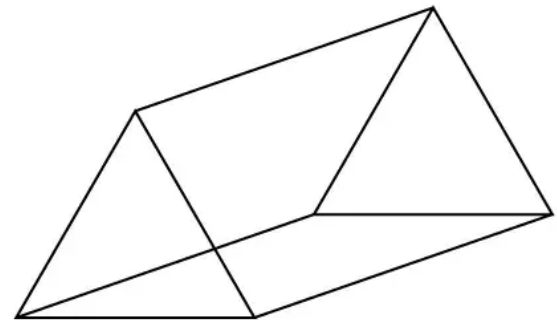
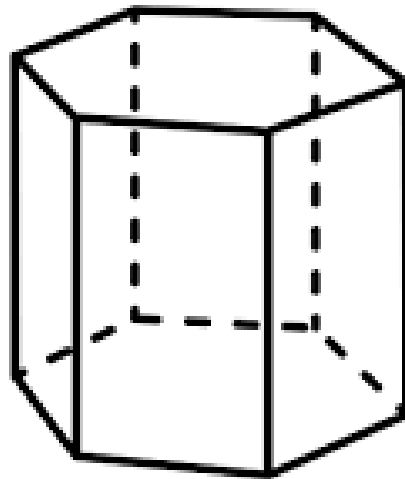
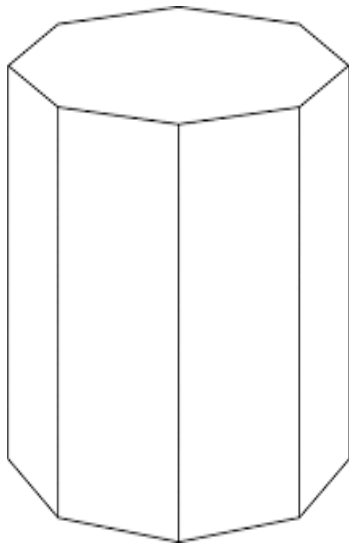
Created by Jonathan Hanks

Warmup 3/ (Diameter of a circle with an area of 110.25π)

- 1) Show work to verify why the date problem is correct. (Today is the 21st)
- 2) Draw a pentagonal prism.

In a prism...

- The bases can be any shape. The sides will be rectangles!!!

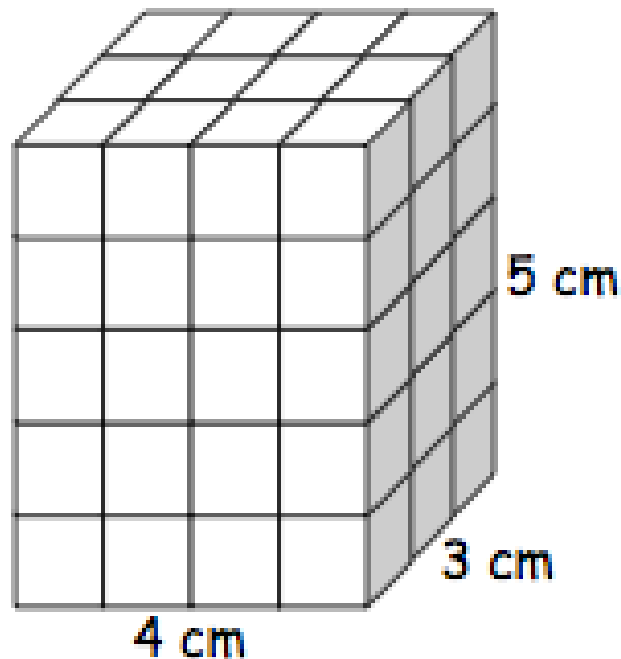


Volume

- ◉ **Area:** How much space is inside a 2-dimensional shape
- ◉ **Volume:** How much space is inside a 3-dimensional shape
- ◉ Finding **volumes** can help us solve problems like: How much cereal could you fit in this box?



How many cubes are there?



$$4 \times 3 \times 5 = 60 \text{ cubes}$$

Can you give me an explanation of why multiplying all three numbers makes sense? How can you visually “see” how many cubes there are???

UNITS!

- Anything that is a **LINE** (straight or curved) has regular units.
- If you're filling in a **2-dimensional space**, use units **SQUARED**.
- If you're filling in a **3-dimensional space**, use units **CUBED**.

Basic Units



Feet (ft.)
Yards (yd.)
Inches (in.)
etc.

Square Units
(unit²)



Square Feet (ft²)
Square Yards (yd²)
Square Inches (in²)
etc.

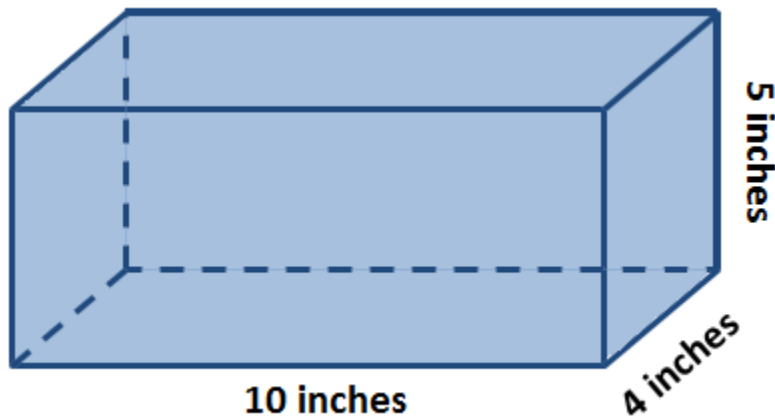
Cubic Units
(unit³)



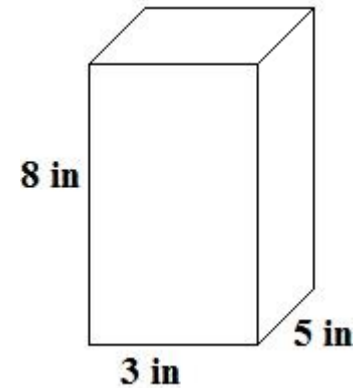
Cubic Feet (ft³)
Cubic Yards (yd³)
Cubic Inches (in³)
etc.

Rectangular Prisms

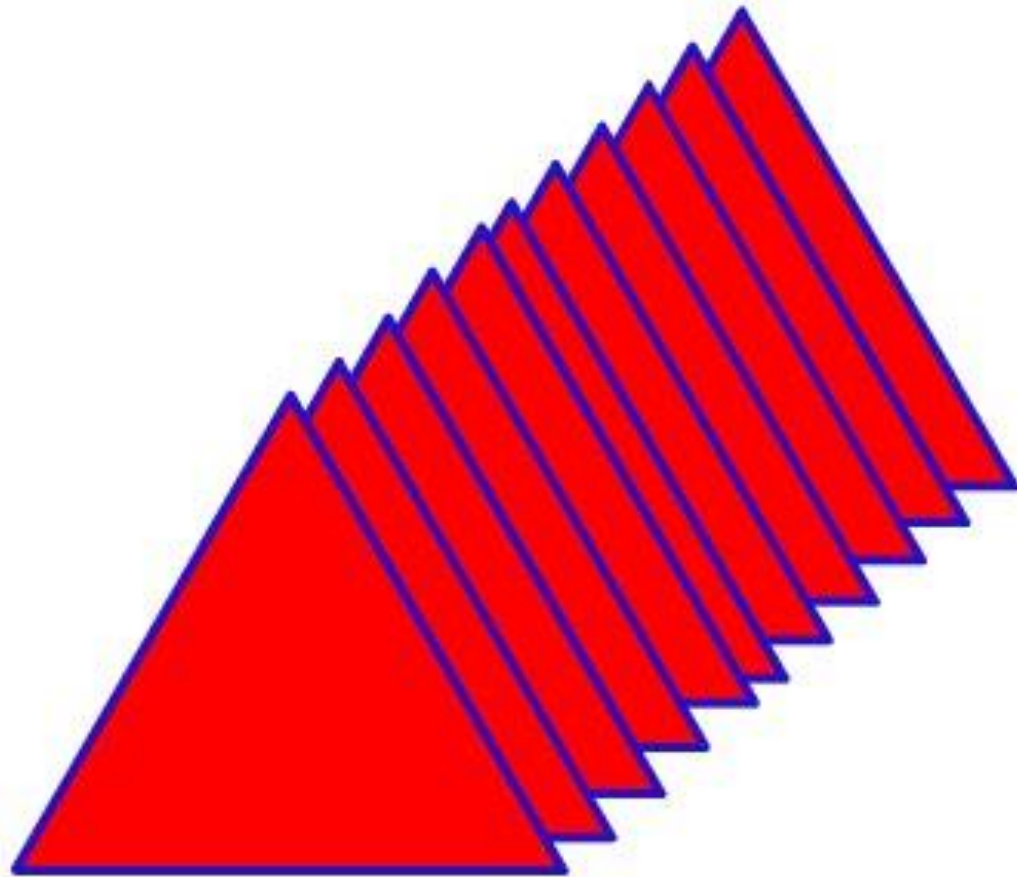
Find the volume of each rectangular prism. Try to do it without a calculator.



$$10 \cdot 4 \cdot 5 = 200 \text{ in}^3$$

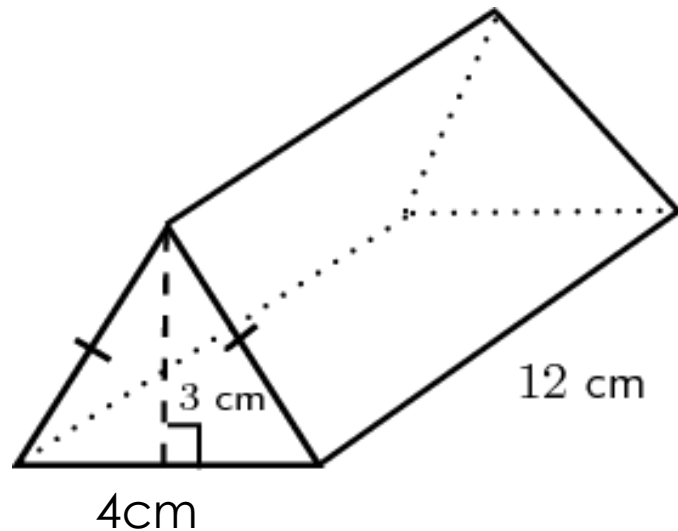


$$3 \cdot 5 \cdot 8 = 120 \text{ in}^3$$



Triangular Prisms

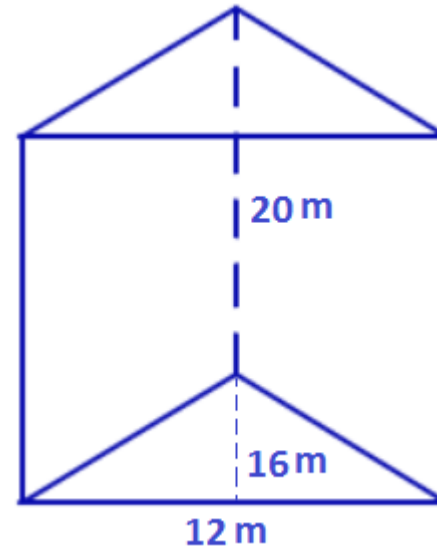
Find the volume of each triangular prism.



$$V = \left(\frac{4 \cdot 3}{2} \right) \cdot 12$$

$$V = (6) \cdot 12$$

$$V = 72 \text{ cm}^3$$



$$V = \left(\frac{12 \cdot 16}{2} \right) \cdot 20$$

$$V = (96) \cdot 12$$

$$V = 1920 \text{ cm}^3$$

Volumes of Prisms

The volume of any prism is:

- $V = (\textit{Area of base}) \cdot h$

- h is the height of the prism

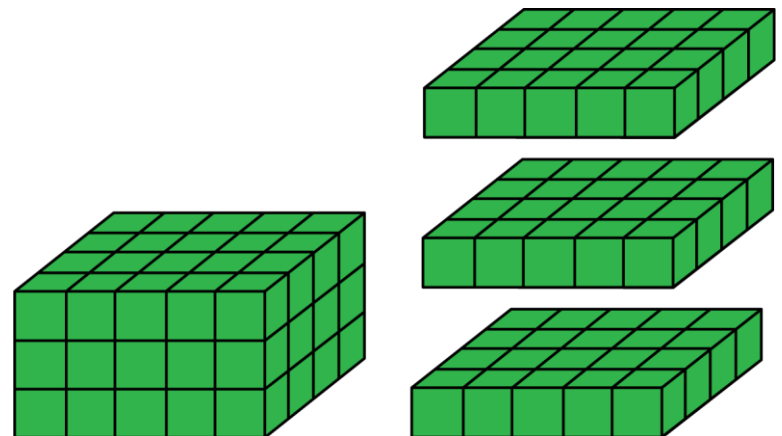
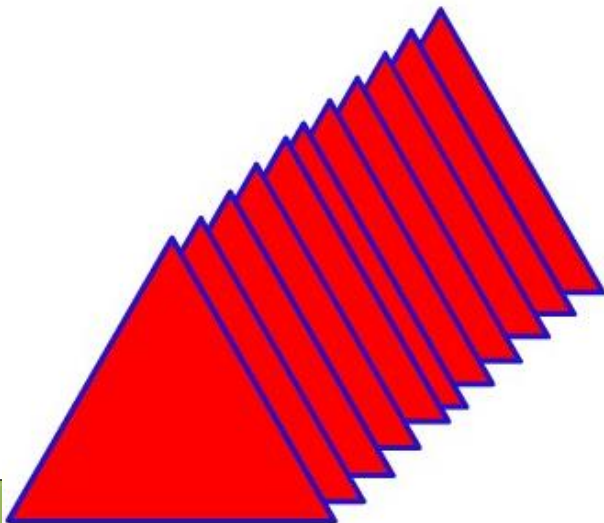
- **Rectangular prisms:** $V = (lw)h$

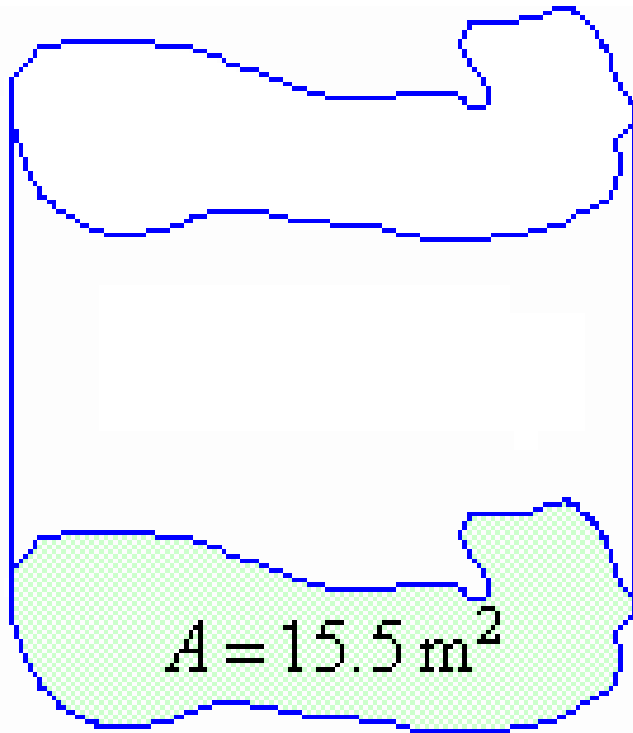
- **Triangular prisms:** $V = \left(\frac{bh}{2}\right)h$

- (The inside “h” is the height of the triangle and the outside “h” is the height of the prism)

ADVICE:

- Do not just memorize the formulas. Understand why they work.
- Every prism is just “layers” of the same shape stacked on top of each other.
- Find the area of one “layer” (the base), then multiply by how many layers there are! (the height)
- If you understand this idea, these formulas will be easy to memorize!!!



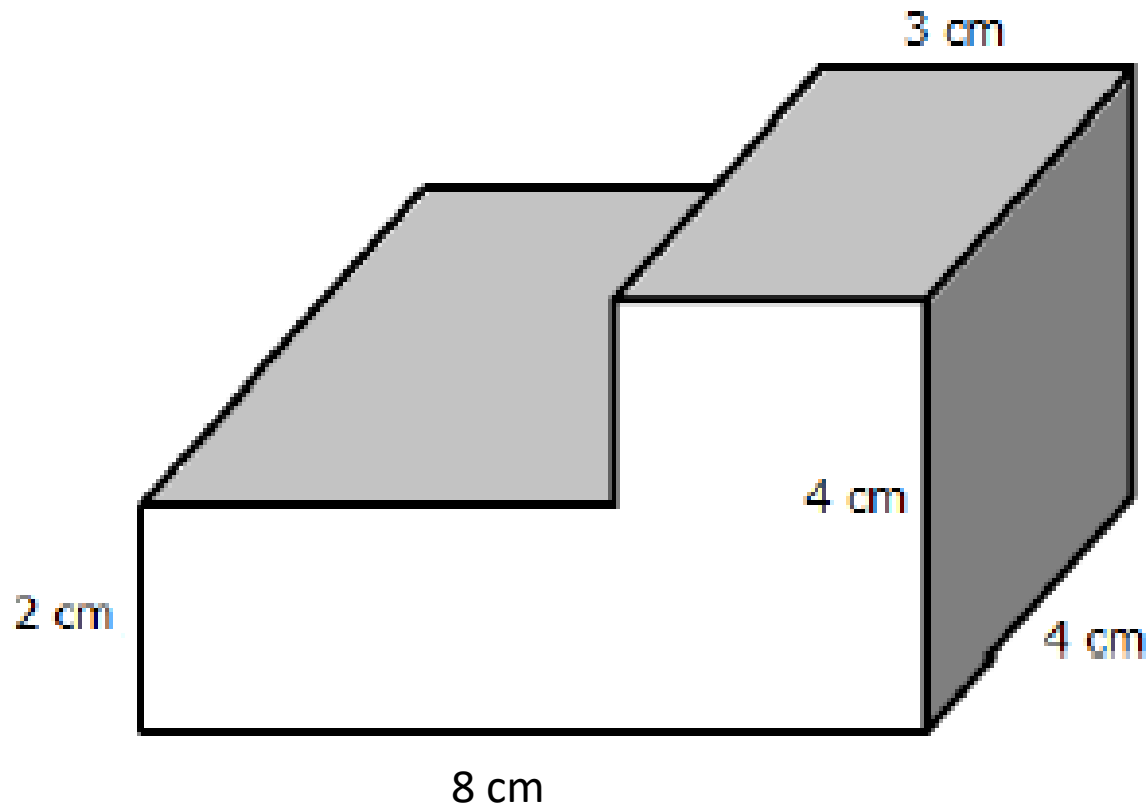


$$h = 10 \text{ m}$$

$$V = 15.5 \cdot 10$$

$$V = 155 \text{ m}^3$$

Find the volume of the figure:

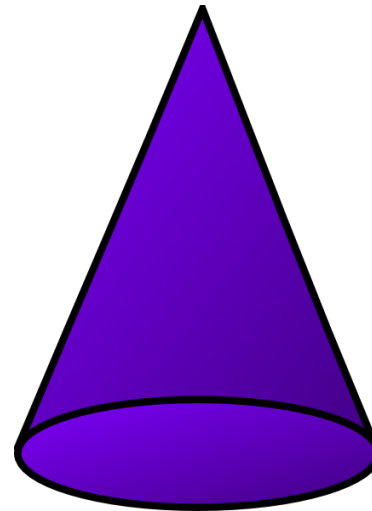
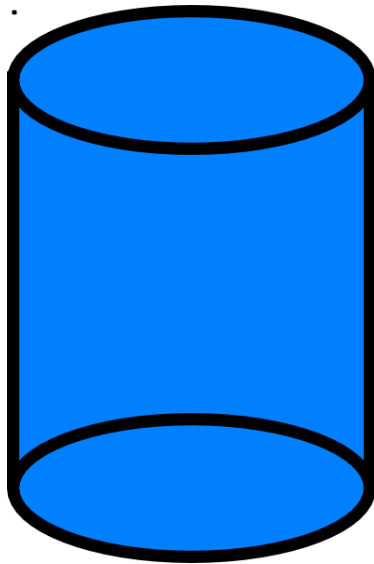


Homework

- Prisms Worksheet

Cones & Cylinders with POPCORN

- Our next topic will be volumes of **cylinders** and **cones**.



OUR JOB:

- Figure out how many kernels of popcorn it takes to fill up the tube!
- **WE HAVE:**
 - A copy of the circle the same size as the opening of the tube
 - A line that is the same length as the height of the tube
- Each pair will receive some kernels of popcorn to help them come up with their estimate.
- **PICK UP EVERY SINGLE PIECE OF POPCORN!.**