

DMT INSTITUTE

Developing Mathematical Thinking Institute (DMTI)



Professional
Development



Curricular
Resources



Assessment

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Measurement

VOLUME OF RECTANGULAR PRISMS

DMTI Varied Practice Worksheets

This PowerPoint or PDF displays the worksheets that have varied situations (context, visual, equations, and other mathematical models) for children to work on. By completing these worksheets, children increase their foundational skills in the topic, which will help them with these standards and future mathematical topics.

1. If using a journal, have children present the worksheet and complete all the problems.
2. Or print the 'Varied Practice Worksheet Slides' for them to work on. Then, you can return to the PowerPoint or PDF to look at the keys to check their work.

Measurement: Volume

One of the first things we must make sense of when finding volume is that we are now measuring a different dimension with a different unit. Look at the figures below and describe what is the same and what it different.



Figure L.

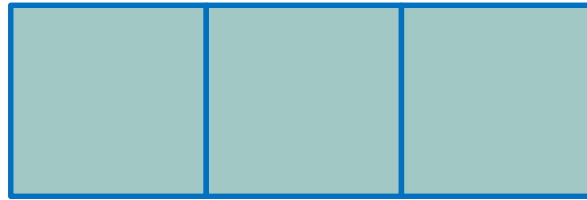


Figure M.

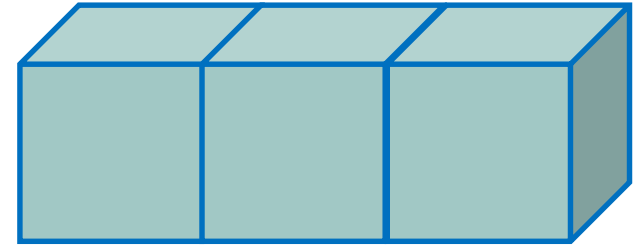


Figure N.

Something that is the **same** is that each of the figures has a measurement of 3.

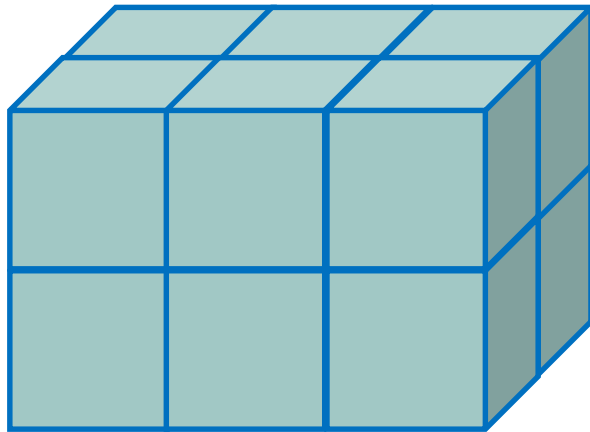
Something that is different is that the measurement for each figure is using a different **unit**. This is because each figure has different **attributes** to measure.

Figure L has a **length** of 3. Figure M has an **area** of 3 which is measured in **square units**. Figure N has a **volume** of 3 which is measured in **cubic units**.

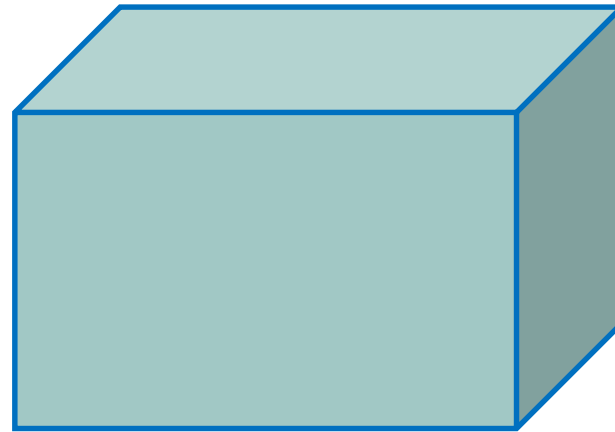
Measurement: Volume

This is a special type of 3-D solid figure called a *prism*.

Prisms do not need to show the cubic units that compose them to still be a prism.



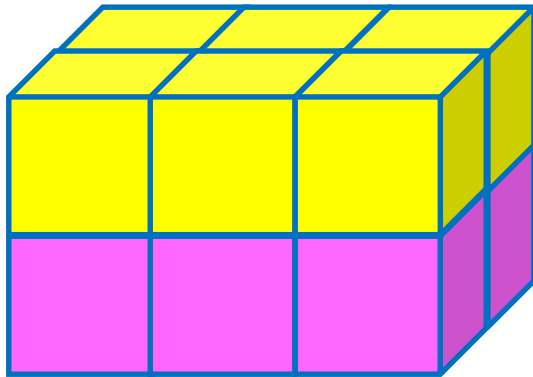
Prism



Prism (without cubic units shown)

Measurement: Volume

How could we find the **volume**? Remember, volume is the number of cubic units that an object fills in 3-D space.



We will iterate this bottom layer another time. So, we have a 3x2x1 layer iterated twice.

We can write this in a volume equation this way: $(3 \times 2 \times 1) \times 2 = 12 U^3$ OR $(3 \times 2) \times 2 = 12 U^3$

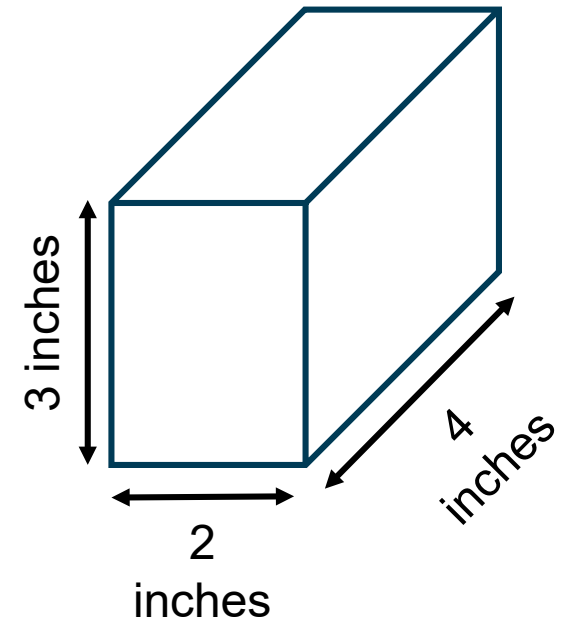
The volume of the rectangular prism is 12 cubic units.

Measurement: Volume

There are two typical formulas for calculating the volume of rectangular prisms.

The first is by determining the length, width and height: $V = l \cdot w \cdot h$ which means that we must iterate a cube 2 times for the length and then 4 times for the width and 3 times height.

The second way is by determining the volume of the base and then multiplying by its height: $V = B \cdot h$ which is creating a $2 \cdot 4$ base or 8 cubes. Then, iterating the base up to be a height of 3 cubes tall.



Grade 6-8: Volume

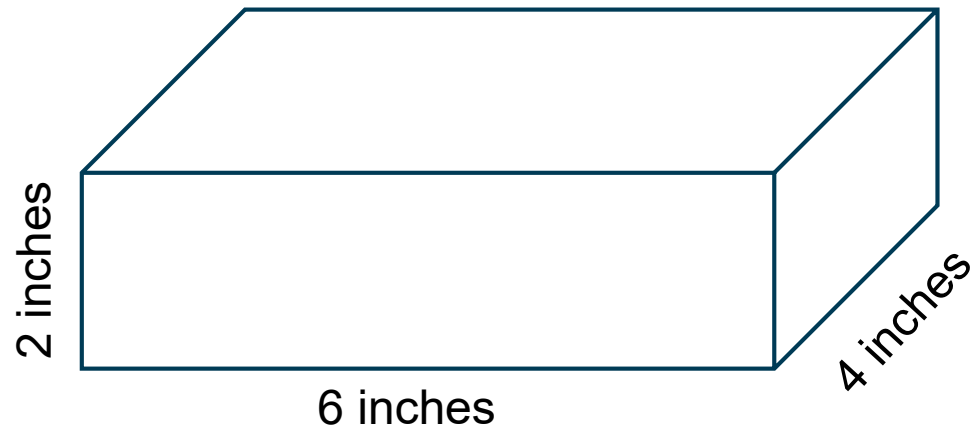
Materials Needed

Printed copies of the Volume Worksheets

Instructions

- A) Use the provided net and dimensions to write and solve an equation for finding the volume of the figure.
- B) Draw a net with the given dimensions and use it to write and solve an equation for finding the volume of the figure.

Worksheet 1.1 – Volume of Rectangular Prisms: Whole Numbers



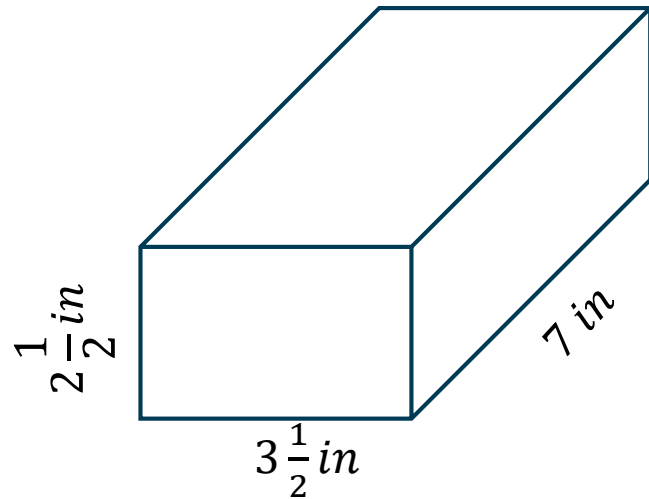
Draw a rectangular prism with the following dimensions:

$$4in \times 5in \times 3in$$

Write and solve an equation for finding the volume:

Write and solve an equation for finding the volume:

Worksheet 1.2 – Volume of Rectangular Prisms: Fractions



Draw a rectangular prism with the following dimensions:

$$6\frac{1}{2} \text{ in} \times 4\frac{3}{4} \text{ in} \times 2 \text{ in}$$

Write and solve an equation for finding the volume:

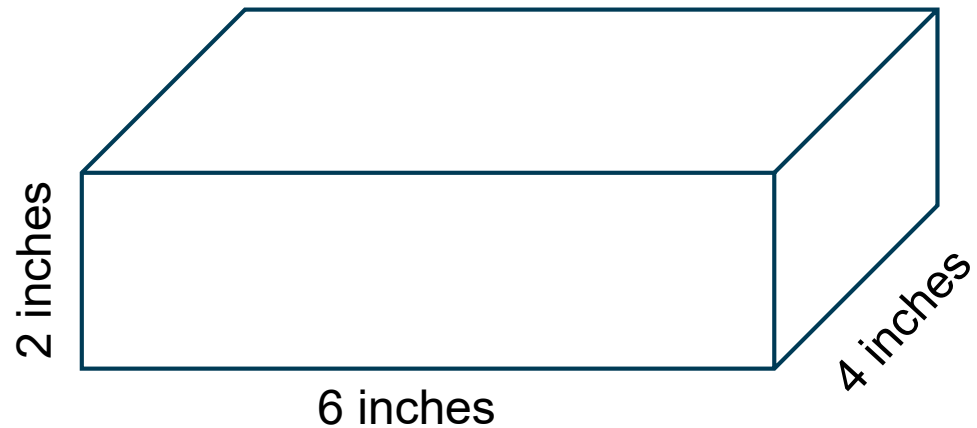
Write and solve an equation for finding the volume:



“The Developing Mathematical Thinking Institute (DMTI) is dedicated to enhancing students’ learning of mathematics by supporting educators in the implementation of research-based instructional strategies through high-quality professional development, curricular resources and assessments.”

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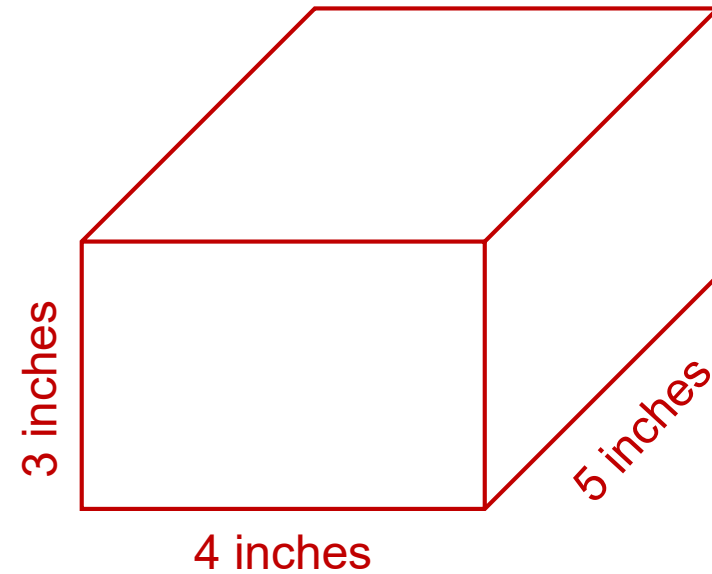


Write and solve an equation for finding the volume:

$$6in \times 4in \times 2in = 48in^3$$

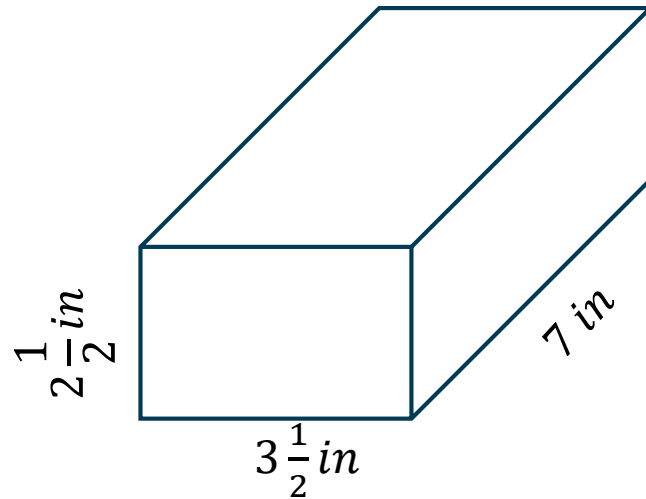
Draw a rectangular prism with the following dimensions:

$$4in \times 5in \times 3in$$



Write and solve an equation for finding the volume:

$$4in \times 5in \times 3in = 60in^3$$

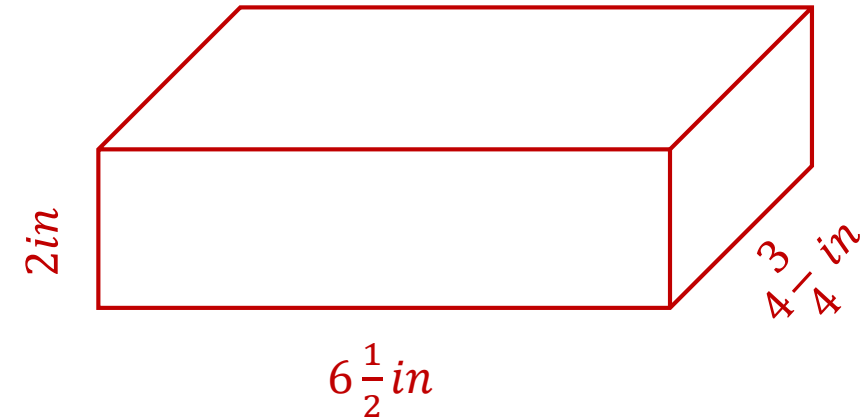


Write and solve an equation for finding the volume:

$$3\frac{1}{2} \text{ in} \times 7 \text{ in} \times 2\frac{1}{2} \text{ in} = 61\frac{1}{4} \text{ in}^3$$

Draw a rectangular prism with the following dimensions:

$$6\frac{1}{2} \text{ in} \times 4\frac{3}{4} \text{ in} \times 2 \text{ in}$$



Write and solve an equation for finding the volume:

$$6\frac{1}{2} \text{ in} \times 4\frac{3}{4} \text{ in} \times 2 \text{ in} = 61\frac{3}{4} \text{ in}^3$$