Module 5 - Lesson 18:

Find the volume of right rectangular prisms by packing with improvised units.

CCSS Standard – 5.MD.C.4

FLUENCY (10-min)

Whiteboard Exchange: Divide Whole Numbers

Find the quotients and remainder.
Show your method.

$$
\begin{array}{r}
025 \\
17\overline{)\,425} \\
-\,34\downarrow \\
\hline
85 \\
-\,85 \\
\hline
0
\end{array}
$$

$$
\begin{array}{r}
005.325 \\
40\overline{)\,213000} \\
-\,200\downarrow \\
\hline
130 \\
-\,120 \\
\hline
100 \\
-\,80 \\
\hline
200 \\
-\,200 \\
\hline
0
\end{array}
$$

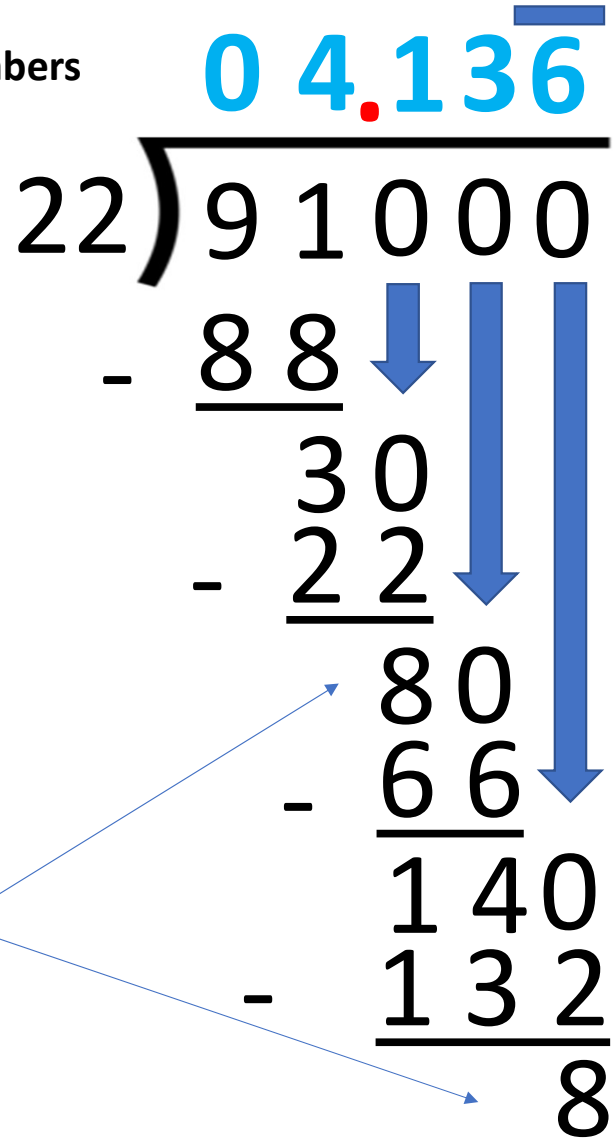
FLUENCY (10-min)

Whiteboard Exchange: Divide Whole Numbers

Sometimes a division problem produces a never-ending quotient.

We call this a non-terminating decimal. The pattern repeats endlessly.

Typically, we place a line over the repeating decimal to indicate it goes on endlessly.



The pattern repeats with 8 and will go on endlessly.

So, we place a line over the thousandths place to indicate that pattern.

FLUENCY (10-min) **Whiteboard Exchange: Write and Evaluate Expressions**

Write an expression to represent the statement.
Then solve for the value of the expression.

The sum of 1.2 and 1.8, doubled

The difference between 1 and 0.1, divided by 3

Add 5 to the product of 0.2 and 4

LAUNCH (5-min) **Reason about finding the number of pieces of gum in a pack and in a box.**

How many sticks of gum are in the pack?

5 sticks of gum.

How many sticks of gum are in the box?

Is it possible that the packs of gum are stacked on top of each other? If so….

1 layer = 50 sticks of gum (10 x 5)
2 layers = 100 sticks of gum (20 x 5)
3 layers = 150 sticks of gum (30 x 5)

If you know the volume of 1 stick of gum and you know the number of sticks of gum in a pack, how could you find the total volume of the gum in a pack?

We could multiply the volume of 1 stick of gum by the number of sticks in the pack.

If you know the volume of 1 pack of gum and you know the number of packs of gum in a box, how could you find the total volume of the packs of gum in a box?

We could multiply the volume of 1 pack by the number of packs in the box.

LEARN (35-min) **Build a Prism with Prisms**

LEARN book page 177.

1. A right rectangular prism is 3 units long, 1 unit wide, and 1 unit tall.

   a. Draw the prism.

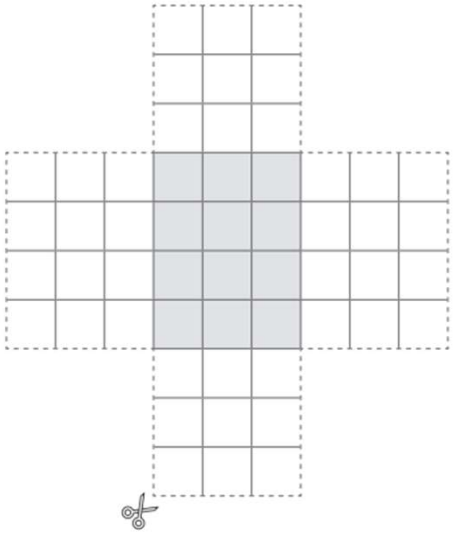
   b. What is the volume of the prism? 3 x 1 x 1 = **3 cubic units.**

Using the interlocking cubes, make the prism above using the same color.

Look at the net of Box 1 on page 173. How can we determine the amount of space the box takes up?

- *We can find its volume. V = L x W x H*
- *We can pack it with centimeter cubes and count them.*
- *We can build a right rectangular prims that is the same size.*

Box 1



LEARN (35-min) Build a Prism with Prisms

LEARN book page 177.

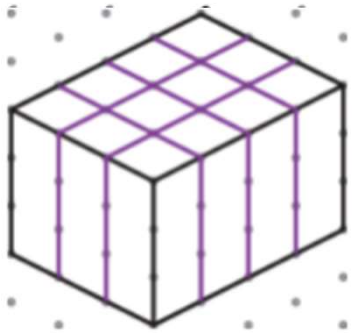
d. Use right rectangular prisms that are 3 units long, 1 unit wide, and 1 unit tall to build a right rectangular prism that is the same size as box 1. Explain or draw lines on the right rectangular prism to show how you arranged the prisms.

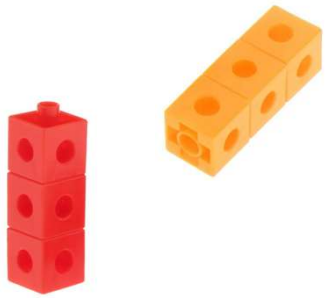
Task:
Use the interlocking cubes to make more **3 x 1 x 1** prims.

You may use different color cubes but try to use the same colors for each small 3 x 1 x 1 prism.

Use those prisms to build a right rectangular prism that is the same size as **Box 1**.

Be ready to share out your strategies.





How many prisms did you use to build a right rectangular prism to match Box 1?

12 prisms.

What is the volume of Box 1?

36 cubic units.
V = 4 cubes by 3 cubes by 3 cubes = 36 cubes

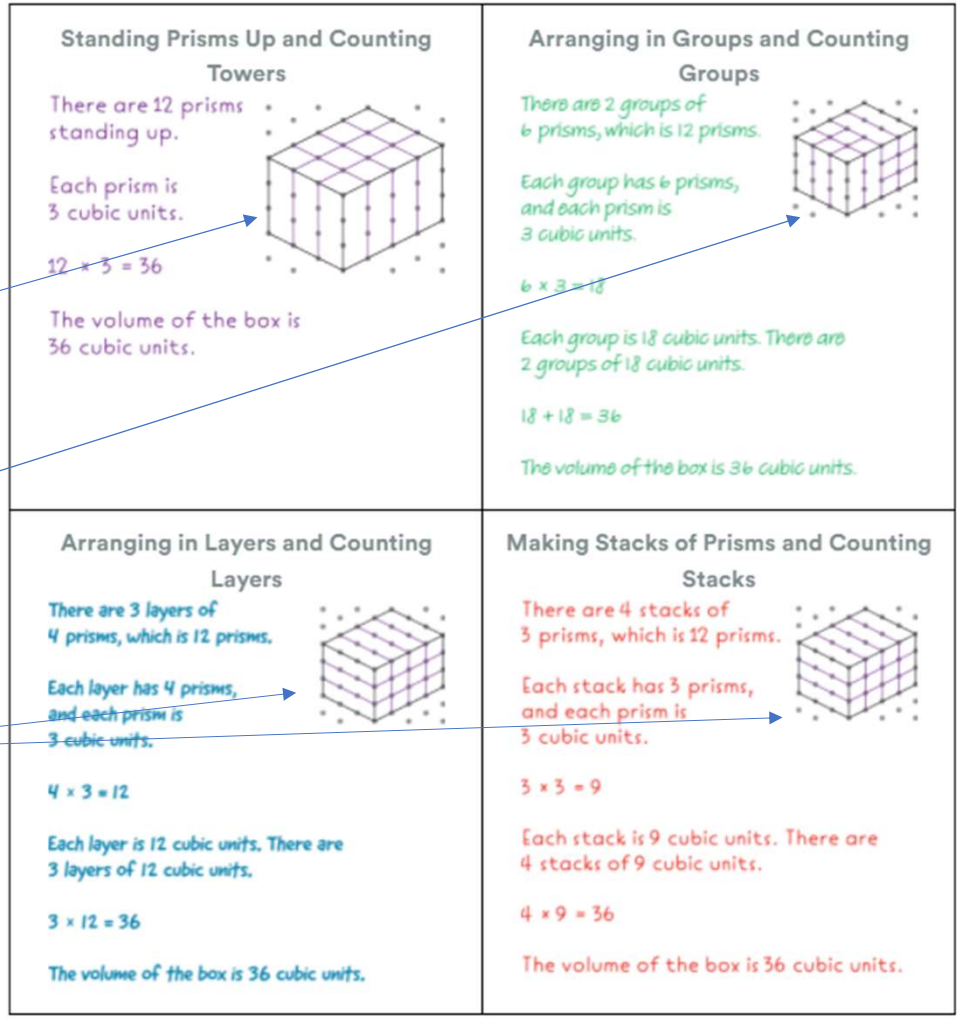
LEARN (35-min) **Build a Prism with Prisms**

There were several different ways to arrange the prisms in Box 1?

The prisms could have all been stood up and arranged in 4 rows of 3 towers.

Six prisms could have been stood up and six prisms laid flat.

The prisms could have been laid flat using 3 layers of prisms.

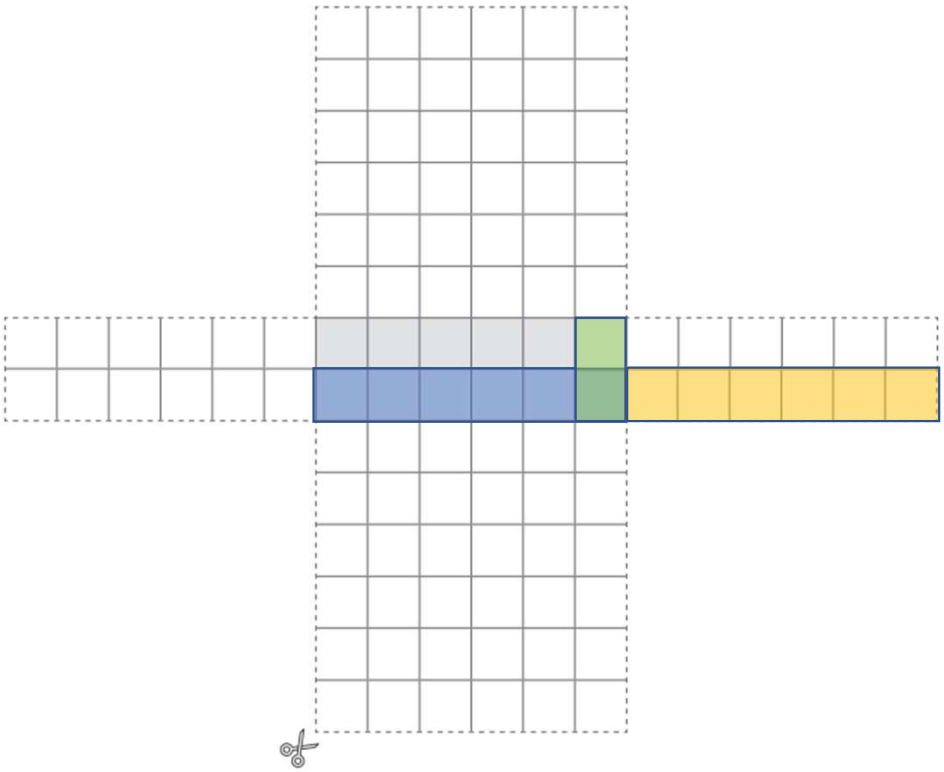


No matter the arrangement of cubes, the volume is the same!

LEARN (35-min) **Build a Prism with Prisms**

Look at the net of Box 1 on page 175.
Can we determine the amount of space the box takes up without stacking it with cubes?

Box 2



$$V = l \times w \times h$$

$$6 \times 2 \times 6$$

cubes cubes cubes

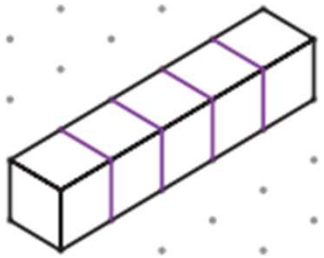
72

cubes

LEARN (35-min) **Problem Set**

LEARN book page 181.

1. Use the right rectangular prism to complete parts (a)–(f).



a. Sketch lines on the prism to show that it is 5 units long, 1 unit wide, and 1 unit tall.

b. What is the volume of the prism?

5 x 1 x 1 = **5 cubic units.**

LEARN (35-min) **Problem Set**

LEARN book page 181.

$V = l \times w \times h$

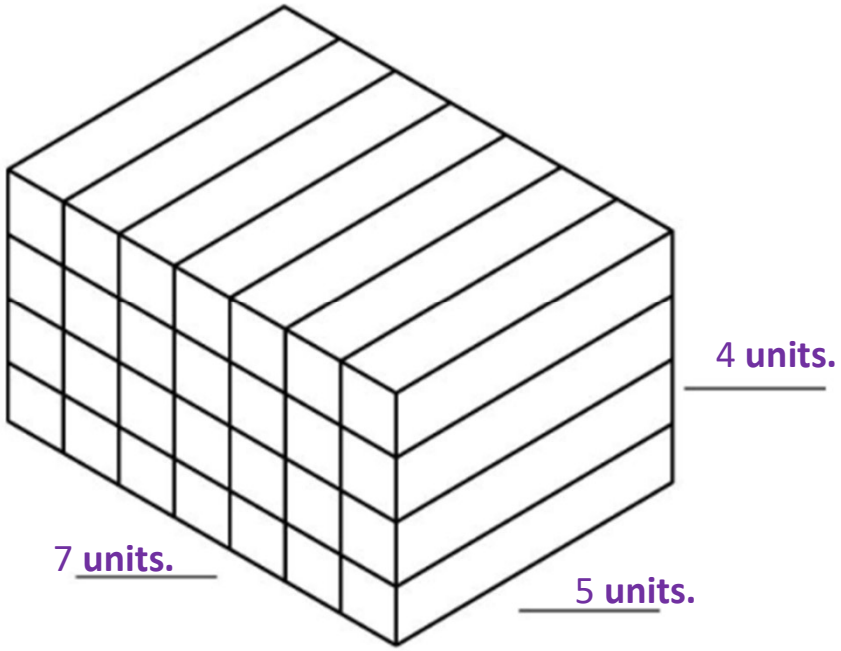
7 x 5 x 4

cubes cubes cubes

140

cubes

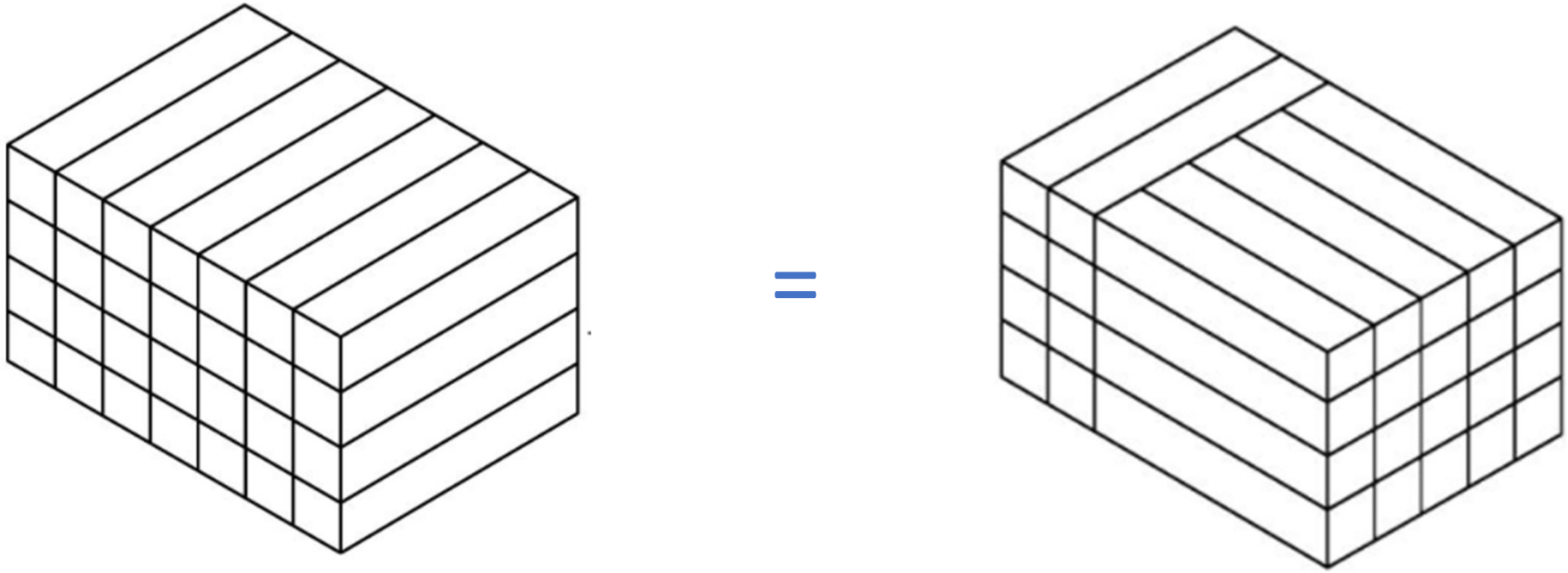
c. Several prisms like the one from part (a) are used to build a larger right rectangular prism. There are 7 stacks of 4 prisms as shown. Fill in the blanks for the unknown measurements.



d. How many prisms are used to build the larger right rectangular prism? **28 prisms.**

LEARN (35-min) **Problem Set**

LEARN book page 181.



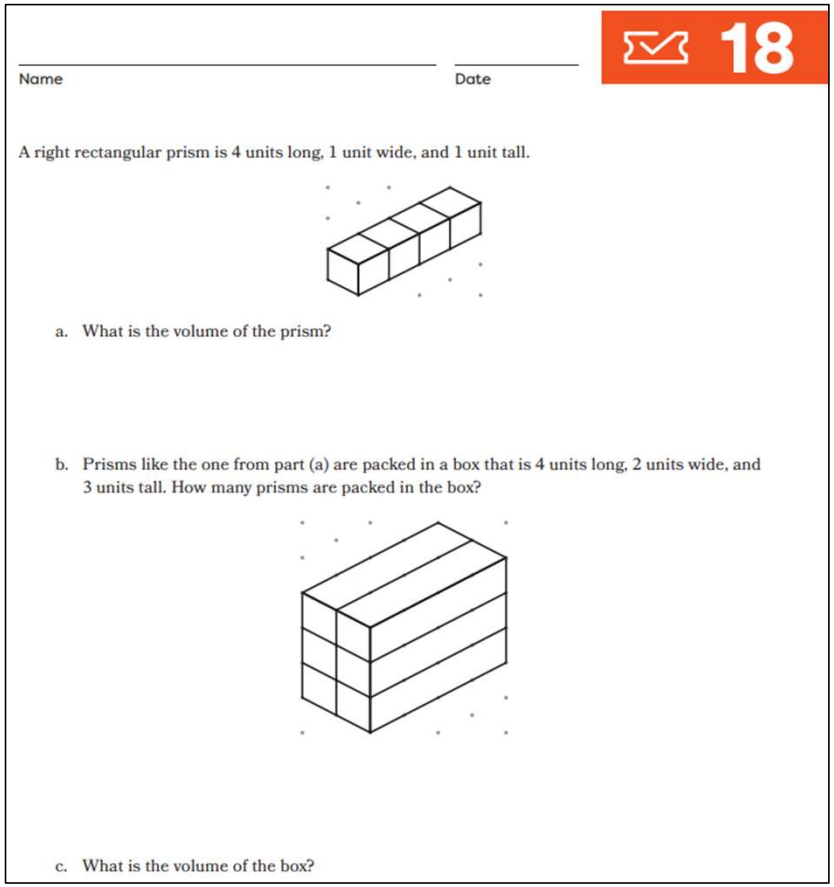
Although these prisms are built differently, their volume are the same.
The length, width, and height are the same.

LAND (10-min) **Exit Ticket**

Exit Ticket – PAGE 185

Small Group Time:
Problem Set Pages 181 - 183

Homework:
Page 115 APPLY BOOK



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Name _____ Date _____

A right rectangular prism is 4 units long, 1 unit wide, and 1 unit tall.

a. What is the volume of the prism?

b. Prisms like the one from part (a) are packed in a box that is 4 units long, 2 units wide, and 3 units tall. How many prisms are packed in the box?

c. What is the volume of the box?