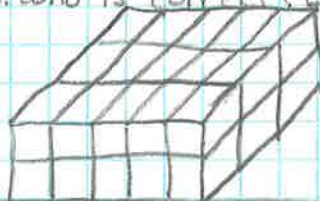


CDC

Lillian Haberlach
Mrs. Jashi

Question: Micheal says to find the volume of a rectangular prism you just count the cubes. Sam says you use the formula $l \times w \times h$ to find the volume. Who is correct? Explain your reasoning.



Claim: They are both correct because Sam is using the correct formula for 3-D shapes. Micheal is also correct because if you count the cube CORRECTLY you will also find the answer.

Data:

Micheal's way

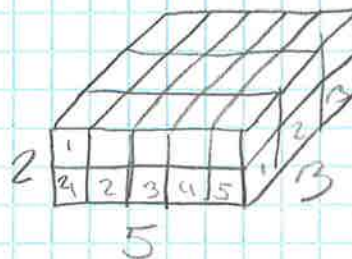


+



$$= 30 \text{ units}^3$$

Sam's way

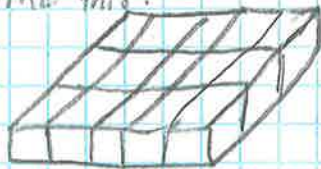


$$V = lwh$$
$$V = 5 \times 3 \times 2 = 30 \text{ units}^3$$

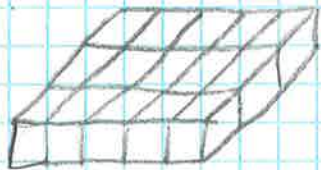
Commentary:

First I will be explaining Micheal's way of just adding the cubes.

1. First you need to notice that there are 2 layers of cubes. Pull them apart like this:



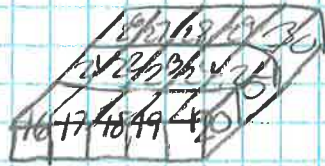
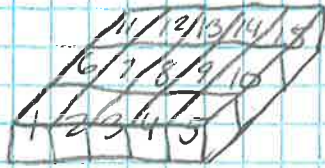
Top layer



Bottom layer

2. Now you need to remember that when you count the cubes you aren't counting faces, but actual cubes. Now if you counted correctly you should have 30 cubes in the total shape. So if you didn't, your counting should look like this:

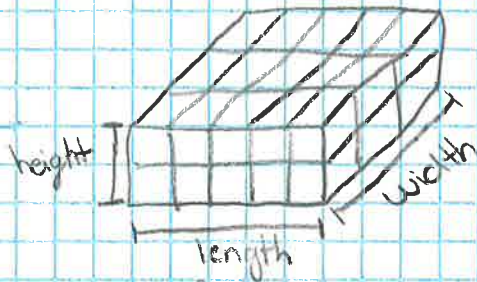
Commentary Continued:



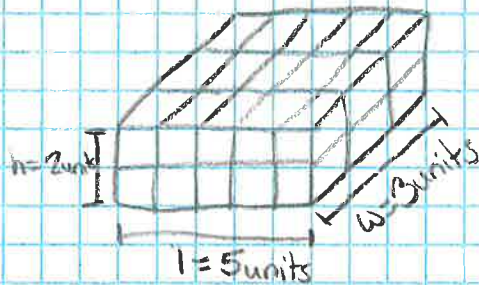
3. Guess what? You're done! Since you counted up to 30 total cubes that's your answer. 30 units!

Now we have to check and make sure Sam is correct too. He said you can use the formula $l \times w \times h$ (length \times width \times height) to find the volume. Let's try it!

1. First you need to determine what your length, width, and height are. Now if you look here I have labeled the for you!



2. Next you have to find how many units are in your length, width, and height. This is where you count the faces of the cubes and not the cubes. Like this:



3. Great! You're almost done. Finally, all you need to do is multiply! $2 \times 5 \times 3$. You can do it in any order. You multiply them like this:

$$\begin{array}{r} 15 \\ \times 35 \\ \hline 15 \end{array} \quad \begin{array}{r} 15 \\ \times 2 \\ \hline 30 \end{array}$$

Now you have your answer, 30 units!
This all shows that they both were correct even though they did it differently.