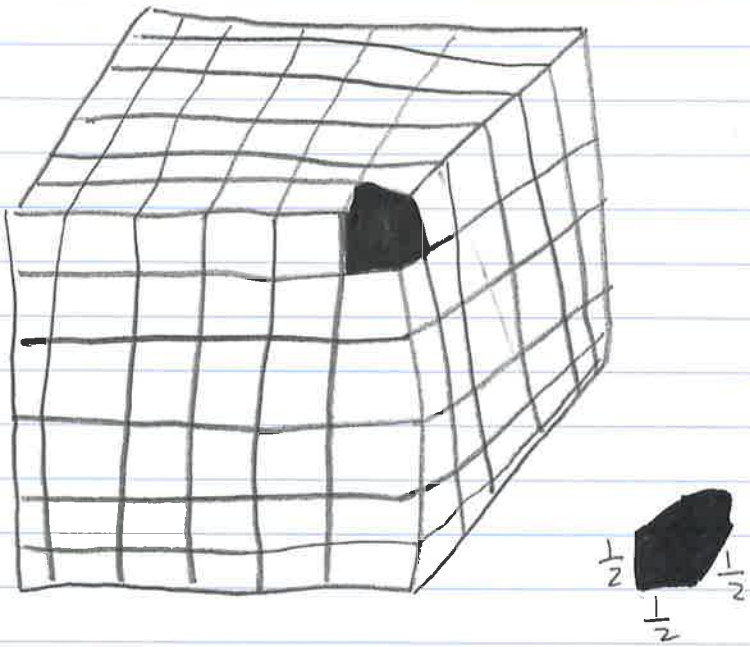
P#1

CDC

Ben B. Mrs Joshi

Question: Tracy said the volume of this 3D shape was $3 \times 3 \times 3$. Mark said the volume was $6 \times 6 \times 6 \times \frac{1}{8}$. Who is correct? Explain with proper reasoning.



Claim: Mark and Tracy are both correct. Mark found the volume by $l \times w \times h \times V$ (V stands for volume of 1 cube). Tracy found the volume by counting the edge length of all the cubes.

P#2

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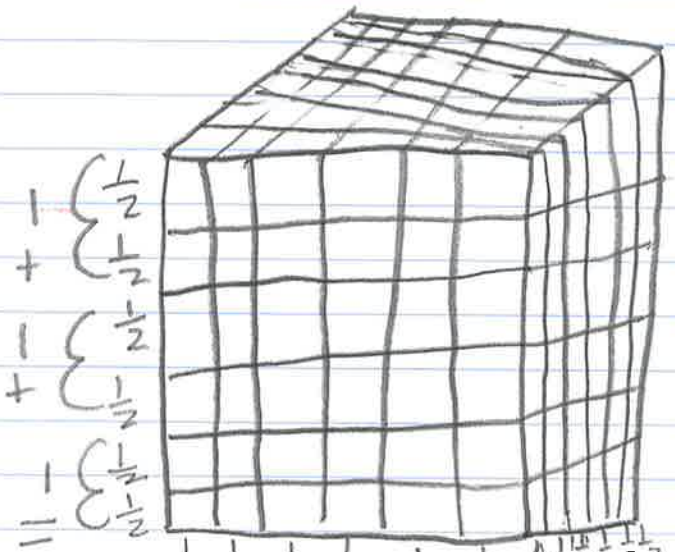
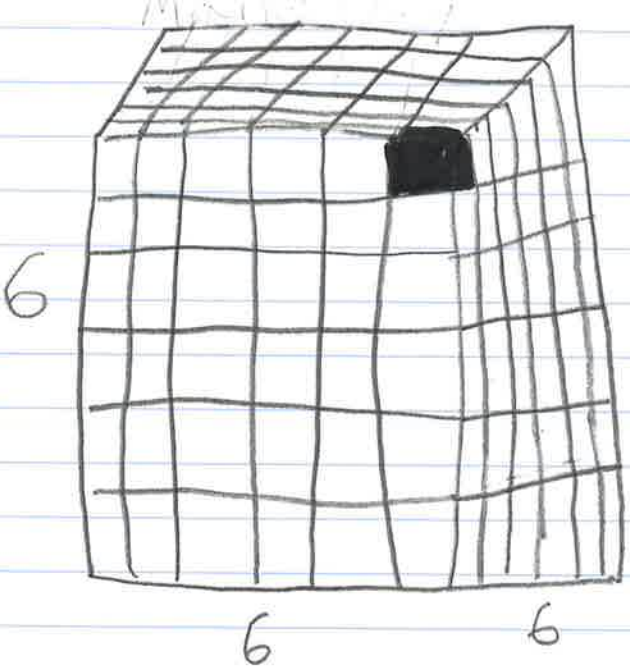
Data: Tracy's way



$3 \times 3 \times 3 = 27 in^3$

Mark's way



$6 \times 6 \times 6 \times \frac{1}{8}$

$\downarrow$

$\frac{6}{1} \times \frac{6}{1} \times \frac{6}{1} \times \frac{1}{8} = \frac{216}{8}$

$27 in^3$

$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$

P#3

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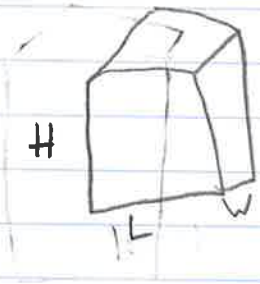
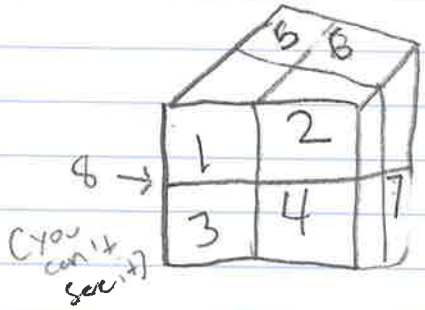
Commentary: 1st: In order to know who is right you have to know what volume is. Volume is the amount of cubic units that will fit in a 3-D object. Volume for a cube can be found by lx wxh (l stands for Length, W stands for width, and h stands for height).



2nd: Another way to find volume is by counting all the cubes.



3rd: That is two ways to find volume, Tracy and Mark used Fractional edge length to find the volume. Their are two ways to use the fractional edge length. The first way (The way Tracy did it) all you have to do is find the edge length on 1 cube

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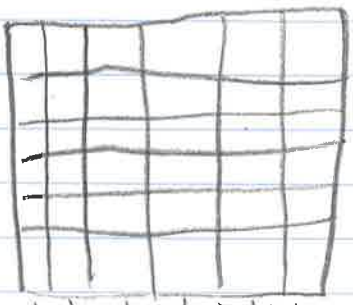
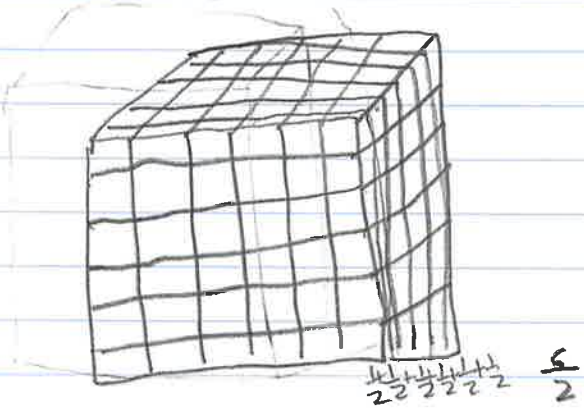
commentary continued: Chitch on this problem is $\frac{1}{2}$)

and count how many of those there are.



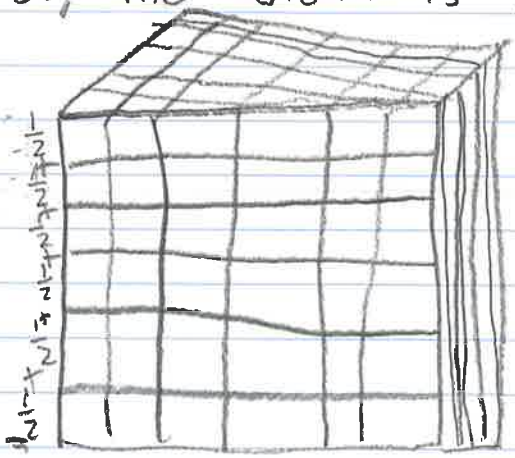
$\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2} = \frac{6}{2} = 3$

Their are six $\frac{1}{2}$s here on the length. $\frac{6}{2}=3$ so, the length is 3.



$\frac{1}{2}\frac{1}{2}\frac{1}{2}\frac{1}{2}\frac{1}{2}\frac{1}{2}$ $\frac{6}{2}$

Their are also six $\frac{1}{2}$s here on the width $\frac{6}{2}=3$ so, the width is 3.



$\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}$

$\frac{6}{2}$

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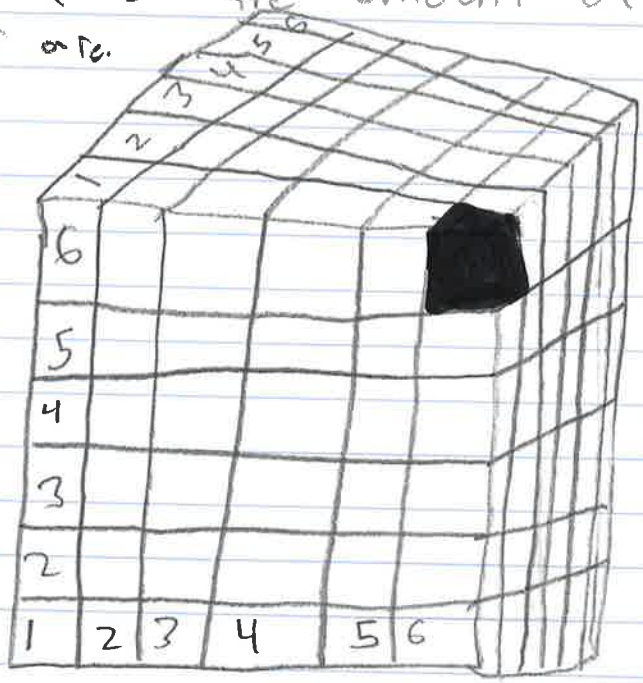
Commentary continued! Their are also six $\frac{1}{2}$s here on the height $\frac{6}{2}=3$ so, the height is 3.

Now that you have found the length, width, and height now all you have to do is multiply them together like so. $3 \times 3 = 9 \times 3 = 27 \text{ in}^3$

The other way to use fractional edge length (Mark's way) is to find the volume (If you do not what volume is it is explained on P#3) of 1 cube Then find the amount of cubes their are.



$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$

1
7

~~$6 \times 6 \times 6 = 216$~~

Now that you have found the volume of 1 individual cube and the amount of cubes all you have too do now is multiply ~~$\frac{27}{1} \times \frac{216}{1} = \frac{27}{1} = 27 \text{ in}^3$~~

P#6

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commentary continued: Therefore Tracy and Mark are both correct even though they used different methods to find the answer.