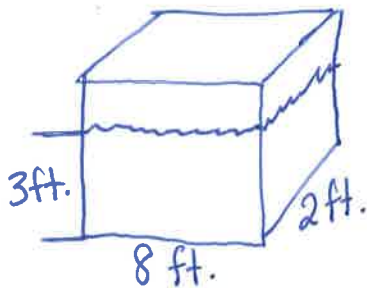


Name _____

Date _____

Geoffrey builds rectangular planters.

1. Geoffrey's first planter is 8 feet long and 2 feet wide. The container is filled with soil to a height of 3 feet in the planter. What is the volume of soil in the planter? Explain your work using a diagram.



$$V = 8 \text{ ft} \times (2 \text{ ft} \times 3 \text{ ft})$$

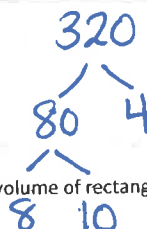
$$8 \text{ ft} \times 6 \text{ ft}$$

$$V = 48 \text{ ft}^3$$

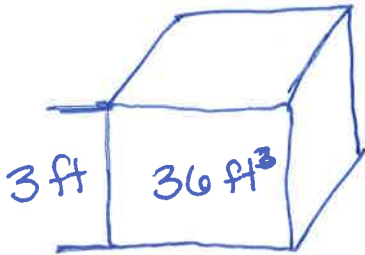
2. Geoffrey wants to grow some tomatoes in four large planters. He wants each planter to have a volume of 320 cubic feet, but he wants them all to be different. Show four different ways Geoffrey can make these planters, and draw diagrams with the planters' measurements on them.

<p>Planter A</p> $\checkmark = 32 \times 5 \times 2$ $= 80 \times 2 \times 2$ $= 20 \times 2 \times 8$ $= 32 \times 10 \times 1$ $= 4 \times 10 \times 8$ $= 16 \times 2 \times 10$	<p>Planter B</p>
<p>Planter C</p>	<p>Planter D</p>

$$320 = \underline{8} \times \underline{10} \times \underline{4}$$



3. Geoffrey wants to make one planter that extends from the ground to just below his back window. The window starts 3 feet off the ground. If he wants the planter to hold 36 cubic feet of soil, name one way he could build the planter so it is not taller than 3 feet. Explain how you know.

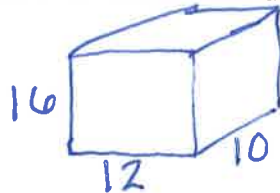
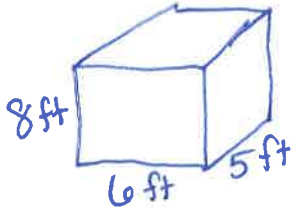


$$36 = (\quad \times \quad) \times \underline{3}$$

$$\begin{array}{l} \wedge \\ 3 \times 12 \\ 2 \times 6 \times 3 \\ 3 \times 4 \times 3 \\ 1 \times 12 \times 3 \end{array}$$

4. After all of this gardening work, Geoffrey decides he needs a new shed to replace the old one. His current shed is a rectangular prism that measures 6 feet long by 5 feet wide by 8 feet high. He realizes he needs a shed with 480 cubic feet of storage.

- a. Will he achieve his goal if he doubles each dimension? Why or why not?

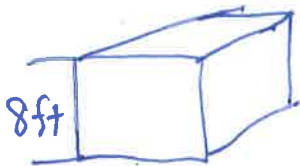


$$V = 16 \times 12 \times 10$$

$$V = 16 \times 120$$

$$V = 1,920 \text{ ft}^3$$

- b. If he wants to keep the height the same, what could the other dimensions be for him to get the volume he wants?



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

$$480 = (\underline{10} \times \underline{6}) \times \underline{8}$$

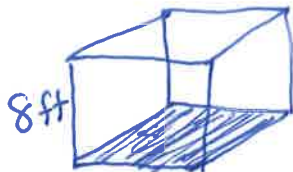
$$480 = (\underline{12} \times \underline{5}) \times \underline{8}$$

$$480 = 15 \times 4 \times 8$$

$$480 = \underline{60} \times \underline{1} \times \underline{8}$$

$$480 = 30 \times \underline{2} \times 8$$

- c. If he uses the dimensions in part (b), what could be the area of the new shed's floor?



$$\text{Area} = 60 \text{ ft}^2$$

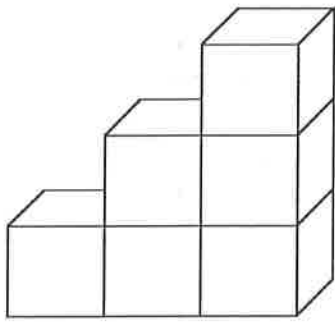
Name: Key

Date: _____

Mid-Module 5 Review Sheet

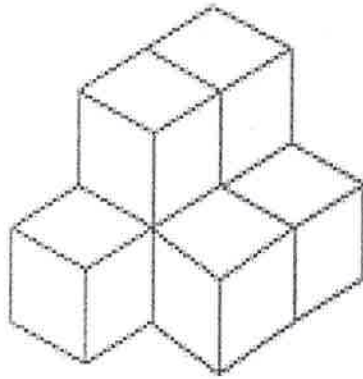
1) Each of the following solid figures is made of 1-inch cubes. Find the volume of each figure. Specify the correct unit of measure.

a)



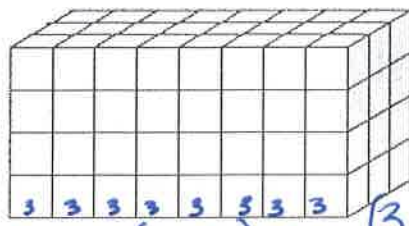
Answer: 6 in³

b)



Answer: 7 in³

2) If the figure below is made of cubes with 3 cm side lengths, what is the volume? Explain your thinking.



$$(4 \times 3) = 12$$

$$(3 \times 3) = 9$$

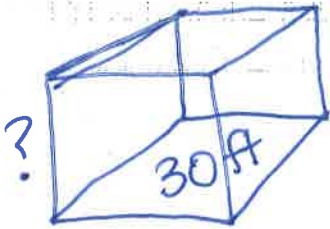
$$(8 \times 3) = 24$$

$$\begin{array}{r} 24 \\ \times 9 \\ \hline 216 \\ 2160 \\ \hline 216 \\ \hline 2160 \\ \hline 2160 \\ \hline 2592 \end{array}$$

$$\begin{aligned} \text{Volume} &= l \times w \times h \\ &= (24 \text{ cm} \times 9 \text{ cm}) \times 12 \text{ cm} \\ &= 2592 \text{ cm}^3 \end{aligned}$$

$$V = \text{Area} \times \text{height}$$

3) The volume of a rectangular prism is 540 ft^3 . If the area of the base is 30 ft^2 , find its height. Draw a label a model to show your thinking.

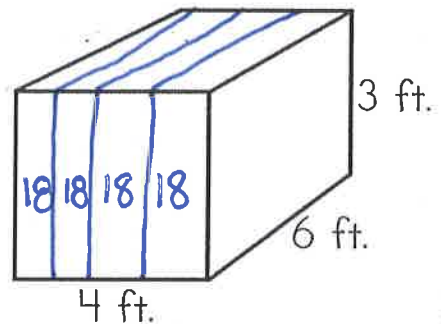


$$540 = 30 \times 18$$

$$18 \text{ ft} = \text{height}$$

$$\begin{array}{r} 18 \\ 30 \overline{) 540} \\ \underline{30} \\ 240 \\ \underline{-240} \\ 0 \end{array}$$

4) Stacey found the volume of the rectangular prism pictured to the right by multiplying 6×3 and then adding $18 + 18 + 18 + 18 = 72$. She says the volume is 72 cubic feet.



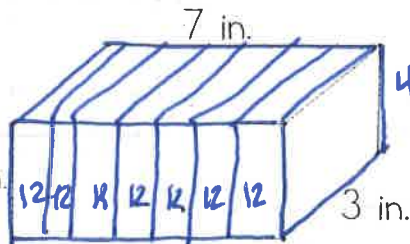
a. Jared says that she did it wrong. She should have multiplied the base first (4×6) and then multiplied by the height. Explain to

Jared why Stacey's method works and is equivalent to her method.

Stacy used layers. She found out one layer (6×3) and then added 3 more layers to get to 72.

$$18 + 18 + 18 + 18 = (6 \times 3) \times 4 = 72 \text{ ft}^3$$

b. Use Stacey's method to find the volume of the following right rectangular prism.



$$4 \times 3 = 12 \text{ (h} \times \text{w)}$$

$$12 + 12 + 12 + 12 + 12 + 12 =$$

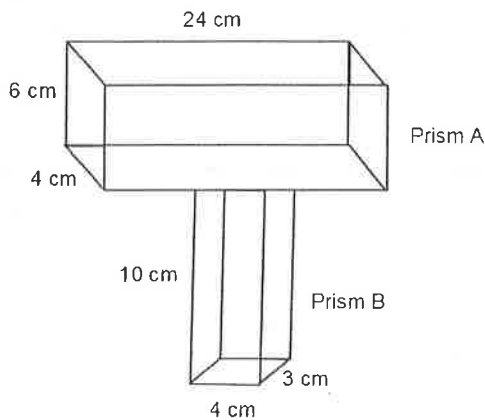
$$84 \text{ in}^3$$

- 5) The following structure is composed of two right rectangular prisms. What is the total volume of the structure? Explain your thinking.

$$24 \times (6 \times 4)$$

$$24 \times 24$$

$$\begin{array}{r} 24 \\ 24 \\ \hline 480 \\ 24 \\ \hline 576 \end{array}$$

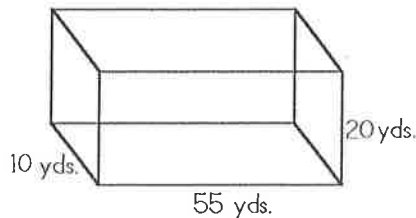


$$10 \times (4 \times 3)$$

$$V = 120$$

$$576 + 120 = 969 \text{ cm}^3$$

- 6) Part A) Find the volume of the following swimming pool. Explain your thinking.



$$V = 55 \times 20 \times 10$$

$$1,100 \times 10$$

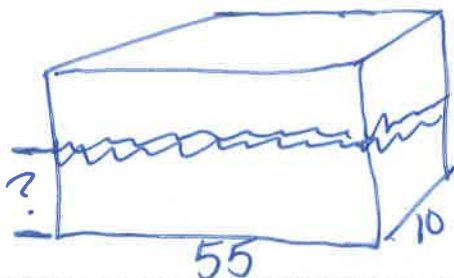
$$V = 11,000 \text{ yrd}^3$$

- Part B) If the swimming pool is completely full with water, and then 2,750 cubic yards are emptied, how high will the water in the pool be? Give your answer in yards, and show your work.

$$\begin{array}{r} 11,000 \\ - 2,750 \\ \hline 8,250 \text{ yds} \end{array}$$

$$8,250 \text{ yrd}^3 = 55 \times 10 \times \underline{\quad}$$

$$8,250 = 550 \times \underline{15}$$



$$\begin{array}{r} 15 \\ 550 \overline{) 8250} \\ \underline{550} \\ 2750 \\ \underline{2750} \\ 0 \end{array}$$

Height of Water = 15 yds

