

Lab FW 3.1 – Filling Rectangular Prisms

Name _____

Date _____ Period _____

Filling & Wrapping Unit



Materials: Centimeter or inch cubes, Isometric Dot Paper, Pencil, “Space Blocks” Activity (see mathchamber website)



Key Learning: Understand volume as a measure of filling a given container or prism. Further investigate the relationship between volume of a box and surface area.



Scenario & Guided Directions



*this is a
PAIRS
ACTIVITY*

Scenario: To package its products, a company may have boxes custom made. However, a company can **save money** if it buys *ready-made boxes*. The Save-a-Tree packaging company sells custom-made boxes in several sizes. ABC Toy Company is considering using one of Save-a-Tree’s ready made boxes to ship their blocks. Each block is a one-inch cube.

ABC needs to know:

- a) the number of blocks that will fill the bottom layer of each box
- b) the number of blocks in total that will fill each box
- c) the surface area of each box

ABC also asked you to **DRAW A DIAGRAM OF JUST THE BASE LAYER** of each box.

Guided Directions:

- A. Using isometric dot paper, draw **JUST THE BASE LAYER** of each box. Remember to use the dimensions of length and width to draw the base layer. For this lab, use the measurement across the **front** of each box for the **length**.
- B. After completing the drawings, fill in the data for each box in the table provided.
- C. Answer the follow-up questions on the last page of this lab.

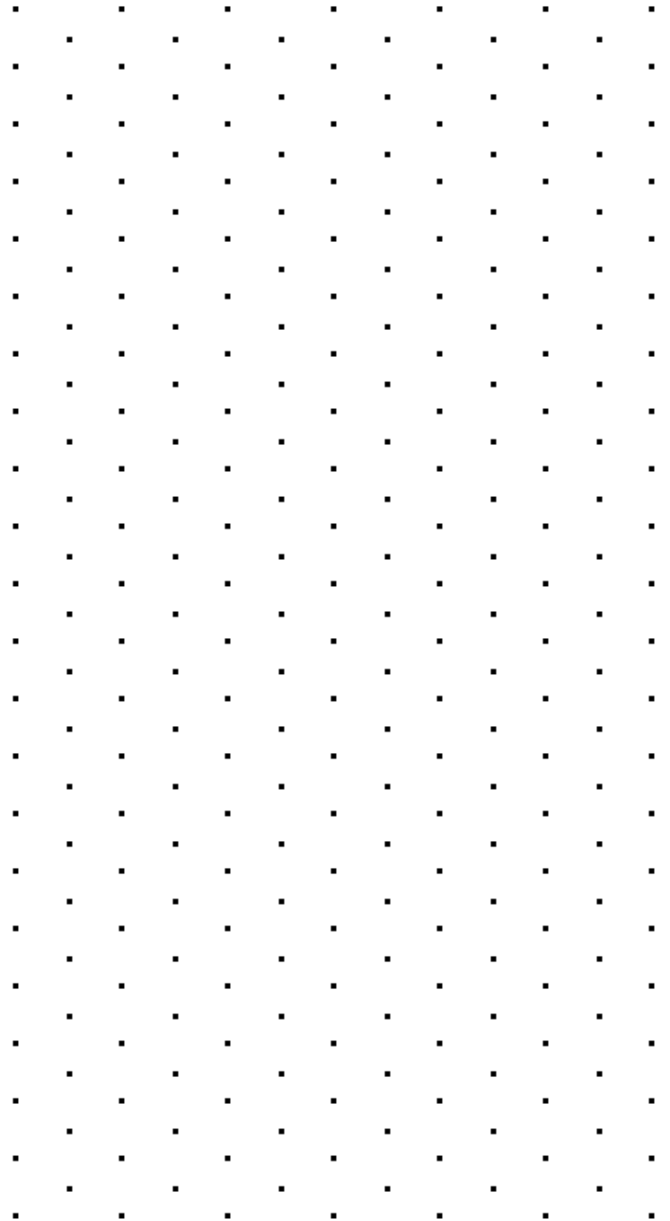
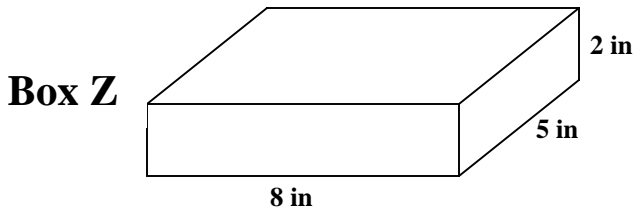
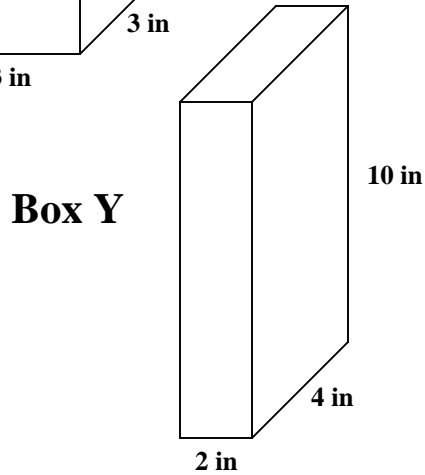
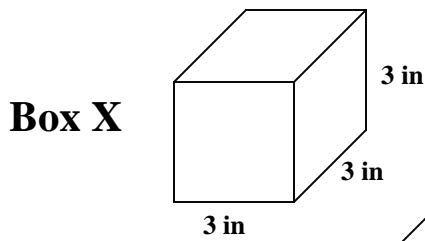
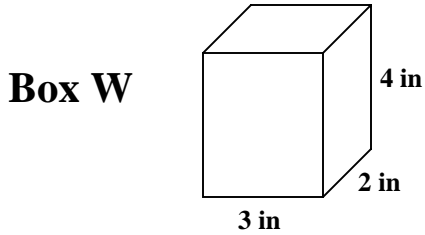
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Save-a-Tree Ready-Made Boxes:

*For each box, draw a diagram of
JUST THE BASE LAYER!*



	L	W	H	# of cubes in base layer	# of layers in the box	Volume	Surface Area
Box W						in ³	in ²
Box X							
Box Y							
Box Z							

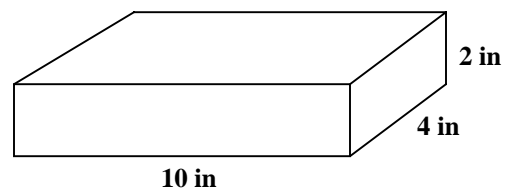
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Follow-up Questions:

1. How did drawing only the bottom layer help you with your calculations? Did it help more with your volume calculation or surface area calculation?
2. Which picture helped you more with the surface area calculation? The GENERIC drawing provided in the lab, OR the drawing you made of the base layer? Why?
3. Suppose Box Y were laid on its side so its base was 10 inches by 4 inches and its height was 2 inches.



- a. Would this affect the volume of the box? Why or why not?
- b. Would this affect the surface area of the box? Why or why not?