

### Problem 2.3

A company may have boxes custom-made to package its products. However, a company may also buy ready-made boxes. The Save-a-Tree packaging company sells ready-made boxes in several sizes.

Paste p.22 boxes here

ATC Toy Company is considering using Save-a-Tree's Box Z to ship alphabet blocks. Each block is a 1-inch cube. ATC needs to know how many blocks will fit into Box Z and the surface area of the box.

#### **Part A**

The number of unit cubes that fit in a box is the volume of the box.

1. How many cubes will fit in a single layer at the bottom of this box?
2. How many identical layers can be stacked in this box?
3. What is the total number of cubes that can be packed in this box?
4. Consider the number of cubes in each layer, the number of layers, the volume, and the dimensions of the box. What connections do you see among these measurements?

Filling and Wrapping

**Part B**

Find the surface area of Box Z.

**Part C**

Suppose Box Z is put down on its side so its base is 4 inches by 10 inches and its height is 2 inches. Does this affect the volume of the box?

Does this affect the surface area? Explain your reasoning.

**Part D**

Apply your strategies for finding volume and surface area to Boxes W, X and Y.

**Box W**

Volume

S. Area

**Box X**

Volume

S. Area

**Box Y**

Volume

S. Area