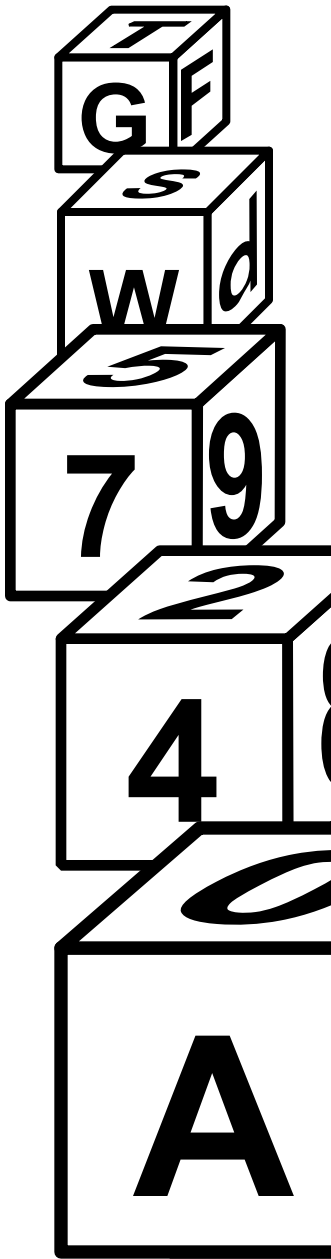


The Perfect Fit

Volume of Rectangular Prisms



Rita makes baby toys for a local toy manufacturer. She is packing some baby blocks she has made into a shipping box. The shipping box has a volume of 1536 cubic inches. The dimensions of the blocks she is packing in the box are given below. She must pack all of the same sized blocks into one box. Rita wants to decide before she actually packs the box which blocks will fit into the box with no space left over. Can you help Rita decide which blocks could be packed into this box? (Hint: Use the \times key to find the volume of each block. Then use the $\div R$ key to find the maximum number of blocks possible and the space left over.)

| Dimensions of Blocks | Maximum Number of Blocks Possible | Space Left Over |
|--|-----------------------------------|-----------------|
| Block 1: 6 in. by 6 in. by 6 in. | | |
| Block 2: 5 in. by 5 in. by 5 in. | | |
| Block 3: 4 in. by 4 in. by 4 in. | | |
| Block 4: 3 in. by 3 in. by 3 in. | | |
| Block 5: 2 in. by 2 in. by 2 in. | | |
| Block 6: $2\frac{1}{2}$ in. by $2\frac{1}{2}$ in. by $2\frac{1}{2}$ in. | | |

Thinking Cap



Using any of the blocks Rita chose, what box dimensions are possible?

The Perfect Fit

Volume of Rectangular Prisms

Topic: Volume of Rectangular Prisms

Objective: To use the calculator to solve problems involving finding the volume of rectangular prisms.

NCTM Standards: Problem solving, Reasoning, Measurement

Using the Activity

Students use the calculator in this activity to find the volume of rectangular prisms, some of which are cubes.

- The **M+** key can be used to enter the volume of the shipping box into the memory of the calculator, and the **MR** key can be used to recall the volume.
- The **x³** key can be used to find the volume of each block.

Example To enter the volume of the shipping box into the memory of the calculator, first press **MC** to clear the memory and then enter 1536 **M+**. To complete the chart for Block 1, press **MR** to recall the volume of the shipping box and then enter **÷R** 6 **x³** 3 **=**. The result is 7 R24, which tells us a maximum of 7 blocks will fit into the shipping box with 24 cubic inches of space left over.

Assessment Encourage students to check their answers by working backwards. To do this for the example above, enter 7 **x** 6 **x³** 3 **+** 24 **=**. If the answer is correct, the result should be 1536.

Answers

*Block 1: See example above. Block 2: **MR** **÷R** 5 **x³** 3 **=** 12 R36; The maximum number of blocks is 12 with 36 cubic inches of space left over. Block 3: **MR** **÷R** 4 **x³** 3 **=** 24 R0; The maximum number of blocks is 24 with no space left over. Block 4: **MR** **÷R** 3 **x³** 3 **=** 56 R24; The maximum number of blocks is 56 with 24 cubic inches of space left over. Block 5: **MR** **÷R** 2 **x³** 3 **=** 192 R0; The maximum number of blocks is 192 with no space left over. Block 6: **MR** **÷R** 2.5 **x³** 3 **=** 98 R4.75; The maximum number of blocks is 98 with 4.75 cubic inches of space left over. Since there is no space left over for blocks 3 and 5, either of these could be packed in a shipping box with this volume.*

Thinking Cap

16 in. by 12 in. by 8 in., 24 in. by 16 in. by 4 in., 32 in. by 12 in. by 4 in., 48 in. by 8 in. by 4 in., or 96 in. by 4 in. by 4 in.