Key Concepts

Surface Area of Rectangular Prisms

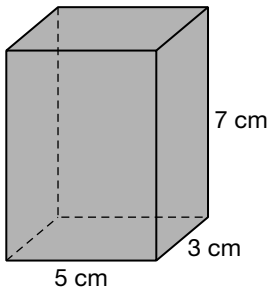
Objective Teach students the concept of surface area, and how to compute the surface area of a rectangular prism.

Note to the Teacher *Begin the lesson with a discussion of the meaning of surface area. Guide the discussion so students understand that the surface area of a prism is the total of the areas of all six faces (the top and bottom and the four sides). To reinforce this idea, have your students do the Mini-Lab activity on page 510 of the Student Edition.*

Surface Area of Rectangular Prisms

Do several examples like the one below.

Example **Find the surface area of a rectangular prism if the bases have side lengths 3 centimeters and 5 centimeters, and the height is 7 centimeters.**



Solution The two bases (the top and bottom faces) are rectangles that are each 3 centimeters by 5 centimeters. So each of these two faces has an area of 3×5 or 15 square centimeters.

The other four faces are also rectangles. Two of these faces, the front and back, are 5 centimeters by 7 centimeters. So each of these two faces has an area of 5×7 or 35 square centimeters.

The right and left faces are rectangles that are each 3 centimeters by 7 centimeters. So each of these two faces has an area of 3×7 or 21 square centimeters.

To compute the total surface area of this rectangular prism, we need to find the sum of the areas of all six of the faces.

$$\begin{aligned}\text{surface area} &= (2 \times 15) + (2 \times 35) + (2 \times 21)\\ &= 30 + 70 + 42\\ &= 142\end{aligned}$$

So, the surface area of this rectangular prism is 142 square centimeters.

Note to the Teacher *After you have done some other examples on the chalkboard, have your students do many more surface area problems, some in groups and some individually. Surface area computations reinforce students' understanding of the concept of area.*