

## Indicators

### Objective:

**2.02 Solve problems involving volume and surface area of cylinders, prisms, and composite shapes.**

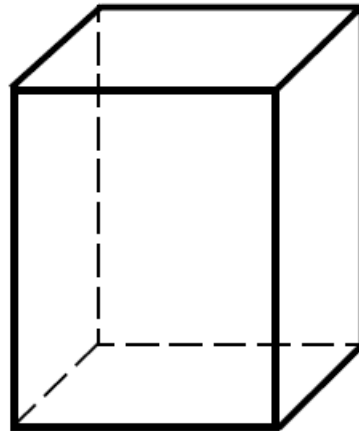
Vocabulary and Resources		
polyhedron	length	lateral area
triangular prism	width	radius
rectangular prism	height	diameter
cube	base	circumference
pentagonal prism	face	density
hexagonal prism	lateral face	

**A.** Huong covered a box with sticky-backed decorating paper. The paper costs 3¢ per square inch. How much money will Huong need to spend on paper?

- A. \$1.89
- B. \$2.22
- C. \$3.78
- D. \$6.66

$h = 9$  inches

$w = 3$  inches

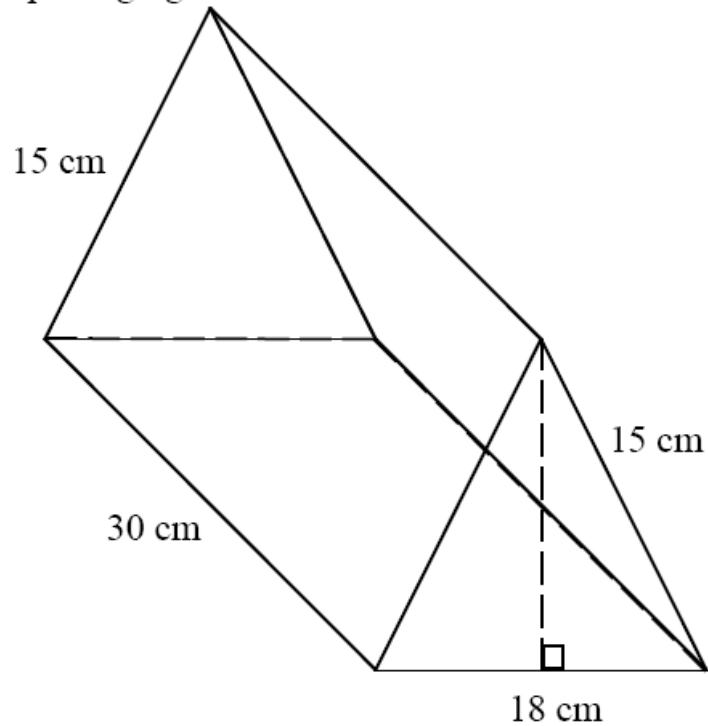


$l = 7$  inches

**B.** A film of water about 0.05 cm thick clings to the skin when people get out of a bath. Estimate the amount of water that clings to the skin of an average seventh grader. (An estimate of the surface area of the body is required; this can be done by considering a collection of cylinders and prisms that approximates the body.)

- C.** A can of cola drink has a diameter of 65 mm and a height of 15 cm. Compute the volume and surface area of the container?
- D.** The Yummy Tastin' company is exploring packaging options for their oatmeal. One option is a cylindrical package with a diameter of 5 inches and a height of 10 inches. The other option is a rectangular box with a length of 7 inches, a width of 2 inches and a height of 14 inches. If the packaging material costs  $\frac{1}{4}$  ¢ per square inch, what option would be the least expensive?
- E.** The dimensions of an aquarium in a local restaurant are 3.5 feet by 2.5 feet by 2 feet. How many cubic inches of water does the aquarium hold?
- F.** A woodworker has a solid block of wood in the shape of a rectangular prism that measures 22.5 inches by 8 inches by 5.5 inches. What is the surface area of the block of wood? He is going to cut a cylindrical shaped piece of wood from the block so that he can put a piece of rope through the block. If the cylinder he cuts has a diameter of 3 inches and a height of 5.5 inches, what will the surface area of the block now be?

**G.** Jennie purchased a box of crackers from the deli. The box is in the shape of a triangular prism (see diagram below). If the volume of the box is 3,240 cubic centimeters, what is the height of the triangular face of the box? How much packaging material was used to construct the cracker box?



**H.** Chef Mario baked a 2-layer cake for a birthday party. The bottom layer of the cake is in the shape of a cube that measures 10 inches on each edge. The top layer of the cake is in the shape of a cylinder with a 6-inch diameter and height of 5 inches. What is the volume of the cake? Chef Mario is going to frost all the exposed area of the cake. What is the total area that will be frosted?