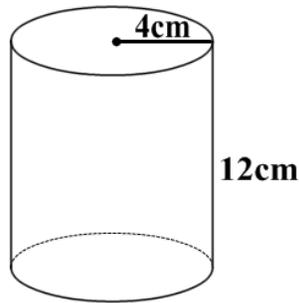


**Aim:** How do we find the surface area and volume of rectangular prisms and cylinders?

**Do Now:** Use the given formulas to find the surface area and volume of the cylinder below. Leave your answers in terms of  $\pi$ .

1. Surface Area of a Cylinder:

$$SA = 2\pi r^2 + 2\pi rh$$



2. Volume of a Cylinder:

$$V = \pi r^2 h$$

**Formulas for Rectangular Prisms:**

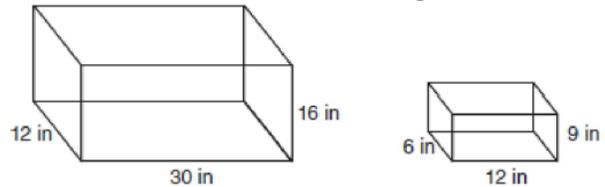
$$SA = 2lw + 2hw + 2lh$$

$$V = lwh$$

3. Lenny made a cube in technology class. Each edge measured 1.5 cm. What is the volume of the cube in cubic centimeters?

4. Sarah wants to cover a cardboard box with plastic wrap. She is concerned that she does not have enough plastic wrap to completely cover the box. If the dimensions of the box are 9 inches wide, 4 inches high and 5 inches long, calculate how much plastic wrap she would need to cover the entire box, including the top and bottom. If Sarah filled the box with sand, how many cubic inches of sand would she need?

5. The diagram below represents Joe's two fish tanks. Joe's larger tank is completely filled with water. He takes water from it to completely fill the small tank. Determine how many cubic inches of water will remain in the larger tank.



6. Mrs. Ayer is painting the outside of her son's toy box, including the top and bottom. The toy box measures 3 feet long, 1.5 feet wide, and 2 feet high. What is the total surface area she will paint?

7. A plastic storage box in the shape of a rectangular prism has a length of  $x + 3$ , a width of  $x - 4$ , and a height of 5. Represent the surface area of the box as a trinomial in terms of  $x$ .

8. A cylinder has a diameter of 10 inches and a height of 2.3 inches. What is the volume of this cylinder, to the *nearest tenth of a cubic inch*?

9. How many square inches of wrapping paper are needed to entirely cover a box that is 2 inches by 3 inches by 4 inches?

10. A soup can is in the shape of a cylinder. The can has a volume of  $342 \text{ cm}^3$  and a diameter of 6 cm. Express the height of the can in terms of  $\pi$ . Determine the maximum number of soup cans that can be stacked on their base between two shelves if the distance between the shelves is exactly 36 cm. Explain your answer.