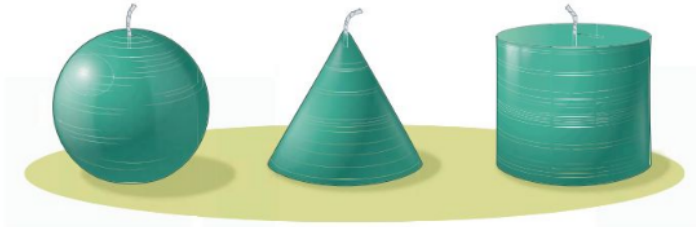


## 2.3 Volume Comparison: Making Candles

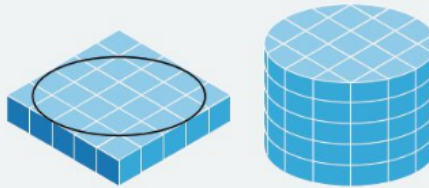
Rocky Middle School is sponsoring a charity event. They plan to make and sell candles at the outdoor market in the city.

Andy's committee is in charge of designing the candles. They designed three different shapes of candles: a sphere, a cone, and a cylinder. The molds for the three types of candles have the same radius and height.



**A** Isaiah tried to figure out how much wax to buy to make the cylindrical candle, but he forgot the formula for the volume of a cylinder. Noah claims that to find the volume of a rectangular prism, you need to know the number of unit cubes in one layer of the prism and the prism's height. He thinks the same idea works for finding the volume of a cylinder.

1. Is Noah correct? Write an expression to find the volume of a rectangular prism.
2. Will this method work for finding the volume of a cylinder? Explain why or why not.



Finish on back....

- B** Andy decided to explore the relationship among the volumes of the three candle designs. He used plastic containers in the shape of a cylinder, cone, and sphere. The containers have the same height  $h$  and inside radius  $r$ , which means that the inside diameter of the sphere is equal to the height. Andy tried to find relationships among the three containers.



1. Write the relationships among the three containers in words and then as algebraic equations.
  2. Use the relationships in part (1) to write an expression for finding the volume of
    - a. a cone with height  $h$  and radius  $r$ .
    - b. a sphere with radius  $r$ .
- C** The price of each candle is based on the cost of wax plus markup for profit. If the cylindrical candle sells for \$12, what should the prices of the other two candles be?
- D** Andy decides to sell cylindrical candles with a radius of 3 inches and a height of 1.25 feet.
1. How much liquid wax does Andy need to make the candle?
  2. Describe the dimensions of a rectangular candle that uses the same amount of wax.