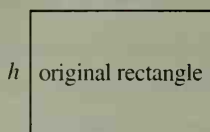


We can generalize the situation described in Example 1. Suppose the base of a rectangle is multiplied by a factor of c .



$$P = 2b + 2h$$

$$A = bh$$



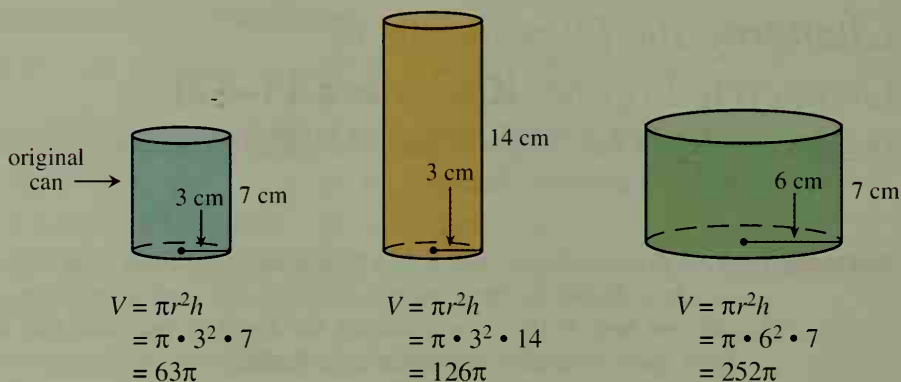
$$P = 2(cb) + 2h = 2cb + 2h \neq c(2b + 2h)$$

$$A = cb(h) = c \cdot bh$$

Notice that the area is multiplied by a factor of c , but the perimeter is not.

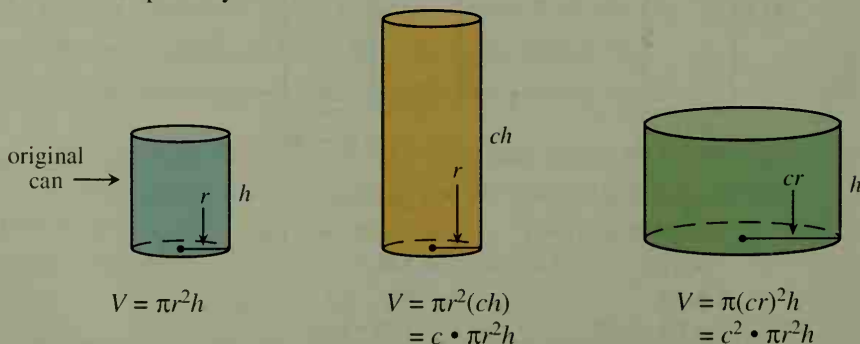
Example 2 A manufacturer of cans wants to double the volume of a can with radius 3 cm and height 7 cm. If the height is doubled, will the volume double? If the radius is doubled, will the volume double?

Solution



Doubling the height doubles the volume. Doubling the radius increases the volume by a factor of 4.

Again, we can generalize the situation described in Example 2. Suppose that a cylinder has radius r and height h . First the height is multiplied by a factor of c . Then the radius is multiplied by a factor of c .



If the height is multiplied by c , then the volume is also multiplied by c .
If the radius is multiplied by c , then the volume is multiplied by c^2 .