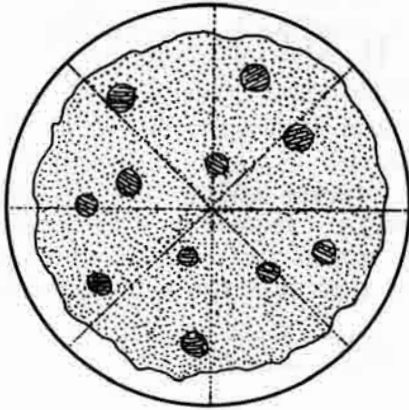
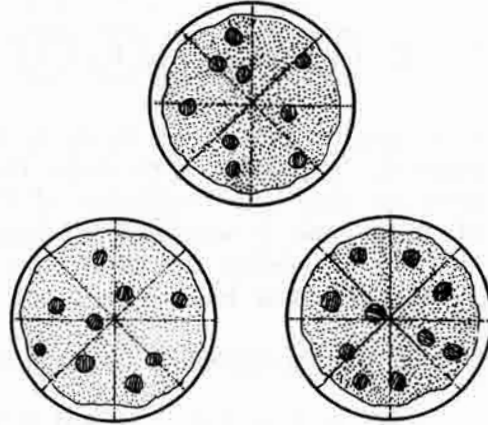


23: Caveat Emptor

Consider the drawing of the regular and special cases below.



One mushroom and sausage pizza with a diameter of 50 cm



Three mushroom and sausage pizzas with diameters of 25 cm

It appears that even though the diameter has only been halved, three small pizzas will fit inside the one large pizza. What has upset Meg is that area, not diameter, is the better measure of the amount of pizza she is getting.

If the large pizza were a 50 cm square and the small pizzas were 25 centimeter squares, the area of the large one would be 2500 sq cm and the area of one small pizza would be 625 sq cm, only one-fourth the area of the large pizza. Thus, in this case, three small pizzas would only be three-fourths as much as one large pizza.

The area of a circle is πr^2 (the number π , which is approximately 3.14, times the square of the radius of the circle). In turn, the radius is $\frac{d}{2}$ (half the diameter of the circle).

Large Pizza

diameter = 50 cm

radius = 25 cm

$$\text{Area} = \pi(25 \text{ cm})(25 \text{ cm})$$

$$\text{Area} = 625 \pi \text{ sq cm}$$

One Small Pizza

d = 25 cm

r = $\frac{25}{2}$ cm

$$A = \pi \left(\frac{25}{2} \text{ cm} \right) \left(\frac{25}{2} \text{ cm} \right)$$

$$A = \frac{625}{4} \pi \text{ sq cm}$$

The area of one small pizza is one-fourth the area of a large pizza. So, the area of three small pizzas is three-fourths the area of one large pizza. Meg and Charlie paid the same amount (\$5.00) but got only three-fourths the usual amount of pizza.