Lesson 6-8

Example 1

FINANCE The amount of interest earned on a savings account varies directly as the amount of money deposited in the account. A deposit of $500 will earn $10 in interest. How much interest will a deposit of $800 earn?

Solution

The amount of the deposit is x, and the amount of interest earned is y.

Equation Method

$$\begin{aligned} y &= kx \\ 10 &= 500k \\ \frac{10}{500} &= k \\ 0.02 &= k \end{aligned}$$

Substitute 800 for x and 0.02 for k into $y = kx$.

$$\begin{aligned} y &= 0.02(800) \\ y &= 16 \end{aligned}$$

Proportion Method

$$\frac{\text{known interest}}{\text{known deposit}} = \frac{\text{new interest}}{\text{new deposit}}$$

$$\begin{aligned} \frac{10}{500} &= \frac{y}{800} \\ 800(10) &= 500y \\ 8000 &= 500y \\ 16 &= y \end{aligned}$$

The savings account earns $16 interest when $800 is deposited.

Example 2

SCIENCE Suppose the number of bacteria in a petri dish varies directly as the square of the time the bacteria have been growing. If after 10 days, the dish contains 320 bacteria, how many bacteria will there be after 15 days?

Solution

Substitute known values of x and y into the equation to find k. The number of days is x, and the number of bacteria is y.

$$\begin{aligned} y &= kx^2 \\ 320 &= k(10)^2 \\ 320 &= 100k \\ 3.2 &= k \end{aligned}$$

Substitute 15 for x and 3.2 for k into the equation $y = kx^2$.

$$\begin{aligned} y &= 3.2(15)^2 \\ y &= 3.2(225) \\ y &= 720 \end{aligned}$$

The petri dish will contain 720 bacteria after 15 days.