

Applications of Proportions

1. On a road map, the scale indicates that 1 cm represents 60 miles. If the measured distance between two cities on the map is 6.7 cm, how many miles apart are they?

2. Suppose a truck travels at 55 mph. How many miles will the truck travel in 8 hours?

3. A recipe calls for 3 cups of milk for 8 servings. How many cups of milk are needed to make 6 servings?

4. At a local college, the cost per unit of instruction is \$24.00. If a student plans to take 27.5 units during the next two semesters, how much will the student pay for tuition?

Applications of Proportions

1. On a road map, the scale indicates that 1 cm represents 60 miles. If the measured distance between two cities on the map is 6.7 cm, how many miles apart are they?

Proportion $\Rightarrow \frac{1 \text{ cm}}{60 \text{ miles}} = \frac{6.7 \text{ cm}}{x \text{ miles}}$

$$\frac{1}{60} = \frac{6.7}{x} \quad \text{LCD} = 10$$

$$\frac{1}{60} = \frac{10(6.7)}{10(x)}$$

$$\frac{1}{60} = \frac{67}{10x}$$

$$10x = 402$$

$$\frac{10x}{10} = \frac{402}{10}$$

$$x = 40.2 \text{ miles}$$

$$\begin{array}{r} 4 \\ 6.7 \\ \times 60 \\ \hline 402.0 \end{array}$$

2. Suppose a truck travels at 55 mph. How many miles will the truck travel in 8 hours?

Proportion $\Rightarrow \frac{55 \text{ miles}}{1 \text{ hour}} = \frac{x \text{ miles}}{8 \text{ hours}}$

$$\frac{55}{1} = \frac{x}{8}$$

$$440 = x$$

Therefore $x = 440 \text{ miles}$

$$\begin{array}{r} 4 \\ 55 \\ \times 8 \\ \hline 440 \end{array}$$

3. A recipe calls for 3 cups of milk for 8 servings. How many cups of milk are needed to make 6 servings?

Proportion $\Rightarrow \frac{3 \text{ cups}}{8 \text{ servings}} = \frac{x \text{ cups}}{6 \text{ servings}}$

$$\frac{3}{8} = \frac{x}{6}$$

$$\frac{18}{8} = \frac{8x}{8}$$

$$\frac{18}{8} = x$$

$$x = \frac{18 \cancel{6}}{8 \cancel{12}}$$

$$x = \frac{9}{4} \text{ cups}$$

-OR-

$$x = 2 \frac{1}{4} \text{ cups}$$

4. At a local college, the cost per unit of instruction is \$24.00. If a student plans to take 27.5 units during the next two semesters, how much will the student pay for tuition?

Proportion $\Rightarrow \frac{24 \text{ dollars}}{1 \text{ unit}} = \frac{x \text{ dollars}}{27.5 \text{ units}}$

$$\frac{24}{1} = \frac{x}{27.5}$$

$$660 = x$$

$$\begin{array}{r} 27.5 \\ \times 24 \\ \hline 1100 \\ + 5500 \\ \hline 660.0 \end{array}$$

Therefore $x = 660 \text{ dollars} = \boxed{\$660}$