6.5 Solving Percent Problems

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Sloths may seem lazy, but their extremely slow movement helps to make them almost invisible to predators. Sloths sleep an average of 16.5 hours a day. To find out what percent of a 24-hour day 16.5 hours is, you can use a proportion or an equation.

Proportion Method

$$\text{Part} \rightarrow \frac{n}{100} = \frac{16.5}{24} \leftarrow \text{Part}$$
$$\text{Whole} \rightarrow \qquad\qquad \leftarrow \text{Whole}$$

$$n \cdot 24 = 100 \cdot 16.5$$
$$24n = 1{,}650$$
$$n = 68.75$$

Sloths spend about 69% of the day sleeping!

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Equation Method

What percent of 24 is 16.5?

$$n \quad \cdot \quad 24 = 16.5$$
$$n = 0.6875$$
$$n = 68.75\%$$

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Solve.
What percent of 40 is 25?

$$\frac{x}{100} = \frac{25}{40} \qquad \left(\frac{is}{of}\right)$$

$$\frac{40x}{40} = \frac{2500}{40}$$

$$x = 62.5\%$$

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Solve.
What percent of 40 is 25?

$$x \cdot 40 = 25$$
$$\frac{40x}{40} = \frac{25}{40}$$
$$x = .625$$
$$62.5\%$$

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Proportion Method

Part $\rightarrow$ $\frac{n}{100}$ = $\frac{16.5}{24}$ $\leftarrow$ Part
Whole $\rightarrow$ $\leftarrow$ Whole

is
of

Equation Method

What percent of 24 is 16.5?

Solve.
15 is 25% of what number?

$$\frac{25}{100} = \frac{15}{x}$$
$$25x = 1500$$
$$x = 60$$

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Solve.
15 is 25% of what number?

$$15 = .25 \times n$$
$$\frac{15}{.25} = \frac{.25n}{.25}$$
$$x = 60$$

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Solve.
What percent of 50 is 10?

$$\frac{x}{100} = \frac{10}{50}$$
$$50x = 1000$$
$$x = 20\%$$

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Solve.
8 is 40% of what number?

Solve.
35 is 28% of what number?

$$\frac{35}{.28} = \frac{.28x}{.28}$$

$$x = 125$$

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Solve.

What percent of 9 is 18?

$$\frac{x}{100} = \frac{18}{9}$$

$$9x = 1800$$

$$x = 200\%$$

$$\frac{9x}{9} = \frac{18}{9}$$

$$x = 200\%$$

Solve.

36 is 24% of what number?

$$\frac{36}{.24} = \frac{.24x}{.24}$$

$$x = 150$$

$$\frac{24}{100} = \frac{36}{x}$$

$$24x = 3600$$

$$x = 150$$

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Solve.

What percent of 6 is 36?

$$\frac{x}{100} = \frac{36}{6}$$

$$\frac{6x}{6} = \frac{36}{6}$$

$$6x = 3600 \qquad x = 600\%$$

$$x = 600\%$$

A portable DVD player costs $225 before tax at an appliance warehouse. What is the sales tax rate if the tax is $18?

Restate the question: What percent of $225 is $18?

$$\frac{x}{100} = \frac{18}{225}$$

$$x \cdot 225 = 18$$

$$x = .08 \quad 8\%$$

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A new flat screen TV costs $800 before tax at an appliance warehouse. What is the sales tax rate if the tax is $56?

Restate the question: What percent of $800 is $56?

$$\frac{x}{100} = \frac{56}{800}$$

$$800x = 5600$$

$$x = 7\%$$

Lesson Quiz

Solve.

1. 21 is 42% of what number?

$$21 = .42x$$
$$x = 50$$

2. What percent of 292 is 73?

3. 112% of what number is 84?

$$\frac{112}{100} = \frac{84}{x}$$
$$x = 75$$

4. What percent of 1,340 is 13.4?

5. An ad features a bicycle on sale for $139. If the total cost of the bike is $147.34, what is the sales tax rate?

$$\frac{x}{100} = \frac{8.34}{139} \qquad x = 6\%$$

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