Lesson 2.1 Reteach — *Percent of a Number*

To find the percent of a number, you can write the percent as a fraction and then multiply or write the percent as a decimal and then multiply.

Example 1

Find 25% of 80.

$25\% = \frac{25}{100}$ or $\frac{1}{4}$ — Write 25% as a fraction, and reduce to lowest terms.

$\frac{1}{4}$ of $80 = \frac{1}{4} \times 80$ or 20 — Multiply.

So, 25% of 80 is 20.

Example 2

What number is 15% of 200?

15% of $200 = 15\% \times 200$ — Write a multiplication expression.

$= 0.15 \times 200$ — Write 15% as a decimal.

$= 30$ — Multiply.

So, 15% of 200 is 30.

Lesson 2.3 Reteach — *The Percent Proportion*

A **percent proportion** compares part of a quantity to a whole quantity for one ratio and lists the percent as a number over 100 for the other ratio.

$$\frac{\text{part}}{\text{whole}} = \frac{\text{percent}}{100}$$

Example 1

What percent of 24 is 18?

$\frac{p}{w} = \frac{n}{100}$ — Percent proportion

Let $n\%$ represent the percent.

$\frac{18}{24} = \frac{n}{100}$ — Write the proportion.

$18 \times 100 = 24 \times n$ — Find the cross products.

$1{,}800 = 24n$ — Simplify.

$\frac{1{,}800}{24} = \frac{24n}{24}$ — Divide each side by 24.

$75 = n$

So, 18 is 75% of 24.

Example 2

What number is 60% of 150?

$\frac{p}{w} = \frac{n}{100}$ — Percent proportion

Let $n\%$ represent the percent.

$\frac{n}{150} = \frac{60}{100}$ — Write the proportion.

$n \times 100 = 150 \times 60$ — Find the cross products.

$100n = 9{,}000$ — Simplify.

$\frac{100n}{100} = \frac{9{,}000}{100}$ — Divide each side by 100.

$n = 90$

So, 90 is 60% of 150.

Lesson 2.4 Reteach — *The Percent Equation*

To solve any type of percent problem, you can use the **percent equation**, where the percent is written as a decimal.

$$\text{part} = \text{whole} \bullet \text{percent}$$

Example 1

600 is what percent of 750?

600 is the part and 750 is the whole. Let n represent the percent.

$\underbrace{\text{part}} = \underbrace{\text{percent}} \bullet \underbrace{\text{whole}}$

$600 = n \bullet 750$	Write the percent equation.
$\frac{600}{750} = \frac{750n}{750}$	Divide each side by 750.
$0.8 = n$	Simplify.
$80\% = n$	Write 0.8 as a percent. So, 600 is 80% of 750.

Example 2

45 is 90% of what number?

45 is the part and 90% or 0.9 is the percent. Let w represent the whole.

$\underbrace{\text{part}} = \underbrace{\text{percent}} \bullet \underbrace{\text{whole}}$

$45 = 0.9 \bullet w$	Write the percent equation.
$\frac{45}{0.9} = \frac{0.9w}{0.9}$	Divide each side by 0.9.
$50 = w$	Simplify. So, 45 is 90% of 50.

Lesson 2.5 Reteach — *Percent of Change*

A **percent of change** is a ratio that compares the change in quantity to the original amount. If the original quantity is increased, it is a **percent of increase**. If the original quantity is decreased, it is a **percent of decrease**.

$$\text{percent of change} = \frac{\text{big} - \text{small}}{\text{original}}$$

Example 1

Last year, 2,376 people attended the rodeo. This year, attendance was 2,950. What was the percent of change in attendance to the nearest whole percent?

Since this year's attendance is greater than last year's attendance, this is a percent of increase.

The amount of change is 2,950 – 2,376 or 574.

$$\text{percent of change} = \frac{\text{amount of increase}}{\text{original amount}}$$

$= \frac{574}{2{,}376}$	Substitution
≈ 0.24 or 24%	Simplify.

The percent of increase is about 24%.

Example 2

Che's grade on the first math exam was 94. His grade on the second math exam was 86. What was the percent of change in Che's grade to the nearest whole percent?

Since the second grade is less than the first grade, this is a percent of decrease. The amount of change is 94 – 86 or 8.

$$\text{percent of change} = \frac{\text{amount of decrease}}{\text{original amount}}$$

$$= \frac{8}{94} \qquad \text{Substitution}$$

$$\approx 0.09 \text{ or } 9\% \qquad \text{Simplify.}$$

The percent of decrease is 9%.

Lesson 2.6 Reteach *Sales Tax, Tips, and Markup*

Sales Tax is a percent of the purchase price and is an amount paid in addition to the purchase price. **Tip**, or **gratuity**, is a small amount of money in return for service. The amount a store increases the price of an item by is called the **markup**.

Example 1

SOCCER Find the total cost of a $17.75 soccer ball if the sales tax is 6%.

Method 1

First, find the sales tax.

$6\% \text{ of } \$17.75 = 0.06 \bullet 17.75$

≈ 1.07

The sales tax is $1.07.

Next, add the sales tax to the regular price.

$1.07 + 17.75 = 18.82$

The total cost of the soccer ball is $18.82.

Method 2

$100\% + 6\% = 106\%$ Add the percent of tax to 100%.

The total cost is 106% of the regular price.

$106\% \text{ of } \$17.75 = 1.06 \bullet 17.75$

≈ 18.82

Example 2

MEAL A customer wants to leave a 15% tip on a bill for $18.50 at a restaurant.

Method 1 Add tip to regular price.

First, find the tip.

$15\% \text{ of } \$18.50 = 0.15 \bullet 18.50$

$= 2.78$

Next, add the tip to the bill total.

$\$18.50 + \$2.78 = \$21.28$

The total cost of the bill is $21.28.

Method 2 Add the percent of tip to 100%.

$100\% + 15\% = 115\%$ Add the percent of tip to 100%.

The total cost is 115% of the bill.

$115\% \text{ of } \$18.50 = 1.15 \bullet 18.50$

$= 21.28$

Lesson 2.7 Reteach *Discount*

Discount is the amount by which the regular price of an item is reduced. The sale price is the regular price minus the discount.

Example

TENNIS Find the price of a $69.50 tennis racket that is on sale for 20% off the regular price.

Method 1: Subtract the discount from the regular price.

First, find the amount of the discount.

20% of $69.50 = 0.2 • $69.50 — Write 20% as a decimal.

= $13.90 — The discount is $13.90.

Next, subtract the discount from the regular price.

$69.50 – $13.90 = $55.60.

Method 2: Subtract the percent of discount from 100%.

100% – 20% = 80% — Subtract the discount from 100%.

The sale price is 80% of the regular price.

80% of $69.50 = 0.80 • 69.50

= 55.60

The sale price of the tennis racket is $55.60.

Lesson 2.8 Reteach *Financial Literacy*

Interest is the amount of money paid or earned for the use of money by a financial institution. To find, use the formula:

$$I = prt$$

where I is the interest earned, p is the principal (the amount of money invested or borrowed), r is the interest rate (written as a decimal), and t is the time in years. **Simple interest** is paid only on the initial principal.

Example 1

Find the simple interest earned in a savings account where $136 is deposited for 2 years if the interest rate is 7.5% per year.

$I = prt$ — Formula for simple interest

$I = 136 \bullet 0.075 \bullet 2$ — Replace p with $136, r with 0.075, and t with 2.

$I = 20.40$ — Simplify.

The simple interest earned is $20.40.

Example 2

Find the simple interest for $600 invested at 8.5% for 6 months.

6 months $= \frac{6}{12}$ or 0.5 year — Write the time in years.

$I = prt$ — Formula for simple interest

$I = 600 \bullet 0.085 \bullet 0.5$ — $p = \$600$, $r = 0.085$, $t = 0.5$

$I = 25.50$ — Simplify.

The simple interest is $25.50.