

Name: _____ Class: _____ Date: _____

Lesson 3: Percents**OBJECTIVES: SWBA to**

Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. **7. RP.3**

INTRODUCTION + Vocabulary:

There are many ways we use percents in real life. The next time you go shopping, just check out the sale signs that say "30% off" or "50% off the lowest ticketed price" and you'll see just one of them. Knowing how to calculate percentages will allow you to determine the price of these items on sale, as well as the "best buy." Once you get to the bill to pay for the items, you will be charged sales tax, a fixed percentage of the price of the items. This is a very common use of percentages in real life.

Also, have a look at the food labels on some things like ice-cream or milk and see where it says "Percentage of recommended daily intake" for a certain portion or serving size. If you can calculate percentages you can determine how much of the food you need to eat or drink in order to get the full, or 100%, recommended daily intake. Another dietary consideration is fat intake, and often food label will say that only a certain percentage of calories come from fat.

Additionally, contractors add 10% to materials ordered to allow for waste; money in saving or a CD account gains some percent interest on your savings. And most commonly, your grade in a test is most of the time out of 100 points or a percent!

Finally, on special type of percent is something we called **commission pay**, which is a sum of money that is paid to an employee upon completion of a task, usually selling a certain amount of goods or services. Commission may be paid as percentage of the sale or as a flat dollar amount based on sales volume.

MINI-LESSON (I DO):**Problem 1:**

Jessica went shopping for a new pair of shoes. She found a pair of shoes that was originally priced at \$50 on sale for \$40. By what percent had the watch been mark down?

To answer this question I will follow these steps:

Step 1: What is the question?

Step 2: We highlight or underling important and relevant information

Step 3: Devise a plan and use it to help you answer the question

Step 4: Check your answer



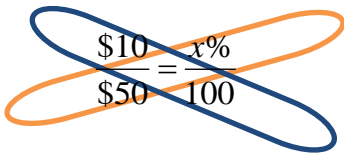
Figure 1: percent Proportion

Name: _____ Class: _____ Date: _____

Step by Step Solution:**Step 1:** By what percent was the pair of shoes mark down?**Step 2:** Original price is \$50; on sale for \$40. Mark down is another way saying “discount, percent off”**Step 3:** I am going to use a percent-proportion to solve this problem. Since the problem is asking for the percent off or percent discount, or the percent mark down, I know that \$50 represents 100% or original price of the shoes. And \$40 presents a part of the original price, or the sale price of the shoes. That is, I saved \$10. So I can ask myself the following question: “\$10 is what percent of \$50?”

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

Where x is the percent mark down (number) we are looking for.


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

Now, I am going to use cross multiplication to find the #%.

$$(10)(100) = 50x$$

1000=50x, divide both sides by 50, we find that

$$x = 20\%$$

The pair of shows was marked down or discounted by 20%.

Let's check the answer:

$$20\% \text{ of } \$50 = 0.20(\$50) = \$10.00.$$

\$50 - \$10 = \$40, which what Jessica will pay for the pair of shoes if she decide to buy it.

Summarize what you have taught them—Assess for understanding by show of thumbs up/down.

Name: _____ Class: _____ Date: _____

Guided Practice: (We do):**Problem 1:**

Sarah earned a 4% commission on all of her sales in March. Her total sales were \$80,000 in March. How much money did she earn from commissions?

- A \$320
- B \$3,200
- C \$32,000
- D \$320,000

Solution:

Step 1: How much did Sarah earn in commission?

Step 2: commission rate is 4% on all sales; Sarah made total sales of \$80,000.

Step 3: We are going to use a percent-proportion to solve this problem.

$$\frac{4}{100} = \frac{x}{\$80,000}$$

Where x is the commission earning we are looking for.

The equation $\frac{4}{100} = \frac{x}{\$80,000}$ is shown with two curved lines indicating cross-multiplication. One blue line connects the 4 in the numerator to the \$80,000 in the denominator. Another orange line connects the x in the numerator to the 100 in the denominator.

Now, I am going to use cross multiplication to find the x.

$$(4)(\$80,000) = 100x$$

\$320,000 = 100x. Divide both sides by 100, we find that

$$x = \$3,200$$

Sarah earned \$3,200 in commission.

Let's check the answer:

If we ask this question: \$3,200 is what percent of \$80,000? We must get 4%! Let's see $\frac{\$3,200}{\$80,000} = 0.04 = 4\%$

Summarize what you have taught the students one more time—Assess for understanding by show of thumbs up/down

Name: _____ Class: _____ Date: _____

Independent Practice (You Do):**Problem 1:**

Sarah went on a one-day bus tour from Las Vegas to the Grand Canyon. The cost of the bus ticket was \$80. She also paid 15% of the cost of the ticket as a tip to the bus driver. What was the amount of the tip that Sarah paid the bus driver?

- A** \$5
- B** \$12
- C** \$15
- D** \$19

Show how you found the answer.

Name: _____ Class: _____ Date: _____

Problem 2:

Rowan raised \$640 in a charity walk last year. This year he raised 15% more than he raised last year. How much money did Rowan raise this year?

Show your work.

Answer \$ _____

Problem 3:

Mustafa buys a book that costs \$12.50. If the sales tax is 8%, what is the total cost of the book?

Show your work.

Answer \$ _____

Name: _____ Class: _____ Date: _____

Problem 4:

Ramona is a travel agent. She receives a 6% commission on vacation package sales.

Part A

How much commission will Ramona make if she sells \$3,600 in vacation packages?

Show your work.

Answer \$ _____

Part B

Ramona receives an additional 2% bonus on the sale of vacation packages during February. What would be her combined commission and bonus if she sells \$3,600 in vacation packages during February?

Answer \$ _____

Name: _____ Class: _____ Date: _____

Zach earns \$160 per week at a local market. He makes a payment of \$12 per week for a new bike. He spends \$75 each week on food and entertainment. Zach deposits the rest of his money in a savings account. Zach estimates that he deposits about 25% of the \$160 into his savings account each week.

Part A

Is Zach's estimate correct?

Answer _____

On the lines below, explain how you determined your answer.

Part B

How much of his weekly earnings would Zach need to deposit in order to save 40%?

Answer \$ _____

Name: _____ Class: _____ Date: _____

Final Summary

In a U-Shape:

1. Re-state the objective to assess if students learn it
2. Elicit from students what they have learned and what they want to learn more about.
3. Tie what they learn to the lesson, and upcoming lessons (Next Saturday, they will learn about proportion, a comparison of two ratios!)