



# Concept: Problems Involving Percent

Name: \_\_\_\_\_


## COMPUTER COMPONENT

**Instructions:** In  follow the **Content Menu** path:

**Percent > Problems Involving Percent**

 Work through all Sub Lessons of the following Lessons **in order**:

- *In This Topic*
- *Steps in Solving Problems*
- *Finding the Whole*
- *Finding the Percent*
- *Percent of a Number*
- *Percents Greater than 100%*
- *Percents Less than 1%*
- *Mental Calculation*
- *Percent Change*

 As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

### NOTES:

1. Complete the following steps in problem solving

STEP 1: \_\_\_\_\_

STEP 2: \_\_\_\_\_

STEP 3: \_\_\_\_\_

STEP 4: \_\_\_\_\_

2. Indicate in which step you would do the following:

	STEP #
Work out your strategy.	
Decide what are information you are given.	
Check your solution.	
Plan your steps for a solution.	
Find an answer.	

Evaluate your answer to see if it is reasonable.	
Figure out what you must find.	
Re-solve the problem if necessary.	
Write all the information down clearly.	
Recheck your strategy.	
Determine how you can use the given information.	
Learn from your mistakes.	

3. We can solve percent problems in a variety of ways (*strategies*).

**Method 1** (*Writing a \_\_\_\_\_*)

*Remember: A **proportion** is a relationship between two equal*

In percent problems, the two equals are usually

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

Example - Using Proportion: (*Fill in the missing parts*)

Bob bought a skateboard for \$50. The board was on sale for 25% of the regular price.  
*What was the regular price?*

**50% is 25% of the regular price**

$$\frac{\underline{\hspace{2cm}}}{100} = \frac{\underline{\hspace{2cm}}}{\text{regular price}}$$

$$\frac{\underline{\hspace{2cm}}}{\underline{\hspace{2cm}}} = \frac{\underline{\hspace{2cm}}}{\text{regular price}}$$

Simplify

$$\frac{25 \div 25}{100 \div 25} = \frac{1}{4}$$

$$4 \times \text{regular price} = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$\text{regualr price} = \underline{\hspace{2cm}}$$

**Method 2** (Finding \_\_\_\_\_ % then calculation \_\_\_\_\_ %)

Example: (Fill in the missing parts)

Bob bought a skateboard for \$50. The board was on sale for 25% of the regular price. What was the regular price?

**25% of the regular price is \$50**

**1% of the regular price = \_\_\_\_\_ = \_\_\_\_\_**

**100% of the regular price = \_\_\_\_\_ × \_\_\_\_\_**

**regular price = \_\_\_\_\_**

**Practice:** Solve the following question using both methods.

When Brady was 15 years old, he weighed 92% of his present weight. Back then he weighed 115 pounds. *How much does he weigh now?*

**Method 1 (Proportion)**

\_\_\_\_\_ is \_\_\_\_\_ of his weight now

\_\_\_\_\_ = \_\_\_\_\_  
**100 his weight now**

\_\_\_\_\_ = \_\_\_\_\_  
**his weight now**

\_\_\_\_\_ × his weight now = \_\_\_\_\_ × \_\_\_\_\_

**his weight now = \_\_\_\_\_**

**Method 2**

$$\begin{aligned}
 & \underline{\hspace{2cm}} \text{ of his weight now is } \underline{\hspace{2cm}} \\
 & 1\% \text{ of his weight now} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \\
 & 100\% \text{ of his weight now} = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\
 & \hspace{10em} \text{his weight now} = \underline{\hspace{2cm}}
 \end{aligned}$$

**Finding the Percent of a Number**

*Remember:* Change the percent to a decimal and multiply.  $10\% \text{ of } 70 = 0.10 \times 70$

A metal bar weighs 8.1 ounces. 40% of the bar is silver. How many ounces of silver are in the bar?

$$\begin{aligned}
 & \text{Percent of the whole} = \% \times \text{whole} \\
 & \underline{\hspace{2cm}} \% \text{ of } \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\
 & \hspace{10em} = \underline{\hspace{2cm}} \text{ ounces}
 \end{aligned}$$

Fill in the blanks for the following formulas.

$$\text{Percent Increased} = \frac{\text{amount}}{\text{number}} \times \%$$

$$\text{Percent decreased} = \frac{\text{amount}}{\text{number}} \times \%$$

$$\text{Percent Markup} = \frac{\text{price}}{\text{price}} \times \%$$

**OFF COMPUTER EXERCISES****Solve the following:**

1. Bobby bought a stereo system for \$650, which was 70% of the regular price. *How much did the stereo cost originally?*
  
  
  
  
  
  
  
  
  
  
2. In a school population of 1100 students, 15% of the males and 11% of the females will become doctors. *How many males and how many females will become doctors?*

*Interesting fact: In 2000, an absentee bidder at a Boston auction paid a whopping \$11,500 for a 1954 Superman lunch box and thermos.*

3. Kellie buys her lunch each day. She spends \$45 each week on lunches. She earns \$75 each week at her part-time job. *What percent of her earnings does she spend on lunches? Do you think she should pack her own lunch? Why or why not?*

4. At a factory that has 125 employees, 40% of the people that work there walk to work. *How many of their people walk to work?*

5. Throughout the last two years, the school has been keeping track of the number of detentions. Today, the principal announced that the number of detentions to date has decreased from last year's 56 to 42.



*What is the percent decrease?*

*Pencil trivia – A pencil will write in zero gravity, upside down, and under water!*

6. Miss Smith ordered 500 pencils for her school. The pencil company sent her 120% of what she ordered. *How many pencils did Miss Smith's school receive?*

7. After a 200 km trip, you have travelled 65% of the way. *How far are you travelling?*

8. At a tire factory, 0.5% of the tires are rejected because of abnormalities. The factory manufactures 1800 tires per day. *How many tires are rejected each day?*

9. One year, the population of whales was 85. By the next year, it had risen to 140% of the original population. *How many whales are there now?*

**Challenges:**

10. A survey of 128 students from four classes on their favorite sporting activity indicated the following:

Favorite Sport  
In Which You Participate

Sport	Number of Students
Soccer	33
Football	9
Gymnastics	18
Baseball	40
Hockey	

Jamie misplaced the results for hockey and estimates that 50% of the students favored hockey. Bill estimates that 25% of the students indicated hockey.

Using the benchmarks of 10%, 25%, 75% or 100%, justify which estimate is more appropriate.



11. A store is able to buy a much sought after baby doll. The store purchase agent was able to get the doll from a distributor for a certain price. The store then raised the price they paid 60% and put a price tag on the doll. Then they had a store wide sale advertising 15% off everything in the store. If a customer pays \$47.60 for the baby doll, *what was the price the store paid the distributor?* (There was no sales tax.)