

Guide to Solving Word Problems

1. Read through the entire problem once. **Circle** what you are being asked to find.
2. Now, read the problem slowly. Pause after each phrase and do the following:
 - **Underline** information that is necessary for solving the problem.
 - Put a **question mark (?)** above any words or phrases you don't understand.
 - **Draw a line through** any unnecessary information.
 - **Jot down any notes** that will keep you from having to re-read. Include given quantities with their units.
 - **Make and label sketches and/or tables** that may help organize or clarify the information.
3. **Define variables** (letters) that will stand for each of the quantities involved in the problem. Be sure you define a variable for what you are asked to find. Be specific and include units. (You are simply giving "nicknames" to these quantities to make them easier to write down in a math sentence!)

EX: Let t = time in hours
 C = Total cost in dollars
4. Using your variables and given quantities, **write a math sentence** (equation or inequality) to help you solve the problem.

EX: $C = 4.79t$
5. **Substitute known values** that correspond to your variables. NOTE: The variable that stands for what you are trying to find will remain a letter at this point.
6. **Solve your math sentence** for the remaining variable.
7. **Answer the question** being asked. Make sure that your answer makes sense, has the **necessary precision, and the correct units**.

EX: The total cost is \$28.74.

Section 3.5 Word Problems Worksheet

Name: KEY

- 1.) You installed a new bookshelf to organize your books. The shelf can handle no more than 9 pounds. The hardcover books you are putting on it are a combined weight of 6.75 pounds. You plan to fill the rest of the shelf with paperbacks that each weigh 0.125 pounds. How many paperbacks can you safely add to the shelf?

Let $x = \#$ of paperback books

$$\begin{array}{r} 6.75 + 0.125x = 9 \\ -6.75 \qquad \qquad -6.75 \end{array}$$

$$\begin{array}{r} 0.125x = 2.25 \\ \underline{0.125} \quad \underline{0.125} \end{array}$$

$x = 18$ paperback books

- 2.) You are putting tile on part of the walls in your kitchen. You are using a combination of plain and decorative tiles. You will need a total of 500 tiles to cover the space and you want to use three times as many plain tiles as decorative tiles. How many of each kind of tile will you need?

Let $x = \#$ of plain tiles

Let $y = \#$ of decorative tiles

$$x + y = 500$$

$$x = 3y$$

$$3y + y = 500$$

$$4y = 500$$

$$y = 125 \text{ decorative tiles}$$

$$x + 125 = 500$$

$$x = 375 \text{ plain tiles}$$

- 3.) You have been assigned to buy packages of frozen lasagna for an upcoming party. Each package of lasagna costs \$7.99 and serves 8 people. You need to buy enough packages so that each person can have two servings. There will be 25 people at the party. How many packages do you need? What is the total cost for the lasagna?

Let $x = \#$ of packages

Let $y = \text{total cost for lasagna}$

$$x = \frac{8 \text{ people}}{1 \text{ package}} = \frac{50 \text{ people}}{x \text{ package}}$$

$$8x = 50$$

$$x = 6.25 \rightarrow 7 \text{ packages}$$

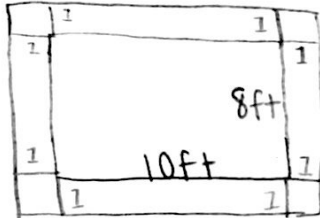
$$y = 7.99x$$

$$y = 7.99(7)$$

$$y = \$55.93$$

4.) A group is building a new sandbox for a children's playground. Railroad ties that are each 1 foot wide frame the interior of the sandbox. The outside of the frame is 12 feet long and 10 feet wide. The group needs to find the area inside the sandbox to help determine how much sand will be needed to fill it. Find the

area inside the sandbox.



12 ft

Let x = area inside the sandbox

$$x = b \times h$$

$$x = 10 \times 8$$

$$x = \boxed{80 \text{ ft}^2}$$

5.) You and a friend are painting a 150-foot long fence. You start at the same time and at opposite ends of the fence. You will be finished when you meet. You paint at a rate of 1.75 feet per minute and your friend paints at a rate of 1.25 feet per minute. How long will it take the two of you to complete the job? How

many feet of fence did each of you paint?

$$d = rt \quad r = 1.75 + 1.25 = 3 \text{ ft/min}$$

$$150 = 3 \cdot x$$

$$x = \boxed{50 \text{ min}}$$

Let x = time to complete the job

Let y = # of feet that I painted

Let z = # of feet that my friend painted

$$y = 1.75 \cdot 50$$

$$y = \boxed{87.5 \text{ ft}}$$

$$z = 1.25 \cdot 50$$

$$z = \boxed{62.5 \text{ ft}}$$

6.) The cellular phone plan you signed up for gives you 400 minutes a month for \$35 and charges \$0.15 for each additional minute over 400 minutes. How long can you talk on the phone each month to stay within

your budget of \$45?

Let x = total minutes per month

Let y = minutes over 400 minutes

$$\$45 - 35 = 10$$

$$0.15y = 10$$

$$y = 66 \text{ min}$$

$$x = 400 + y$$

$$x = 400 + 66$$

$$x = \boxed{466 \text{ min}}$$

7.) Currently, you have \$60 and your sister has \$135. You decide to save \$5 of your allowance each week, while your sister decides to spend her whole allowance plus \$10 each week. How long will it be before you have as much money as your sister? Let $x = \#$ of weeks

$$\text{My money: } \$60 + \$5x$$

$$\text{My sister: } \$135 - \$10x$$

$$\begin{array}{r} 60 + 5x = 135 - 10x \\ + 10x \qquad + 10x \end{array}$$

$$\begin{array}{r} 60 + 15x = 135 \\ - 60 \qquad - 60 \end{array}$$

$$\frac{15x}{15} = \frac{75}{15}$$

$$x = 5 \text{ weeks}$$