

Solving Math Word Problems

The following steps can be used as a *general guideline* for approaching math word problems.

	Steps	Tips for success	Example
1.	Read the problem over once to become familiar with the scenario.	If necessary, read the problem twice or more.	A certain recipe requires $2\frac{1}{2}$ cups of flour, half a cup of sugar, three apples and 1 cup of cranberries. This recipe makes 12 muffins. What amount of sugar is required if you want to make exactly 15 muffins?
2.	<i>Understand</i> the problem situation.	Connect the situation to your personal experience and/or real life.	
3.	Specify exactly what you are trying to find.	Look for the question sentence in the problem.	What amount of sugar is required if you want to make exactly 15 muffins?
4.	Underline the information that you think is important for solving the question.	Sometimes quantities are written out in words and not as numbers!	<u>half a cup of sugar</u> This recipe makes <u>12 muffins</u> .
5.	Write down the important information (the givens) in point form.		$\frac{1}{2}$ cup sugar for 12 muffins
6.	<i>Mathematize</i> the situation described and come up with a way to solve for the unknown using the givens.	- How are the givens related to one another mathematically? - Look for "clue words."	Since there is a comparison of different quantities, a proportion can be used to solve for the unknown. $\frac{1}{2} : 12 = x : 15$
7.	Solve for the unknown.	There may be more than one step!	$\frac{1/2}{12} = \frac{x}{15}$ $12x = \frac{1}{2} (15)$ $x = \frac{15}{2} \div 12$ $x = \frac{5}{8}$
8.	Interpret your final answer.	Does the final answer seem reasonable?	$\frac{5}{8}$ is greater than $\frac{1}{2}$. This makes sense since we are making more muffins than the original recipe.
9.	Communicate the final result to the reader.	- Using the question sentence to help you write a sentence that answers this question. - Include units if applicable.	$\frac{5}{8}$ cups of sugar is required to make 15 muffins according to the recipe.

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Mathematical operation	Clue Word(s)	Example
Addition +	all	If you combined all of their earnings how much would they have?
	sum	The sum of their earnings was \$3400.
	total	What is the total amount earned?
	in all	How much did you earn in all ?
	increased by	Your wage increased by \$2.
	combined	The total hours are combined.
	together	Together you earned \$3400.
Subtraction -	additional	How many additional hours did you work this week?
	difference	What is the difference between your earnings?
	decreased by	The total number of hours decreased by 3 hours.
	how much more/less...	How much more did you earn this month compared to last month?
	less	You worked 8 hours less this week than last week.
	fewer than	You have two fewer cookies than her.
	left or remain	How much money is left ?
Multiplication x ()() ·	take away	If you take away \$8, how much remains?
	product	What is the product of 8 and 9?
	total	You worked 40 hours at \$20 per hour. How much did you earn in total ?
	each	You earn \$20 each hour. What are your earnings for 15 hours?
	times	This week you worked three times longer than last week.
	of	A third of the class got 80% or higher on the last quiz.
	factor of	The school population increased by a factor of 7.
Division ÷ $\frac{x}{y}$	double; triple, quadruple, etc.	The population of bacteria doubled every minute.
	equal/equally	The items were packed equally into three bags. How many items were in each bag?
	distribute	If the total amount was distributed evenly, how much did each person get?
	quotient	

NOTE: The above table is for reference only. It is not an exhaustive list. Please, note that some words can indicate more than one mathematical operation. Word problems should always be understood as a whole.

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Practice Problems:

- 1) Mr. Handa is writing a budget request to upgrade his personal computer system. He wants to purchase a cable modem, which will cost \$100, two new software programs at \$350 each, a color printer for \$249, and an additional color cartridge for \$25. What is the total amount Mr. Wallace should write on his budget request?
- 2) Joan went shopping with \$100 and returned home with only \$18.42. How much money did she spend?
- 3) Each of five physical therapists at the therapy center works six hours per day. Each therapist can work with three patients per hour. In total, how many patients can be seen each day at the center?
- 4) An administrative assistant can type 80 words per minute on his word processor. How many minutes will it take him to type a report containing 760 words?
- 5) Your patient must drink a total of 2 L of fluids every day. Today your patient consumed 1 L of water, 0.5 L of juice, 0.2 L of broth in soup, and 0.4 L of tea. What is the patient's total fluid intake for today?
- 6) Each hospital wing has 20 nurses on staff. Each nurse works a total of 7 hours per day. If the nurses spend 2 hours a day with each of their patients, how many patients are the nurses able to see?
- 7) In a hospital cafeteria there are 30 bottles of juice containing 550 mL each. If each patient requires 250 mL of juice for breakfast, how many cups of juice can be prepared?
- 8) A patient is to receive a dose of medication every four hours for an entire week. In total, how many dosages has the patient received by the end of the week?

Solutions:

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|-----------|----------------|----------------|----------------|
| 1. \$1074 | 2. \$81.58 | 3. 90 patients | 4. 9.5 minutes |
| 5. 2.1 L | 6. 70 patients | 7. 66 cups | 8. 42 dosages |