

Solving math word problems can be a difficult skill both to teach and to learn. While word problems may be challenging, they give students the opportunity to apply and practice the skills they have learned to real-world situations. This is excellent preparation for adult life, where people are regularly called upon to solve problems in both their personal and professional lives. The following suggestions can be used to help students develop the skills needed to tackle and to solve word problems in math.

Relax and read

Word problems require both reading and math comprehension. Begin by separating the two and simply have the student read the problem as he would a story, becoming familiar with the situation and getting a sense of what is happening. Some students find it helpful to read the problem aloud, draw a storyboard, or act out the problem as an aid to understanding; others may need to have the problem read to them. There should be no attempt at this point to think about calculations or computations required for solving.

Organize the information

Once the student can clearly tell you what the problem is about, she can begin organizing the information. She might like to list everything that could be helpful, whether it's something in the problem (ex., "The car is 5 meters long") or a mathematical fact that she already knows (ex., $100 \text{ cm} = 1 \text{ m}$).

Determine what the student needs to find

As with most things in life, knowing the goal or objective helps in focusing effort to find the correct answer. Generally, what a student needs to find in a problem is presented as a question or a set of instructions, which he can underline or highlight. Sometimes, after completing this step, the student may discover that he has gathered extraneous information which will not help him find the answer and can therefore be removed from his list.

Choose a strategy

Now the student is ready to find the answer. Often this means performing computations, but for some problems, drawing a diagram or setting up a chart or table may be helpful. Students often wonder at this point which operation to use (addition, subtraction, multiplication, or division). If an understanding of the problem has already been established, common sense is the best guide. Are quantities being put together, or will the result be a greater amount? Then addition or multiplication will most likely be used. Is an amount being separated from a whole, or will the result be less? Subtraction or division are definite possibilities. Some teachers recommend finding key words to determine the appropriate operation. While Math-U-See does refer to this technique, it should never be used as the primary means for solving a problem. Depending on key words alone does not encourage students to think mathematically about a problem or use logic to reason toward a solution; furthermore, it is not a foolproof method. Sometimes key words do not appear in problems, or additional operations may be required to find the final answer. Key words should only be used to support the student's rationale for choosing a particular operation and not be the determining factor.

Work toward the solution

Many times there are several different ways to solve a problem that are all equally valid. A student could use guess-and-check, perhaps entering different values in a chart and computing various combinations until the desired one is found. Another student might use a more systematic approach, performing a series of calculations to arrive at the solution. Other students may choose an algebraic approach to set up and solve equations. Whatever method is used, it is important that the student take ownership of the solution process, utilizing the tools and strategies with which he feels the most comfortable.

Check the solution

There is one more important step to solving any mathematical problem: checking the solution. First, the student should make sure that the question posed has been answered. Sometimes the result of a calculation is only one step to finding the final solution, and additional work must be done. Second, make sure the answer is reasonable. It would not make sense, for example, to have a bedroom with an area of 2 square centimeters. Finally, if the solution is given in an answer key and the student's response does not match, take the time to find out why. Discuss the problem and the student's solution and adjust any misunderstandings. Share with the student other ways to solve the problem that might be more efficient.

Word problems can be challenging, but learning how to solve them is well worth the effort. As you utilize the suggestions listed above, your student will become more skillful and successful in applying mathematical reasoning to real-life situations.