

Analyzing Problems: Hints and Reminders

Different problems require different approaches. Being able to determine what types of problems you're dealing with will help you solve them. Before you jump in, take a look at the descriptions of the different types of problems you'll be analyzing. You may find it helpful to refer to this page and its tips as you go through the worksheets.

Introduction to Problem Solving

Word problems can be intimidating. But don't let them get you down! Just try to approach each problem slowly, breaking it down into these four steps:

1. Understand – What do you know? What do you need to find out?
2. Plan – Identify what you need to do.
3. Solve – Do what you need to do.
4. Look back – Check your work.

Learning to use these steps automatically can really help reduce some of the stress of solving word problems.

Choose an Operation

“Choosing an operation” just means figuring out whether to use addition, subtraction, multiplication, or division to solve a problem. Finding the “main action” in the problem will give you the clues you need to choose the right operation. To find the main action, look for the question that’s being asked. For example, when a problem asks you to compare, take away, or find a missing part, you should subtract. When you’re asked to put things together, you should add.

Exact or Estimate?

Some problems don't need an exact answer...sometimes an estimate will do! You'd use an estimate to talk about the number of words or letters in a book because there are too many to count. You'd use an exact number to talk about the score of a baseball game because you need an exact score to determine the winner. The words “about” or “plan” in a problem indicate an estimate: **About** how many people could you serve? Or how many pies should she **plan** to bake?

Multiple-Step Problems

Before attempting to solve any word problem, you should always read through it at least twice. Then make a list of details. To solve a multi-step problem, you must first identify the “main idea,” or what you're expected to find. (This info usually appears at the end of the problem.) Then it's all about collecting the details, identifying the steps, and solving them in the right order.

Too Much or Too Little Information?

You can solve problems when you have too much information, but you can't solve problems with too little information. How can you tell the difference? It's all in the details! Here are some tips:

- Read the problem slowly and more than once.
- Underline what you're being asked to find.
- Circle the information that you need to solve the problem.
- Cross out any information that you don't need.

And keep in mind that you may not realize that a problem has too little information until you get to the "plan" or "solve" step.

Overestimating and Underestimating

Overestimating means making a good guess that's greater than the exact answer to a problem. Underestimating means making a good guess that's less than the exact answer. You overestimate when you want to make sure you have enough of something, such as time or money. You underestimate when you want to find a safe limit, such as a weight limit. Ask yourself these questions when tackling this type of problem:

- How would you plan to solve the problem without estimating?
- What would happen if you overestimated?
- What would happen if you underestimated?

Interpreting Remainders

A remainder is what's left over when you divide. Whether you're divvying up pizza or allowances, you've got to know if those leftovers matter! Sometimes you need to consider remainders to solve a problem, but sometimes you don't. Drawing pictures or using counters (beans, coins, etc.) can help you "see" when remainders matter and when they don't.

Choosing the Right Strategy: Hints and Reminders

Good problem solvers always have more than one strategy at the ready. Stuff a few of these tactics up your sleeve, and you'll be on your way to solving all types of problems. You may find it helpful to refer to this page and its tips as you go through the worksheets.

Guess and Check

The guess and check method comes in most handy when working a problem that doesn't give you all the information you need to solve it. You have to "guess" and then "check" your answer against a fact you already know. Keep in mind that words like "sum" and "together" mean use addition. The word "difference" means use subtraction. Take $__ + __ = 19$, for example. Say you know that the difference between the two addends is 11. You can guess until you hit on $15 + 4$. It's the right answer because their sum is 19, and their difference is 11.

Make an Organized List

When tackling word problems, listing pairs of information in an organized way can help you make sure that you've found all the possibilities and don't have any duplications. List all the possible combinations for one item before you move on to the next. This will help you begin to identify patterns. Try writing the item abbreviations in a row (A, H, C, S, W). Take the first letter and pair it with all the letters that follow it in the row. Write down the pairs. Then take the second letter and pair it with all the letters that follow it, and so on until you reach the last letter.

Look for a Pattern

Patterns are all around us – in artwork, music, science, and in our behavior! And wherever there's a pattern, there's a rule. A "rule" describes what you do to each element in a pattern to get to the next element: Add 2, Subtract 3, etc. Be sure to read through the whole pattern at least once before you determine the rule.

Make a Table

When it comes to word problems, tables are your friends! If you're solving a problem that involves a pattern – how many beads in a necklace, patches in a quilt, or tiles on the floor – a table can help you find the relationship between the numbers. Remember to approach each word problem slowly – step-by-step. Read through it at least twice before beginning the table. Making a drawing for each problem will also really help you "see" what each table represents.

Draw a Picture

When you're solving a problem that involves the position of something and how it relates to other things – like runners in a race or seats in a theater – drawing pictures can really help. Read each problem through a couple of times before making a list of details and "positional" words, such as ahead, behind, right, left, etc. This information will be crucial to the picture you draw.

Work Backward

Working backward is a good method to use when a key bit of information falls at the end of a word problem. Take that information and reverse or “undo” the actions described in the problem to find the answer.

Use Logical Reasoning

A little logic will go a long way! Logical reasoning problems in fourth grade tend to be set up with the “clues” to the problem called out in bullets. The trick here is to find the main thing that you’re solving for, and then apply a little “if... then...” logic to the clues.

Solve a Simpler Problem

You’ve already covered how to look for a pattern to solve a problem. Now, you just need to take what you’ve learned and run with it! In tough problems, patterns can get complicated. The key to solving these problems is to find a simpler pattern first. Once you find the “rule” to that pattern, you can use it to solve the whole problem.