

Problem Solving Plan and Strategies

Here is a 4-step **problem solving plan** that you can use to solve problems.

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| STEP 1 | Read and understand the problem. | Read the problem carefully. Organize the given information and decide what you need to find. Check for unnecessary or missing information. Supply missing facts, if needed. |
| STEP 2 | Make a plan to solve the problem. | Choose a problem solving strategy. Choose the correct operations to use. Decide if you will use a tool such as a calculator, graph, or spreadsheet. |
| STEP 3 | Carry out the plan to solve the problem. | Use the problem solving strategy and any tools you have chosen. Estimate before you calculate, if possible. Do any calculations that are needed. Answer the question that the problem asks. |
| STEP 4 | Check to see if your answer is reasonable. | Reread the problem. See if your answer agrees with the given information and with any estimate you have made. |

Here are some **problem solving strategies** that you can use to solve problems.

| Strategy | When to use | How to use |
|---|--|---|
| Guess, check, and revise | Guess, check, and revise when you need a place to start or you want to see how the problem works. | Make a reasonable guess. Check to see if your guess solves the problem. If it does not, revise your guess and check again. |
| Draw a diagram or a graph | Draw a diagram or a graph when a problem involves any relationships that you can represent visually. | Draw a diagram or a graph that shows given information. See what your diagram reveals that can help you solve the problem. |
| Make a table or an organized list | Make a table or list when a problem requires you to record, generate, or organize information. | Make a table with columns, rows, and any given information. Generate a systematic list that can help you solve the problem. |
| Use an equation or a formula | Use an equation or a formula when you know a relationship between quantities. | Write an equation or formula that shows the relationship between known quantities. Solve the equation to solve the problem. |
| Use a proportion | Use a proportion when you know that two ratios are equal. | Write a proportion using the two equal ratios. Solve the proportion to solve the problem. |
| Look for a pattern | Look for a pattern when a problem includes numbers or diagrams that you need to analyze. | Look for a pattern in any given information. Organize, extend, or generalize the pattern to help you solve the problem. |
| Break a problem into parts | Break a problem into parts when a problem cannot be solved in one step but can be solved in parts. | Break the problem into parts and solve each part. Put the answers together to help you solve the original problem. |
| Solve a simpler or related problem | Solve a simpler or related problem when a problem seems difficult and can be made easier by using simpler numbers or conditions. | Think of a way to make the problem easier. Solve the simpler or related problem. Use what you learned to help you solve the original problem. |
| Work backward | Work backward when a problem gives you an end result and you need to find beginning conditions. | Work backward from the given information until you solve the problem. Work forward through the problem to check your answer. |