

Problem Solving Guide

for Middle-Level Math Students

There will be many times in this course that you will be asked to think through and find solutions for problems using the skills you are learning. Problem solving is an important skill of its own, and not just in math!

Use this guide to help you practice your problem-solving skills. Soon, you'll be a master problem solver!

Step 1: Make sure you know what the problem is asking you to do.

- a. Write down a guess, even if you don't know the answer. Fill in numbers that you don't know with an x .
- b. Make a list of the information that is given to you -- the things that you *know*.
- c. Make another list of the things you don't know yet -- *the unknowns*.
- d. To make sure you really understand the problem, try rewriting it in *your own words*.

Step 2: Come up with a plan.

- a. Try *drawing* what you think is happening. Drawing pictures is a great way to get your brain moving!
- b. What *mathematics* do you need to solve this? Is it something you recently learned? Check your notes to match the problem with the skills you learned.
- c. Write out in words what your plan of attack is. Use a numbered list, if it helps. (For example: "First, I will multiply the rate and the time together to find the distance. Then, I will...")

Step 3: Make your plan work!

- a. Look once more at the problem. Remember what it is asking for.
- b. Follow the steps of your plan, stopping every once in awhile to ask yourself if you're getting closer to the answer.
- c. Keep drawing. If something changes because of your work, make a new drawing to help you visualize the change.

Step 4: Check your answer.

- a. Re-read the problem and your solution. Ask yourself, "Does my solution answer the question?"
- b. Make sure your answer makes sense. Is your number way too big or small? Can you picture your answer in your head?
- c. Make sure you're finished. Have you given all of the information the problem asked for?

Sanity Checks

Do you need a break? Are you staying focused? Sometimes, you may just need to walk away from the problem, do something else for a while, and then come back to it.

- Am I getting frustrated? Do I need a break? Can I work on something else for now?
- Is my plan working? Am I getting closer to a solution, or am I moving in the wrong direction?
- Do I need to stop writing and think a little more about the problem?
- Do I need to eat or drink?
- Do I need to change my environment (noise, light, distractions, etc.)?