

Approaching the Math "Problem"

- **BELIEVE IN YOUR OWN ABILITIES!**
Difficulties in math are frequently a consequence of self doubt not of actual ability. Believe you can succeed, and you will!
- **MATH IS ABOUT DOING!**
 - Focus on problem solving and technique.
 - **PRACTICE! PRACTICE! PRACTICE!**
- **MATH IS CUMULATIVE!**
(What you don't understand today, will affect you tomorrow.)
 - Attend every class.
 - Keep on top of your assignments. (Do a little every day.)
 - Get help when you need it, *DON'T WAIT!*
- **WRITE MORE NOT LESS!**
When working through a math problem, write out ALL of your steps. The more you write, the less likely you are to make a simple error and the easier it will be to identify where any mistakes might have occurred.
- **BE WILLING TO MAKE MISTAKES!**
It is through analyzing our mistakes that real growth is made. If you make a mistake, discover where the error lies. Then you will know not to make it the next time. (*USE PENCIL!*)
- **ASK QUESTIONS!!!** Asking about what you do not understand is the key to success in mathematics.
 - Ask questions in class, if appropriate.
 - See your professor during office hours.
 - Visit the tutoring center.
 - Ask a classmate.
 - Form a small study group (no more than 4 people).
- **DON'T JUST MEMORIZE THE EXAMPLES.**
 - Understand *WHY* each step must be used to solve a problem.
 - Ask yourself "expert" questions.
 - Be able to explain the concepts, examples, and equations in your own **WORDS**.

EXPERT QUESTIONS*

Questions to ask when you're *learning* a new mathematical concept or as you're solving a new problem.

- What would I guess the answer or result should be?
- What is each step of the solution accomplishing?
- What's the pattern here?
- If this changes, what else will change?
- What happens at "the extremes"?
- Can I generalize this result?
- What are the "special cases"?
- How can this question be rephrased?
- What are the essential features of this problem?
- What other types of problems or techniques does this remind me of?
- How many different ways can I solve this problem?
- Can I derive the formula?
- How can I make this concept more tangible?

*Robinson, A. (1993). *What smart students know*. New York: Three Rivers Press.