2008-09 Blue Team <u>The Four-Step Problem Solving Process</u>: **UPDR**

Think of this four-step process as a set of general guidelines that help you stay organized for problem solving (obvious in Math, but applicable to all other subjects and our IDU this spring). Note that only some of the detailed actions described in the four-step process may be needed for a particular problem. One of the most important principles of problem solving is to be flexible, because no single particular strategy always works best.

Step #	Description	Detailed Actions
Step 1. **Understand** the problem **U**	• What do you know? • What are you being asked to solve?	• Make a list or table of the information given. • Draw a picture or diagram to help make sense of the problem • Restate the problem in a different way to clarify its question.
Step 2 **PLAN** Devise a strategy to solve the problem **P**	• How should you go about trying to solve the problem? • Organize & create.	• Make a list of possible strategies and hints that will help you select your overall strategy. • Map out your strategy with a flow chart or diagram.
Step 3 **DO** Carry out your strategy, revise if necessary **D**	• Do the work.	• Keep an organized, neat, written record of your work, which will be helpful if you later need to review or study your solution. • Constantly reevaluate your strategy as you work; if you find a flaw in your strategy return to step 2 & create new strategy
Step 4 **REVIEW** Look back to check, interpret and explain your results. **R**	• Check your work. After all a result is not worth much if it is wrong, misinterpreted, or cannot be explained to others.	• Be sure your result makes sense – that it seems like a reasonable answer to original problem. • If your answer is reasonable, recheck your calculations or find an independent way of checking your results. • Identify potential sources of uncertainty in your result. • Write your solution clearly and concisely, including discussion of any relevant uncertainty or assumptions.

Alg-1 Systems of Equations Examples

Solve the system: $2x - y = 3$
$4x + 3y = 21$

Understand: What are you asked to do?
What does it mean "solve" the system?

Plan: How should you go about solving it?
Should you graph it?
Should you use substitution method?
Should you use elimination method?
For THIS problem is one method better?

Do: Go ahead and use your method, look at above Detail Actions portion of step 3 – important to keep neat, written record of your work.

Review: **D**oes your solution make sense?
How could you check your solution?
Is there an independent way to check the result?

2nd Example

Everyone knows Cooper and Reese are battling it out for the Focus Intramural Championship.
However, Prahst and Maite have resorted to unethical tactics to try and bribe the intramural coordinator.
There are a total of 47 focus students in Prahst's and Maite's classes. Each focus student in Prahst's class paid $3 and each focus student in Maite's class paid $2. A total of $119 was raised and given to the Intramural Coordinator.

Find the number of students in Prahst's focus class and the number of students in Maite's focus class:

Understand: What are you asked to do?

Plan: How should you go about solving it?

Do: Go ahead and begin to solve the problem
Remember the Detail Actions – important to keep neat, written record of your work.

Review: **D**oes your solution make sense?
What if you get a Negative Number?????
How could you check your solution?