

# Week 1 Lecture 3

September 1, 2017

Textbook Reference: Chapters 1,2

- Write out PSSSP acronym. Incorporate into stretches.
- Stretch 2 (Pg. 97): Move just one line and leave the giraffe unchanged (it can be oriented differently).
  - **Hints:** Use process of elimination - first eliminate all the lines that *cannot* be moved
  - **Solution:** Move left leg
- Stretch 3 (Pg. 97): In a village of 800 people, 3% wear one earring. Of the remaining 97%, half wear two earrings and half wear none. How many earrings are worn?
  - **Hints:** Make a drawing.
  - **Solution.** There are 800 earrings! Imagine that half of the 97% people with two earrings gave one of their earrings to the other half with none. Then everyone would have exactly one earring per person.
- Stretch 4 (Pg. 97): A piece of string is 10 inches long. What is the smallest number of scissor cuts necessary to get 10 one-inch pieces?
  - **Hints:** Think of ideas involving folding
  - **Solution.** Only one cut is needed!
    - \* Solution 1: Fold the string over and over on itself so that each fold is 1/2 inch long. Then cut the top seam. Each separate piece will then be 1 inch (draw a picture).
    - \* Solution 2: Imagine taking scissors whose blades are half an inch thick. Wrap the string around one blade over and over and cut.
- PSSSP
  - Title of book is PProblem SSSolving. Reasoning for this title is that the authors created an acronym for a guideline strategy for problem solving. The acronym is PSSSP. PSSSP strategy is not a step by step method for problem solving. You will need to practice solving problems and decide which strategies to use and when.
  - **BE PROACTIVE:** Just do it! To solve problems you have to commit yourself and attack it over and over. Don't give up after a few minutes.

- **SEE IT:** Use visuals! Always try to draw a picture. This often makes it easier to see how to proceed and come up with a solution [Stretch 2,3,4].
- **SIMPLIFY IT:** Simplify complicated problems. Break a complicated problem up into smaller and easier problems. After solving the easier problems you can then attack the harder problem. How could you simplify the heap of beans problem? Think of other problems that you could simplify.
- **STIR IT UP:** Take a guess and see if it works! If not, try a different guess. Try a similar problem. Try thinking about the problem from a different angle [Stretch 1].
- **PAUSE AND REFLECT:** Sometimes you will get stuck and all of the methods you try keep failing. When this happens it's a good time to pause and reflect. Ask yourself questions like:
  - \* What type of answer should I expect?
  - \* Do I understand what is being asked?
  - \* Have I solved similar problems and do their solutions help with this problem?