Problem Solving Activities Section 1.2 A

DIRECTIONS: Begin working on the first problem - UNLESS you have done this problem before - in that case do the second problem. Work on your own. If you finish problem 1, then go ahead and go on to problem 2. You will most likely need a separate sheet of paper as you attempt these problems.

1.   A census-taker knocked on a door, and a woman answered. She had three daughters, and when the census-taker asked her the ages of her children she said that the product of their ages was 36. The census-taker was confused and couldn't figure out how old the three children were. He asked for more information, and the woman said, "The sum of their ages is the same as the address on the house next-door." He went next door and looked at the address, but he still couldn't figure out how old the girls were. When he came back the mother said, "I'm sorry, but I don't have any more time. I need to go talk with my oldest daughter." As soon as she closed the door he realized what the ages of the girls were. How old were they?

2.   All fractions $0 < \dfrac{a}{b} < 1$ (where a and b are both positive integers) are placed into the sequence as shown below – first by increasing order of denominator and then by increasing order of numerator. Find $a + b$ for the 2013th element of the sequence.

$$\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \dots$$

Life Lessons that are Also at the Heart of Mathematics

1. Just do it!

2. Make mistakes and fail, but never give up!

3. Keep an open mind!

4. Explore the consequences of new ideas.

5. Seek the essential.

6. Understand the issue.

7. Understand simple things deeply.

8. Break difficult problems into easier ones.

9. Examine issues from several points of view.

10. Look for patterns and similarities.

(taken from Dr. Ed Burger of Williams College)

A quote to consider:

"If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is."

John von Neumann (1903-1957)

Think of the problem solving we are doing in chapter 1 as a 'boot camp,' and constantly be thinking about the process and how you can related the 10 lessons above to both math and life.