1. Define: even number; odd number

2. Prove that if n is odd then so is n^2.

3. Consider the expression $n^2 + n - 5$, where n is an integer. Compute its values for n = 1, 2, 3, 4, 5. Can you make a conjecture?   Can you prove your conjecture?

4. Can you *guess* a formula for 1 + 2 + 3 + ... + n, where n is a positive integer.   Explain how you arrived at this guess.

5. Consider the following problem:

   Into how many regions do n lines divide the plane? (Here n is a non-negative integer.)

   (a) Why is this question ambiguous?

   (b) Modify this statement so that it is unambiguous.

(c)   What is the answer when n = 1?   n = 2?   n = 3?

(d)   What about n = 4?

(e) Try n = 5.

(f)   What is your guess for n = 6?   Can you discern a pattern?

(g) Analyzing this pattern, can you find a general formula?

6.   Carefully state the Product Principle for two finite sets.

7.   Carefully state the Addition Principle for two finite sets. (Be careful here.)