MATH 4010-002: Intermediate Algebra
Worksheet 2: Problem Solving

1. Last class I gave you the following problem:

   How many 1m \times 1m square tiles does it take to make a border around a square pool in the pattern shown in the example below?

   Try to find the answer in at least two different ways.

   Explain one of your solutions to your group, and write down the questions they ask.

   (a) Do you think your answers convinced your groupmates that your answer is correct?

   (b) How would you verify that they had understood your answer correctly?

2. You’ve assigned the pool problem to a class, and gotten the following answers back. Try to explain pictorially how a student might have come up with each of these answers:

   (a) 4(n + 1)

   (b) 4n + 4

   (c) 2n + (2n + 2)

   (d) 4(n + 2) − 4

3. A triangular number is a whole number that can be represented by an array of dots in a particular shape. The first four triangular numbers are

   ![Triangular Numbers](image)

   What is the \( n \)th triangular number? Try to solve this problem by drawing pictures. It may help to start with some small examples.

4. (a) If six points are placed on a circle, and each pair of points is joined by a segment, how many segments are there?

   (b) If \( n \) points are placed on a circle, how many segments are there?