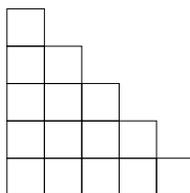


## Math 95 Homework Five

### Your Forty-Five Minute<sup>1</sup> Assignment:

- (1) Spend 5 minutes reviewing your solutions to Clock Problem from Week Five. At the beginning of seminar on Tuesday, students will be called upon to present their ideas about the Clock Problem.
- (2) Spend 30 minutes attempting to solve the Stair-like Structure Problem below. If you succeed in solving the problem in less than 30 minutes, try to find at least one other method of solving the problem.

**Stair-like Structure Problem:** A figure such as the one below is called a stair-like structure.



- (a) You have 1176 identical square pieces. Can you use all the pieces to construct a stair-like structure?
  - (b) You want to build a stair-like structure out of toothpicks. Is it possible to use exactly 2628 identical toothpicks to create a stair-like structure?  
Note: When constructing a structure using toothpicks, if two squares lie side by side, their common edge is only made of one toothpick. For example, in the picture above, the structure would be built with exactly 40 toothpicks.
- (3) Spend 10 minutes preparing to present your ideas to the Stair-like Structure Problem in seminar on Tuesday.

Remember that **it is not important that you present a correct solution to the problem**. Just be ready to present your ideas, partial or complete. We would also very much like to see any errors that you made while solving the problem, so even if you eventually solved the problem correctly, you are strongly encouraged to present your initial erroneous attempts to the class. Some of our most fruitful conversations about learning and teaching mathematics start with incorrect or incomplete solutions. Remember that we want to uncover and address misconceptions; we absolutely do not want to hide them.

Also note that you may present using a screen share of a prepared pdf file, or you may screen share on your tablet/ipad in real time, or you may show us your ideas on a personal whiteboard that you are holding in your hand. Whatever works for you will work for us; just be willing to try!

---

<sup>1</sup>Of course you may spend more time on this if you feel inspired! :-)