Intro to Proofs Day 1 Outline (This class meets for 1 hour and 50 minutes.)

**Need cards, notecards, scrap paper.**

**Tag Out activity:** [30 minutes]

* *Materials:* scrap paper
* *Introduce by demonstrating the following game:* Class stands in a circle. The game tag out works as follows: One person starts. This person tags the person to their right. This person is “out”. Then starting with the next person to the right they tag the person to their right. The game continues in this fashion. The last person in, wins.
* *Play with 2 people.*
* *Play with the whole class.*
* *Activity directions:* Come up with a conjecture. Can you predict who wins?
* *Discussion:* Have students talk about the ideas from their groups. Start a discussion of what it means to prove something. Assign competence! Specifically discuss “how do we decide if a statement is true or false?” (from Section 1.1)
  + *Guesswork and conjectures/looking for patterns/generalizing/starting with small examples.*

**Group norms discussion:** [15-20 minutes]

* *Materials:* Notecards
* Think/pair/share: Write down two things you expect your groupmates to do/not do when working together. Pair with someone not in your tag out group to discuss. Discuss as a class what our norms should be.

If time: or next time - <https://www.nytimes.com/interactive/2015/07/03/upshot/a-quick-puzzle-to-test-your-problem-solving.html>

**---Take a 10 minute break -----**

**Cover Section 1.1 (40 minutes):** [Statements and conditional statements] See worksheet.

* 8 minutes: What’s a statement? *Definitions and statements are the lifeblood of mathematics. A statement has to be true or false or neither.*
* 25 minutes: Have them work on card tasks, go over, go over truth tables
* 15 minutes: Have them work on applying conditional statements task

**Hand out syllabus/discuss what to do for next time** [5 minutes]

* Preview activity: For Sections 1.2 and 2.1. Read syllabus, what questions do they have on it.
* Synthesis activity: Section 1.1 Question 3, Question 7 (a)-(c), listen for a conditional statement they hear in their life.