Dec. 9, 2016

**Content:** Introducing/Reinforcing Linear Understanding (including slope, intercepts, equations) and Using Transformations on Lines

**Instructor:** Christy Miller

**Materials**: 8” x 10” pictures of celebrities (or use participants themselves), tennis balls, water, large graph paper, marker, ruler, yard/meter stick, colored pencils/crayons, protractors

**Objective(s):** Participants will explore linear equations and parts of equations, including slope and intercepts, in several different contexts.

**CCSS Content:**

7th Grade Introduction: Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

[CCSS.Math.Content.8.EE.C.7](http://www.corestandards.org/Math/Content/8/EE/C/7/)  
Solve linear equations in one variable.

[CCSS.Math.Content.8.EE.C.7.a](http://www.corestandards.org/Math/Content/8/EE/C/7/a/)  
Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form *x* = *a*, *a* = *a*, or *a* = *b* results (where *a* and *b* are different numbers).

**CCSS Practice:** Match My Line: 1, 2, 6, 7, 8

Marble Slide: 1, 2, 6, 7, 8

Tennis Balls: 1, 2, 3, 5

**Warm-Up:** Game of Guess Who with celebrity faces. Participants will have pictures of approximately 20 celebrities. There should be two groups of the same celebrities. Divide the participants into two groups to play Guess Who against each other. Play a couple times, then discuss attributes used to determine who the “it” person was. (The first activity that was done at last CAMP meeting can be linked to this game.)

**Lesson Body:** 1) BRIEFLY play (Desmos) Polygraph:Lines <https://teacher.desmos.com/polygraph-lines> . Brief discussion on importance of mathematical language. This should be a review from last PD.

2) Continue with (Desmos) Match My Line <https://teacher.desmos.com/activitybuilder/custom/5605bb5f00701ed10fb09314>

This is an individual activity taking approximately 30-45 minutes. (Desmos advertises 45-60 minutes, but it will likely take teachers less time than it would take students.)

3) (Desmos) Marble Slide <https://teacher.desmos.com/marbleslides-lines>

This is an individual activity taking approximately 45 minutes. (Desmos advertises 45-60 minutes, but again it will likely take teachers less time than it would take students.) There are several “Challenges” at the end of this lesson. It wouldn’t be necessary for all teachers to do all challenges.

Group Discussion Questions (in addition to Content and Practice Standards)

1. What prior knowledge should students have prior to participating in this lesson?
2. In what areas would your students excel in this activity?
3. In what areas would your students struggle in this activity?
   1. How can the activity be modified to accommodate the struggling student?
4. In what ways would it make more sense to use paper/pencil or chalkboard techniques be better than using Desmos?
5. In what ways would it make more sense to use Desmos (instead of paper/pencil or chalkboard techniques)?

**Launch After Lunch:** (Desmos) Card Sort

This activity is quite brief and could be used as the Launch After Lunch. Participants will simply match graphs, tables, and equations, and answer one question regarding a potential student’s misconception.