PCMI December Outreach Weekend

24-25 March2018

Math!

Survivor Time

URL: go.edc.org/survivor21

Shared Websites:

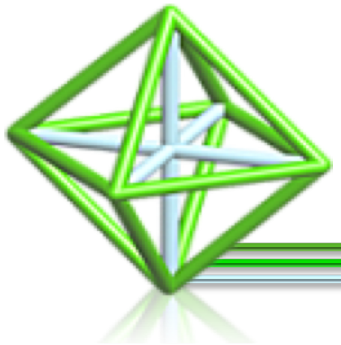
Projects.ias.edu/PCMI

Past PCMI problem sets

Illustrative Mathematics

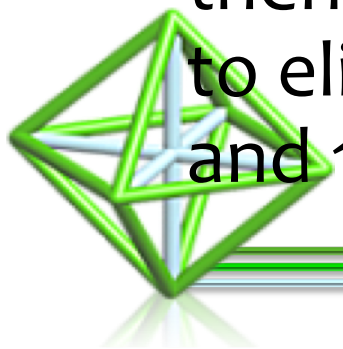
Past TLP Summer Sessions:

http://projects.ias.edu/pcmi/hstp/previous.html



Games Games Games! *What do you notice? Wonder? What are your questions?*

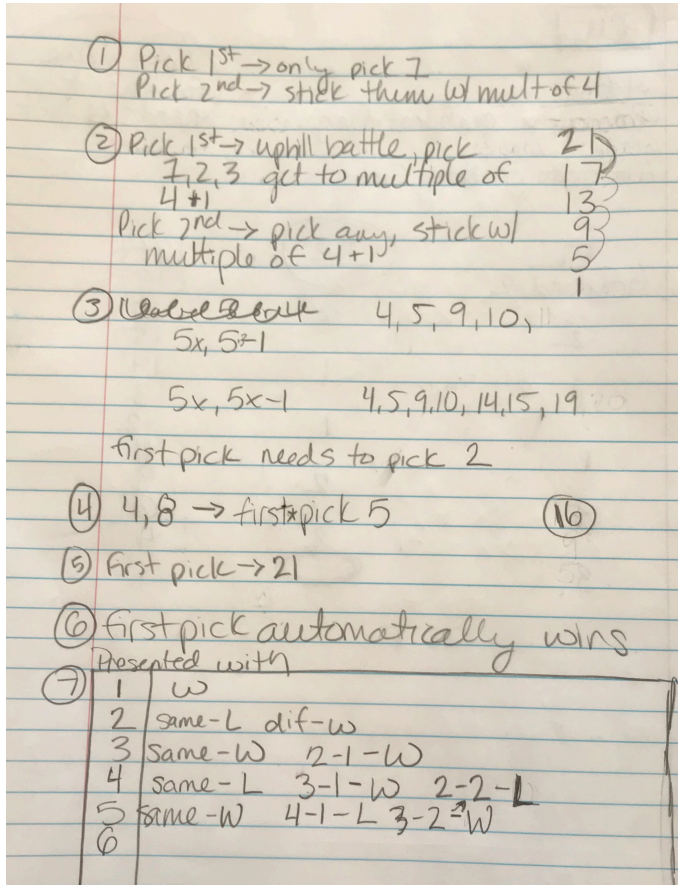
- Higher numbers, you have to completely work out all the possibilities to see if it breaks down to an earlier smaller case (e.g. Move X is equivalent to Y in the earlier game).
- A lot of our methods involved matching or reacting to the other person to make groups of 4 or 8.
- I wonder if there is some sort of probability equation that would help me solve this? Looking at diagonals (drawing 1 color and then 2 of one color then 3 of one color, etc. set up in a diagonal to eliminate the choices and get down to last 3 – 2 of one color and 1 of another) - referencing problem 9.

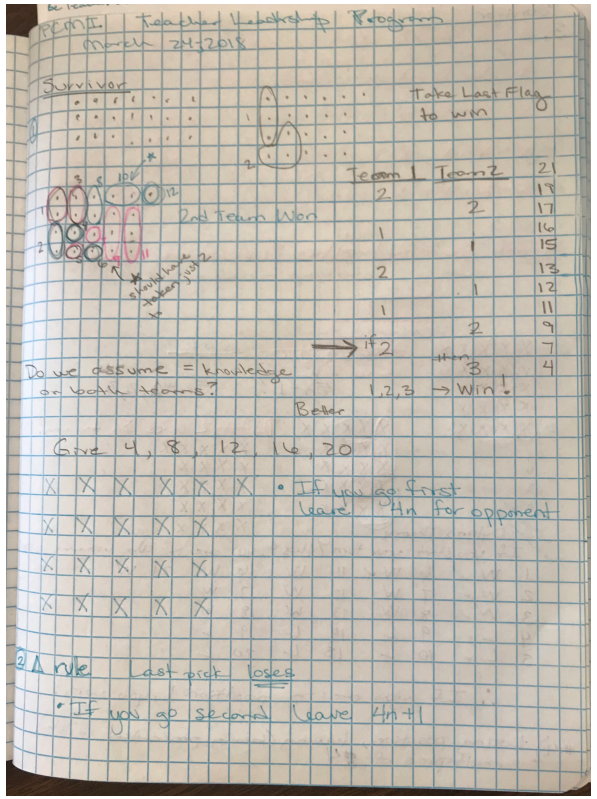


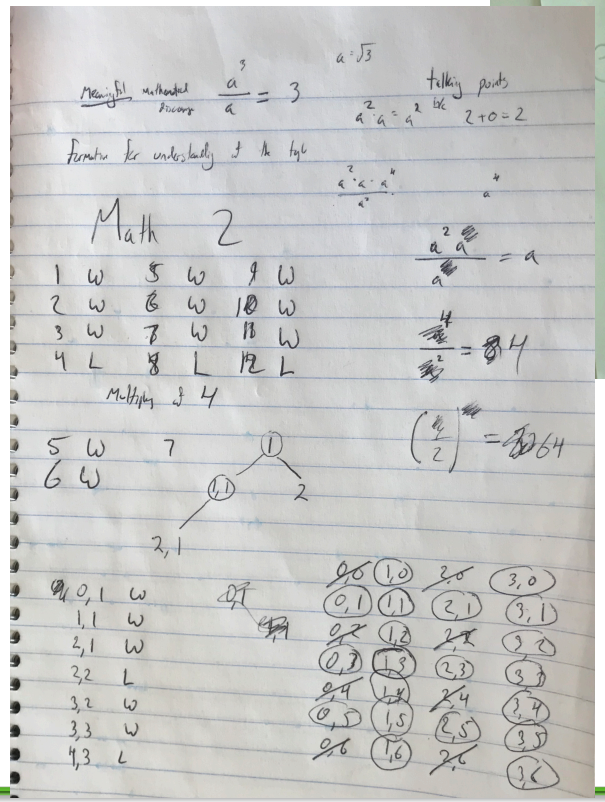
Games Games Games! *What do you notice? Wonder? What are your questions?*

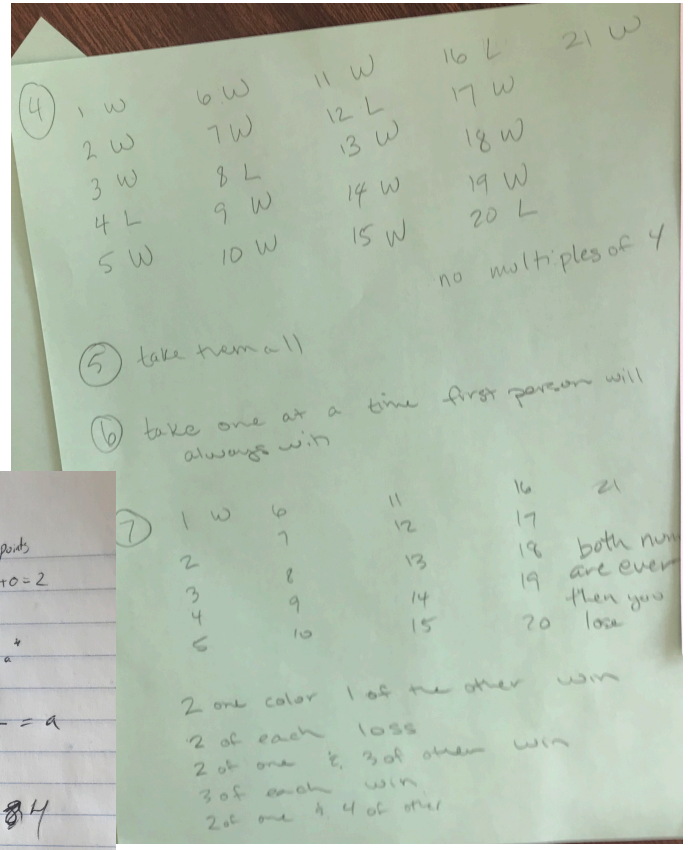
- We noticed that in #7 you want to leave the other person with an even number when the colors switch from 2 to 1. What is the critical move to make when the transition occurs from 2 colors to 1 color.
- Could this be similar to a permutation equation?

Participant Work









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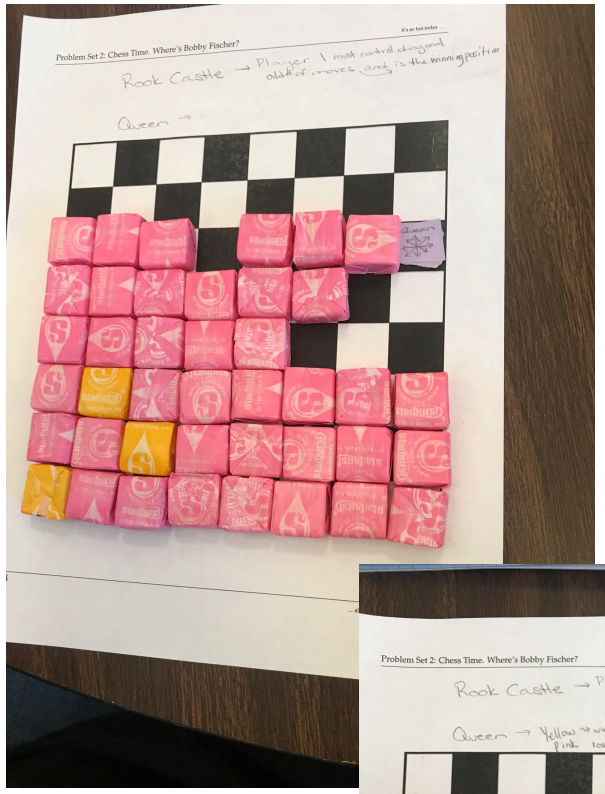

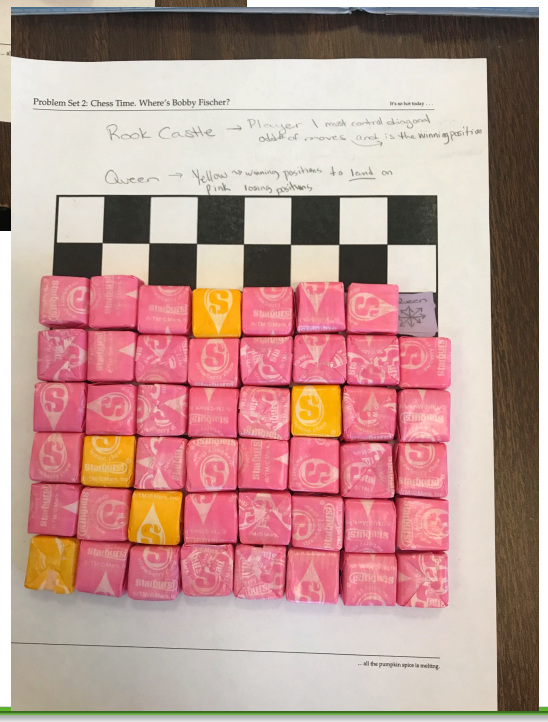

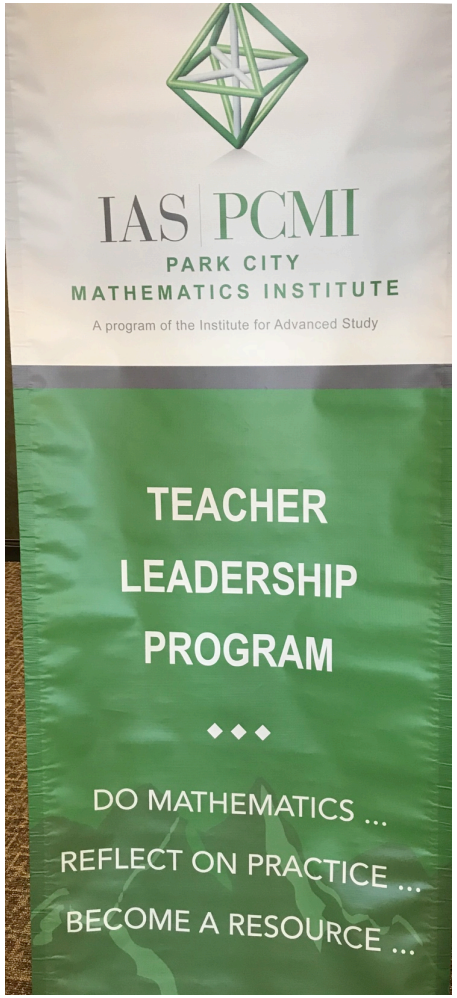

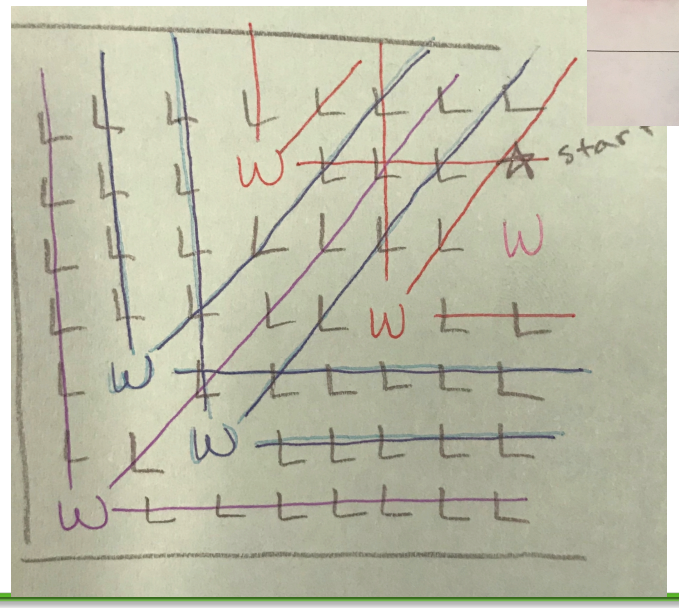

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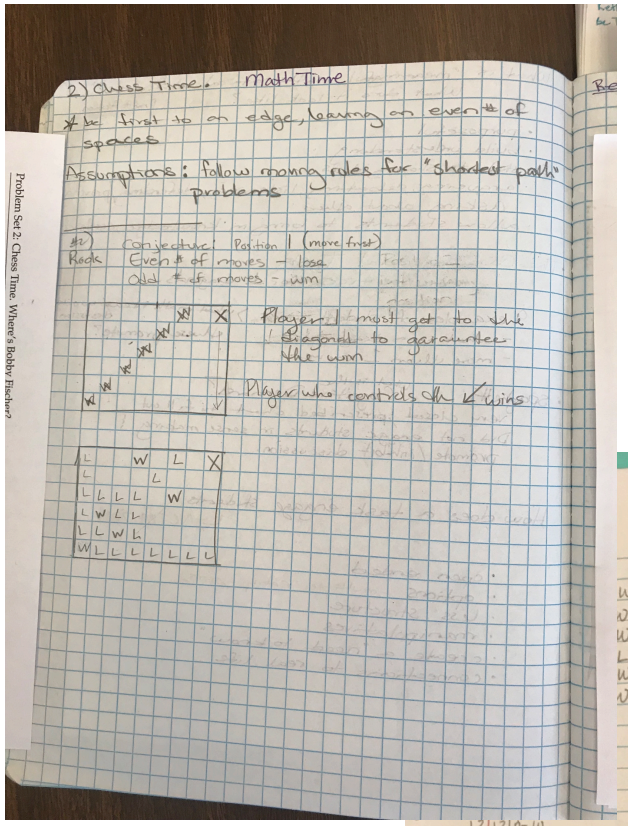

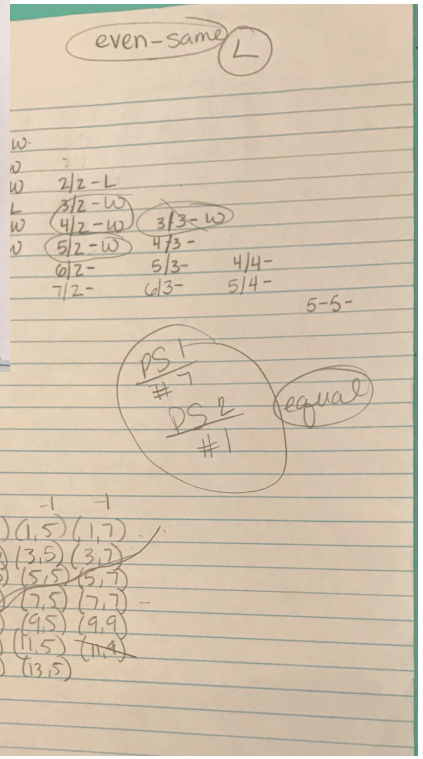

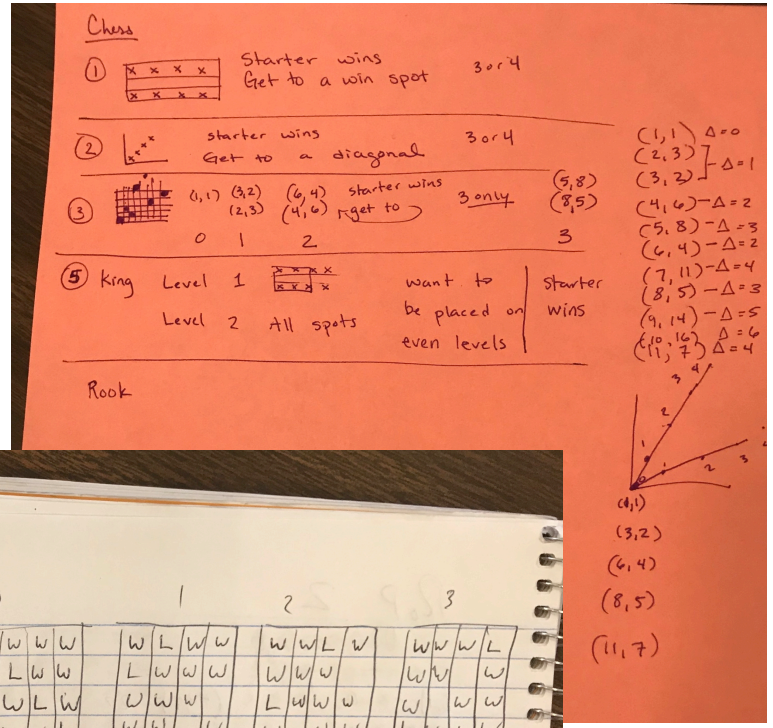

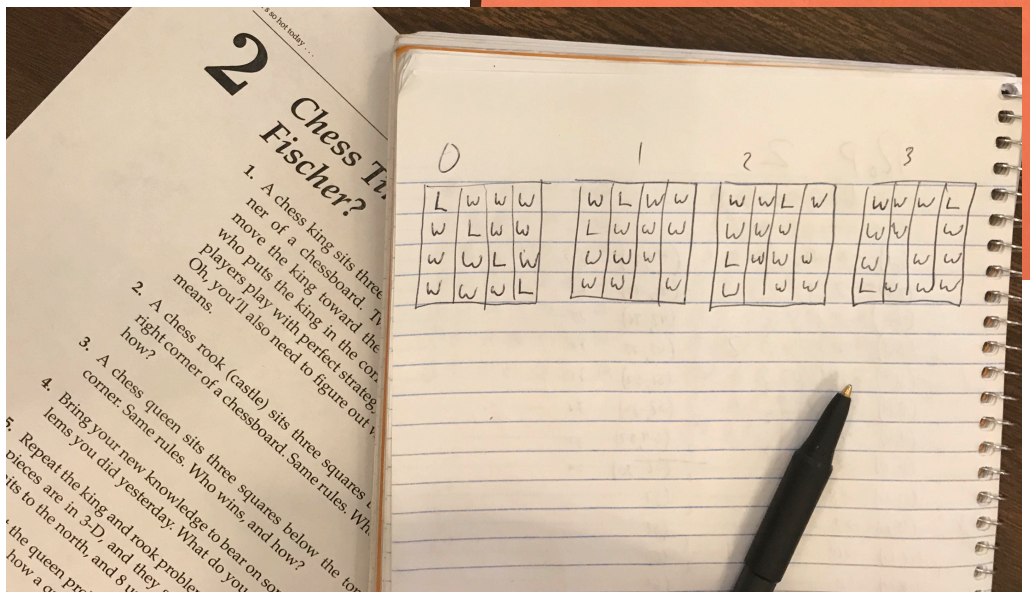

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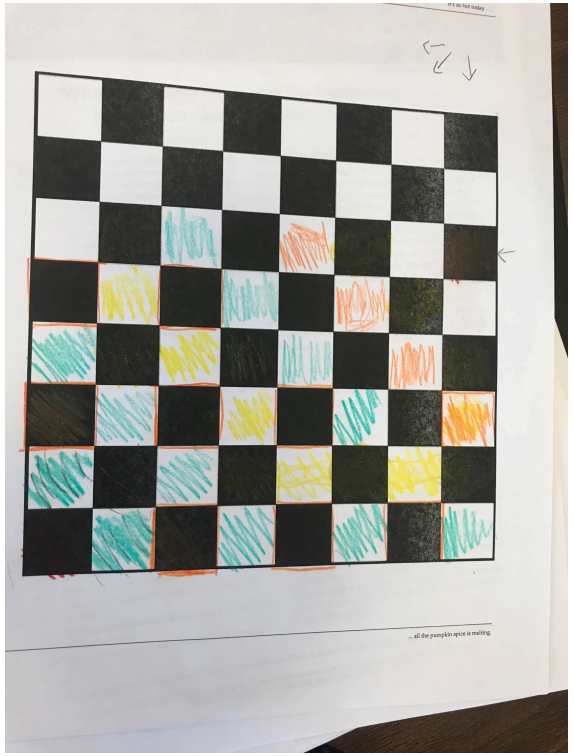

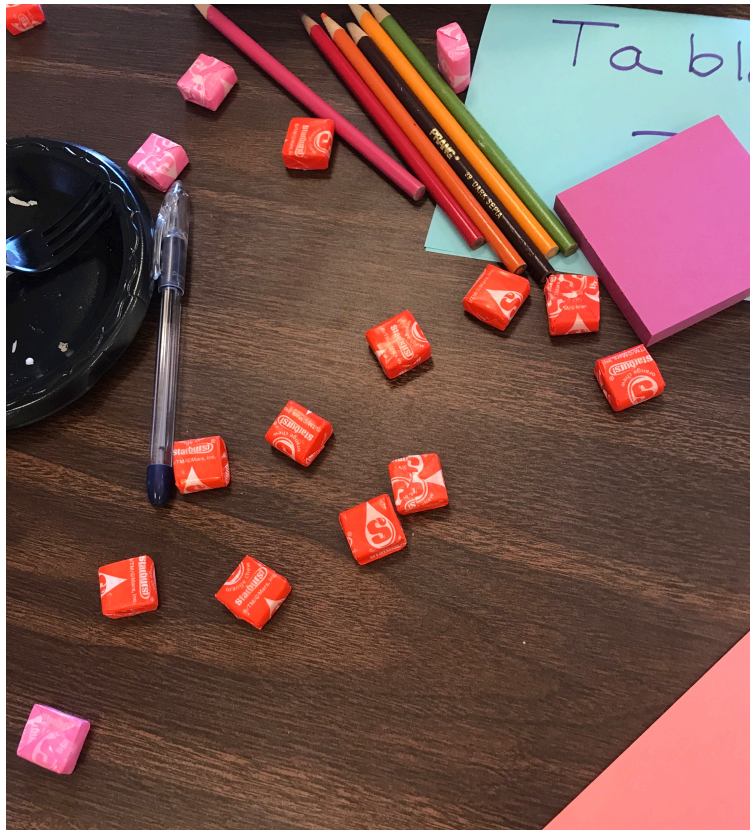

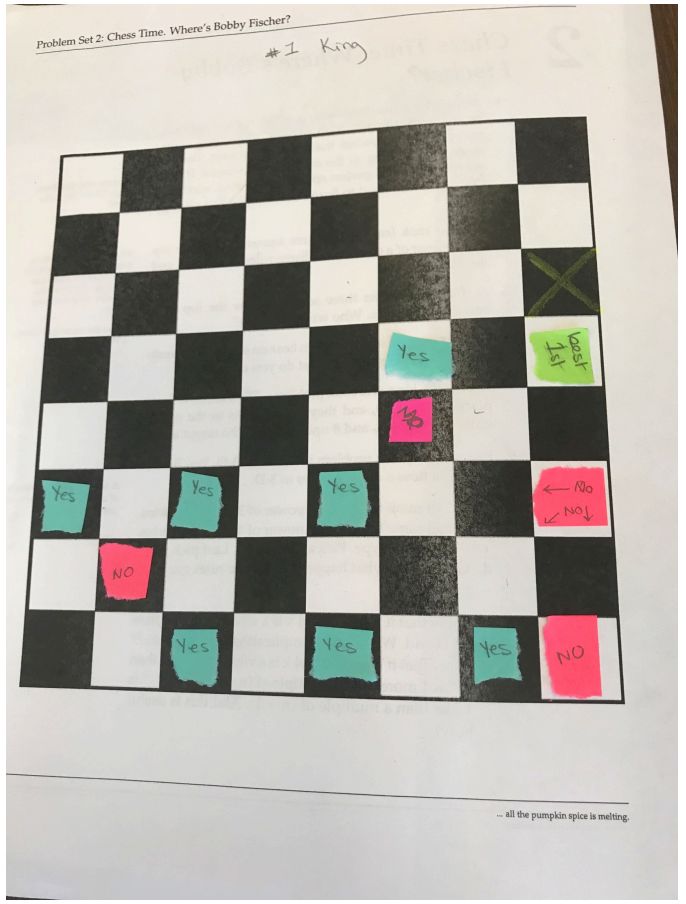

Denver Participants

Chess Time

What do you notice? What questions do you have?

- The chess and flag problems were related. The types of flags said went with directions of chess pieces.
- Question: Does every chess question have a parallel flag question?
- The more freedom a piece had to move, the less choice you had to force a winning move.
- The starting position must have something to do with it. Starting on a point (e.g. (8,5)), which are relatively prime must have something to do with it.
- Is there a relationship between the starting position and the starting number of flags in each color (when the questions are related)? And what is that relationship?

Pythagorean Triples

- I didn't understand the Eisenstein triples.
- There was some relationships with the mod 4s. All the PPT were a combo of 3, 0, and 1. Hypotenuse was always 1 in mod 4.
- The multiple of 3, 4, and 5 is in every PPT. (not necessarily distinct numbers).
- The hypotenuse cannot be a multiple of 3 or 4. And must be odd.
- If the short leg is even, then the other leg has to be odd (and vice versa).
- What Becky said…