Intro to Proofs Day5 Outline (This class meets for 1 hour and 50 minutes.)

**Need 2.4 worksheets, synthesis to hand back, snacks/pens/cards, pennies**

**Present Synthesis Activities** [0-20 minutes]

* Section 2.2 #1 (a)
  + (a) Original: If a =5 then a^2=25
  + (a) Converse: If a^2 = 25 then a = 5 (not the same truth value)
  + (a) Contrapositive: If a^2 \neq 25 then a \neq 5 (same truth value)
  + (a) Negation: a = 5 and a^2 \neq 25 (opposite truth value)
* Section 2.2 #1©
  + Original: If a\neq b then a^4 \neq b^4
  + Converse: If a^4\neq b^4 then a \neq (not the same truth value)
  + Contrapositive: If a^4 = b^4 then a = b (same truth value)
  + Negation: a \neq b and a^4 = b^4. (opposite truth value)

TALK ABOUT COUNTEREXAMPLES HERE!!!

* Section 2.2 #3 (f) and (h)
  + (f) If you graduate from college, then you will get a job or you will go to graduate school. Negation: *You graduate from college and you do not get a job and you do not go to graduate school.*
  + (h) If you clean your room or do the dishes then you can go to see a movie. *Negation: You clean your room or do the dishes and do not go see a movie.*
* Section 2.3 #1 (a), (b), (e), and (f)
  + (a) {x \in R | 2x^2 + 3x-2 = 0} = {-2, 0.5)
  + (b) {x\in \Z | 2x^2 + 3x-2 =0} = {-2}
  + (e) {y\in \Q | |y-2| = 2.5} = {4.5, -0.5}
  + (f) {y\in \Z | |y-2|<= 2.5} = {0,1,2,3,4}

**Discuss proof portfolio** [20-25 minutes]

* Show example.
* Do another example of a counterexample: If a is even and b is odd then a+b is even.

**Section 2.3 – Sets** [25-40 minutes]

* Go over subset/element again, and Activity 3
* Discuss how to write a set in set builder notation given a set in roster notation. (What set do they all live in? What’s the rule?)
* They do Activity 3. Present?

**Discuss Preview Activity** [40-50 minutes]

* Go over slides 7 and 8 and 9!!!

---------------------------------BREAK ---------------------------------------------------

**Section 2.4 – Working with Quantifiers** [60-100 minutes]

* They work on 2.4 worksheet, regroup as needed

**Play, Conjecture, Prove** [100-110 minutes]

* Do penny trick!

For next time: SA5: Section 2.2 #6 on page 50. Section 2.3 #2 on page 61. Section 2.4 #2 (a) – (c) on page 74.

PA5: Divides (Section 3.1)