Intro to Proofs Day 2 Outline (This class meets for 1 hour and 50 minutes.)

**Need cards, notecards with logical equivalencies, writing guidelines (pink), writing guidelines checklist (pink), 1.2 and 2.2/2.2 worksheets**

**Syllabus Discussion** [0-10 minutes]

* *Questions from Preview Activity: Fill in Wednesday at 9AM*

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* *Group Norms*
  + On slide

**Present Synthesis Activities** [10-20 minutes] (Volunteers present)

* Exercise 3: (a) If 10<7 then 3-4 (TRUE), (b) If 7<10 then 3=4 (FALSE), (c) If 10<7 then 3+5 = 8 (TRUE), (d) If 7<10 then 3+5 =8 (TRUE).
* Exercise 7 (a)-(c): If f is a quadratic function of the usual form and ac<0 then the function f has two x-intercepts:
  + (a) g(x) = -8x^2 +5x-2. Note that (-8)\*(-2)=16>0 so nothing concluded
  + (b) h(x) = -1/3 x^2 + 3x. Note that (-1/3)\*0 = 0 which is not less than 0 so nothing concluded
  + (c) k(x) = 8x^2-5x-7. Note that (8)(-7)=-56<0 so the theorem can be applied and the function has 2 x-intercepts

**Section 1.1 – Page 3** [20-35 minutes]

* Work in groups on page 3 of the Section 1.1 worksheet
* Go over as a class.
* Skill L1 on quiz on Monday

**Closure** [35-50 minutes]

* Hand out 1.2WS while they discuss answers to PA2.*Fill in Wednesday at 9AM*
* Go over PA (Yes, No, Yes) – most right. Question 3: If two rational numbers are subtracted then the result is a rational number. Whenever the hypothesis is true the conclusion is true. (This is mostly how we’ll prove things, because the only thing we want to avoid is having the hypothesis be true and the conclusion be false).
* They read and do page 1, compare answers when you are ready.

TAKE A BREAK (10 minutes)

**Even – Odd Proofs** [60-80 minutes]

* Go over PA of even and odd (slides 4 and 5). Want to emphasize that the thing you are multiplying by has to be an integer! *Fill in Wednesday at 9AM*
* Do Know-show table for Theorem 1 together
  + Write what you know at the top and what you want to show at the bottom.
  + Work forwards and backwards (asking forwards questions – what can I do next? And backwards questions – what comes before this step?)

**Writing Guidelines** [80-95 minutes]

* They do page 3
* Hand out writing guidelines and checklist

**Type 0,1,2 integers** [95-110 minutes]

* 6 minutes to read and think to yourself. Do an example or two.
* 14 minutes to talk it out and try to prove it.
* Have someone present?

**Truth Tables** [If time]

* *Fill in Wednesday at 9AM* (slide 5)
* Hand out 2.1/2.2 worksheet
* Try to fill in truth tables for each of the things with logic. I’ll check in.
* Work through pages 1-2 with your group.

***Next time:*** Logical equivalence notecards.

For next time: Quiz L1, L2, SA2 Section 1.1 #10, Section 1.2 #4b, PA2 – read writing guidelines, download LaTeX (or get Overleaf)