Intro to Proofs Day 21 Outline (This class meets for 110 minutes.)

**Need: stuff to hand back, 6.4 (composition) WS,**

PART 1: Synthesis (0-10 minutes)

**Section 7.2 Exercise 4**

* xRy if and only if |x| + |y| = 4
  + Not reflexive because 7 is not related to 7 (among other things)
  + Symmetric because if |x|+|y| = 4 then |y|+|x|=4.
  + Not transitive because |1| + |3| = 4 and |3|+|1| = 4, but |1|+|1| \neq 4

PART 2: Proving Equivalence Relations (10-50 minutes)

**Set up Proof that congruence is an equivalence relation**

* First we will show that ~ is reflexive. Let a in Z. Then…
* Next we will show that ~ is symmetric. Let a,b in Z and suppose that a~b. We will show that b~a
* Finally we will show that ~ is transitive. Let a,b,c in Z and suppose that a~b and b~ c. We will show that a~c.
* Have someone present? Or go over.

**Work on 2 conjectures on page 4 of 7.1/7.2 worksheet**

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

PART 3: Preview Activity (60-70 minutes)

**Discuss Preview Activity:**

* Go through snapshots

PART 4: 7.3/7.4 Worksheet (70-95 minutes)

**They work on worksheet**

PART 5: Quiz (95-110 minutes)

**No preview activity**

**Synthesis Activity:** Section 7.2 #5 |a-b|<= 3 an equivalence relation?, Section 7.3 #7 (a) –(c) (x,y in R and x~y if x-y\in Q). Section 7.4 Exercise 1b (table for Z\_7, if we get to congruence arithmetic)

**Quiz Monday:** S3 (last chance), S4 (second chance), S5 (first chance), S6 (first chance)