Chapter 4.1
Wednesday, Week 3

Warmup

1. If I have 7 friends and 30 cookies, and I divide the cookies as evenly as possible among my 7 friends, how many cookies will be left over?

2. True or false: $31103 \times 20775 = 646164821$

3. Today is Wednesday. What day of the week will it be 1440 days from now?

4. Starting at 12:00, I watch 15 movies that last 1 hour and 55 minutes each, with no time in between movies. What will the minute hand of my clock say when I am done?

Modular Arithmetic

What is $(-15) \pmod 7$? Should it be 6 or -1?

True or False: if $5a \equiv 5b \pmod{12}$ then $a \equiv b \pmod{12}$.

True or False: if $8a \equiv 8b \pmod{12}$ then $a \equiv b \pmod{12}$.

Prove that the product of two odd numbers is odd... the easy way! (What does $\mathbb{Z}_2$ have to do with odd and even numbers?)

What is n^2 (mod 4)? What is n^2 (mod 3)? (4 and 3 cases, respectively)

Prove that 20101010103 is not a perfect square, using the above.