Chapter 4.3
Thursday, Week 3

Warmup

Evaluate:

1. $7^5 \pmod 3$
2. $8^5 \pmod 3$
3. $13 \cdot 994 \pmod{998}$
4. $2^{88} \pmod 7$

True or false:

1. $7|10n$ if and only if $7|n$.
2. $8|13n$ if and only if $8|n$.
3. If $5|ab$ then $5|a$ or $5|b$.
4. If $12|ab$ then $12|a$ or $12|b$.

gcd, Linear Combinations

If you have some 10-gallon jugs and some 3-gallon jugs, what is the smallest amount of water you can measure accurately?

If you have some 36-gallon jugs and some 16-gallon jugs, what is the smallest amount of water you can measure accurately?

If you have some 55-gallon jugs and some 17-gallon jugs, how can you measure out 1 gallon exactly?

The Prime Property

Find all $n \in \mathbb{Z}_8$ such that $n^2 = 1$.

Find all $n \in \mathbb{Z}_{11}$ such that $n^2 = 1$.

True or false: if $ab \equiv 0 \pmod{15}$ then $a \equiv 0 \pmod{15}$ or $b \equiv 0 \pmod{15}$.

True or false: if $ab \equiv 0 \pmod{17}$ then $a \equiv 0 \pmod{17}$ or $b \equiv 0 \pmod{17}$.