Problem Set 9: Discrete Mathematics Name_____ ID_____

1. For m = 6 and n = 15, list some positive linear combinations mx + ny for integers x, y. What is the smallest positive linear combination you can get? What is gcd(m, n)?

2. Show that if d|rnn, then d|gcd(m,d).n.

3. Let d,d' be relatively prime. Show that if d|n and d'|n, then dd'|n.

4. Show that gcd(gcd(ℓ, m), n) = gcd(ℓ, gcd(m, n)).

5. Compute the remainder when 5^{2015} is divided by: (i) 3 and (ii) 11

6. Show that 15 does not have a multiplicative inverse for modulus 6.