Lesson 12

(1) Use the Euclidean Algorithm to compute the following gcd's:

   (a) $\gcd(216, 111)$.

   (b) $\gcd(1001, 11)$.

   (c) $\gcd(663, 5168)$.

   (d) $\gcd(1357, 2468)$.

   (e) $\gcd(733103, 91637)$.

(2) If p is a prime, and n is any integer, what are the possible values of $gcd(p, n)$? Hint: Try a few experiments with specific numbers to spot the correct answer. Alternatively, think about the positive integers that can divide a prime. Warning: In the notation $\gcd(a, b)$, do not assume that $a \geq b$. The two parameters a and b can be written in either order: $\gcd(15, 12) = \gcd(12, 15) = 3$.

(3) Determine $gcd(6123, 2913)$ and write it as a linear combination of 6123 and 2913.

(4) What can you conclude about $\gcd(a, b)$ if there are integers s, t such that $as + bt = 8$?

(5) What is the smallest positive integer that can be written as a linear combination of 2191 and 1351?

(6) (bonus) If n is a positive integer, what is $\gcd(n, n + 1)$? Explain your answer.