1. Use the well-ordering property to show that there does not exists an infinite strictly decreasing sequence of non-negative integers.

2. Like in chapter 7, let $\mathbb{E} = \{\ldots, -4, -2, 0, 2, 4, \ldots\}$.

   (a) Write down the first 10 "primes" (positive elements in $\mathbb{E}$ that are not the product of two elements in $\mathbb{E}$.)

   (b) Make a conjecture about when a number is an element of $\mathbb{E}$ is prime. (Hint: There is a very simple condition.)

   (c) Prove this conjecture.

3. Suppose p is prime and $m > 0$ with $p \not| m$ then prove from the definition of gcd that $\gcd(m, p) = 1$.