1. Use the Well-Ordering Property of integers to prove that every integer greater than 1 is divisible by a prime number. (Hint: For an integer \( n \), consider the set of all factors of \( n \) greater than 1.)

2. For each of the following, find the integer \( x \) with \( 0 \leq x \leq 6 \) such that the congruence holds (Don’t use a calculator, use modular arithmetic to simply the calculations):
   
   (a) \( x \equiv 88 \pmod{7} \)
   (b) \( x \equiv -88 \pmod{7} \)
   (c) \( x \equiv 8^2 \pmod{7} \)
   (d) \( x \equiv 8^3 \pmod{7} \)
   (e) \( x \equiv 8^{10} \pmod{7} \)
   (f) \( x \equiv 6^{11} \pmod{7} \)

3. Suppose \( a \) and \( b \) are integers, and suppose \( m \) is a positive integer. Prove that \( a \equiv b \pmod{m} \) if and only if \( a \mod m = b \mod m \).