CS235: pset-1, Section 1 #2, 7, 11, 14 (Due: September 12th)

Exercise 1.2. Let n be a composite integer. Show that there exists a prime p dividing n, with $p \leq n^{1/2}$.

Proof: Let n be a composite integer $\therefore n = ab$ for some integers $a, b \mid 1 < a, b < n$.
$a, b \leq n^{1/2}$ must hold, or else $ab > n$.

$n > 0 \therefore n$ can factor to powers of primes p (Fundamental Theorem of Arithmetic). If p is a composite, factor again until a single prime p' is found. $p' \mid p$ then $p' \mid n$ and $p' \leq n^{1/2}$. ■.