Homework on §7–8
Due: Thursday, February 21

A. Let $d \mid a, d \mid b$. Show that

$$\gcd(a, b) = d \gcd\left(\frac{a}{d}, \frac{b}{d}\right).$$

B. Silverman 7.3.

C. Recall that for $n \in \mathbb{N}$, $n!$ means $n \cdot (n-1) \cdots 2 \cdot 1$. How many 0s does 100! end in?

D. Let $n \in \mathbb{N}$ have prime factorization $p_1^{e_1} p_2^{e_2} \cdots p_r^{e_r}$, where the p_i are distinct primes and $e_i \geq 1$. Show that n is a perfect square if and only if $2 \mid e_i$ for all i.

E. Silverman 8.5–8.7.