Homework
due on Monday, September 17

Problem 1. Let p, q be distinct prime numbers. Prove that

$$p^{q-1} + q^{p-1} \equiv 1 \pmod{pq} .$$

Problem 2. Let m, n be positive integrs such that $m|n$. Prove that $\phi(m)|\phi(n)$ and that $\phi(mn) = m\phi(n)$

Problem 3. Compute $\phi(2592)$, $\phi(111111)$, $\phi(15!)$.

Problem 4. Prove that 561 is a composite number and $a^{561} \equiv a \pmod{561}$ for every integer a.

Read section 1.7, 1.9 of Lauritzen's book.