Proposition: If $p$ and $q$ are prime (where $p$ and $q$ are distinct), then

$$\varphi(pq) = (p - 1)(q - 1).$$

RSA Encryption:
Choose two distinct large primes $p$ and $q$.
Find $k$ such that $1 < k < \varphi(pq)$ and $\gcd(k, \varphi(pq)) = 1$, and find a $d$ such that $kd \equiv 1 \pmod{\varphi(pq)}$.
Keep $d$ private. Make $k$ and $n = pq$ public.
The sender computes $r \equiv m^k \pmod{n}$, $r < n$ and sends $r$.
Decode $x \equiv r^d \pmod{n}$, $x < n$. 