Homework 4, due September 13

(1) Show that if $a|n, b|n$, and $\gcd(a, b) = 1$, then $ab|n$.
(2) Let a be a positive integer with $\gcd(a, 26) = 1$. Suppose $A = 0, B = 1, C = 2$, etc. Why will the function $x \mapsto ax^2 \pmod{26}$ not work as a cipher system? For example, if $a = 11$, then $C = 2 \mapsto 11 \cdot 2^2 \equiv 18 \pmod{26} = S$.
(3) For the following ciphertext, the first part was encrypted by a shift cipher. Decrypt both parts.

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DROXOHDMSZROBSCKPPSXODROPSBCDDGYVODDOBCKBOIY
VJLKNATDXKHTHAXAPIHTYTJHCHTNIRJTCFXKCNHAIVFJKKXFC
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