Elementary Number Theory
Math 175, Section 30
Autumn Quarter 2008
Written Exercise from Week 5

Exercise 0.0.1 For the following, assume $a, b, n \in \mathbb{Z}$, and assume $n > 1$. Consider the statement:

If $a|n$ and $b|n$, then $ab|n$.

This statement is clearly false in general (let $a = 2$, $b = 4$, and $n = 12$). Find necessary and sufficient conditions on a and b that make the statement true, and prove your results.