

1. Prove that if $ab|ac$, then $b|c$, where $a, b, c \in \mathbb{Z}$ and $a \neq 0$.
2. Prove that if $a|b$ and $b|c$, then $a|c$.
3. Verify that 101 is prime, but try not to do too much work. *Hint: Prove by contradiction. Argue that if this is not true, then there is a prime that divides 101, but this prime is not very big (how big?). Then rule out cases.*