Theorem 39: If $a,b \in R$ then $a(-b) = -(ab)$ and $(-a)b = -(ab)$

Theorem 40: If $a \in R$ then $-(-a) = a$

Theorem 41: If $a,b \in R$ then $-(a+b) = -a + -b$

Theorem 42: If $a,b \in R$ then $(-a)(-b) = ab$

Definition: Saying that ring *R*, has the **multiplicative cancellation property** means: for $a,b,c \in R$, if $ab = ac$ or $ba = ca$ then $b = c$

Theorem 43: A ring *R* has the multiplicative cancellation property if and only if *R* has no zero divisors.

Theorem 44: If $S \subseteq R$ and $T \subseteq R$ are both subrings of *R*, then $S \cap T$ is a subring of *R*.

Theorem 45: If *R* is a ring and $a \in R$ then the set $aR = \{ax \mid x \in R\} \subseteq R$ is a subring of *R* and the set $Ra = \{xa \mid x \in R\} \subseteq R$ is a subring of *R*.

Definition: If *R* and *S* are rings and $f : R \to S$ is a function and $a,b \in R$, then *f* is a ring **homomorphism** if $f(a+b) = f(a) + f(b)$ and $f(ab) = f(a)f(b)$.