Definition MunkTop.22.1: If (X,T) and (Y,T') are topological spaces and p is a surjection from X to Y then p is a *quotient map* if and only if for every $U \subseteq Y$, $U \in T'$ if and only if the range of the converse relation to p when restricted to U is in T.

Definition MunkTop.22.2: If (X,T) and (Y,T') are topological spaces and p is a surjection from X to Y and $C \subseteq X$ then C is *saturated* if and only if for every $y \in Y$, if C intersects the range of the converse relation to p when restricted to $\{y\}$ then the range of the converse relation to p when restricted to $\{y\}$ is contained in C.

Definition MunkTop.22.3: If (X,T) and (Y,T') are topological spaces and p is a function from X to Y then f is an *open map* if and only if for every $U \in T$, the range of f when restricted to U is in T'.

Definition MunkTop.22.4: If (X,T) and (Y,T') are topological spaces and p is a function from X to Y then f is a *closed map* if and only if for every A such that A is a closed set in (X,T), we have that the range of f when restricted to A is a closed set in (Y,T').

Definition MunkTop.22.5: If (X,T) is a topological space and p is a surjection from X to A then *the qutotient topology on A induced by p* is the unique T' such that T' is a topology on A and p is a quotient map.

Definition MunkTop.22.6: If (X,T) is a topological space and X^* is a partition of X and p is a surjection from X to X^* and for every $x \in X$, $p(x) = (!w \in X^*)x \in w$ and T equals the qutotient topology on X^* induced by p then (X^*,T) is a *quotient space* if and only if $\top$.