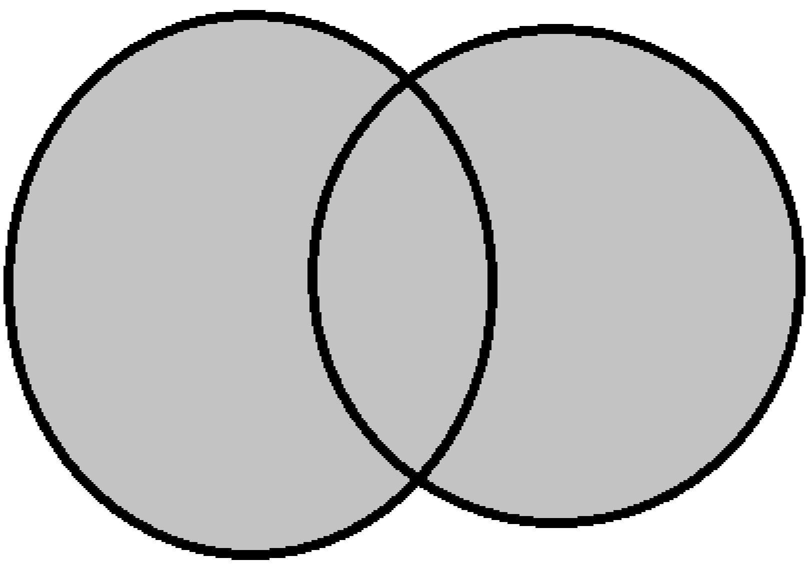
== Section 2.1 Basic Set Theory number 10 ==

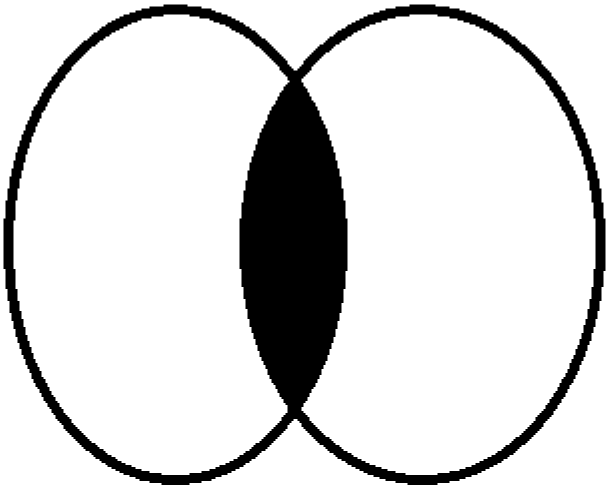
Prove that XU(Y∩Z)=(XUY)∩(XUZ)

Definition: A **set'**s any collection of elements for which we can always tell whether an element is in the set or not.

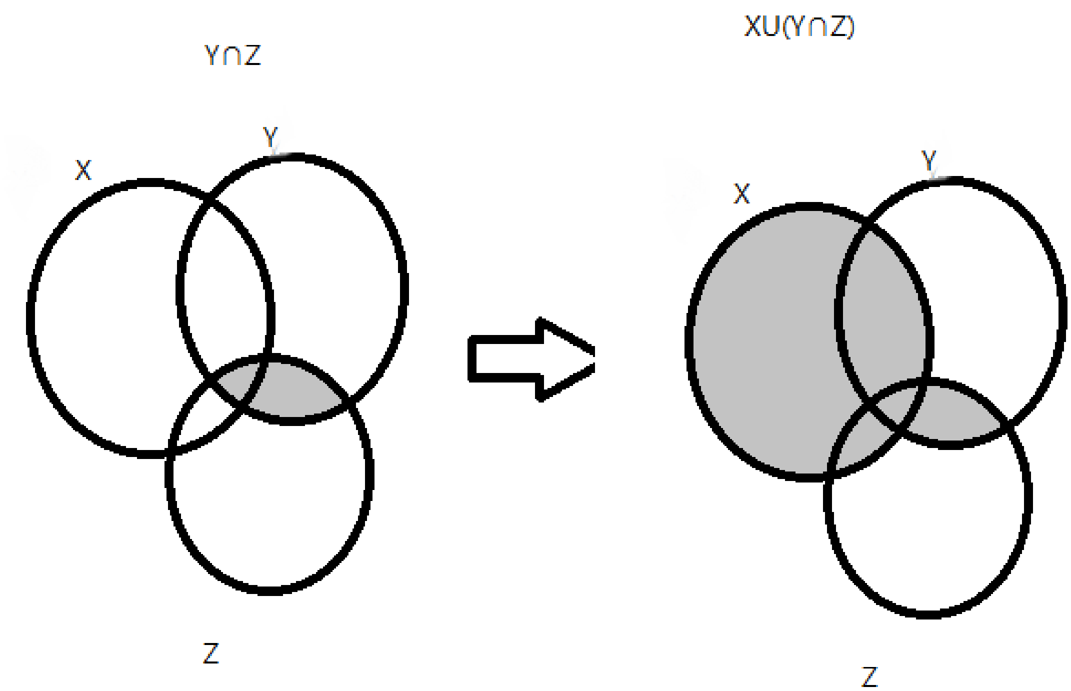
Definition: Given two sets X and Y, X **union** Y is the set of all the elements in X and all the elements in Y. We denotes this by XUY.



Definition: Given two sets X and Y, X **intersect** Y is the set of all the elements that are simultaneously in X and in Y. we denote this by X∩Y.



Now to find the left side, we know that X is union to Y intersection Z. This means, that everything is in X and the elements intersecting at X and Y.



On the other right side of the equation, the elements are in the intersection of X union Y and X union to Z. If we were to make a diagram of X union Y and another diagram of X union Z, we would see that X

Union Y is everything in X and Y, similarly, X union Z is everything in X and Z. If we were to combine these two diagrams together, we see that the diagram looks exactly like the left hand equation, XU(Y∩Z)