Set Notation & Set Operations

A set is a collection of objects. The object is a member or element of the set.

The roster method of writing a set encloses the list of elements in a set of braces { }.
{1, 2, 3, 4} or {2, 4, 6, 8 …}

The symbol $\in$ means element of, $x \in \Re$, means x is an element of the real numbers. The symbol | means such that. This way we can list a set without stating every element. See example at the bottom of the page.

The empty set or null set is a set that contains no elements, ø or { }.

The union, U, of two sets, A U B, is the set that contains all the elements of set A & all the elements of set B, only listing each element once.

The intersection, ∩, of two sets, A ∩ B, is the set that contains the elements that are common to both of the sets.

A = {1, 3, 5, 6, 7} B = {3, 4, 6, 8, 9} C = {9, 10, 11…}

A U B = {1, 3, 4, 5, 6, 7, 8, 9}
A ∩ B = {3, 6}
A ∩ B = { } or ø

Set Builder Notation: { $x \in C \mid x$ is odd} means: the set of x in set C, such that x is odd and equals in Roster Notation {9, 11, 13, 15…}

The use of set notation and operations makes it easier for everyone to quickly and easily see what items are being discussed.

For example, if we were to get ready to prepare taxes for someone, we would ask them to bring all their medical receipts for 2007. This set is very easy for us to understand. If instead you were to ask the person to bring their receipts for 2007 from individual places, you would have to know every place that they had a medical expenditure. If they do not have any receipts for medical expenses for 2007, it would be an empty set.

This same idea carries over into mathematical sets, and we use sets when we talk about solutions to equations and inequalities.