* **Union of Sets :**
* The **union** of two or more sets contains all the elements in all the sets.
* The union of sets ***A*** and ***B*** is the elements in either set ***A***or ***B***or **both**.
* Unions of sets are denoted by the symbol **∪.**
* **What is the union of set *A*, the outcomes of rolling a dice, and set *B*, all positive integers between 7 and 11?**
* set ***A***= {1, 2, 3, 4, 5, 6}
* set ***B*** = {7, 8, 9, 10, 11}
* ***A* ∪ *B* = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}**
* For sets ***A***, ***B***, their***union A* ∪ *B***  is the set containing all elements that are either in ***A***, or

in ***B*** (or, of course, in both).

* Formally**, ∀*A*, *B*: *A* ∪ *B* = {*x* | *x* ∈ *A*∨*x*∈*B*}.**
* Note that ***A* ∪ *B***contains all the elements of ***A***and it contains all the elements of ***B***:  
  **∀*A*, *B*: (*A*∪*B* ⊇*A*) ∧ (*A*∪*B* ⊇*B*)**
* {a, b, c} ∪ {2, 3} = {a, b, c, 2, 3}
* {2, 3, 5} ∪ {3, 5, 7} = {2, 3, 5, 3, 5, 7} = **{2, 3, 5, 7}**
* Formal definition for the union of two sets:  
  **A U B = { *x* | *x* ∈ A or *x* ∈ B }**
* Further Examples
* {1, 2, 3} U {3, 4, 5} = {1, 2, 3, 4, 5}
* {New York, Washington} U {3, 4} = {New York, Washington, 3, 4}
* {1, 2} U ∅ = {1, 2}
* **Properties of the union operation**
* **A U ∅ = A Identity law**
* **A U U = U Domination law**
* **A U A = A Idempotent law**
* **A U B = B U A Commutative law**
* **A U (B U C) = (A U B) U C Associative law**