* **What is a Set?**
* A set is a group of **"objects"**.
* A collection of well-defined objects is called set. (Well defined means we must be able to decide that the object will be included in our collection on not).
* we denote any set by upper case A, B, C, ...
* Objects in the set are called elements or members.
* **Example:**
* People in a class: {Alice, Bob, Chris}
* Classes offered by a department: {CS 101, CS 202, ...}
* Colors of a rainbow: {red, orange, yellow, green, blue, purple}
* States of matter {solid, liquid, gas, plasma}
* States in the US: {Alabama, Alaska, Virginia, …}
* Sets can contain non-related elements: {3, a, red, Virginia}
* Although a set can contain (almost) anything, we will most often use sets of numbers.
* **Example:**
* All positive numbers less than or equal to 5: {1, 2, 3, 4, 5}
* A few selected real numbers: {2.1, π, 0, -6.32, e}
* **Important Sets:**
* **N** = {0,1,2, 3, …}, the set of natural numbers, non-negative integers, (occasionally IN)
* **Z** = {…, -2, -1, 0, 1, 2,3, …), the set of integers
* **Z**+ = {1,2, 3, …} set of positive integers
* **Q** = {p/q | p € Z, q € Z, and q≠0}, set of rational numbers
* **R**, the set of real numbers
* **Note**: Real number are the numbers that can be represented by an infinite decimal representation, such as 3.4871773339…. The real numbers include both rational, and irrational numbers such as π and the and can be represented as points along an infinitely long number line.