Topic 3: Sets

1) The Basics:

a) Sets Symbols:
For the following symbols sets A and B are:

    $U = \{ a, b, c, d, e, f, g, h, i, j, k \}$ *U = Universal Set

    $A = \{ a, c, e, f, g \}$ and $B = \{ c, d, f, h, k \}$

1) ∩: **Intersection:** elements that both sets have in common.

    e.g. $A \cap B = \{ c, f \}$

2) ∪: **Union:** the elements in both sets listed once.

    e.g. $A \cup B = \{ a, c, d, e, f, g, h, k \}$

3) ∈: **is an element of**

    e.g. $g \in A$ and $k \in B$

4) ∉: **is not an element of**

    e.g. $p \notin A$ and $r \notin B$

5) ∅ **or { }: null set or empty set**

    e.g. if D is the set of days of the week beginning with a 'G'

    then $D = \{ \}$ or $D = \emptyset$

6) ⊂: **is a subset of**

    If all the elements of a set are contained in another set then one set is a subset of the other.

    e.g. $\{ c, g \} \subset A$ .....because c and g are in set A

7) **': complement:** elements that are **NOT** in a set.

    e.g. $A' = \{ b, d, h, i, j, k \}$ and $B' = \{ a, b, e, g, i, j \}$

8) **A\B: Less or Set Difference (can also use A – B)**
- What elements are in set A that are **NOT** in set B?
- Order is important i.e. $A\backslash B \neq B\backslash A$

    e.g. $A\backslash B = \{ a, e, g \}$ and $B\backslash A = \{ d, h, k \}$

9) **#: Cardinal Number:** number of elements in a set

e.g. $\#A = 5$ and $\#U = 11$

b) Venn Diagrams:
- **2 Set Diagrams:**