

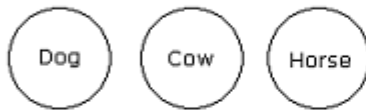
The use of venn diagram is to test your ability about the relation between some items of a group by diagrams. By good understanding of diagram we can easily solve the problem.

Some examples can be given below:-

Eg 1:

If all the words are of different groups, then they will be shown by the diagram as given below.

Dog, Cow, Horse

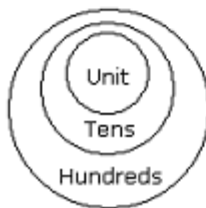


All these three are animals but of different groups, there is no relation between them. Hence they will be represented by three different circles.

Eg 2:

If the first word is related to second word and second word is related to third word. Then they will be shown by diagram as given below.

Unit, Tens, Hundreds

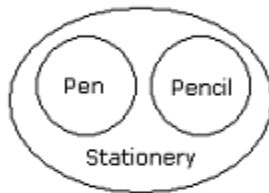


Ten units together make one Tens or in one tens, whole unit is available and ten tens together make one hundreds.

Eg 3:

If two different items are completely related to third item, they will be shown as below.

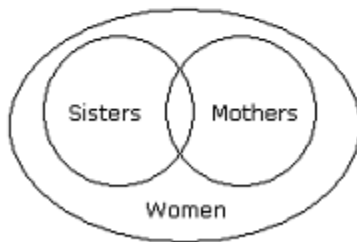
Pen, Pencil, Stationery



Eg 4:

If there is some relation between two items and these two items are completely related to a third item they will be shown as given below.

Women, Sisters, Mothers



Some sisters may be mothers and vice-versa. Similarly some mothers may not be sisters and vice-versa. But all the sisters and all the mothers belong to women group.

Eg 5:

Two items are related to a third item to some extent but not completely and first two items totally different.

Students, Boys, Girls

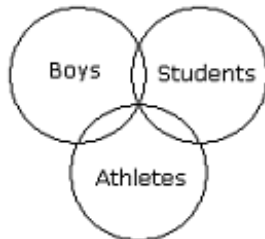


The boys and girls are different items while some boys may be students. Similarly among girls some may be students.

Eg 6:

All the three items are related to one another but to some extent not completely.

Boys, Students, Athletes

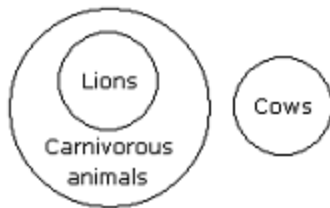


Some boys may be students and vice-versa. Similarly some boys may be athletes and vice-versa. Some students may be athletes and vice-versa.

Eg 7:

Two items are related to each other completely and third item is entirely different from first two.

Lions, Carnivorous, Cows



All the lions are carnivorous but no cow is lion or carnivorous.

Eg 8:

First item is completely related to second and third item is partially related to first and second item.

Dogs, Animals, Flesh-eaters



All the dogs are belonging to animals but some dogs are flesh eater but not all.

Eg 9:

First item is partially related to second but third is entirely different from the first two.

Dogs, Flesh-eaters, Cows



Some dogs are flesh-eaters but not all while any dog or any flesh-eater cannot be cow.

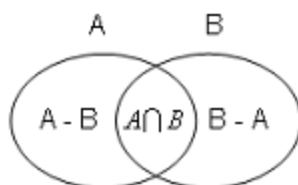
In the corresponding cases we can analyse the data using venn diagrams, which involves **set theory** .

Now let us observe the exemplary notes

The objects in a set are called the members or elements of the set .If $A = \{ 1, 2, 3, 3, 5, 6 \}$, then 1, 2, 3, 3, 5, & 6 are the members or Elements of the set A.

If $A = \{ x : x \text{ is a positive integer divisible by 5 and } x < 30 \}$ or , $A = \{ 5, 10, 15, 20, 25 \}$ then 5, 10, 15 , 20, 25 are the elements of the set A.

Observe the diagram



$A \cap B$ read as A intersection B, is the set having the common elements of both the sets A and B.

$A \cup B$ read as A union B is the set having all the elements of the sets A and B.

- are not in B. In other words, $A-B$ represents the set A exclusively.

The Number of elements of a set A is represented by $n(A)$,

- $n(A \cup B) = n(A \cup B)$
- $n(A \cap B) = n(A \cap B)$.
- $n(A-B) \neq n(B-A)$

By the above Venn diagram it is obvious that

- $n(A) = n(A-B) + n(A \cap B)$..(1)
- $n(B) = n(B-A) + n(A \cap B)$..(2)
- $n(A \cup B) = n(A-B) + n(A \cap B) + n(B-A)$ -----(3)
- Adding (1) and (2) we get,
 $n(A) + n(B) = n(A-B) + n(B-A) + n(A \cap B) + n(A \cap B)$
 or $n(A) + n(B) - n(A \cap B) = n(A-B) + n(B-A) + n(A \cap B)$ -----(4)
- From (3) and (4) we have
 $n(A \cap B) = n(A) + n(B) - n(A \cup B)$ (5)