

Venn Diagrams

There are 100 students. 38 of them read comic books. Draw a *Venn diagram* to represent this situation. What is the probability that a randomly selected student...

Venn diagram

a) reads comic books?
(call this event A)

b) does not read comic books?

Intersection of Events

Of the 100 students, 30 students play soccer. Of those, 16 do both, read comic books and play soccer (let B represent the event of “playing soccer”). How many students just play soccer? How many students just read comic books? Draw a *Venn diagram* to represent this situation.

What is the probability that a randomly selected student engages in both activities, reads comic books and plays soccer? Draw a *Venn diagram*.

What is the probability that a randomly selected student does not play soccer but does read comic books? Draw a *Venn diagram*.

What is the probability that a randomly selected student does not engage in both activities, does not read comic books or play soccer? Draw a *Venn diagram*.

Union of Events

What is the probability that a randomly selected student either reads comic books or plays soccer (does “or” include the possibility of both?). Draw a *Venn diagram*.

$A \cup B^C$ represents _____.
Draw a *Venn diagram* and find $P(A \cup B^C)$.

Now you try it!

In a group of 30 students, 17 play computer games, 10 play instruments and 9 play neither. Draw a *Venn diagram* to show this information. Use your diagram to find the probability that:

- a student chosen at random from the group plays instruments,
- a student plays both computer games and instruments,
- a student plays instruments but not computer games.

There are 25 girls in a PE group. 13 have taken aerobics before and 17 haven't taken gymnastics. One girl has done neither before. How many have done both activities?

One girl is chosen at random. Find the probability that:

- she has taken both activities,
- she has taken gymnastics but not aerobics.

4) The universal set U is defined as the set of positive integers less than or equal to 15. The subsets A and B are defined as:

$A = \{\text{integers that are multiples of 3}\}$

$B = \{\text{integers that are factors of 30}\}$

a List the elements of

i A

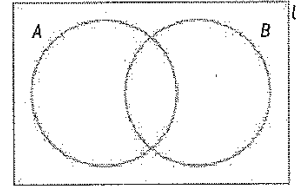
ii B

b Place the elements of A and B in the appropriate region on a Venn diagram.

c A number is chosen at random from U . Find the probability that the number is

i both a multiple of 3 and a factor of 30,

ii neither a multiple of 3 nor a factor of 30.



5) In a town 40% of the population read newspaper 'A', 30% read newspaper 'B', 10% read newspaper 'C'.

It is found that 5% read both 'A' and 'B'; 4% read both 'A' and 'C'; and 3% read both 'B' and 'C'.

Also, 2% of the people read all three newspapers.

Find the probability that a person chosen at random from the town

a reads only 'A',

b reads only 'B',

c reads none of the three newspapers.

