BASICS AND GRADE 10

$$P(A) = \frac{n(a)}{n(s)}$$

probability of event A happening

$n(a)$: number of possible outcomes in event A

$n(s)$: total number of outcomes in the sample space

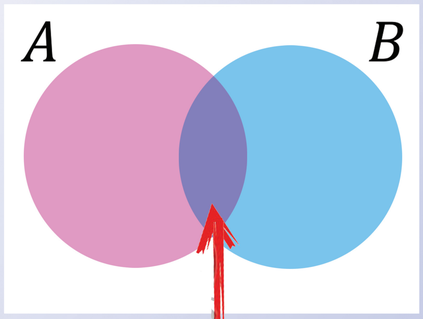
$P(A) = 1$ (certain)

$P(A) = 0$ (impossible)

Outcome - *a particular result*

Sample Space - *all possible outcomes*

Venn diagram



intersection

sample space

$$P(A \cup B) = P(A) + P(B) - P(A \cap B))$$
$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

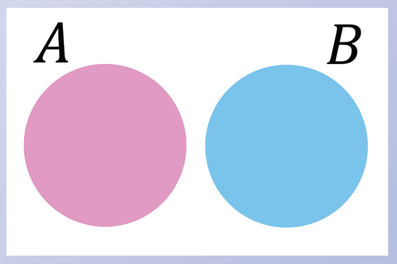
$\cup$ - union / or

$\cap$ - intersection / and

"OR is MORE"

Mutually exclusive events

No intersection



$$P(A \cup B) = P(A) + P(B)$$
$$P(A \cap B) = 0$$

Complementary events

The only 2 possible outcomes

$$P(A^1) = 1 - P(A)$$

"not A"

Example:

Heads or tails when flipping a coin

GRADE 12

Fundamental Counting Principle

A way to find the number of all possible arrangements

Example:

4 shirts, 3 skirts, 2 pairs of shoes

How many different outfits?

$4 \times 3 \times 2 = 24$

Factorial notation

$n! = n \times (n-1) \times (n-2) \times \ldots \times 2 \times 1$

Example:

$4! = 4 \times 3 \times 2 \times 1 = 24$

Dependent Events

The occurrence of one event affects the probability of another event occuring

Independent Event

The occurrence of one event has no effect on the probability of another event occuring

GRADE 11

If 2 events are independent then:

$$P(A \cap B) = P(A) \times P(B)$$

PROBABILITY