

Year 2 Applied Chp 2 - Conditional Probability

Set Notation

$P(A)$ = Probability of A

$P(A')$ = Probability of Not A

$P(A \cup B)$ = Probability of A or B

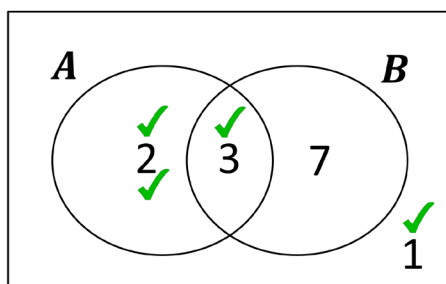
$P(A \cap B)$ = Probability of A and B

Venn Diagrams

$P(A \text{ or Not } B)$

Tick A

Tick Not B



$$P(A \text{ or Not } B) = \frac{6}{13}$$

$A \text{ or } B$ = ^{Include} ✓ or ✓✓

$A \text{ and } B$ = ^{Include Only} ✓✓

Probability Laws

If A and B are **mutually exclusive** then:

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

If A and B are **independent** then:

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

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

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

Conditional Probability

$(B|A)$

The '|' symbol reads
"given that"

$$P(B|A)$$

Find the probability of event
B given that A has happened.

Example

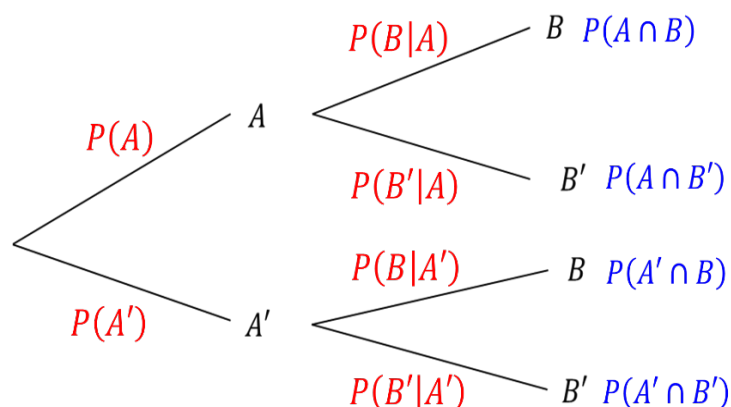
	French	Spanish
Girls	14	38
Boys	26	22

Determine the $P(G|S)$

Step 1: Highlight Spanish $\frac{\quad}{60}$

Step 2: Highlight Girls $\frac{38}{60}$
of what you have highlighted.

Probability Trees



You have two bags, the first with 5 red balls and 5 blue balls, and the second with 3 red balls and 6 blue balls.

You first pick a ball from the first bag, and place it in the second.

You then pick a ball from the second bag. Draw a tree diagram.

