

1. Goals

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

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

By the end of this week, you should be able to:

- understand the notion of a conditional probability and recognise and use language that indicates conditionality
- use the notation $P(A|B)$ and the formula $P(A \cap B) = P(A|B)P(B)$
- understand the notion of independence of an event A from an event B , as defined by $P(A|B) = P(A)$
- establish and use the formula $P(A \cap B) = P(A)P(B)$ for independent events A and B , and recognise the symmetry of independence
- use relative frequencies obtained from data as point estimates of conditional probabilities and as indications of possible independence of events

2. Theoretical components

Knowledge checklist:

- understand the definition of conditional probability.
- use the relative frequency approach to assigning probability to find the conditional probability of an event from a two-way table.
- use the formula for conditional probability.
- use the multiplication rule to find the probability of the intersection of two events.
- use the multiplication rule to find the probability of the intersection of more than two events.
- determine if two events are independent.

Videos

<https://www.khanacademy.org/math/probability/probability-and-combinatorics-topic/probability-combinatorics/v/probability-using-combinations>

Reading

Maths Quest 11 (pdf's – Google Classroom)

- Read through Section 12H on Applications to Probability. Study and make notes on Examples 26-29
- Read through Section 11E. Study and make notes on worked examples 18-20.
- Read through Section 11F on Conditional Probability. Study and make notes on Examples 21-24.

3. Practical components

Chapters 11 & 12 of **Maths Quest 11 Mathematical Methods** (pdf - Google Classroom). Do the following questions. Organise your solutions neatly in your exercise book:

12H Applications to probability

- Q's 1-7, 12-18

11F Conditional probability

- Q's 1, 3, 5, 9-12, 14, 15, 17, 19

11H Independent events

- Q's 1a, e, 2, 3, 5, 9, 16, 18

4. Investigation

In-Class in Week 5.

The in-class will be run in your last lesson of the week (Thursday or Friday).

The questions will focus on the practical components of the week (eg. Ex. 12H, 11F and 11H).