

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 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.
- Read through Section 12H on Applications to Probability. Study and make notes on Examples 26-29

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:

11F Conditional probability

- Q's 1, 3, 5, 9-12, 14, 15, 17, 19, 21

11H Independent events

- Q's 1a, e, 2, 3, 5, 9, 11, 12, 16, 18

12H Applications to probability

- Q's 1-7, 12-18

Mathspace tasks

Complete the www.mathspace.co tasks set for this week.

4. Investigation

In-Class in Week 6.

QFO

Quiz/Forum/Other

In Week 6 you are to sit an **In-Class Task** worth 20% (with your weekly investigations) in your double line 3 or 5. It is an **“open book”** task given under test conditions. You are allowed to bring in any of your notes and worked exercises since Week 1 and, of course, your calculator.