Probability (AS)

M1   Understand and use mutually exclusive and independent events when calculating probabilities.

Link to discrete and continuous distributions.

For a brief commentary on this content go to the MEI outline SoW.

Pre-requisites

- GCSE: Understand simple probabilities.
- GCSE: Be able to represent outcomes using a tree diagram or two-way table.

Common student errors

- Using $P(A \cap B) = P(A) \times P(B)$ for non-independent events.
- Using $P(A \cup B) = P(A) + P(B)$ for non-mutually exclusive events.
- Not ensuring that the overall probability adds up to 1, particularly when completing Venn diagrams.

Teaching it!

- A series of videos designed to support students with this topic.
- Venn diagrams: A simple GeoGebra applet connecting Venn diagrams, set notation & probabilities.
- Rolling a die: A Desmos simulation reinforcing that theoretical probabilities come from examining expected frequencies from a large number of trials.
- Which spinners?, Last one standing: Two Nrich tasks looking at relative & expected frequencies.

Getting them thinking

- Give me an example of a Venn diagram and a tree diagram showing Independent Events A and B.
- Deriving $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ from a Venn Diagram.
- Two players take turns to roll a fair dice; the winner is the first person to roll a six. How much of an advantage is it to go first? What if the game is to pick the car hidden behind one of the doors numbered 1 to 6?