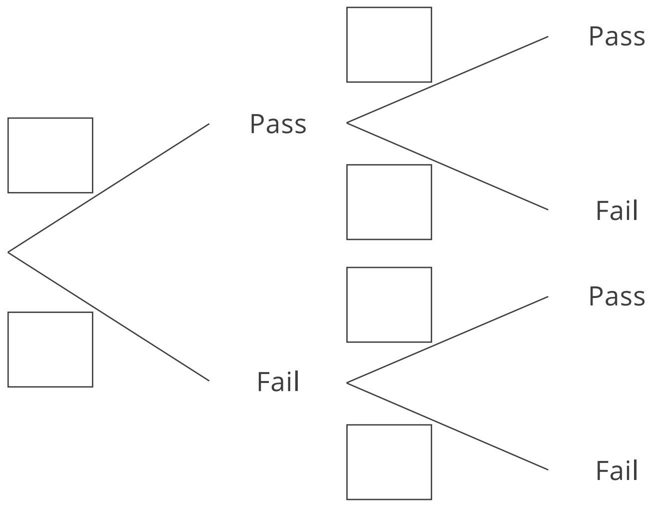
Wimbledon Tree Diagrams and Venn Diagrams

1. Eleanor is trialling to become a ball girl in this year's Wimbledon Championship. She has to pass two tests to be eligible to be picked, each of which can either be passed or failed. The probability she passes the first test is $\frac{5}{9}$ and the probability she passes the second test is $\frac{1}{3}$.

   a. Complete the probability tree diagram to show this information.



   b. Find the probability she fails both tests.

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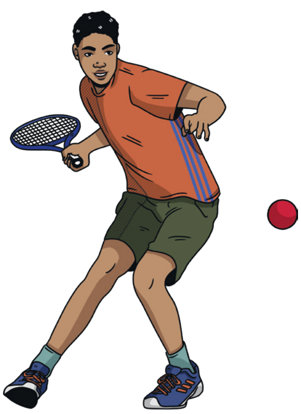
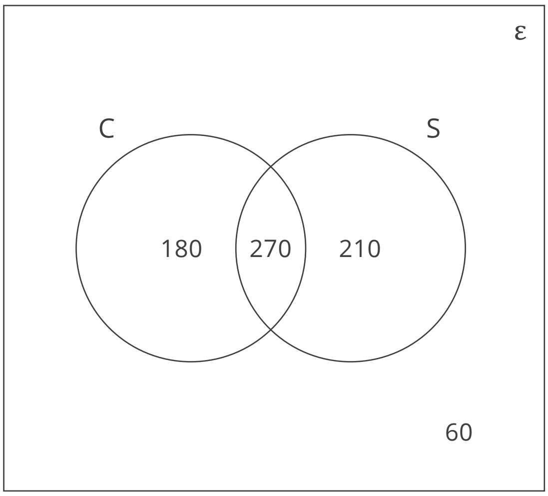
2. Ben is playing in a tennis tournament. In this tournament there are no draws; you play your match until one person wins. The probability that Ben wins his first match is 0.3. If he wins the first match, the probability he wins his second is 0.6. If he loses his first match, the probability he wins his second match is just 0.1. Draw a probability tree diagram to show this information and use it to find the probability that Ben wins at least one match.



3. Javid is going to play three tennis games. If he wins at least two games, he will qualify for the local tournament. The probability he wins his first game is $\frac{7}{10}$, the probability he wins his second game is $\frac{3}{5}$ and the probability he wins his third game is 0.45. Find the probability he qualifies for the local tournament.

4. A food stall kept a record of the number of people buying items on a certain day at Wimbledon 2016. The information is displayed in the Venn diagram below. C is the set of people who bought champagne and S is the set of people who bought strawberries.

   a. Shade the area of the Venn diagram represented by (S∩C)



   b. A person is picked at random. What is the probability they bought only strawberries?

   c. A person is picked at random. Given that the person bought champagne, what is the probability that they also bought strawberries?

5. The drinks menu in the VIP section at Wimbledon has two options. You can have champagne (C) or beer (B). On a certain afternoon, 80 people were asked which drinks they had drunk that day.

   - 34 said they had drunk some beer.
   - 41 said they had drunk some champagne.
   - 17 said they had drunk neither.

   a. Draw a Venn diagram representing this information.

   b. A person is picked at random. Find the probability they drank both beer and wine.

6. 77 people were questioned about the types of tennis matches they enjoyed watching. Everyone enjoyed at least one type of match.

   In total:

   - 49 people said they liked singles matches (S).
   - 55 said they liked doubles matches (D).
   - 26 said they liked mixed doubles matches (M).
   - 31 said they liked both singles and doubles matches.
   - 15 said they liked both singles and mixed doubles matches.
   - 17 said they liked both doubles and mixed doubles matches.
   - 10 said they liked all three.

   A person is chosen at random. Find the probability they liked doubles matches only.