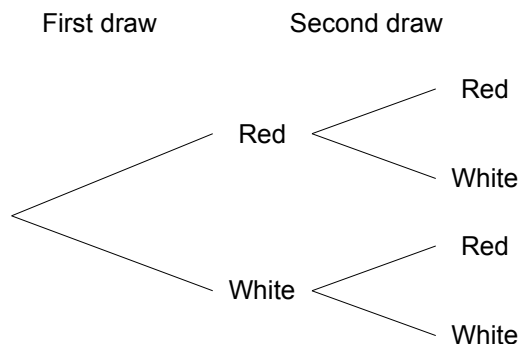


## PROBABILITY TREES

1) A bag contains 3 red beads and 5 white beads. A bead is drawn, and then REPLACED before a second bead is drawn. Complete the tree diagram shown below to show all the possibilities.

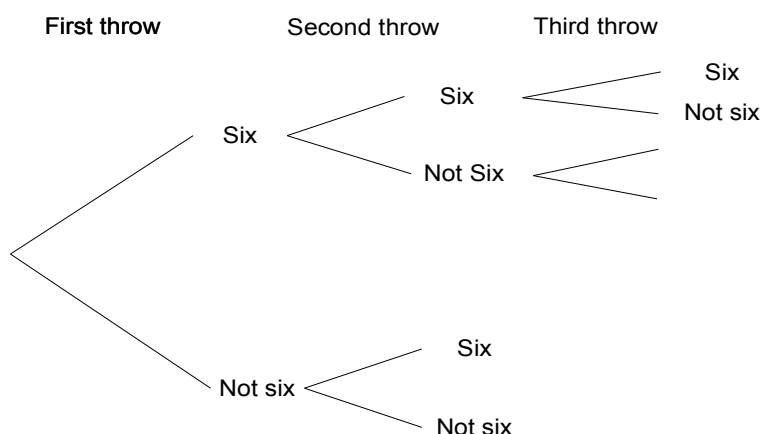


- (a) What is the probability of getting two beads of the same colour?  
 (b) What is the probability of getting one red and one white (in either order)?

2) Alan and Bob are each going to attempt a high jump with the bar at 1.3 metres. The probability that Alan succeeds is  $\frac{1}{3}$ , and the probability that Bob succeeds is  $\frac{3}{4}$ . Draw a tree diagram to show the possible outcomes.

- (a) What is the probability that one boy succeeds and the other doesn't?  
 (b) What is the probability that at least one of the boys succeeds?

3) A die is thrown 3 times. Copy and complete the following tree diagram:



- (a) What is the probability of not throwing any sixes in the 3 attempts?  
 (b) What is the probability of throwing exactly 1 six in the three attempts?

4) Ann is due to take two tests for a job, one in Maths and one in English. She needs to pass both to get the job. She reckons her probability of passing maths is  $\frac{2}{3}$ , and her probability of passing English is  $\frac{3}{4}$ . Draw a tree diagram to show the possibilities. What is the probability:

- (a) that she gets the job?                      (b) that she passes one test and fails one?

5) Dave and Eleanor are playing a tennis match which is the best of three sets. The probability that Dave wins any set is 0.4. Draw a tree diagram showing the possible outcomes for each set (remember that if the same player wins the first two sets, the third set will not be played).

- (a) What is the probability that Eleanor wins in straight sets?  
 (b) What is the probability that Eleanor wins the match?

6) Repeat question 1, but this time assume the first bead is NOT REPLACED before the second draw.

7) Out of 12 girls in a class, 4 live in Oxford. Two girls are to be chosen at random to represent the class in a competition. Draw a tree diagram (with headings "FIRST GIRL CHOSEN" and "SECOND GIRL CHOSEN") to show the possibilities. What is the probability:

- (a) that both girls chosen live in Oxford?                      (b) that at least one of the girls chosen lives in Oxford?

8) The next bus to arrive at this bus stop may be a double decker or a minibus. The probability that it is a double decker is  $\frac{1}{3}$ . If it is a minibus, the probability that it is full is  $\frac{1}{2}$ , but if it is a double decker, the probability of it being full is only  $\frac{1}{8}$ . Draw a tree diagram to show this information. What is the probability that I am able to get on the next bus that comes?