

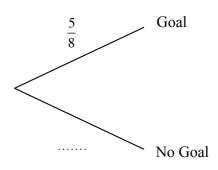


## **PROBABILITY TREES (STANDARD)**

- 1. Each time that Sam takes a shot at goal, the probability that he will score is  $\frac{5}{8}$  Sam takes two shots.
  - (a) Complete the probability tree.

First Shot

Second Shot



- (b) What is the probability that Sam
  - (i) Scores twice
  - (ii) Scores exactly once
  - (iii) Scores at least once

2. A bag contains 4 white beads and 5 black beads.

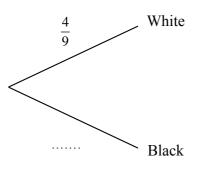
Amy picks at random a bead from the bag and <u>replaces</u> it.

The beads are mixed and she then picks at random another bead from the bag.

(a) Complete the probability tree of the problem.

First Pick

Second Pick



- (b) What is the probability that Amy picks:
  - (i) two black beads
  - (ii) a black bead in his second draw.

(iii) beads of different colours

**3.** A bag contains 4 white beads and 5 black beads.

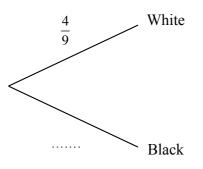
Shanaiya picks at random a bead from the bag and **does not replace** it.

The beads are mixed and she then picks at random another bead from the bag.

(a) Complete the probability tree of the problem.

First Pick

Second Pick



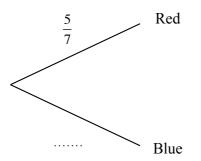
- (b) What is the probability that Shanaiya picks:
  - (i) two black beads
  - (ii) a black bead in her second draw.

(iii) beads of different colours

- 4. A packet contains 5 red and 2 blue sweets. Pardeep picks a sweet from the packet, eats it and then picks a second sweet and eats it.
  - (a) Complete the probability tree.

First Pick

Second Pick



- (b) Calculate the probability that Pardeep eats:
  - (i) one red sweet and one blue sweet

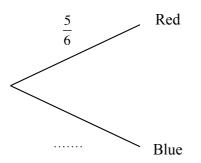
(ii) two sweets of the same colour.

(iii) at least one red sweet

- 5. A packet contains 5 red and 1 blue sweets. Maddie picks a sweet from the packet, eats it and then picks a second sweet and eats it.
  - (a) Complete the probability tree.

First Pick

Second Pick



- (b) Calculate the probability that Maddie eats:
  - (i) one red sweet and one blue sweet

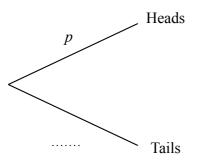
(ii) two sweets of the same colour.

(iii) at least one red sweet

- 6. Michael has a biased coin. The probability that Michael will throw a Head on any throw is *p*. Michael throws the coin twice.
  - (a) Complete the probability tree.Give the probabilities in terms of *p*.

First Throw

Second Throw



- (b) Find expressions, in terms of *p*, for the probability that Michael will throw:
  - (i) two heads
  - (ii) two tails
  - (iii) exactly one head

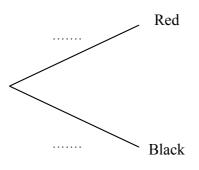
Given that p = 0.7

(c) Work out the probability that Michael will throw a head on his second throw.

- 7. Bag A contains 10 marbles of which 2 are red and 8 are black.Bag B contains 12 marbles of which 4 are red and 8 are black.Imogen chooses a marble at random from each bag.
  - (a) Complete the probability tree.



Bag B

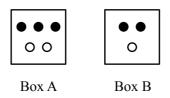


(b) Find the probability that Imogen chooses:

- (i) two red marbles
- (ii) two black marbles
- (iii) one black and one red marble
- (iv) at least one red marble.

Box B

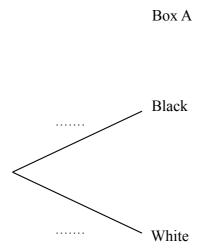
**8.** In box A, there are 3 black counters and 2 white counters. In box B there are 2 black counters and 1 white counter.



Alec takes at random a counter from Box A and puts it into Box B.

He then takes at Random a counter from Box B.

(a) Complete the probability tree.



(b) Work out the probability that the counter that he takes from Box B will be a black counter.