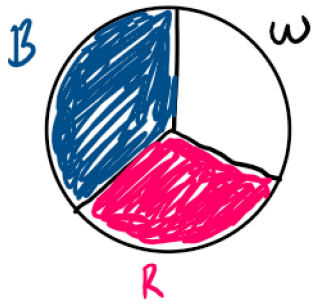
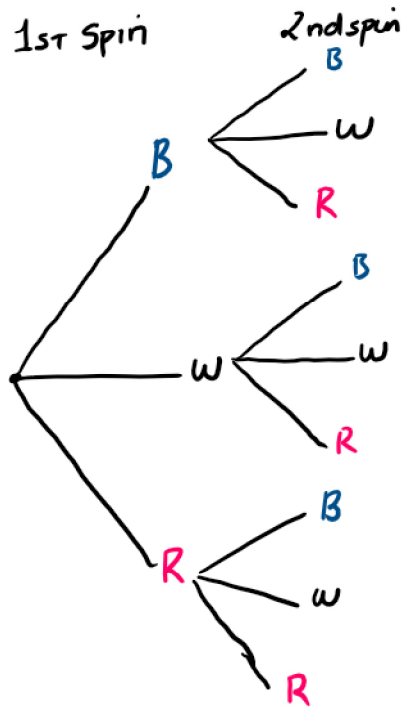


Use a tree diagram of two or more events



Counting
 $3 \times 3 = 9$ outcomes



Outcomes

- BB
- BW
- BR
- WB
- WW
- WR
- RB
- RW
- RR

9 possible outcomes

$$P(\text{same colour on both spins}) = \frac{3}{9} = \frac{1}{3}$$

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T&T2 10.7
Tree...

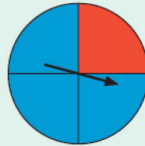


T&T2 10.7
Tree...

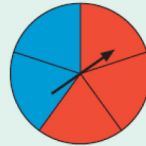
Section 10.7 Tree diagrams

Example 1

Each of the spinners shown on the right is spun once.
Draw a tree diagram to represent these spins.
Use the tree diagram to write down these probabilities:



Spinner A



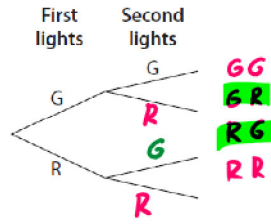
Spinner B

(i) $P(\text{A red, B red})$

(ii) $P(\text{both the same colour}).$

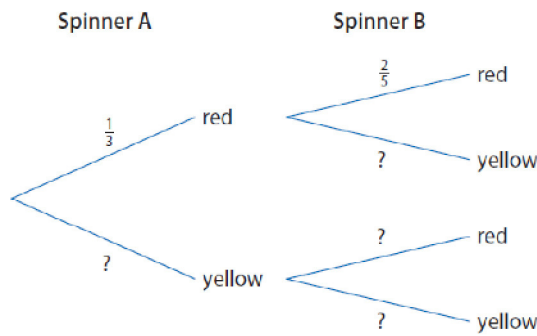
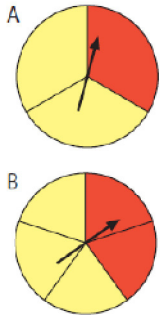
Exercise 10.7

1. When a motorist approaches any traffic lights, there is an even chance that they will be red or green.
 If a motorist has to go through two sets of lights, copy and complete the tree diagram on the right.



- Write down the probability of each of these:
 (i) P(both green) = $\frac{1}{4}$ (ii) P(one red, one green). $\frac{2}{4} = \frac{1}{2}$

2. Copy and complete the tree diagram for these two spinners.



- What is the probability that A and B show
 (i) the same colour (ii) different colours?

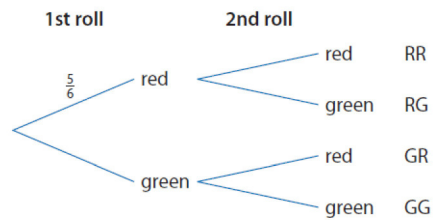
3. Paula has a dice with 5 red faces and 1 green face.

She rolls the dice twice.

(i) Copy and complete the tree diagram.

(ii) Find the probability that the dice shows the same colour each time.

(iii) Find the probability that the dice shows green and red in that order.



4. A bag contains 4 red beads and 2 blue beads. A second bag contains 2 red beads and 4 blue beads.

Jack takes one bead at random from each bag.

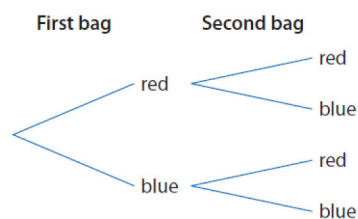
(i) Complete the probability tree diagram.

(ii) Find the probability that Jack takes

(a) 2 red beads

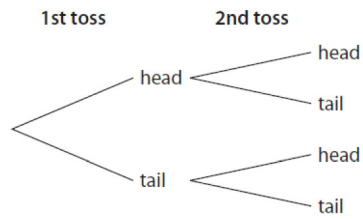
(b) red and blue in that order

(c) red and blue in any order.



5. Gerry has a coin which is weighted so that the probability that it lands 'head' is $\frac{3}{5}$ and 'tail' $\frac{2}{5}$.

- (i) Copy and complete the tree diagram for two tosses of the coin, writing the probabilities on the branches.
- (ii) Find the probability of getting one 'head' and one 'tail'.



6. A bag contains 10 coins.

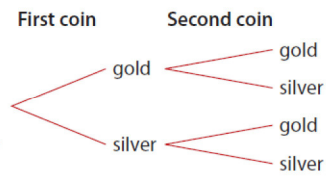
There are 6 gold coins and the rest are silver.

A coin is taken at random from the bag.

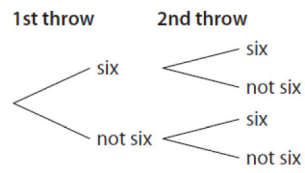
The type of coin is recorded and the coin is then returned to the bag.

A second coin is then taken at random from the bag.

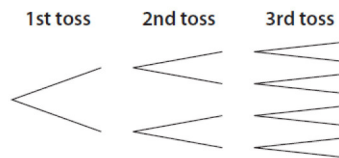
- (i) The tree diagram shows all the ways in which two coins can be taken from the bag. Copy the diagram and write the probabilities on it.
- (ii) Use your tree diagram to calculate the probability that one coin is gold and one coin is silver.



- 7.** Silvia throws an ordinary dice twice.
- (i) Copy and complete this tree diagram.
 - (ii) Use the tree diagram to write down the probability that Silvia gets
 - (a) two sixes
 - (b) one six only.



- 8.** Helen tosses a fair coin three times.
 Draw a tree diagram for the three tosses.
 Find the probability that
- (i) all three tosses give the same result
 - (ii) two tosses give 'head' and the other 'tail'.



9. Two fair dice, each having faces numbered 1, 1, 2, 2, 2, 2, are thrown.
Draw up a probability tree and use the tree to find the probabilities of these events:
- (i) the total score is 4
 - (ii) the total score is 3
 - (iii) at least one dice shows a 2.

Answers

Exercise 10.7

1. (i) $\frac{1}{4}$ (ii) $\frac{1}{2}$
2. (i) $\frac{8}{15}$ (ii) $\frac{7}{15}$
3. (i) $\frac{13}{18}$ (ii) $\frac{5}{36}$
4. (ii) (a) $\frac{2}{9}$ (b) $\frac{4}{9}$ (c) $\frac{5}{9}$
5. (ii) $\frac{12}{25}$
6. (ii) $\frac{12}{25}$
7. (ii) (a) $\frac{1}{36}$ (b) $\frac{5}{18}$
8. (i) $\frac{1}{4}$ (ii) $\frac{3}{8}$
9. (i) $\frac{4}{9}$ (ii) $\frac{4}{9}$ (iii) $\frac{8}{9}$