Lesson 8

8.1 An Introduction to Tree Diagrams

Example

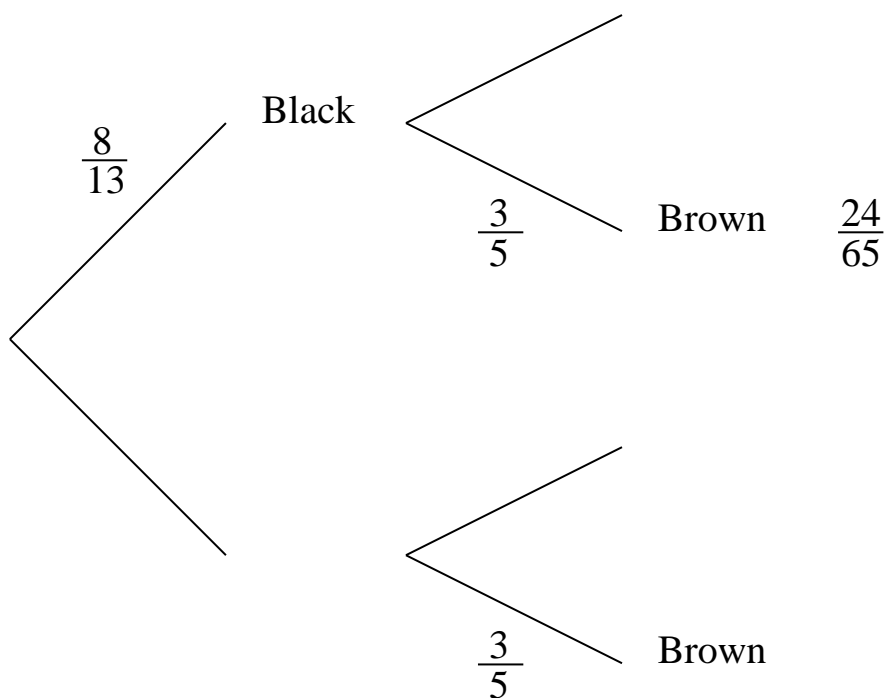One drawer contains 8 black socks and 5 brown socks.
A second drawer contains 2 white socks and 3 brown socks.

A sock is chosen at random from each drawer.

(**i**)   Complete the tree diagram

First drawer   Second drawer

$$\frac{8}{13}$$ Black

$$\frac{3}{5}$$ Brown $$\frac{24}{65}$$

$$\frac{3}{5}$$ Brown

(**ii**)   What is the probability of getting a black sock and a white sock ?

(**iii**)   What is the probability that both socks are the same colour ?

8.2 Exercise

Question 1
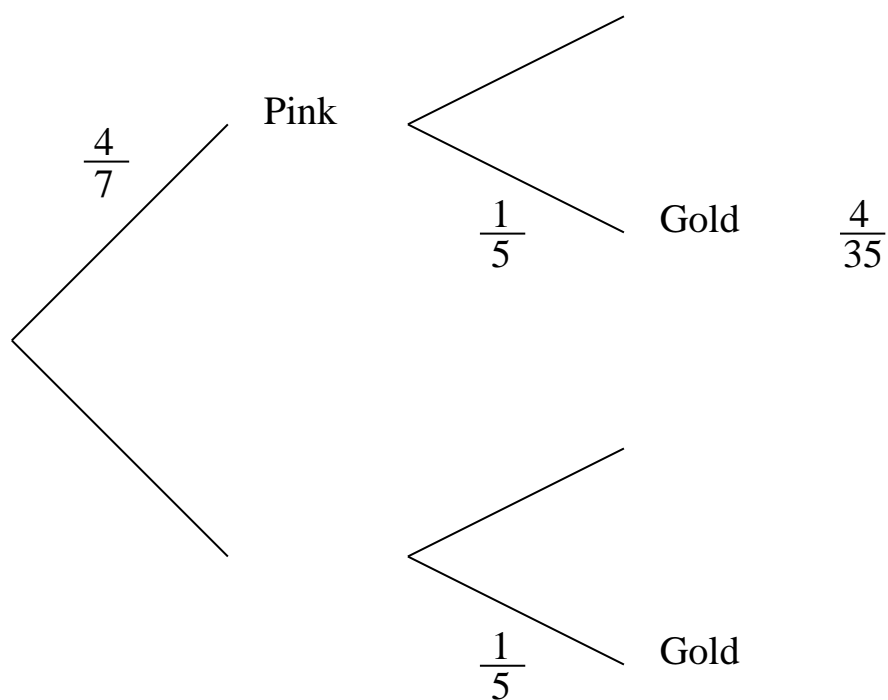One pencil case contains 4 pink pencils and 3 blue pencils.
A second pencil case contains 1 gold pencil and 4 blue pencils.

A pencil is chosen at random from each pencil case.

(**i**)   Complete the tree diagram

First pencil case   Second pencil case

$\dfrac{4}{7}$ Pink

$\dfrac{1}{5}$ Gold $\dfrac{4}{35}$

$\dfrac{1}{5}$ Gold

(**ii**)   What is the probability of getting a pink pencil and a gold pencil ?

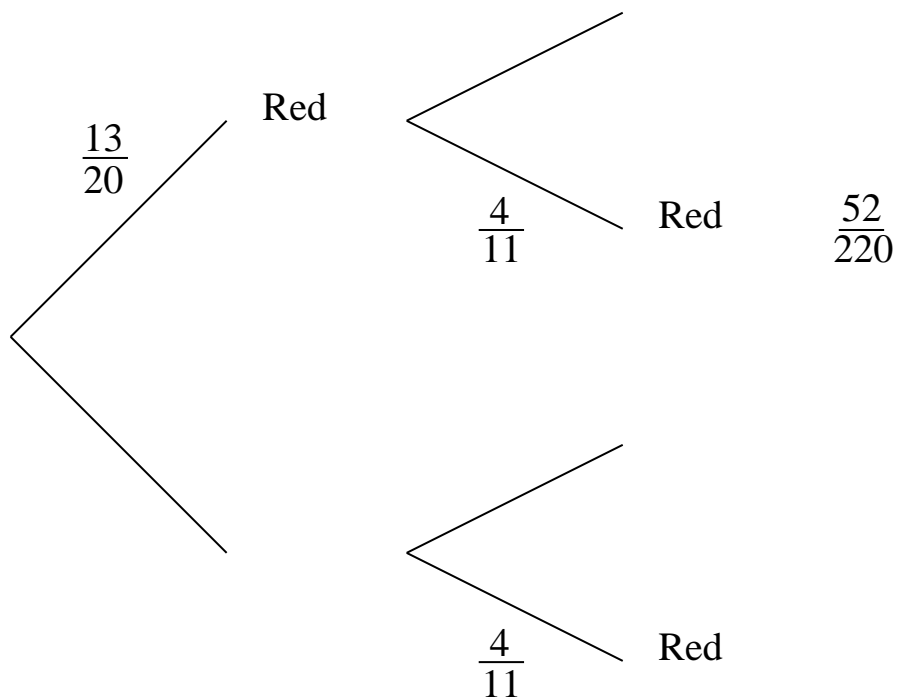(**iii**)   What is the probability that both pencils are the same colour ?

Question 2

One bag of sweets contains 13 red boiled sweets and 7 green boiled sweets.
A second bag of sweets contains 7 blue boiled sweets and 4 red boiled sweets.

A sweet is chosen at random from each bag.

(i)   Complete the tree diagram

First bag of sweets   Second bag of sweets

$\dfrac{13}{20}$ Red

$\dfrac{4}{11}$ Red $\dfrac{52}{220}$

$\dfrac{4}{11}$ Red

(ii)   What is the probability of getting a green sweet and a blue sweet ?

(iii)   What is the probability of **<u>NOT</u>** getting two red sweets ?

Question 3
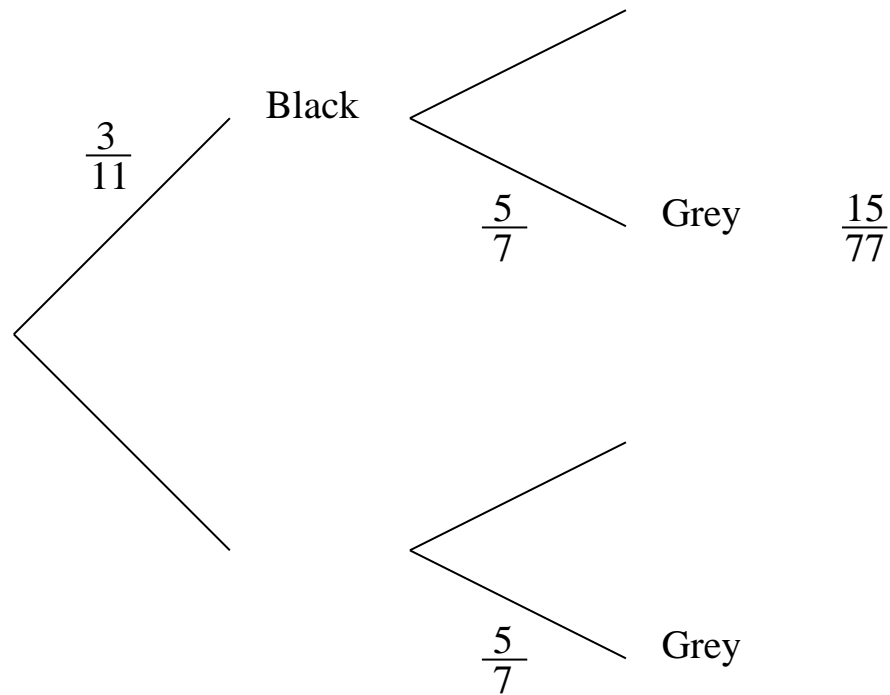One drawer contains 3 black socks and 8 grey socks.
A second drawer contains 2 black socks and 5 grey socks.

A sock is chosen at random from each drawer.

(**i**)   Complete the tree diagram

First drawer   Second drawer

$\dfrac{3}{11}$ Black

$\dfrac{5}{7}$ Grey $\dfrac{15}{77}$

$\dfrac{5}{7}$ Grey

(**ii**)   What is the probability of getting two black socks ?

(**iii**)   What is the probability that both socks are the same colour ?

(**iv**)   What is the probability of the pair not being of a matching colour ?

Question 4
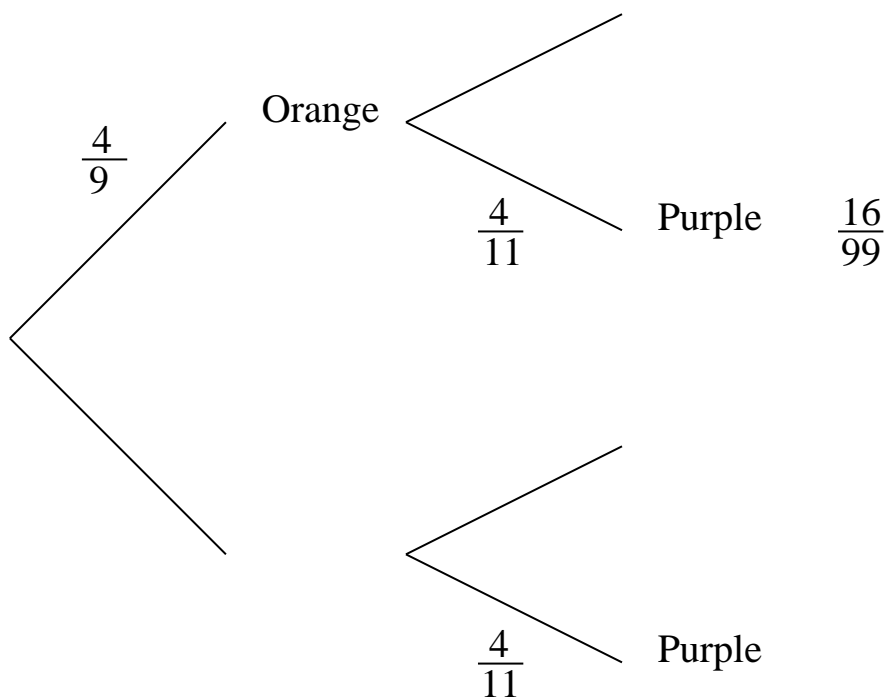One spinner has 4 orange sectors and 5 purple sectors all of equal size.
A second spinner has 7 orange sectors and 4 purple sectors all of equal size.

Each is spun once.

(**i**)   Complete the tree diagram

First spinner   Second spinner

$\frac{4}{9}$

Orange

$\frac{4}{11}$ Purple $\frac{16}{99}$

$\frac{4}{11}$ Purple

(**ii**)   What is the probability of spinning two orange sectors ?

(**iii**)   What is the probability that both spinners spin the same colour ?

(**iv**)   What is the probability of the spinners not being of a matching colour ?

Question 5
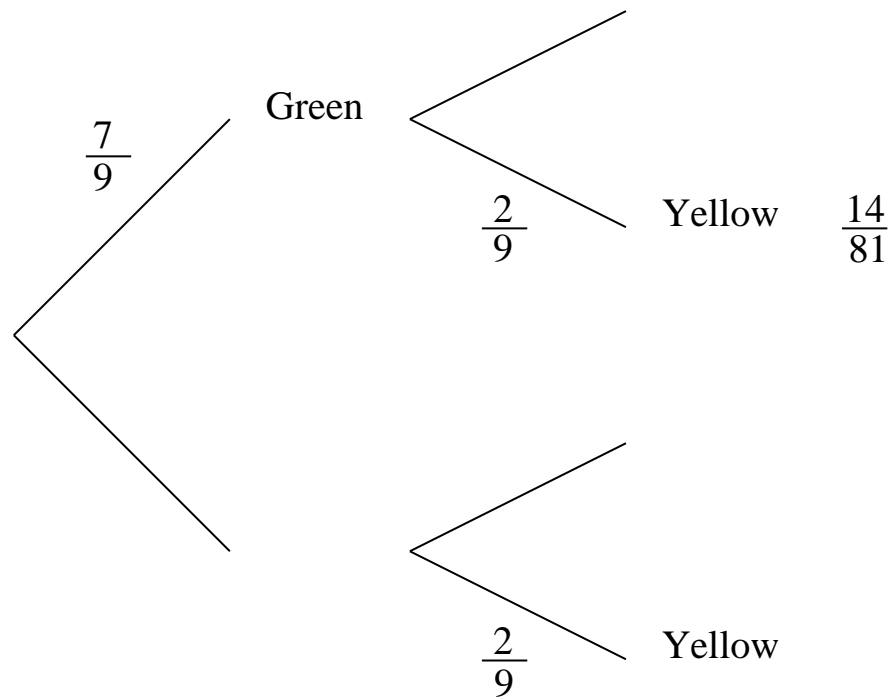
A spinner has 7 green sectors and 2 yellow sectors, all of equal size.

It is spun twice.

(i)   Complete the tree diagram

First spin   Second spin

Green

$\dfrac{7}{9}$

$\dfrac{2}{9}$ Yellow $\dfrac{14}{81}$

$\dfrac{2}{9}$ Yellow

(ii)   What is the probability that both spins are green ?

(iii)   What is the probability that both spins are the same colour ?

(iv)   What is the probability of the two spins not being of a matching colour ?

Question 6

A spinner has 5 indigo sectors and 6 puce sectors, all of equal size.

It is spun twice.

(**i**)　　Draw a tree diagram of a similar style to those of previous questions.

(**ii**)　　What is the probability that both spins are indigo ?

(**iii**)　　What is the probability that both spins are the same colour ?

(**iv**)　　What is the probability of the two spins not being of a matching colour ?