



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Tree Diagrams & Conditional Probability · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☐ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Tree Diagrams & Conditional Probability

Total marks available: 99

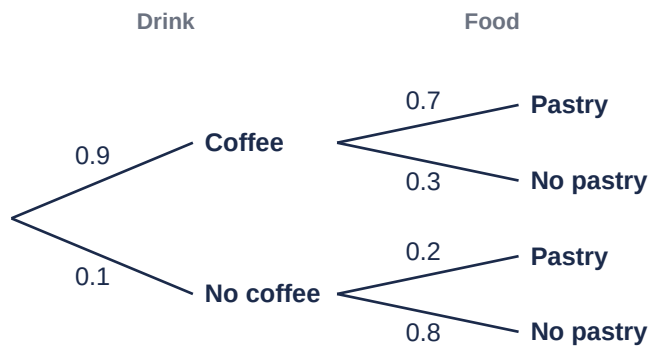
● Tree Diagrams & Conditional Probability

Q1

[2 marks]

The tree diagram shows the probability that a customer buys a coffee, and the probability that they buy a pastry in each case.

Work out the probability of 'Coffee' and 'Pastry'.

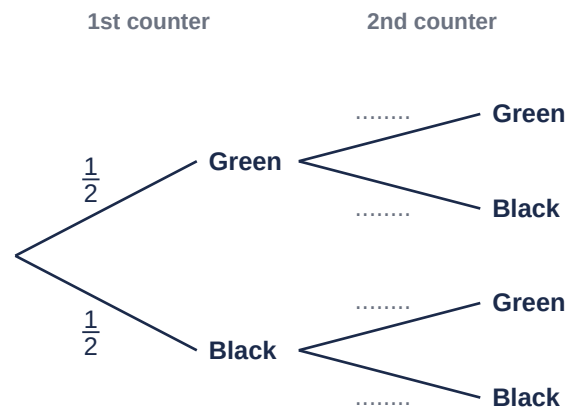


Q2

[2 marks]

A bag contains 4 green counters and 4 black counters. Two counters are taken at random, one after the other, without replacement.

Complete the probability tree diagram.

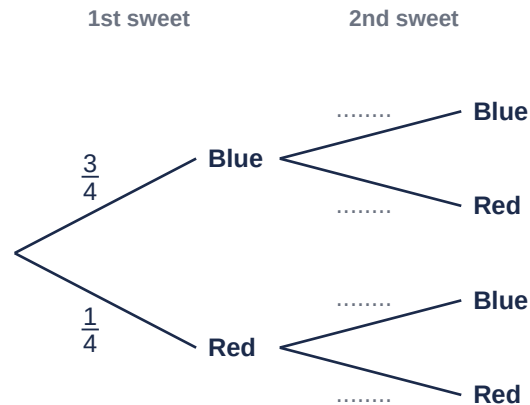


Q3

[2 marks]

A bag contains 6 blue sweets and 2 red sweets. Two sweets are taken at random, one after the other, without replacement.

Complete the probability tree diagram.

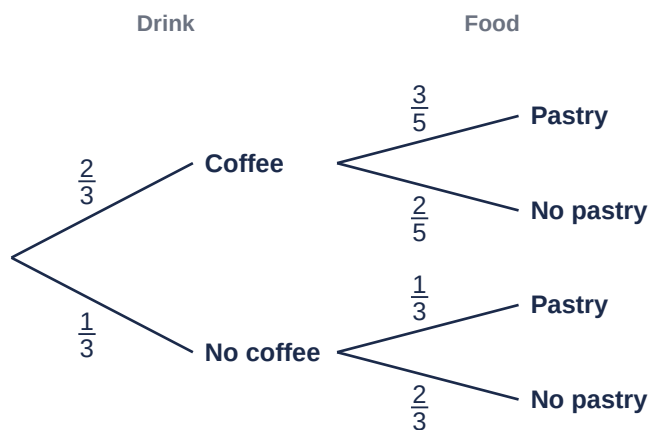


Q4

[2 marks]

The tree diagram shows the probability that a customer buys a coffee, and the probability that they buy a pastry in each case.

Work out the probability of 'Coffee' and 'Pastry'.

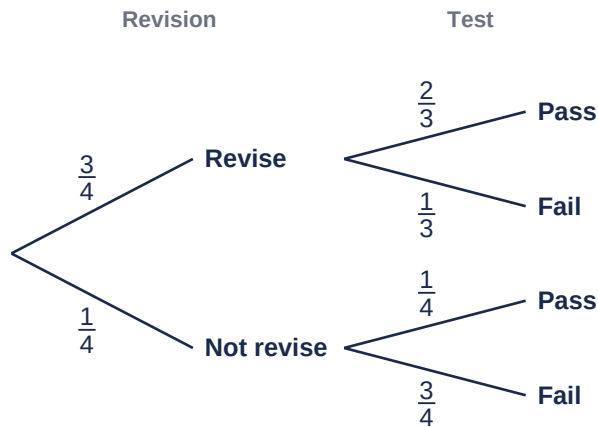


Q5

[2 marks]

The tree diagram shows the probability that a student revises, and the probability that they pass the test in each case.

Work out the probability of 'Revise' and 'Pass'.

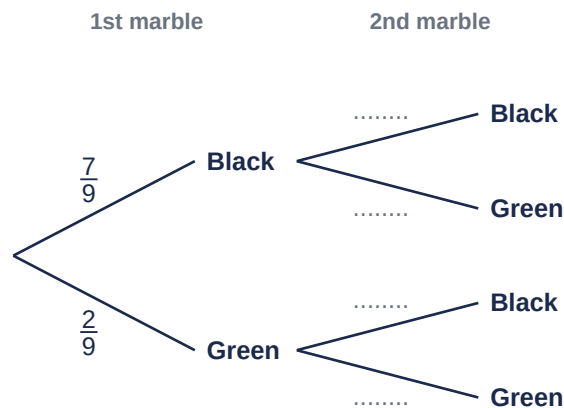


Q6

[2 marks]

A bag contains 7 black marbles and 2 green marbles. Two marbles are taken at random, one after the other, without replacement.

Complete the probability tree diagram.

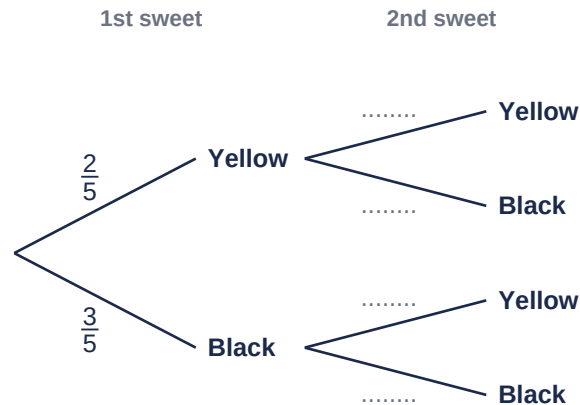


Q7

[2 marks]

A bag contains 4 yellow sweets and 6 black sweets. Two sweets are taken at random, one after the other, without replacement.

Complete the probability tree diagram.

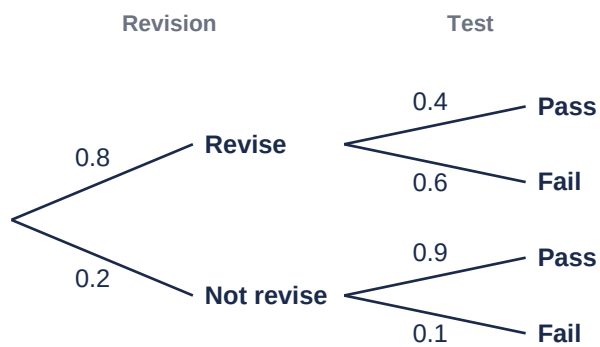


Q8

[2 marks]

The tree diagram shows the probability that a student revises, and the probability that they pass the test in each case.

Work out the probability of 'Revise' and 'Pass'.

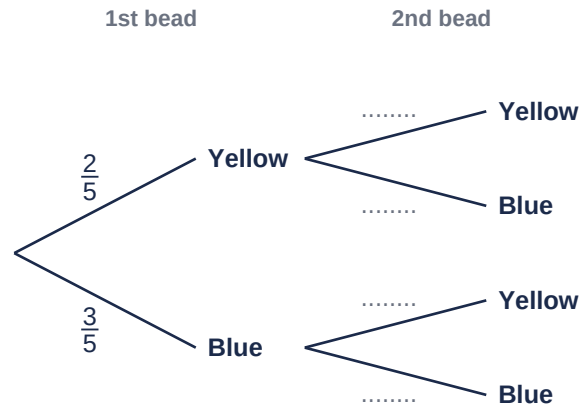


Q9

[2 marks]

A bag contains 4 yellow beads and 6 blue beads. Two beads are taken at random, one after the other, without replacement.

Complete the probability tree diagram.

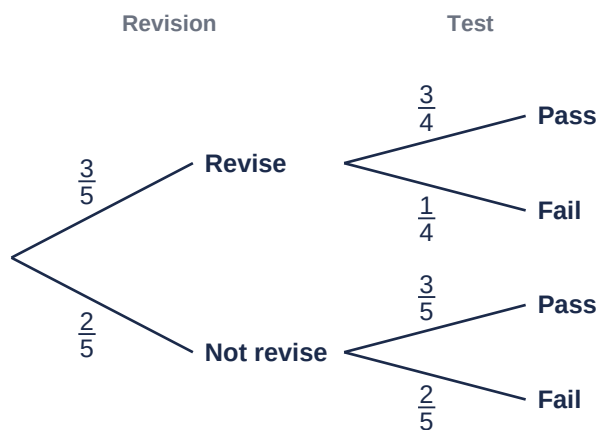


Q10

[2 marks]

The tree diagram shows the probability that a student revises, and the probability that they pass the test in each case.

Work out the probability of 'Not revise' and 'Pass'.

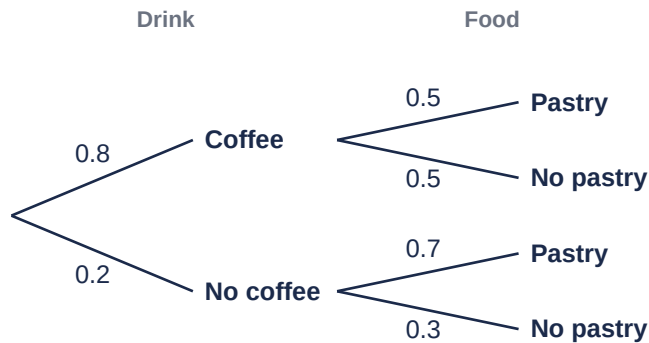


Q11

[3 marks]

The tree diagram shows the probability that a customer buys a coffee, and the probability that they buy a pastry in each case.

Work out the probability of 'Pastry'.

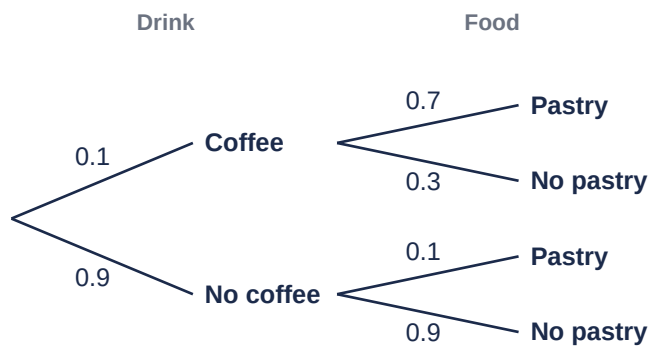


Q12

[3 marks]

The tree diagram shows the probability that a customer buys a coffee, and the probability that they buy a pastry in each case.

Work out the probability of 'Pastry'.

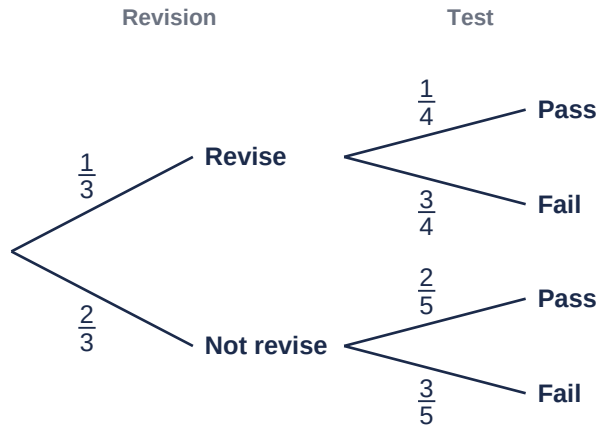


Q13

[3 marks]

The tree diagram shows the probability that a student revises, and the probability that they pass the test in each case.

Work out the probability of 'Pass'.

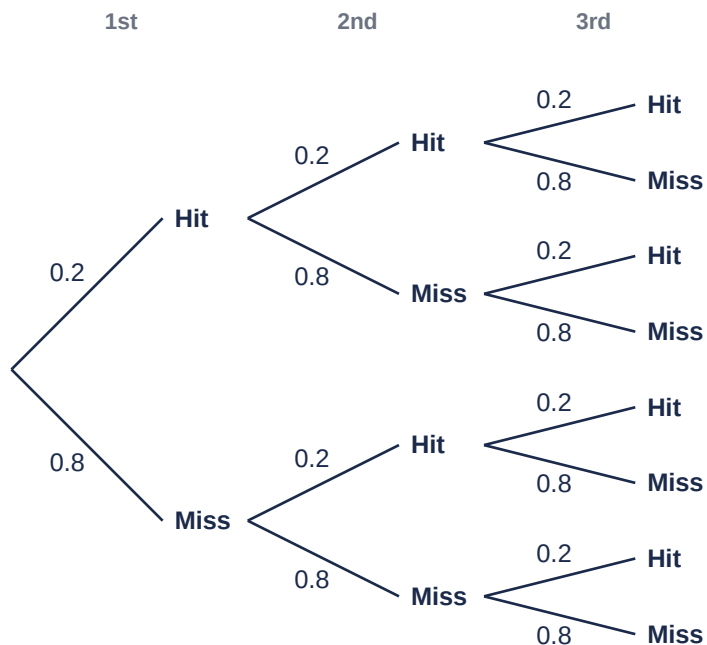


Q14

[3 marks]

A player takes three shots at a target. The results are independent and the tree diagram shows the probabilities.

Work out the probability of at least two 'hit' results.



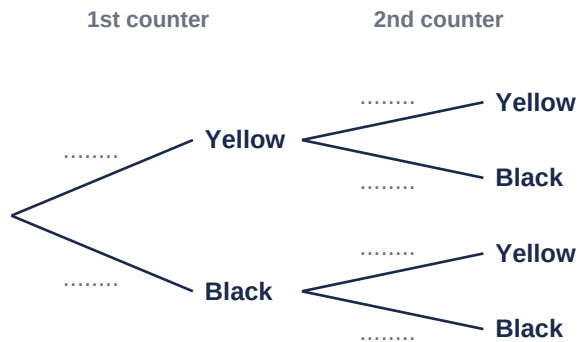
Q15

[5 marks]

There are 4 yellow counters and 5 black counters in a bag. Two counters are taken at random without replacement.

(a) Complete the probability tree diagram.

(b) Work out the probability that both counters are the same colour.

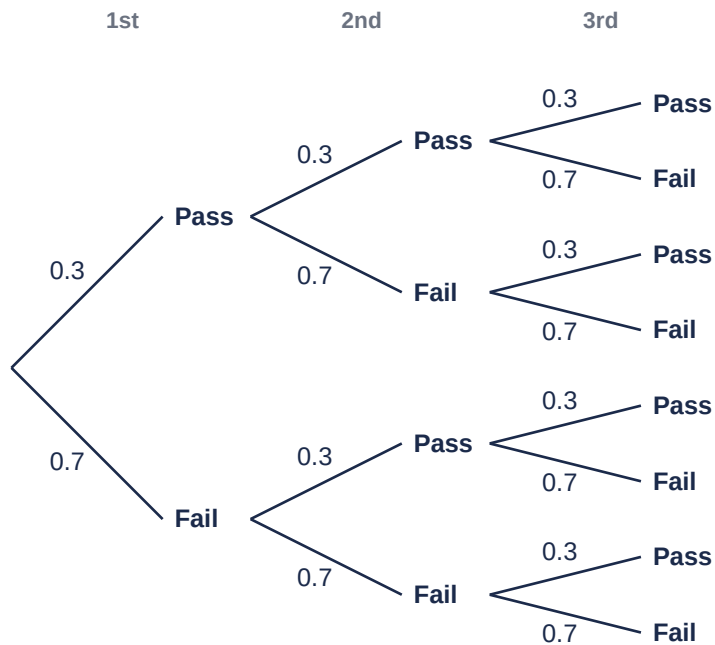


Q16

[3 marks]

Three checks are made on a machine. The results are independent and the tree diagram shows the probabilities.

Work out the probability of at least two 'pass' results.

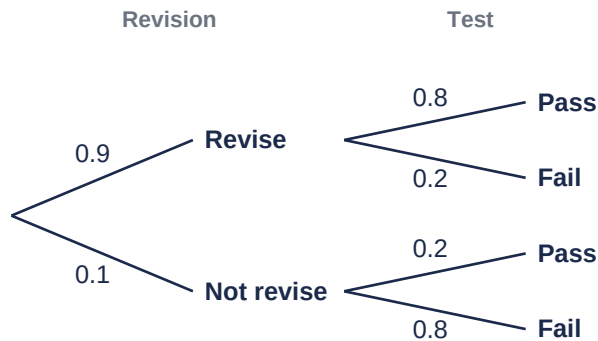


Q17

[3 marks]

The tree diagram shows the probability that a student revises, and the probability that they pass the test in each case.

Work out the probability of 'Pass'.



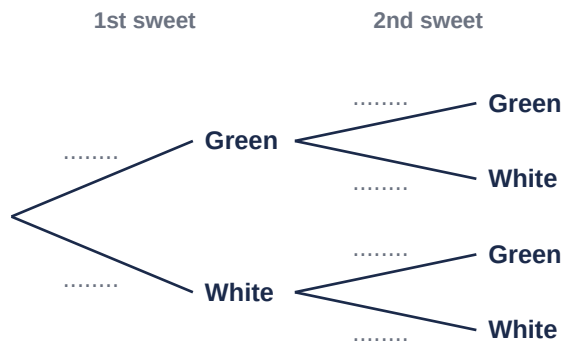
Q18

[5 marks]

There are 3 green sweets and 6 white sweets in a bag. Two sweets are taken at random without replacement.

(a) Complete the probability tree diagram.

(b) Work out the probability that both sweets are the same colour.

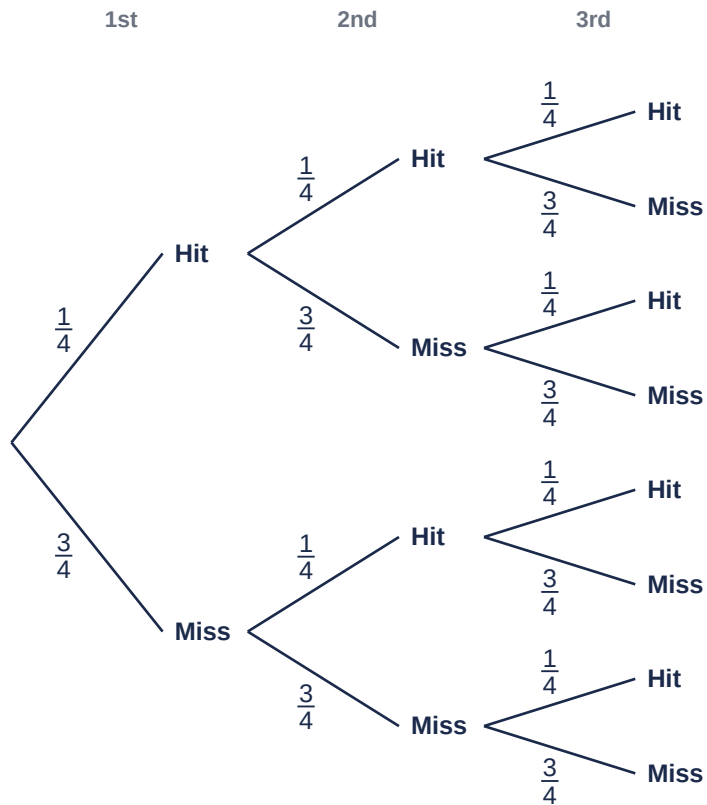


Q19

[3 marks]

A player takes three shots at a target. The results are independent and the tree diagram shows the probabilities.

Work out the probability of at least two 'hit' results.



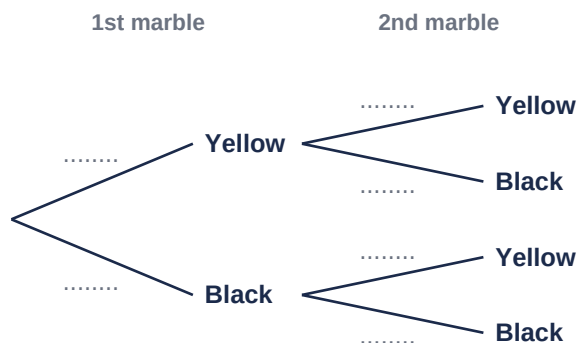
Q20

[5 marks]

There are 4 yellow marbles and 2 black marbles in a bag. Two marbles are taken at random without replacement.

(a) Complete the probability tree diagram.

(b) Work out the probability that both marbles are the same colour.



Q21

[5 marks]

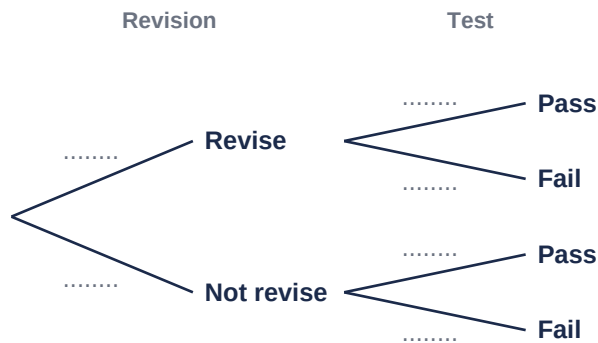
The probability that a student revises is 0.6.

If a student revises, the probability that they pass the test is 0.4.

If not, the probability that they pass the test is 0.7.

(a) Complete the probability tree diagram.

(b) Work out the probability that exactly one of 'Revise' and 'Pass' happens.



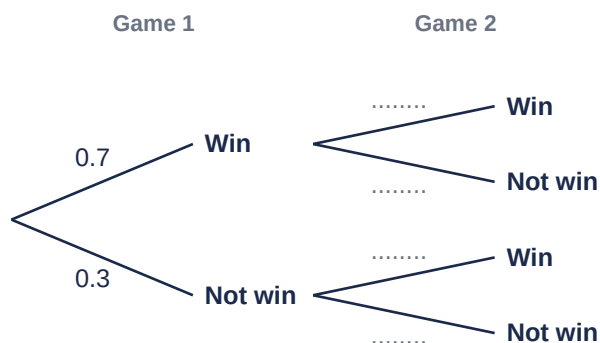
Q22

[4 marks]

The tree diagram shows the probabilities for Game 1. The results for Game 1 and Game 2 are independent. The probability that the team wins game 1 and the team wins game 2 is 0.21.

(a) Work out the probability that the team wins game 2.

(b) Complete the probability tree diagram.



Q23

[5 marks]

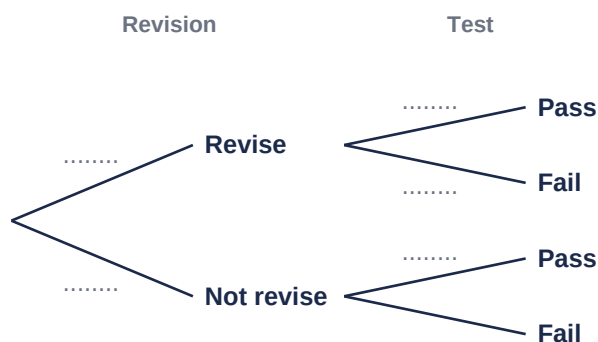
The probability that a student revises is 0.3.

If a student revises, the probability that they pass the test is 0.7.

If not, the probability that they pass the test is 0.2.

(a) Complete the probability tree diagram.

(b) Work out the probability that exactly one of 'Revise' and 'Pass' happens.



Q24

[5 marks]

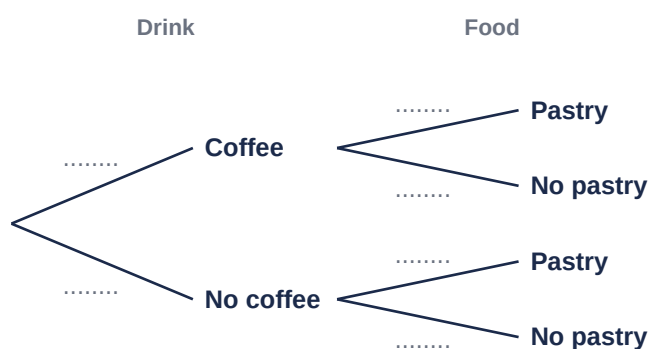
The probability that a customer buys a coffee is 0.3.

If a customer buys a coffee, the probability that they buy a pastry is 0.3.

If not, the probability that they buy a pastry is 0.6.

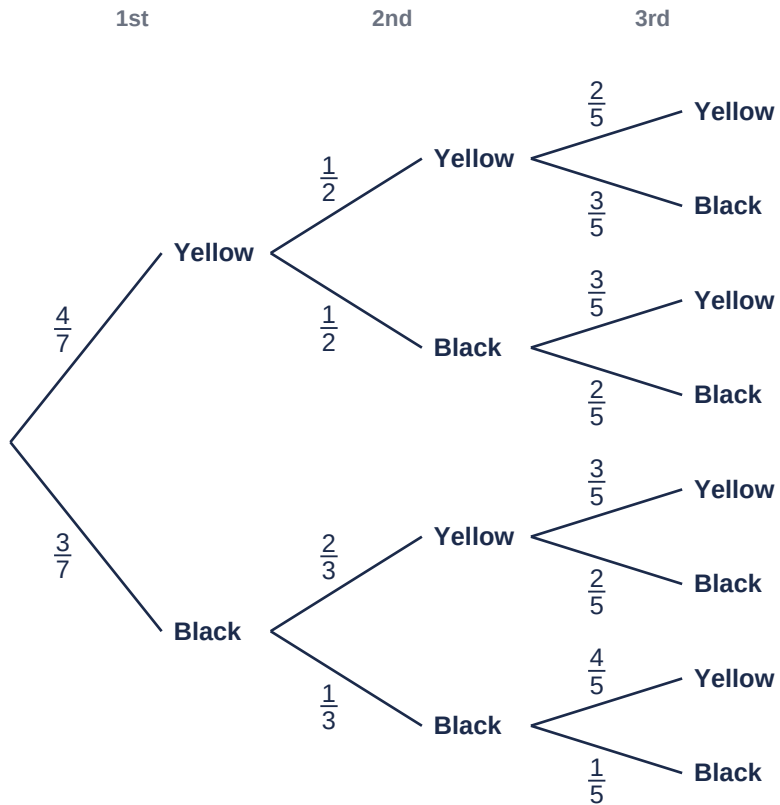
(a) Complete the probability tree diagram.

(b) Work out the probability that exactly one of 'Coffee' and 'Pastry' happens.



A bag contains 4 yellow beads and 3 black beads. Three beads are taken at random without replacement. The tree diagram shows the probabilities.

Work out the probability that exactly two of the beads are yellow.

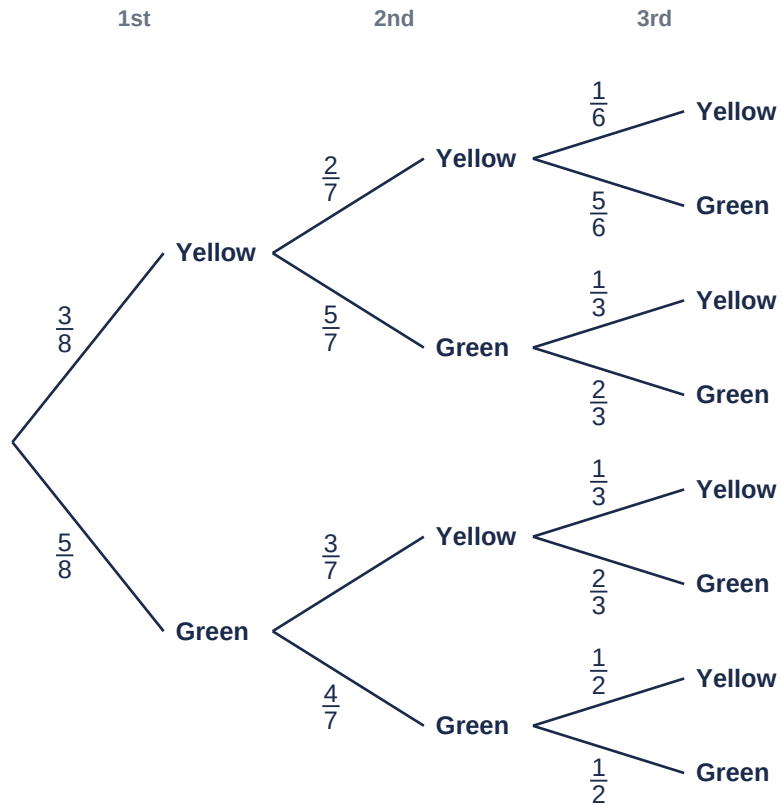


Q26

[4 marks]

A bag contains 3 yellow counters and 5 green counters. Three counters are taken at random without replacement. The tree diagram shows the probabilities.

Work out the probability that exactly two of the counters are yellow.

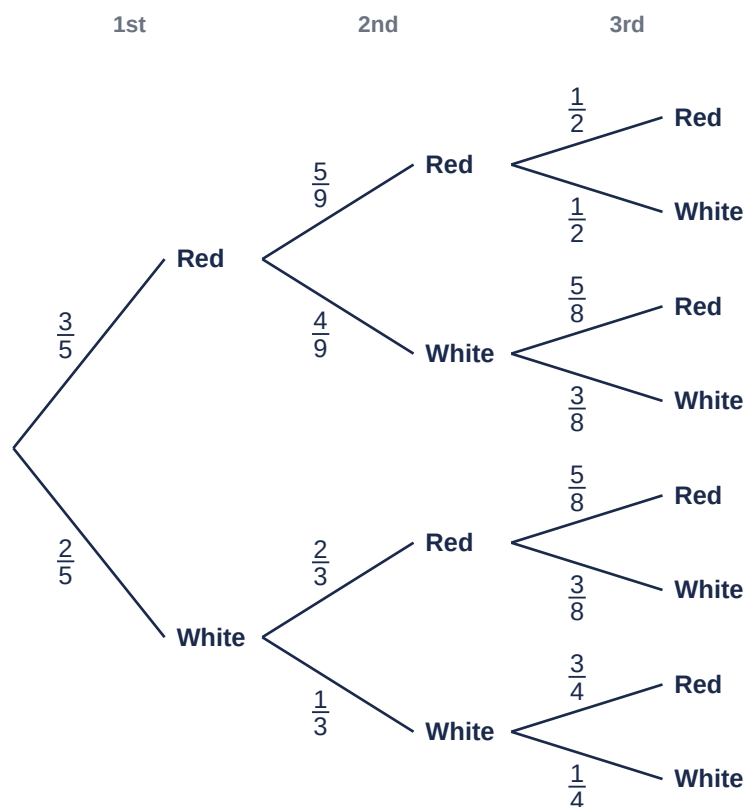


Q27

[4 marks]

A bag contains 6 red marbles and 4 white marbles. Three marbles are taken at random without replacement. The tree diagram shows the probabilities.

Work out the probability that at least one of the marbles is white.



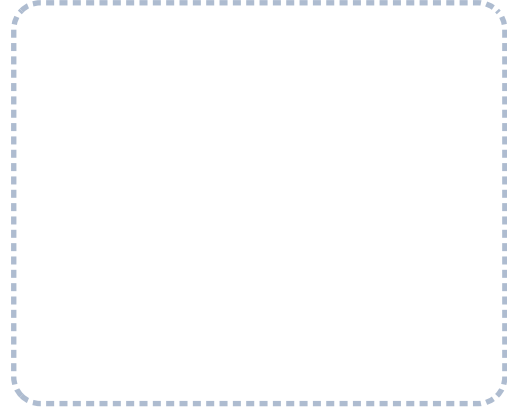
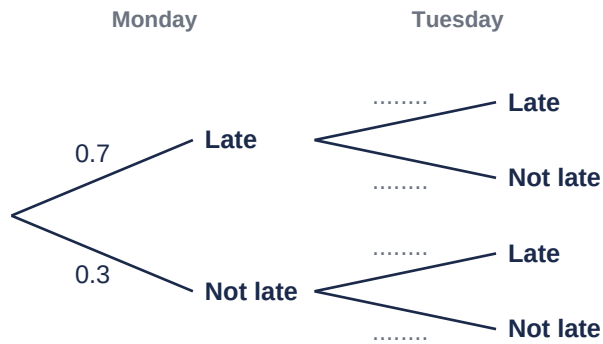
Q28

[4 marks]

The tree diagram shows the probabilities for Monday. The results for Monday and Tuesday are independent. The probability that the bus is late on Monday and the bus is late on Tuesday is 0.21.

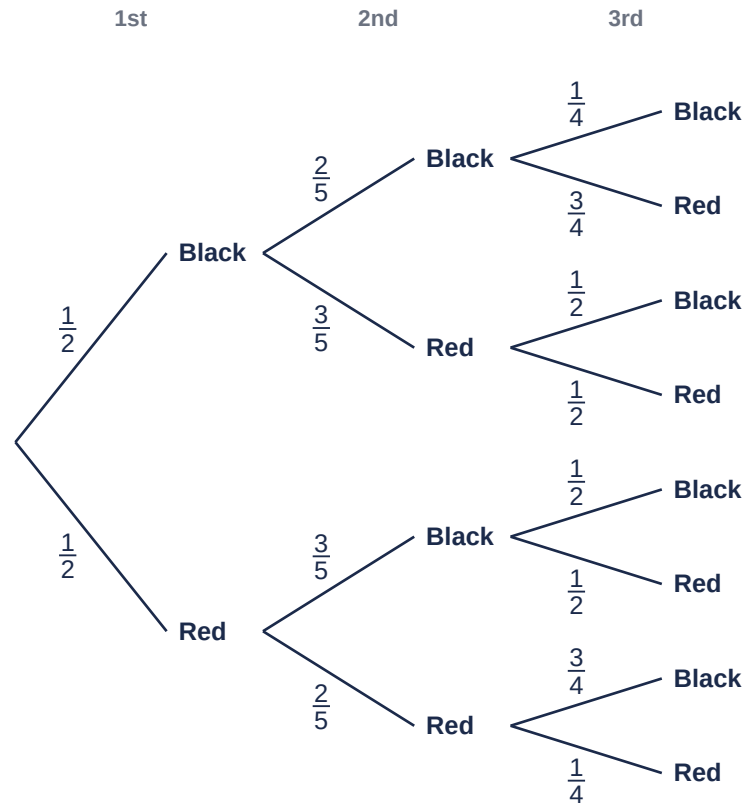
(a) Work out the probability that the bus is late on Tuesday.

(b) Complete the probability tree diagram.



A bag contains 3 black counters and 3 red counters. Three counters are taken at random without replacement. The tree diagram shows the probabilities.

Work out the probability that at least one of the counters is red.



Q30

[4 marks]

The tree diagram shows the probabilities for Amy. The results for Amy and Ben are independent. The probability that Amy passes and Ben passes is 0.36.

- (a) Work out the probability that Ben passes.
(b) Complete the probability tree diagram.

