

Probability Tree Diagrams





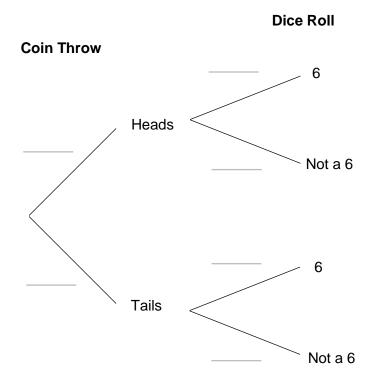
REVISE THIS TOPIC

CHECK YOUR ANSWERS



- 1 In a game a fair coin is thrown and a fair six-sided dice is rolled.
- 1 (a) Complete the tree diagram

[2 marks]



1 (b) A player wins the game if they throw Heads and then roll a number 6.Work out the probability that a player wins the game. [2 marks]



Answer

4

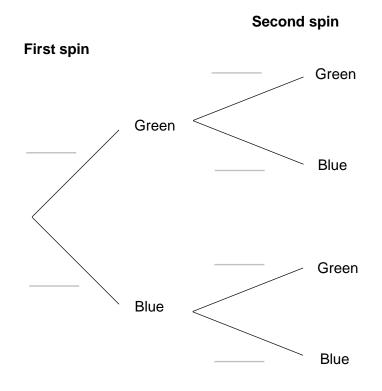


A fair spinner has 5 equal sections.2 of the sections are green and the rest are blue.

The spinner is spun twice.

2 (a) Complete the tree diagram

[2 marks]



2	(b)	Work out the probability that both spins are blue.	[2 marks]

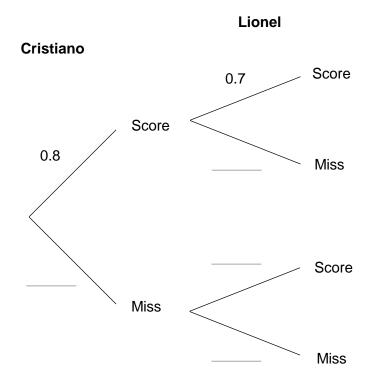
Answer



3 Cristiano and Lionel both take penalty kicks.
The probability that Cristiano scores his penalty kick is 0.8
The probability that Lionel scores his penalty kick is 0.7

3 (a) Complete the tree diagram

[2 marks]



3 (b) Work out the probability that both players score their penalty kicks. [2 marks]

Answer

3 (c) Work out the probability that both players miss their penalty kicks. [2 marks]

Answer _____

10



A bag contains 2 red counters and 7 blue counters.

A counter is taken from the bag, the colour is noted and it is put back into the bag.

A second counter is taken and the colour is noted.

4 (a) Complete the tree diagram

[2 marks]

First Counter Red Blue Blue

4	(b)	Work out the probability that both counters taken are the same colour.	[3 marks]

Answer

Blue



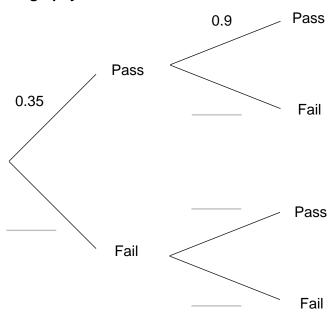
5 Shamil has a geography test and a history test.
The probability that he passes his geography test is 0.35
The probability that he passes his history test is 0.9

5 (a) Complete the tree diagram

[2 marks]

History Test

Geography Test



5	(b)	Work out the probability that Shamil passes only one of his tests.	[3 marks]

Answer

1st

Turn over ▶

10





Ashleigh's hockey team are in the semi final of the hockey cup. The probability that they win the semi-final match is 0.6

If they win the semi-final match they will play the final match. If they lose the semi-final match they are knocked out and play no more matches.

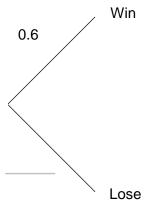
The probability that they win the final match (if they play it) is 0.3

6 (a) Complete the tree diagram

[2 marks]

Final Match

Semi-Final Match



6	(b)	If Ashleigh's team win both the semi-final and the final they win the cup. Work out the probability that Ashleigh's team do not win the cup.	[3 marks]

Answer____







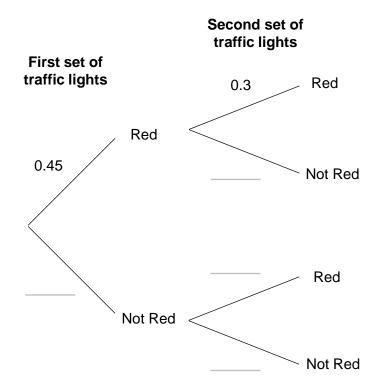
7 On Alliyah's journey to work she drives through 2 sets of traffic lights.

When Alliyah arrives at the traffic lights

The probability the first set is red is 0.45 The probability the second set is red is 0.3

7 (a) Complete the tree diagram

[2 marks]



7	(b)	Work out the probability that at least one of the sets of	ftraffic lights is red
		when Alliyah arrives at them.	[3 marks]

Answer			

1st





8 Sadrile plays a game at the school fair.

The following cards are shuffled and placed face down.



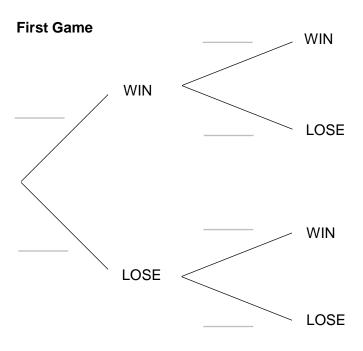
To play the game Sadrile must pick one card at random to see if he wins or not. After each game the cards are returned and shuffled again.

Sadrile plays the game twice.

8 (a) Complete the tree diagram

[2 marks]

Second Game



8 (b) Work out the probability that Sadrile wins exactly one of the games. [3 marks]

1st



Answer_

9 A fair spinner has 4 equal sections.

Two of the sections are blue.

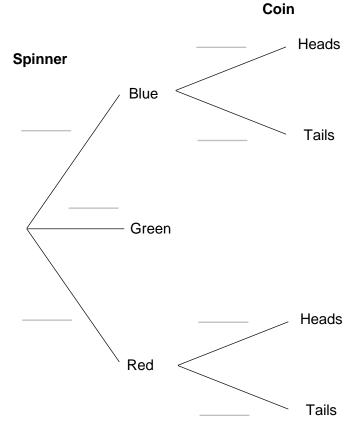
One of the sections is green.

One of the sections is red.

The spinner is spun. If the spinner lands on blue or red then a fair coin is thrown.

9 (a) Complete the tree diagram

[2 marks]



9	(b)	Work out the probability that a coin is thrown and it lands on heads.	[3 marks]

Answer

10

Solutions Dis





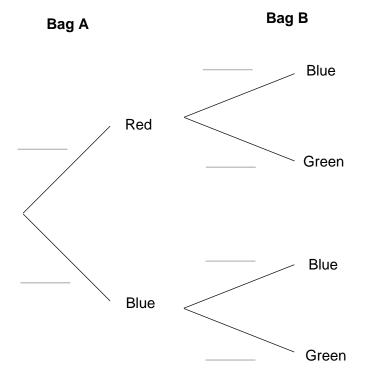
10 Fiona has two bags of counters.

Bag A contains only red and blue counters in the ratio 2 : 5
Bag B contains only blue and green counters in the ratio 3 : 4

Fiona takes a counter from bag A and then a counter from bag B.

10 (a) Complete the tree diagram

[2 marks]



10 (b)	Work out the probability that exactly one of the counters Fiona selects is blue.
	[3 marks]

Answer





- 11 A game uses a spinner that has n equal sections.
 - $\frac{2}{3}$ of the sections are blue.
 - $\frac{1}{4}$ of the sections are yellow

The rest of the sections are green.

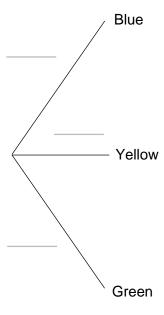
A player spins the spinner. If it lands on blue they can spin it a second time.

11 (a) Complete the tree diagram

[4 marks]

Second Spin

First Spin



11 (b) To win the game the player must spin a yellow.

Work out the probability that the player wins the game. [3 marks]

Answer

12







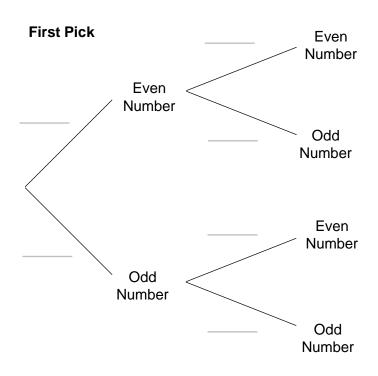
A bag contains 5 counters numbered 1 to 5.

In a game a player picks out a counter from the bag, replaces it then picks out a second counter from the bag.

12 (a) Complete the tree diagram

[2 marks]

Second Pick



12 (b) To win the game the numbers picked must both be even or both be odd. If one number is even and one number is odd then the player loses.

Is the player more likely to win the game or lose the game?	
You must show your working.	[4 marks]





Answer



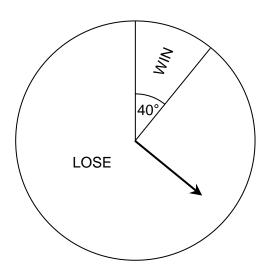
12 (c)	350 people play the game.		
	Work out an estimate for how many people would win the game.	[2 marks]	
	Answer	_	
12 (d)	The rules of the game are changed. The player now wins if either		
	Both numbers picked are prime numbers. Both numbers picked are not prime numbers.		
	If one number is a prime number and one number is not prime, the player loses.		
	What affect does this have on the probability that a player wins. Tick one box and give a reason for your answer.	[2 marks]	
	The probability of winning with the new rules is higher.		
	The probability of winning with the new rules is lower.		
	The probability of winning stays the same.		

1st

Solutions



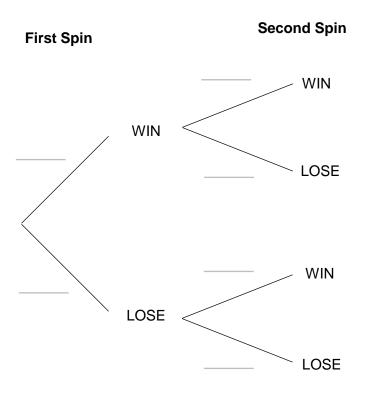
13 The spinner below is used in a game.



In the game players must spin the spinner two times.

13 (a) Complete the tree diagram

[3 marks]







13 (b) The table below shows the prizes that the player can win.

Spins	2 × WIN	1 × WIN	0 × WIN
Prize	£10	£3	£0

To play the game players must pay £2.50 During one week 405 players play the game.

Work out an estimate for the amount of profit the game organiser made this week.
[6 marks]

Answer £



Solutions