D2 *Probability of Two or More Events*

Data Sheets

Data Sheets

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Data Sheet D2.1

A Coin and a Die

A fair die is rolled and an unbiased coin is tossed at the same time.

Complete the following table to show the possible outcomes:

		DIE					
COIN							

How many outcomes are there:

(a) *in total* ☐

(b) that include a 6 ☐

(c) that include a *head* ☐

(d) that include an *even* number ? ☐

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Data Sheet D2.2

Two Dice

Complete the following table to show the possible outcomes when two dice are thrown at the same time and their scores are added:

		DIE B					
		1	*2*	*3*	*4*	*5*	*6*
DIE A	*1*						
	2						
	3						
	4						
	5						
	6						

How many outcomes are there:

(a) *in total* ☐

(b) that give a score of 9 ☐

(c) that give a score of 6 ☐

(d) that give a score of 12 ? ☐

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Data Sheet D2.3

Two Dice Probabilities

The table shows the possible outcomes when two fair dice are thrown and their scores are added:

		SECOND DIE					
		1	*2*	*3*	*4*	*5*	*6*
FIRST DIE	*1*	2	3	4	5	6	7
	2	3	4	5	6	7	8
	3	4	5	6	7	8	9
	4	5	6	7	8	9	10
	5	6	7	8	9	10	11
	6	7	8	9	10	11	12

What is the probability of getting a score:

(a) of 9

(b) of 10

(c) less than 6

(d) greater than 9 ?

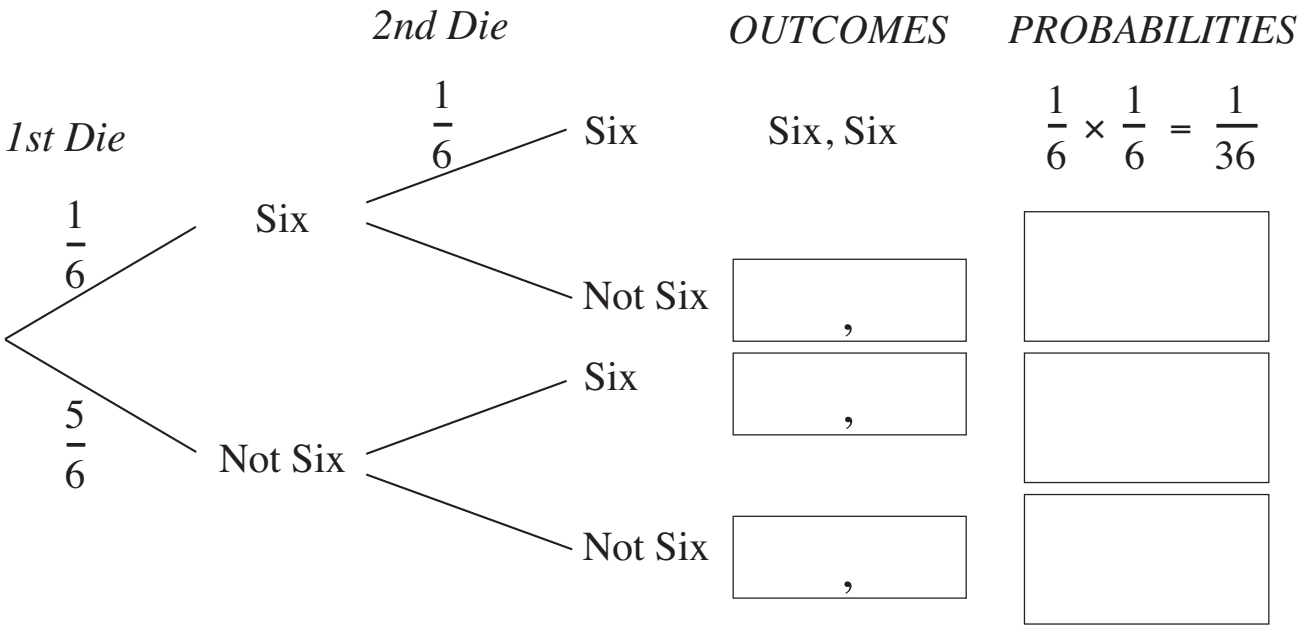
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Data Sheet D2.4 *Tree Diagrams for Two Dice*

Complete the tree diagram and use it to determine the probability of getting:

(a) 2 sixes, (b) 1 six, (c) no sixes,

when you roll two fair dice.



(a) $p(\text{2 sixes}) =$ ☐

(b) $p(\text{1 six}) =$ ☐ + ☐ = ☐

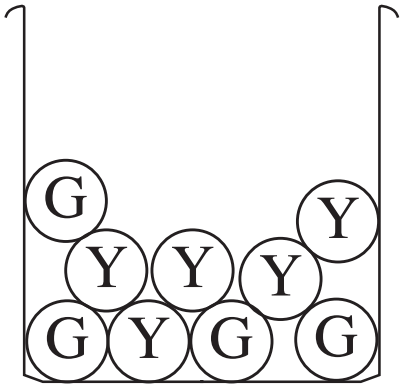
(c) $p(\text{no sixes}) =$ ☐

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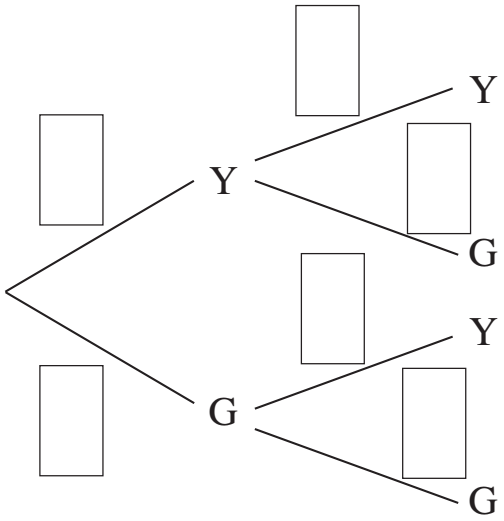
Data Sheet D2.5 *Tree Diagram for Coloured Balls*

There are 5 yellow balls (Y) and 4 green balls (G) in a container.

One ball is taken out at random and then put back. A second ball is then taken out at random.



Complete the tree diagram:



OUTCOME	*PROBABILITY*		
Y Y		=	
		=	
		=	
		=	

Determine:

$p\,(2 \text{ yellow balls}) =$ ☐

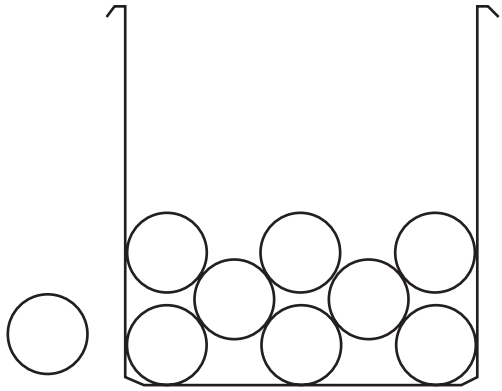
$p\,(2 \text{ green balls}) =$ ☐

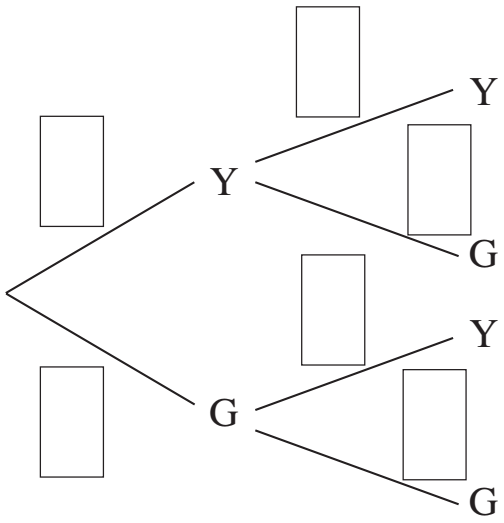
$p\,(\text{a green ball and a yellow ball}) =$ ☐ + ☐ = ☐

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Data Sheet D2.5 Extension

Using the information given in Data Sheet D2.5, find what happens if the first ball taken is NOT put back into the container.





OUTCOME	*PROBABILITY*		
Y Y		=	
		=	
		=	
		=	

Determine:

$p\,(2 \text{ yellow balls}) =$

$p\,(2 \text{ green balls}) =$

$p\,(\text{a green ball and a yellow ball}) =$ + =

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Data Sheet D2.6

Misconceptions

Each of the following is a misconception (incorrect statement). Explain why.

Misconception 1

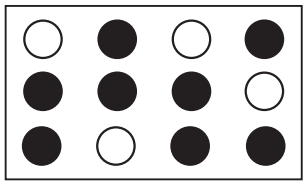
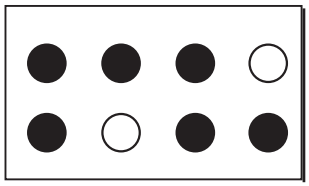
When two fair dice are rolled and the numbers thrown are added, the probability of getting a total of 6 is $\frac{1}{11}$ *because there are 11 different possible outcomes.*

Misconception 2

If six fair dice are thrown at the same time, you are less likely to obtain 1, 1, 1, 1, 1, 1 than 1, 2, 3, 4, 5, 6.

Misconception 3

If you choose 1 ball from each box, you are more likely to obtain a black ball from box A than from box B, because there are more black balls in box A.

A  B 

Misconception 4

You spin two unbiased coins. The probability of getting a HEAD and a TAIL is $\frac{1}{3}$ *because you can get:*

2 HEADS; 1 HEAD and 1 TAIL; 2 TAILS

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