

LISTING OUTCOMES AND SAMPLE SPACE

Probability

Key Concepts

When there are a number of different possible outcomes in a situation we need a **logical** and **systematic** way in which to view them all.

We can be asked to **list** all possible outcomes e.g. choices from a menu, order in which people finish a race.

We can also use a **sample space diagram**. This records the possible outcomes of two different events happening.



58, 69, 126

Examples

Starter	Main
Fishcake	Lasagne
Melon	Beef
	Salmon

List all of the combinations possible when one starter and one main are chosen.

F, L	M, L
F, B	M, B
F, S	M, S

Note: You can write the initials of each option in a test. You do not need to write out the full word.

Two dice are thrown and the possible outcomes are shown in the sample space diagram below:

	1	2	3	4	5	6
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

- 1) What is the probability that 2 numbers which are the same are rolled?

$$\frac{6}{36} = \frac{\text{outcomes where numbers are the same}}{\text{total number of outcomes}}$$

- 2) What is the probability that two even numbers are rolled?

$$\frac{9}{36} = \frac{\text{outcomes where numbers are both even}}{\text{total number of outcomes}}$$

Key Words
List
Outcome
Sample
space
Probability

1) Abe, Ben and Carl have a race. List all of the options for the order that the boys can end the race.

		Spinner		
		Red	Green	Blue
Coin	Heads	H,R	H,G	H,B
	Tails	T,R	T,G	T,B

2a) What is the probability that a head is landed on?
b) What is the probability that a head and a green are landed on?