



Check out

You should now be able to ...

✓ Generate sample spaces for events and use these to calculate probabilities.	6	1 - 4
✓ Understand that the probabilities of all possible outcomes sum to 1.	6	5
✓ Analyse the frequency of outcomes of simple probability experiments.	7	5 - 7
✓ Enumerate sets using Venn diagrams.	7	8

Test it

Questions

- Two dice are thrown. State if these pairs of events are mutually exclusive
 - 'one of the dice shows a 3' and 'the sum of both dice is 7'
 - 'one of the dice shows an even number' and 'the product of the two dice is even'
 - 'one of the dice shows a 4' and 'the difference between the dice is 5'
- A card is chosen at random from a set of digit cards from 1 to 20. Find the probability of each of these events.
 - P(even number)
 - P(odd number)
 - P(multiple of 3)
 - P(prime number)
- A letter from the word SUMMER is chosen at random. Find the probability of each of these events.
 - P(R)
 - P(M)
 - P(a vowel)
 - P(P)
- Two fair dice are thrown and the numbers multiplied together.
 - Construct a two-way table which shows the sample space.
 - Calculate the probability of getting a product of more than 12.
- A fair dice is thrown twice and each time it is recorded whether it is a 6 or not a 6. Record the outcomes on a tree diagram.



- Aidan is practising on a putting green. He records how many shots per hole in the table.

Shots	1	2	3+
Frequency	3	11	4

Estimate the probability Aidan takes 3 or more shots.

- A five-sided spinner is spun 20 times and the results recorded.

1	4	5	3	5
2	4	3	4	3
3	5	4	2	3
4	3	5	1	4

- Calculate the relative frequency of each number.
 - Calculate the theoretical probability of each number.
 - Do you think the spinner is fair?
- $\Omega = \{\text{the integers } 1 \text{ to } 10\}$
 $A = \{\text{multiples of } 2\}$
 $B = \{\text{factors of } 18\}$
 - Draw a Venn diagram to show this information.
 - Shade the region $A \cap B$.
 - Find $P(A \cap B)$.
 - $C = \{\text{multiples of } 4\}$
What can you say about the sets A and C?
 - What can you say about the sets B and C?

What next?

0 - 3	Your knowledge of this topic is still developing. To improve look at Formative test: 3B-16; MyMaths: 1199, 1209, 1210, 1211, 1264, 1921 and 1922
4 - 6	You are gaining a secure knowledge of this topic. To improve look at InvisiPen: 451, 452, 453, 454, 461, 462, 463, 464, 472, 474, 475 and 476
7, 8	You have mastered this topic. Well done, you are ready to progress!



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Example

Experiment	A series of trials.	Tossing a dice 100 times is an experiment.
Trial	An activity that you can record the result of.	Rolling a dice is a trial.
Outcome	Possible result of a trial.	The possible outcomes of rolling a dice are 1, 2, 3, 4, 5, 6.
Event	A set of outcomes.	'Rolling an even number' on a dice is an event.
Mutually exclusive	Events that cannot both happen together.	Raining and not raining are mutually exclusive events.
Exhaustive	All the possible outcomes of a trial.	'An even score' and 'an odd score' on a dice.
Relative frequency	An estimate of probability from experimental data.	Weather forecasters use patterns to estimate the probability of rain.
Probability	A measure of how likely an event is to occur.	'The probability of rain tomorrow is $\frac{3}{10}$ '