

**Check out**

You should now be able to ...

✓	Questions	Score
✓	Understand and use the probability scale from 0 to 1.	5
✓	Find probabilities for mutually exclusive events.	5
✓	Find probabilities based on equally likely outcomes.	5
✓	Use a sample-space diagram to show the possible outcomes of two events.	6
✓	Find and interpret probabilities based on experimental data.	5
✓	Use Venn diagrams to find probability.	6

**Test it**

**Questions**

1	A bag contains 2 white and 7 red counters. What is the probability that a randomly chosen counter will be red?
2	The probability that Jeremy wins his game of chess is 0.6. What is the probability he doesn't win?
3	Mandy has a pack of 76 cards. Twenty of the cards have pictures on them. Find the probability of Mandy selecting a picture card at random. Give your answer as a fraction in its lowest terms.
4	Ashleigh can choose white, brown or seeded bread for her sandwiches. As a filling she could have cheese, ham or egg.
5	A game involves flipping a coin and rolling a dice.



**Language Meaning Example**

<b>Outcome</b>	The result of an activity.	For a regular dice the outcomes are 1, 2, 3, 4, 5, and 6.
<b>Event</b>	A group of one or more possible outcomes.	The event 'odd number' consists of the outcomes 1, 3 or 5.
<b>Trial</b>	A single occurrence of an activity whose outcome is random.	Tossing a coin once is a trial. Tossing a coin 100 times is an experiment.
<b>Experiment</b>	A collection of repeated trials.	Rolling an even number and an odd number on a regular dice.
<b>Mutually exclusive</b>	Events that cannot both happen at the same time.	If a coin is tossed 50 times and comes up heads 23 times, then the experimental probability of heads is $\frac{23}{50}$ .
<b>Experimental probability</b>	The number of favourable outcomes divided by the total number of outcomes in an experiment.	For a regular dice, the theoretical probability of obtaining a factor of 6 (that is a 1, 2, 3 or 6) is $\frac{4}{6} = \frac{2}{3}$ .
<b>Theoretical probability</b>	Assuming all outcomes are equally likely, the number of favourable outcomes divided by the total number of outcomes.	

- red
  - green?
- The probability that Jeremy wins his game of chess is 0.6. What is the probability he doesn't win?
- Mandy has a pack of 76 cards. Twenty of the cards have pictures on them. Find the probability of Mandy selecting a picture card at random. Give your answer as a fraction in its lowest terms.
- Ashleigh can choose white, brown or seeded bread for her sandwiches. As a filling she could have cheese, ham or egg.
  - Draw a sample-space diagram to show all the possible outcomes.
  - How many different combinations can she choose from?
- A game involves flipping a coin and rolling a dice.
  - Copy and complete the sample space diagram to show all the possible outcomes.

		Dice					
		1	2	3	4	5	6
Coin	H	H1					
	T						

**What next?**

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

- How many possible outcomes are there?
  - What is the probability of getting a head and a 5?
  - What is the probability of getting an odd number and a tail?
- The test results of 15 students are as follows:
 

12	10	13	10	16
18	15	13	9	7
10	12	14	15	17

 A mark of 12 or more was needed to pass. Estimate the probability that a student chosen at random would have passed the test.
- Zak plays a game 40 times and wins 16 times.
  - Estimate the probability he will win the next time he plays.
  - If Zak plays the game 30 more times, how many times would you expect him to win?
- Construct a Venn diagram from this information.
 
$$\Omega = \{\text{whole numbers } 1-40\}$$

$$P(A) = \frac{1}{2}, P(A \cap B) = \frac{1}{8}, P(A \cup B) = \frac{1}{4}$$