

Sample space

1 Write the sample space for each of the following:

a rolling a dice 1, 2, 3, 4, 5, 6

b drawing a marble from a bag containing 8 red, 4 blue and 2 green marbles

red, blue, green

c choosing a sock from a drawer that has white, grey, black and striped socks

white, grey, black, striped

The **sample space** is a list of all the possible outcomes. It answers the question 'What could I get when I do this experiment?'



2 Jimmy wants to choose his outfit from the clothes shown in the pictures. List all the possible outfits that Jimmy could wear (the sample space).



yellow / blue / green / pink T-shirt with black / blue / grey / green / light blue / brown jeans



3 Complete the table below to find the sample space for the menu listed.

MENU

Mains

Linguini with pesto
Sweet and sour pork
Chicken pot pie
Crab cakes
Sirloin steak

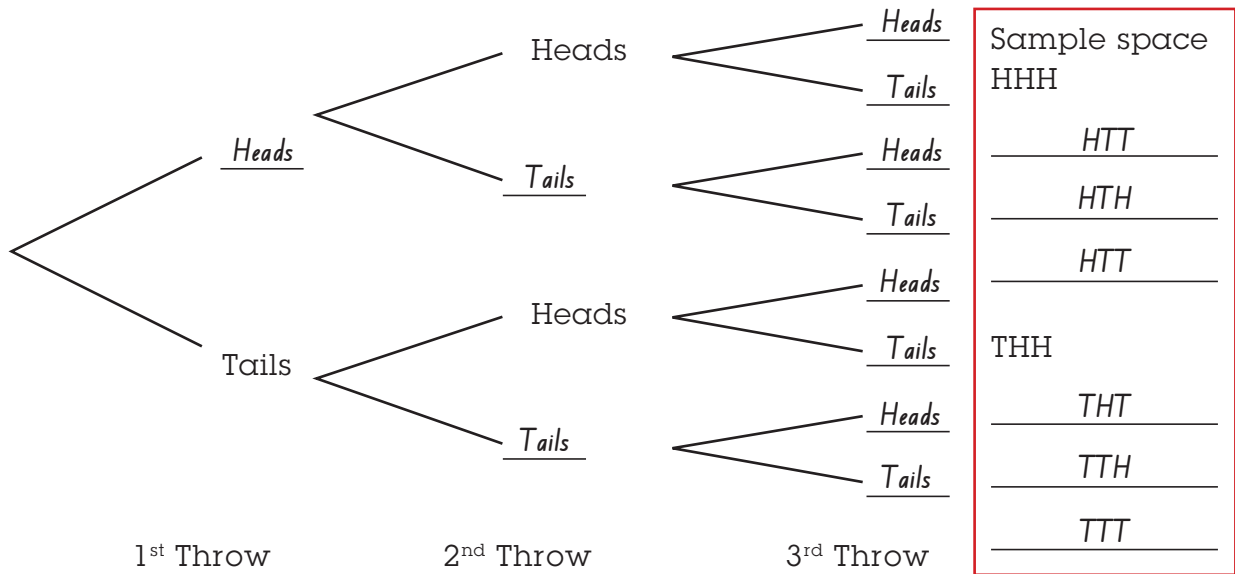
Dessert

Blueberry pie
Tiramisu
Ice-cream sundae
Fruit salad

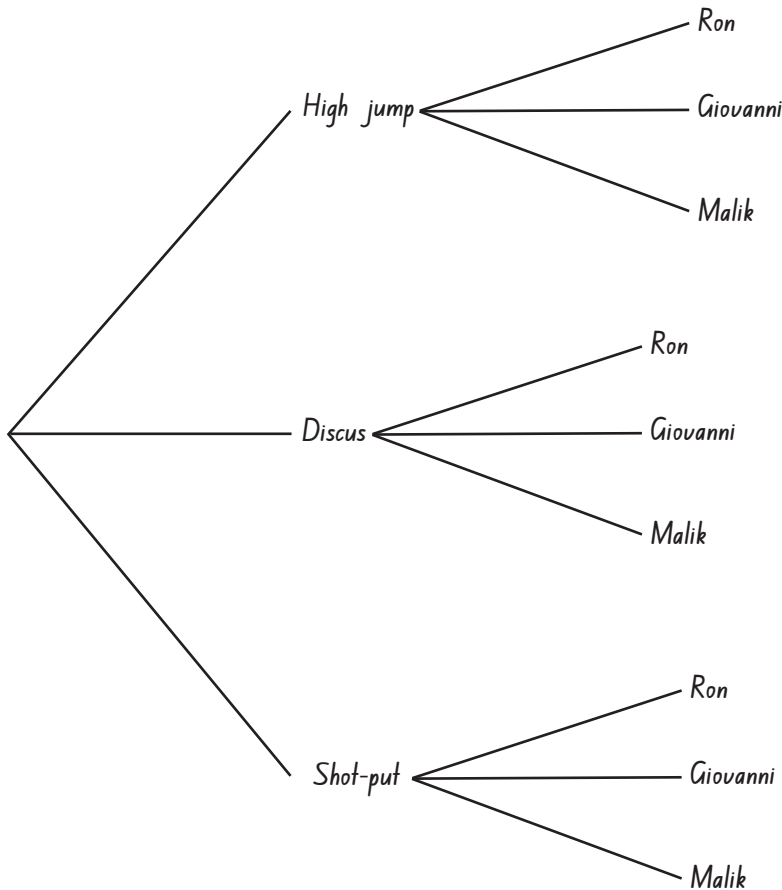
Sample space	Blueberry pie	Tiramisu	Ice-cream sundae	Fruit salad
Linguini with pesto	Linguini, pie	Linguini, Tiramisu	Linguini, sundae	Linguini, fruit salad
Sweet and sour pork	Pork, pie	Pork, Tiramisu	Pork, sundae	Pork, fruit salad
Chicken pot pie	Chicken, pie	Chicken, Tiramisu	Chicken, sundae	Chicken, fruit salad
Crab cakes	Crab cakes, pie	Crab cakes, Tiramisu	Crab cakes, sundae	Crab cakes, fruit salad
Sirloin steak	Steak, pie	Steak, Tiramisu	Steak, sundae	Steak, fruit salad

Tree diagrams

- 1 Complete the tree diagram to find the sample space for throwing a coin three times.



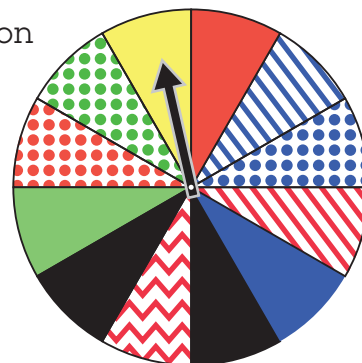
- 2 Ron, Giovanni and Malik competed against each other in the high jump, discus and shot-put. Draw a tree diagram to show all the possibilities of who came first in each event.



What is the chance?

1 Look at the spinner. What is the probability as a fraction that it will land on:

- a red? $\frac{1}{12}$
- b blue? $\frac{1}{12}$
- c a section with spots? $\frac{3}{12} = \frac{1}{4}$
- d a blue striped section? $\frac{1}{12}$
- e a black section? $\frac{2}{12} = \frac{1}{6}$



2 In a car park there are 8 black, 12 silver, 5 green, 3 red, 2 white cars and 5 motorcycles. What is the probability that the next vehicle to leave the car park will be:

- a a white car? $\frac{2}{35}$
- b a motorcycle? $\frac{5}{35} = \frac{1}{7}$
- c a truck? 0
- d a silver or black car? $\frac{20}{35} = \frac{4}{7}$

3 a Complete the table to show the scores that can be obtained when 2 dice are rolled. The first ones have been done for you.

b What is the probability that the score will be:

- i 7? $\frac{6}{36} = \frac{1}{6}$
- ii 12? $\frac{1}{36}$
- iii 1? 0
- iv even? $\frac{18}{36} = \frac{1}{2}$
- v greater than 10? $\frac{3}{36} = \frac{1}{12}$

	1	2	3	4	5	6
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

4 Consider a normal deck of cards (without the jokers). You may like to find one to help you answer these questions. What is the probability that a card drawn from this deck will be:

- a the 8 of clubs? $\frac{1}{52}$
- b a 2? $\frac{4}{52}$
- c an ace? $\frac{4}{52}$
- d a king or queen? $\frac{8}{52}$
- e a black? $\frac{1}{2}$
- f a joker? 0
- g a red picture card? $\frac{12}{52}$



Win or lose?

1 Jodie sold 100 raffle tickets. She sold 20 to her grandparents, 15 to her mother, 45 to her neighbours, 10 to her teacher and 5 each to her brother and sister.

- a** What is the probability as a percentage that first prize went to:
- i** her mother? 15% **ii** her brother? 5%
iii a neighbour? 45% **iv** a grandparent? 20%

b Who has the greatest chance of winning? her neighbour

c If Jodie's mother won first prize, what is the probability that she will win second prize as well? Give reasons for your answer.

$\frac{14}{100}$. Winning the first prize means she loses 1 tickets.
 $\therefore 15 - 1 = 14$ tickets left.

2 In a game of bingo there are 75 numbers.

a What is the probability that the first ball drawn will be:

- i** a 9? $\frac{9}{75}$
ii odd? $\frac{38}{75}$

iii in the first two columns of the bingo card that is shown? $\frac{30}{75}$

b What is the probability that the first number drawn will be a number on this bingo card?
 $\frac{24}{75}$

c What is the probability that the second number drawn will also be a number on this bingo card?
 $\frac{23}{75}$



3 Have you played the game rock paper scissors? How often do you win?

a Write out the sample space for two people playing the game.

Rock vs paper Rock vs rock Paper vs paper
Rock vs scissors Rock vs scissors scissors vs scissors

b What is the chance of winning one round?
 $\frac{1}{3}$

