How many ways?

Notes and guidance

This small step focuses on correspondence problems.

Children start by systematically listing all the possible combinations resulting from combining two groups of objects. For example, if there are three buckets and four spades, children can explore how many different combinations of bucket and spade they can make.

The use of practical equipment to model a question can support children's understanding. Drawing a table helps children to take a systematic approach to ensure that they have found all the possible combinations. By the end of this step, children should be able to use multiplication to calculate the total number of possibilities, as a more efficient strategy than listing them all.

Things to look out for

- When writing lists, unless working systematically, children may omit some possibilities and/or count some possibilities more than once.

- Children may not recognise the link between listing the number of possibilities and the multiplication calculation that can be done.

Key questions

- How can you show the possibilities in a table?

- In what order should you list the possibilities?

- Starting with _____, how many combinations can you make?

- How do you know you have found all the ways?

- How many combinations are there if you have _____ and _____?

Possible sentence stems

- For every _____, there are _____

  There are _____ × _____ = _____ possibilities altogether.

- For each _____, there are _____ choices of _____

  There are _____ ways altogether.

- I know that I have found them all because …

National Curriculum links

- Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects
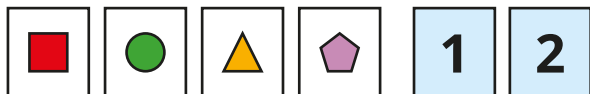
How many ways?

Key learning

- Huan has three T-shirts and four pairs of shorts.

  Complete the table to show how many different outfits he can make.

T-shirt	Shorts
white	blue
white	white
white	spotty
white	stripy

- Alex has four shape cards and two digit cards.

  She chooses a shape and a digit.

  Use a table to find all the different ways that she can do this.

  How many different ways can you find?

  How do you know that you have found them all?

- Ron has three hats and two scarves.

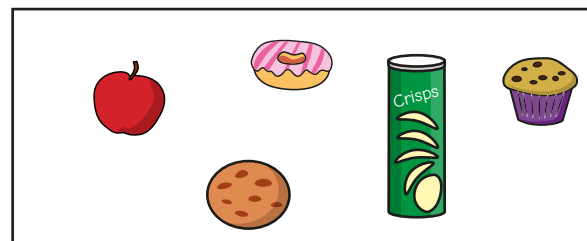 He chooses a hat and a scarf.

  List all the possible combinations he can wear.

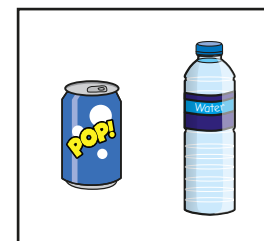 Use a multiplication to work out the number of combinations.

  How many combinations are there if Ron buys four more scarves?

- Aisha is choosing a snack and a drink.

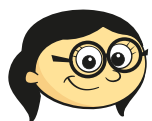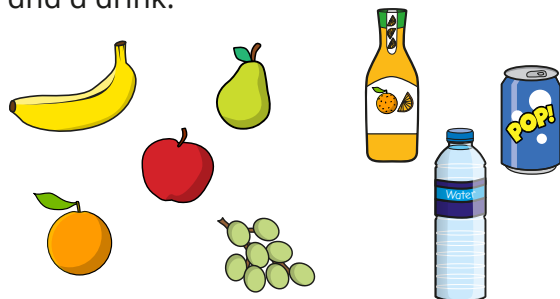 How many possible combinations are there?

  snacks   **drinks**

How many ways?

Reasoning and problem solving

Annie chooses a piece of fruit and a drink.

There are 5 kinds of fruit and 3 drinks.
5 + 3 = 8, so there are 8 possible combinations I could have.

Explain why Annie is wrong.

How many possible combinations are there altogether?

How many possible combinations include a bottle of drink?

$$\frac{15}{10}$$

Brett is choosing an ice cream.

He chooses one flavour of ice cream and one sauce.

There are 6 ice cream flavours.

There are 24 possible combinations of ice cream and sauce.

How many sauces are there?

4

Tommy has some jumpers and pairs of trousers.

He has more jumpers than pairs of trousers.

He can make 15 different outfits.

How many jumpers could he have?

How many pairs of trousers could he have?

Compare answers with a partner.

5 jumpers and 3 pairs of trousers

15 jumpers and 1 pair of trousers