7–5 Sample Spaces

Main Idea
- Construct sample spaces using tree diagrams or lists.

Build Your Vocabulary (pages 169–170)

The set of all possible outcomes is called the **sample space**.

A **tree diagram** is a diagram that shows all possible outcomes of an event.

Example Use a List to Find Sample Space

1 **VACATION While on vacation, Carlos can go snorkeling, boating, and paragliding. In how many ways can Carlos do the three activities? Make an organized list to show the sample space.**

Make an organized list. Use S for snorkeling, B for boating, and P for paragliding.

There are ____ Carlos can do the three activities.

Check Your Progress **STUDENT COUNCIL**

Ken, Betsy, Sally, and David are seated in a row at the head table at a student council meeting. In how many ways can the four students be seated? Make an organized list to show the sample space.

Example Use a Tree Diagram to Find a Sample Space

1 **A car can be purchased with either two doors or four doors. You may also choose leather, fabric, or vinyl seats. Use a tree diagram to find all the buying options.**

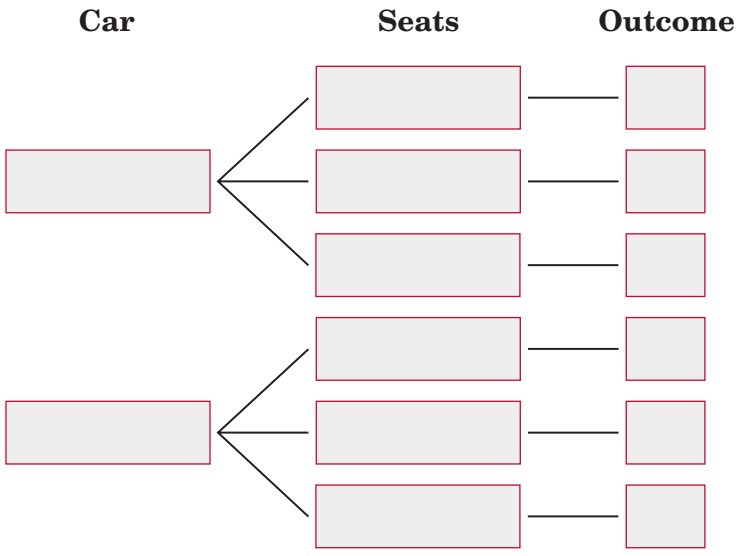
List each choice for the number of doors. Then pair each choice for the number of doors with each choice for the types of seats.

Foldables

Organize It

In your Foldable, tell how a tree diagram is used to show a sample space.

Fraction	Percent	Decimal
$\frac{1}{2}$	→ 50% →	0.5



There are ____ possible buying options.

REMEMBER IT

Outcomes are all the possible results of a probability event.

Check Your Progress A pair of sneakers can be purchased with either laces or Velcro. You may also choose white, gray, or black sneakers. Use a tree diagram to find how many different sneakers are possible.

BUILD YOUR VOCABULARY (pages 169–170)

The **Fundamental Counting Prinicipl**e states that if there are ____ outcomes for the first choice and ____ outcomes for a second choice, then the total number of possible outcomes is $m \times n$.

EXAMPLE 1 Use Fundamental Counting Principle

FLOWERS **Chloe wants to buy a bouquet of flowers in a vase. The flower shop has roses, daffodils, and tulips, and has four different vases from which to choose. Use the Fundamental Counting Principle to find the total number of possible outcomes of a bouquet made up of two types of flowers in a vase.**

number of outcomes for flower choice	·	number of outcomes for vase choice	=	total number of outcomes
____	·	____	=	____

There are ____ different outcomes.

Check Your Progress **PASTA** A restaurant offers a pasta bar where customers can choose from fettucine, linguine, and macaroni for their pasta choice, and three types of sauce. Use the Fundamental Counting Principle to find the total number of outcomes of a pasta dish with one type of pasta and one sauce.

HOMEWORK ASSIGNMENT

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