

Lesson 12-4 (pp. 647–652)

Sample Spaces

<p>Lesson Objectives</p> <ul style="list-style-type: none"> ▼ Find a sample space ▼ Use the counting principle 	<p>NAEP 2005 Strand: Data Analysis and Probability</p> <p>Topic: Probability</p> <p>Local Standards: _____</p>
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Vocabulary and Key Concepts

The Counting Principle

Suppose there are m ways of making one choice and n ways of making a second choice. There are $\square \times \square$ ways to make the first choice followed by the second choice.

Example If you can choose a shirt in 5 sizes and 7 colors, then you can choose $\square \times \square$, or \square , shirts.

A sample space is _____

Examples

- ① **Finding a Sample Space** Make a table to show the sample space for tossing two coins. Write the outcomes as ordered pairs.

	H	T	
H	(H, H)	(H, T)	← There are \square possible outcomes.
T	(T, H)	(T, T)	

- ② **Using the Counting Principle** How many kinds of coin purses are available if the purses come in small or large sizes and colors red, blue, yellow, and black?

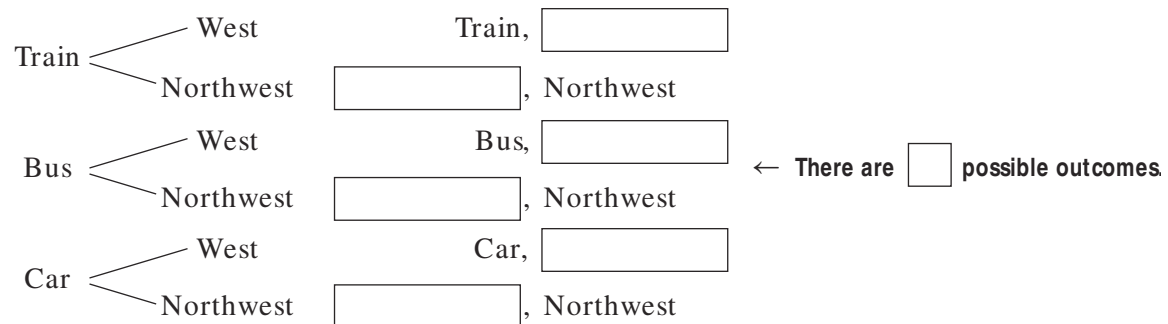
Size	×	Color	
number of choices		number of choices	
\square	×	\square	= \square

There are \square different kinds of coin purses available.

Size	Colors
small	red
large	blue
	yellow
	black

3 Using a Tree Diagram Suppose you can go west or northwest by train, bus, or car.

a. Draw a tree diagram to show the sample space.



b. What is the probability of a random selection that results in a bus trip west?

There is favorable outcome (bus,) out of possible outcomes. The probability is .

Check Understanding

1. Give the sample space for tossing three coins.

2. a. Use the data from Example 2. Suppose pink is added as another choice of purse color. How many different kinds of coin purses are now available?

b. Suppose you select a coin purse at random from the original selection. What is the probability of selecting a large coin purse?

3. a. Suppose an airplane is added as another choice in Example 3. Draw a tree diagram to show the sample space.

b. Find the probability of randomly selecting an airplane for your journey.