15.4

Compound Events

Do Now

1. **An event has a theoretical probability of 0.5. What does this mean?**

2. **Describe an event that has a theoretical probability of 1/4.**

3. **A pollster surveys randomly selected individuals about an upcoming election. Do you think the pollster will use experimental probability or theoretical probability to make predictions? Explain.**

Learning Target:

- **I can use tree diagrams, tables, or a formula to find the number of possible outcomes.**
- **I can find probabilities of compound events.**

Key Vocabulary & Idea:

SAMPLE SPACE

The _____ of all _____ _____ of __ or _____ _____.

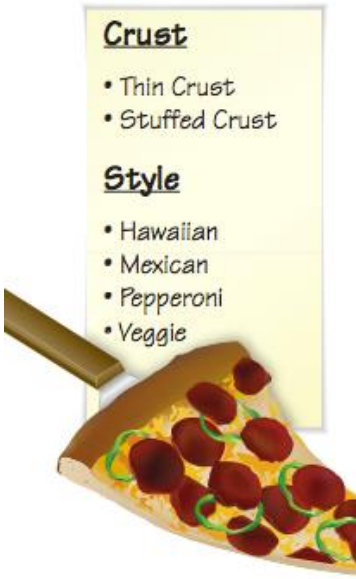
You can use _____ and _____ _____ to find the sample space of 2 or more events.

Finding a Sample Space

You randomly choose a crust and style of pizza. Find the sample space. How many different pizzas are possible?

Use a tree diagram to find the sample space.

Crust *Style* *Outcome*



Finding a Sample Space

Practice

The pizza shop adds a deep dish crust. Find the sample space. How many pizzas are possible?

Crust *Style* *Outcome*

Key Vocabulary & Idea:

Fundamental Counting Principle

Another way to find the _____ _____ of _____ _____.

An event M has *m* possible outcomes. An event N has *n* possible outcomes. the total number of outcomes of event M followed by event N is *m* x *n*.

Finding the Total Number of Possible Outcomes

Find the total number of possible outcomes of rolling a number cube and flipping a coin.

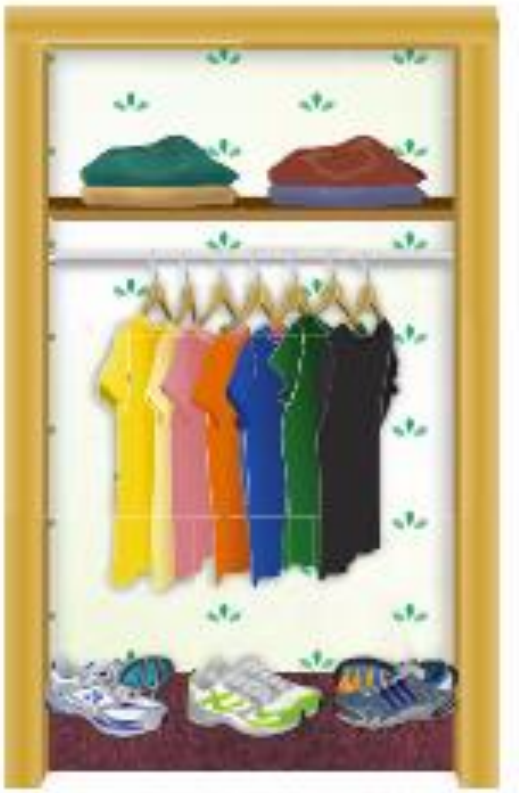
	1	2	3	4	5	6
						
						

Finding the Total Number of Possible Outcomes

Practice

What is the probability of rolling at most 4 and flipping heads?

Finding the Total Number of Possible Outcomes



How many different outfits can you make from the T-shirts, jeans, and shoes in the closet?

Use the Fundamental Counting Principle. Identify the number of possible outcomes for each event.

Finding the Total Number of Possible Outcomes

Practice

How many different outfits can you make from 4 T-shirts, 5 pairs of jeans, and 5 pairs of shoes?

Key Vocabulary & Idea:

Compound Event

A compound event consists of _____ or _____ _____.

As with a single event, the probability of a compound event is the _____ of the _____ of _____ _____ to the _____ of _____ _____.

Finding the Probability of a Compound Event:

What is the probability (from a previous example) of rolling a number greater than 4 and flipping tails??

How many favorable outcomes in the sample space?

	1	2	3	4	5	6
						
						

Finding the Probability of a Compound Event:

Practice

1) You roll 2 number cubes. What is the probability of rolling double threes?

Finding the Probability of a Compound Event:

Practice

2) You flip three nickels. What is the probability of flipping two heads and one tails? Use a tree diagram to find the sample space.

First Flip *Second Flip* *Third Flip* *Outcome*

Finding the Probability of a Compound Event:

Practice

3) You flip three nickels. What is the probability of flipping at least two tails?

Use a tree diagram to find the sample space.