

Study Guide and Intervention

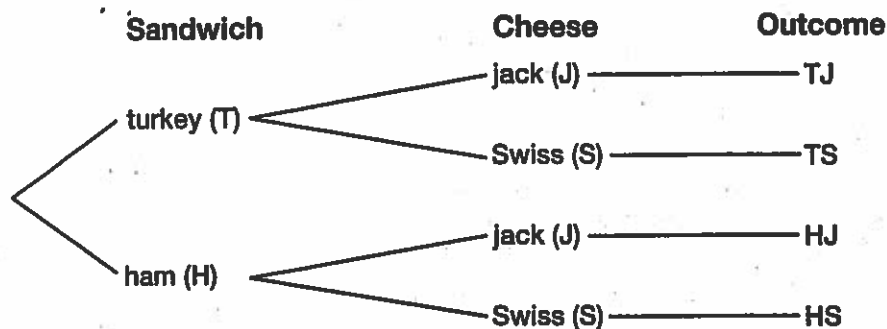
Outcomes

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

A **tree diagram** is a diagram used to show the total number of possible outcomes. It can be used to show the sample space. When you make a tree diagram, you have an organized list of outcomes. When you know the number of outcomes, you can easily find the probability that an event will occur.

EXAMPLE 1 How many sandwiches are possible from a choice of turkey or ham with jack cheese or Swiss cheese?

Draw a tree diagram.



There are four possible sandwiches.

EXAMPLE 2 Use the tree diagram from Example 1. Find the probability of choosing a ham with jack cheese sandwich.

The outcome column of the tree diagram shows there is one possible outcome for ham with jack cheese. There are 4 possible outcomes. So, $P(\text{ham, jack}) = \frac{1}{4}$, 0.25, or 25%.

EXERCISES

Draw a tree diagram to show the sample space for each situation. Then tell how many outcomes are possible and find the probability.

- buy a can or a bottle of grape or orange soda
Find $P(\text{bottle, grape})$.
- toss a coin and roll a number cube
Find $P(4, \text{tails})$.
- wear jeans or shorts with a blue, white, black, or red T-shirt. Find $P(\text{jeans, white T-shirt})$.



Practice: Word Problems

Outcomes

<p>1. OUTINGS Olivia and Candace are deciding between Italian or Chinese food and then whether to go to a movie, walk in the park, or go for a bike ride. Draw a tree diagram to show the sample space. How many choices do they have?</p>	<p>2. PETS Terence is going to get a parrot. He can choose among a yellow, green, or multi-colored female or male parrot. Draw a tree diagram showing all the ways Terence can choose. What is the probability he will choose a yellow female?</p>
<p>3. CAKE Julia is ordering a birthday cake. She can have a circular or rectangular chocolate or vanilla cake with chocolate, vanilla, or maple frosting. Draw a tree diagram showing all the possible ways Julia can order her cake. How many options does she have?</p>	<p>4. GAMES Todd plays a game in which you toss a coin and roll a number cube. Draw a tree diagram to find all possible outcomes. What is $P(\text{heads, odd number})$?</p>
<p>5. SCHOOL Melissa can choose two classes. Her choices are wood shop, painting, chorus, and auto shop. List all the ways two classes can be chosen.</p>	<p>6. SHOPPING Kaya has enough allowance to purchase two new baseball caps from the five he likes. How many ways can he choose?</p>