

10-5 Counting (Pages 509–513)

You can use a **tree diagram** or the **Fundamental Counting Principle** to count **outcomes**, the number of possible ways an event can occur.

Fundamental Counting Principle	If an event M can occur in m ways and is followed by event N that can occur in n ways, then the event M followed by event N can occur in $m \cdot n$ ways.
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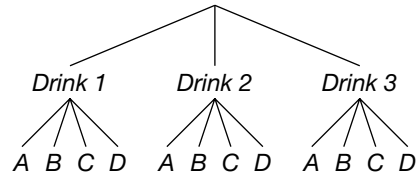
EXAMPLE

How many lunches can you choose from 3 different drinks and 4 different sandwiches?

Let the different sandwiches A, B, C, and D.

A tree diagram shows 12 as the number of outcomes.

You could also use the Fundamental Counting Principle.



$$\begin{array}{rclcl}
 \text{number of} & \times & \text{number of types} & = & \text{number of} \\
 \text{types of drinks} & & \text{of sandwiches} & & \text{possible outcomes} \\
 3 & \times & 4 & = & 12
 \end{array}$$

There are 12 possible outcomes.

Try These Together

1. Draw a tree diagram to find the number of outcomes when a coin is tossed twice.
2. A six-sided number cube is rolled twice. How many possible outcomes are there?

PRACTICE

Draw a tree diagram to find the number of outcomes for each situation.

3. A six-sided number cube is rolled and then a dime is tossed.
4. Julie can either catch the bus or walk to school in the mornings. In the afternoons, she has a choice of catching a ride with a friend, taking the bus, or walking home. How many different ways can Julie get to and from school?
5. **Fast Food** A fast-food restaurant makes specialty burritos. The tortillas come in the sizes of regular, monster, and super and in flavors of wheat, flour, cayenne, and spinach. How many different combinations of size and flavor of tortilla can you order for a burrito?

- 6. Standardized Test Practice** Using two six-sided number cubes, what is the probability of rolling two 1s?

- A** $\frac{1}{36}$ **B** $\frac{1}{18}$ **C** $\frac{1}{12}$ **D** $\frac{1}{6}$

Answers: 1. 4 outcomes; see Answer Key for diagram. 2. 36 outcomes 3–4. See Answer Key for diagrams. 3. 12 outcomes 4. 6 ways 5. 12 combinations 6. A
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