NAME _____ DATE _____ PERIOD _____

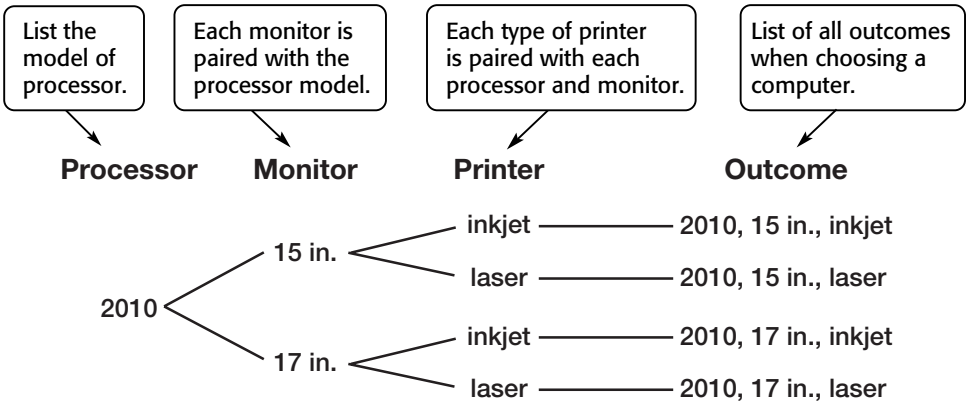
# 12-1 Study Guide and Intervention

6SDAP3.1

## *Counting Outcomes*

An organized list of outcomes, called a **sample space,** can help you determine the total number of possible outcomes for an event.

**Example 1** **COMPUTERS** **An electronics store offers a model 2010 processor with a choice of 2 monitors (15-inch and 17-inch) and 2 printers (inkjet and laser). Draw a tree diagram to determine how many different computer systems are available.**




There are 4 different computer systems available.

If 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 the event $N$ can occur in $m \cdot n$ ways. This principle is known as the **Fundamental Counting Principle**.

**Example 2** **LOCKS** **A lock combination is made up of three numbers from 0 to 39. How many combinations are possible?**

Use the Fundamental Counting Principle. $40 \times 40 \times 40 = 64{,}000$

There are 64,000 possible lock combinations.

**Exercises**

1. A museum tour includes a box lunch which contains a ham, turkey, or cheese sandwich and an apple, a banana, an orange, or a pear. An equal number of all lunch combinations are available for each tour. Draw a tree diagram to determine the number of outcomes.

**Use the Fundamental Counting Principle to find the number of possible outcomes.**

2. A number cube is rolled twice.

3. Six coins are tossed.