

## Lesson 9-4

### Example 1 Find a Permutation

**CONCERT** In how many ways can a group of seven children stand in a row to sing for a concert?

Use the Fundamental Counting Principle. There are 7 choices for the first position, 6 choices for the second position, 5 choices for the third position, 4 choices for the fourth position, 3 choices for the fifth position, 2 choices for the sixth position, and 1 choice for the seventh position.

$$7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 5,040$$

So, there are 5,040 ways the seven children can stand in a row.

### Example 2 Find Probability

**BOOKS** Drew has borrowed six books from the library. The books are all from the same series and are numbered as books 1 – 6. If he randomly selects two of these books to read on a trip, what is the probability that he will select book 1 first and book 2 second?

There are six choices of books he can read first and five choices that remain that he can read second. So, there are  $6 \cdot 5$  or 30 choices for the books Drew will read first and second. Since there is only one way of arranging book 1 first and book 2 second, the probability of this event is  $\frac{1}{30}$ .