

Key

FCP - Fundamental Counting Principle

- If you want to perform a series of tasks and the first task can be done in x ways, the second can be done in y ways, the third can be done in z ways, and so on, then all the tasks can be done in $x \cdot y \cdot z \cdot \dots$ ways.

<p>1. Starbucks has 14 different flavors of coffee. Each coffee comes in tall, grande, or venti size. How many different kinds of coffees are there?</p> $14 \cdot 3 = 42$	<p>2. A computer store sells 6 different computers, 4 different monitors, 5 different printers, and 3 different multimedia packages. How many different computer systems are available?</p> $6 \cdot 4 \cdot 5 \cdot 3 = 360$
<p>3. Picking a month of the year and a day of the week.</p> $12 \cdot 7 = 84$	<p>4. A store offers 32 different T-shirt designs in 11 different colors. The store advertises "A T-shirt for EVERY DAY of the year!" Is the advertisement true?</p> $32 \cdot 11 = 352$ <p>No</p>
<p>5. You are ordering a case for your iPod. You can choose any of 20 colors for the main shell, any of 28 colors for the protective band, and any of the 150 decals for the back screen. How many different cases can you select from?</p> $20 \cdot 28 \cdot 150 = 84,000$	<p>6. Sam is setting the combination lock on his briefcase. If he can choose any digit 0-9 for each of the 6 digits in the combination, how many possible combinations are there?</p> $10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10$ $1,000,000$
<p>7. The standard configuration for a North Carolina license plate is 3 letters followed by 4 numbers.</p> <p>a) How many different license plates are possible if the digits and letters can be repeated?</p> $26 \cdot 26 \cdot 26 \cdot 10 \cdot 10 \cdot 10 \cdot 10$ $175,760,000$	<p>b) How many different license plates are possible if the digits and letters cannot be repeated?</p> $26 \cdot 25 \cdot 24 \cdot 10 \cdot 9 \cdot 8 \cdot 7$ $78,624,000$

6. The math club is electing new officers. There are 3 candidates for president, 4 candidates for vice-president, 4 candidates for secretary, and 2 candidates for treasurer. How many different combinations of officers are possible?

$$3 \cdot 4 \cdot 4 \cdot 2$$

$$96$$

7. You go to Best Buy to purchase a new television. You have the following choices: LED or ^{Smart} plasma; screen size 42", 46", 50", 55", 60", 65", or 70" $\Rightarrow 7$ and manufacturer Samsung, Sony, LG or $\Rightarrow 4$ Panasonic. How many different televisions does the store have to offer?

$$7 \cdot 4 = 28$$

8. A website requires users to set up an account that is password protected. If the password format is four letters followed by a single digit number, how many different passwords are possible?

$$26 \cdot 26 \cdot 26 \cdot 26 \cdot 10$$

$$4,569,760$$

9. You roll a dice and then draw a card from a set of 3 cards "A", "B", and "C". How many possible outcomes are there?

$$6 \cdot 3 = 18$$

Find the probability that you will select "C" and roll a 4?

$$\frac{1}{18}$$

10. A bicycle license plate consists of 2 letters followed by 3 numbers.

a. If the same letter or number can be repeated, how many can be made?

$$\Rightarrow 26 \cdot 26 \cdot 10 \cdot 10 \cdot 10 = 676,000$$

b. If the same letter CANNOT be repeated, how many can be made?

$$\Rightarrow 26 \cdot 25 \cdot 10 \cdot 9 \cdot 8 = 468,000$$