Math on the Fly!

NAME: _____   DATE: _____

The Fundamental Counting Principle

Solve each problem.

1. How many outcomes are possible when a coin is flipped 4 times?

2. How many outcomes are possible when a coin is flipped one time and a 6–sided die is rolled twice?

3. At a picnic, a person can choose between 5 soups, 6 appetizers, 5 main courses, and 4 desserts. How many different four–course meals are possible?

4. At an elementary school, 8 kids are lined up to go to recess. How many different ways can you line up the kids?

5. How many three–digit even numbers exist where the first two digits are odd? (356 and 770 are examples of numbers that fit the conditions.)

6. A pop quiz has 5 multiple–choice questions. Each multiple–choice question has 4 possible answers to choose from. If every question is answered, how many different ways can the test be answered?

7. A man is at home deciding what to wear for work. He is choosing between wearing a blue, purple or red tie. He is also deciding whether to wear a white dress shirt or a black dress shirt. For his socks, he is choosing between wearing gray socks or brown socks. He has already decided the pants he is going to wear for work. How many different outfits of 1 tie, 1 dress shirt and 1 pair of socks can he make?

8. A license plate number contains 7 symbols where the first four symbols are a letter from A to Z and the last three symbols are a digit from 0 to 9.

How many license plates are possible if:
a) Letters and digits can be repeated
b) Letters and digits cannot be repeated

SOLUTIONS

1. 2 x 2 x 2 x 2 = 16 outcomes

2. 2 x 6 x 6 = 72 outcomes

3. 5 x 6 x 5 x 4 = 600 meals

4. 8 x 7 x 6 x 5 x 4 x 3 x 2 x 1 = 8! = 40,320 ways

5. 5 x 5 x 5 = 125 numbers

6. 4 x 4 x 4 x 4 x 4 = 1,024 ways

7. 3 x 2 x 2 = 12 outfits

8. a. 26 x 26 x 26 x 26 x 10 x 10 x 10 = 456,976,000 plates
   b. 26 x 25 x 24 x 23 x 10 x 9 x 8 = 258,336,000 plates