

Aim: How do I find compound probability with sample spaces?

Do Now: You have a wheel lock with four different wheels as follows:

Wheel 1: 0 - 9

Wheel 2: A - J

Wheel 3: K - T

Wheel 4: 0 - 9



How many possible combinations are there?

What is the probability you guess the right combination? Is this likely or unlikely?

A _____ event consists of one event.

1) You have a bag of marbles with 6 blue marbles, 4 red marbles and 2 purple marbles.

a) What is the probability of getting a *blue marble*?

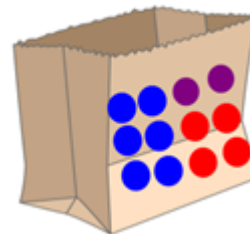
$$P(\text{blue}) =$$

b) What is the probability of getting a *brown marble*?

$$P(\text{brown}) =$$

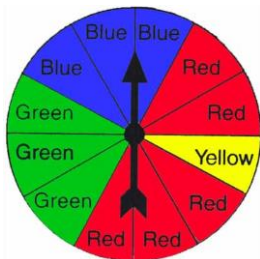
c) What is the probability of getting a *purple or red marble*?

$$P(\text{purple or red}) =$$



A _____ event consists of two or more events.

2) You spin the spinner once and flip the coin once. How many possible outcomes are there using the Fundamental Counting Principle?



How could we possibly list all these different outcomes?

Sample Spaces - *the set of all possible outcomes of one or more events*

List the possible outcomes of rolling a die _____

List the possible outcomes of flipping a coin _____

List all the possible outcomes of rolling a die and flipping a coin. ← *compound event*

LIST	TREE DIAGRAM

Finding Probability of Compound Events:

Use the previous example to answer numbers 1 - 3

1. What is the probability of getting heads and a 4?

2. What is the probability of rolling a number greater than 4 and flipping tails?

3. What is the probability of rolling at most 4 and flipping heads?

4. Make a sample space for flipping three nickels.

a. What is the probability of flipping two heads and one tail?

b. What is the probability of rolling at least two tails?

Recall that probability is:

$$P(E) = \frac{\text{the \# of favorable outcome}}{\text{the \# of possible outcomes}}$$

1. You roll two number cubes. What is the probability of rolling:
 - a. a 3 and a 6
 - b. two 4's

2. You spin the spinner once and flip the coin once.



Find the probability of each event:

- a. Spinning a 1 and flipping a heads
 - b. Spinning an even number and flipping a heads
 - c. Spinning a number less than 3 and flipping a tails
 - d. Spinning a 6 and flipping a tails
 - e. Not spinning a 5 and flipping a heads
 - f. Spinning a prime number and not flipping heads
3. You forget the last two digits to a password you use. (digits are 0-9)
 - a. How many possible outcomes are there for the last two digits?
 - b. Without using a sample space, what is the probability that you randomly choose the correct digits?
 - c. If you suddenly remember that both numbers are even, how does this change the probability you choose correctly?