## TOPIC: MULTIPLICATION RULE: INDEPENDENT EVENTS

### Probability of Multiple Independent Events

◆ Events which do **NOT** depend on each other at all are called **Independent Events**.

**EXAMPLE** Identify whether each set of events is independent or dependent.

$(A)$ Getting tails on the first toss of a coin
Getting tails on the second toss of a coin

**[ INDEPENDENT | DEPENDENT ]**

$(B)$ Drawing and keeping a blue marble from a bag
Drawing a blue marble again

**[ INDEPENDENT | DEPENDENT ]**

◆ For **independent events**, find the probability of event $A$ AND event $B$ occurring by _____ their probabilities.

New

$$P(A \cap B) = P(A) \_\_\_ P(B)$$

**EXAMPLE** Find the probability of each set of events.

$(A)$ Getting heads on two consecutive coin flips

$(B)$ Rolling an even number on the first roll of a six-sided die and rolling a 3 on the second roll

◆ For any number of **independent events**, multiply _____ probabilities to find $P(A \cap B \cap C \cap \ldots)$

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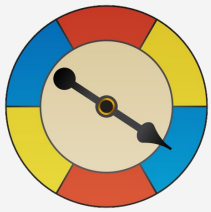
**PRACTICE**

The spinner below has 6 equal regions. Find the probability of landing on yellow for the first spin and not landing on yellow on the second spin.



**PRACTICE**

The spinner below has 6 equal colored regions numbered 1-6. Find the probability of stopping on yellow for the first spin, stopping on an even number on the second spin, and stopping on blue or red on the third spin.