Name_____Date_____Per_____

## CC Algebra 2H 7-3 Notes

### *Independent and Dependent Events*

Two events, *A* and *B*, are **independent** if the occurrence of one event has no effect on the probability of the occurrence of the other.

**Multiplication Rule for the Probability of Independent Events**

If A and B are independent events, then P( A and B) = P(A) • P(B).

**Example 1**: There are 3 red pens, 4 blue pens, and 5 black pens in a box. Suppose you choose a pen at random from the box, replace it, and then choose a second pen. Find the probability of choosing a blue pen and then a red pen, in that order.

**Example 2:** What is the probability of rolling a 3 and then an even number on a cube numbered 1-6?

Two events, *A* and *B*, are **dependent** if the occurrence of one event affects the probability of the occurrence of the other. The probability of *B* given that *A* has occurred is called the **conditional probability** of *B*, given *A.* It is denoted P(B | A).

**Multiplication Rule for the Probability of Dependent Events**

If A and B are dependent events, then P( A and B) = P(A) • P(B | A).

**Example 3:** A deck of cards has 12 face cards and 40 number cards. A card is drawn from the deck and not replaced. A second card is drawn. Find the probability of drawing a number card and then a face card from the deck.

**Example 4:** There are 3 red pens, 4 blue pens, and 5 black pens in a box. Suppose you choose 3 pens, one at a time, without replacement. Find the probability of choosing 1 blue, 1 black, and 1 blue pen, in that order.