**Unit 8 #3 Compound Probability**

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| **Independent Events** |
| Definition: involves two or more events in which the outcome of one event \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ affect the outcome of any other events | Examples:* Your grade in Math class and your grade in English class
* The final score of a hockey game played in Los Angeles, and the final score of a basketball game played in New York
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| Example 1: *P*(jack, factor)bd08671_[1]  | Example 2: You roll a red number cube and a blue number cube. What is the probability that you roll a 5 on the red cube and a 1 or 2 on the blue cube?The probability of rolling a 5 The probability of rolling a on the red number cube is 1 or 2 on the blue number  cube is \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_Find the probability of rolling a 5 on the red cube AND a 1 or 2 on the blue cube. |
| **Dependent Events** |
| Definition: involves two or more events in which the outcome of one event \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ affect the outcome of the other events | Examples: * Drawing from the same deck of cards
* Selecting items from a container \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ replacement
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| Example 3: *P*(Q, S)* All the letters of the alphabet are in the bag 1 time.
* Do not replace the letter.

j0325338[1]  | Example 4: One freshman, 2 sophomores, 4 juniors, and 5 seniors receive top scores in a school essay contest. To choose which 2 students will read their essays at the town fair, 2 names are chosen at random from a hat. What is the probability that a senior and then a junior are chosen?The probability that a senior The probability that a is chosen first is junior is chosen after a  senior is chosen is \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_What is the probability that a senior and then a junior is chosen? |

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| **FORMULAS** |
| **INTERSECTIONS** | **UNIONS** |
| P(A \_\_\_\_\_\_\_ B) = *P*(*A* \_\_\_\_ *B*) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | P(A \_\_\_\_ B) = *P*(*A* \_\_\_\_ *B*) =$$\left\{\begin{array}{c}if NOT mutually exclusive ⇒\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\(\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_ happen at same time)\\if mutually exclusive ⇒P\left(A\right) + P(B) \\(\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_ happen at same time)\end{array}\right.$$ |
| Example 5: At a picnic, there are 10 diet drinks and 5 regular drinks. There are also 8 bags of fat-free chips and 12 bags of regular chips. If you grab a drink and a bag of chips without looking, what is the probability that you get a diet drink and fat-free chips? | You roll a standard die. are the events mutually exclusive?6. Rolling a 2 and a 3 7. Rolling an even number  and a multiple of 38. Rolling an even number 9. Rolling an even number and  and rolling prime number rolling a number less than 2 |
| Practice Problem: Using the information in #5, what is the probability that you get a regular drink and regular chips? | Example 10: Suppose you reach into a dish and select a token at random. What is the probability that the token is:a. Round or Green? b. Orange or Triangle? c. Yellow or Square? |