Name _____   Date_____

Worksheet 11.4 : Independent vs. Dependent Events

Independent events

1. Bag A contains 9 red marbles and 3 green marbles. Bag B contains 9 black marbles and 6 orange marbles. Find the probability of selecting one green marble from bag A and one black marble from bag B.

2. Two seniors, one from each government class are randomly selected to travel to Washington, D.C. Wes is in a class of 18 students and Maureen is in a class of 20 students. Find the probability that both Wes and Maureen will be selected.

3. If there was only one government class, and Wes and Maureen were in that class of 38 students, what would be the probability that both Wes and Maureen would be selected as the two students to go to Washington?   Is this still an example of independent events?

Dependent Events

4. A box contains 5 purple marbles, 3, green marbles, and 2 orange marbles. Two consecutive draws are made from the box **without replacement** of the first draw. Find the probability of each event.

>   a. P(orange first, green second)

>   b. P(both marbles are purple)

>   c. P(the first marble is purple, and the second is ANY color EXCEPT purple)

5. If you draw two cards from a standard deck of 52 cards **without replacement**, find:

>   a. P(King first, Jack second)

>   b. P(face card first, ace second)
>   c. P(2 aces)

MULTIPLE CHOICE:

6. A coin is tossed and a die with numbers 1-6 is rolled. What is P(heads and 3)?

>   a. 1/12   b. 1/4   c. 1/3   d. 2/3

7. Two cards are selected from a deck of cards numbered 1 – 10. Once a card is selected, it is not replaced. What is P(two even numbers)?

    a. 1/4   b. 2/9   c. 1/2   d. 1

8. Which of the following in NOT an example of independent events?

    a. rolling a die and spinning a spinner
    b. tossing a coin two times
    c. picking two cards from a deck with replacement of first card
    d. selecting two marbles one at a time without replacement

9. A club has 25 members, 20 boys and 5 girls. Two members are selected at random to serve as president and vice president. What is the probability that both will be girls?

    a. 1/5   b. 1/25   c. 1/30   d. 1/4

10. One marble is randomly drawn and then replaced from a jar containing two white marbles and one black marble. A second marble is drawn. What is the probability of drawing a white and then a black?

    a. 1/3   b. 2/9   c. 3/8   d. 1/6

11. Maria rolls a pair of dice. What is the probability that she obtains a sum that is either a multiple of 3 OR a multiple of 4?

    a. 5/9   b. 7/12   c. 1/36   d. 7/36

12. Events A and B are independent. The P(A) = 3/5, and P(not B) = 2/3. What is P(A and B)?
a. 2/5   b. 1/5   c. 4/15   d. 2/15