

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Marbles and Cards Learning Task – MM1D2b

**There are 21 marbles in a bag. Seven are blue, seven are red, and seven are green. If a blue marble is drawn from the bag and not replaced, what is the probability that:**

1. A second marble drawn at random from the bag is blue? \_\_\_\_\_
2. A second marble drawn from the bag is blue or green? \_\_\_\_\_
3. A second marble drawn from the bag is not blue? \_\_\_\_\_

**There are 21 marbles in a bag. Seven are blue, seven are red, and seven are green. If the marbles are not replaced once they are drawn, what is the probability;**

4. Of drawing a red marble and then a blue marble? \_\_\_\_\_
5. Of drawing a red marble, then a blue marble, then a green marble? \_\_\_\_\_
6. Of drawing a red marble or a blue marble and then a green marble? \_\_\_\_\_
7. Of drawing a red marble given that the first marble drawn was red? \_\_\_\_\_

**Given a standard deck of 52 cards, you are dealt 3 cards without replacement.**

8. What is the probability that all three of the cards you are dealt are queens?
9. Suppose the first card you draw is the queen of hearts and the second card is the queen of diamonds. Are these two drawings independent events? Why or Why not?
10. If the first card you are dealt is a queen, what is the probability that your second card will **not** be a queen?
11. Suppose that the first two cards you are dealt are queens. What is the probability that the third card you are dealt will also be a queen?
12. Again supposing that the first two cards that you are dealt are queens, what is the probability that the third card that you are dealt will **not** be queen?

**Now assume that each card is replaced and the deck is shuffled after each card is dealt. You are still going to be dealt 3 cards.**

13. What is the probability that all three of the cards you are dealt are queens?

14. Suppose the first card you draw is the queen of hearts and the second card is the queen of diamonds. Are these two drawings independent events? Why or Why not?

15. If the first card you are dealt is a queen, what is the probability that your second card will **not** be a queen?

16. Suppose that the first two cards you are dealt are queens. What is the probability that the third card you are dealt will also be a queen?

17. Again supposing that the first two cards that you are dealt are queens, what is the probability that the third card that you are dealt will **not** be queen?

18. Compare the answers in #8 – 12 to the answers in #13 – 17. What is the same? What is different?

19. Which events would be considered “*independent*” and which would be “*dependent*”? Why?

20. You draw 3 marbles from a bag with 10 marbles in it.

What are the chances that you draw all blue marbles, if half of the marbles are blue and half are red?

You repeat #20, but you replace the marbles each time. What are the chances that you draw all blue marbles this time?