U2D3 HW WS Conditional Probability and the Multiplication Rule (4-3) Name_____

1. At the Avonlea Country Club, 73% of the members play bridge and swim, and 82% play bridge. If a member is selected at random, find the probability that the member swims, given that the member plays bridge.

2. At a large university, the probability that a student takes calculus and is on the dean's list is 0.042. The probability that a student is on the dean's list is 0.21. Find the probability that the student is taking calculus, given that he or she is on the dean's list.

3. The gift basket store had the following premade gift baskets containing the following combinations in stock.

	Cookies	Mugs	Candy
Coffee	20	13	10
Tea	12	10	12

Choose 1 basket at random. Find the probability that it contains

a. Coffee or candy
b. Tea given that it contains mugs
c. Tea and cookies

4. In addition to being grouped into four types, human blood is grouped by its Rhesus (Rh) factor. Consider the figures below which show the distributions of these groups for Americans.

	O	A	B	AB
Rh +	37%	34%	10%	4%
Rh -	6	6	2	1

Choose one American at random. Find the probability that the person

a. Is a universal donor, i.e., has O-negative blood
b. Has type O blood given that the person is Rh +
c. Has A + or AB – blood
d. Has Rh – given that the person has type B

5. State which events are independent.
   a. Tossing a coin and drawing a card from a deck
   b. Getting a raise in salary and purchasing a new car
   c. Driving on ice and having an accident
   d. Having a large shoe size and having a high IQ
   e. A father being left-handed and a daughter being left-handed
   f. Smoking excessively and having lung cancer

6. An automobile salesperson finds the probability of making a sale is 0.21. Is she talks to four customers, find the probability that she will make 4 sales. Is this event likely or unlikely to occur? Explain.

7. Thirty-five percent of adults who own cell phones use their phones to send and receive text messages. Choose 3 cell phone owners at random. What is the probability that all 3 use their phones for texting?

8. If 2 cards are selected from a standard deck of 52 cards with replacement, find these probabilities
   a. Both kings
   b. Both are the same suit
   c. Both red cards

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10. In a box of 24 iPads, 3 are defective. If 3 are sold, find the probability that all are defective. Would you consider this event likely or unlikely to occur?

11. Jacob K. has a jar with 5 red marbles, 8 pink marbles, and 2 orange marbles. Jacob picks a marble, puts it aside, and pulls out another. What is the probability of pulling out an orange marble followed by a red marble?

12. Devan has 3 pairs of white shoes, 5 pairs of black shoes, and one pair of red shoes. All of her shoes are in a box. She randomly goes in the box to pull out two shoes to wear. What is the probability that both of them are black?

13. KD has a regular 6-sided die and a spinner with 8 sections numbered 1 through 8. What is the probability of rolling an odd number and spinning a 5?

14. Blake is going to guess the birth month of two people. What is the probability that he will guess correctly?

15. Below is given the summary from the 112th Congress of Senators whose terms end in 2013, 2015, or 2017.

	2013	2015	2017
Democrat	21	20	1
Republican	8	15	13

Choose one senator at random and find

   a. P(Democrat and term expires in 2015)
   b. P(Republican or term expires in 2013)
   c. P(Republican given the term expires in 2017)

Are the events “Republican” and “term expires in 2015” independent? Explain.