**Foundations 12: Probability Quiz #2**   $P(A \cup B) = P(A) + P(B) - P(A \cap B)$   $P(A \cap B) = P(A) \cdot P(B|A)$ Full credit will only be awarded for all work shown in a neat and organized manner. For probabilities, answer with percentages to 2 decimal places, if needed (e.g. 14.56%) In a deck of cards there are

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<ul> <li>52 cards total</li> </ul>	<ul> <li>26 black cards</li> </ul>	<ul> <li>26 red cards</li> </ul>
	(Clubs and Spades)	(Hearts and Diamonds)
• 13 cards of each suit	4 Cards	of each type
(Clubs, Spades, Hearts Diamonds)	(A, 2-	-10, J, Q, К)

1. Two cards are drawn from a standard deck **<u>without</u>** replacement. Determine:

a. P(The first is a red Jack, and the second is a 10) =

- b. P(One card is red and one card is black) =
- c. P(No Aces) =
- d. P(Both cards are a different number/letter) =
- A carnival game uses a bag that contains 3 red marbles, 5 blue marbles and 6 green marbles. It costs \$1.50 to pick a marble. A red marble is worth \$5, a blue marble is worth \$1, and a green marble is worth \$0.50. Would you play this game? Justify your answer mathematically.

- 3. When you get fouled in basketball, you get to take 2 shots ("Free-Throws"). On his first shot, Mr. G makes 72% of his free-throws. If he misses his first shot, the probability of making it goes down by 10%. If he makes his first shot, the probability of making the second shot goes up 5%.
  - a. Draw a tree diagram to represent this situation

- b. P(Makes both shots) =
- c. P(Makes exactly 1 shot) =
- d. P(Makes his second shot | missed his first shot) =
- 4. In a class of 30 students, 22 students have dark hair and 16 of the dark hair students are right-handed. The rest of the students have blonde hair and 3 of the blonde students are left-handed. (Leave answers b. to e. as fractions. You don't need to reduce them)

a	. Comp	lete the t	table be	low

	Right-Handed (RH)	Left-Handed (LH)	Total
Dark Hair (D)			
Blonde Hair (B)			
Total			30

b.  $P(D \cap LH) =$ 

c. P(LH  $\cup$  B)=

d. P(D | RH) =

e. P(RH  $\cap$  B')=

f. In this class, are being right-handed and having dark hair independent? Explain.