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## Foundations 12: Probability Quiz \#1

$$
P(A \cup B)=P(A)+P(B)-P(A \cap B)
$$

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...

- 52 cards total
- 13 cards of each suit
(Clubs, Spades, Hearts Diamonds)
- 26 red cards
(Hearts and Diamonds)
- 26 black cards (Clubs and Spades)
- 4 Cards of each type
(A, 2-10, J, Q, K)

1. A twelve-sided die (D12) is rolled.
a. List the event "a multiple of 4 is rolled"
b. List the complement of the event "a multiple of 3 is rolled"
2. Box 1 has a blue $(B)$, green $(G)$, purple $(P)$ and red $(R)$ ball. Box 2 has a red $(R)$, yellow $(Y)$ and green $(G)$ ball. One ball is picked from Box 1 then another ball from Box 2 at random.
a. Draw a tree diagram to show the sample space
b. Find the odds against "exactly one red ball is chosen" in lowest terms
c. Find the probability of "both balls are the same colour"
d. Are the events "no red balls are chosen" and "exactly 1 red ball is chosen" complementary? Explain.
3. Pre-season predictions are being made for the NFL. One commentator is predicting which teams will make the playoffs. According to her, the Seahawks have a $42 \%$ chance, the odds in favor of the 49ers making the playoffs is 4:5, and the odds against the Vikings is 11:9
a. Which team is most likely to make the playoffs?
b. What are the odds in favor of the Seahawks making the playoffs (in lowest terms)?
4. A single card is drawn from a standard deck of cards. Use the formula to find the probability.
a. P(Jack U Red card)
b. Are drawing a Jack and drawing a red card mutually exclusive? Explain how you know from you work in part a.
5. In a Lord Byng foods class, $81 \%$ of students like baking, $26 \%$ of students like cleaning dishes and $14 \%$ of students don't like baking or cleaning the dishes (and might want to consider a different elective...)
a. Draw a Venn Diagram (and fill it in as you go)
b. Find the probability a student chosen at random likes baking or cleaning dishes

c. Find the probability a student chosen at random likes baking and cleaning dishes
d. Find the probability a student chosen at random only likes cleaning dishes (...weird)
