Review of Statistics

Name_____

1. Let A , B and, C be three sets such that;

Set A = { A, B, F, G, H, I, O}, set B = {A, E, I, O, U, Y, T, S}, and Set C = { Q, W, E, R, T, Y}

Find: **a.** $A \cap B = \{A, I, O\}$

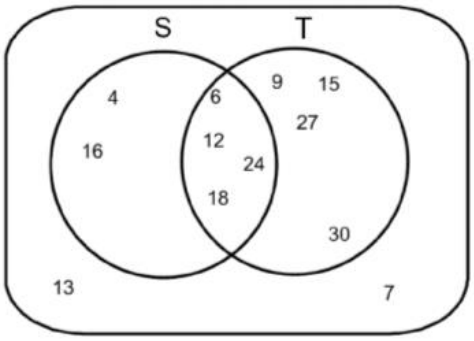
b. $A \cup C = \{A, B, F, G, H, I, O, Q, W, E, R, T, Y\}$

c. $(A \cap C) \cup B = \{A, E, I, O, U, Y, T, S\}$

d, $A^C = \{E, O, U, Y, T, S, Q, W, R\}$

e. $\sim(B \cap C) = \{A, B, F, G, H, I, O, U, S, Q, W, R\}$

2. Find the following.



a) $S \cap T$
$\{6, 12, 24, 18\}$

b) $T \cup S$
$\{4, 16, 6, 12, 24, 18, 9, 15, 27, 30\}$

c) $S^C \cap S$
$\{\ \}$

d) $T^C \cup S$
$\{4, 16, 13, 7, 6, 12, 24, 18\}$

e) $(S \cap T)^C$
$\{4, 16, 13, 9, 15, 27, 30, 7\}$

3. Ms. DenBesten has a bin of candy. In that bin she has 24 Hershey's kisses, 45 Jolly Ranchers, and 31 Dum Dum's. Find the following: Total = 100

a) What is the probability of selecting a Dum Dum and then selecting a Jolly Rancher with replacement?
$P(D) = \frac{31}{100}$ $P(J) = \frac{45}{100}$ $P(D \text{ and } J) = \frac{31}{100} \cdot \frac{45}{100} = \frac{1395}{10000} = \frac{279}{2000}$

b) What is the probability of selecting a non-chocolate and then selecting a Jolly Rancher with replacement?
$P(N.C.) = \frac{76}{100}$ $P(J) = \frac{45}{100}$ $P(N.C. \text{ and } J) = \frac{76}{100} \cdot \frac{45}{100} = \frac{3420}{10000} = \frac{171}{500}$

c) What is the probability of selecting a chocolate and then selecting a Hershey's kiss w/o replacement?
$P(C) = \frac{24}{100}$ $P(H|C) = \frac{23}{99}$ $P(C \text{ and } H) = \frac{24}{100} \cdot \frac{23}{99} = \frac{552}{9900} = \frac{46}{825}$

d) What is the probability of selecting a Dom Dom and then selecting a Jolly Rancher?
$P(D) = \frac{31}{100}$ $P(J|D) = \frac{45}{99}$ $P(D \text{ and } J) = \frac{31}{100} \cdot \frac{45}{99} = \frac{1395}{9900} = \frac{31}{220}$

4. The probability that Trent buys Jordan's and gets a mark on them within the first week is 1 / 7. The Probability that he buys Jordan's is 1/5. Find the probability that Trent gets a mark on his shoes within the first week, given that he bought Jordan's.
$P(J \text{ and } M) = \frac{1}{7}$ $P(J) = \frac{1}{5}$ $P(M|J) = ?$ $P(M|J) = \frac{\frac{1}{7}}{\frac{1}{5}} = \frac{1}{7} \cdot \frac{5}{1} = \frac{5}{7}$

5. A new superman MasterCard has been issued to 2000 customers. Of these customers, 1500 hold a Visa card, 500 hold an American Express card and 40 hold a Visa card and an American Express card. Find the probability that a customer chosen at random holds a Visa card, given that the customer holds an American Express card.
$P(V|A) = \frac{P(V \text{ and } A)}{P(A)} = \frac{\frac{40}{2000}}{\frac{500}{2000}} = \frac{40}{500} = \frac{2}{25}$

6. A new bag of golf tees contains 5 red tees, 13 orange tees, 7 green tees and 15 blue tees. You empty the tees into your golf bag. What is the probability of pulling a green or orange one? Total = 40
$P(G \text{ or } O) = P(G) + P(O) - P(G \text{ and } O)$
$\frac{7}{40} + \frac{13}{40} - \frac{0}{40} = \frac{20}{40} = \frac{1}{2}$

Review of Statistics

Name_____

	M	F	Total
K	58	74	132
N	96	72	168
Total	154	146	300

7. At a school of only 300 students there are 132 KIK users; of the KIK users 74 are female and of the non-KIK users 96 are male.

a) P(a KIK user or a female) $= P(K) + P(F) - P(K \text{ and } F) = \frac{132}{300} + \frac{146}{300} - \frac{74}{300} = \frac{204}{300} = \frac{17}{30}$

b) P(a non-KIK user or female) $= P(N.K) + P(F) - P(N.K. \text{ and } F) = \frac{168}{300} + \frac{132}{300} - \frac{72}{300} = \frac{228}{300} = \frac{19}{25}$

c) P(a KIK user or Male) $= P(K) + P(M) - P(K \text{ and } M) = \frac{132}{300} + \frac{154}{300} - \frac{58}{300} = \frac{228}{300} = \frac{13}{25}$

8. Below is a partial list of the results of a classroom Poll. Complete the chart.

Study for the Test

	yes	no	Maybe	Total
Boys	2	2	6	10
Girls	8	5	7	20
Total	10	7	13	30

a) Who was more likely to study for the test girls or boys? Why?

$P(B) = \frac{2}{10} = 0.2$ $P(G) = \frac{8}{20} = 0.4$ The girls are more likely to study, because they have a higher probability of yes.

b) Is it more likely for someone to study for the test or not study?

More likely to study because there are more yes than no.

c) What percent of students studied for the test, given that they were girls?

$P(S|G) = \frac{8}{20} = 0.4 = 40\%$

d) What percent of students where boys, given that that they said maybe?

$P(B|M) = \frac{6}{13} = 0.462 = 46.2\%$

e) Write a frequency table.

	Yes	No	Maybe	Total
Boys	$2/30 = 0.067$	$2/30 = 0.067$	$6/30 = 0.2$	0.334
Girls	$8/30 = 0.267$	$5/30 = 0.167$	$7/30 = 0.233$	0.667
Total	$10/30 = 0.333$	$7/30 = 0.233$	$13/30 = 0.433$	1

f) If we were talking about all of geometry, which has 300 students. How many would study for the test?

$0.333\ (300) = 100$ students would study

g) How many girls wouldn't have studied?

$0.167\ (300) = 50$ girls would not have studied

Decided if each of the following are independent(Mutually Exclusive) or Dependent(Not M.E.) events.

a. Landing on heads after tossing a coin and rolling a 5 on a single 6-sided die. – Independent
b. Choosing a 3 from a deck of cards, replacing it, and then choosing an ace as the second card. – Dependent
c. Spinning a spinner twice. – Independent
d. Pick a marble from 5 marbles, don't put it back then pick another marble. Dependent
e. Having a car and having a laptop. – Not Mutually Exclusive
f. Choosing a king and choosing an Ace out of a deck of cards. – Mutually exclusive
g. Flipping a coin and getting heads and tails – Mutually Exclusive