Name: _____ Date: _____

Period: _____ Pre-Calculus *16.1 Introduction to Probability*

1. Three children are born into a family. On any birth the child could be a son or a daughter. Using *s* to represent a son and *d* to represent a daughter, and write out all of the possibilities.

$S = \{sss, ssd, sds, dss, sdd, dsd, dds, ddd\}$

2. A committee of 2 is selected from a group consisting of 5 people: Amanda, Matt, Jenn, Sean, and Brenda.
   a. Find all the possible outcomes.
   b. What is the probability that both members on the committee are males?
   c. What is the probability that exactly one member is male?

a) $S = \{AM, AJ, AS, AB, MJ, MS, MB, JS, JB, SB\}$

b) $P(MM) = 1/10$

c) $P(M) = 7/10 =$ or $P(M \text{ or } S) = P(M) + P(S) - P(M \text{ and } S)$

$\frac{4}{10} + \frac{4}{10} - \frac{1}{10} = \frac{7}{10}$

3. Two letters are chosen at random from the word WINTER.
   a. Find all the possible outcomes. $\{WI, WN, WT, WE, WR, IN, IJ, IE, IR, NT, NE, NR, TE, TR, ER\}$
   b. What is the probability that both letters are consonants?
   c. What is the probability that both letters are vowels?

b) $P(CC) = \frac{6}{15}$

c) $P(VV) = \frac{1}{15}$

4. A die is thrown and a coin is tossed.
   a. Find all the possible outcomes. $\{H1, H2, H3, H4, H5, H6, T1, T2, T3, T4, T5, T6\}$
   b. What is the probability that the number on the die is odd?

$1/2$

5. If the probability that it will snow on a given day is $1/3$:
   a. What is the probability that it will not snow? $\rightarrow 2/3$
   b. How do the two probabilities compare?

$1/3 + 2/3 = 1$

6. You are the first person to draw one of 24 slips of paper, numbered consecutively 1 to 24.
   a. What is the probability of drawing a number exactly divisible by 3?

$8/24 = 1/3$

b. What is the probability of drawing a number exactly divisible by 5?

4/24 = 1/6

7. A bag contains 2 white marbles, 4 blue marbles, and 6 red marbles. A marble is drawn at random from the bag. What is the probability that:

a. It is white? 2/12 = 1/6

b. It is not blue? 2/3

c. It is not white? 5/6

d. It is red? 6/12 = 1/2

e. It is blue? 4/12 = 1/3

f. It is black? 0

8. One card is picked from a typical deck of 52 playing cards. What is the probability that the card is:

a. A black card? 1/2

b. A three? 1/13

c. A king or a queen? 8/52 = 4/26 = 2/13

d. A black or not a face card?

P(B) = 1/2 ← 26/52

P(Not Face) = 10/13 ← 40/52

P(B and Not Face) = 5/13 ← 20/52

P(B or Not Face) = 1/2 + 10/13 - 5/13 = 46/52 = 23/26

9. The probability that there will be snow this Wednesday is 4/5.

a. What is the probability that there will NOT be snow this Wednesday? 1/5

b. What are the *odds* in favor of snow this Wednesday? (This is different than the probability, think about it!)

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