MAT 100, Quiz #6, Spring 2017 Name KEY

Instructions: Show all work. Use exact answers unless otherwise directed to round.

1. Use set notation to list the sample space for a family of three kids.

$\{GGG, GGB, GBG, BGG, BBG, BGB, GBB, BBB\}$

2. Find the probability associated with each event selected from a well-shuffled standard deck of 52 cards.
   a. What is the probability of selecting a king, and then a queen (without replacement)?

$\frac{4}{52} \cdot \frac{4}{51} = .0060 \qquad \frac{4}{663}$

   b. What is the probability of selecting either a king or a queen?

$\frac{8}{52} = \frac{2}{13} = .153846$

   c. What is the probability of selecting a king or a spade?

$\frac{4}{52} + \frac{13}{52} - \frac{1}{52} = \frac{4}{13} = .30769$

   d. How many different 5 card poker hands are possible?

$52C5 = 2,598,960$

3. You and five friends are standing in line. How many different ways can your group stand (in order)?

$6! = 720$

4. If the probability of an event is $\frac{1}{7}$, what are the odds against the event?

6:1

5. Find the expected value of the discrete probability distribution below.

x	P(x)
0	$P(x=0) = \frac{2}{50}$
1	$P(x=1) = \frac{11}{50}$
2	$P(x=2) = \frac{23}{50}$
3	$P(x=3) = \frac{9}{50}$
4	$P(x=4) = \frac{4}{50}$
5	$P(x=5) = \frac{1}{50}$

$$0*\frac{2}{50} + 1*\frac{11}{50} + 2*\frac{23}{50} + 3*\frac{9}{50} + 4*\frac{4}{50} + 5*\frac{1}{50}$$

$$= \frac{21}{10} = 2.1$$