Statistical Reasoning Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Review WS 7.1-7.2 Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Day: \_\_\_\_\_\_

1. A gambler know that red and black are equally likely to occur with each spin of a roulette wheel. He observes 5 consecutive reds and bets heavily on black on the next spin. His reasoning is that “black is due by the law of averages.” What is wrong with his reasoning.
2. Now the gambler moves to a poker game. He is dealt five straight red cards. He assumes that the next card has an equal chance of being red or black. Is he right or wrong?
3. The weatherman says “There is a 30% chance of rain tomorrow.” What does this statement mean?
4. Let’s say the chances of Shaq making a free throw are 50%. We want to know the likelihood of him making 3 free throws in a row out of 10 attempts (this would be called a “run”). Use line 101 of the random digit table. Any digit 0-4 is a made shot, any digit 5-9 is a missed shot. Do 3 different trials (each set of 10 digits is a trial). Do 4 trials and estimate the probability that Shaq made at least 3 free throw out of 10.
5. Imaging tossing a coin 3 times.
   1. List all possible outcomes for the sample space.
   2. What is the probability for each outcome.
   3. P(2 tails and 1 head)
6. Use the sample space to the right for rolling 2 dice.
   1. P(doubles)
   2. P(sum is 10 or less)
   3. P(a sum of 7)
   4. P(not getting a sum of 7)
7. The following table shows the percentage of people who say they drink water at each particular meal of the day:

Meal Breakfast Lunch Dinner

Probability 0.2 0.5 ????

1. P(drink water for dinner)
2. P(don’t drink water for breakfast)