**Contemporary Math**
Test 3, Chapter 11
Spring 2019
Due Thursday, March 14

1. In a hybrid seed research project, 1400 tomato seeds were planted and 1385 germinated. Give the probability that a randomly selected seed will germinate to two decimal places.

2. The "spinner" is spun twice to determine a two digit number. Find the probabilities. You may want to write out the Sample Space.

    a) The number is even.

    b) The number has repeated digits.
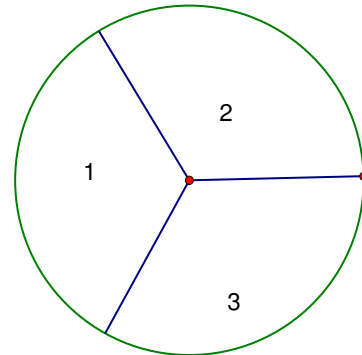
3. a) If $P(E) = \frac{1}{4}$, what are the odds for E?

    b) If the odds for E are 9 to 5, what is the probability of E?

4.   You have two 4 sided dice. The green one has the numbers $1, 2, 5, 7$, while the yellow one has the numbers $2, 3, 4, 6$. Fill in the table of the possible outcomes (add the numbers on the dice) and find the probability that a roll of these dice will be an even number.

	1	2	5	7
2				
3				
4				
6				

5.   The sample space for this problem is $S = \{1, 2, 3, \ldots, 10\}$. Let A be the event that a number is odd and let B be the event the number is a multiple of 4.

a)   Are A and B mutually exclusive? Why or why not.

b)   Find $P(A \text{ or } B)$.

6.   Below are several experiments. State whether the events are independent or not independent (I or N). You do not need to calculate any probabilities.

   a)   Two marbles are drawn from a bag without replacement. The events are "they are the same color."

   b)   Two coins are flipped. The events are "they are both heads".

   c)   Two cards are dealt without replacement. The events are :the first is red" and "the second is black".

   d)   The answers are all guessed on a multiple choice test. The event is "the first is correct" and "the last is incorrect".

   e)   A card is drawn from a deck, replaced, and a second card is drawn. The event is "the first chosen is a diamond" and "the second is a spade".

7.   Two marbles are drawn without replacement from a bag containing 16 marbles of which 4 are green and 12 are yellow. Find the probability the two marbles are the same color.

8.   Three coins are flipped. If the number of Heads is 3, you win $12. If the number of Heads is 2, you win $6. If the number of Heads is 1, you win $3. You win nothing if no Heads are flipped. Find a fair price for the game.

9.   You have a choice of two companies to do a job for you. The first charges $1200 if they finish on time, but $600 if they are late. The probability they are late is .20. The second charges $1400, but only $400 if they are late. The probability they are late is .40. Find the expected value for each company charges and explain which company you would chose and why. You do not need to base it on the expected value.

10. Refer to the table below. One person is selected at random from the group of 2500. Give your answers to three decimal places.

   a) What is the probability the person is female?

   b) What is the probability the person is female given they work in a Precision Production, crafts occupation?

   c) Are being female and working in a Precision Production, crafts occupation independent? Explain.

Occupation	Number of Males	Number of Females	Total
Executive, administrative, management	180	185	365
Professional specialty	163	234	397
Technical, sales, administrative support	236	520	756
Service occupations	119	227	346
Precision production, crafts	223	27	250
Operators, fabricators, laborers	232	92	324
Farming, forestry, fishing	47	15	62
Totals	1200	1300	2500