**Sets and Counting: Problem Set 2**

**Directions**:

1. Solve the following problems. **Hand write** your solutions and explanations on your own paper. Do not write answers on this page.

2. **Show your work** AND explain your reasoning using complete English sentences. Explanations must directly follow the solution for each part of the problem.

3. Take a picture of your solution and explanation. Insert that image, cropped to only show the solution and explanation of the indicated problem, as a replacement for the italicized words after each problem.

4. Turn in your solutions by clicking on the submit button in the assignment on Canvas.

1. 500 people are surveyed and asked to check the boxes that apply to them.

1. I am confident in the economy.
2. I have health insurance.

321 said they were confident about the economy, 403 said they had health insurance, and 63 checked neither box.

a. **[3 pts]** Draw an accurate Venn diagram that represents the situation consisting of cardinalities.

(Grade breakdown: 1 each region -- .5 for correct number and .5 for correct work; -.5 rectangle and labeling)

*Replace the italicized words with your image of the solution, answer and explanation.*

*(for question 1a only)*

b. **[1 pt]** How many people had health insurance and were not confident in the economy?

(Grade breakdown: .5 correct answer; .5 for reasoning)

*Replace the italicized words with your image of the solution, answer and explanation.*

*(for question 1b only)*

c. **[1 pt]** How many people had health insurance or were confident in the economy?

(Grade breakdown: .5 correct answer; .5 for reasoning)

*Replace the italicized words with your image of the solution, answer and explanation.*

*(for question 1c only)*

2. Using the digits 0 through 9, find out how many 4-digit numbers can be configured based on the stated conditions:

a. **[1 pt]** The number cannot start with zero and no digits can be repeated.

(Grade breakdown: .5 correct answer; .5 for reasoning)

*Replace the italicized words with your image of the solution, answer and explanation.*

*(for question 2a only)*

b. **[1 pt]** The number must begin and end with an odd digit. (Repeated digits are okay.)

(Grade breakdown: .5 correct answer; .5 for reasoning)

*Replace the italicized words with your image of the solution, answer and explanation.*

*(for question 2b only)*

c. **[1 pt]** The number must be at least 5000 and be divisible by 10. (Repeated digits are okay.)

(Grade breakdown: .5 correct answer; .5 for reasoning)

*Replace the italicized words with your image of the solution, answer and explanation.*

*(for question 2c only)*

d. **[2 pt]** The number must be less than 3000 and must be even. No digits may be repeated in the last 3 digits. (That is, 2234 would be okay, but 2334 would not be okay.)

(Grade breakdown: 1 correct answer; 1 for reasoning)

*Replace the italicized words with your image of the solution, answer and explanation.*

*(for question 2d only)*