

Mathematics for College Liberal Arts  
Unit 1 Project  
Sets

**Instructions:** Answer **ALL** questions. You **MUST** show all calculations and/or explanations to justify your answers. Upload the completed project as a Word or PDF file.

1. Classify each of the following sets as finite or infinite.

- a)  $\{1, 5, 9, \dots\}$
- b)  $\{c | c \text{ is a cat}\}$
- c)  $\{1, 2, 3, \dots, 1000\}$
- d)  $\{s, m, i, l, e\}$
- e)  $\{\text{natural numbers}\}$

2. Given the universal set  $\mathcal{U} = \{31, 32, 33, \dots, 50\}$ , and

$$A = \{35, 38, 41, 44, 47, 50\}$$

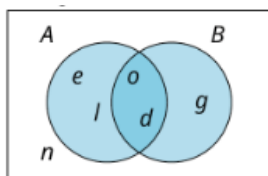
$$B = \{32, 36, 40, 44, 48\}$$

$$C = \{31, 32, 41, 42, 48, 50\} :$$

- a) Find  $A \cup B$
- b) Find  $B \cap C$
- c) Determine if set A is equivalent to, equal to, or neither equal nor equivalent to set C. Justify your answer.
- d) Find  $n(A \cup C)$
- e) Find  $A \cap (B \cap C)$
- f) Find  $(A \cup B)' \cap C$
- g) Find  $(A \cap B') \cup C$

3. Use the Venn diagram below to answer the following questions.

$$\mathcal{U} = \{g, o, l, d, e, n\}$$



- a) Find  $B'$
- b) Find  $A \cup B$
- c) Find  $A \cap B'$