

NAME: _____

DATE: _____

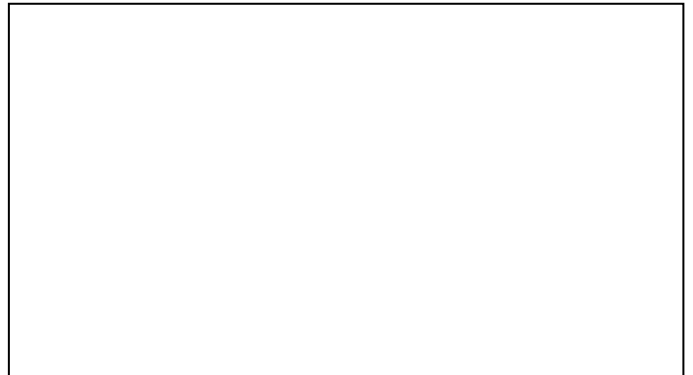
GRADE: _____

Expectations:

1. You will **show all of your working** on each of the questions in this assignment.
 2. You may do your work **directly on this assignment sheet**. If you need a new one do not hesitate to ask.
 3. Remember that it is OK to ask your teacher questions on an assignment, and it is very important that you complete every question in preparation for your chapter test.
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1. (a) Organize the following sets in a Venn diagram:

- The universal set $R = \{\text{real numbers}\}$
- $N = \{\text{Natural numbers}\}$
- $W = \{\text{whole numbers}\}$
- $I = \{\text{integers}\}$
- $Q = \{\text{rational numbers}\}$
- $\bar{Q} = \{\text{irrational numbers}\}$



- (b) Identify any disjoint sets

- (c) Of which sets is N a subset?

2. a) Organize the following sets of numbers in a Venn diagram:

- $X = \{x \in I \mid -1 \leq x \leq 5\}$
- $Y = \{y \in N \mid 2 \leq y \leq 5\}$
- $Z = \{z \in I \mid -5 \leq z \leq -1\}$

- b) List the disjoint subsets, if there are any. Justify your answer.

c) Is each statement true or false? Explain.

- I. $X \subset Y$
- II. $Y \subset X$
- III. $\bar{X} \subset \bar{Y}$
- IV. $n(X) = n(Z)$
- V. $Y \cap Z = \emptyset$ (Note: $\emptyset$ is an empty set, and $Y \cap Z$ is the intersection between the sets Y and Z)

3. 100 people in a community participated in a technology survey. It was found that 80 people have a computer, 40 people have access to the internet, and 30 people have both a computer and access to the internet.

- I. How many people in the survey have a computer only?
- II. How many people in the survey have internet only?
- III. How many people in the survey have neither?
- IV. Construct a Venn Diagram for the situation.

4. In a math class of 30 students, 10 students like Soccer, 12 students like Basketball and some students like Hockey. 3 students like both Soccer and Basketball, 8 students like both Basketball and Hockey, and 2 students like both Soccer and Hockey. We lost the data for the number of students who likes Hockey. But, what we know is that there is at least one student who likes all of Soccer Basketball and Hockey. Also, we know that every student in the class likes at least one of them. Find the number of students who likes Hockey only. (Hint: First, find how many people like all of Soccer, Basketball, and Hockey.)

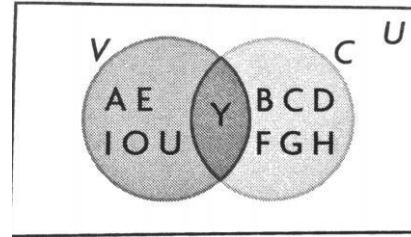
5. Consider the Venn diagram shown.

- a Determine $V \cup C$. _____

b Determine $n(V \cup C)$. _____

c Determine $V \cap C$. _____

d Determine $n(V \cap C)$. _____



6. On an ocean liner, 741 passengers were asked if they would like fish or vegetable stew for dinner.

- All passengers liked at least one of these choices •
- 100 liked fish and stew equally •
- 239 preferred fish.

Determine how many passengers preferred the stew.

7. Becky is a travel agent. She has kept track of why all of her 948 clients have travelled in the past year.

- 569 people travelled for pleasure
- 398 people travelled for business
- 29 people travelled for neither business nor pleasure

Determine how many people travelled for business and pleasure

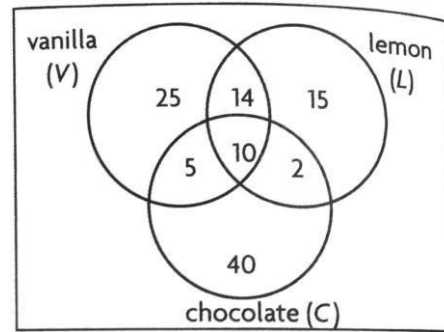
8. Creative cupcakes sells vanilla, chocolate, and lemon cupcakes. On Monday, customer sales were as shown in the Venn diagram. Determine each amount.

a $n((V \cup C) \setminus L)$

b $n((L \cup V) \setminus C)$

c $n((V \cup C) \cap L)$

d $n(L \cap C \cap V')$



9. A total of 81 students attended a three-day information session on working in developing countries. The three countries featured were Mali, India, and Vietnam. One country was featured per day.
- 45 attended the session on Mali, 40 on India, and 35 on Vietnam
 - 10 attended the session on Mali and India only
 - 15 attended the session on Mali and Vietnam only
 - 12 attended the session on India and Vietnam only
 - All students attended at least one session

How many students attended all three sessions?