

Assignment - Day 3 Sets/Venn Diagrams

Name _____
Period _____

1

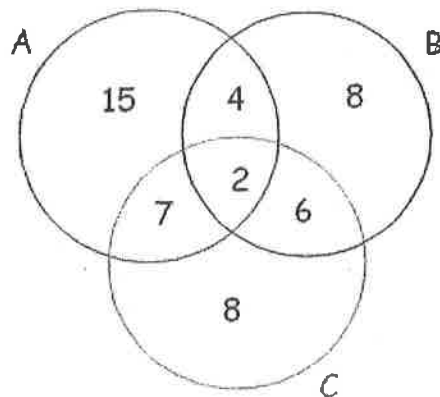
In a year group of 63 students, 22 study Biology, 26 study Chemistry and 25 study Physics. 18 study both Physics and Chemistry, four study both Biology and Chemistry and three study both Physics and Biology. One studies all three subjects. How many students study:

- a Biology only
- b Physics or Chemistry
- c none of Biology, Physics or Chemistry
- d Physics but not Chemistry?

(If you get stuck, see example 12 on pp. 80-81)

2

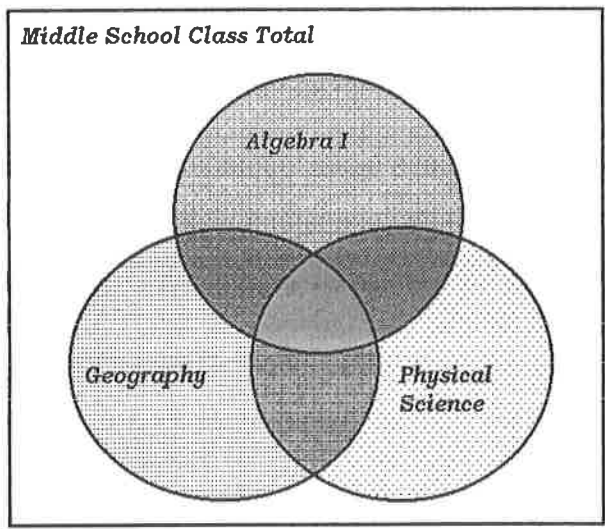
The accompanying Venn diagram shows the number of students who play spring sports. All students in circle A play baseball. All in circle B run track. All in circle C play golf. what percentage of the students participate in either golf or baseball?



3

Venn Diagram Problem: A middle school class consists of 238 students with the following class distribution:

- 142 students are enrolled in Algebra I
- 106 students are enrolled in Geography
- 96 students are enrolled in Physical Science
- 51 students are enrolled in both Geography and Physical Science
- 44 students are enrolled in both Geography and Algebra I
- 50 students are enrolled in both Algebra I and Physical Science
- 23 students are enrolled in all three classes



Complete the Venn diagram to discover how many students are enrolled in one of the classes but not either of the other two and how many are not enrolled in any of the three classes.

- _____ in Algebra I only
- _____ in Geography only
- _____ in Physical Science only
- _____ not in any of these very important classes

Review with Sets:

- 4) Write \cup in set builder notation
 - a) the set of all real numbers between 10 and 14
 - b) the set of all integers between -10 and 5, inclusive.

5 List the elements of the set $A = \{n \mid 1 < n < 40, \text{ where } n \text{ is a perfect square}\}$

6 Given $B = \{x \mid x \in \mathbb{Z}, 3 < x \leq 10\}$ write down

a) the elements of set B

b) $n(B)$

7a Is $\{x \mid x \in \mathbb{Z}, -2 \leq x \leq 10\}$ finite or infinite?

b Is $\{y \mid y \in \mathbb{Q}, 3 < y < 8\}$ finite or infinite?

8 $A = \{\text{Days of the Week}\}$ $B = \{\text{Months of the Year}\}$
 $C = \{\text{letters of the alphabet in English}\}$ $D = \{\text{letters in the word "STANDARD"}\}$

Which are true, which are false?

a) $\{\text{saturday, Sunday}\} \subset A$

b) $\{a, e, i, o, u\} \subset C$

c) $D \subset C$

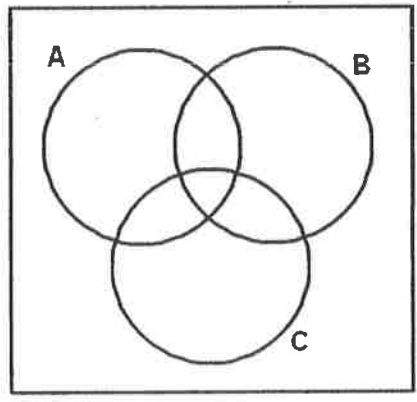
d) $C \subset D$

9

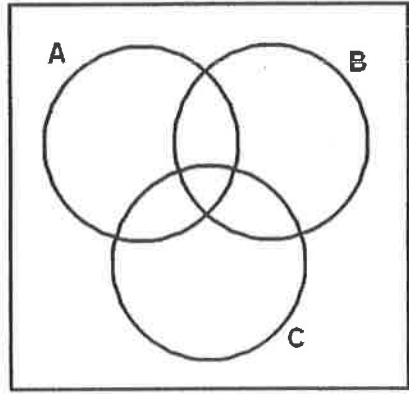
Sets – Practice Questions

Venn Diagrams

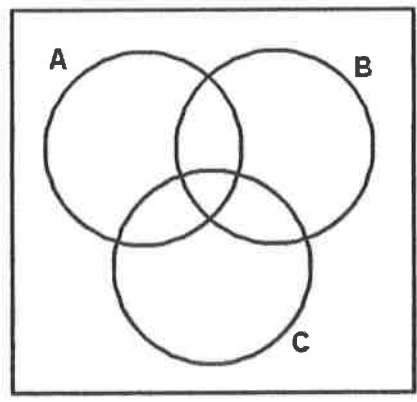
Shade the following diagrams so that they represent the statement underneath them



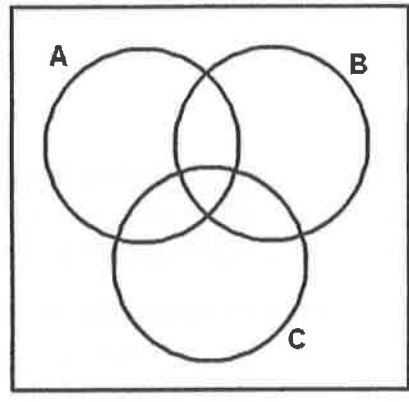
$$A \cup B \cup C'$$



$$A \cap B'$$

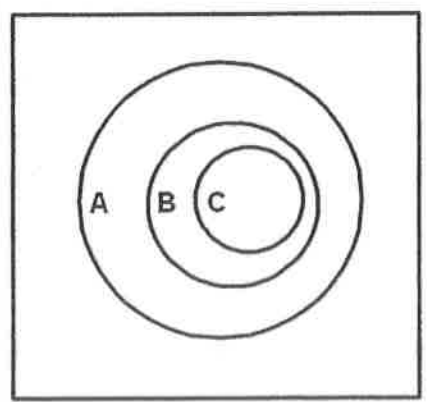


$$(A \cap B) \cup (B \cap C) \cup (A \cap C)$$



$$(A \cup B) \cap (C \cup B)$$

Sets of Numbers



If the universal set U for this Venn diagram is \mathbb{R} and A , B and C represent \mathbb{Z} , \mathbb{Q} and \mathbb{N} label the diagram accordingly to show which set is which