

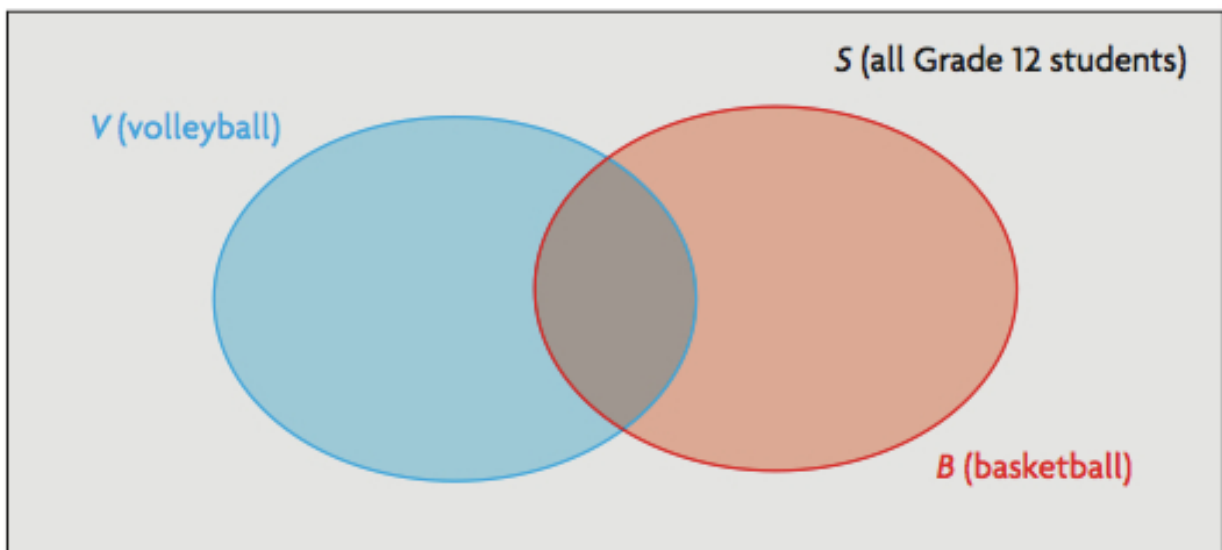
3.2 Exploring Relationships between Sets p. 159

Name _____

Date _____

Goal: Explore what the different regions of a Venn diagram represent.**EXPLORE** the Math

In an Alberta school, there are 65 Grade 12 students. Of these students, 23 play volleyball and 26 play basketball. There are 31 students who do not play either sport. The following Venn diagram represents the sets of students.



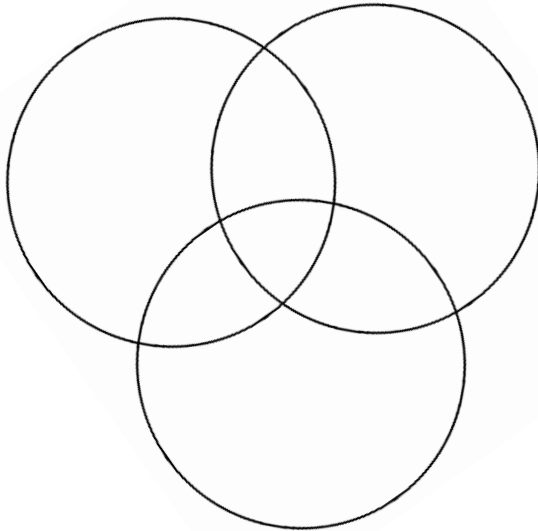
How many students play: Volleyball only? _____ Both Volleyball and Basketball? _____

Basketball only? _____ Neither sport? _____

Reflect: Consider the set of students who play volleyball and the set of students who play basketball. Are these two sets disjoint? Explain how you know.

Example 2: Each member of a sports club plays at least one of soccer, rugby, or tennis. The following information is known. 43 members play tennis, 11 play tennis and rugby, 7 play tennis and soccer, 6 play soccer and rugby, 84 play rugby or tennis, 68 play soccer or rugby, and 4 play all three sports.

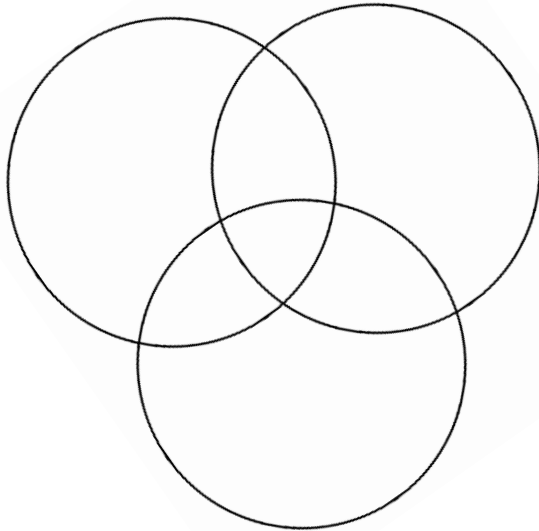
a) Display the information in a Venn diagram.



b) How many members does the club have?

Example 3: In a high school, there are 130 grade 11 students. Currently, 82 students are taking math, 27 are taking math and physics, 25 are taking math and chemistry, 20 are taking chemistry and physics, 110 are taking math or chemistry, and 87 are taking chemistry or physics. Eleven students are taking all three courses.

a) Draw a Venn diagram to display the information.

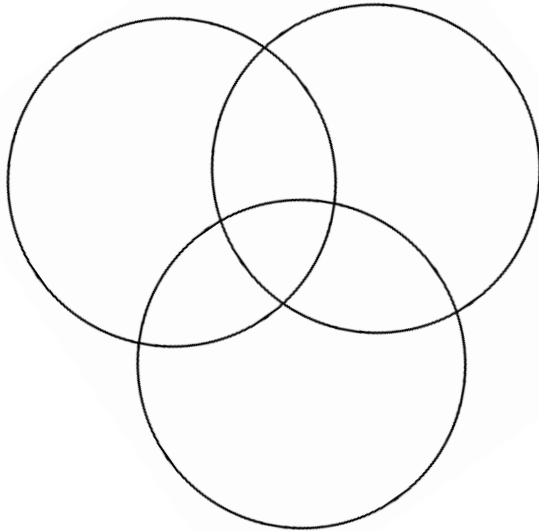


b) How many students are taking math or physics?

c) How many students are taking none of these three courses?

Example 4: Each student at a music camp plays at least one of the following instruments: violin, piano, or saxophone. It is known that 6 students play all three instruments, 163 play piano, 36 play piano and violin, 13 play piano and saxophone, 11 play saxophone and violin, 208 play violin or piano, and 98 play saxophone or violin.

a) Draw a Venn diagram to display the information.

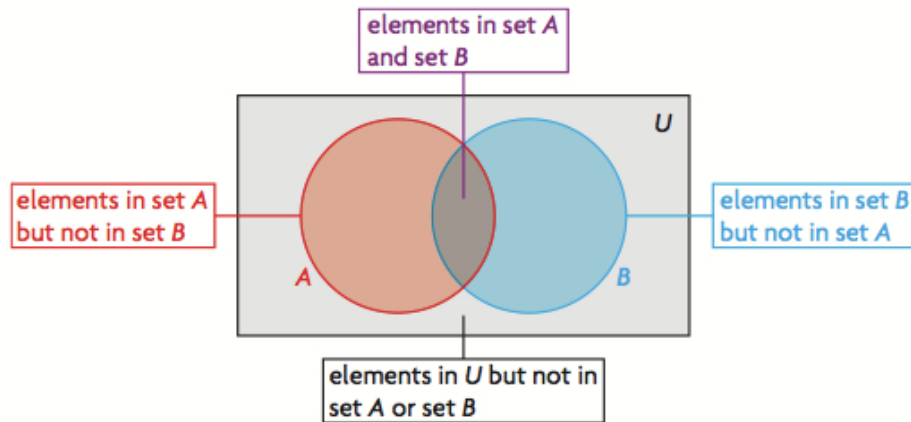


b) How many students are there at the camp?

In Summary

Key Ideas

- Sets that are not disjoint share common elements.
- Each area of a Venn diagram represents something different.
- When two non-disjoint sets are represented in a Venn diagram, you can count the elements in both sets by counting the elements in each region of the diagram just once.



Need to Know

- Each element in a universal set appears only once in a Venn diagram.
- If an element occurs in more than one set, it is placed in the area of the Venn diagram where the sets overlap.