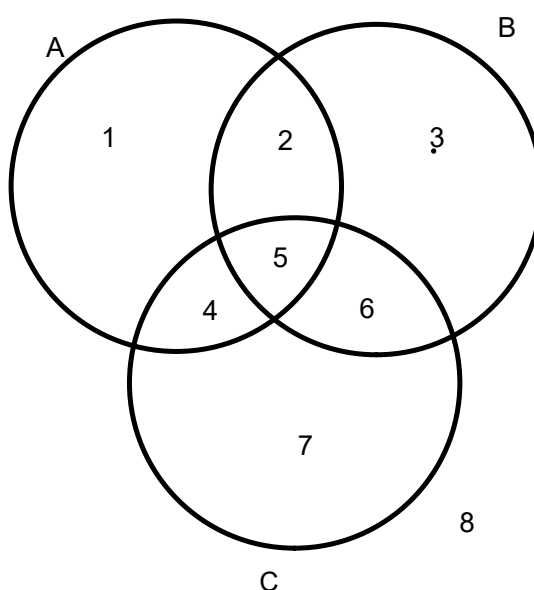


Section 2-5 Application of sets

Looking for keywords

1. only set A -> region 1
2. Set A and Set B -> region 2, 5
3. only A and B -> region 2
4. Set A or set B -> 1, 2, 3, 4, 5, 6
5. Set A or set B but not set C -> 1, 2, 3



and - intersection

or - union

not - complement

EXAMPLE 1 *Fitness Equipment*

Fitness for Life health club is considering adding additional cardiovascular equipment. It is considering two types of equipment, treadmills (T) and StairMasters (S). The health club surveyed a sample of members and asked which equipment they had used in the previous month. Of 150 members survey was determined that

102 used the treadmills.

71 used the StairMasters.

40 used both types.

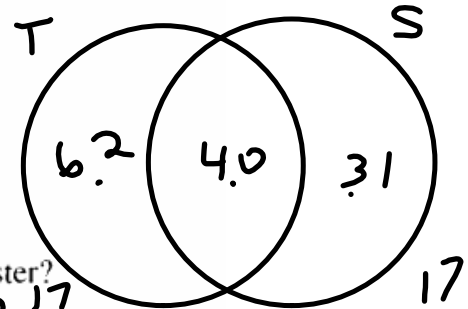
Of those surveyed,

a) how many did not use either the treadmill or the StairMaster?

b) how many used the treadmill but not the StairMaster? **62**

c) how many used the StairMaster but not the treadmill? **31**

d) how many used either the treadmill or StairMaster? **133**



EXAMPLE 2 *Software Purchases*

CompUSA has recorded recent sales for three types of computer software: **games**, educational software, and utility programs. The following information rega

software purchases was obtained from a survey of 893 customers.

545 purchased games.

497 purchased educational software.

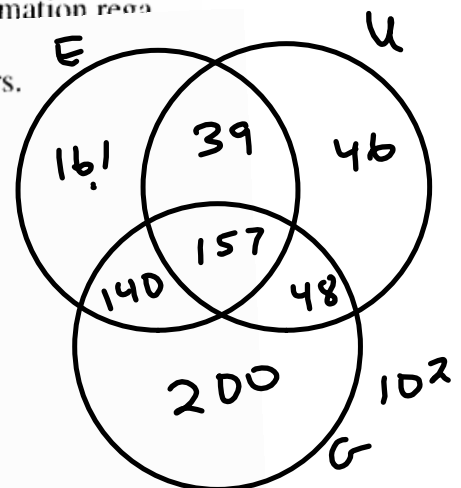
290 purchased utility programs.

297 purchased games and educational software.

196 purchased educational software and utility programs.

205 purchased games and utility programs.

157 purchased all three types of software.



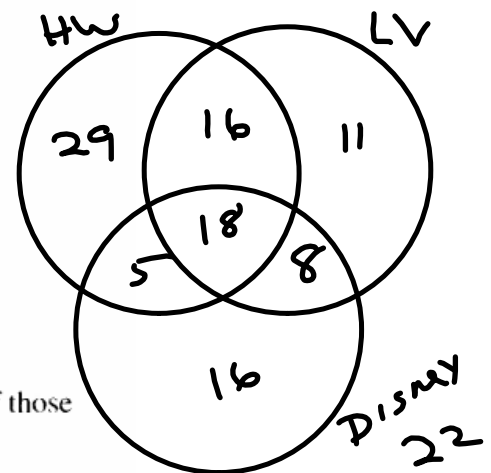
Use a Venn diagram to answer the following questions. How many customers purchased

- none of these types of software? **102**
- only games? **200**
- at least one of these types of software? **791**
- exactly two of these types of software? **227**

EXAMPLE 3 *Travel Packages*

Liberty Travel surveyed 125 potential customers. The following information obtained.

- 68 wished to travel to Hawaii.
- 53 wished to travel to Las Vegas.
- 47 wished to travel to Disney World.
- 34 wished to travel to Hawaii and Las Vegas.
- 26 wished to travel to Las Vegas and Disney World.
- 23 wished to travel to Hawaii and Disney World.
- 18 wished to travel to all three destinations.



Use a Venn diagram to answer the following questions. How many of those

- a) did not wish to travel to any of these destinations? 22
- b) wished to travel only to Hawaii? 29
- c) wished to travel to Disney World *and* Las Vegas, but not to Hawaii? 8
- d) wished to travel to Disney World *or* Las Vegas, but not to Hawaii? 35
- e) wished to travel to exactly one of these destinations? 56

5. *Cultural Activities* Thirty-three U.S. cities were re-searched to determine whether they had a professional sports team, a symphony, or a children's museum. The following information was determined.

16 had a professional sports team.

17 had a symphony.

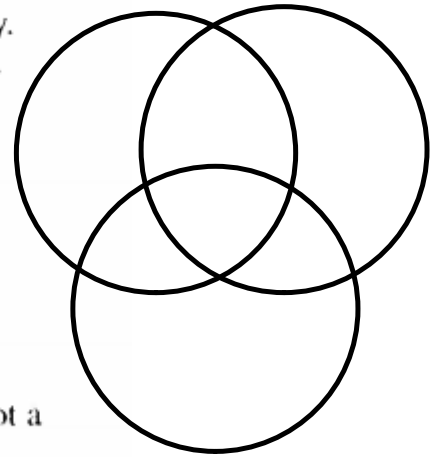
15 had a children's museum.

11 had a professional sports team and a symphony.

7 had a professional sports team and a children's museum.

9 had a symphony and children's museum.

5 had all three activities.



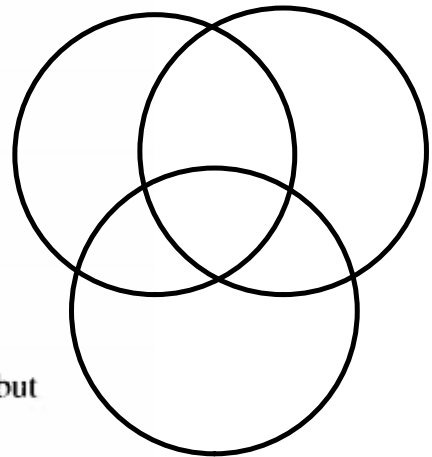
How many of the cities surveyed had

- only a professional sports team?
- a professional sports team and a symphony, but not a children's museum?
- a professional sports team or a symphony?
- a professional sports team or a symphony, but not a children's museum?
- exactly two of the activities?

9. **Transportation** Seventy businesspeople in Sacramento, California, were asked how they traveled to work during the previous month. The following information was determined.
- 28 used public transportation.
 - 18 rode in a car pool.
 - 37 drove alone.
 - 5 used public transportation and rode in a car pool.
 - 9 used public transportation and drove alone.
 - 4 rode in a car pool and drove alone.
 - 3 used all three forms of transportation.

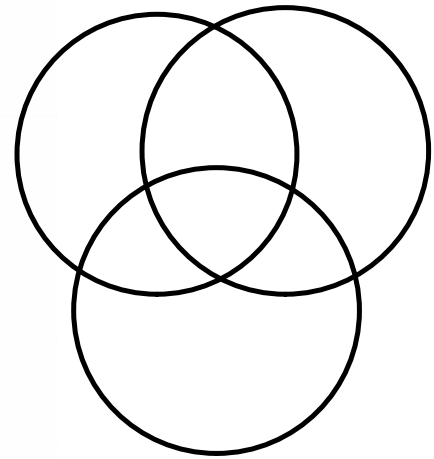
How many of those surveyed

- a) only used public transportation?
- b) only drove alone?
- c) used public transportation and rode in a car pool, but did not drive alone?
- d) used public transportation or rode in a car pool, but did not drive alone?
- e) used none of these forms of transportation?



11. *Homeowners' Insurance Policies* A committee of the Florida legislature decided to analyze 350 homeowners' insurance policies to determine if the consumers' homes were covered for damage due to sinkholes, mold, and floods. The following results of the analysis were determined.

- 170 homes were covered for damage due to sinkholes.
- 172 homes were covered for damage due to mold.
- 234 homes were covered for damage due to floods.
- 105 homes were covered for damage due to sinkholes and mold.
- 115 homes were covered for damage due to mold and floods.
- 109 homes were covered for damage due to sinkholes and floods.
- 78 homes were covered for damage due to all three conditions.



How many of the homes

- a) were covered for damage due to mold but were not covered for damage due to sinkholes?
- b) were covered for damage due to sinkholes or mold?
- c) were covered for damage due to mold and floods, but were not covered for damage due to sinkholes?
- d) were not covered for damage due to any of the three conditions?