CADT
IDT វិទ្យាស្ថានបច្ចេកវិទ្យាឌីជីថល
Institute of Digital Technology

Exercises of word problem in set

Lecture: Ngeth Youdarith

E-mail: youdarith.ngeth@cadt.edu.kh

To solve word problems involving sets, you typically need to apply set operations such as union, intersection, and complement. Here's a general approach to solving set word problems:

1. Read the problem carefully: Understand the problem statement and identify the key information related to sets. Pay attention to any specific conditions or restrictions mentioned in the problem.

2. Identify the sets involved: Determine the sets mentioned in the problem and assign them labels or symbols for clarity. For example, let A represent the set of students who play football and B represent the set of students who play basketball.

3. Translate the problem into set notation: Use the information given in the problem to express the sets and their relationships using set notation. This step helps you represent the problem in a more mathematical form.

4. Apply the appropriate set operations: Determine which set operations (union, intersection, complement) are relevant to solving the problem. Apply these operations to the given sets to find the desired set.

5. Solve for the specific question: Based on the problem, identify the specific question or task you need to answer. Apply the operations and principles of sets to solve the question and obtain the desired result.

6. Verify and interpret the solution: Once you have obtained the set or sets that satisfy the problem, review the solution and check if it aligns with the problem statement. Make sure you interpret the result in the context of the problem.

Exercises

1. In a group of 105 students
70 students passed Math
60 students passed CCNA
45 students pass Advance Programing
30 students passed Math and CCNA
35 students passed CCNA and Advance Programing
25 students passed Math and Advance Programing 15 passed all subject
Find the number of students who
   a. Passed at least one subject?
   b. Passed exactly two subject?
   c. Passed Math and Failed CCNA
   d. Passed all three subject that they passed two
   e. Passed Math given that they passed CCNA

2. A survey of 100 university students found the following data on their food preferences:
54 preferred Italian cuisine
29 preferred Asian-style cooking
16 preferred both Italian and Asian-style foods
19 preferred both Asian-style and Indian dishes
10 preferred both Italian and Indian cuisines
5 liked them all 11 did not like any of the options
How many students preferred:
   a. Only Indian food?
   b. Only Italian food?
   c. Only one food?

3. In a group of 82 students were surveyed, and it was found that each of the students surveyed liked at least one of the following three fruits :
39 liked apricots
50 liked bananas
39 liked cantaloupes
21 liked apricots and bananas
18 liked bananas and cantaloupes
19 liked apricots and cantaloupes
   a. How many students liked apricots, but not bananas or cantaloupes?
   b. How many students liked cantaloupes , but not bananas or apricots?
   c. How many students liked all of the following three fruit?
   d. How many students liked apricots and cantaloupes, but not bananas?

4. In a survey of American tourists in Europe was conducted and the following information was gathered :

25 have been to Amsterdam
27 have been to Berlin
33 have been to Copenhagen
16 have been to Amsterdam and Berlin
17 have been to Amsterdam and Copenhagen
13 have been to Berlin and Copenhagen
50 have not been to any of the following three cities
76 have been to at most one of the following three cities

a. How many tourists have been to Amsterdam, but not to Berlin or Copenhagen?
b. How many tourists have been to exactly one of three cities?
c. How many tourists have been to exactly two of the three cities?

5. In a group of 40 students showed that
23 students study Math
5 study Math and CCNA
8 study Math and IL
5 study CCNA and IL
3 study all three subjects
The number of students who study CCNA is only twice the number who study IL only
Find the number of students who study

a. Only Math
b. Only CCNA
c. Only one subject

6. 100 college students were surveyed and it was found out that all of theme have visited at least one of the following three cities: Austin(TX).Boston (MA).and Chicago(JL).
53 of the students visited Austin.
52 of the students visited Boston.
65 of the students visited Chicago.
19 of the students visited Austin and Boston.
28 of the students visited Boston and Chicago.
31 of the students visited Austin and Chicago.
38 of the students visited exactly one of the following three cities: Austin. Boston. and Chicago.
How many students visited only Austin?
How many students visited only Boston?
How many students visited only Chicago?
How many students visited both Austin and Boston . but not Chicago?

how many students visited both Boston and Chicago .but not Austin?
How many students visited both Austin and Chicago .but not Boston?
How many students visited all of the following three cities: Austin Boston and Chicago?
7. A pet store keeps track of purchases of customers over a four hour period. The store manager classifies purchases as containing a dog product, a cat product, a fish product for different of pet. She found
83 purchased a dog product
101 purchased a cat product
22 purchased a fish product
31 purchased a dog and a cat product
8 purchased a dog and a fish product
10 purchased a cat and a fish product
6 purchased a dog , a cat and a fish product
34 purchased a product for pet other than a dog , cat or fish

a. How many purchased were for a dog product only?
b. How many purchased were for a cat product only?
c. How many purchased were a dog or a fish product?
d. How many purchased were there in total?