

# Q&A 1: Members, Complement, Subsets, Union, Intersection

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**God's Word: Psalm 71:1**

*"In thee, O LORD, do I put my trust; let me never be put to confusion."*

**My Declaration: O LORD, I put my trust in You, and I will never be put to shame.**

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1. Given that:

$$U = \{4, 8, 12, 16, \dots, 36\}$$

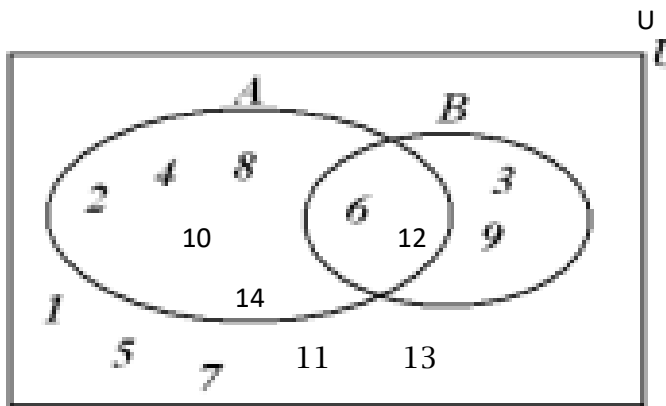
$$F = \{\text{factors of } 24\}$$

$$M = \{\text{multiples of } 8\}$$

F and M are subsets of U.

- i. List the members of F and of M
- ii. Draw a Venn diagram to represent the above data
- iii. State  $n(F \cup M)$

2. The Venn Diagram below shows two sets A and B



$U = \{\text{whole numbers less than 15}\}$  and A and B are subsets of U.

- i. Describe A and B in words
- ii. List the members of  $A \cap B$
- iii. Determine  $n(A \cap B')$

3. The Universal Set,  $\xi = \{1, 3, 4, 6, 7, 8, 9, 13, 15, 19\}$

$$X = \{1, 3, 6, 7, 13\}$$

$$Y = \{1, 3, 7, 13, 15, 19\}$$

$$Z = \{1, 3, 9, 15\}$$

- i. Draw the Venn diagram to represent the above information.
- ii. List the members of the set  $X' \cup Y$
- iii. State  $n(Z \cap X)'$ .

## Q&A 2: Problems In Two and Three Sets

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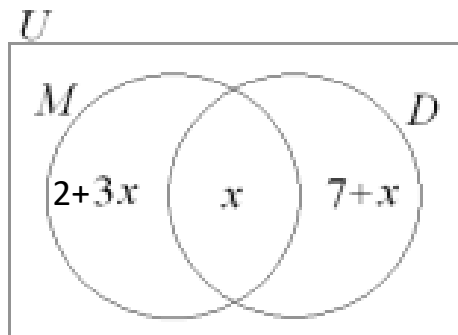
**God's Word: Psalm 51:10**

*"Create in me a clean heart, O God; and renew a right spirit within me ."*

**My Declaration: As above.**

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1. In the diagram below, the Universal set, (U), represents all the students



in a sports club. The M represents all the students who are in the marching band. The set D represents the students who take diving. If 42 students are in the marching band, calculate

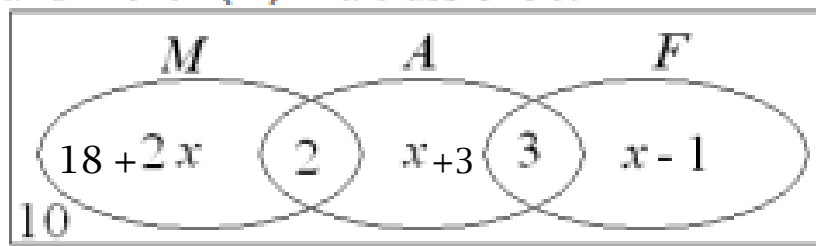
- i. the number of students who are both in the marching band and take diving;
- ii. the number of student who take diving only

2. Of the 58 students who took examinations, 38 took Math (M) and 22 wrote English.  $x$  students took both subjects, while 12 took neither.

Find the number of students who:

- i. wrote both exams;
- ii. took Math only

3.



The above diagram shows the number of students, class of 51, who like Math (M), Art (A) and French (F).

- Write down an expression in  $x$  for the number of students who like Math.
- Write down an equation, in terms of  $x$ , which shows the information in the Venn diagram.
- Determine the number of students who like Math only.

# Q&A 3: Three-Sets Problems

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**God's Word: Psalm 118:1**

*"O give thanks unto the Lord; for He is good: because His mercy endureth forever."*

**My Declaration: Lord, I bless Your holy name and thank You, for You are good and Your mercy endures forever.**

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1. In a class of 65 students, each student does at least one of the three activities, Embroidery (E), Martial Arts (M), and Sailing (S).

17 students do Embroidery and Sailing only;

9 students do Sailing only;

8 students do Martial Arts and Embroidery only;

4 student does Martial Arts only;

15 students do three activities

$x$  students do Martial Arts and Sailing only;

$2x$  students do Embroidery only.

- i. Draw a Venn diagram to illustrate the above information;
- ii. Write an expression in  $x$  to represent the composition of the class
- iii. Hence, calculate the number of students who do Embroidery only.

2. There are 102 students in a foreign language club.

45 students speak Swahili

48 students speak French

53 students speak Greek

17 students speak Swahili and French

19 students speak Swahili and Greek

20 students speak Greek and French

Three students speak none of the three languages

Let the number of students who speak all 3 languages be  $x$ .

- (a) Write an equation to show the total number of members in the club.
- (b) Hence, determine the number of members who speak all three languages.