PRIMARY FOUR MATHEMATICS WORK BOOK TERM ONE.

THEME: SETS
TOPIC: Set Concepts

DEFINITION OF A SET
A set is a collection of well-defined elements or numbers.

EXAMPLE 1
A = {even numbers less than 9}
B= {vowel letters}
X = {a, e, i, o, u}

SET SYMBOLS

∪ - Union set
∩ - Intersection set/
∅ - Empty set or null set.
↮ - Non – equivalent sets
∈ - Member of a given set
⊂ - Subset
{ } –Empty set
↔ Equivalent sets
n (B) – Number of elements in set B.

ε - Universal set

EXAMPLE 2

EQUIVALENT SETS

They have the same number of members

Set X = { 3, 6, 5 }

Set Y = { □ △ ⬭ }

∴ Set x is equivalent to Set y or $x \leftrightarrow y$

NON – EQUIVALENT SETS

They have different number of members.

Set T = {3, 6, 8, 9, 5} Set V = {9, 4, 7, 2}

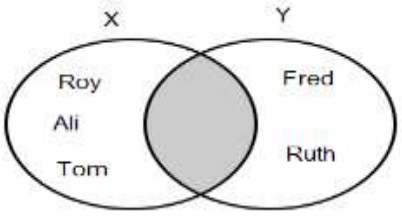
∴ Set T is non – equivalent to set V or T ↮ V

EMPTY SET
A set without members.
Symbol for empty set or null set is ∅
EXAMPLE 1
a) K = {Pupils in P.4 with blue legs}
Set K = { }

b) M = {Mothers who are five years old}
Set M = ∅

DISJOINT SETS

These are sets without common members.



X ∩ Y = ∅ OR

X ∩ Y= { }

EXAMPLES 1

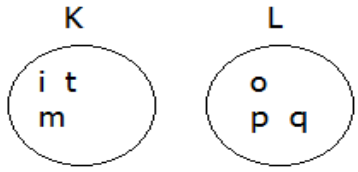
F = {orange, egg, yam, mango}

G = {Cabbage, carrot, pawpaw}

Sets F and G have no common members so they are **disjoint.**

ACTIVITY

1. Describe the following sets.
   a) B = {Green pupils in your class}
   b) K = {P.4 pupils who don't eat food}
   c) E = {Teachers in your school}
   d) A = {Elephants in the game park}
   e)



Sets K and L are

……

f) D = {a, b, c, d, e} E = { 4, 5, 6, 7 }

Sets D and E are

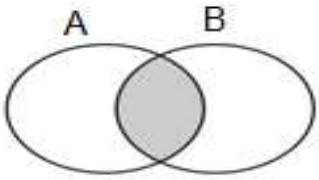
……

2. Form two empty sets

INTERSECTION OF SETS

These are sets with common members,

Symbol for intersection set is ∩



The shaded region represents A ∩ B.

EXAMPLE 1

S = {1, 2, 3, 4, 5, 6}

T = {2, 3, 4, 6, 8, 9}

S ∩ T = {2, 3, 4, 6}

EXAMPLE 2

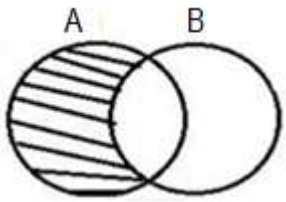
P = {a, e, I, o, u} Q = {a, b, c, o, e, f}

P ∩ Q = {a, o, e}

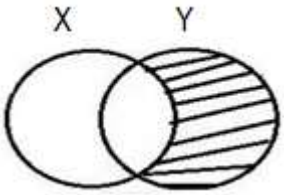
MEMBERS OF SETS ONLY

If two sets let's say X and Y have members with others intersecting, Members of X only is given as X–Y. Those of Y only is as Y–X as shown in the Venn diagram below

(a) A – B (A only)



(b) Y–X (Y only)



ACTIVITY

1. Write the intersection sets.
   a) A = {a, b, c} B = {b, d, e, f}

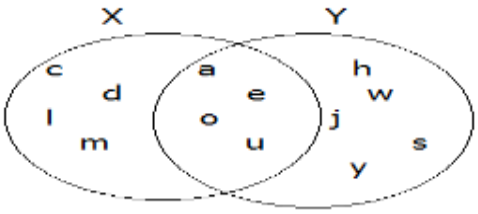
   b) P = {a, e, I, o, u k, m} Q = {a, b, c, o, e, f m}

c) S = {1, 2, 3, 4} T = {g, t, m}

d) X = {letters in the word Friday}
Y = {letters in the word Monday}

e) E = {odd numbers less than 13}
F = {even numbers less than 12}

2. Use the Venn diagram to answer the questions that follow:



List down the elements of set X

a) Find n(Y)

b) Find X ∩ Y

c) Find X – Y

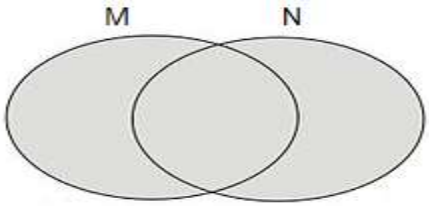
d) Find Y – X

e) Find n(Y – X)

UNION OF SETS

This is the collection of all members of the given sets without repeating any members

Symbol for union set '' ∪ ''



The shaded region represents M ∪ N.

EXAMPLE 1

A = {1, 2, 3, 4, 5, 6} B = {0, 1, 9, 3, 7, 2, 4}

A ∪ B = {1, 2, 3, 4, 5, 6, 0, 7}

EXAMPLE 2

P= {a, b, c} Q = {b, d, e, f}

P ∪ Q = {a, b, c, d, e, f}

ACTIVITY

1. Find the union set

a) K = {2, 4, 5, 0} J = {1, 2, 3, 4, 6, 7}

b) A = {oranges, mangoes, pawpaws, peas}
B = {peas, pineapples, mangoes}

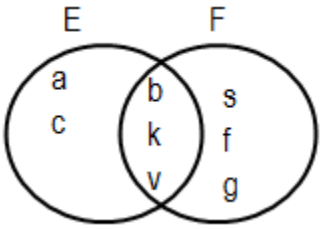
c) S = {hut, cat, house, pig} T = {cat, sheep, goat, pig}

d) K = {2, 4, 6, 8} L = {1, 2, 3, 4,5 ,6, 7, 9}

e) X = {a, e, l, o, u} Y = {b, l, g, e, r}

f) W = {g, b, k, r} N = {1, 5, 6}

2. Use the Venn diagram



a) List down the elements of set E

b) Find n (F)

c) Find E∩ F

d) Find E ∪ F