SUVA SANGAM COLLEGE

YEAR 12

MATHEMATICS

WORKSHEET 3

Strand 1	Social Mathematics
Sub-Strand	1.2Modular System and Group
Content Learning Outcome	• Identify properties for a system to be a group • Prove that a system is a group
Reference from Text	Pg. 13 to 19

Questions

No.	**CONCEPT IN BRIEF**: Identity element is when the element remains unchanged: a * e = e * a = a Inverse -when an element is operated with its inverse, the result is the identity (e)
1.	The table given below shows the set {0, 1, 2, 3, 4} under the operation addition modulo4 (use the same table for question 2) a) what is the identity element? b) Find the inverse of all the elements of the set.

+	0	1	2	3
0	0	1	2	3
1	1	2	3	0
2	2	3	0	1
3	3	0	1	2

	CONCEPT IN BRIEF: Associative property (a@b)@c = a@(b@c)
2.	Show that the operation is associative? Explain.
	CONCEPT IN BRIEF: A set **S** is a **group** under an operation« if the following **four** conditions are satisfied: 1. (S, @) is **closed**. 2. There is an **identity** element for @ in S. 3. Every element in S has an **inverse** under @. 4. The operation @ is associative.
3.	An operation "□" on a set $M = \{0, 1, 2\}$ is defined by the table given below:

□	0	1	2

	0	2	0	1
	1	0	1	2
	2	1	2	0
	Prove that this system is a group.			