

### LEARNING STRAND 3 MATHEMATICAL & PROBLEM-SOLVING SKILLS

SESSION GUIDES FOR MODULE 1: MEETING THE FAMILIES OF NUMBERS

ALS Accreditation and Equivalency Program: Junior High School



Alternative Learning System - Accreditation and Equivalency (ALS-A&E)

JUNIOR HIGH SCHOOL: MATHEMATICAL AND PROBLEM-SOLVING SKILLS SESSION GUIDES FOR MODULE 1 (MEETING THE FAMILIES OF NUMBERS)

#### ALS Accreditation and Equivalency Program: Junior High School Learning Strand 3: Mathematical and Problem-Solving Skills Session Guides for Module 1 (Meeting the Families of Numbers)

Published in 2020 by the United Nations Educational, Scientific and Cultural Organization UNESCO Office, Jakarta Jalan Galuh II No. 5, Kebayoran Baru, Jakarta, Indonesia

and

Department of Education DepEd Complex, Meralco Avenue, Pasig City, Philippines

Copyright © UNESCO and DepEd 2020

This publication is available in Open Access under the Attribution-Share Alike 3.0 IGO (CC-BY-SA) 3.0 IGO) license (http://creativecommons.org/licenses/by-sa/3.0/igo/). By using the content of this publication, the users accept to be bound by the terms of use of the UNESCO Open Access Repository (http://www.unesco. org/open-access/terms-use-ccbysa-en).

The designations employed and the presentation of material throughout this publication do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The selection and presentation of the material contained in this publication, as well as the opinions expressed herein are the sole responsibility of the authors and not necessarily those of UNESCO, nor do they commit the organization in any way.

This educational resource material was developed and printed through the project "Better Life for Out-of-School Girls to Fight Against Poverty and Injustice in the Philippines" with financial support from Korea International Cooperation Agency (KOICA).

Printed by APC Printers Corporation Printed in Makati City, Philippines

ISBN 888-888-8888-88-8

#### **DEVELOPMENT TEAM**



Jenelyn Marasigan Baylon Kristine Lee S. Lumanog Judy R. Mendoza Reyangie V. Sandoval Josephine C. Intino Eric U. Labre Roderick P. Corpuz Daisy Asuncion O. Santos Marilette R. Almayda Ariz Delson Acay D. Cawilan G. H. S. Ambat

Tonisito M. C. Umali

Leonor Magtolis Briones



Ermil P. Gabuat Ramonette Ruzgal Bernadette Sison Mildred Parbo Ma. Teresita Medado Author Content Expert Admin and Finance Staff Project Lead President

#### Content and Language Evaluators and Instructional Design Reviewer

Marilyn E. Macababbad Lourdes A. Navarro Ivy S. Yasis Schools Division Office of Biñan City, Department of Education Regional Office XI – Davao, Department of Education Freelance Language Editor



Ade Sandra Rusyda Djamhur Marmon Abutas Pagunsan Remegio Alquitran Maria Karisma Bea Agarao Mee Young Choi Shahbaz Khan Admin and Finance Assistant Project Assistant National Project Consultant National Project Officer National Programme Coordinator Head of Education Unit Director and Representative

Master Teacher I, ALS Task Force (On-detail) Education Program Specialist II, ALS Task Force (On-detail) Project Development Officer III, Bureau of Learning Resources Education Program Specialist II, Bureau of Learning Resources Senior Education Program Specialist, Bureau of Curriculum Development Senior Education Program Specialist, Bureau of Learning Resources Supervising Education Program Specialist, ALS Task Force Chief Education Program Specialist, Bureau of Learning Resources Director III/Head, ALS Task Force Officer-In-Charge, Office of the Director IV, Bureau of Learning Resources Assistant Secretary for Alternative Learning System Program and Task Force Undersecretary for Legislative Liaison Office, External Partnership Service and Project Management Service Secretary

### User's Guide

#### For the ALS Teacher/Instructional Managers/Learning Facilitator:

Welcome to the session guide of this module entitled Meeting the Families of Numbers under Learning Strand 3 Math and Problem-Solving Skills of the ALS K to 12 Basic Education Curriculum (BEC).

The module and the session guides were collaboratively designed, developed and reviewed by select DepEd field officials and teachers from formal school and ALS, and private institutions to assist in helping the ALS learners meet the standards set by the ALS K to 12 Basic Education Curriculum (BEC) while overcoming their personal, social, and economic constraints in attending ALS learning interventions.

This learning resource hopes to engage the learners in guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st Century skills while taking into consideration their needs and circumstances.

As an ALS Teacher/Instructional Manager/Learning Facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their learning. Moreover, you are expected to encourage and assist the learners as they do the tasks included in the module.

### READY, SETS, GO! Session Guide No. 1

### I. Duration of Session: 3 hours

### II. Key Understandings to Be Developed

- Sets and elements
- Union of sets

### **III. Learning Objectives**

- 1. Define set and other related terms.
- 2. Determine the union of two sets.
- **3.** Express satisfaction in mastery of new ways of thinking through application of mathematics.

### IV. Resources (if available)

• Scrap metal, bottle, botelya, carton, tin can, spring, newspaper, shoes, slippers, shirt, sando, jersey, shorts, skirt, pants, hijab, sombrero, and cap

### V. Activity

1. Ask the learners to help Tito Gino arrange the items that can be found around the neighborhood. *The activity is designed to simulate and emphasize the concept of grouping objects with similar characteristics that make up a set.* 



MEETING THE FAMILIES OF NUMBERS 1

**1.1.** Ask the learners to determine items that belong to each group below. (Paper-based items serve as example.)

<b>a.</b> Paper-based	<b>b.</b> Glass-based	<b>c.</b> Alloy (Steel mix)	<b>d.</b> Non-biodegradable ( <i>Hindi nabubulok</i> )
Newspaper Carton			

**1.2.** Ask the learners to name the different items below.



**1.3.** Ask the learners to identify items in (b) that could be worn on the corresponding body parts below. (Items that could be worn on the feet serve as example.)

e. Feet	<b>f.</b> Torso	g. Legs	<b>h.</b> Head
Shoes			
Slippers			

**1.4.** Ask the learners to identify items in (b) that could be worn on the upper or lower body parts. (Some upper body items serve as example.)

<b>i.</b> Upper Body (above the waist)	<b>j.</b> Lower Body (below the waist)
Sombrero Cap Shirt	

2. Ask the learners to prepare a simple presentation of their work for the rest of the class.

#### VI. Analysis

- 1. Based on the activity, ask this question: *How did you come up with the group of objects in each category?* 
  - Items in the junk shop were grouped according to the material they are made of while the garments were grouped according to the body parts they are used for.

### 2. Writing sets:

• Put emphasis on the skill of identifying and listing objects with similar properties or characteristics as in the examples in set making. Use items 1. a, b, c, d and 3. a, b, c, d as examples.

### Item 1:

- a. Paper-based items are made of paper.
- **b.** Glass-based items are made of glass.
- c. Alloy items are made of metallic materials.
- d. Non-biodegradable items are items that do not decay.

### Item 3:

- a. Garments worn on the feet are shoes and slippers.
- **b.** Garments worn on the torso are shirt, sando, and jersey.
- c. Garments worn on the legs are shorts, skirt, and pants.
- d. Garments worn on the head are hijab, sombrero, and cap.

- Ask the learners to give objects that has the same characteristics such as vegetables, fruits, animals, etc. Ask them to explain what characteristics are common to these objects.
- Give other examples using people belonging to different families, occupation, religious affiliation, etc. and objects that are common in the community.
- **3.** Union of Sets (*This part comes after the discussion of formal definition of sets*).
  - Put emphasis on the skill of combining two or more groups together using items **4**. **a and b**.

### Item 4:

- a. Upper body garments are objects that can be worn on the head and on the torso.
- **b.** Lower body garments are objects that can be worn on the legs and feet.
- Give two or more sets (categories or group of people or objects that can be seen around the community) and ask learners to provide an example for each. List down the examples, then combine them together to form a bigger set.
- 4. Shift the discussion to mathematics by replacing the group or categories of objects with types of numbers. Recall learners' knowledge of different types of numbers such as:

Whole Numbers	:	$\{1, 2, 3, 4, 5, 6\}$
Decimals	:	$\{0.32, 1.43, 2.5, 2.97, 3.8\}$
Fractions	:	$\{\frac{1}{4}, \frac{2}{3}, \frac{3}{4}, \frac{7}{8}\}$
Counting Numbers	:	$\{0, 1, 2, 3, 4, 5\}$
Integers	:	$\{-3, -2, -1, 0, 1, 2, 3\}$

Prepare visual aids of these. Provide the definitions or differences of each.

### VII. Abstraction/Generalization

1. Present the definition and examples.

A collection of numbers is called a **set** and is usually enclosed in *braces* "{ }". Sets are named using capital letters, such as set *A*, set *B*, set *C*, etc.

Each number inside a set is called an **element** or **member**.

### 2. Writing elements in a set:

• Emphasize the use of braces to enclose one group.

The set of Whole numbers {1, 2, 3, 4, 5, 6} has six elements included.

3. After presenting the examples, ask the learners to provide their own examples with more elements.

### 4. Writing elements in ascending order:

• When writing a set of numbers, arrange the elements in ascending order. Arranging numbers in ascending order means that the numbers are listed from lowest value to highest value.

Examples:	$\{2, 3, 4, 5, 6\}$
	$\{-1, 0, 1, 2, 3, 4\}$
	$\{-4, -2, 0, 2, 4, 6\}$

• Allow learners to practice during discussion by giving examples of sets with elements that are not in ascending order.

### 5. Union of sets:

 Sets of numbers can also be combined to form one bigger set. The set formed is called a union of sets. We use the symbol "U" to show the union of two or more sets.

For example,

 $A = \{1, 3, 5, 8\} \qquad B = \{-2, 0, 4, 9\}$ 

To determine  $A \cup B$ , we combine the elements of Set *A* and Set *B* in a single set:

 $(A \cup B) = \{1, 3, 5, 8, -2, 0, 4, 9\}$ 

Arranging this set in ascending order, we obtain

$$(A \cup B) = \{-2, 0, 1, 3, 4, 5, 8, 9\}$$

 $(A \cup B)$  is read as "A union B".

- Emphasize the correct way of reading union of sets "A union B".
- Emphasize that elements appearing in both or all sets should only be written once in the set representing the union of the sets.
- Ask the learners to read "A ∪ C" and "A ∪ B ∪ C" as a practice. Provide other examples with more sets.
- Relate union of sets to the groups of objects in Tito Gino's activity.

The non-biodegradable group in the junk shop is composed of objects made of glass and alloy materials.

The upper body garments group is made up of objects worn on the head and on the torso.

The lower body garments group is made up of objects worn on the legs and feet.

6

### **VIII.** Application

- 1. Ask the learners to define sets, elements, and union of sets.
- 2. Have them properly write a set.
- 3. Present the *Sharpening Your Skills* and *Treading the Road to Mastery* assessments which aim to further develop their skills on:
  - a. identifying elements that belong to a given set.
  - **b.** identifying the correct elements in each set using the numbers that are not visually given.
  - c. applying the ideas of sets and union of sets in real-life scenario.
  - **d.** identifying the correct elements in the union of sets.
- 4. Process the activity by allowing learners to explain their answers.
  - Encourage learners to project the numbers in the set mentally to promote critical thinking. Learners might need help in clarifying some set qualifiers such as "greater than..." and "less than..."
  - Solicit a variety of answers based on the learner's own experience.

### IX. Concluding Activity

End the session by reviewing the key understandings developed and relating the concepts of sets and union of sets to real life.

### SETTING IT UP Session Guide No. 2

### I. Duration of Session: 3 hours

### II. Key Understandings to be Developed

- Different kinds of sets
- Intersection of sets

### **III. Learning Objectives**

- 1. Discuss the different kinds of sets.
- 2. Determine the intersection of two sets.
- 3. Express satisfaction in mastery of new ways of thinking through application of mathematics.

### IV. Resources (none)

### V. Activity

1. Ask the learners to help Tito Gino identify weights of items that belong to a given set. *The activity is designed to recall the learner's* 

understanding of identifying the elements in each set of numbers that was discussed in Session 1.

Set A = weight in whole number





- Set C = weight less than 1 kilogram
- Set D = weight more than 10 kilograms
- Set E = weight less than 5 kilograms

For example, in Set A = weight in whole number, the weights of items that belong to this set are 2 kg, 5 kg, and 8 kg.

2. Ask learners to show their answers for each set and to explain how they came up with these answers.

### **SESSION GUIDE 2 -**

### VI. Analysis

- 1. Based on the activity, ask this question: *What do you notice about the sets?* 
  - There are some sets that have only one element, some sets that share the same elements, and some sets that do not contain anything.
- 2. Clarify to the learners that some elements may be written in more than one set. Put emphasis on how the elements of a set should be written in ascending order and enclosed in braces.

Set  $A = \{2, 5, 8\}$ Set  $B = \{0.45, 1.69, 2.35, 3.56, 4.3, 6.87, 9.5\}$ Set  $C = \{0.45\}$ Set  $D = \{\}$  (none) Set  $E = \{0.45, 1.69, 2, 2.35, 3.56, 4.3\}$ 

3. Go over the sets one by one and note the number of elements in each set. Use this information to discuss the different types of sets.

### VII. Abstraction/Generalization

- 1. Present the definition and examples.
- 2. Different types of sets:
  - Explain and relate the definition of each type of set to the activity.

**Singleton Set** contains only one element. In Tito Gino's list, Set  $C = \{0.45\}$  is a singleton set.

Null or Empty Set does not contain any element and is represented by symbols  $\{ \}$  or  $\emptyset$ . In Tito Gino's list, Set *D* is a null or empty set.

**Finite Set** contains a limited number of elements. In Tito Gino's list, sets *A*, *B*, *C*, and *E* are all finite sets.

## SESSION GUIDE 2 -

### 3. Infinite set:

- Emphasize the use of ellipsis (three dots in succession) to denote infinity of a set. Say "Infinite sets are usually used with groups involving the words "greater or more than (>)" and "less than (<)."
- Use examples in the Learner's Module.

Examples: Set  $J = \{2, 4, 6, 8, ...\}$ Set  $K = \{..., -3, -2, -1\}$ Set  $L = \{..., 9, 12, 15, ...\}$ 

### 4. Subset:

- Subset is a set with ALL its elements contained in a bigger set. The symbol for subset is "⊆".
- For the last type of set, ask, "What do you notice about the element in Set C in relation to Sets B and E?"

All elements of set *C* is contained in set *B*. We say that *set C* is *a subset of set B*. We can write that as  $C \subseteq B$ . Similarly, set *C* is also a subset of set *E* written as  $C \subseteq E$ .

• Provide other examples so learners can practice writing subsets.

### 5. Intersection of sets:

- To determine the intersection of sets, we identify the elements that are common to two or more different sets. We use the symbol "∩" to show intersection of two or more sets.
- Ask, "Are there common elements between Sets A and E? Sets B and C? Sets C and E? Sets B and E?"

Using Tito Gino's list, we can write the intersection of sets as:

 $\begin{array}{ll} (A \cap E) = \{2\} & (A \cap E) \text{ read as "}A \text{ intersection } E" \\ (B \cap C) = \{0.45\} & (B \cap C) \text{ read as "}B \text{ intersection } C" \\ (C \cap E) = \{0.45\} & (C \cap E) \text{ read as "}C \text{ intersection } E" \\ (B \cap E) = \{0.45, 1.69, 2.35, 3.56, 4.3\} & (B \cap E) \text{ read as "}B \text{ intersection } E" \end{array}$ 

- Let the learners practice how to read  $A \cap E$  as "A intersection E."
- Clarify that the intersection of sets that do not have any common element is a null set.

### VIII. Application

- 1. Ask the learners to discuss the different types of sets.
- 2. Ask them how to determine the intersection of two sets.
- 3. Present the *Sharpening Your Skills* and *Treading the Road to Mastery* assessments which aim to further develop their skills on
  - **a.** identifying the type of a given set using the number of elements included and differentiating the types of sets.
  - **b.** determining if a given set is a subset of a bigger set by carefully examining if each element in the given set is in the bigger set.
  - c. identifying the correct elements in the intersection of sets.
- 4. Process the activity by allowing the learners to explain their answers.
  - Correct misconceptions such as ignoring the ellipsis in a set and wrongly identifying the set as finite.
  - For items that are not identified as subsets of the bigger set, let learners list the element that disqualifies them.

### IX. Concluding Activity

End the session by reviewing the key understandings developed and relating the concepts of different types of sets and intersection of sets to real-life.

## SESSION GUIDE 3 -

### FALLING IN LINE Session Guide No. 3

### I. Duration of Session: 3 hours

### II. Key Understandings to Be Developed

- Number Line
- Set of real numbers on a number line

### III. Learning Objectives

- 1. Describe and draw a number line.
- 2. Show the different sets of real numbers on a number line.
- 3. Describe the set of integers.

### **IV. Resources**

- Sticks (to represent number line)
- Pieces of rock (as markers)
- Any other indigenous materials available in the community that can be used to represent number line and markers.

### V. Activity

1. Ask the learners to help Tito Gino compute the money gained daily by determining the total weight of materials left in the junk shop after all the transactions in a day. *The activity is designed for learners to physically experience the movements in the number line that can help them remember how adding and subtracting numbers work.* 

Follow the instructions and give examples as stated below:

### Instructions:

1. Create a straight line on the floor.

Mark the starting point as zero (0). Mark equal spaces on the line using your foot, then name each mark using numbers 1, 2, 3, and so on until you reach 15.



3. Using the list of transactions in the junk shop for the past week, compute the money gained daily in terms of the weight of materials left each day. Move forward for "sell" amounts, move backwards for "buy" amounts.



Ask the learners to apply the instructions on the transactions of Tito Gino for the last 5 days:

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Sell 4 kg	Sell 8 kg	Sell 7 kg	Sell 9 kg	Sell 10 kg
Buy 2 kg	Buy 5 kg	Buy 5 kg	Sell 3 kg	Buy 5 kg
Buy 1 kg	Sell 3 kg	Buy 2 kg	Buy 10 kg	Buy 4 kg
Sell 5 kg	Buy 2 kg	Sell 8 kg	Sell 6 kg	Sell 3 kg
Sell 1 kg	Buy 4 kg	Buy 5 kg	Buy 7 kg	Sell 2 kg

Day 1 serves as an example.



*Sell 4 kg*  $\rightarrow$  *move 4 spaces forward* 



*Buy 2 kg*  $\rightarrow$  *move 2 spaces backward* 



Buy 1 kg  $\rightarrow$  move 1 space backward





### **14** MEETING THE FAMILIES OF NUMBERS



Starting from 0 on the leftmost part, the movement ended with 7. Hence, Tito Gino gained 7 kg in Day 1.

- **2.** Remind the learners to follow instructions accordingly and carefully.
- 3. Reiterate that the starting point is zero (0) and there must be fifteen (15) markers after that. Numbers must be placed to the right of zero.

_										
										-
	1	I			I	1	1	1	I	I.
0	1	2	3	4	5	6	7	8	9	10
U	-	-	0	-	0	U	'	0		10

Each marker must be measured using the length of one foot of the same learner to keep the measurement constant.

4. Clarify that the forward movement is for "selling" (as money is gained when selling) and the backward movement is for "buying" (as money is lost when buying).

### VI. Analysis

- 1. After the activity, ask the learners to list the final count after all the movements per day for comparison.
  - Applying the movements on the line they made, this should be the results that they got:

DAY 1	7 kg
DAY 2	0 kg
DAY 3	3 kg
DAY 4	1 kg
DAY 5	6 kg

# SESSION GUIDE 3 -

- The items that the shop sold gain money, which is why the movement is forward. The items that the shop bought lose money as payment to the sellers who brought them, which is why the movement is backward.
- 2. Ask the learners to discuss or present their answers for each day.
- 3. Verify if the answers are correct using the answer key. For those who were not able to get the correct answers, ask what challenges they encountered.
- 4. Use the line the learners used in the activity to introduce the concept of number line.
- 5. Ask the learners to give some examples of objects with numbers in them used in the community and which jobs use these objects (such as measuring tape for carpenters)

### VII. Abstraction/Generalization

1. Present the definition and examples.

A **number line** is a straight line that has numbers written at equal distances. It uses zero as its starting point.

### 2. Creating a number line:

- Zero (0) is the starting point or reference point where the number line begins the count of numbers.
- Emphasize the need for a uniform spacing between numbers in the number line. This is the reason why measuring was done by the same learner all throughout.
- For fractions, the intervals used between whole numbers should be equal to the denominator of the fractions.

### 3. Movement in the number line:

• Discuss how to locate a point in the number line using zero as the starting point. For example, number 1 is one step to the right of zero.

- Give the learners sample items of numbers that they will locate in the number line.
- Discuss the movements done in the number line like the activity at the beginning of the lesson.



• Ask the questions:

"What do you notice about the answers using the movement?" "Will the answers be the same if we use mathematical computation?"

"What happen to the numbers when we go forward (to the right)?" "What happen to the numbers when we go backward (to the left)?"

• Explain that moving to the right in the number line indicates an increase in the value of numbers while moving to the left indicates a decrease in the value of numbers.

### 4. Integers on the number line:

• Recall the concept of integers and ask what numbers compose this set.

**Integers** are made up of positive numbers, negative numbers, and zero. They constitute the usual number line used in mathematics.

- Discuss that negative numbers appear when we move to the left of zero. Negative one (-1) is one step to the left of zero.
- Ask the question: "Using the concept of money, how can we describe negative numbers?"
- Explain that positive numbers is similar to getting salary or allowance (gaining money) while negative numbers is similar to debt or loans (losing money).

### 5. Different intervals on the number line:

• Emphasize that smaller or larger intervals may be used to locate different sets of numbers depending on the values that they need to plot in the number line.

Example:



Here, the interval is 10. The rightmost point in the number line is the biggest while the leftmost is the smallest.

• Explain that decimals and fractions use a zoomed-in version of the number line.

We can imagine making smaller divisions or "baby steps" in between 0 and 1 to represent decimals, as shown on the next page. In fact, both decimals and fractions may be represented this way.



• Larger numbers such as multiples of 5, 10, 50, 100, etc. use a zoomed-out version of the number line. Use intervals where the set of numbers is divisible with.

### 6. Infinity on the number line:

- Recall how to locate a point in the number line using zero as the starting point as discussed earlier. Explain that expressions with "greater than (or equal)" or "less than (or equal)" conditions contain many points in them, and in fact, has infinite number of points in them.
- Emphasize that to graph an infinity, we use the number in the expression as starting point:

*Examples:* x > 2, start the graph at 2.

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 **0** 1 2 3 4 5 6 7 8 9 10

x < -5, start the graph at -5.

,					$\dot{\mathbf{A}}$															
					Ψ															
-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10

- Use open circle when the symbol used is ">" (greater than) or "<" (less than).</li>
- Use shaded circle when the symbol used is "≥" (greater than or equal) or "≤" (less than or equal).

- Emphasize the correct way of shading regions—shade the right side when greater than is used and shade the left side when less than is used.
- Use the symbols as "arrows" to know where to shade.
   ">" points to the right, shade the right side
   "<" points to the left, shade the left side</li>

### VIII. Application

- 1. Ask the learners to discuss the different sets of numbers in the number line and how it can be used in comparing different numerical values such as height, weight, sales, etc.
- 2. Present the *Sharpening Your Skills* and *Treading the Road to Mastery* assessments which aim to further develop their skills on
  - a. plotting points or setting points in the number line;
  - **b.** creating a number line using different intervals, plotting points, and labelling them correctly; and
  - **c.** using arrowto represent different expressions involving "greater than" and "less than".
- 3. Remind the learners to take note of the words that signal whether the movement is forwards or backwards.
- 4. Process their answers by comparing which has the smallest or largest limit as indicated by the arrows.

### IX. Concluding Activity

End the session by reviewing the key understandings developed and relating the concepts of number line and movements in a number line in real-life scenario.

### **PRE-ASSESSMENT**

1.	В	6. D	11. D
2.	А	7. B	12. C
3.	D	8. B	13. A
<b>4</b> .	А	9. C	14. C
5.	А	10. A	15. A

### LESSON 1: READY, SETS, GO!

### TRYING THIS OUT ACTIVITY I

PAPER-BASED GLASS-BASED NON-BIODEGRADABLE ALLOY (Steel Mix) (Hindi Nabubulok) Botelya Spring Spring Newspaper Botelya Tin Can Botles Bottles Carton Tin Can Scrap Metal Scrap Metal

### ΑCTIVITY ΙΙ



MEETING THE FAMILIES OF NUMBERS **21** 

PAGE 2

PAGE 5

## ANSWER KEY -

#### **ACTIVITY III**

FEET	TORSO	LEGS	HEAD
Shoes Slippers	Shirt Sando Jersey	Shorts Skirt Pants	Hijab Sombrero Cap

#### ΑCTIVITY IV

UPPER BODY	LOWER BODY
(above the waist)	(below the waist)
Hijab Sombrero Cap Shirt Sando Jersey	Short Skirt Pants Shoes Slippers

### SHARPENING YOUR SKILLS ACTIVITY I

PAGE 12

- 1.  $\{-11, -9, -2, 0, 4, 5, 13, 23\}$
- **2.**  $\{-15.8, -5.7\}$
- **3.** { 5, 13, 23 }
- 4.  $\{\frac{1}{3}, \frac{5}{6}, \frac{11}{8}\}$
- 5.  $\{-15.8, -11, -9, -\frac{13}{2}, -5.7, -2, -\frac{2}{7}, \frac{1}{3}, \frac{5}{6}, \frac{11}{8}, 2.1, 2.4, 8.01\}$

### ΑCTIVITY ΙΙ

- 1. { 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50 }
- 2. { 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48 }
- 3. { 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50 }
- **4.** { 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 }
- 5. { 14, 21, 28, 35, 42, 49 }

## ANSWER KEY -

### ACTIVITY III

The recycled materials collected would be made into re-usable products that can be sold such as bags, coin purse, pencil holders, etc. The idea of sets can be used in this task in segregating and arranging the materials according to their usage. The idea of union of sets can be used in this task in putting together all the money collected from selling the products.

### TREADING THE ROAD TO MASTERY ACTIVITY I

PAGE 14

- A.  $\{-4, -2, -1, 0, 2, 3, 4, 7\}$
- **B.**  $\{-3, -1, 1, 3, 5, 7, 9\}$
- C.  $\{-4, -3, -2, 0, 1, 2, 4, 5, 9\}$

### ΑCTIVITY ΙΙ

A. { -3.5, -2.57, -2.04, -0.69, 1.42, 3.15} B. { -3.5, -2.57, -2.4, -2.04, -1.7, -0.69, 3.5, 8.09} C. { -2.4, -1.7, 1.42, 3.15, 3.5, 8.09}

### ACTIVITY III

**A.** {  $0.2, \frac{2}{7}, 0.45, \frac{1}{2}, \frac{3}{5}, \frac{4}{3}, 1.73, 2.8$ } **B.** { 0, 0.2, 0.45, 1, 1.73, 2, 2.8}

### **LESSON 2: SETTING IT UP**

### **TRYING THIS OUT**

Set  $A = \{2, 5, 8\}$ Set  $B = \{0.45, 1.69, 2.35, 3.56, 4.3, 6.87, 9.5\}$ Set  $C = \{0.45\}$ Set  $D = \{\ \}$ Set  $E = \{0.45, 1.69, 2, 2.35, 3.56, 4.3\}$ 

### SHARPENING YOUR SKILLS ACTIVITY I

### 1. Infinite set

It contains number of elements that has no limit/end.

2. Null set

It does not contain any element.

3. Singleton set

It contains only one element.

4. Infinite set

It contains number of elements that has no limit/end.

5. Finite set

It contains limited number of elements.

6. Null set

It does not contain any element.

### ACTIVITY II

- b. { 1, 3, 7 } and d. { 4, 5, 8, 9 }
   Justification: The subsets of Set *A* are choices b and d because all their elements are contained in Set *A*. Choice a is not a subset because 10 is not in Set *A*. Choice c is not a subset because -1 is not in Set *A*.
- a. {-21, -9, 3} and c. {-13, -5, -1, 7}
  Justification: The subsets of Set *B* are choices a and c because all their elements are contained in Set *B*. Choice b is not a subset because -21, -18 and -12 are not in Set *B*. Choice d is not a subset because -11, -10 and -8 are not in Set *B*.

PAGE 16

PAGE **23** 

### TREADING THE ROAD TO MASTERY ACTIVITY I

PAGE 25

- A. { 0, 1, 2, 3, 5, 8 }
  B. { 0, 2, 4, 6 }
  C. { 1, 3, 5, 7 }
  D. { 0, 2 }
  E. { 1, 3, 5 }
  F. { } or Ø

### **ACTIVITY II**

- A. { 8 }
  B. { 5 }
  C. { } or Ø
  D. { } or Ø
  E. { 2, 4 }
- **F.** { } or Ø

### **LESSON 3: BECOMING A GREAT EMPLOYEE**

### **TRYING THIS OUT**

PAGE **27** 

DAY 1	7 kg
DAY 2	0 kg
DAY 3	3 kg
DAY 4	l kg
DAY 5	6 kg

### SHARPENING YOUR SKILLS ACTIVITY I

PAGE 38



2.













**26** MEETING THE FAMILIES OF NUMBERS

### ΑCTIVITY ΙΙ

1. **Description**: The movement of the numbers is to the left. This means that the amount of harvested corn from August to November is decreasing.



2. **Description**: The movement of numbers is to the right which means the amount of alcohol per trial is increasing.



3. **Description**: The movement of the work completed is increasing.



### TREADING THE ROAD TO MASTERY

PAGE **40** 

1. Joel has ₱400.00 left from his salary.



2. Tyang Amy has 2 phones left after all her transactions.



3. Basketball has the highest height requirement among the sports team given.



#### **REACH THE TOP**

PAGE 44

ΑCTIVITY Ι

- 1. c
- **2.** a
- 3. d
- **4.** a
- **5.** a
- **6.** d
- 7. b
- 8. b
- **9.** c
- 10. a

ACTIVITY II



MEETING THE FAMILIES OF NUMBERS 29

The development and printing of this teaching resource was made possible with the cooperation of Asia Pacific College. This is a component of the project "Better Life for Out-of-School Girls to Fight Against Poverty and Injustice in the Philippines" implemented by UNESCO Office, Jakarta in partnership with the Department of Education. This initiative received a generous financial support from Korea International Cooperation Agency (KOICA).

For inquiries, please contact:

#### Department of Education, Bureau of Learning Resources (DepEd BLR)

Office Address	:	Ground Floor, Bonifacio Building, DepEd Complex,
		Meralco Avenue, Pasig City, Philippines 1600
Telefax	•	+63-2-8631-1072; +63-2-8634-1054; +63-2-631-84985
Email Address	:	blr.qad@deped.gov.ph; blr.lrpd@deped.gov.ph