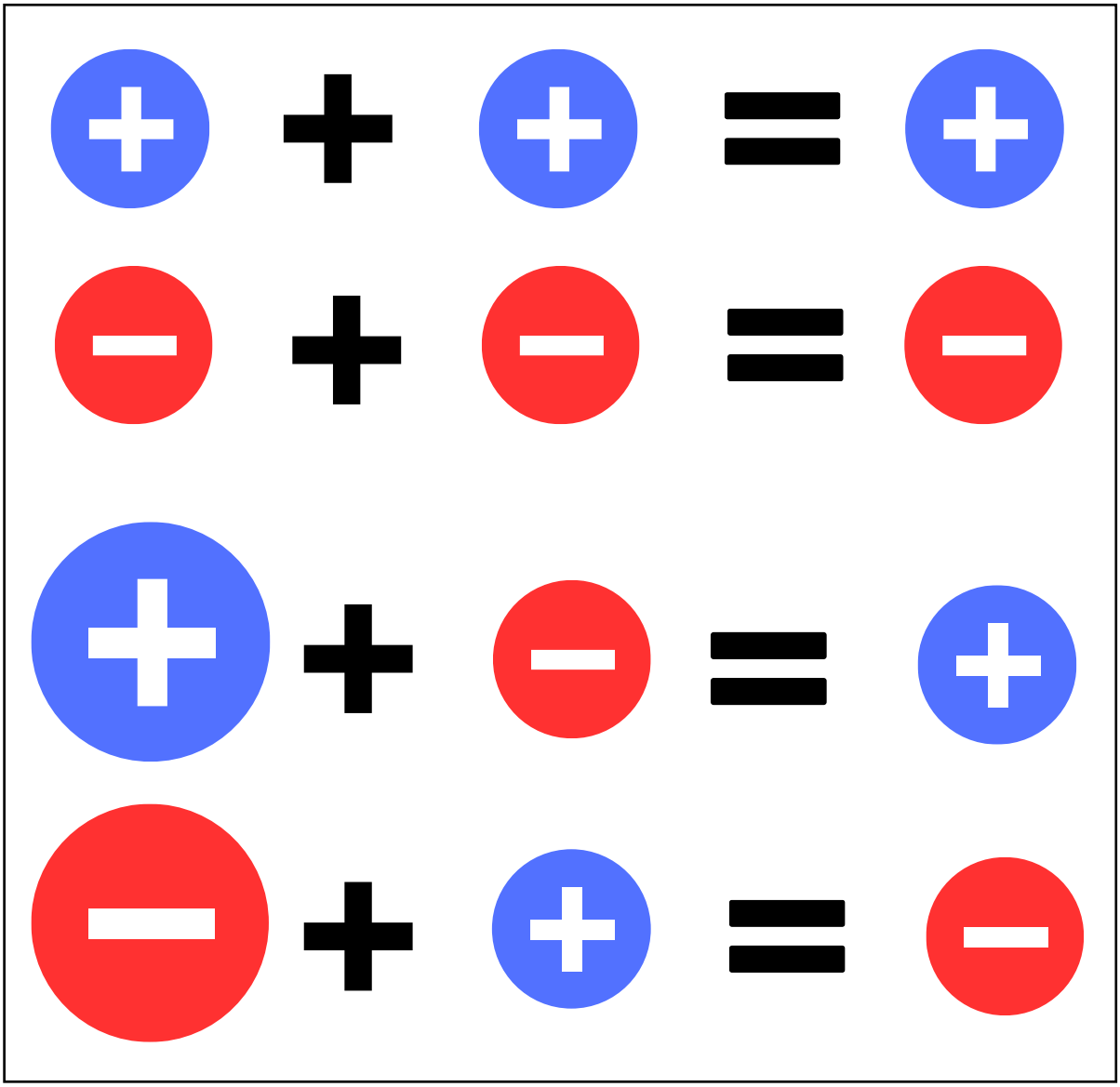
SELF-LEARNING KIT for MATHEMATICS 7

ADDITION OF INTEGERS



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Rizal National High School

Mathematics – 7
Self-Learning Kit
Addition of Integers
2023

Department of Education
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FOREWORD

Hurray! welcome to the world of integers! This self-learning kit is your gateway to mastering the fundamental skill of adding integers. As you embark on this journey, you will unlock the secrets of mathematical manipulation and gain a deeper understanding of how numbers interact and combine.

Inside these pages, you'll find clear explanations, modeled step-by-step examples, and engaging activities designed to solidify your understanding of integer addition. You will learn the principles that govern the addition of positive and negative numbers, paving the way for more complex mathematical concepts down the road.

Moreover, this kit is more than just patterns and computations. It is an invitation to explore the beauty of mathematics and its practical applications in your daily life. As you grasp the concept of adding integers, you will also cultivate problem-solving skills, critical thinking, and attention to detail – all essential attributes in a world that demands analytical prowess.

Remember that every journey begins with a single step. Approach each activity with an open mind and a curious spirit. Embrace the challenges, and always try to revisit concepts that might seem tricky at first. The process of learning is a gradual ascent, and with each small triumph, you will inch closer to mastery. This kit will be your trusty companion to enhance your numeracy skills.

As you dive into this self-learning experience, I encourage you to seek connections between integers and the world around you. From your favorite sports to navigation, integers are woven into the fabric of our reality. By the time you have completed this kit, you will have a newfound appreciation for the power of numbers.

Thus, let us embark on this voyage of discovery together. May this self-learning kit be your compass, guiding you through the realm of integer addition and laying the foundation for a lifetime of mathematical confidence.

Happy learning!

MATHEMATICS 7
ADDITION OF INTEGERS

CONTENT STANDARD:

The learners demonstrate an understanding of the key concepts of sets and the real number system.

PERFORMANCE STANDARD:

The learners should be able to formulate challenging situations involving sets and real numbers and solve these in a variety of strategies.

LEARNING COMPETENCY:

Performs fundamental operations on integers (M7NS-Ic-d-1).

OBJECTIVE:

1. To determine the sum of integers.
2. To illustrate an integer less than zero; and
3. To use HEART counters to perform addition of integers.

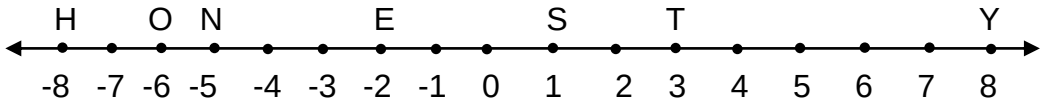
What Happened?

Make it absolute!

TASK: Applying what you have learned about absolute value of integers, answer what is being asked in each item.

1. Refer to the diagram below. Determine the absolute value of the integers by identifying the length of the segments on the number line.

   a. $\overline{HN}$ =_____
   b. $\overline{NT}$ =_____
   c. $\overline{OY}$ =_____
   d. $\overline{ET}$ =_____
   e. $\overline{HY}$ =_____



2. Using the same number line above, determine the value of the following integers:

   a. | -5 | =_____
   b. | 7 | =_____
   c. |-3 | =_____
   d. |-2 | =_____
   e. | 4 | =_____

3. Using the concept of absolute value, determine the sum of the following integers:
   a. |-21 | + | -123 | = _____
   b. | -23| + |- 23 | = _____
   c. | -45| + |-34 | = _____
   d. | -167| + |-879 | = _____
   e. |-358 | + | -221 | = _____

Pre-test

Directions: Read and analyze each statement then choose the correct answer from the given options. Write only the letter of your answer on the blank provided before each item.

_____ 1. What is the sum when you add three and fourteen?

a. 16 b. 17 c. 18 d. 19

_____ 2. What is the missing number in the mathematical sentence:

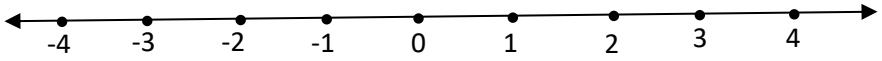
345 + _____ = 827?

a. 428 b. 482 c. 248 d. 284

_____ 3. If you add 13 and 31, then what is the result?

a. 26 b. 44 c. 54 d. 62

_____ 4. In the number line below, which pair of integers are opposites?



a. 3 and -3 b. -4 and 2 c. 2 and -4 d. -3 and -4

_____ 5. Complete the number sentence: (-7) + 2 = _____.

a. -9 b. -5 c. -4 d. 9

_____ 6. A basketball team loses 5 points on one play and then loses 8 points on the next play. What integers represents the number of points they lose on the two plays?

a. -15 b. -14 c. -13 d. -12

_____ 7. You park in a garage 3 floors below ground level. Then you get in the elevator and go up 12 floors. What floor do you get off the elevator?

a. 9^{th} b. 8^{th} c. 7^{th} d. 6^{th}

_____ 8. In 2019, Bianca Pagdanganan won the Women's' Golf in Southeast Asian Game. Her scores were -2, -3, -6 and -1 for four rounds. What was her final score?

a. -10 b. -11 c. -12 d. -13

_____ 9. A local bookstore has 30 copies of a bestseller when it opens on Monday morning. On Monday, it sells 6 copies of the book. On Tuesday, it sells 3 copies. On Wednesday, it receives a shipment containing 24 copies of the books and sells 8 copies. How many books does the store have at the end of Wednesday?

a. 35 b. 36 c. 37 d. 38

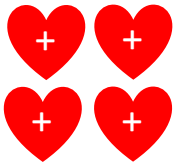
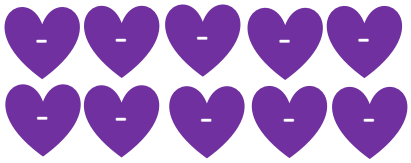
_____ 10. A research team aboard an underwater research vessel descends 1,500 feet beneath the surface of the water. They then rise 525 feet and descend again 350 feet. Where are they currently located?

a. 1325ft b. -1325ft c. 1235ft d. -1235ft

What to Learn?

Addition of Integers using HEART Counters

Adding integers can easily be done using HEART Counters. Look at the representation in the table below:

Positive (+) HEART Counter	Negative (-) HEART Counter
	
Positive integer is represented by a red positive heart counter. Example 1.  (there are four red positive heart counters) This means that the integer is **+4**	Negative integer is represented by a purple negative heart counter. Example 2.  (there are two purple negative heart counters) This means that the integer is **-2**
Example 3  *There are six red positive heart counters.* This means that the integer is **+6**	Example 4  *There are ten purple negative heart counters.* This means that the integer is **-10**

Remember that

 = 1 and  = -1

When one red counter heart and one purple counter heart are paired together, the result is ZERO. That is

 +  = 0

Take note that every pair of opposite counters will result to ZERO.

Example 1. Write the number sentence and find the sum.

Given:  + 

<u>Solution: 5 + 7 = 12</u>

That is, five positive counters hearts added to seven positive counter hearts will result to 12 positive counter hearts.

Example 2. Write the number sentence and determine the sum.

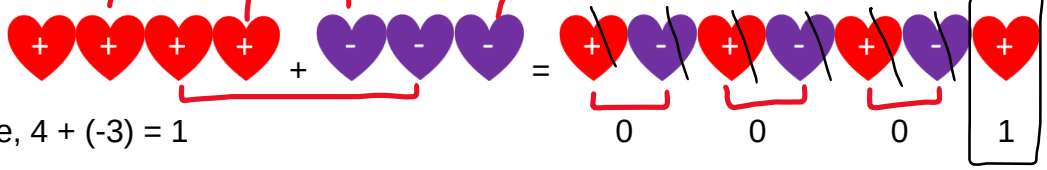
Given: 

Solution: (-4) + (-4) = -8

That is, four negative counter hearts added to four negative counter hearts will result to 8 negative counter hearts.

Example 3. Write the number sentence and determine the sum.

Given: 

Solution: 

Therefore, 4 + (-3) = 1

That is, four positive counter hearts added to three negative counter hearts will result to 1 positive counter heart since one red and one purple counter that are paired together will result to ZERO.

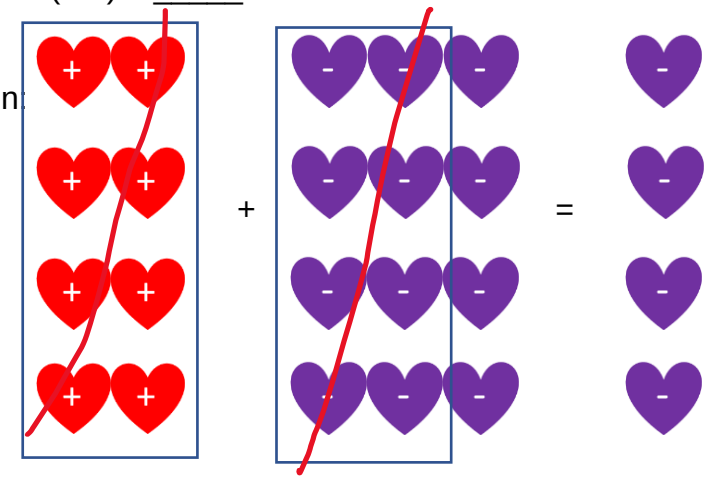
Always remember that

Study the next examples.

Example 4. Use the heart counters to find the sum.

Given: 8+ (-12) = _____

Solution:

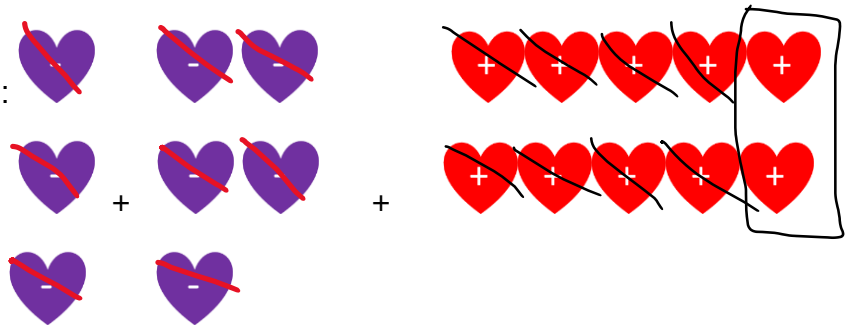


Therefore, 8+ (-12) = **-4**

Example 5. Use the heart counters to find the sum.

Given: (-3) + (-5) + 10 = _____

Solution:

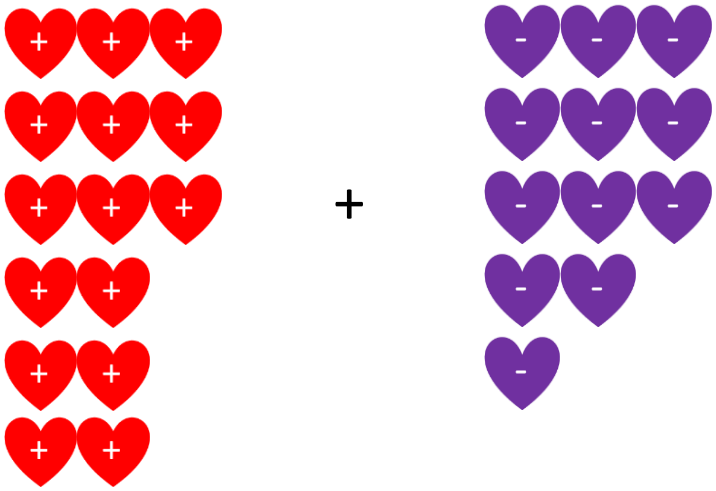


Therefore, (-3) + (-5) + 10 = **2**

What Have You Learned?

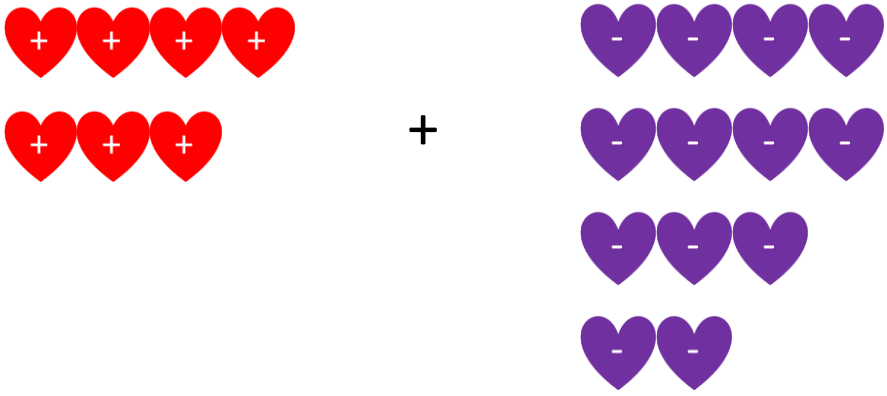
ACTIVITY 1. Heart, heart

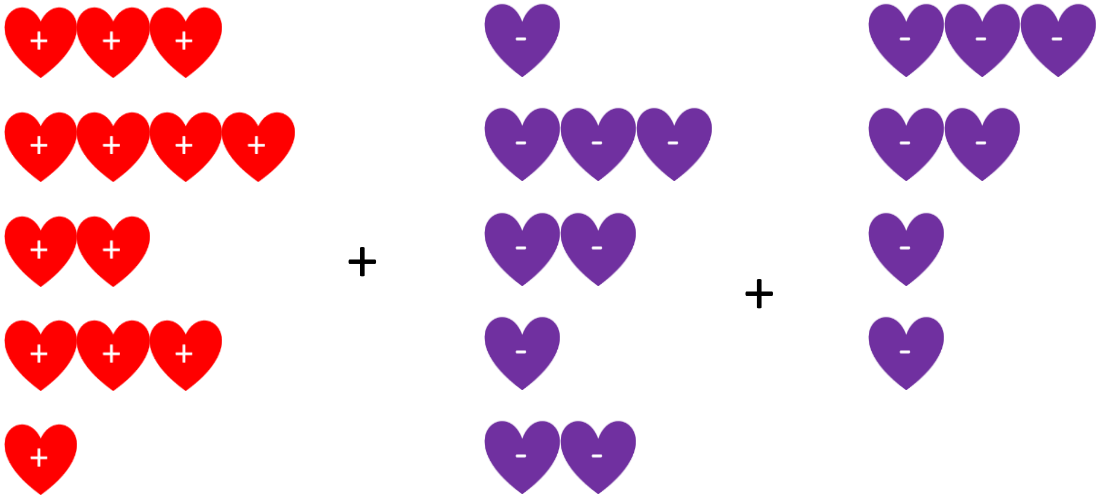
Directions. Convert the heart counters to integers.Write the number sentence and then find the sum. Place your solutions and answer in the provided box below each given item.

1. 

2. 

3. 

4. 

5. 

ACTIVITY 2. Change of heart

Directions. Use heart counters to present the given number sentence. Use two different colors of your choice to represent the heart counters Place your solutions, answer, and illustration in the provided box below each given item.

1. (-5) + (-6) + 10 = _____ Illustration:
2. (-1) + (-9) +10 = _____ Illustration:

3. (-15) +7 = _____

Illustration:

4. 9 + (-5) + (-1) = _____

Illustration:

5. 5 + (-5) + (-1) = _____

Illustration:

ACTIVITY 3. No model this time

Directions. Using the concept that you have learned from the heart counters, add the given integers. Place your answer in the blank provided.

1. (-125) + 65 = _____
2. (-434) + (-234) + 967 = _____
3. 45+ 89 + (-101) = _____
4. (-90) + 45 + (-54) = _____
5. (-67) + (-323) + 76 = _____

POST-TEST

Directions: Read and analyze each statement then choose the correct answer from the given options. Write only the letter of your answer on the blank provided before each item.

_____ 1. What is the missing number in the mathematical sentence:
345 + _____ = 827?
a. 428 b. 482 c. 248 d. 284

_____ 2. What is the sum when you add three and fourteen?
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_____ 3. If you add 13 and 31, then what is the result?
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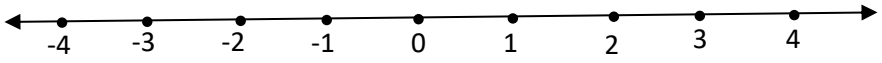

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ANSWER KEY

What happened?

TASK1. a. 3 b. 8 c. 14 d. 5 e. 16

TASK2. a. 5 b. 7 c. 3 d. 2 e. 4

TASK 3 a. 144 b. 46 c. 79 d. 1046 e. 527

Pre – Test

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

What have you learned?

ACTIVITY 1

1. 15 + (-12) = 3
2. (-5) + 4 + (-5) = -6
3. (-2) + 4 + (-5) = -3
4. 7 + (-13) = -6
5. 13 + (-9) + (-7) = -3

ACTIVITY 2

1. (-5) + (-6) + 10 = -1
2. (-1) + (-9) + 10 = 0
3. (-15) + 7 = -8
4. 9 + (-5) + (-1) = 3
5. 5 + (-5) + (-1) = -1

ACTIVITY 3

1. -60 2. 299 3. 33 4. -99 5. -466

Post – Test

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

SYNOPSIS

An **Integer** is a whole number that can be either positive, negative, or zero.

The set **of integers** consist of whole numbers and natural numbers as illustrated in the diagram below.

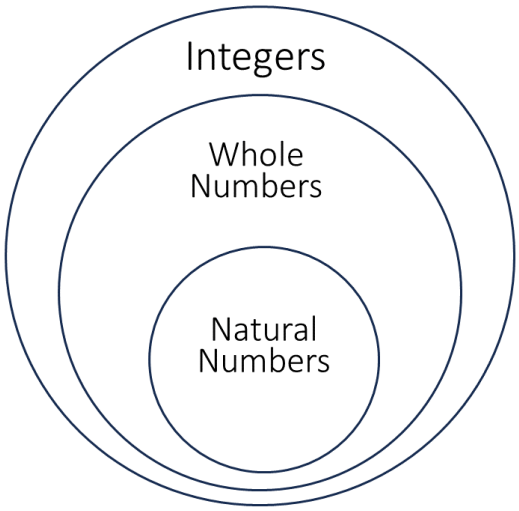

Image illustrated by Napoleon B. Picio using MS PowerPoint

ABOUT THE AUTHOR

NAPOLEON B. PICIO is a versatile Marian Educator from Saint Mary's University, a coach to various academic and tech-vocational skills contests, a curriculum developer, writer, layout artist to published modules and learning activity sheets in the Schools Division of Santiago City, a former Mathematics and Physics teachers in some private as well as international schools abroad, in Manila, and in the region. To name a few, he was a teacher at National College of Business and Arts, Quezon City (2001), University of La Salette, Incorporated (2005), Philippine International School, Doha, Qatar (2013).

In 2017, he was awarded twice in National Category in terms of ICT. Because of his dedication, he was awarded as two-peat Most Outstanding Teacher in the school's STARTS award (2017- 2020).

He is a teacher at Rizal National High School, Santiago City where he taught TLE, ICT, EsP, and Electronics. At present he teaches Mathematics in grade 7.