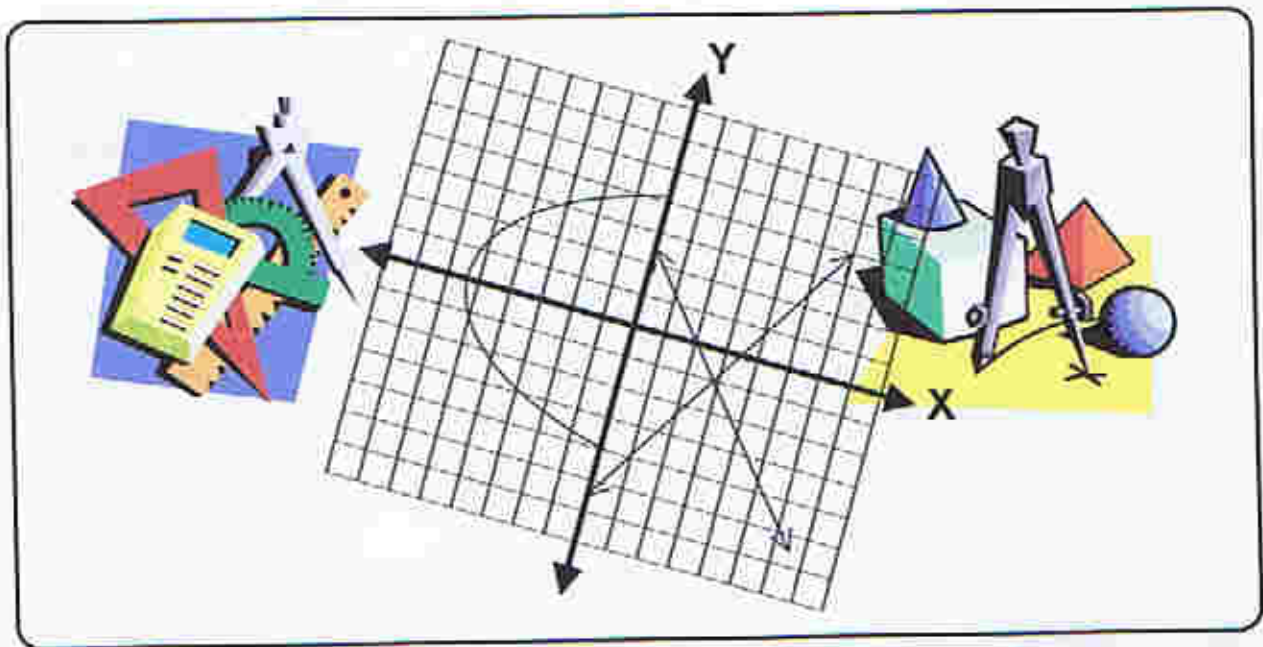


Project EASE

(Effective and Alternative Secondary Education)

MATHEMATICS I



MODULE 4

Up and Down the Line



BUREAU OF SECONDARY EDUCATION
Department of Education
DepEd Complex, Meralco Avenue
Pasig City



Module 4

Up and Down the Line



What this module is all about

In the study of operations on the set W of whole numbers, we learned that adding any two whole numbers will result in a unique whole number. However, this is not always possible with subtraction. The subtraction $a - b$ will result in a whole number only when $a \geq b$. However, some real life situations such as the fluctuation of temperatures in the northern and southern hemispheres require the subtraction of a bigger number from a smaller number resulting in answers that are not whole numbers. This led mathematicians to invent a new set of numbers, the integers, which is an extension of the set of whole numbers.

This module focuses on the fundamental operations on integers. It aims to help you acquire skills in solving real life problems involving the four mathematical operations on integers.

This module consists of the following lessons:

- Lesson 1 Adding Integers**
- Lesson 2 Properties of Addition**
- Lesson 3 Subtracting Integers**
- Lesson 4 Multiplying Integers**
- Lesson 5 Dividing Integers**



What you are expected to learn

After going through this module, you are expected to:

- perform fundamental operations on integers,
- illustrate the different properties (commutative, associative, identity, inverse); and,
- solve real-life problems involving the four fundamental operations of integers.

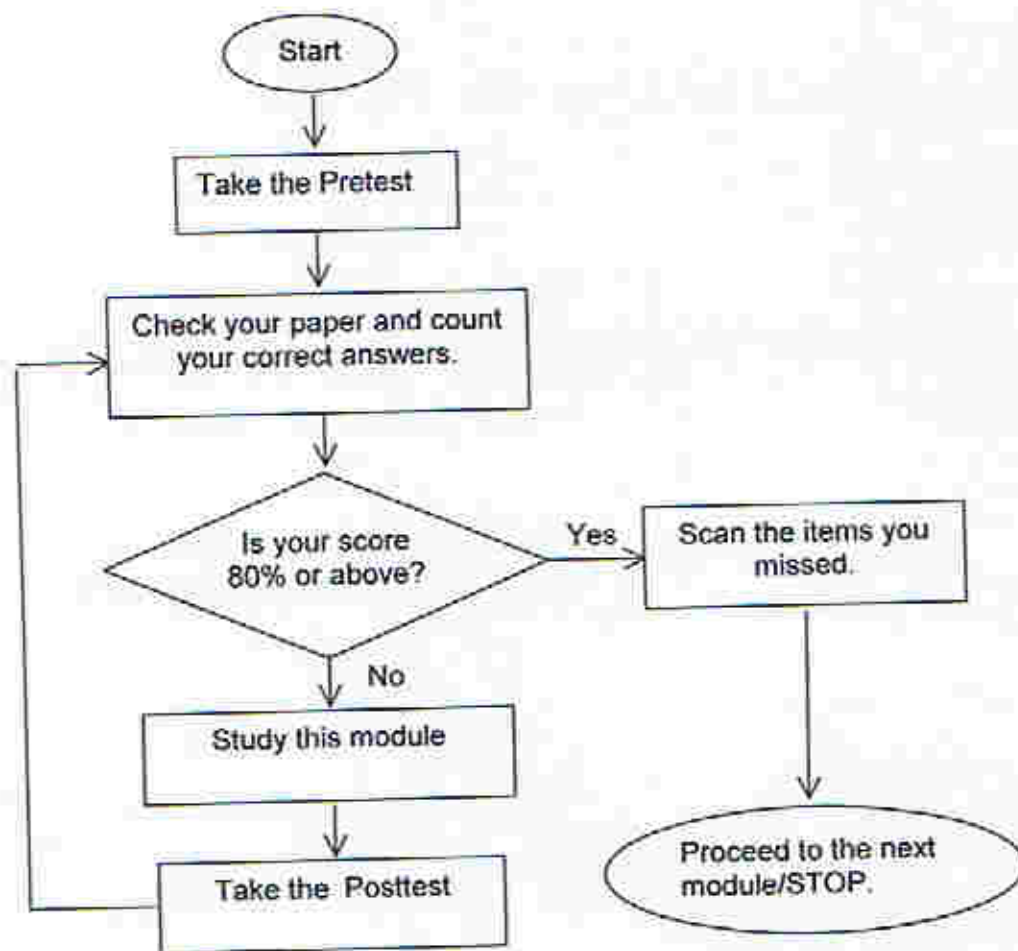


How to learn from this module

This is your guide for the proper use of the module:

1. Read the items in the module carefully.
2. Follow the directions as you read the materials.
3. Answer all the questions that you encounter. As you go through the module, you will find help to answer these questions. Sometimes, the answers are found at the end of the module for immediate feedback.
4. To be successful in undertaking this module, you must be patient and industrious in doing the suggested tasks.
5. Take your time to study and learn. **Happy learning!**

The following flowchart serves as your quick guide in using this module.





What to do before (Pretest)

Before you start using this module, take the following pretest.

Direction: Choose the letter of the correct answer.

- The sum of -3 and (-5) is _____.
a. $+8$
b. 8
c. -8
d. none of these
- What must be added to $+7$ to give -5 ?
a. 12
b. 2
c. -2
d. -12
- The product of -3 and -4 is _____.
a. -12
b. -1
c. 1
d. 12
- The quotient of -45 and 15 is _____.
a. -50
b. -3
c. $+3$
d. $+50$
- The sign of the product of any two positive numbers is _____.
a. negative
b. positive number
c. any of these
d. cannot be determined
- The sign of the product of the two negative and three positive integers is _____.
a. positive
b. negative
c. any of these
d. cannot be determined
- To add two numbers having the same sign, find the _____ and prefix the common sign.
a. difference of their absolute values
b. sum of their absolute values
c. product of their absolute values
d. quotient of their absolute values
- If 15 is added to the sum of -12 and -3 , then the result will be _____.
a. -30
b. -15
c. 0
d. 30

9. If 7 is subtracted from the sum of 12 and -6 , then the result will be
- | | |
|---------|-------|
| a. -1 | c. 1 |
| b. 0 | d. 11 |
10. What is the result when the difference of -10 and -3 is added to the sum of 15 and -23 ?
- | | |
|----------|-------|
| a. -21 | c. 15 |
| b. -15 | d. 21 |
11. For what value of the variable n will the statement $25 - n = -3$ be TRUE?
- | | |
|----------|-------|
| a. -28 | c. 22 |
| b. -22 | d. 28 |
12. In going to school, Marissa walked 53 meters from their house to the jeepney stop. She forgot her packed lunch so she went back to their house. On her way home, she took a jeepney after walking 14 metres. How many meters did she walk in all?
- | | |
|-------|--------|
| a. 28 | c. 106 |
| b. 67 | d. 120 |
13. From 11:00 A.M. to noon, the temperature rose by 2°C ; at noon it became cloudy so that by 1:00 P.M. the temperature had dropped by 1°C . The next hour, it rose by 3°C . What was the net result of the temperature changes from 11:00 A.M. to 2:00 P.M.?
- | | |
|--------------------------------|----------------------------------|
| a. 4°C or $+4$ | c. 10°C or $+10$ |
| b. 6°C or $+6$ | d. none of the above |
14. Mario borrowed P35.00 from Jose on Monday and returned P15.00 on Wednesday. How much did Mario still owe Jose?
- | | |
|-----------|-----------|
| a. P70.00 | c. P25.00 |
| b. P50.00 | d. P20.00 |
15. A farmer has a debt of P3 200.00. After paying P1 700.00, how much does he still owe?
- | | |
|---------------|-----------------|
| a. P1 500.00 | c. P4 900.00 |
| b. P15 000.00 | d. both a and b |



Answer Key on page 26

As illustrated, moving 3 steps up is associated with (+3) and 5 steps more is another (+5). Thus, we can write this as:

$$(+3) + (+5) = +8$$

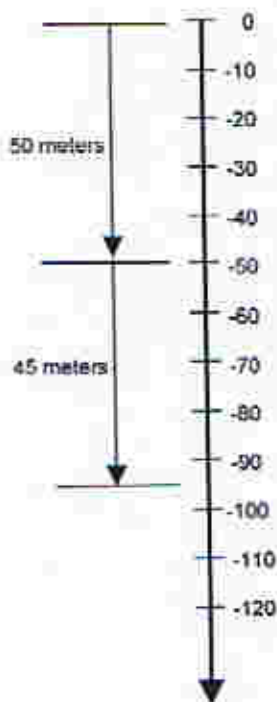
We have to note that +8 can also be written as 8.

What if the numbers are both negative? Consider the problem below.

Example 2

A submarine is cruising at a depth of 50 meters. A crew dives to explore what it is that he could find if he goes deeper by 45 meters. How far is the crew from the sea level?

To illustrate this, again, we use the number line as shown below. Recall that in the previous module, you learned that the direction of going down is associated with the negative numbers.



Since the submarine is 50 meters below the sea level, then we can represent this with -50 . When the crew dived 45 meters lower, which is associated with -45 , then we can say that the crew has a distance of

$$(-50) + (-45) = -95 \text{ meters}$$

from the sea level.



What you will do

Read the following lessons and try to understand the illustrated operations. Then do the suggested activities patiently.

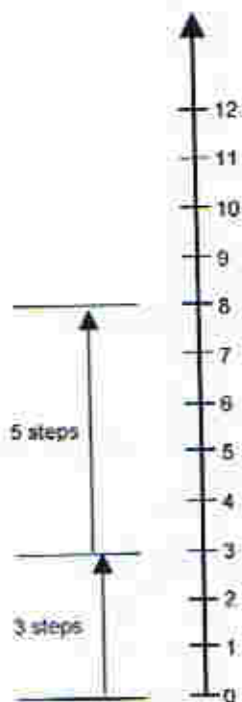
Lesson 1 Adding Integers

In performing the four fundamental operations on integers, we can use diagrams and the concept of motion as shown in the examples that follow.

Example 1

A boy takes 3 steps up a flight of stairs. After a brief pause, he moves up 5 steps more. How many steps is he from the ground?

To illustrate this, we use the number line.



Have you observed a pattern for finding the sum of two numbers with the same signs?

Therefore, we say that the sign of the sum of any two numbers follow the common signs of the addends, that is, if the numbers to be added are both positive, then their sum is positive while if the numbers to be added are both negative, then their sum is also negative.

Is it possible for the sum of two numbers to be negative? Let us find out in the activity below.



Exploration

Do the following activity carefully.



Activity Addition of Integers

Materials:

- 20 red chips
- 20 yellow chips

Procedure:

1. If the yellow chips represent the positive numbers and the red chips the negative numbers, show the following using the colored chips:
 - a. +3 _____
 - b. +6 _____
 - c. +12 _____
 - d. -2 _____
 - e. -9 _____
2. We have learned adding of integers with like signs using a number line. Show the following operations using the red (-) and yellow (+) chips:
 - a. $(+2) + (+3) =$ _____
 - b. $(+3) + (+5) =$ _____
 - c. $(-1) + (-7) =$ _____

3. Since adding integers means "accumulating", show the following using the colored chips:

a. $(+2) + (-2) =$ _____
b. $(+5) + (-5) =$ _____
c. $(-4) + (+4) =$ _____
d. $(-7) + (+7) =$ _____

The sum in each of the items above is given a special name and that is zero. Note that we can represent zero in different ways as shown above.

4. Can you make a conjecture regarding your observation in number 3. _____

5. Show the following using the colored chips:

a. $(+4) + (-1) =$ _____
b. $(+8) + (-11) =$ _____
c. $(+10) + (-3) =$ _____
d. $(-6) + (+2) =$ _____
e. $(-9) + (+15) =$ _____

6. Make a conjecture regarding the sum of two integers with unlike sign. _____

 Answer Key on page 26

- To add numbers having the same sign, add their absolute values and prefix the common sign.
- To add numbers having unlike signs, subtract their absolute values and copy the sign of the number with the larger absolute value.



Self-check 1

A. Find the sum of the following integers and check your answers using a number line.

1. $(+5) + (+4)$
2. $(-2) + (-4)$
3. $(+8) + (-6)$
4. $(-9) + (+3) + (+2)$
5. $(+23) + (-15) + (-32)$

B. Write an addition sentence for the given situation, and simplify: *The temperature of a saline solution after a drop of 46° from 95° C.*



Answer Key on page 26

Lesson 2 Properties of Addition

In the addition of integers, there are certain properties that we need to know. Study the examples given below.

Example 1

Find: a) $(+8) + (-10) = \underline{\hspace{2cm}}$
b) $(-10) + (+8) = \underline{\hspace{2cm}}$

Notice that the order of the addends in (a) is reversed in (b). Did the answer change?

This example illustrates the *Commutative Property of Addition* (CPA) where for any integer a and b , $a + b = b + a$.

Example 2

Find: a) $(-5 + 3) + 2 = \underline{\hspace{2cm}}$
b) $-5 + (3 + 2) = \underline{\hspace{2cm}}$

Again, notice that the groupings of the addends in (a) is changed in (b). Did the answer change?

This example illustrates the *Associative Property of Addition (APA)* where for any integer a , b , and c , $(a + b) + c = a + (b + c)$.

Example 3

Find: a) $0 + 7 =$ _____
b) $-15 + 0 =$ _____

What is the sum of zero and any number? This example illustrates the *Identity Property of Addition (IPA)*, where 0 is called the *identity element of addition*. Hence, $a + 0 = 0 + a = a$

Example 4

Find: a) $8 + (-8) =$ _____
b) $-23 +$ _____ $= 0$

What did you notice with the sum of the numbers? What do you observe about the numbers added whose sum is zero (0)?

Two numbers that add up to zero are called additive inverses of each other. This property is called the *Additive-Inverse Property (AIP)*, that is for any integer a , $a + (-a) = 0$.

Example 5

Find: a) $12(5 + 8) =$ _____
b) $12(5) =$ _____
c) $12(8) =$ _____
d) $25(12 - 2) =$ _____
e) $25(12) =$ _____
f) $25(2) =$ _____

How do you compare the sum of (b) and (c) above to (a)?

Thus, we have:

$$\begin{aligned} 12(5 + 8) &= 12(5) + 12(8) \\ 12(13) &= 60 + 96 \\ 156 &= 156 \end{aligned}$$

As to the statements in (d), (e), and (f), what mathematical statement can you make?

Hence,

$$25 (12 - 2) = 25 (12) - 25 (2)$$

$$25 (10) = 300 - 50$$

$$250 = 250$$

This example illustrates the *Distributive Property of Multiplication over Addition* (DPMA) that is, for any integer a , b , c ; $a (b + c) = ab + ac$.



Did you know?

- In *Commutative Property of Addition* (CPA), the order of the addends does not affect the sum.
- In *Associative Property of Addition* (APA), the grouping of the addends does not affect the sum.
- In *Identity Property of Addition* (IPA), zero (0), which is the *identity element* of addition preserves the identity of the integer when added to the given integer.
- In *Additive Inverse Property* (AIP), adding the *additive inverse*, $-a$, of any number a , the result is the identity element of addition.
- In *Distributive Property of Multiplication over Addition*, one of the factor is distributed (multiplied) to the sum or difference of the other factor.



Self-check 2

Determine what property is being illustrated in each of the following.

1. $7 + (-2) = (-2) + 7$

2. $-19 + 19 = 0$

3. $12 + [(-3) + 29] = [12 + (-3)] + 29$

4. $15 + [8 + (-4)] = [8 + (-4)] + 15$
5. $(2 + 3) + (-9) = 2 + [3 + (-9)]$
6. $0 + (-37) = -37$
7. $(6 + 0) - 7 = 6 - 7$
8. $7 + 3 + (-3) = 7$
9. $13(2 - 6) = 13(2) - 13(6)$
10. $(-4 + 3)(5 + 6) = (-4 + 3)(5) + (-4 + 3)(6)$

 Answer Key on page 26

Lesson 3 Subtracting Integers

We said earlier that the concept of integers started when mathematicians find numbers to represent the difference of smaller number and a larger number.



Exploration

To illustrate the process of subtraction of integers, study the examples below.

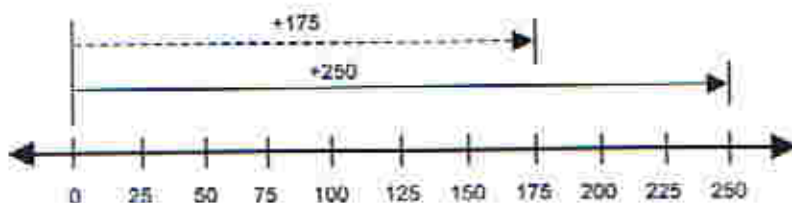
Example 1

On Monday, May received her weekly allowance of Php 250.00 from her mother. If she spent Php 175.00 for her transportation and food for the whole week, how much did she save?

The problem can be translated into a mathematical statement as follows:

$$250 - 175 = \underline{\quad}$$

Just like addition of integers we can illustrate this by using a number line as shown follows:



Note that subtraction means "taking away", and so from the illustration above, if we take away 175 from 250, we get the remaining portion, which is 75.

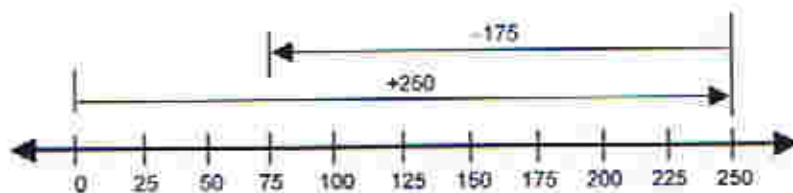
Thus, we have:

$$250 - 175 = 75$$

Therefore, May saved Php 75.00.

Study the process below and compare the result above.

Consider: $250 + (-175) = \underline{\hspace{2cm}}$ whose illustrations is shown below using a number line.



And hence, we have:

$$250 + (-175) = 25$$

Notice that we in the two illustrations above, we have:

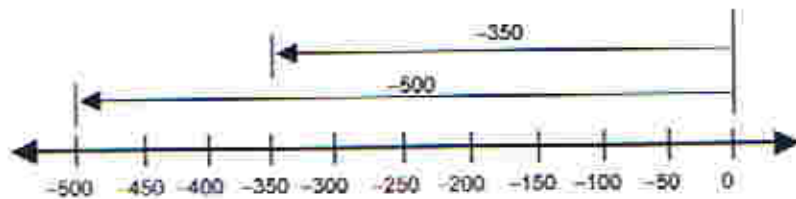
$$250 - 175 = 250 + (-175)$$

Let us have some more examples.

Example 2

Manuel borrowed Php 500.00 from Rico for his school project. After selling fruits, he was able to earn a net profit of Php 350.00 and pay the whole amount to Rico. How much more did Manuel owe Rico?

To illustrate this in a number line, we have:



From the problem, (-500) represents the loan of Manuel from Rico, while the payment made means subtracting 350 from the loan which may be represented by subtracting (-350) from (-500) .

Thus, the mathematical statement is given by:

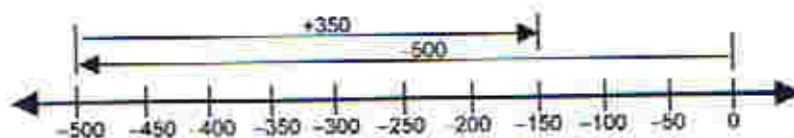
$$-500 - (-350) = \underline{\hspace{2cm}}$$

However, we can also interpret it as: $-500 + 350$, which indicates that 500 being the loan, must be negative (written as -500) and 350 being the payment, must be positive ($+350$).

So,

$$-500 - (-350) = -500 + 350$$

Hence, the number line associated with this is the number line shown:



Therefore,

$$-500 - (-350) = -500 + 350 = -150$$

How much does Manuel still owe Rico?

Based on the examples above, subtraction being the inverse operation of addition can be expressed as addition.



Exploration

Let us further probe our findings in the succeeding activity.



Activity *Subtraction of Integers*

Materials:

20 red chips
20 yellow chips

Procedure:

- Let us recall how to add integers using the colored chips. Find the following:
 - $3 + 8 =$ _____
 - $-3 + (-8) =$ _____
 - $3 + (-8) =$ _____
 - $(-3) + 8 =$ _____
- If in addition, we mean "accumulate", in subtraction we would mean "taking away".

For example, to show

$$(+8) - (+3) = \underline{\quad}$$

we have 8 yellow chips which represents (+8)



then "taking away" 3 yellow chips representing (+3) yields,



Hence, $(+8) - (+3) = +5$

3. Using the colored chips, find the following:

- a. $(+7) - (+5) =$ _____
- b. $(+16) - (+10) =$ _____
- c. $(-7) - (-3) =$ _____
- d. $(-18) - (-9) =$ _____

4. Can you still recall how we show zero using the colored chips?

Explain. _____

These pair of colored chips which shows zero is called a "zero pair".

5. Consider: $(+3) - (+4) =$ _____

Notice that in this problem, it will not be possible for us to "take away" 4 yellow chips from only 3 yellow chips. To do this, we add any zero pair as in:



Now, we can "take away" the 4 yellow chips which yields only 1 red chip, which represents (-1) ;



6. Suppose we add 2 zero pairs instead of only 1 zero pair in number 5. Will the result be the same? _____

Explain. _____

7. Use the colored chips, to show the following:

- a. $(+8) - (+12) =$ _____
- b. $(+5) - (-7) =$ _____
- c. $(+13) - (-4) =$ _____
- d. $(-2) - (+6) =$ _____
- e. $(-8) - (-17) =$ _____

8. Express the mathematical statements in number 7 in terms of addition and simplify.

What conclusion can you make from the results in number 8?

 Answer Key on page 27

To subtract two signed numbers we change the sign of the subtrahend and proceed to addition.



Self-check 3

A. Find the difference of the following.

1. $(+82) - (-31)$

2. $(+54) - (+78)$

3. $(-19) - (-116)$

4. $(+9) - (+10)$

5. $(-24) - (+12)$

B. Solve.

The interest of Jim's loan of Php 1 000 in a certain lending company is Php 30.00 per month. If Jim was not able to pay the loan for a month, how much will his loan be after one month?

 Answer Key on page 27

Lesson 4 Multiplying Integers

Just like in the previous lessons, we can use the concept of motion and line numbers in multiplying signed numbers. Study the following examples.

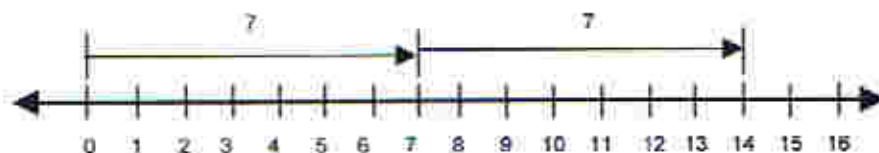
Example 1

Anna's score in her mathematics examination is twice as her score in science. If her score in science is 7, what score did she have in mathematics?

The problem requires the mathematical sentence:

$$\text{Mathematics Score} = (2)(7)$$

which can be illustrated using a number line as follows:



Moreover, as can be seen above, multiplication can be expressed as a repeated addition as in:

$$(2)(7) = 7 + 7 = 14$$

What is the score of Anna in her mathematics examination?

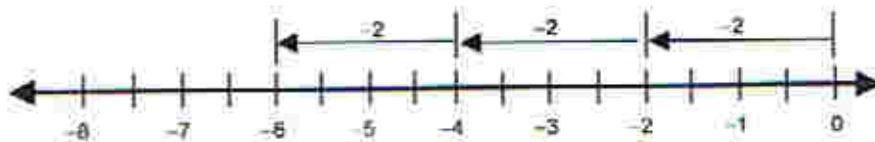
Example 2

In a certain tournament, team A lost 2 games in basketball while team B lost 3 times as much as team A. How many games did team B lose?

The number of games lost by team B can be written as:

$$(-2)(3) = \underline{\hspace{2cm}}$$

The number of losses of team B can be repeatedly reflected (3 times) in the same direction (towards the left because of its negative sign), which yields:



Thus,

$$(3)(-2) = -6$$

Hence, team B lost 6 games.

Example 3

Jenny has ten P5.00 coins in her coin purse. If her niece took 3 of the coins, how much has been taken away from her purse?

How do we represent this problem using integers?

Since, "taking away" indicates negative numbers, then we have:

$$(+5)(-3) = -15$$

Thus, Jenny has P15.00 less in her coin purse.

Example 4

A mail carrier brings cash checks and bills (electric, water, and credit card). Florian received 2 bills each amounting to Php 650.00. Is he richer or poorer by how much if he asked his cousin to pay the bills?

Since cash checks represent gains, which are positive, while bills represent credits, which are negative, then "taking away" or paying the two bills will be:

$$(-650)(-2) = 1\,300$$

The sign of the product is positive since this indicates that his bills are lessened by Php 1 300.

From the examples we had above; let us see if you can find the product of the following:

1. $(+4)(+3) =$ _____
2. $(-4)(+3) =$ _____
3. $(+4)(-3) =$ _____
4. $(-4)(-3) =$ _____

What do you notice when we multiply numbers with like signs? _____

What about the product of two numbers with unlike signs? _____



Answer Key on page 27

- The product of two integers with like signs is positive while that of two integers with unlike signs is negative.



Self-check 4

A. Find the product of the following:

1. $(+5)(+12)$
2. $(-8)(+4)$
3. $(-5)(+3)$
4. $(+5)(+2)(-4)$
5. $(-7)(+4)(-2)$

B. Solve.

If Myrna's loan of Php 4 000 in a certain company doubled after 3 years, how much does she have to pay?



Answer Key on page 28

Lesson 5 Dividing Integers

In lesson 3, we have learned that subtraction is the inverse operation of addition. Now, we shall discuss the inverse operation of multiplication, and that is division. Study the examples that follow.



Activity *Division of Integers*

Materials:

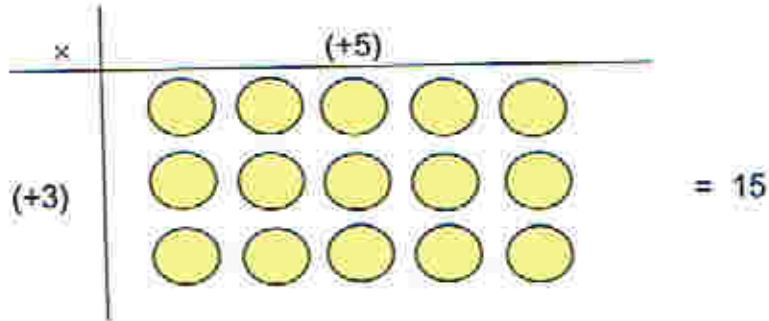
- 20 red chips
- 20 yellow chips

Procedure:

1. In our previous discussion, we learned how to multiply integers. Let me see if you could do the following multiplication using the colored chips.

For example:

To multiply $(+3)$ and $(+5)$, we count the number of yellow chips (positive) in 3 rows and 5 columns:



Hence, we have 15 yellow chips in all.

- a. $(+2)(+3)$
- b. $(+2)(-3)$
- c. $(-2)(+3)$

4. Make a conjecture about the quotient of any two integers, except zero.

 Answer Key on page 28

- The quotient of two integers with like signs is positive while that of two integers with unlike signs is negative.



Self-check 5

A. Find the value of the following:

1. $(+45) \div (+5)$
2. $(+48) \div (-4)$
3. $(-145) \div (+5)$
4. $(-180) \div (-30)$
5. $(+55) \div (-5)$

B. Solve the following:

1. Mary's store earned P17 500.00 in one week. How much is her average earnings in a day?
2. Five boys work in Mang Teban's carwash center. If they are paid P750.00 for a 5-day work, how much will each boy receive?

 Answer Key on page 28



Let's summarize

In the four operations of integers, the following should always be taken into consideration:

Addition:

- The sum of two integers having like signs is the sum of their absolute values whose sign is their common sign.
- The sum of two integers with unlike signs is the difference of their absolute values whose sign is equal to the sign of the integer with a greater absolute value.

Properties of Addition

- ✓ *Commutative Property of Addition*
If a and b are integers, then $a + b = b + a$
- ✓ *Associative Property of Addition*
If a , b , and c are integers, then $(a + b) + c = a + (b + c)$
- ✓ *Identity Property of Addition*
If a is any integer, then $a + 0 = a$
- ✓ *Additive Inverse Property*
If a is any integer, then $a + (-a) = 0$
- ✓ *Distributive Property of Multiplication Over Addition*
If a , b , and c are integers, then $a(b + c) = ab + ac$

Subtraction:

- The difference between two integers is the sum of a number and the additive inverse of the subtrahend.

Multiplication:

- The product of two integers with like signs is positive.
- The product of two integers with unlike signs is negative.

Division:

- The quotient of two integers with like signs is positive.
- The quotient of two integers with unlike signs is negative.



What to do after (Posttest)

Direction: Choose the letter of the correct answer.

1. What is the sign of the sum of two negative numbers?
a. Negative
b. Positive
c. Any of these
d. Cannot be determined
2. The difference of $+8$ and -5 is _____.
a. -13
b. -3
c. $+13$
d. $+3$
3. What must be added to $+5$ to get -8 ?
a. 13
b. 3
c. -3
d. -13
4. The product of (-5) and $(+3)$ is _____.
a. -2
b. -15
c. $+2$
d. $+15$
5. The product of two integers with different signs is _____.
a. Positive
b. Negative
c. Any of these
d. Cannot be determined
6. The product of $+16$ and -3 is _____.
a. -48
b. -19
c. $+19$
d. $+48$
7. Which of the following shows the commutative property of addition?
a. $(34 + 15) + 10 = (15 + 34) + 10$
b. $(34 + 15) + 10 = 34 + (15 + 10)$
c. $(34 + 15) + 0 = 34 + 15$
d. $34(15 + 10) = 34(15) + 34(10)$
8. Which of the following shows the identity property of addition?
a. $(34 + 15) + 10 = (15 + 34) + 10$
b. $(34 + 15) + 10 = 34 + (15 + 10)$
c. $(34 + 15) + 0 = 34 + 15$
d. $34(15 + 10) = 34(15) + 34(10)$
9. The value of $(+48) + (-4)$ is _____.
a. 44
b. 12
c. -12
d. -44

10. A student borrowed 5 books in the library on Monday, returned 3 books on Wednesday, and borrowed another 5 books on Friday. How many books does the student have?
- a. 2 books
b. 7 books
c. 5 books
d. 13 books
11. For what value of the variable n will the statement $-16 + n = -2$ be TRUE?
- a. -18
b. -14
c. 14
d. 18
12. A Php100 decrease in the price of a used car is followed by a second decrease of Php200. The total decrease is represented by the integer _____.
- a. 200
b. 100
c. -200
d. -300
13. On a cold day the temperature dropped two degrees in an hour. During the next hour, it dropped another three degrees. On the third hour it rose one degree, but on the fourth hour it fell by four degrees. Find the total change in temperature.
- a. 8°
b. 7°
c. 6°
d. 5°
14. If the quotient of two numbers is negative, their product is _____.
- a. Positive
b. Negative
c. Any of these
d. Cannot be determined
15. A football team has these results in four plays; a loss of 3 meters, a gain of 9 meters, a loss of 6 meters and a gain of 17 meters. Find the total number of meters lost or gained
- a. 17 meters lost
b. 5 meters lost
c. 1 meter gained
d. 17 meters gained



Answer Key on page 28












Answer Key

Pretest page 3

- | | | |
|------|-------|-------|
| 1. c | 6. a | 11. d |
| 2. d | 7. b | 12. b |
| 3. d | 8. c | 13. a |
| 4. b | 9. a | 14. d |
| 5. b | 10. b | 15. a |

Lesson 1 Activity page 7

1. a) 
b) 
c) 
d) 
e) 
2. a) +5
b) +8
c) -8
d) -7
3. a) 
b) 
c) 
d) 
4. The sum of a number and its additive inverse is zero.
5. a) +3
b) -3
c) +7
d) -4
e) +6
6. The sum of two integers with unlike signs, subtract the numbers and copy the sign of the number with a larger absolute value.

Lesson 1 Self-Check 1 page 9






- A.
- 9
 - 6
 - 2
 - 4
 - 24
- B. $95^0 + (-46^0) = 39^0$

Lesson 2 Self-Check 2 page 11

- Commutative Property of Addition
- Additive Inverse Property
- Associative Property of Addition
- Commutative Property of Addition
- Associative Property of Addition

6. Identity Property of Addition
7. Identity Property of Addition
8. Additive-Inverse Property
9. Distributive Property of Multiplication Over Addition
10. Distributive Property of Multiplication Over Addition

Lesson 3 Activity page 15

1. a) 11
b) -11
c) -5
d) 5
3. a) +2
b) +6
c) -4
d) -9
4. Zero pair is any number of pair of yellow and red chips.
6. Yes. The result after subtraction will yield answer where some of the chips give zero pair(s).
7. a) 
b) 
c) 
d) 
e) 
8. a) -4
b) 12
c) 17
d) -8
e) 9
9. To subtract two signed numbers we change the sign if the subtrahend and proceed to addition.

Lesson 3 Self-Check 3 page 17

- A.
1. +113
 2. -24
 3. +97
 4. -1
 5. -36
- B. Php 1 030.00

Lesson 4 Example 4 page 19

1. +12
2. -12
3. -12
4. +12

The product of two numbers with like signs is positive while the product of two numbers with unlike signs is negative.

Lesson 4 *Self-Check 4* page 20

- A. 1. 60
2. -32
3. -15
4. -40
5. 56
- B. Php 8 000

Lesson 5 **Activity** page 21

1. a) +6
b) -6
c) -6
Zero pair is any number of pair of yellow and red chips
3. a) +5
b) -3
c) -3
d) +3
4. The quotient of two integers with like signs is positive while that of two integers with unlike signs is negative.

Lesson 5 *Self-Check 5* page 22

- A. 1. 9
2. -12
3. -29
4. 6
5. -11
- B. 1. Php 2 500.00
2. Php150.00

Posttest page 24

- | | | |
|------|-------|-------|
| 1. b | 6. a | 11. c |
| 2. c | 7. a | 12. d |
| 3. d | 8. c | 13. a |
| 4. b | 9. a | 14. b |
| 5. b | 10. b | 15. a |

END OF MODULE

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Charles, R. I. & Thompson, A. G. (1996). *Secondary math: Focus on algebra*. New York: Addison-Wesley Publishing Company.

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