A DETAILED LESSON PLAN IN MATHEMATICS  
Operations on Integers

I. OBJECTIVES

At the end of the lesson, the students will be able to:
a. Distinguish the rules on different operation of integers.
b. Construct a mathematical equation using the four (4) operations of integers.
c. Recognize the importance of using integers in real life.

II. SUBJECT MATTER

Topic: Operation on Integers

References:
Pascasio, Ponsones, Ocampo, Tresva (2013), Math Ideas and Life Applications 7, page 46-59, Quezon City, Metro Manila


Values Integration: To develop the critical thinking, collaboration, determination and patience of the students.

III. PROCEDURE

<table>
<thead>
<tr>
<th>Teacher’s Activity</th>
<th>Students’ Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Initiatory Phase</strong></td>
<td></td>
</tr>
<tr>
<td>1. Opening Prayer</td>
<td></td>
</tr>
<tr>
<td>Class, kindly stand for the opening prayer.</td>
<td>(The students will all stand)</td>
</tr>
<tr>
<td>May I call on Mr. __________ to lead the prayer?</td>
<td>Oh, God our father we praise and adore you for everything in this world. Forgive us for the sins that we have done. We give you thanks Oh God almighty for all the blessings you have given us most especially for the blessing of life. Thank you for guiding us all through out our life. Oh god, we ask for your guidance in everything we are going to do. Give us hope and strength to overcome every struggle we will face. Give us the knowledge we need for our discussion today. We pray this in Jesus name, Amen.</td>
</tr>
<tr>
<td>2. Greetings</td>
<td></td>
</tr>
<tr>
<td>Good Morning Class and Peace be with you</td>
<td>Good Afternoon Ma’am and Peace be with you</td>
</tr>
<tr>
<td>Before you take your sit kindly pick up the pieces of paper or candy wrapper under your chair and if none you may</td>
<td></td>
</tr>
</tbody>
</table>
take your sit.

3. **Checking of Attendance**

   Monitor, is there any absent for today?

   Very good, maintain that perfect Attendance.

4. **Drills/Energizer**

   Before we start our day, let us have first a math trick. Do you want a math trick??

   Are you ready?

   So get any piece of paper and ball pen. Write your month number from your birthday. For example, if your birthday is June then your month number is 6.

   Then, multiply by 5.

   Next, add 6.

   Multiply the total by 4.

   Add 9.

   Multiply by 5 once again.

   Then, add your birth date. If you were born on the 14th, then add 14.

   And last, subtract 165. You will surprise cause you will have the month and day you were born.

   Are you done on computing?

   What have you notice in the trick?

   Exactly.
   I hope it energized you all.

5. **Review**

   It seems that you are all alive now. So, before we proceed to our next topic, let us have a short review of what we have discussed last meeting.

   So, who among you still remember our last topic?
Yes, Ms. __________

Exactly.
What do you mean by integer?
Yes Ms. __________

Very good.
How will you define the absolute value of a number?
Yes Mr. __________

Okay Thank you.
It feels great that you still remember our last topic.

6. Motivation

It seems that you have fully understood our last topic, now we will proceed to the next. But before we formally start our lesson I will show you a video clip entitled Application of Integers in Real Life. While watching the video, you’re going to take note of what you have noticed in the video. Is that clear?

If that so, here is the video.
(The teacher will play the video)

(after the video presentation)
What can you say about the video the video?
Yes Ms. __________

Thank you.
Another?
Yes Ms. __________

Exactly!
We can’t deny the fact that almost all of the students nowadays hate mathematics a lot. But why? Though mathematics is really part of our life. Everything we do is part of math. When we are eating, taking a bath or even when we travel. There is always an integration of mathematics. Did I make myself clear?

Yes ma’am.
B. Developmental Phase

1. ACTIVITY

Since you have a good observation in the video that you have been watched, let us have an activity that is related to our topic. Are you excited?

I will group you into 4. Please count 1 to four.

Go to your respective group.
What you’re going to do is to create a graphic organizer. I have here a box where you will pick your topic. Then you will choose one representative to present your output. Is that clear?

Representative of each group kindly come here in front and pick your topic from the box.

Each group will be given points according to the following criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTENT</td>
<td>5 points</td>
</tr>
<tr>
<td>PARTICIPATION</td>
<td>3 points</td>
</tr>
<tr>
<td>CREATIVITY</td>
<td>2 points</td>
</tr>
<tr>
<td>TOTAL</td>
<td>10 points</td>
</tr>
</tbody>
</table>

The points you will get will serve as your points in recitation. Is that clear?

I have here an example of graphic organizer for you to have an idea of what you are going to do.

(The teacher will show a graphic organizer)
So it is one example of graphic organizer
Class one thing you only have 3 minutes
to do that activity and 2 minutes for the
explanation of your output.
Is that clear?

Is there any question about the mechanics
of our activity?

(the teacher will distribute the materials)

Are you ready?

Class when I say time’s up you need to
paste your output on board.
You may start now.

(After 3 minutes)
Time’s Up
Everybody go back to your proper sit.

Okay, now Group 1 kindly present your
output.

Yes ma’am.

None so far

Yes ma’am.

(the students will start to do the
activity)

(The student will discuss the work of
her group)

The topic that assigned to us is all
about addition. We write sum, total and
average as the words that are related to
addition.

(The student will discuss the work of
her group)

Thank you!
Now, may I call on Mr.________ to
discuss the work of group 2?
Thank you!
To discuss the work of group 3, may I call on Ms.________?

Thank you!
And the last but definitely the least, may I call on Mr.__________ to the work of group 4?

Thank you.
Class give yourselves a Good Job clap for a job well done.

Here is your grades:
Group 1 got ___ Points
Group 2 got ___ Points
Group 3 got ___ Points
Group 4 got ___ Points

The topic that assigned to us is all about subtraction. The words that we write are minus, difference, negative and decrease.

(The student will discuss the work of her group)

The topic that assigned to us is about multiplication, and we come up with the words product, times, multiply and multiplicative.

(The student will discuss the work of her group.)

The topic that assigned to us is about division. We write the words quotient, remainder, divisor and dividend in the graphic organizer.

(The students will do the Good Job clap)
2. ANALYSIS
Now, what have you notice on our activity?
Yes, Ms.__________?

Very good.

Now, let us start our discussion.
Today we are going to discuss the four operations on Integers. What are the four operations on integers?
Yes, Mr. ________?

I have notice that the words we got are the four operations.

The four operations on integers are addition, subtraction, multiplication and division.

Very good!
In this lesson you will learn how to perform addition, subtraction, multiplication and division of integers.
Now, let us first discuss the addition of integers. There are rules in adding integers.
(The teacher will post the rules)

Ms. ____________ kindly read the first rule.

To add integers having the like signs:
- Find their absolute values;
- Add the number obtained in step a;
- Attach the common sign of the integers to the answer in step b.

To add integers having unlike signs:
- Find their absolute values;
- From the obtained number in step a, subtract the smaller number from the bigger number;
- Attach the sign of the integer with the bigger absolute value to the answer in step b.
Thank you!
Here is the first example,

\[-6 + (-3)=?\]

Who wants to solve this equation?
Yes Ms.___________?

How did you get your answer?

Precisely!
Here is another example,

\[-6 + (-3)\]
\[|-6| + |-3|\]
\[6 + 3\]
\[9\]
\[= -9\]

As stated in the rule no.1, first we find the absolute value of both number which is 3 and 6 respectively. Next we add their absolute value and the sum is 9. Then we attach the negative sign at the sum since it is the common sign.
-7 + (-4)=?

Who wants to solve this?
Yes Ms.____________?

How did you come up with that answer?

Exactly!
Now, let us proceed to the rule no.2. Ms.__________ kindly read.

Thank you!
Here is an example,

-7 + (-4)
\[-7| + |-4|
7 + 4
11
= -11

To add -7 and -4, we apply the rule no.1 step a up to step c because we are adding two integers with like signs (both negative). Find their absolute value and add the result. We get 7 + 4= 11. Then we attach the negative sign to 11. Therefore, -7 + (-4)= -10

2. To add integers having unlike signs:
   a. Find their absolute values;
   b. From the obtained number in step a, subtract the smaller number from the bigger number; and
   c. Attach the sign of the integer with the bigger absolute value to the answer in step b.

-125 + 117
\[-125| - |117|
125 – 117
8
= 8

As stated in the rule, we find their absolute values and subtract the smaller number from the bigger number. We get 125 – 117= 8, then we attached the
-125 + 117 = ?

Who wants to solve this example?
Yes Ms.____________?

Explain your work please.

Very good!
Here is another example,

4 + (-10) = ?

Mr.____________ kindly solve this equation.

How did you get your answer?

Subtracting a number from another number is the same as adding the opposite of n to the other number.
Precisely!
Now, it seems that you already understand the addition, let us proceed to the next operation which is Subtraction.

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**Rule in Subtracting Integers**

Subtracting a number (n) from another number is the same as adding n to the other number.

Mr. ____________ kindly read the rule in subtraction.

Thank you!
Here is an example,

\[ -15 - 19 \]

\[ |-15| - |19| \]

\[ 15 - 19 \]

\[ = 4 \]

As said in the rule, subtracting number from another is the same as adding the opposite number of it to the other, we just find the opposite number of the subtrahend and we get -19 and we add it to -15, the answer is -34 since they are both negative.

\[ -21 - (-14) \]

\[ |21| - |14| \]

\[ 21 - 14 \]

Who to wants to solve this problem?

Prove your answer.
Very good!
Here is another example,

\[ -21 - (-14) = {?} \]

Ms. ___________ please solve this equation.

How did you come up with that answer?

Why it is become negative?

Precisely!
Since you understand well the subtraction of integers, let us now proceed to the third operation which is the multiplication. You may have noticed that using repeated addition to find the product of two integers is quite tedious. Fortunately the process of multiplying integers can be simplified using the following steps;

\[ 7 = -7 \]

Subtracting -14 from -21 is the same as adding 14 to -21. Hence, we change subtraction to addition then we change -14 to 14. So, \(-21 - 14\) is \(-7\).

Because, as we can see in the given their sign is negative so we just copy it.

1. To multiply integers with unlike signs, multiply their absolute values. Attach the negative sign to the result.
Ms. _________ please read the first rule.

Thank you!
Let us have an example,

\[ -5 \times 3 = ? \]

Ms. _________ can you please solve the example?

Explain your answer.

Exactly!
Here is another example,

\[ 4 \times (-3) = ? \]

\[ |4| \times |-3| = 12 \]

To solve \( 4 \times (-3) \), notice that the integers have unlike signs. The product is obtained by multiplying the absolute value of 4 (\(|4|=4\)) by that of -3 (\(|-3|=3\)). This gives you \( 4 \times 3 = 12 \). Attach negative sign to 12; you will get -12. Thus, \( 4 \times (-3) = -12 \).

2. To multiply two integers with like signs, find the product of their absolute values. The result is always positive.
Solve the equation.

4 x (-3) = ?

How did you get your answer?

Precisely!
Now, let us proceed to the next rule, kindly read ____________.

Thank you!
Here is an example,

P

-23 x (-4)

\[ |\!-23| \times |\!-4| \]

23 x 4

= 92

To solve -23 x (-4), notice that the integers have like signs. The product is obtained by multiplying the absolute value of -23 (|\!-23|=23) by that of -4 (|\!-4|=4). The product is 92. Since they have the same sign, then the product is positive.

4 x 7

= 28

To solve for the product of 4 and 7, we multiply the absolute value of 4 (|\!4|=4)
Ms.__________ please solve this problem.

How did you come up with your answer?

Very good!
Here is another example,

\[
4 \times 7 = ?
\]

Please solve this Ms.__________.

Explain your answer.

Precisely!
Now for the last operation, let us proceed to division.

by that of 7 (|7|=7). The answer is 28. Since the given is both positive the answer is also positive.

1. To divide two integers with like signs, find the quotient of their absolute values. The result is always positive.

\[
45 \div 5 = 9
\]

To solve 45 ÷ 5, observe that the divisor and the dividend have like signs. Dividing the absolute value of 45 (|45|=45) by that of 5 (|5|=5) gives you 9. Thus, 45 ÷ 5= 9.
Ms. __________ please read the first rule.

Thank you!
Here is an example,

\[
45 \div 5 = ?
\]

Ms. __________ please solves the equation.

How did you get your answer?

Precisely!
Another example,

\[
-28 \div (-7) \\
\frac{|-28|}{|7|} \\
28 \div 7 \\
= 4
\]

To solve \(-28 \div (-7)\), as we can see they have the same signs. Get the absolute value of \(-28\) (\(|-28|=28\)) divided by that of \(-7\) (\(|-7|=7\)) will give you 4. Thus, \(-28 \div (-7)=4\)

2. To divide two integers with unlike signs, find the quotient of their absolute values. Attach the negative sign to the result.
-28 ÷ (-7) = ?

Ms. ________ please solves this one.

Kindly explain to us how this happen.

Very good! Now let us proceed to the second rule in dividing integers. Can you please read Ms.__________?

Thank you!
Here is an example,

18 ÷ (-3)
|18| ÷ |-3|
18 ÷ 3
6
= -6

To solve 18 ÷ (-3), observe that the divisor and the dividend have unlike signs. Dividing the absolute value of 18 (|18|=18) by that of -3 (|-3|=3) gives you 6. Attach a negative sign to 6. Thus, 18 ÷ (-3)= -6

30 ÷ (-6)
|30| ÷ |-6|
30 ÷ 6
5
= -5

To find the quotient of 30 ÷ (-6), we divide the absolute value of 30 (|30|=30) by that of -6 (|-6|=6) and we get 5. We just attach the negative sign since they have unlike signs

None ma’am.
How do you come up with that answer?

Precisely!
Here is another example,

\[ 30 \div (-6) = ? \]

Ms._________ please solves the equation.

How does it happen?

Very good!
Now, do you have any question regarding the four operations of integer?

3. ABSTRACTION

Since, you don’t have any question regarding to our topic, I will ask some questions. I put a sticker under your chair. Look under your chair and get the sticker. Those who got the sticker with star can now sit back and relax while those who got the sticker with the heart, (The student will stand)

What are the four operations on integers?

The four operations on integers are addition, subtraction, multiplication and division.

In adding integers, what will be the sign of the sum if you add -14 and -8? Why?

If we add -14 and -8, the sign of the sum will be negative because as stated in the rule, when adding integers with like signs just copy the sign.

When you are multiplying two negative integers what will be the sign of the product?

The sign of the product of two negative integers will be positive, because they have the like signs and in multiplying integers with like signs, the product is always positive.

In dividing integers, when is the quotient become negative?

In dividing integers, the quotient become negative when we are dividing two integers with unlike signs.

What do you think is the most important operations of integers?

For me the most important operation of integers is the addition of integers because it is the commonly use in our daily life.

Why is an integer important to our life?

For me, integers are important in our daily life because it was being used by many people everywhere and every time.
you are so lucky today because you got the question. Who got the question?

Kindly read your question.

Very good!
Next question.

Precisely!
How about the next question?

Exactly!
Next question.

Yes ma’am
None so far

Very good!
Next question.

Precisely.
How about the last question?

Give a specific scenario in which integers are being used. Expand your answer.

For example, when you are shopping your clothes, the price of the clothes is an integer; the quantity of the clothes you had bought is also an integer.
Precisely!
How about the last question?

Very good.

4. APPLICATION

Since you already understand our lesson, let us have our final activity. In this activity, we will measure your creativity. Since you already have your respective group I will no longer grouped you. This is your activity. You will construct a 3 example of integer with solution. So I have here a brief case, inside the brief case is the operation in integer, you will pick a brief case and you will open it to know the operation that you will used in your example. And another thing is you will going to prepare a yell. Before you present your output you re going to have a yell first. Class I will only give you 3 minutes to do the task and 2 minutes to each to present your output and yell. Is that clear?

Is there any question about the instruction?

If that so, Representative of each group come here in front and pick your brief case.

Group 1, what did you get? Open your brief case.

What about group 2? open your brief case

Group 3 what did you get?

And the last group?

Ok class, I will grade you by group and make sure you will have a participation. Here are the criteria on grading.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTENT</td>
<td>50%</td>
</tr>
<tr>
<td>PARTICIPATION</td>
<td>30%</td>
</tr>
<tr>
<td>CREATIVITY</td>
<td>10%</td>
</tr>
</tbody>
</table>
Is that clear?

You may now proceed to your group. I will set a timer, and when you hear the word times up, finished or not you need to go back to your proper sit.

Class, are you ready?

Ok timer starts now.

(after 3 minutes)
Times up!

Now let’s have group number one.

Thank you group 1.
Now, group 2 presents your work.

Thank you group 2.
Now, Group 3 presents your work.

Thank you Group 3.
And the last but definitely not the least, group 4 presents your work.
IV. EVALUATION
Since you now have full of knowledge, get your ball pen and 1 whole sheet of pad paper and answer the problem below.

DIRECTION: Read each question carefully. Choose the letter of the correct answer and write it on the space provided before each number.

_____ 1. If we are going to add -67 to 69, what will be the answer?
   a. 138
   b. -2
   c. 2
   d. -138

_____ 2. Which of the following equation is true?
   a. -12 – 7 = -15
   b. 12 x 3 = 39
   c. -13 x 5 = 65
   d. none of this

_____ 3. Which of the following equation is not true?
   a. -24(3) = -72
   b. -12 + (-5) = -17
   c. -17 - (6) = -23
   d. none of this

_____ 4. Which do not belong to the group?
   a. Division of Integers
   b. Subtraction of Integers
   c. Multiplication of Integers
   d. Addition of Integers

_____ 5. Which of the following statement is true?
   a. In Addition of Integers if the equation has unlike sign we subtract the larger number from the smaller number.
   b. In Multiplication of Integers if the equation has unlike sign. The sign of the answer are always positive.

Thank you group 4.
Okay class, since you enjoy our activity, give yourselves a good Job clap.

Here is your grades:
Group 1 got ___%
Group 2 got ___%
Group 3 got ___%
Group 4 got ___%

Again give your self around of applause for a job well done.
c. The Four Operations of Integers are the following: Addition of Integers, Subtraction of Integers, Multiplication of Integers and Division of Integers.
d. none of this

Class, time’s up.
Let’s check your paper.

Everyone, exchange your paper with your seatmate.
Here are the answers.
1. b
2. d
3. d
4. a
5. d

Class, are you done?  
Yes ma’am.

Okay, who got the score of:
5?
4?
3?
2 and below?
None ma’am.

Very good! Keep up the good work.

V. ASSIGNMENT
For your assignment, make your own five examples of each operation on integers. Write it in 1 whole sheet of paper.
Detailed Lesson Plan in
MATHEMATICS

Topic: The Four Operations on Integers

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