**SUPPLEMENTAL INSTRUCTION ACTIVITY**

**TOPIC: Integers**

**APPLICABLE COURSES:** All math courses starting from Math 025/026 and other courses in other disciplines.

**LEARNING OUTCOME:** (What will students be able to do by the end of the workshop?)

After completing this workshop, students should be able to add, subtract, multiply and divide integers and signed numbers.

**CONTENT:** (What do students need to know to accomplish the outcome?)

1. Define an integer.
2. Define the absolute value of an integer.
3. Adding integers with the same sign.
4. Adding integers with the opposite signs.
5. Define the opposite of an integer.
6. Subtract integers by adding the opposite.
7. Multiplying and Dividing integers with the same sign.
8. Multiplying and Dividing integers with the opposite signs.
9. Using the order of operations when simplifying an integer problem with more than one operation.

**METHOD:** (How will the instructor deliver content? Short lecture, handouts, Powerpoint, other audio-visual presentation)

Short lecture followed by active learning exercise and worksheet (45 minutes)

* Teach 1, 2, 3 and 4 (10 minutes)

Practice 1, 2, 3 and 4 (5 minutes)

* Teach 5 and 6 (5 minutes)

Practice 5 and 6 (5 minutes)

* Teach 7 and 8 (5 minutes)

Practice 7 and 8 (5 minutes)

* Teach 9 (5 minutes)

Practice 9 (5 minutes)

* The lesson is divided into segments composed of lecture and examples followed by student practice and sharing.
* First, the instructor distributes the exercise worksheet and any supporting handouts.
* Then the instructor presents segment 1, 2, 3 and 4 (Definition of an integer, example of integers in real life, definition of absolute value, explain how to add integers with the same and opposite signs.)
* After this brief lecture with examples, students will break up into pairs and complete the practice problems (3 min).
* Next, in pairs, students each take a turn explaining to their partner how they solved one of the problems (2 min). At the end of this 5-minute segment, the instructor posts the solutions/answers on the screen/white board for students to check their work.
* Follow the same lecture/practice procedure for segments 5 through 9 (Definition of opposites, subtracting integers, multiplying and dividing integers and reviewing the order of operations.)

Note: If time is short, only one student explains his/her process to the partner for each segment of the lesson, taking turns for each segment.

**ACTIVE LEARNING STRATEGIES:** (How will students apply their knowledge? Solve a problem, create a project, analyze a case, and explain a process)

Students reflect on the exercises and teach each other by verbalizing the steps they took to reach their conclusions.

**ASSESSMENT METHOD:** (How will the instructor know that the students met the outcome? Check for understanding. )

(12 minutes.)

Students will complete a quiz where they are asked to apply the operations of addition, subtraction, multiplication and division to integer problems. After completing the quiz, the instructor posts the solutions/answers on the screen/white board. Students check their results. The instructor can also look over the quizzes while the students are completing the self-reflection activity to give feedback to students.  
If students do not successfully complete the worksheet quiz, they may be referred to individual tutoring or a guided learning activity.

**SELF-REFLECTION ACTIVITY:** (What will the instructor do to get students to reflect on how they learned the content? What they learned, how they learned it, how they will apply it in their coursework)

(3 minutes.)

-Which segment of the exponential expressions was most challenging for you?

-What steps are you going to take to learn this subject?