HEADING

Student: Allison Sloper Professor: R. Moroney

Course: EDU 521 Date: April 15, 2015

Grade: 7th Content Area: Mathematics

Topic: Addition and Subtraction of Integers and Rational Numbers

INSTRUCTIONAL OBJECTIVE

After learning about addition and subtraction of integers and rational numbers, students will be able to add positive integers and negative numbers by counting down on a number line on a worksheet with 80 percent accuracy.

Key concepts: positive integer, negative integer, number line

STANDARDS AND INDICATORS

Mathematics (CCSS): The Number System

7.NS.1.a Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.

Indicator: This will be evident when students understand that 2 + -2 equals zero

ISTE STANDARDS

1. Creativity and innovation
2. Communication and collaboration
3. Research and information fluency
4. Critical thinking, problem solving, and decision making

MOTIVATION

Students will complete the DO NOW. They may refer back to their notes for assistance.

A real life reference will be made. Example- “When you buy an item in a store how can do you figure out how much money you give the cashier to pay for the item?”

MATERIALS

Pencils, ruler, notebook, SMART Board, YouTube video

STRATEGIES

* Start the class with a Do-Now Activity and go over the aim for the class
* Teacher will teach the lesson by direct instruction
* Convergent and divergent questions will be asked throughout the lesson to make sure the students are comprehending what is being taught
* Key vocabulary will be emphasized
* Emphasis on listening awareness will be addressed when students take notes
* Steps to an assignment will be clearly defined
* Students will have time for independent practice of a few example problems
* Students will be given a summative assessment in the form of the “tic tac toe” game
* Before they leave the class, students will complete a “ticket out” form

ADAPTATIONS

* A student who is an English Language learner will be given notes with blank spaces for the student to fill in, visual aids, and opportunities to answer problems on the SMART Board
* During the independent practice assessment a student who is having difficulty may consult with a peer
* Directions on the worksheet may be read orally to students who need the assistance
* Different level of difficulty of problems will be given out to the students
* A student who is struggling writing notes may use an iPad to type their notes instead

DIFFERENTIATION OF INSTRUCTION

Below level – Students will be asked to complete the beginner level problem before going on to the more advanced problems. They will be given more example problems of adding and subtracting integer on a number line if they are still struggling. They will be able to work with a partner during independent work*.*

Advanced Learners – Students will come up to the SMART Board and be able to teach the class how to do a certain problem. They will become the teacher and given the opportunity to explain how to solve a problem to a student who is struggling.

English Language Learners – Visual aids will be used to engage the students. A copy of the notes will be provided with blanks that the students will need to fill in. Key vocabulary will be recited and practiced. Links to real life situations will be addressed.

DEVELOPMENTAL PROCEDURES

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| Duration | Activity | Key Questions |
| 5 min | Introduction –completion and review of the DO NOW and aim of the lesson | *What do you know about positive and negative numbers?* |
| 2 min | Discussion of the key vocabulary of the lesson. | *How do you use a number line?* |
| 10 min | Students will complete a Venn Diagram about negative and positive numbers | *How can you describe these numbers?* |
| 8 min | Students will learn how to add and subtract numbers using a number line. They will be given the opportunity to use the SMART Board. They will learn how to draw arrows to indicate what direction they are going. |  |
| 5 min | Students will be shown a YouTube video to illustrate this concept more in depth | *What are the correct steps to follow to add and subtract positive and negative integers?* |
| 7 min | Students will work on a worksheet with a partner focusing on addition and subtraction of integers as well as the additive inverse of numbers. |  |
| 5 min | Exit ticket – As a class, students will play a “tic tac toe” game and will have to answer one question correctly at the end of the class | *What are some important concepts that you learned today?* |

ASSESSMENT

* Students will complete a Venn Diagram describing positive and negative numbers
* Students will answer practice problems during class as they are learning about addition and subtraction of integers and rational numbers
* At the end of class the students will complete a worksheet that contains all the information they learned that day and answer one question correctly each on the “tic tac toe” game

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| |  | | --- | | **Math - Problem Solving : Positive and Negative Numbers**  Teacher Name: **Allison Sloper**    Student Name:     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
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| **Venn Diagram “What I Know” about positive and negative numbers** |
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| CATEGORY | **4** | **3** | **2** | **1** |
| **Working with Others** | Student was an engaged partner, listening to suggestions of others and working cooperatively throughout lesson. | Student was an engaged partner but had trouble listening to others and/or working cooperatively. | Student cooperated with others, but needed prompting to stay on-task. | Student did not work effectively with others. |
| **Diagrams and Sketches** | Diagrams and/or sketches are clear and greatly add to the reader\'s understanding of the procedure(s). | Diagrams and/or sketches are clear and easy to understand. | Diagrams and/or sketches are somewhat difficult to understand. | Diagrams and/or sketches are difficult to understand or are not used. |
| **Mathematical Concepts** | Explanation shows complete understanding of the mathematical concepts used to solve the problem(s). | Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s). | Explanation shows some understanding of the mathematical concepts needed to solve the problem(s). | Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written. |
| **Mathematical Reasoning** | Uses complex and refined mathematical reasoning. | Uses effective mathematical reasoning | Some evidence of mathematical reasoning. | Little evidence of mathematical reasoning. |

INDEPENDENT PRACTICE

After learning about paired angles students will be asked to complete the worksheet that they started in class. This will be handed in and graded for a homework grade.

FOLLOW-UP: ACADEMIC INTERVENTION AND ACADEMIC ENRICHMENT

Example of academic intervention: Students will be encouraged to attend extra help to work on one on one with the teacher. Students will be given different strategies to help them understand and comprehend the topic.

Example of academic enrichment: A student who has shown that he has clearly mastered the concept will help the teacher create a quiz for the class. He will be in charge of creating problems that challenge the class to think critically.

TEACHER REFERENCES

Charles, Illingworth, & McNemar. (2012). *Course 3 mathematics: common core*. Upper Saddle River, New Jersey: Prentice Hall.

Ryan, K., & Cooper, J. M. (2013). *Those who can, teach*. Belmont, California: Wadsworth, Cengage Learning

Serdyukov, P., & Ryan, M. (2007). *Writing effective lesson plans.* Upper Saddle River, New Jersey: Pearson.