

MUSIC NOTES LESSON PLAN – INTEGERS
DAY 1 – ADDITION AND SUBTRACTION

Teacher:

Date:

Subject / grade level: Algebra 1/8th Grade

Materials: Projector, ability to play digital video (computer or dvd player), speakers, close reading passage, number lines, notebooks or loose leaf paper.

Time: 75 minutes

Common Core

State Standard(s): Strand: Arithmetic with Polynomials and rational expressions (A-APR)
Standard: Perform arithmetic operations on polynomials
1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

TEKS

State Standard(s): 6.3(D) add, subtract, multiply, and divide integers fluently
6.3(E) multiply and divide positive rational numbers fluently

Lesson objective(s): Given a set of integer problems, student will be able to correctly apply the rules of integers and accurately solve the problems.

Differentiation strategies to

meet diverse learner needs: Instructional Video
Close Reading
Partner-Private-Public (P-P-P)
Sentence Starters
Think-Ink-Pair-Share
Flexible Grouping (as determined appropriate by teacher)
Guided Questions

Engagement (10 minutes)

- The teacher will show a music based instructional video that explains the rules for adding/subtracting/multiplying/dividing integers.
- Students should use the *Think-Ink-Pair-Share* Strategy to answer comprehension questions, such as: What is the definition of an integer? What are the rules for adding/subtracting?

Exploration (25 minutes)

- The teacher will distribute number lines and reading passage/lyrics while introducing a *close reading* activity to the students where the learners are to read a mathematical passage 2 times. The teacher will explain that the passage is the lyrics to the music in the song/video. During the first reading, students will read the lyrics along to the song/music playing in the background (do not play the video at this time, as it may distract students from reading the passage/lyrics). The teacher will ask a set of questions after the first reading. During the second reading, the teacher should utilize appropriate reading strategies based on individual student's decoding/comprehension skills (i.e., read long with music (not video), independent/silent read, partner read, choral read, group read aloud, etc.) then conduct the second set of questions.
 - (5 minutes) The first reading is for comprehension. Answers to comprehension questions are found directly in the text. Students will use provided *sentence starters* to answer each comprehension question.
 - (5 minutes) The second reading is for structured analysis. Structure and analysis questions are higher level thinking and more inferential. Students will use the *Think-Write-Share* strategy to respond to each structure and analysis question.

Comprehension Questions (Sentence Starter) (7 minutes)

What is an integers? (An integer is...)

On what kind of line do we find integers? (Integers are found on...)

How do you add two negative numbers? (To add two negative integers you must...)

Compare $-2 - 3$ and $-2 + (-3)$. What are the answers to both of these? (When comparing these two problems...)

When doing subtraction, if you subtract a positive minus a negative integer is the answer positive or negative? (When subtracting a positive...)

Structure & Analysis Questions (8 minutes)

When adding integers the answer will have the same sign of which number?

What happens when 3 negative integers are added?

What happens when 2 negative and 1 positive integers are added?

Is zero an integer? What else do you know about zero?

Explanation (20 minutes)

- (10 minutes) The teacher will ask the students to explain this topic as if they are teaching somebody that's never heard of an integer before. Students should use the *Private-Partner-*

Public (P-P-P) Strategy to respond and the teacher will select students at random to share out (*public*). Pose questions such as:

- How would you explain adding/subtracting integers to an 8 year old? How would you demonstrate a set of integers to a sixth grader? What would you do to show a new student the rules for adding, subtracting integers?
- (10 minutes) The teacher will provide students time to process and respond to higher order thinking questions to solicit student explanations and help them to justify their explanations. Students will use the *Think-Ink-Pair-Share* strategy to respond, being sure to record their answers in writing. Ask questions such as:
 - How is it possible to add 3 negative integers and 1 positive integer and get a positive answer?

Elaboration (25 minutes)

- (15 minutes) The students will develop a more sophisticated understanding of the concept through engaging in solving integer practice problems from the approved Algebra 1 textbook. They should solve practice problems for each operation (+, -).
- (5 minutes) All vocabulary is a review from previous grade levels however the teacher should revisit the mathematical meanings for integer, infinite, positive number and negative number. Students may record terms and definitions in their notebooks.
- (5 minutes) Have students think about and discuss in small groups how this concept is applied to daily life. For example, Students will need these skills as they learn about weather and temperature, elevation and sea level, yards advanced/lost in a football game, score tabulation of a round of golf, calculating minutes of a cell phone plan, paying bills (in a restaurant or store) and balancing a bank account.

Evaluation (5 minutes)

- Students will fill out an exit ticket to show the teacher whether or not they have mastered the skill and reflect on their learning in this lesson. The exit ticket will have four math computation problems and one metacognitive written response.

Exit Ticket Questions

1. $-10 + 4 =$
2. $-13 - 11 =$
3. From this lesson, what best helped you understand integers?

MUSIC NOTES LESSON PLAN – INTEGERS
DAY 2 – MULTIPLICATION AND DIVISION

Teacher:

Date:

Subject / grade level: Algebra 1/8th Grade

Materials: Projector, ability to play digital video (computer or dvd player), speakers, close reading passage, number lines, notebooks or loose leaf paper.

Time: 80 minutes

Common Core

State Standard(s): Strand: Arithmetic with Polynomials and rational expressions (A-APR)
Standard: Perform arithmetic operations on polynomials
1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Lesson objective(s): Given a set of integer problems, student will be able to correctly apply the rules of integers and accurately solve the problems.

Differentiation strategies to

meet diverse learner needs: Instructional Video
Close Reading
Partner-Private-Public (P-P-P)
Sentence Starters
Think-Ink-Pair-Share
Flexible Grouping (as determined appropriate by teacher)
Guided Questions

Engagement (10 minutes)

- The teacher will show a music based instructional video that explains the rules for multiplying/dividing integers.

- Students should use the *Think-Write-Share* Strategy to answer comprehension questions, such as: What is the definition of an integer? What are the rules for multiplying/dividing integers?

Exploration (25 minutes)

- The teacher will distribute number lines and reading passages/lyrics while introducing a *close reading* activity to the students where the learners are to read a mathematical passage 2 times. The teacher will explain that the passage is the lyrics to the music in the song/video. During the first reading, students will read the lyrics along to the song/music playing in the background (do not play the video at this time, as it may distract students from reading the passage/lyrics). The teacher will ask a different set of questions for each reading. During the second reading, the teacher should utilize appropriate reading strategies based on individual student's decoding/comprehension skills (i.e., read long with music (not video), independent/silent read, partner read, choral read, group read aloud, etc.)
 - (5 minutes) The first reading is for comprehension. Answers to comprehension questions are found directly in the text. Students will use provided *sentence starters* to answer each comprehension question.
 - (5 minutes) The second reading is for structured analysis. Structure and analysis questions are higher level thinking and more inferential. Students will use the *Think-Ink-Pair-Share* strategy to respond to each structure and analysis question.

Comprehension Questions (Sentence Starter) (7 minutes)

What is an integer? (An integer is...)

On what kind of line do we find integers? (Integers are found on...) What happens when you multiply two negative integers? (When you multiply two negative integers you must...)

What happens to the quotient when you divide numbers with opposite signs? (When you divide...)

When you divide two negative integers is the answer positive or negative? (When dividing two negative integers...)

Structure & Analysis Questions (8 minutes)

What happens when 3 negative integers are multiplied?

What happens when 2 negative and 1 positive integers are divided?

Is zero an integer? What else do you know about zero?

Explanation (20 minutes)

- (10 minutes) The teacher will ask the students to explain this topic as if they are teaching somebody that's never heard of multiplying and dividing integers before. Students should use the *Private-Partner-Public (P-P-P)* Strategy to respond and the teacher will select students at random to share out (*public*). Pose questions such as:

- How would you explain mult/div integers to an 8 year old? How would you demonstrate a set of integers to a sixth grader? What would you do to show a new student the rules for multiplying and dividing integers?
- (10 minutes) The teacher will provide students time to process and respond to higher order thinking questions to solicit student explanations and help them to justify their explanations. Students will use the *Think-Ink-Pair-Share* strategy to respond, being sure to record their answers in writing. Ask questions such as:
 - Why is the answer negative when you add 4 negative integers, but the answer is positive when you multiply 4 negative integers?

Elaboration (25 minutes)

- (15 minutes) The students will develop a more sophisticated understanding of the concept through engaging in solving integer practice problems from the approved textbook. They should solve practice problems for each operation (\times , \div).
- (5 minutes) All vocabulary is a review from previous grade levels however the teacher should revisit the mathematical meanings for integer, infinite, positive number and negative number. Students will record terms and definitions in their notebooks.
- (5 minutes) Have students think about and discuss in small groups how this concept is applied to daily life. For example, Students will need these skills as they learn about weather and temperature, elevation and sea level, yards advanced/lost in a football game, score tabulation of a round of golf, calculating minutes of a cell phone plan, paying bills (in a restaurant or store) and balancing a bank account.

Evaluation (5 minutes)

- Students will fill out an exit ticket to show the teacher whether or not they have mastered the skill and reflect on their learning in this lesson. The exit ticket will have four math computation problems and one metacognitive written response.

Exit Ticket Questions

1. $12 \times (-3) =$
2. $-84 \div 7 =$
3. From this lesson, what best helped you understand integers?