#10139
BASIC MATH: INTEGERS AND ADDITION

CEREBELLUM CORPORATION, 2001
Grade Level: 7-12
13 mins.
2 Instructional Graphics Enclosed

DESCRIPTION

What are integers? What is a whole number? Covers definitions of terms, and discusses the number line, positive and negative integers, and addition of single- and multiple-digit numbers. Gives clear examples. Standard Deviants School.

ACADEMIC STANDARDS

Subject Area: Mathematics

- Standard: Understands and applies basic and advanced properties of the concepts of numbers
  - Benchmark: Understands the characteristics and properties (e.g., order relations, relative magnitude, base-ten place values) of the set of rational numbers and its subsets (e.g., whole numbers, fractions, decimals, integers) (See INSTRUCTIONAL GOALS 1.)
  - Benchmark: Understands the role of positive and negative integers in the number system (See INSTRUCTIONAL GOALS 1.)
  - Benchmark: Understands the basic meaning of place value (See INSTRUCTIONAL GOALS 2.)
  - Benchmark: Uses models (e.g., number lines, two-dimensional and three-dimensional regions) to identify, order, and compare numbers (See INSTRUCTIONAL GOALS 4.)
- Standard: Uses basic and advanced procedures while performing the processes of computation
  - Benchmark: Adds, subtracts, multiplies, and divides whole numbers, fractions, decimals, integers, and rational numbers (See INSTRUCTIONAL GOALS 3.)

INSTRUCTIONAL GOALS

1. To explain the key terms integers, whole numbers, number line, digits, addition, sum, positive, negative, and carry over.
2. To briefly explain place value up to one million.
3. To illustrate addition of positive and negative integers.
4. To demonstrate placing integers on a number line.

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VOCABULARY

1. addition
2. carrying over
3. digits
4. hundred thousands
5. hundreds
6. integers
7. infinity
8. millions
9. minus sign
10. negative
11. number line
12. plus
13. positive
14. subtraction
15. sum
16. tens
17. ten thousands
18. thousands place
19. units
20. whole numbers

BEFORE SHOWING

1. Give examples of where a person might find a number less than zero. List responses on the board. Sample answers include the temperature, elevation, and a golf score.
2. Review horizontal and vertical number lines. Locate zero. Explain where positive and negative numbers are located on the number lines.
3. Copy and distribute the "Integers and Addition: Viewing Guide." (See INSTRUCTIONAL GRAPHICS.)
   a. Encourage the students to follow along on the viewing guide as the concepts are explained.
   b. Allow time for looking at the viewing guide during each pause of the video.

DURING SHOWING

1. View the video more than once, with one showing uninterrupted.
2. Pause the video after the number line introduction. Clarify where the positive and negative numbers are on the number line.
3. Pause after the place value explanation. Review the names of each digit's place in a large number. Practice identifying what place a digit is in.
4. Pause after the section on adding positive integers. Practice adding positive integers using a vertical number line.
5. Pause after the section on adding positive and negative integers. Practice several examples using a vertical number line.
6. Pause after the demonstration of "carrying over" when adding large numbers. Review the information, and practice adding large numbers that require carrying.

AFTER SHOWING

Discussion Items and Questions

1. Define *integers*.
2. What are *whole numbers*? What aren't whole numbers?
3. Define *addition*. Explain the word *sum*.

Applications and Activities

1. Review the information on the viewing guide. Answer the three questions in the bottom left-hand corner.

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2. Complete the "Integers and Addition: Check Your Knowledge" worksheet. (See INSTRUCTIONAL GRAPHICS.)
3. Practice ordering the numbers from –9 to +9.
   a. Using index cards, make number cards from –9 to +9. Mix the cards up.
   b. Tape one card to the back of each student while they are in a line. Don't allow the students to see their own card, but they can see their classmates' card.
   c. The students must get themselves in the correct numerical order from least to greatest without communicating their numbers to each other.
   d. To make this more interesting, make a double set of cards, divide the students into two teams, and whichever team finishes first, wins.
4. Review place value concepts.
   a. Obtain practice items from math textbooks or Internet Web sites. Practice identifying what place a digit is in.
   b. Roll several dice with ten sides and the digits 0-9 on them. Place the dice in order to make the largest or smallest possible number. Identify the place the dice are in.
5. Make individual number lines that include negative integers. Use the number lines to practice adding small positive and negative integers.
6. Play a variation of the card game WAR to practice addition.
   a. Use a regular deck of playing cards. Assign values to the face cards (J = 11, Q = 12, and K = 13) or remove them.
   b. Each pair of students deals the cards as if playing WAR–the whole deck evenly. Students do not look at the cards.
   c. Each player flips up two cards and adds the two numbers, announcing the sum to their partner.
   d. The player with the highest sum wins the trick. If the students disagree on an answer, the teacher can be the referee.
   e. Play for a set time and the player with the most cards wins, or play until one player possesses *all* the cards.
   f. To practice adding positive and negative integers, identify one color of cards as negative and the other as positive. Play the game the same way.
7. Review addition with carrying.
   a. Use units, tens, and hundreds blocks, model two numbers to add. Add the units, trading ten units for one ten block, and ten tens blocks for a hundred blocks.
   b. Using three dice with ten sides numbered 0-9, roll and record a three digit number. Roll again and record another three digit number. Add the numbers.
   c. Obtain additional addition math problems involving carrying. Practice individually.
8. Working in small groups or partners, create math word problems for addition. Trade problems with another group and solve each other's problems.

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CMP RELATED RESOURCES

- *Ace Math for Kids: Volume I, Part 4* #3555
- *Basic Math: Dividing Integers* #10137
- *Basic Math: Multiplying Integers* #10141
- *Basic Math: Subtracting Integers* #10143
- *Integer Operations–Into the Negative Zone!: Part 1–Adding and Subtracting* #9933

World Wide Web

The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **LESSONS ON ADDITION OF INTEGERS**

http://www.mathgoodies.com/lessons/vol5/addition.html

Mrs. Glosser's Math Goodies Web page reviews how to add positive and negative integers, and then provides practice online.

- **ADDING AND SUBTRACTING INTEGERS**

http://www.math.com/school/subject1/lessons/S1U1L11GL.html#sm3

Multiple-page Web site with explanations of adding and subtracting integers using a number line and online practice examples.

- **FLASHCARDS FOR KIDS!** http://www.edu4kids.com/math/math.php

Math problems are presented online for students to practice at the computer. Choose the operation. Users are given feedback on correct and incorrect responses and scores when completed.

- **MATH FORUM: ASK DR. MATH** http://forum.swarthmore.edu/dr.math/

"Ask Dr. Math" allows users to e-mail questions to Dr. Math and access archived material. For other materials that relate to this media, click on "Elementary" and then "Addition," or click on "Middle School," then choose "Negative Numbers."

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- **LINE JUMPER**

http://www.funbrain.com/linejump

Use this interactive number line to solve addition problems with positive and negative integers to +/- 16.

- **PLACE VALUE PUZZLER**

http://www.funbrain.com/tens

Another FunBrain site asks the user to select the digit in a specific place value position. A correct answer removes a puzzle piece which reveals a portion of a hidden picture.

INSTRUCTIONAL GRAPHICS

- INTEGERS AND ADDITION: VIEWING GUIDE
- INTEGERS AND ADDITION: CHECK YOUR KNOWLEDGE

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Integers and Addition: Viewing Guide

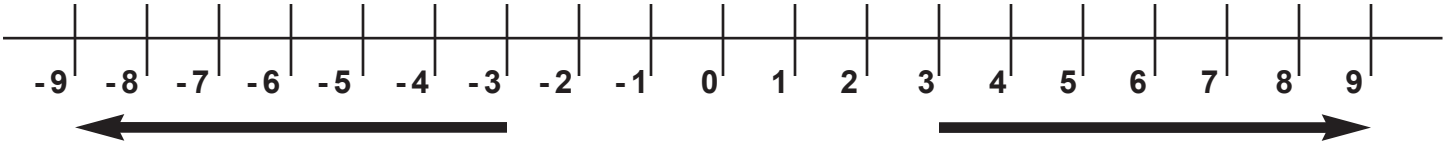
What are Integers?

Whole numbers and their negatives.

- Whole numbers CANNOT be negatives, decimals, or fractions.
- Integers can be positive or negative (and don't forget zero!).

Number Line

- Vertical or horizontal line that is marked at even intervals or units.



Any number to the left of zero or less than zero is negative.

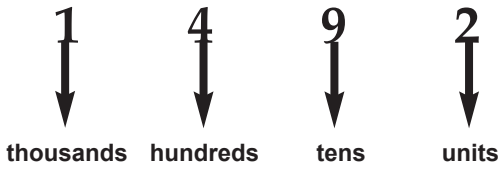
Any number to the right of zero or greater than zero is positive.

A number line goes on forever (to infinity!).

Digits

- Integers are made up of digits 0-9.
- Every digit in a number goes in a certain place.

Example:



Viewing Questions

1. What is a number line?
2. What is an integer?
3. Where does a number line end?

Addition and Integers

- When adding positive integers, combine them to form a larger number (sum).

Example: $4 + 5 = 9$

Sum

Rules:

The sum of two positive integers is a positive integer. $2 + 5 = 7$

The sum of two negative integers is a negative integer. $-2 + -9 = \mathbf{-11}$

To add a positive and negative integer:

- Subtract the two numbers (subtract the smaller number from the larger number).
- The result takes the sign of the greatest integer. $-9 + 5 = \mathbf{-4}$

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Integers and Addition: Check Your Knowledge

Total Score / 50

A. Word Problems

Solve each word problem. Show your work (5 points each).

1. Sheree has $100 in her savings account. Her father gives her an additional $105 because she made the Honor Roll. Sheree puts the $105 in her account. What is the new balance of her savings account?

2. It takes Andre 5 minutes to vacuum his car. It takes him 12 minutes to wash his car. How long does it take Andre to wash AND vacuum his car?

B. Sum it Up

Find the sum of each pair of integers (2 points each).

1. -2 + -9 = _____
2. -5 + -8 = _____
3. -13 + -7 = _____
4. 2 + 2 = _____
5. 17 + 5 = _____
6. -9 + 5 = _____
7. 6 + -7 = _____
8. 9 + -9 = _____
9. -6 + -9 = _____
10. 7 + 11 = _____
11. 5 + -3 = _____
12. -2 + 7 = _____
13. 9 + -12 = _____
14. 29 + 16 = _____
15. 7 + 7 = _____
16. -2 + -2 = _____
17. -100 + -100 = _____
18. 15 + -10 = _____
19. -50 + -29 = _____
20. -1 + -1 = _____

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Integers and Addition: Check Your Knowledge

Answer Key

Total Score / 50

A. Word Problems

Solve each word problem. Show your work (5 points each).

1. Sheree has $100 in her savings account. Her father gives her an additional $105 because she made the Honor Roll. Sheree puts the $105 in her account. What is the new balance of her savings account?

$100 + $105 = $205 in her savings account

2. It takes Andre 5 minutes to vacuum his car. It takes him 12 minutes to wash his car. How long does it take Andre to wash AND vacuum his car?

5 + 12 = 17 minutes to wash and vacuum his car

B. Sum it Up

Find the sum of each pair of integers (2 points each).

1. -2 + -9 = **-11**
2. -5 + -8 = **-13**
3. -13 + -7 = **-20**
4. 2 + 2 = **4**
5. 17 + 5 = **22**
6. -9 + 5 = **-4**
7. 6 + -7 = **-1**
8. 9 + -9 = **0**
9. -6 + -9 = **-15**
10. 7 + 11 = **18**
11. 5 + -3 = **2**
12. -2 + 7 = **5**
13. 9 + -12 = **-3**
14. 29 + 16 = **45**
15. 7 + 7 = **14**
16. -2 + -2 = **-4**
17. -100 + -100 = **-200**
18. 15 + -10 = **5**
19. -50 + -29 = **-79**
20. -1 + -1 = **-2**

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