

Subject: Integer Addition

Grade Level: Seventh Grade

Overview: The lesson provides students with multiple representations of integer addition. These representations include the use of manipulatives, color dots, and number lines. Also, a real life situation of integer addition is used to engage in student's thinking.

Key Objectives:

- 1) Add integers and determine the sign of the sum by determining which of the two numbers being added number has the greatest distance from zero. (GPS: M7N1a-d).
- 2) Apply a variety of strategies and build new mathematical knowledge through problem solving in context (GPS: M7P1 a-d).
- 3) Communicate integer addition by using multiple representations among peers and the teacher (GPS: M7P3 a-d).

Learning Outcomes:

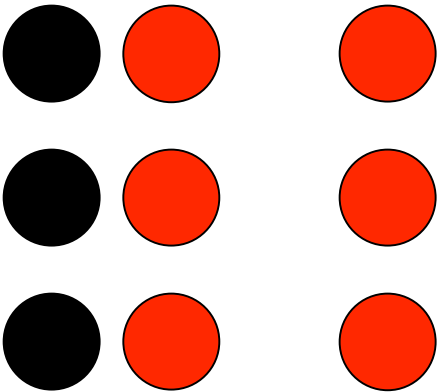
- 1) Find the sum of two integers and correctly determine the sign of the sum.
- 2) Represent integer addition in a variety of ways.

Materials:

- Black and red chips
- Color pencils/markers
- Calculators
- Transparency 1: The Big Question: When you add two integers how do you decide what the sign of the final answer will be? How do you know if the answer will be positive or negative?
- Transparency 2: How can I show $+3+-3$ using red and black chips?

- Transparency 3: (below)

So $+3+-6$ might look like:



Therefore the answer is: -3

- Transparency 4: How can checkers help you add two integers? Michael just got a job at McDonalds. Each day he works he makes \$20 and spends \$5. He plans to buy a CD player for \$250. How many days will he have to work to have enough money to buy it? A) 15 days B) 16 days C) 17 days D) 20 days.

Lesson Outline:

- 1) Introduce the “Big Question” (transparency 1)
- 2) Introduce the concept of chips and their values.

Question 1: How do you think you would represent positive one?

Question 2: How would you represent the equation $3 + -3$? (transparency 2)

Question 3: See if you could show me $-4 + -1$ on your desk.

Question 4: See if you could show me $+6+-4$ on your desk.

Introduce the concept of zero pairs.

Question 5: See if you could represent $+3+-6$ on your desk.

- 3) Next task is to use color dots on paper to represent integer addition (transparency 3)

Question 6: How might we represent $-8+-7$ on paper?

Question 7: Represent a sum which result is -3.

- 4) Go over homework which uses number line to represent integer addition.

Question 8: How did you use a number line to represent $+6+-6$?

- 5) Go back to the big question.

Summarize what we learned using the multiple representations.

- 6) Introduce a real life situation using integer addition (transparency 4).

Elicit different responses and start a class discussion.

Solutions to Questions:

- 1) Possible answer: One black chip
- 2) Three black chips and three red chips.
- 3) Five red chips
- 4) Six black chips and four red chips.
- 5) Three black chips and six red chips.
- 6) Eight red dots plus seven red dots = -15
- 7) Possible answer: five black chips and eight red chips.