Algebra/Geometry Institute Summer 2002

Lesson Planning Guide

Faculty Name: Brenda Pleasants
School: East Elementary Greenwood, MS
Grade Level: 5th

1 Teaching objective(s)

Compare, order, and locate real numbers on a number line.
(adding integers on a number line)

2 Instructional Activities

Problem of the Day- show on overhead- "During the grand opening of a store, every 5^{th} person wins a prize. How many people will win a prize if 188 people enter the store? (37 people)

Today you will learn how to add integers by using a number line. Teacher will explain that a number line can be used to add integers and will stress that the starting point – or "origin" is always zero. Move left for negative numbers and move right for positive numbers.

Teacher will place a number line from $^{-}5$ through $^{+}5$ on overhead with this problem: "Suppose you are playing a game in which you can lose points(-) and gain points (+). On your first turn you lose 2 points. On your second turn you win 7 points. What is your score?"

Teacher models steps for solving $^{-}2 + {}^{+}7$ using number line on overhead.

Step 1 – start at 0 (origin) .Move left 2 units to show $^{-}2$

Step 2- starting at $^{-}2$ move right 7 units to show $^{+}7$

Step 3- the number of the point where you stop on the number line is the answer. --- $^{-}2 + {}^{+}7 = {}^{+}5$

Teacher will also model other examples- $^{-}5 + {}^{+}2 =$ (negative sum)
$^{-}3 + {}^{-}1 =$ (sum of two negative integers)

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After demonstrating, teacher asks,

1. "Will the sum of two negative integers always be negative? Explain"
(Yes, both integers make you move to the left on the number line.)

2. "When adding a negative and a positive integer, how can you tell if the

sum will be negative or positive?"

(The sign of the addend with the greater absolute value will be the sign of the sum.)

Students will construct a number line from $^{-}20$ through $^{+}20$ to be used to complete the following activity (1):

"USING A NUMBER LINE TO ADD INTERGERS"

A. Use your number line to add the following:

$^{+}7 + {}^{-}5 =$ $\quad {}^{-}8 + {}^{-}5 =$ $\quad {}^{+}8 + {}^{+}7 =$ $\quad {}^{-}15 + {}^{+}15 =$ $\quad {}^{+}12 + {}^{-}18 =$ $\quad {}^{-}9 + {}^{-}3 =$

$^{+}10 + {}^{-}15 =$ $\quad {}^{-}14 + {}^{-}5 =$ $\quad {}^{-}10 + {}^{+}17 =$ $\quad {}^{-}3 + {}^{+}16 =$

B. Use your number line to complete the following number sentences:

1. $^{+}5 + \_\_ = {}^{+}13$
2. $^{-}7 + \_\_ = {}^{-}17$
3. $^{-}16 + \_\_ = {}^{-}16$
4. $^{-}6 + \_\_ = {}^{-}15$
5. $\_\_ + 13 = {}^{+}19$
6. $\_\_ + {}^{-}7 = {}^{-}15$
7. $\_\_ + {}^{+}16 = {}^{+}16$
8. $\_\_ + {}^{-}5 = {}^{-}10$

After going over activity sheet with students, teacher may assign enrichment activity if students demonstrate full understanding.

MAGIC SQUARES

In a magic square, each row, column, and diagonal have the same sum. Work with a partner to complete the magic squares.

-4		
-18	-10	

Magic Sum = 30

		-13
	-10	
		-15

Magic Sum = 30

	-1	-2	
-4		-9	
			-11
-3			0

Magic Sum = 30

+16			+13
	+11		+8
+9		+6	
	+14	+15	

Magic Sum = 34

+5	+11			-1
	-2		+10	-9
+9	-10		+2	
+1		+8	-11	
		0		+12

Magic Sum = 0

3 Materials and Resources

- Overhead
- Markers

- Paper
- Pencils
- Activity sheets 1 and 2
- Houghton Mifflin Mathematics Teacher's Edition Vol. 1 (5^{th} level) 2001
- Mathematics Plus Teacher's Edition (Level 6) Harcourt Brace and Co. 1994

4 Assessment

Teacher observation, oral responses of students, answers on activity sheet.

5 Enrichment (Optional)

Activity sheet- "Magic Squares"