Algebra/Geometry Institute Summer 2003

Lesson Plan # 2

Faculty Name: *Algernon D. Cooper*
School: *W. A. Higgins Jr. High*
City: *Clarksdale, MS*
Grade Level*: 7th Compensatory Math*

1 Teaching objective(s)

Objectives--- *The students will use models including the number line to compare and order integers.*

At completion of this lesson, students will be able to model integers, and compare and order integers with ***at least*** *70% accuracy.*

2 Instructional Activities

1. *The teacher will start the lesson by instructing each student to obtain a newspaper from the front of the classroom. The teacher will ask students to define integers and wait for responses. The teacher will instruct students to locate several examples of integers from the newspaper. The teacher will ask the following and discuss the responses: "How would you recognize examples of negative integers and positive integers?" The teacher will explain to the students that the whole numbers and their opposites are called* ***integers****.*

2. *The students will make a table of integers found in the newspaper in which positive and negative numbers are used. Examples may include temperatures above or below a zero value, times before or after a certain event, etc.*

3. *The teacher will use Celsius thermometers to provide a concrete foundation for the number line.*

4. *The students will draw arrows on both ends of their number lines, The teacher will ask them what the arrows show. The teacher will explain that they show that the line keeps going in both directions. The students will complete a worksheet on ordering of the integers. The worksheet contains exercises like the one below. See attachment.*
   - *Fill in the appropriate comparison symbol by using <, >, or =:*
     a. -10 _____ -5 b. –5_____ 0 c. 0_____ 5 d. 5_____10
   - *Fill in a number that makes the statement true.*
     a. _____ < -10 b. _____ > 15 c. _____ = 23

5. *The teacher will demonstrate to students how to read a thermometer by discussing scale, or evenly spaced division, marked on the thermometer. The students should notice that there are a number of larger divisions, which are subdivided into smaller divisions. The teacher will ask students what the larger and smaller division lines stand for. (The larger divisions are multiples of 5 or 10, and the smaller divisions are multiples of 1.)*

6. *The students may be unsure about when to use a positive or negative sign. The teacher will explain to the students that negative numbers need a negative sign, and positive numbers do not need a plus sign because numbers without a positive or negative sign are positive. For example, +2 and 2 both mean "positive 2". The teacher will also explain that the number 0 is neither positive nor negative.*

7. *The student will sketch a thermometer with a scale ranging from –30º C to 30º Cº on graph paper. They will practice finding the location of integers by marking each of the following temperatures with a dot on their thermometer sketch: a) 15º C, b)-10º C, c)-5º C, d)28º C, e)-17º C, and f) 0º C*

8. *The teacher will ask the students if they think a thermometer will work when laid flat on a table or turned upside down. The students will create a horizontal number line by using a straightedge and ruled notebook paper. The teacher will emphasize that a number line, like a thermometer, should have evenly spaced divisions. On a standard thermometer, the temperature increases from bottom to top. The scale of the thermometer is thus a vertical number line. On a horizontal number line, the numbers increase from left to right. Negative numbers are to the left of zero, and positive numbers are to the right of zero.*

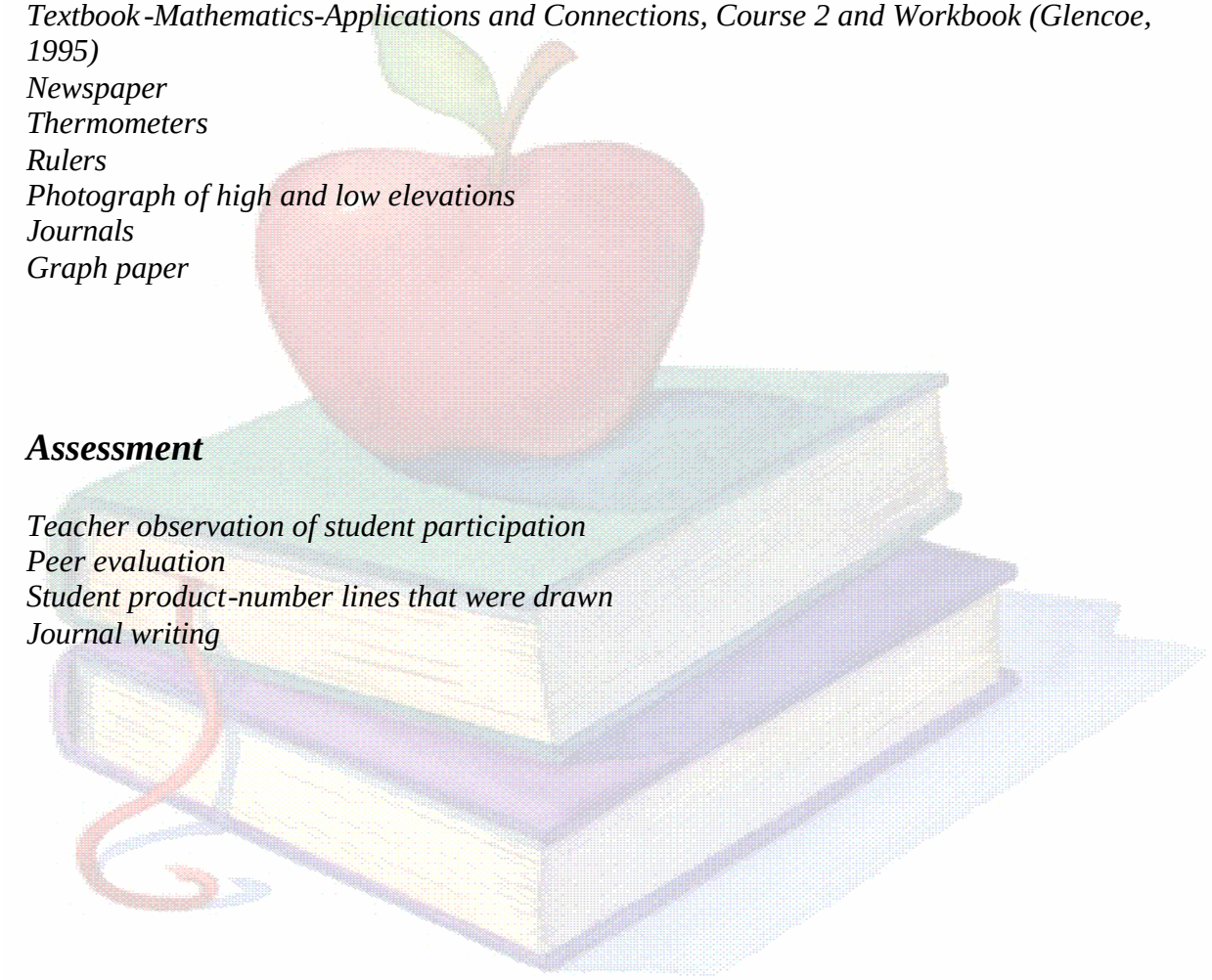
9. *The teacher will place students with a partner for a plotting activity. One student will take the role of reader/checker to read the problem and check the answer, and the other student can take the role of sketcher/reporter to draw the number line and report to the class following sets of numbers: multiples of 5 between -10 and 15, and even integers -20 and 20. The student will mark each number with a dot. .*

10. *The teacher will ask the students to think of pairs of opposite words. Examples may include up/down, go/stop, happy/sad, and good/bad. The teacher will ask the students to create a new number line on ruled paper and to mark dots for a pair of integers that are opposites, such as 4 and –4. The students will fold their number line at 0 so that one side of the number line falls directly on top of the other side. The students will write a description of what they observe from their folded number line and what this means. If the number line is scaled properly, the dots should lay on top of one another. This shows that the opposites are equal distances from zero.*

11. *The students will take out their journals, and describe the mathematics seen in the photograph on the overhead. (Photograph provided will show Death Valley (-282ft.) and Mount Everest (29,028 ft.).*

3 Materials and Resources

Overhead projector
Pencil
Notebook
Textbook-Mathematics-Applications and Connections, Course 2 and Workbook (Glencoe, 1995)
Newspaper
Thermometers
Rulers
Photograph of high and low elevations
Journals
Graph paper



4 Assessment

Teacher observation of student participation
Peer evaluation
Student product-number lines that were drawn
Journal writing

Name _____ Date _____

Worksheet for instructional activity # 4

Comparing and Ordering Integers

Complete with <, >, or =.

1. –9____-19
2. -13____-6
3. 0____-6
4. –15____-98
5. –32____-23
6. –362____-36
7. –1____1
8. 12____-12
9. –4____-6
10. –9____2
11. 8____-5
12. 7____-98
13. –22____-222
14. 10____18
15. –9____9

Order the integers from least to greatest.

16. 4,-6,9,-11,-19,25
17. –8,-4,18,32,-33.-17,-2
18. –82,66,44,-79,8,14,0
19. –53,-76,8,-7,-45,65,43,2
20. –13,-44,8,-1,5,-6,54
21. –53,-9,0,5,-2,-6,13,7