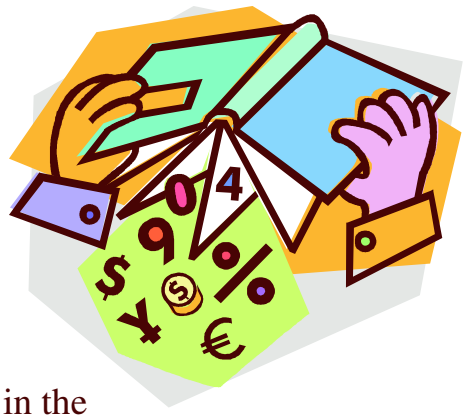
Algebra/Geometry Institute Summer 2007



Faculty Name: Bernard Berryhill
School: North Delta Alternative School
Sumner, MS
Grade Level: 7th

1. Teaching objective:

The student will apply the principles of graphing in the coordinate system.

2. Instructional Activities:

Activity 1

- Ask the class for location of a specific city (teacher's discretion) and briefly discuss map usage as a means to assist with the unknown location of a city. **Hint: Make city an unfamiliar one and use the map's city listing to find its location on the map.**
- Place the students into pairs and place a list of the key terms associated with the objective on the overhead allowing the students to brainstorm over their definitions.
- Reveal a list of the definitions for the terms, have the students attempt to match the term with the correct definition and lead students in the discussion of these key terms.
- Demonstrate how to draw a coordinate system, label the appropriate parts, and plot a set of ordered pairs.
- Place practice problems on the overhead and monitor the students as they practice selected examples.

Activity 2 (Following directions)

- Provide each student in the group with five 3 x 5 cards with directional terminology on it such as (3 units left and 2 units down, 1 unit right and 4 units up).
- Have one student read the information to the other student and have the listener graph the described location.
- Have student randomly place a point on the coordinate system and write a description of how to find its location.
- If you have additional cards, a matching game can be played with the cards.

Activity 3 (Walk with me)

- Identify a large open space. Classroom may work but desks will have to be placed against wall so center of class will be available.
- Provide students materials to construct a coordinate system on the floor.
- Provide each pair of students with a burlap sack and a number on a 3 x 5 card.
- Using the burlap sack, have the students place leg into the sack. **(Hint: Think of a sack race.)** One student represents the *x*-coordinate and the other student represents the *y*-coordinate.
- Together the pair will plot their point by walking the indicated number of units on the cards.
- Have students exchange cards with their partner and locate the new point and discuss whether they are in the same location.

3. Materials

- Transparencies
- Overhead Projector
- 3 x 5 cards
- Large open space
- Burlap sacks
- Markers
- Rope or tape
- Construction paper
- Graph paper

4. Resources

Price, Jack, Rath, James N., & Leschensky, William, et. al. *Merrill Pre-Algebra: A Transition to Algebra Teacher's Edition*. Glencoe/McGraw Hill, 1995, pgs 620 – 627.
Points were plotted on Geometer's Sketchpad.
Free Simple Grid Graph Paper from http://incompetech.com/graphpaper/lite

5. Assessment

Students will be assessed by interview (activities 1& 2), self assessment (activities 2 & 3) and performance tasks (activities 2 & 3).

Key terms & definitions

1. **ordered pair** – a pair of numbers in which the order is specified.
2. **origin** – The point of intersection of the x – axis and the y – axis in a coordinate system.
3. **quadrant** – one of four regions into which two perpendicular number lines separate the plane.
4. **x – axis** – The horizontal line of the two perpendicular number lines in a coordinate plane.
5. **y – axis** – The vertical line of the two perpendicular number lines in a coordinate plane.
6. **graph of a point** – A dot marking a point that represents a number on a number line or an ordered pair on a coordinate system.
7. **line** – A never-ending straight path.
8. **x – coordinate** – The first number of an ordered pair.
9. **y – coordinate** – The second number of an ordered pair.
10. **coordinate system** – Two perpendicular number lines form a coordinate system.

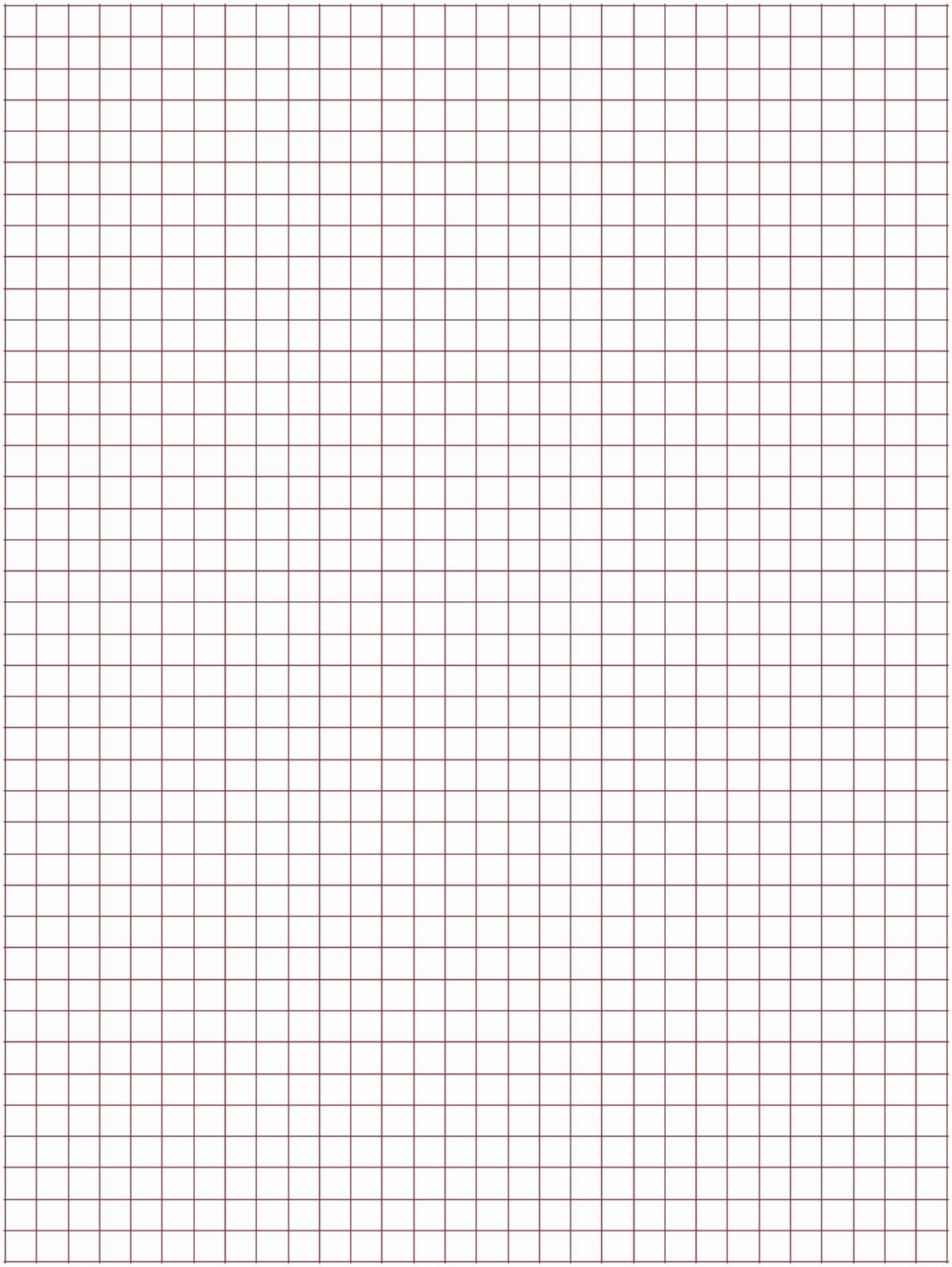
Practice Problems

Graph and label the following points on the coordinate system.

1. Z(8,4)
2. Y(0,7)
3. X(-4,2)
4. W(3,0)
5. V(6,-1)
6. U(1,5)
7. T(-2,-4)
8. S(-6,3)

Examples for 3 x 5 cards for activity 2

3 units left, 2 units down	4 units right, 5 units up	6 units right, 0 units down	10 units right, 9 units down
(-3, -2)	(4, 5)	(6, 0)	(10, -9)
2 units left, 3 units up	0 units left, 0 units down	7 units right, 10 units down	0 units right, 5 units down
(-2, 3)	(0, 0)	(7, -10)	(0, -5)
8 units left, 6 units up	1 unit left, 4 units up	5 units right, 6 units up	3 units left, 0 units up
(-8, 6)	(-1, 4)	(5, 6)	(-3, 0)



Examples for 3 x 5 cards for activity 3

3 units left	4 units right	6 units right	10 units right
2 units down	5 units up	0 units down	9 units down
2 units left	0 units left	7 units right	0 units right
3 units up	0 units down	10 units down	5 units down
8 units left	1 unit left	5 units right	3 units left
6 units up	4 units up	6 units up	0 units up