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

Points were plotted on Geometer’s Sketchpad.
Free Simple Grid Graph Paper from [http://incompetech.com/graphpaper/lite](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

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<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
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<td>3 units left,</td>
<td>4 units right,</td>
<td>6 units right,</td>
<td>10 units right,</td>
<td></td>
</tr>
<tr>
<td>2 units down</td>
<td>5 units up</td>
<td>0 units down</td>
<td>9 units down</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(-3, -2)</td>
<td>(4, 5)</td>
<td>(6, 0)</td>
<td>(10, -9)</td>
<td></td>
</tr>
<tr>
<td>2 units left,</td>
<td>0 units left,</td>
<td>7 units right,</td>
<td>0 units right,</td>
<td></td>
</tr>
<tr>
<td>3 units up</td>
<td>0 units down</td>
<td>10 units down</td>
<td>5 units down</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(-2, 3)</td>
<td>(0, 0)</td>
<td>(7, -10)</td>
<td>(0, -5)</td>
<td></td>
</tr>
<tr>
<td>8 units left,</td>
<td>1 unit left,</td>
<td>5 units right,</td>
<td>3 units left,</td>
<td></td>
</tr>
<tr>
<td>6 units up</td>
<td>4 units up</td>
<td>6 units up</td>
<td>0 units up</td>
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</tr>
<tr>
<td>(-8, 6)</td>
<td>(-1, 4)</td>
<td>(5, 6)</td>
<td>(-3, 0)</td>
<td></td>
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</tbody>
</table>
### Examples for 3 x 5 cards for activity 3

<table>
<thead>
<tr>
<th>3 units left</th>
<th>4 units right</th>
<th>6 units right</th>
<th>10 units right</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 units down</td>
<td>5 units up</td>
<td>0 units down</td>
<td>9 units down</td>
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<td>0 units left</td>
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<td>0 units right</td>
</tr>
<tr>
<td>3 units up</td>
<td>0 units down</td>
<td>10 units down</td>
<td>5 units down</td>
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<tr>
<td>8 units left</td>
<td>1 unit left</td>
<td>5 units right</td>
<td>3 units left</td>
</tr>
<tr>
<td>6 units up</td>
<td>4 units up</td>
<td>6 units up</td>
<td>0 units up</td>
</tr>
</tbody>
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