

You Sank My Battleship

Purpose

Students will learn to identify and graph ordered pairs in four quadrants.

Materials

For the teacher: overhead projector, transparency grid, transparency markers

For each student: graph paper, pencil

Activity

A. Introduction

1. Ask students to draw both the x and y axis on their graph paper as you draw it on the overhead projector. Tell them to label both the x -axis and the y -axis.
2. Show students how to label x and y values. Start with only Quadrant I where the x and y values are both positive. Tell students that we are now going to add the negative values to the graph.
3. Show students how to identify the negative values. Explain that for each positive value, there is a negative value on the *opposite* side of the origin, $(0, 0)$.
4. Explain that negative values appear to the left of the origin on the x -axis and below the origin on the y -axis.
5. Explain to the students that the plane is broken into four quadrants. Show the location of the quadrants by drawing the x -axis and y -axis and numbering each quadrant counter-clockwise starting in the upper-right quadrant.
6. Ask students for help in plotting these four points: $(2, 5)$, $(4, 7)$, $(-5, -2)$, $(0, 3)$.
7. Tell the students the number of the quadrant in which each point falls.
8. Say: "Do you notice anything special about the relationship between the location of these four points?" Discuss student responses. Stress that these four points lie on the same line.

B. Partner Activity

1. Separate the class into pairs. Ask each student to take out a sheet of graph paper and draw the x -axis and y -axis. Have students label both with x and y values from -10 to 10 .

(continued)

EXTENDING
THE



ACTIVITY

Use a local map to find landmarks. Explain to students that the x - y coordinate system is similar to the system used by mapmakers with the x coordinate usually represented by an alpha character.

MEETING
INDIVIDUAL



NEEDS

For students having difficulty, provide extra practice by distributing exercises consisting of sets of points that lie on the same line. Tell students in advance that these points should fall on the same line. Ask students to check their answers by connecting the points.

Standards Links
6.1.1, 6.1.3

Activity (continued)

2. Explain to students that they will be drawing “battleships” on their graph paper. In this case the battleships are represented on the graph paper by a line segment. Tell students to draw only vertical and horizontal line segments. Each student should draw two segments of length 4, two segments of length 3, and two segments of length 2. These battleships can be drawn in any of the four quadrants.
3. Have the partners take turns calling point coordinates. When the caller chooses a point, the partner should mark that point with an X. If the caller chooses a point that lies on one of the partner’s battleships, the partner should say, “Strike.” The caller should also mark an X on his graph paper to keep track of strikes. If the caller chooses a point that does not lie on one of the partner’s battleships, the partner should say, “Miss.” The caller should mark an O on his graph paper to keep track of misses. The player who is able to strike all the coordinates of all of the opponent’s battleships first is the winner.


C. Individual Activity


1. Ask students to take out another sheet of graph paper and label the x -axis and y -axis with values from -15 to 15 .
2. Write the following points, in order, on the chalkboard: $(-4, 9)$ $(14, 9)$ $(14, 5)$ $(7, 5)$ $(7, -8)$ $(3, -8)$ $(3, 5)$ $(-4, 5)$ $(-4, 9)$.
3. Ask students to plot the points from these coordinates and connect the dots in the same order as they are written on the chalkboard.
4. Allow time for students to complete the activity. Discuss the resulting object. (The students should be able to see the block letter “T” on their graph paper.)


Classroom Assessment


Basic Concepts and Processes

During the individual activity, discuss the following questions with your students to gauge their understanding of the indicator:

 What do the x -coordinate values of all points that fall within Quadrant III have in common?

 What do the y -coordinate values of all points that fall within Quadrant IV have in common?

 Where is the origin located?

 What are the origin’s coordinates?