

## **The Giant Grid Plot**

### **Activity Overview:**

Students will cooperate and apply their skills in teams to make shapes by themselves on a 20m x 20m grid by following mathematical instructions.

### **Cycle 1 Theme: Connection**

Students work together in teams place themselves on the Giant Grid as quickly and accurately as they can. Adding and subtracting integer values are connected with the experience of space and position. Students experience the connection that crossed number lines form a grid. Students experience the definition of coordinate positions as a combination of vertical and horizontal integer values. They connect their learning of integer addition and subtraction to physical positions.

### **Introductory Questions / Inquiry Prompts:**

What kinds of grids have you seen? What are for they used for?

### **Materials:**

- 20m x 20m net labelled at 1m intervals, from -10m to 10m, vertically and horizontally. (This net is the product of the Cycle 1 Group Project)
- Pins/tent pegs for securing grid to the ground.
- Caller Instruction Package
- Location cards
- Clipboards
- Graph paper
- Writing utensils
- Transformation cards

### **Logistics:**

- Access to playing field
- Grid should be pinned securely
- Students should be briefed, shown, and practice control of movement to avoid tripping or disrupting the grid.

### **Procedure:**

- 1) Students divide into two teams.
- 2) Every student receives a card with a grid coordinate
- 3) Students go to their grid coordinate.
- 4) Teams are given first instruction (form a rectangle)
- 5) Students call out their coordinates, one team at a time, one student at a time.
- 6) Teams are given second instruction (form a triangle)
- 7) Students call out their coordinates, one team at a time, one student at a time.
- 8) Teams are given third instruction (form a horizontal line)

- 9) Students call out their coordinates, one team at a time, one student at a time.
- 10) Teams are given fourth instruction (form a vertical line)
- 11) Students call out their coordinates, one team at a time, one student at a time.
- 12) Teams are given fifth instruction (form a diagonal line)
- 13) Students call out their coordinates, one team at a time, one student at a time.
- 14) Students are given sixth instruction (return to a vertical line, with Team A's line going through the point (0, -2), and Team B's line going through the point (0,2)
- 15) Team A is instructed to move the line three points in the negative direction
- 16) Team B is instructed to move the line three points in the positive direction
  
- 17) Team A is given a card with the coordinates of a rectangle in the fourth quadrant.
- 18) Team B is given a card with the coordinates of a rectangle in the first quadrant.
- 19) Both teams are instructed to form the given shape.
  
- 20) Teams are given the remaining instructions to
  - a. move vertically up 3, down 4,
  - b. move horizontally left 2, right 2,
  - c. Record their positions, and flip their shape vertically, horizontally, and diagonally, then record their positions with each move.

### **Creative Challenge:**

Teams are invited to design a familiar shape, such as a bird, or a flower, or a simple character, place themselves on the grid to form that shape, and record the coordinates of the shape. (Team A should stay left of the Y-axis, Team B should stay right of the Y-axis). They can choose to move the shape and record the coordinates of the new position.

### **Enrichment / Math Extension:**

- 1) Form a mathematically defined line, such as  $x=2$ . Record the coordinates of that pattern.
- 2) Given an equation such as  $y=x+2$ , form the line of that equation.

### **Care of the environment**

Re-pack materials, check for pegs, paper, and return all equipment and materials to classroom.

### **Awareness of Process**

Discuss what worked well, what was challenging, difficult, or didn't work well.  
 Discuss how the Giant Grid Plot made use of what they had learned in Math class.  
 Discuss how their experience could be applied in their community and in the world in general.

### **Resources: Following pages**

Location cards: Team A

-10, 0

-9, 1

-8, 2

-7, 3

-6, 2

-5, 2

-4, 2

-3, -3

-2, -3

-1, -3

-4, -3

-2, -3

**Location Cards Team B**

10, 0

9, 1

8, 2

7, 3

6, 2

5, 2

4, 2

3, -3

2, -3

1, -3

4, -3

2, -3

**Shape Cards**

(Used in Procedure step 17:

Team A is given a card with the coordinates of a rectangle in the fourth quadrant.  
Both teams are instructed to form the given shape.)

**Team A**
$$(-7, 6) \quad (-3, 6)$$
$$(-7, -3) \quad (-3, 3)$$

**Shape Cards**

(Used in Procedure Step 18:

Team B is given a card with the coordinates of a rectangle in the first quadrant.  
Both teams are instructed to form the given shape.)

**Team B** $(3, 6) \quad (7, 6)$  $(3, 3) \quad (7, 3)$ 

**Transfor  
mation  
Cards**