## Fly on the Ceiling

Summary
Students will play a variety of games to help them understand coordinates.
Group Size
Pairs
Materials

- The Fly on the Ceiling
, by Julie Glass
- Tic-Tac-Toe gameboard (pdf) (one per partner)
- Swat the Flies gameboard laminated (pdf) (one for each student Vis- $\tilde{A}$-Vis® markers (red, blue, green)
Additional Resources


## Books

- The Fly on the Ceiling
, by Julie Glass; ISBN 0679886079
- Grid and Bear It
, by Will C. Howell (Fearon Teacher Aids); ISBN 0-8224-3510-1
- Grid and Graph It
, by Will C. Howell (Fearon Teacher Aids); ISBN 0-8224-3511-X


## Background for Teachers

Identifying points on a coordinate grid is important in understanding how the coordinate system works and in constructing simple line graphs to display data or to plot points. These skills can be used to examine algebraic functions and relationships. The skills developed in this lesson can be applied to interpreting latitude and longitude in map reading in social studies and to plotting points to represent data collected during science experiments. Students can use the coordinate plane when exploring the ideas related to symmetry, reflection, and spatial sense.

## Intended Learning Outcomes

1. Demonstrate a positive learning attitude toward mathematics.
2. Make mathematical connections.

Instructional Procedures
Invitation to Learn
Read The Fly on the Ceiling, by Julie Glass
Instructional Procedures
Play the game Fly Tic-Tac-Toe.
Players: two
How to play:
Points are marked at intersections of a grid. The size of the grid is $4 \times 4$ with corners at $(0,0),(0,4),(4,4)$, and $(4,0)$.
One player plays $X$, the other plays $O$

Players must locate a point by using an ordered pair of numbers to describe it, (e.g., (2,3)). The first number tells how far to go across, the second number tells how far to go up on this grid. The points must be named by their ordered pair and marked on the Fly Tic-TacToe recording sheet.
If the player states the wrong coordinates, the turn ends.
To win, a player must get four coordinate points in an uninterrupted straight line-horizontally, vertically, or diagonally.
Play Swat the Flies.
Players: two
This game is similar to Battleship. The goal of this game is to be the first person to "swat" the other person's flies by calling out the coordinates that locate the "fly families." Each player has five fly families: one family of two, two families of three, and two families of four. To win, a player must locate and "swat" all of the families.

Provide each player with a laminated Swat the Flies gameboard, which contains two $10 x$ 10 grids. Have them draw their fly families on the left grid using a water based Vis-Ã -Vis® marker. They can be drawn vertically or horizontally. The right grid is used to mark the locations the player calls out to his/her opponent. This recording helps to prevent calling out the same location twice during a game.
Players can roll a die or flip a coin to determine who goes first.
On a turn, a player calls out the location of a point, (e.g. (3,2)). The student marks the point on his/her right grid, as the opponent calls out "hit" if the point is located at one of his/her fly families. The opponent will also mark a "hit" on his/her grid so s/he will know when all members of the fly family have been hit. When a player has hit all flies in a fly family, the opponent calls out "swatted" to signal all flies in a family have been hit.
Play proceeds until one of the players has "swatted" all his/her opponent's fly families. The first player to do so wins the game.

## Extensions

Use a board that includes all four quadrants, so that some of the points will include negative numbers.
Plot coordinate points, then connect the points to make a mystery picture. Grid and Bear It is an excellent choice for this type of practice.
Have students create a picture on a grid, going through coordinate points. List the points that need to be plotted to complete the mystery picture on a separate sheet of paper. Have a partner try to recreate the mystery picture following the coordinates given.
Family Connections
Have students play Fly Tic-Tac-Toe with a family member. Have students play Swat the Flies with a family member at home. Have students create a picture on a grid and have a family member try to recreate the picture following the coordinates given.

## Assessment Plan

While students are playing each game, the teacher may walk around and observe the students' understanding of coordinates. Are they identifying the coordinate using the correct ordered pairs? The coordinate pictures created by each student can also help to determine understanding.

## Authors

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