

Math 5 - Act. 17: Mountain Rescue Mission

Summary

This game will help reinforce students' understanding of the coordinate system.

Group Size

Pairs

Materials

Grid paper (10x10) one for each team, numbered using the coordinate system

Colored pencils or markers -- a different color for each member

2 dice

Additional Resources

A Fly On the Wall by Julie Glass

GPS unit, pilot, search and rescue team member

Background for Teachers

Coordinate geometry uses numeric methods to represent a location. The most commonly used coordinate system today is that of longitude and latitude with its angles represented in degrees, minutes, and seconds. The movement from one point to an adjacent point, either horizontally or vertically, is considered one unit. As an example, to move three sections to the right and four sections up in a grid would be considered seven units ($3 + 4$).

Intended Learning Outcomes

2. Become mathematical problem solvers.
3. Reason mathematically.

Instructional Procedures

Invitation to Learn

Ask the students to close their eyes and imagine that they are flying an airplane, but they are in a thick cloud. How would they get safely to their destination? How could an air traffic controller give them directions to move and avoid mountains and other aircraft? If they were in the middle of the ocean, how would they describe their location so that someone could find their boat if necessary? Show a map and globe and the lines of latitude and longitude. These are used in the same method that we use a quadrant grid.

Instructional Procedures

Divide the class into groups of two.

In this game, the rescue teams are at the base of the hill (ordered pair to be determined by roll of dice) and the injured victim is at the top of the hill (ordered pair (10,10)). The objective is to get to him as quickly as possible.

Player #1 rolls two dice and uses the numbers rolled as the ordered pair for his base camp.

Player #2 starts in the same manner.

On each successive roll, the players use 1 die. Once the number is rolled, the player must decide how to move the rescue team up the hill. For example, if a 5 is rolled, he must decide if it should be used as a vertical move of 5 units straight up, or to combine horizontal and vertical movement such as up 3 and over 2. At no time can the rescue team go off the grid.

Once he decides how he is going to use his roll, he must write the new ordered pair of his location and the new point is recorded on the coordinate plane.

The first player to land exactly on (10,10) is the winner.

Alternate: The player who reaches the victim with the shortest pathway is the winner.

Curriculum Integration

Social Studies--Mapping skills, longitude and latitude.

Extensions

Possible Extensions/Adaptations

Battleship game

Home/Family Connections

Tic-Tac-Toe

The game is played in the traditional way except that the grid is larger and the X's and O's are placed on the intersection rather than in the spaces.

The goal is to get 4 X's or 4 O's in a row.

The spot where the X's or O's are placed must be given using their ordered pair.

An adult could act as the game host and will mark both the X's and O's on the grid, using the coordinates (ordered pairs) given. The other family members will compete against each other, one representing the X's and the other O's.

Players take turns naming ordered pairs. The points MUST be named with ordered pairs.

The goal is to get 4 X's or 4 O's in a row.

Adaptation

Try playing with more than two players at a time. Instead of using X's and O's, each player could use their own color to mark points.

Assessment Plan

Anecdotal notations and student self-evaluations.

Authors

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