

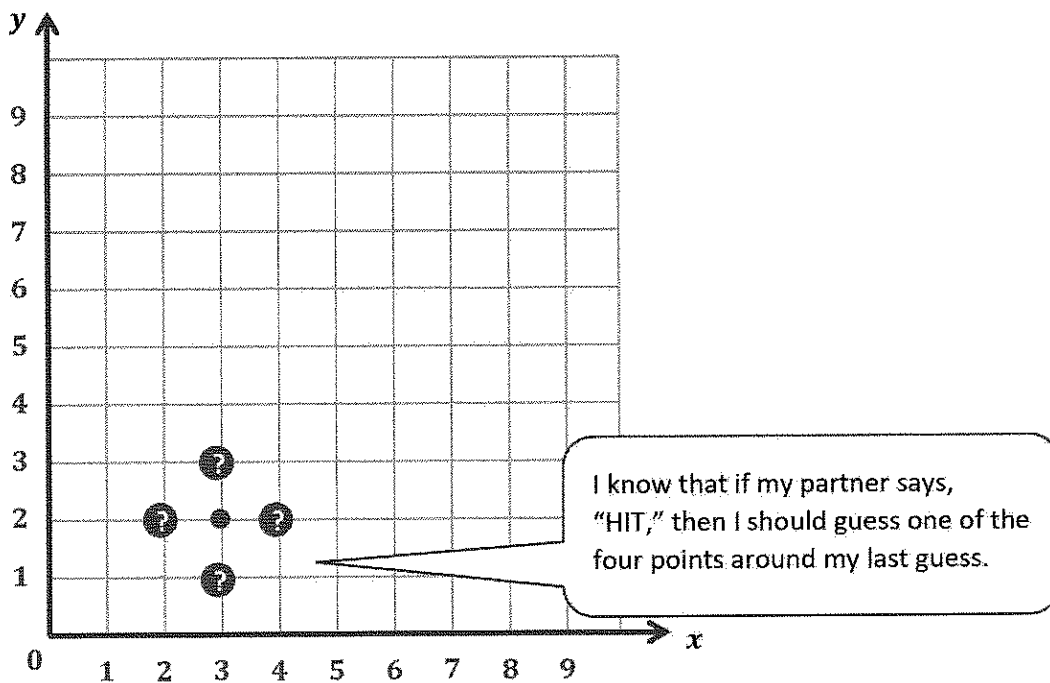
G5-M6-Lesson 4

Lesson Notes

The rules for playing *Battleship*, a popular game, are at the end of this Homework Helper.

1. While playing *Battleship*, your friend says, "Hit!" when you guess point $(3, 2)$. How do you decide which points to guess next?

If I get a hit at point $(3, 2)$, then I know I should try to guess one of the four points around $(3, 2)$ because the ship has to lie either vertically or horizontally according to the rules. I would guess one of these points: $(2, 2)$, $(3, 1)$, $(4, 2)$, or $(3, 3)$.



2. What changes to the game could make it more challenging?

The game is easiest when I count by ones on the coordinate grid's axes. If I changed the axes to count by another number like 7's or 9's on each grid line, the game would be more challenging. It would also be more challenging if I skip-count on the axes by fractions such as $\frac{1}{2}$ or $2\frac{1}{2}$.

Battleship Rules

Goal: To sink all of your opponent's ships by correctly guessing their coordinates.

Materials

- 1 My Ships grid sheet (per person/per game)
- 1 Enemy Ships grid sheet (per person/per game)
- Red crayon/marker for hits
- Black crayon/marker for misses
- Folder to place between players

Ships

- Each player must mark 5 ships on the grid.
 - Aircraft Carrier—Plot 5 points
 - Battleship—Plot 4 points
 - Cruiser—Plot 3 points
 - Submarine—Plot 3 points
 - Patrol Boat—Plot 2 points

Setup

- With your opponent, choose a unit length and fractional unit for the coordinate plane.
- Label chosen units on both grid sheets.
- Secretly select locations for each of the 5 ships on your My Ships grid.
 - All ships must be placed horizontally or vertically on the coordinate plane.
 - Ships can touch each other, but they may not occupy the same coordinate.

Play

- Players take turns firing one shot to attack enemy ships.
- On your turn, call out the coordinates of your attacking shot. Record the coordinates of each attack shot.
- Your opponent checks his My Ships grid. If that coordinate is unoccupied, your opponent says, "Miss." If you named a coordinate occupied by a ship, your opponent says, "Hit."
- Mark each attempted shot on your Enemy Ships grid. Mark a black ✕ on the coordinate if your opponent says, "Miss." Mark a red ✓ on the coordinate if your opponent says, "Hit."
- On your opponent's turn, if he hits one of your ships, mark a red ✓ on that coordinate of your My Ships grid. When one of your ships has every coordinate marked with a ✓, say, "You've sunk my [name of ship]."

Victory

- The first player to sink all (or the most) opposing ships wins.