

What's Your Coordinate?

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Discipline / Subject: Math

Topic: reading and interpreting coordinate graphs

Grade Level: third, others with modifications

Resources / References / Materials Teacher Needs:

Alaska Map with Latitude and Longitude: <http://www.mapsofworld.com/usa/states/alaska/lat-long.html#>

Coordinate Graphing Song: <https://www.youtube.com/watch?v=VdahdGaFiFs>

Alien Coordinate Game: http://www.mathplayground.com/locate_aliens.html

Lesson Summary:

Students will use the coordinates to locate points on a coordinate graph.

Standards Addressed: (Local, State, or National)

CCSS.MATH.CONTENT.5.G.A.1

Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x -axis and x -coordinate, y -axis and y -coordinate).

CCSS.MATH.CONTENT.5.G.A.2

Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Learning Objectives:

TLW locate points on a coordinate graph.

Assessment:

Students can be assessed on the coordinate graph drawing.

Procedural Activities

1. Share with the students the map of Alaska with the latitude and longitude lines. Ask them to locate the following communities on the map and determine their latitude and longitude location:

Anchorage: the home of the Iditarod Ceremonial Start

Kotzebue: the home of Iditarod champion John Baker

Fairbanks: the home of famed Iditarod mushers Aliy Zirkle and Allen Moore as well as many others
2. Have the students talk through the process that they used to determine the latitude and longitude points of the communities.
3. Let them know that in math, we use a similar strategy to locate points on a coordinate graph.
4. Play the Alien game either via a projection device or on the students' individual devices. **-OR-**
5. Put the students in pairs to play the included Trail Spill Game. This game is an Iditarod themed version of Battleship. You will need to spend some time with the students to ensure they set their boards up correctly. They **MUST** cover the number of points shown in the key. It is helpful if they use a small tape ball to hold each item down.
6. After they have had a chance to practice with game, they can complete the individual coordinate graph picture as a wrap up.

Materials Students Need:

Coordinate Grid Paper (3 per student): <http://www.mathworksheets4kids.com/grid/20by20-all-scale1.pdf>

Set of Iditarod Object Pictures (included)

Iditarod Object Picture Key (included)

Coordinate Grid Points (included)

Technology Utilized to Enhance Learning:

See Teacher Resources

Other Information:

Modifications for Special Learners/ Enrichment Opportunities:

Instead of having the students cut out and place the items, you could create two different versions of the board for the students to play on.

The coordinate graph picture could be created as a class, team, or individual as needed.

To add a writing component, students could do a journal entry about the process they went through to locate items on the coordinate graph. As an alternative, they could write a creative story about how they lost their things on the trail and how they were able to find them in the snow!

If more practice is needed, here's another version of a husky/wolf:

http://mathcrush.com/graph/ws_graph_wolves_a.pdf

Additional Information

Trail Spill Game

Oh No! Spill on the Trail! Two mushers have spilled some of the contents of their sled all over the trail! Can you be the first to find all of your missing belongings and rejoin the race?

Prepare for Cleanup:

- Cut out and secretly place your partners five missing items on your grid.
- You may put the items vertically or horizontally, but not diagonally.
- Do not place any of the items in a way that overlaps another item or goes off the edge.
- You may not change the location of any item once the game has begun.

How to Play:

- Decide who will go first. You and your opponent will alternate turns, calling out one location per turn trying to find your missing objects.
- On your turn, pick a target location and call out a location by coordinate grid pairs. Your opponent must tell you if your shot is a hit or a miss.
- Keep track of your results on the blank grid paper.
- When your opponent locates all the squares of an item, hand the item to them. They have found one of their objects!

Winning the Game:

The first person to collect all five of their items is the winner!

Trail Spill Object Pictures



Trail Spill Key

Item:	Name:	Number of "Hits" Required to Collect
	Pink Foot Cream	4 hits
	Dog Food Cooker	6 hits
	Vet Book	1 hit
	Harnesses	6 hits
	Snow Hook	4 hits

What's Your Coordinate?

Plot the points on the graph. Connect the points with line segments as you plot them. Keep connecting the points until you see LINE ENDS. Then start the next group. Color it in when finished.

1. (0, 3)
 2. (-2, 3)
 3. (-3, 4)
 4. (-3, 3)
 5. (-4, 2)
 6. (-7, 1)
 7. (-8, -4)
 8. (-7, -5)
 9. (-4, -5)
 10. (0, -4)
 11. (4, -5)
 12. (5, -5)
 13. (8, -4)
 14. (8, -2)
 15. (7, 1)
 16. (4, 2)
 17. (3, 3)
 18. (3, 4)
 19. (2, 5)
 20. (0, 5)
- Stop Line

1. (5, 5)
 2. (7, 5)
 3. (8, 6)
 4. (8, 8)
 5. (7, 8)
 6. (5, 7)
 7. (5, 5)
- Stop Line

1. (3, 7)
 2. (3, 9)
 3. (2, 10)
 4. (1, 9)
 5. (1, 7)
 6. (3, 7)
- Stop Line

1. (-1, 8)
 2. (-1, 9)
 3. (-2, 10)
 4. (-3, 9)
 5. (-2, 7)
 6. (-1, 8)
- Stop Line

1. (-5, 5)
 2. (-5, 8)
 3. (-6, 9)
 4. (-7, 8)
 5. (-7, 6)
 6. (-6, 5)
 7. (-5, 5)
- Stop Line