

WAMC Lab Template

Math Concept(s): Battleship with Coordinate Plane

Source / Text: Holt McDougal and Miss Anne Bee on TPT

Developed by: Amanda Aki

E-Mail: aaki@cloverpark.k12.wa.us

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Attach the following documents:

- Lab Instructions
- Student Handout(s)
 - Pre-Assessment
 - Post-Assessment
- Rubric and/or Assessment Tool

Short Description (Be sure to include where in your instruction this lab takes place):

- In this lab students will be playing battleship with the coordinate grid. This lab can be completed within a standard classroom.

IB Components

SOI: Patterns from models that can be used to create form.

ATL: Organizations and Communication

LPT: Open Minded

Inquiry Question: How do I graph on the coordinate plane? Why does direction matter?

Lab Plan

Lab Title: Battleship on Coordinate Plane

Prerequisite skills: Multiplying, writing the rule for a table, and graphing in the first quadrant.

Lab objective:

Students will be able to locate and name points in the coordinate plane.

Standards: (Note SPECIFIC relationship to Science, Technology, and/or Engineering)

[Mathematics K–12 Learning Standards:](#)

- 6.NS.C.6.c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- 6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

[Standards for Mathematical Practice:](#)

- 2: Reason Abstractly and quantitatively

[K-12 Learning Standards-ELA](#) (Reading, Writing, Speaking & Listening):

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- 6.RST.7- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)

K-12 Science Standards

- N/A

Technology

- N/A

Engineering

- MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

Leadership/21st Century Skills:

<p><u>21st Century Interdisciplinary themes</u> (Check those that apply to the above activity.)</p> <input type="checkbox"/> Global Awareness <input checked="" type="checkbox"/> Financial/Economic/Business/Entrepreneurial Literacy <input type="checkbox"/> Civic Literacy <input type="checkbox"/> Health/Safety Literacy <input type="checkbox"/> Environmental Literacy			
<p><u>21st Century Skills</u> (Check those that students will demonstrate in the above activity.)</p>			
<p>LEARNING AND INNOVATION</p> <p><u>Creativity and Innovation</u></p> <input type="checkbox"/> Think Creatively <input checked="" type="checkbox"/> Work Creatively with Others <input type="checkbox"/> Implement Innovations <p><u>Critical Thinking and Problem Solving</u></p> <input checked="" type="checkbox"/> Reason Effectively <input type="checkbox"/> Use Systems Thinking <input type="checkbox"/> Make Judgments and Decisions <input checked="" type="checkbox"/> Solve Problems <p><u>Communication and Collaboration</u></p> <input checked="" type="checkbox"/> Communicate Clearly <input checked="" type="checkbox"/> Collaborate with Others	<p>INFORMATION, MEDIA & TECHNOLOGY SKILLS</p> <p><u>Information Literacy</u></p> <input type="checkbox"/> Access and Evaluate Information <input type="checkbox"/> Use and manage Information <p><u>Media Literacy</u></p> <input type="checkbox"/> Analyze Media <input type="checkbox"/> Create Media Products <p><u>Information, Communications and Technology (ICT Literacy)</u></p> <input type="checkbox"/> Apply Technology Effectively	<p>LIFE & CAREER SKILLS</p> <p><u>Flexibility and Adaptability</u></p> <input checked="" type="checkbox"/> Adapt to Change <input checked="" type="checkbox"/> Be Flexible <p><u>Initiative and Self-Direction</u></p> <input type="checkbox"/> Manage Goals and Time <input type="checkbox"/> Work Independently <input type="checkbox"/> Be Self-Directed <p><u>Learners</u></p> <p><u>Social and Cross-Cultural</u></p> <input type="checkbox"/> Interact Effectively with Others <input type="checkbox"/> Work Effectively in Diverse Teams	<p>Productivity and Accountability</p> <input type="checkbox"/> Manage Projects <input type="checkbox"/> Produce Results <p>Leadership and Responsibility</p> <input type="checkbox"/> Guide and Lead Others <input type="checkbox"/> Be Responsible to Others

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Battleship paper

Set-Up Required:

- Print off battleship paper.

Lab Organization Strategies:

Expectations:

- Be respectful, be responsible, be engaged, and be safe.

Lab Instructions:

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- 1) After 12.1 lesson have student partner up and play battleship. (see below for student handout.
- 2) Rules of battleship:
 - a. You and your opponent sit facing each other, with the lids (or whatever your using to cover up) your game paper so neither of you can see each other's ocean grid.
 - b. Secretly place your fleet of 5 ships on your ocean grid. To place each ship use the number of dots each ship has and place it in the corner of the square grids, for example the destroyer is two dots so you will need two dots to place that ship down. Your opponent does the same.
 - c. Rules for placing ships:
 - i. Place each ship in any horizontal or vertical position, but not diagonally.
 - ii. Do not place a ship so that any part of it overlaps with another ship.
 - iii. Do not change the position of any ship once the game has begun.
 - d. How to Play:
 - i. Decide who will go first. You and your opponent will alternate turns, calling out one shot per turn to try and hit each other's ships.
 - e. Call your shot:
 - i. On your turn, pick a target ordered pair on your opponent's coordinate plane and call out its location by ordered pairs. Each target square has the same coordinates on your opponent coordinate plane. To determine each coordinate, start off at the origin (0,0).
 - ii. It's a HIT! If you call out a shot location that is occupied by a ship on your opponent's ocean grid, your shot is a hit! Your opponent tells you which ship you have hit. Be sure to record your hits and misses.
 - f. Winning the Game:
 - i. Be the first player to sink your opponent's entire fleet of 5 ships, you win the game!

Post Lab Follow-Up/Conclusions:

By the end of this lesson students should be able to name points in the coordinate plane, know what quadrant they are located on, know where to start graphing, how (x,y) moves.

Formative:

<https://create.kahoot.it/share/12-1-graphing-on-the-coordinate-plane/8b65980d-89bd-42fe-b332-387defd12336>

During Lab Students:

Be playing battleship. The teacher is listening proper use of saying and using vocabulary/ordered pairs.

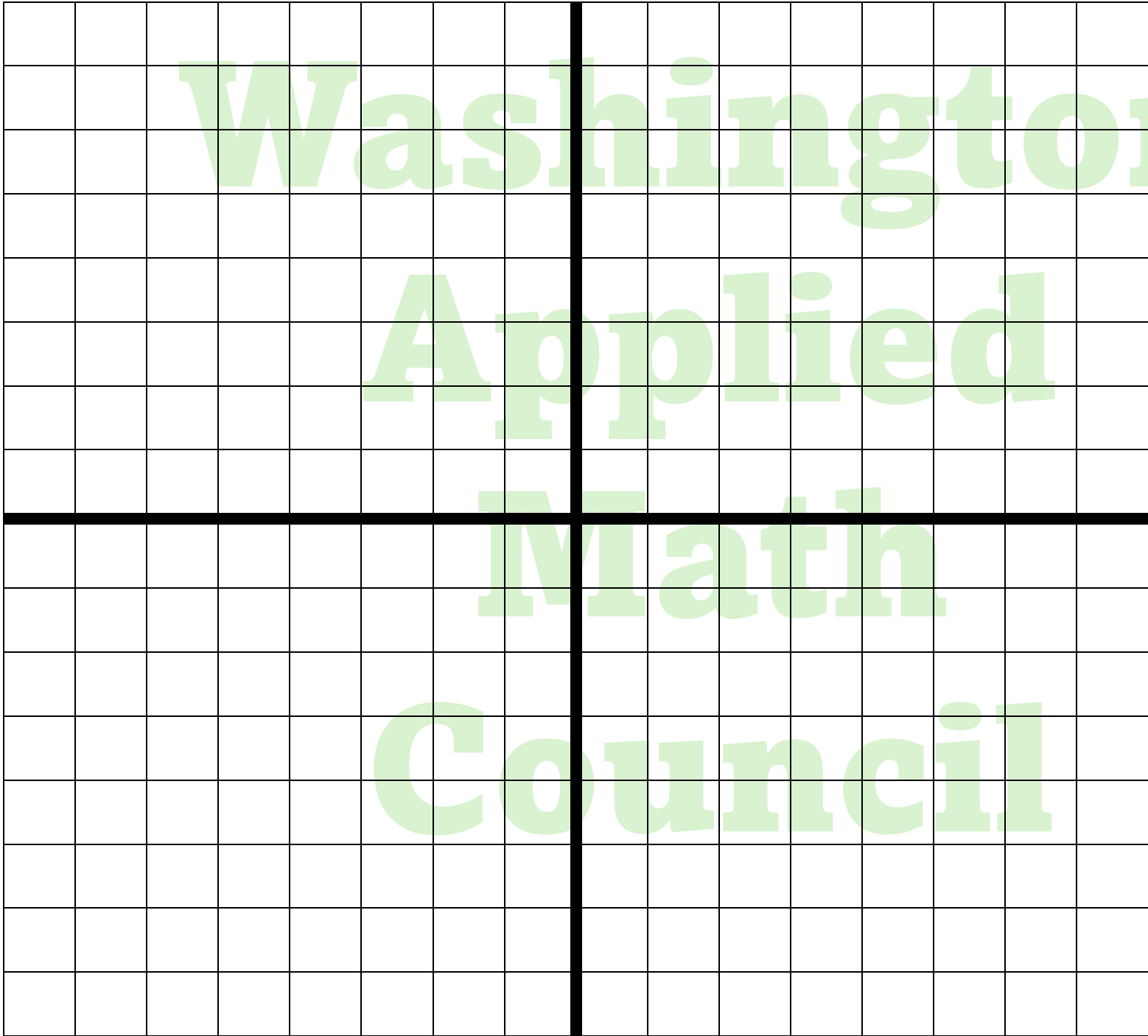
Summative Assessment:

Completed at the end of the unit and is in my summative word document.

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Use this board to track your guesses about your opponent's ships.

If they tell you it's a hit, mark the point with a dot. If they tell you it's a miss, mark the point with an x.

When you hit all points in a ship, your opponent will tell you what ship you sank. Mark it off on the list. First to sink all five ships wins!



Aircraft Carrier



Battleship



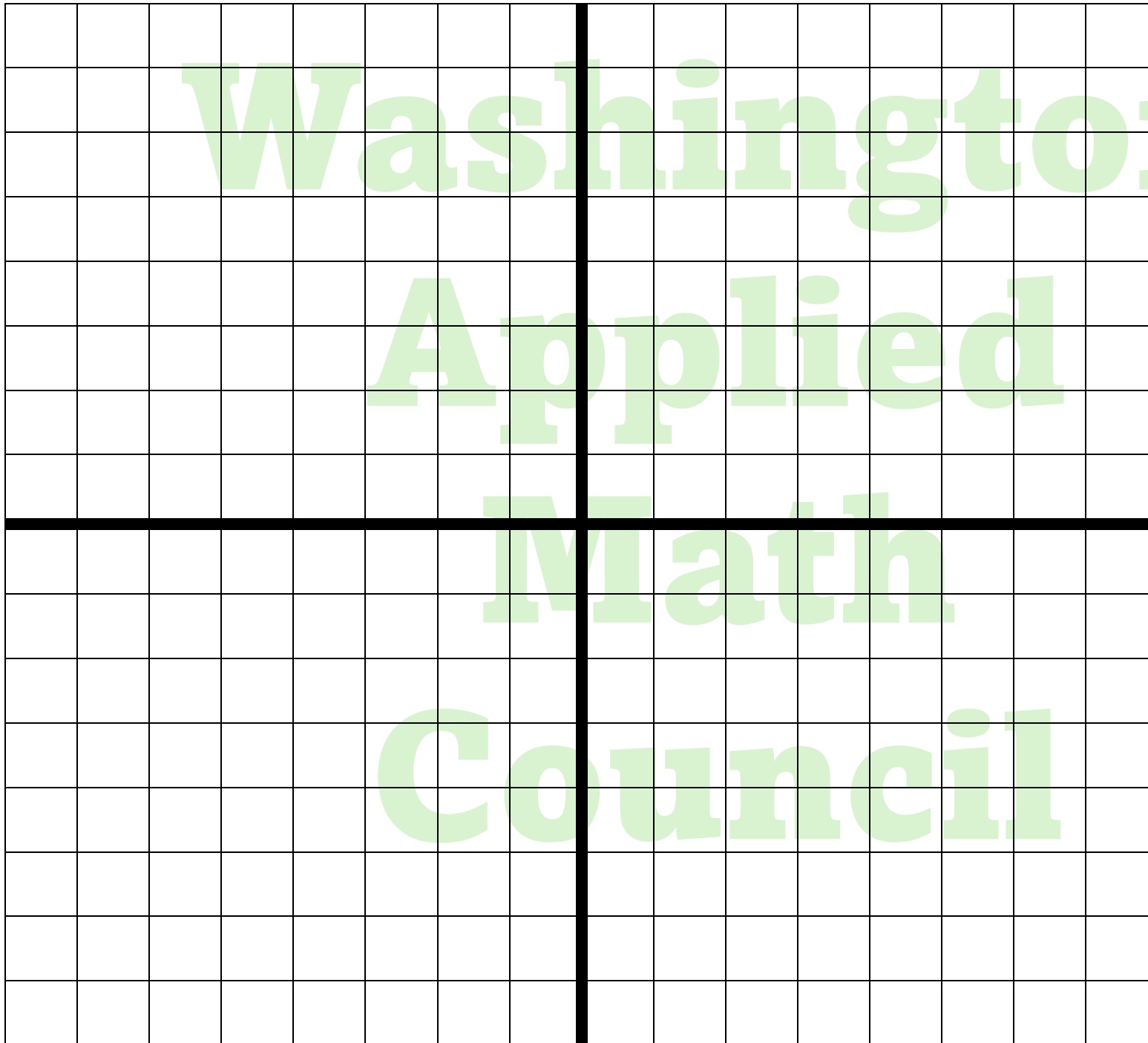
Submarine



Cruiser



Destroyer



Place one of each ship on your own board by circling points on the grid.

When your opponent guesses a point, mark it off on the grid and tell them if it's a hit or a miss.

If your opponent hits all points in a ship, tell what ship they sank. First to sink all five ships wins!



Aircraft Carrier



Battleship



Submarine



Cruiser



Destroyer

