Island Conquer!

Area & Perimeter
Math Partner Game

Laura Candler

Island Conquer
Area & Perimeter Quest

Created by Laura Candler

Island Conquer is a pirate-themed partner math game that involves plotting rectangular polygons on a coordinate grid and then finding the area or perimeter of those shapes. The game includes two sets of directions; one for finding the area of the island, and the other for finding the perimeter. You may want to print the two sets of directions on different colors of paper to avoid confusion.

You'll need a Quadrilateral Bay Treasure Map and a set of Coordinate Cards for every two students. Players will also need a dry erase board or blank paper and a pencil to work out the problems.

The object of the game is for the players to find all the islands in Quadrilateral Bay and conquer them by correctly calculating their area or perimeter. At the end of the game, both pirates count their "treasure" by calculating the total area or perimeter of all the islands they have captured. The pirate with the most treasure is the winner and is declared Pirate Captain for that round. Before placing the game in a center, introduce it to your class and ask two volunteers to model the directions as you read them aloud.

The Quadrilateral Bay Treasure Map is a blank grid with rows that are 1 cm high and columns that are 1 cm wide. These dimensions make it easy for students to check the perimeters of the islands by measuring them with a ruler. The directions don't include measuring the islands with a ruler, but you can add this requirement if you wish.

Common Core Alignment
Island Conquer is aligned with the 3rd and 5th grade math Common Core standards, but those standards are not included on the student printables. For more information about the specific standards addressed by this activity, refer to page 7 in this packet.
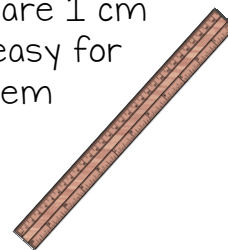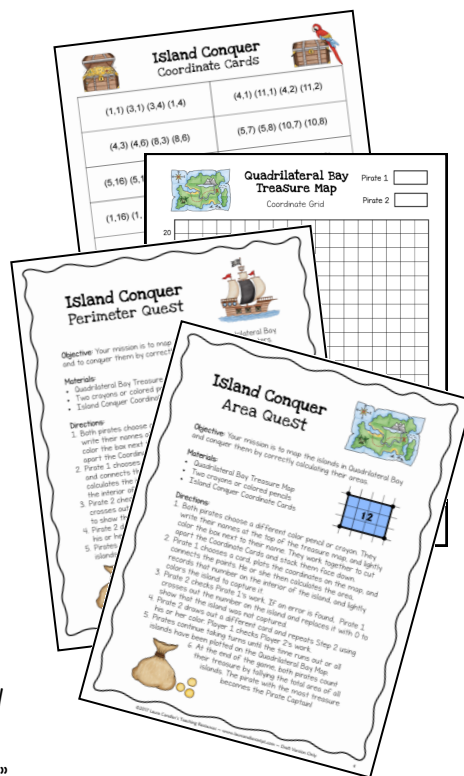
Island Conquer
Perimeter Quest

Objective: Your mission is to map the islands in Quadrilateral Bay and to conquer them by correctly calculating their perimeters.

Materials:
- Quadrilateral Bay Treasure Map
- Two different color crayons or colored pencils
- Island Conquer Coordinate Cards
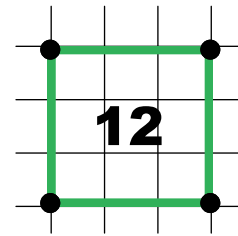
Directions:
1. Both pirates choose a different color pencil or crayon. They write their names at the top of the treasure map, and lightly color the box next to their name. They work together to cut apart the Coordinate Cards and stack them face down.
2. Pirate 1 chooses a card, plots the coordinates on the map, and connects the points with a colored line. He or she then calculates the island's perimeter and records that number on the interior of the island.
3. Pirate 2 checks Pirate 1's work. If an error is found, Pirate 1 crosses out the number on the island and replaces it with 0 to show that the island was not captured.
4. Pirate 2 draws out a different card and repeats Step 2 using his or her color. Player 1 checks Player 2's work.
5. Pirates continue taking turns until the time runs out or all islands have been plotted on the Quadrilateral Bay Map.
6. At the end of the game, both pirates count their treasure by tallying the total perimeter of all islands. The pirate with the most treasure becomes the Pirate Captain!

Island Conquer
Area Quest

Objective: Your mission is to map the islands in Quadrilateral Bay and conquer them by correctly calculating their areas.
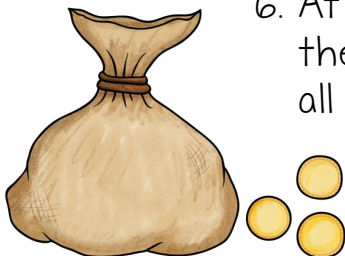
Materials:
- Quadrilateral Bay Treasure Map
- Two different color crayons or colored pencils
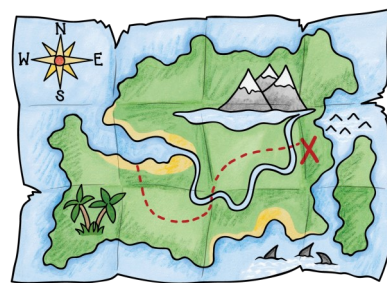- Island Conquer Coordinate Cards

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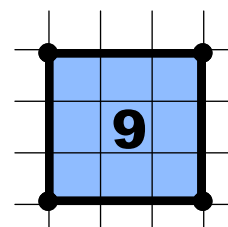
Directions:
1. Both pirates choose a different color pencil or crayon. They write their names at the top of the treasure map, and lightly color the box next to their name. They work together to cut apart the Coordinate Cards and stack them face down.
2. Pirate 1 chooses a card, plots the coordinates on the map, and connects the points. He or she then calculates the area, records that number on the interior of the island, and lightly colors the island to capture it.
3. Pirate 2 checks Pirate 1's work. If an error is found, Pirate 1 crosses out the number on the island and replaces it with 0 to show that the island was not captured.
4. Pirate 2 draws out a different card and repeats Step 2 using his or her color. Player 1 checks Player 2's work.
5. Pirates continue taking turns until the time runs out or all islands have been plotted on the Quadrilateral Bay Map.
6. At the end of the game, both pirates count their treasure by tallying the total area of all islands. The pirate with the most treasure becomes the Pirate Captain!
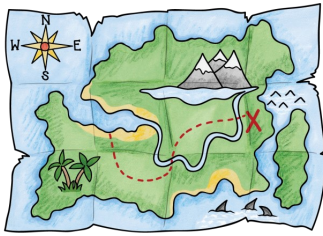
Quadrilateral Bay
Treasure Map

Coordinate Grid

Pirate 1 [   ]

Pirate 2 [   ]
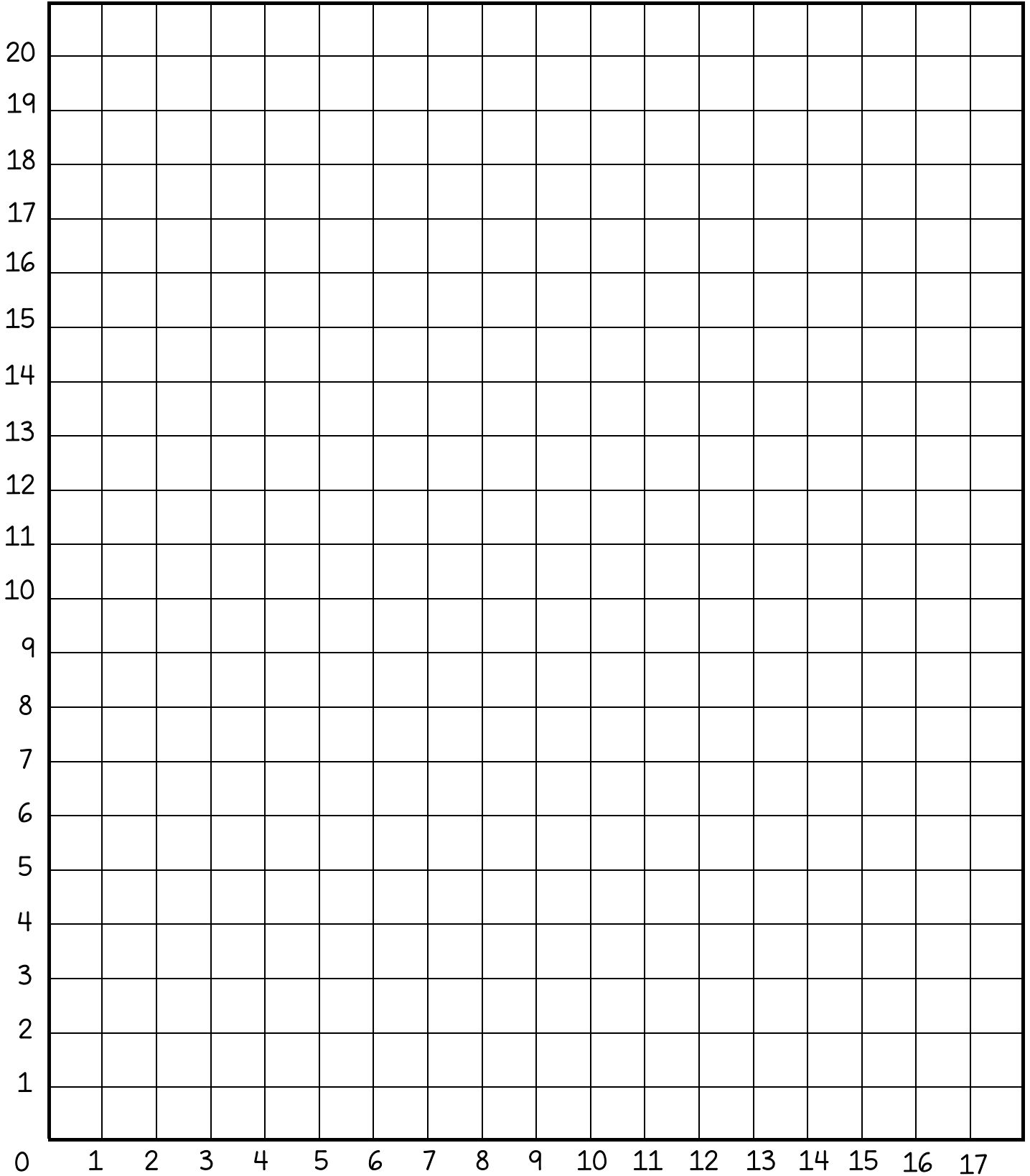
Island Conquer
Coordinate Cards

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

Common Core Aligned
Math Standards

Island Conquer is aligned with the 3rd and 5th grade standards below. However, because coordinate graphing is not formally taught until 5th grade, if you use the game with 3rd graders, you have to teach your students how to plot points on a coordinate grid.
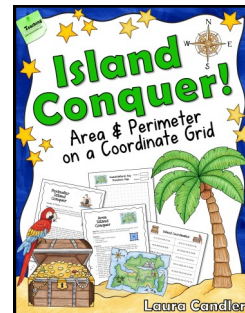
Grade 3
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

3.MD.5. Recognize area as an attribute of plane figures and understand concepts of area measurement.

- A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
- A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

3.MD.6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

3.MD.7. Relate area to the operations of multiplication and addition.

- Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
- Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometric measurement: recognize perimeter.

3.MD.D.8 – Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
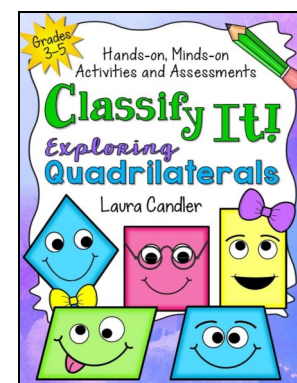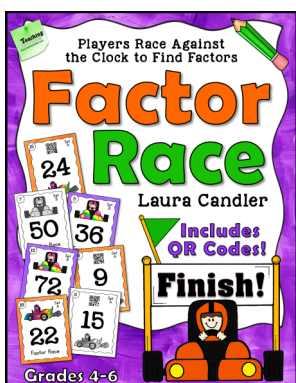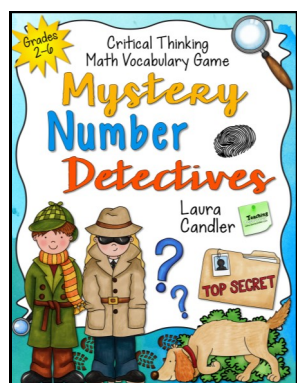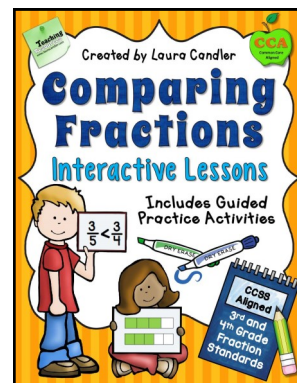
Grade 5
Graph points on the coordinate plane to solve real-world and mathematical problems.

5.GA.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.

5.GA.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.

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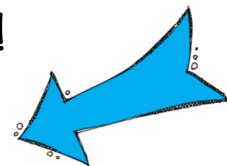**Pinterest:** www.pinterest.com/lauracandler
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