

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Explore the Vital Signs Crab Dataset

Essential Question: What can we learn from looking at the data all together?

Do now: How do you think the populations of invasive crabs are changing over time in Maine? What do you think about the populations of native crabs?

By the end of this activity I will be able to...

NGSS	Level 1	Level 2: <i>all of level 1 and...</i>	Level 3: <i>all of level 2 and...</i>	Level 4: <i>all of level 3 and...</i>
Practice 4: Analyze and interpret data:	Create a graph or map using an online tool.	Create a graph or a map that can help to answer a question about the data.	Describe what I see in the graph or map that could help answer the question, like the shape, range, mean, median, mode, the spread of the data, any interesting points or groups of data, or outliers in the data.	Use what I see in the data to form a tentative claim

*Once you have completed the activity, circle the highest level that you achieved.*

#### Part 1: Get acquainted with the tools

Access the Vital Signs crab data set at: <http://bit.ly/VScrabdata>

Create three piles for your challenge cards: "Haven't tried it," "We did it," and "We're stuck"

Start with all of your cards in the "Haven't tried it" pile.

Work with your group to master as many challenges as you can:

1. Pick a card from the "Haven't tried it" pile and read the challenge.
2. Work on the challenge.
3. Once you complete it put it in the "We did it" pile.
4. If you get stuck on a challenge, put it in the "We're stuck" pile
5. If you discover a tool that isn't in the cards, make a new challenge card.

When prompted by your teacher, share your skills with a different group of students.

**Part 2: Get acquainted with the data**

Repeat the same process using the **Question** cards, this time, creating graphs or maps that answer the questions.

Create a title for each graph or map with the number of the question, so that you can go back to it.

Minimize the graph or map when you are finished (by clicking the “—”) but do NOT close it out (by clicking the “X”).

When you have completed all the questions, choose one that you can share.

1. Open the graph or map that answers the question.
2. Take a snapshot the graph or map that answers the question.
3. Circle the data in the map or graph that helps you answer the question.
4. Make a new textbox. In the box, write the answer to your question.

Be prepared to share your question, the graph, and the answer with your classmates.

**Part 3: The big question**

In this section, you will focus on one big question that researchers across Maine and New Hampshire are trying to figure out:

**How do populations green crabs, Asian shore crabs, and native crabs compare up and down the coast of New England?**

1. Get into groups of three.
2. Assign each member in your group a specific type of crab to investigate, either Asian shore, green, or native crabs.

My type of crab: \_\_\_\_\_

3. Create a map that shows the location or all the observations for your type of crab only.
4. Zoom in and out and look closely. What do you notice about where the observations are located? Use the chart to record your observations:

Questions:	Observations of the data:
Which areas along the coast have the most data?	

Which areas have the least?	
Do you see any overall patterns? Are most observations in the north? In the south? Are they spread out evenly? Do you notice any other patterns?	

5. Add a layer to the map that shows the “Found” and “Not Found” observations.

6. What do you notice about the locations of the Found vs. Not Found observations? Use the table to record your observations:

Question	FOUND	NOT FOUND
Which areas along the coast have the most data?		
Which areas have the least?		
Do you see any overall patterns? Are most observations in the north? In the south? Are they spread out evenly? Do you notice any other patterns?		

7. What do your observations tell you about the where your type of crab is and isn't found?

8. Where do you think you are most likely to find your type of crab? Why do you say that?

9. Compare your answers to questions 7 and 8 with the other two members of your group. Work together to answer the question below.

How do populations green crabs, Asian shore crabs, and native crabs compare up and down the coast of New England?