Name_____ Period _____ Date _____

Bridge Out

STEM Sims

Lesson 1: Directing Traffic

In this simulation, you will be mapping out paths to different locations. The goal is to try to map out a route so that you can start any of the points and get to every other point. Can you direct the traffic so that you can visit all the islands?

Doing the Science

1. Start the Bridge Out Simulation by clicking on the "Sim" tab.
2. Click on "Bridges". Read the instructions provided to familiarize yourself with the task.
3. Click on each of the bridges to place an arrow. Click on the bridge again if you want the arrow to change direction. Remember the goal is to map out a route so that you can start at any of the points and reach all of the other points.
4. Click on "Yes" to test the map.
5. Click on the island of Fatu. Using Table 1 below, use pencil to check off which islands your path can reach when all bridges are crossed.
6. Click on the island until there are no more path numbers.
7. Repeat steps 5 - 6 for the islands of Ofu, Bagao, and Rota.
8. If not all of the boxes are checked, click on "Yes" and change different arrow directions to try to find paths that reach all of the points.
9. Erase Table 1 data and repeat steps 4 - 7 to test your path.
10. Keep testing different paths to try to fill the table.
11. When finished testing, click on "No" and answer the question. Read the explanation to understand the solution.
12. Click on "New" and answer the second question. Read the explanation to understand the solution.
13. Click on "New" for a new map and repeat steps 3 - 12 for each map.
14. After completing the three practice maps, you can click "New" to repeat the practice maps or you can click on "Quiz."
15. Repeat steps 3 - 12 for the quiz map.

Table 1.

	Fatu	Ofu	Rota	Bagao
Fatu				
Ofu				
Rota				
Bagao				

Do You Understand?

1. Were there any patterns that determined if after crossing every bridge you would end up in the same spot?

2. What happens if there are two bridges going in the same direction? What do you have to do to accommodate for that?

3. Does the increase in the number of bridges affect the end location of the path after crossing each bridge once?

4. What happens if you reverse all of the arrows of a path that was circular?