## Sea Level Rise - Tic Tac Toe Choice Board

Instructions: Using the board below please choose two additional activities to complete. ALL STUDENTS must complete box 5.

1 Experiment. In the lab, students fill containers of water to a certain level, and measure the water temperature. They place the water on a burner. As the water heats, the students take the temperature and measure how much higher the water stands in the vessel every two minutes. Teachers explain the atomic dynamics of thermal expansion as the water and water temperatures rise. Students then add measured amounts of ice to the vessel, melt them while increasing the heat, and determine rates of additional rise in the vessel.	2 Write Using the referenced journal article about the "Castles in the Sand" case," students identify the implications of one to three of these rulings for future coastal management. Students write short essays about one, two, or three rulings.	<b>3 Research and Write</b> Students visit or research a greenhouse, learn how one works, and write a short essay comparing a greenhouse to the earth's atmosphere. Essays must include at least three vocabulary words provided in this lesson.
<b>4 Create</b> Students create an infographic for the general public about the causes and effects of SLR. This should include a "hook" title, should briefly describe one or two causes of SLR (there are many causes, but keep it simple!) in simple terms, and focus on ONE major effect of SLR. The infographic should also include a "call to action" that tells the audience what THEY can do to help.	<ul> <li>5 Create and Experiment</li> <li>Students in groups build a beach with sand in a paint pan or plastic tub, leaving a few inches for the "beach" to migrate backwards. Fill the pan with water so that it overlaps the beach. Create waves using a fan or other instrument, and observe how the beach behaves. Next, rebuild the beach in its original position. Then, using blocks or any hard material, build a "seawall" on the beach face.</li> <li>Turn the fan back on and report on the differences in how the beach responded.</li> </ul>	<b>6 Research and Write</b> Students research and write five- paragraph essays that explore how sea- level rise and two other stressors discussed in this lesson work together to damage essential fish habitats.
<b>7 Report</b> Students visit a site with essential fish habitat including seagrass, mangroves, and nearshore reefs, and then visit a sea wall or other hard structure. They then team up to create a short public outreach presentation on the relative benefits they observed as provided by natural resources vs. manmade structures. This may be in the form of a video or in-class presentation, but should include one recommendation of how the public can help.	8 Write Letters Students write letters to their members of Congress articulating their concerns about sea-level rise and other climate- related stressors.	<b>9 Create</b> Create a visualization of the impacts of SRL on a geographic location of your choice. This may be a map in GIS, an image created with an editing software, a drawing, a piece of art, or anything else you can think of that someone can look at to see the effects of SLR on a community.