21 Things 4 Students
REMC ASSOCIATION OF MICHIGAN Thing 12.Q1

Students, TO USE THIS DOCUMENT, you MUST make a copy for yourself:

- ***Google users must be logged into their Google email account, go to File>Make a Copy, and save it to their Drive or download it as a Microsoft Word document.***

12. Interactives QUEST #1: Balloon Hockey Static Activity

Name:
Date:
Teacher name:
***Check with your teacher about the process for turning in your work on this activity.*

Learning Objectives:

- I can determine the variables that affect how positive and negative objects interact.
- I can predict how positive and negative objects will interact.

1. As a class or with a partner, record your observations about a balloon (that you have received from your teacher and blown up), sticking or repelling.
    a. Rub the balloon against your shirt and then test the balloon on various surfaces. What do you notice about sticking or repelling?

    b. Rub the balloon against your head and then test the balloon on various surfaces. What do you notice about sticking or repelling?

    c. What are some other observations about the balloon?

2. Let's look at the Balloons and Static Electricity simulation, exploring various features with a partner.
    a. Select *Show no charges*.
        i. Rub the balloon against the sweater.
        ii. Place the balloon back in the middle of the screen. What happens?

        iii. Place the balloon next to the wall. What happens?

b. Now select *Show all charges* and click *Reset Balloon*. Now complete the same steps as you did above. What do you notice about the + and - charges?

c. Check out what is happening with the charges in the different positions when you select *Show charge differences*. What do you notice?

d. Now, *Reset the Balloons*, *Remove the Wall,* and *Select Two Balloons*. Rub both balloons against the sweater and do some testing. What do you notice?

e. Based on your observations, what affects whether things attract or repel?

3. With a partner, test your ideas about attraction and repulsion using the Electric Field Hockey simulation in *Practice mode (bottom green ribbon)*. Notice the puck is a positive charge by default (you may change this if you would like).

   a. Play with the sim by placing + and - charges and talk with your partner about ideas that help you SCORE! Share your strategy below.

   b. Now, develop strategies for the following challenges:
      i. Make a GOAL where the puck takes the SHORTEST amount of time to get to the goal.
         1. What rules are you using to determine which direction the puck moves?
         2. What rules are you using to determine how fast the puck moves?
      ii. Make a GOAL where the puck takes the LONGEST amount of time to get to the goal

1. What rules are you using to determine which direction the puck moves?

2. What rules are you using to determine how fast the puck moves?

c. Now take some time to challenge your Electric Field Hockey play by changing the *Difficulty* levels in the bottom green ribbon to 1,2, and 3 for different plays. Reflect on the challenge. What made it hard? What helps you score a goal?

4. Based on your Electric Field Hockey play, reflect on your answers #1 and #2e at the top.
   a. What determines whether two objects will attract or repel?

   b. What determines how strongly they attract or repel?

****Check with your teacher about the process of turning in your work on this activity.*