

Static

Learning Objectives:

- Students will be able to determine the variables that affect how positive and negative objects interact.
- Students will be able to predict how positive and negative objects will interact.

1. You and the class just made some observations with balloons – sticking and repelling.

Discuss with your partner your ideas about **why** the balloons would stick to things (like hair) after rubbing on your head? And repel from each other?

Use words and pictures to describe your ideas about what might be going on.

2. Let's look at the **Balloons and Static Electricity simulation**.

- a. Explore the simulation.
How can you make the balloon stick to the sweater?

What makes it stick weakly versus strongly?

- b. How do the plus or minus symbols help you decide whether something attracts or repels?

- c. Talk about how your observations support, change or add to your ideas from Question 1 and about what affects whether things attract or repel. Then **revise your ideas from Question 1**.

3. With you partner, test your ideas about attraction and repulsion using the **Electric Field Hockey** simulation in the **Practice mode**.

Play with the sim and talk with your partner about ideas that help you SCORE!

Now, develop strategies for the following challenges:

Make a GOAL where puck takes the **SHORTEST amount of time** to get to the goal

Draw your strategy for placing positives or negatives in the picture below.

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

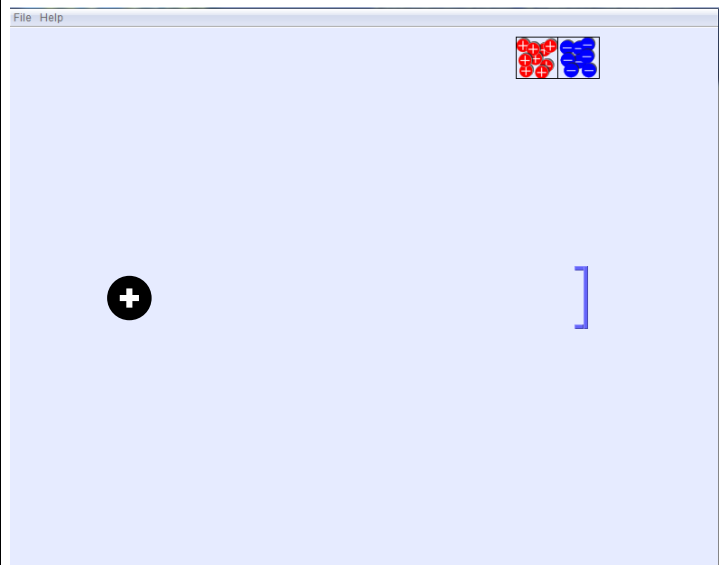
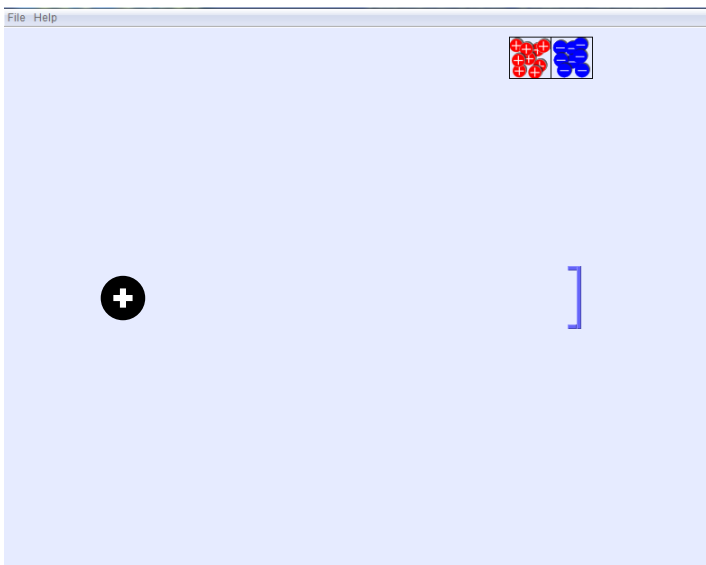
What **rules** are you using to determine **how fast** the puck moves?

Make a GOAL where puck takes the **LONGEST amount of time** to get to the goal

Draw your strategy for placing positive or negative pucks in the picture below

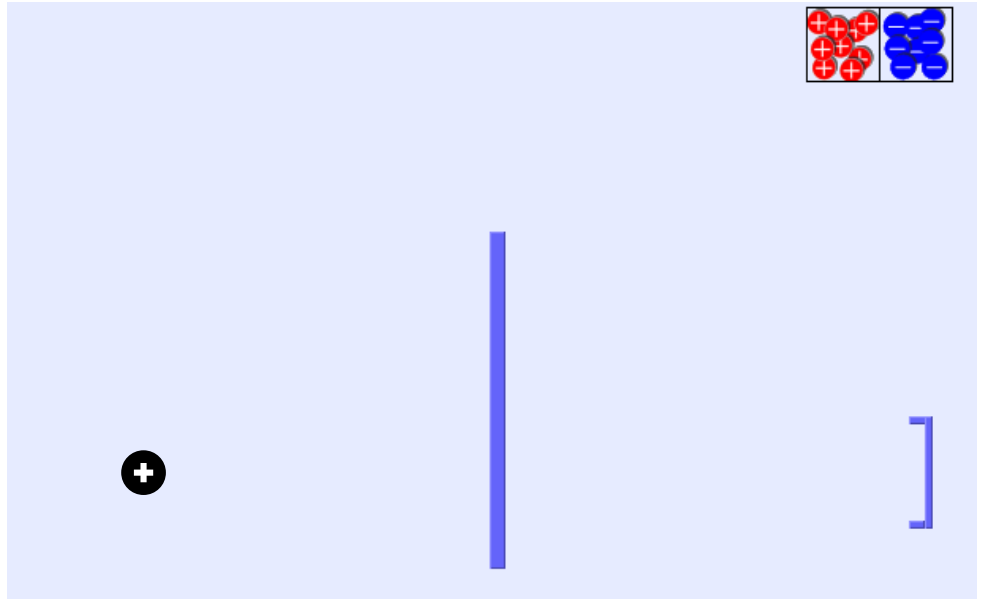
What **rules** are you using to determine **which direction** the puck moves?

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



4. **Draw** where you might put pucks to get a goal with the **fewest pucks**.

Explain why this works:



5. Reflect on your ideas from Questions 1&2 and your data from Questions 3&4. How do your observations support, change or **add** to your ideas about...

...whether two objects will attract and repel?

...how strongly they attract or repel?

Revise your explanation from Question 1.