Unit 5B
Static Electricity
Questions to Consider

Main Ideas, Key Points, Questions:
After watching the video segment, write down key points, main ideas, and big questions.

Objective(s):
- Define conductors and insulators and what makes them different
- Understand charging by friction, electrical conduction and induction

Notes:
During the video segment, use words, phrases, or drawings to take notes.

Summary:
After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: “If I was going to explain this to someone else, what would I say?”
Unit 5B
Static Electricity
Questions to Consider

Answer the following.

1. What is an insulator? Give two examples of insulating materials.

2. What is a conductor? Give three examples of conducting materials.

3. What is the difference between charging an object by conduction and charging by induction?

4. What does it mean when we say an object is ‘grounded’? What happens to excess charge on a grounded object?

5. After rubbing a balloon with a towel, the balloon will be attracted to wall surfaces even though the wall has no net charge. What makes this attraction happen?
6. An uncharged metal sphere hangs by an insulating thread. When you bring a positively-charged rod near, the sphere is pulled toward the rod. But, the instant the two objects touch, the sphere immediately moves away. Why?

7. Holding a wooden dowel attached to positively-charged metal sphere, you a) bring the sphere near an insulated, uncharged metal sphere, b) touch the spheres together, then c) pull the sphere away out of contact. Draw the electrical charge distributions on the spheres below:

a)

b)

c)
Coulomb's Law

Main Ideas, Key Points, Questions:
After watching the video segment, write down key points, main ideas, and big questions.

Objective(s):
- Define Coulomb's Law and compare it to the gravitational force.
- Understand electric fields as mediators of electric force.

Notes:
During the video segment, use words, phrases, or drawings to take notes.

Summary:
After watching the video segment, write at least three sentences explaining what you learned.
You may ask yourself: "If I was going to explain this to someone else, what would I say?"
Unit 5C
Coulomb's Law
Questions to Consider

1. Coulomb's Law describes a force that can both attract and repel. In the cases below, which way would the electric force act? Circle ATTRACT, REPEL, or NEITHER to indicate your answer:
   
   a. \( q_1 = 4.2 \times 10^{-6} \text{ C} \) \( q_2 = -1.1 \text{ nC} \) ATTRACT / REPEL / NEITHER
   
   b. \( q_1 = 3 \text{ mC} \) \( q_2 = 7.6 \times 10^{-2} \text{ C} \) ATTRACT / REPEL / NEITHER
   
   c. \( q_1 = -8 \times 10^{-37} \text{ C} \) \( q_2 = 7.2 \text{ C} \) ATTRACT / REPEL / NEITHER
   
   d. \( q_1 = 4 \text{ nC} \) \( q_2 = -4 \text{ nC} \) ATTRACT / REPEL / NEITHER
   
   e. \( q_1 = 0 \text{ C} \) \( q_2 = 6.7 \times 10^{-15} \text{ C} \) ATTRACT / REPEL / NEITHER

2. What is an electric charge?

3. What is an electric field?

4. In words, what is Coulomb's Law?

5. If the distance between two charges is doubled, what will happen to the force between the charges?

6. If one of the charges is doubled, what will happen to the force between the charges?
Questions to Consider.

7. Coulomb's Law tells us about electric force magnitude. How do we figure out the force direction?

8. Is there ever a case where one of the two charges in Coulomb's Law experiences a different force magnitude than the other charge? Why or why not?