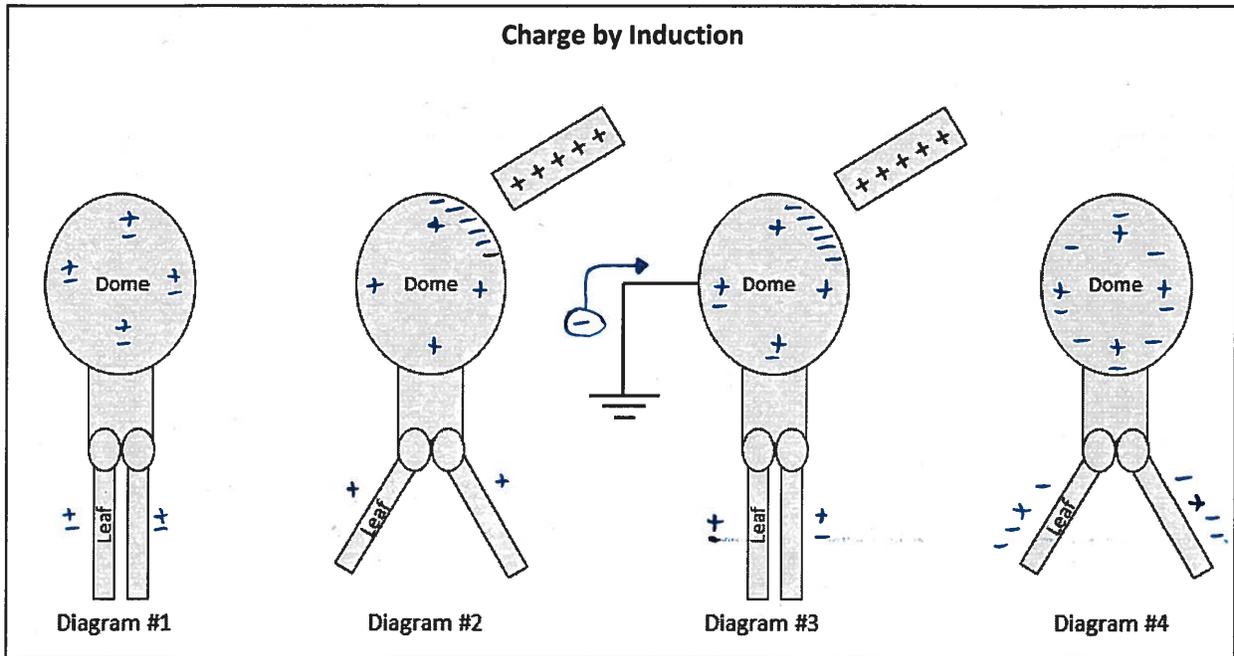


First Name: \_\_\_\_\_

Last Name: \_\_\_\_\_

L'02 - EQ - Electrical Interactions and Electroscopes

Use the following information to answer Q1-Q2:



Q1: In Diagram #2, the dome has a net i charge, and has ii protons.

	<i>i</i>	<i>ii</i>
A.	positive	lost
B.	positive	the same number of
C.	negative	lost
<b>D.</b>	negative	the same number of

Q2: In Diagram #4, the dome has a net i charge, and the leaves have a net ii charge.

	<i>i</i>	<i>ii</i>
A.	positive	positive
B.	positive	negative
C.	negative	positive
<b>D.</b>	negative	negative

Use the following information to answer Q3:

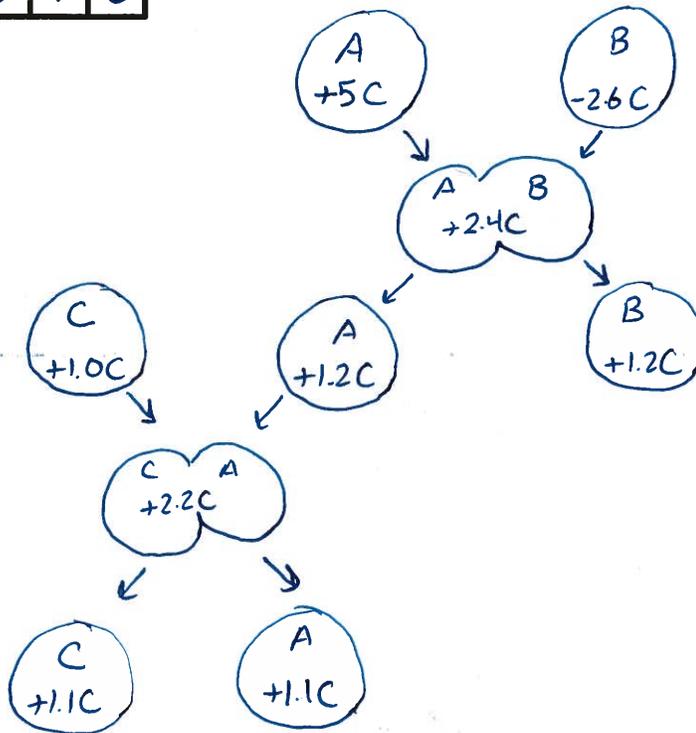
Three identical objects are each independently charged.

- Object A receives an initial net charge of +5.0 Coulombs.
- Object B receives an initial net charge of -2.6 Coulombs.
- Object C receives an initial net charge of +1.0 Coulombs.

**Q3:** Object A is briefly touched to Object B, then separated. Object A is then touched to Object C, and separated. What is the final charge on Object C, measured in Coulombs?

(Record your **three digit** answer in the Numerical Response boxes below)

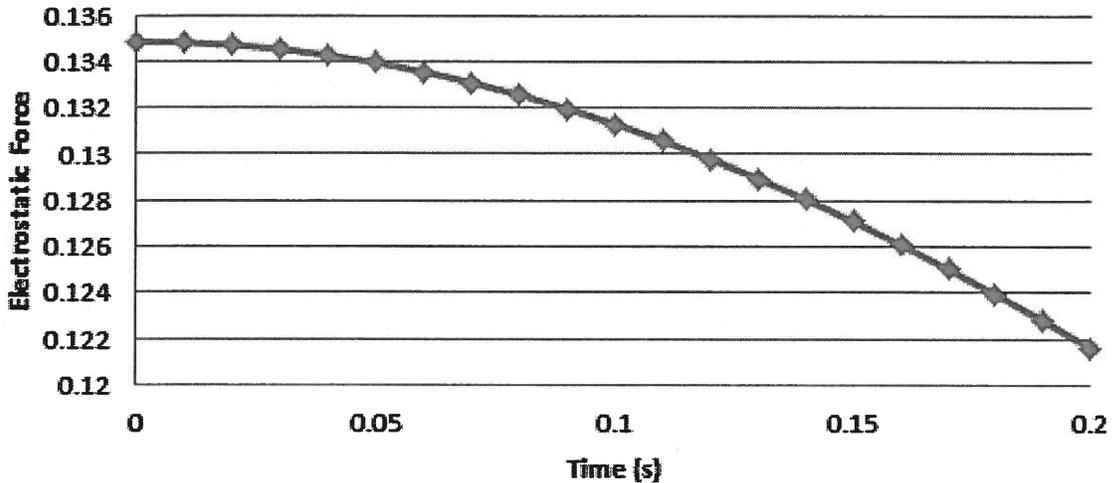
1	.	1	0
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Use the following information to answer Q4:

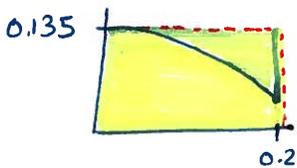
A stationary 50.0g steel ball has a net charge of  $+5.00\mu\text{C}$ . The steel ball is temporarily exposed to an identical steel ball of net charge  $+3.00\mu\text{C}$  placed 1.00m away. As the electrostatic force repels the 50.0g ball, the force becomes weaker, as depicted below.

### Electrostatic Repulsion



Q4: Approximate the final speed of the 50.0g steel ball after 0.200 seconds. (1 mark)

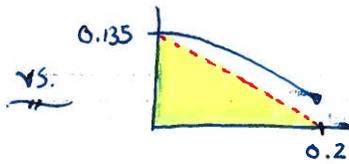
*Impulse question. Approximate area under graph.*



Area = (L)(w) = 0.027

$F\Delta t = m\Delta v$   
 $0.027 = (0.050)\Delta v$   
 $\Delta v = 0.54 \text{ m/s}$   
 $v_f \approx 0.54 \text{ m/s}$

Good approximation



Area =  $\frac{1}{2}(b)(h) = 0.0135$

$F\Delta t = m\Delta v$   
 $0.0135 = (0.050)\Delta v$   
 $\Delta v = 0.27 \text{ m/s}$   
 $v_f \approx 0.27 \text{ m/s}$

Poor approximation.

Keep in mind, our y-axis does not start at zero. So our actual shape is closer to a rectangle. So  $v_f$  is closer to 0.54 m/s.

Any value greater than 0.45 m/s and less than 0.55 m/s is excellent.

**MARKING:**

Beginning	0.0 – 1.5
Progressing	2.0 – 2.5
Competent	3.0 – 3.5
Exemplary	4.0