Wednesday, May 6/15
Science 122

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1. Return: Test - Nuclear Physics

2. Questions?
   Cutnell - Chapter 12, Page 366: #9, 11-13, 15, 17, 19
   Examples - Ideal Gas Laws

3. Cutnell - Page 412: #9-11, 13, 15, 16, 18

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4. Number of Things

5. Kinetic Theory of Gases

6. Cutnell - Page 413: #28, 30-33, 36

7. Thermodynamics and Systems

8. Zeroth Law of Thermodynamics

9. First Law of Thermodynamics

10. Thermal Processes

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Physics 122

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Task Sheet #3

1. Rewrite -> Quiz U2-S2: IS Today or Thursday → Friday. if Grad Meeting.
2. Test: Unit 2 - Monday, May 11/15
3. Questions?
   Example: Mass on a Spring
   Text: Page 608, #1-4
   Page 623, #23-27, 30
   Text: Page 614, #5-8
   Page 623, #28, 29
   Worksheet - SHM -> Optional
4. Formative Assessment - SHM
5. Transfer of Charge
6. Law of Conservation of Electric Charge
7. Charging by Conduction
8. Charging by Induction -> To Be Continued

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9. Electric/Electrostatic Force
10. Textbook: Page 638, #4-5
    Handout: Charge and Coulomb's Law
11. Coulomb's Law - Three Charges

# Formative Assessment - SHM

1. On the planet Fizixphun, the frequency, mass, and length of a pendulum are 0.72Hz, 0.25Kg, and 1.9m respectively. What is the value of the acceleration due to gravity on Fizixphun?

$(39\ m/s^2)$

Pendulum

$f = 0.72Hz$

$m = 0.25Kg$

$l = 1.9m$

$g = ?$

$T = \frac{1}{f}$

$T = 2\pi\sqrt{\frac{l}{g}}$

$f = \frac{1}{2\pi}\sqrt{\frac{g}{l}}$

2. An object vibrates at the end of a horizontal spring ($k = 125\ N/m$) along a frictionless surface. If the speed of the object is 2.1m/s when its displacement is 2.4m and its maximum speed is 3.5 m/s, what is the maximum displacement of the object?

$k = 125\ \frac{N}{m}$

$V = 2.1\ \frac{m}{s}$

$x = 2.4m$

$V_{max} = 3.5\ m/s$

$A = ?$

$V = V_{max}\sqrt{1 - \frac{x^2}{A^2}}$

$\frac{V}{V_{max}} = \sqrt{1 - \frac{x^2}{A^2}}$

$\frac{V^2}{V_{max}^2} = 1 - \frac{x^2}{A^2}$

$A^2\left(\frac{x^2}{A^2}\right) = \left(1 - \frac{v^2}{V_{max}^2}\right)A^2$

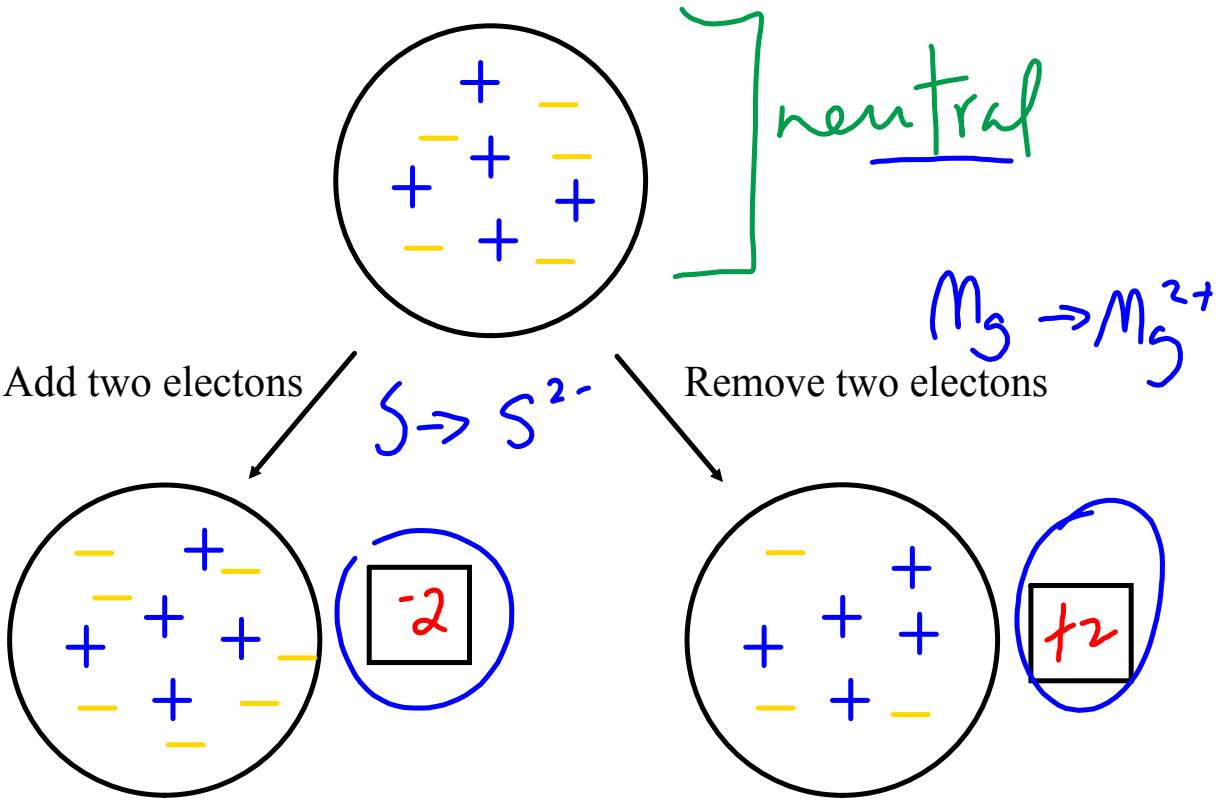
$A^2 = \frac{x^2}{1 - \frac{v^2}{V_{max}^2}}$

$A = \sqrt{\frac{x^2}{1 - \frac{v^2}{V_{max}^2}}}$

$A = 3.0m$

# Transfer of Charge

Electric charge can be transferred from one object to another. Usually electrons are transferred.

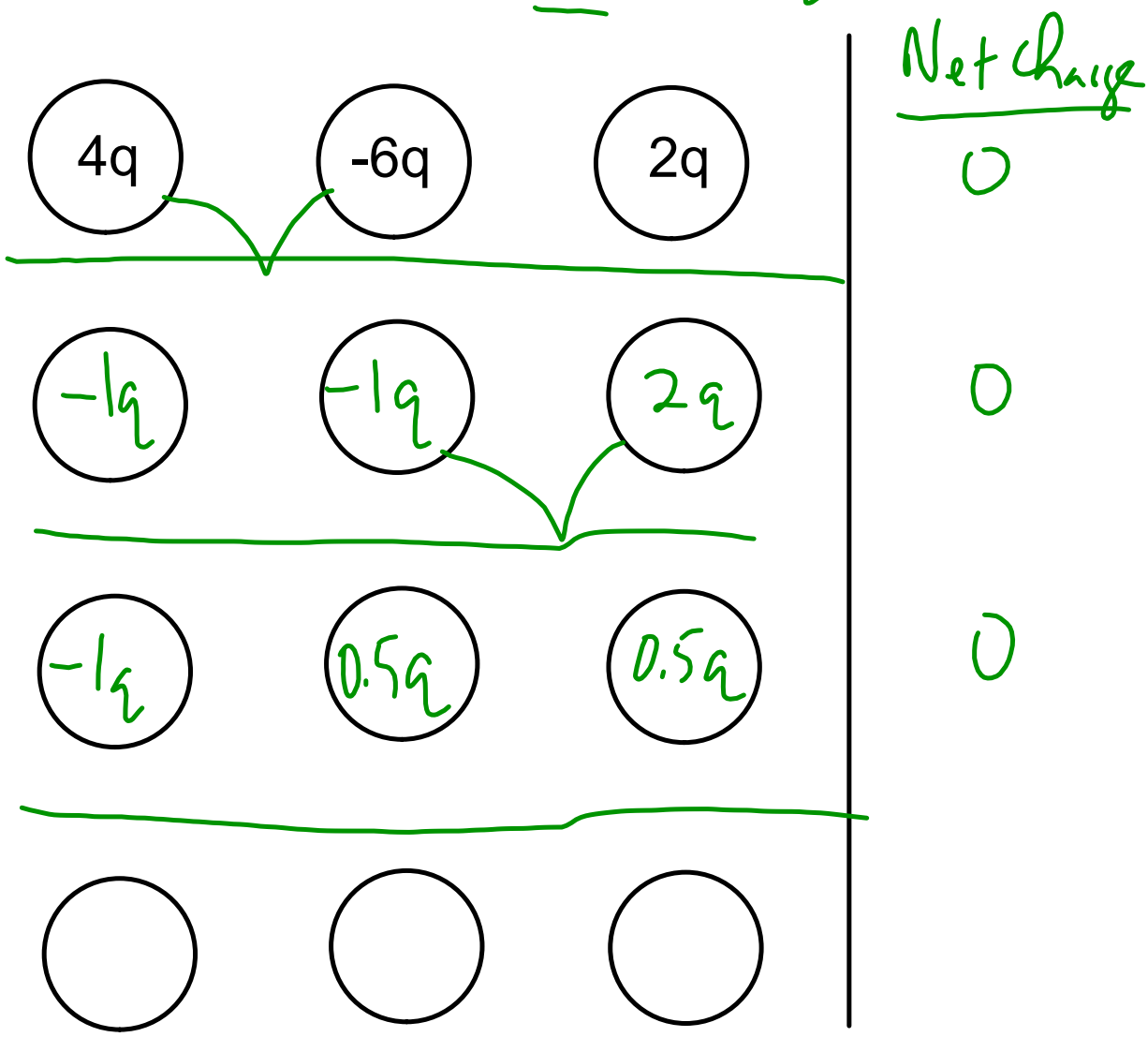



Separation of charge often occurs when two unlike materials are rubbed together - electrification by friction.

Electric charges are involved in chemical reactions, electric circuits and radioactive decay. In any situation, the Law of Conservation of Electric Charge is obeyed. Charge can't be created or destroyed. The net electric charge of an isolated system is constant.

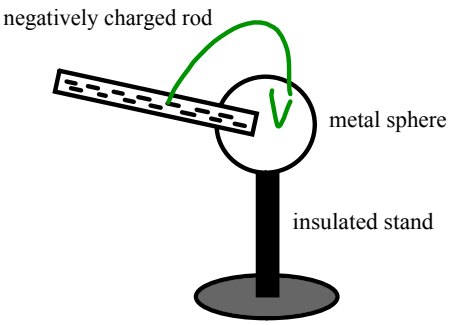
Δ

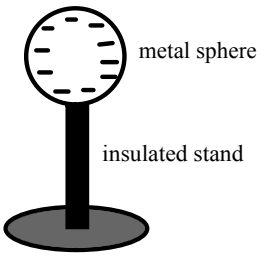
Three spheres are made of the same substance.



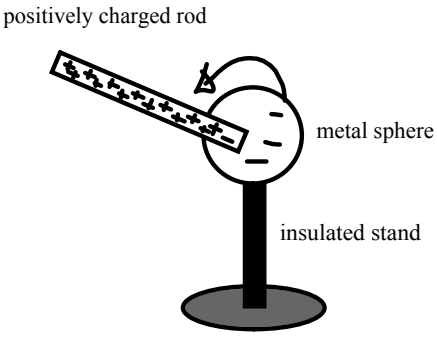
# Charging by Conduction

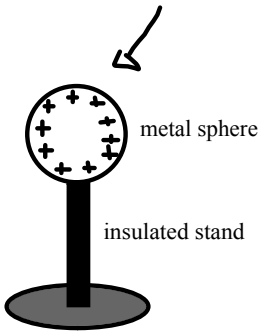
When a negatively charged rod touches a metal sphere, some of the excess electrons from the rod are transferred to the sphere. Once the electrons on are the sphere, they repel one another and spread out over the sphere's surface. The insulated stand prevents the electrons from flowing to the earth, where they would spread out even more. When the rod is removed, the sphere is left with a negative charge distributed over its surface.




What if a positively charged rod was used instead?



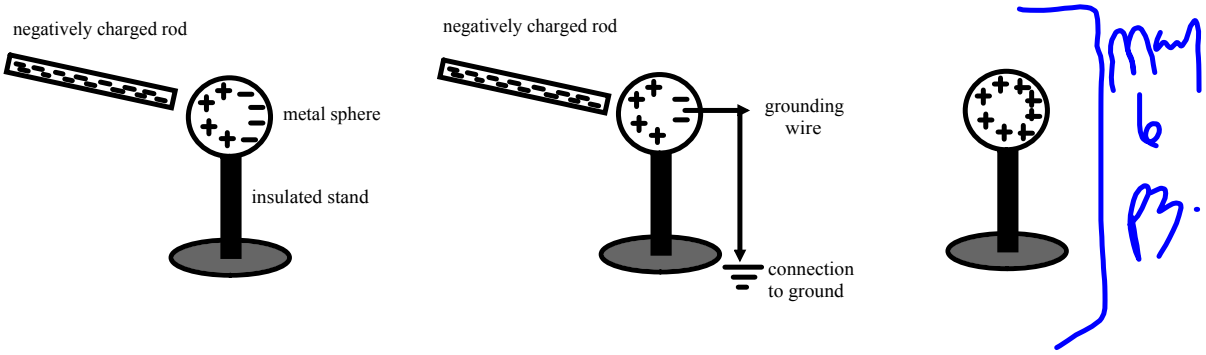




Electrons from the sphere would be transferred to the rod leaving the sphere with a positive charge.

The process of giving one object a net electric charge by placing it in contact with another object that is already charged is known as charging by conduction.

# Charging by Induction

It is possible to charge an object without contact.




The process of giving one object a net electric charge without touching the object to a second charged object is called charging by induction.

Wednesday, May 6/15
Science 10

1. Quiz: Today -> SD, Certainty Rule, Precision Rule, Rearranging Equations and Metric Conversions

2. Understanding Concepts - Page 358: #3-6, 8

3. Worksheet: Matching a Graph to a Story

4. Types of Physical Quantities

5. Direction

6. Position and Displacement