# Question 1

Briefly describe each method of charging. Be able to tell the difference between them, the circumstances in which each occurs and the end result of each.

a. friction

When charging by friction, you start with two neutral insulators.

When you rub them together you are doing work moving electrons from one object to the other.

When you are finished, you end with two equal and oppositely charged objects.

# Question 1

Briefly describe each method of charging. Be able to tell the difference between them, the circumstances in which each occurs and the end result of each.

b. contact

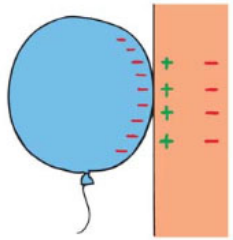
When charging by contact, you start with one charged object and a neutral conductor.

When you touch them together you allow electrons to move from one object to the other.

When you are finished, you end with two like charged objects.

# Question 1

Briefly describe each method of charging. Be able to tell the difference between them, the circumstances in which each occurs and the end result of each.



c. polarization.

In polarization, the object does not have a net charge.

Polarization occurs when a charged object is brought near a neutral object and the charged object causes charges on the neutral object to rearrange either by attraction or repulsion.

This results in the neutral behaving like a charged object.

When the charged object is taken away from the neutral object, the charges in the neutral object go back to normal and the effect disappears.

# Question 2

If a negative charge repels an object, then the object must be _Negative_. However if the same negative charged object attracts another object, then that object can be either _Positive_ or _Neutral_.

# Question 2B

If two positive charged objects are held near one another and released what will happen?

They will repel away from one another

Since a force is causing them to repel, will they will they move away from one with a constant velocity?

They will accelerate  F=ma

# Question 3

What is the electrostatic force between a 0.03 Coulomb charge and a 0.05 Coulomb charge if the distance between them is 9.0 m?

$$F = \frac{Kq_1q_2}{d^2} = \frac{(9 \times 10^9)(0.03)(0.05)}{9^2}$$

F = 167,000 N

# Question 4

Two charges, $q_1$ and $q_2$, at a certain distance, d, exert a 100 N force on each other. What would the force be if:

a. $q_1$ is doubled. 200 N

b. $q_1$ is halved and $q_2$ is tripled. 150 N

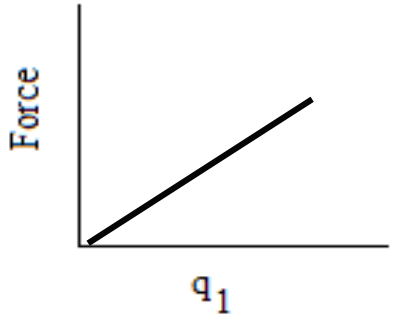
c. distance is halved. 400 N

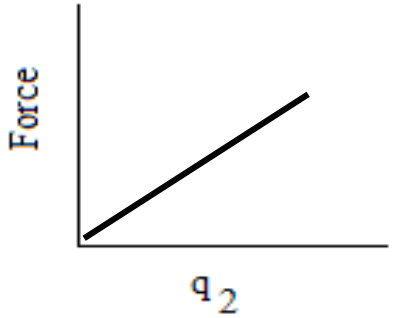
d. $q_1$ is cut into 1/3, $q_2$ is doubled and d is doubled. 16.7 N

$$F = \frac{Kq_1q_2}{d^2}$$

# Question 5

Two charges, $q_1$ and $q_2$, at a certain distance, d, exert force on each other. Draw a graphical representation of the following relationships:





First step is to find the equation that contains the relationship you are looking for:

$$F = \frac{Kq_1q_2}{d^2}$$

Exit Electrostatics