

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

**AP Physics 1: Electrostatics**

**Calculating Charge and Coulomb's Law HW**

**Multiple Choice:**

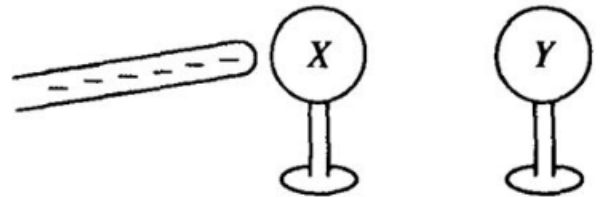
1. Two isolated charges,  $+q$  and  $-2q$ , are 2 centimeters apart. If  $F$  is the magnitude of the force acting on charge  $-2q$ , what are the magnitude and direction of the force acting on  $+q$ ?

	<u>Magnitude</u>	<u>Direction</u>
A.	$\frac{1}{2} F$	Towards charge $-2q$
B.	$2 F$	Away from charge $-2q$
C.	$F$	Toward charge $-2q$
D.	$F$	Away from charge $-2q$
E.	$2F$	Toward charge $-2q$

2. Two small spheres have equal charges  $q$  and are separated by a distance  $d$ . The force exerted on each sphere by the other has a magnitude of  $F$ . If the charge on each of the spheres is doubled and  $d$  is halved, the force on each sphere has a magnitude of....

- A.  $F$
- B.  $2F$
- C.  $4F$
- D.  $8F$
- E.  $16 F$

3. Two metal spheres that are initially uncharged are mounted on insulating stands, as shown above. A negatively charged rubber rod is brought close to, but does not make contact with, sphere X. Sphere Y is then brought close to X on the side opposite to the rubber rod. Y is allowed to touch X and then is removed some distance away. The rubber rod is then moved far away from X and Y. What are the final charges on the spheres?



	<u>Sphere X</u>	<u>Sphere Y</u>
A.	Zero	Zero
B.	Negative	Negative
C.	Negative	Positive
D.	Positive	Negative
E.	Positive	Positive

