Name: _____ **Date:** _____

Charge Detector Graphing Worksheet Answers

Force vs. Charge

Two charged objects, object #1 and object #2, are held one meter apart. The table at the right indicates the amount of force (in newtons) between the two objects, based on the charge on the objects (in coulombs).

Draw a graph in the space below, using the data in the table. On your graph, place force on the y-axis, and the product of the charges on the objects on the x-axis.

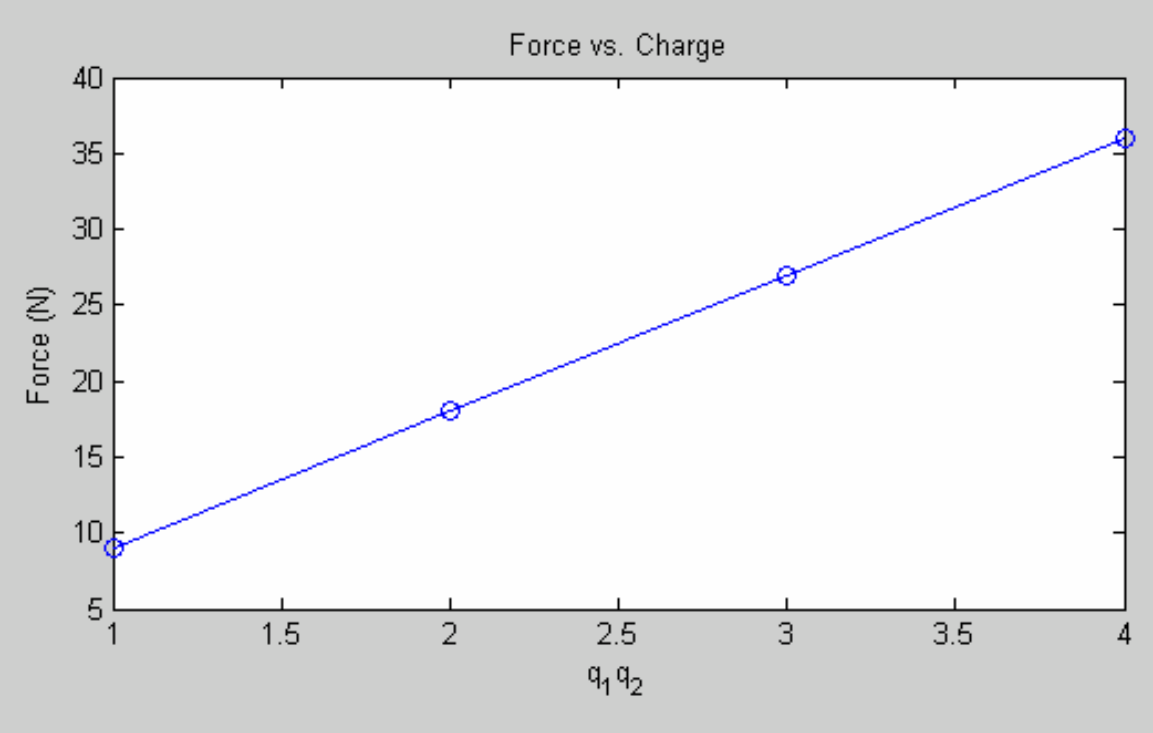
Charge on #1 (C)	Charge on #2 (C)	Force ($x10^9$ N)
1	1	9
1	2	18
1	3	27
1	4	36
2	2	36

Charge on #1 (C) q_1	Charge on #2 (C) q_2	Product of the charges $q_1 \times q_2$
1	1	1
1	2	2
1	3	3
1	4	4
2	2	4

The electric force between two charged objects is given by the equation:

$$F = \frac{kq_1q_2}{r^2}$$

where q_1 and q_2 are the charges on the two objects, r is the distance between the objects and k is a constant equal to 9×10^9 Nm^2/C^2.



Distance between #1 and #2 (m)	Force ($x10^9$ N)
1	9
2	2.25
3	1
4	0.6
5	0.4

Force vs. Distance

We have two objects, object #1 and object #2, each with a charge of 1 C. The table indicates the amount of approximate force between the two objects as the distance (in meters) between them is changed.

Make a graph below, using the data in the table. On your graph, place force on the y-axis and the distance between the objects on the x-axis.