




# Coulombic Attraction

What variables will affect the force of attraction between charged particles?

## Why?

**Coulombic attraction** is the attraction between oppositely charged particles. For example, the protons in the nucleus of an atom have attraction for the electrons surrounding the nucleus. This is because the protons are positive and the electrons are negative. The attractive force can be weak or strong. In this activity, you will explore the strength of attraction between protons and electrons in various atomic structures.

## Model 1 – Distance and Attractive Force

		Force of Attraction (Newtons)
A	 0.10 nm	$2.30 \times 10^{-4}$
B	 0.20 nm	$0.58 \times 10^{-4}$
C	 0.30 nm	$0.26 \times 10^{-4}$

1. What subatomic particles do these symbols represent in Model 1?



2. Would you expect to observe attraction or repulsion between the subatomic particles in Model 1?



3. Consider the data in Model 1.

a. What are the independent and dependent variables in the data?

b. Write a complete sentence that describes the observed relationship between the independent and dependent variables in Model 1.

4. If the distance between a proton and electron is 0.50 nm, would you expect the force of attraction to be greater than or less than  $0.26 \times 10^{-4}$  N?
5. If two protons are 0.10 nm away from one electron, would you expect the force of attraction to be greater than or less than  $2.30 \times 10^{-4}$  N?



# Pogil Coulombic Attraction Pogil

**JL Elias**



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