## 4/16 Notes from class

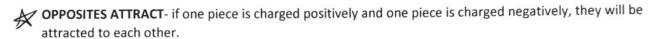
## Tape Lab

Given 2 pieces of tape on the table:

When you pull off one piece and pulled off the other piece, they were attracted to each other. They would also curl toward your finger. Positive or negative things also attract neutral things.

When top piece was removed and put toward another top piece- repelled.

Could you pull off a top and bottom piece and make them repel? - no because opposite charges attract, conservation of charge.



LIKE CHARGES REPEL- if both pieces were bottom pieces or both were top pieces of tape, they will not want to be next to each other because they have the same charge.

## Coulomb's Law

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

F= Electrical Force (measured in Newtons)

q = charge (measured in Coulombs)

r = radius (measured in meters)

k = Coulombs constant (a constant number 9x109)

When you:

Double the distance-

1/4th the force

Triple the distance-

1/9th the force

Quadruple the distance- 1/16<sup>th</sup> the force

1/2 the distance -

4 times the force

1/3 the distance-

9 times the force

1/4 the distance -

16 times the force

because the distance is squared in the formula.

A+2c charge is placed 4m from a +3c charge. Calculate F.

$$F_{\epsilon} = \frac{Kq_1q_2}{V^2} \frac{(9\times10^9)(+2c)(+3c)}{4^2} = 3.4\times10^9 N$$

Example #2

A 5.4 x 10<sup>-8</sup> C charge placed 6 m from an inknown charge, producing a 40 N force. Charlete the inknown charge.

$$-40N = \frac{486(92)}{36}$$