Distance makes the force grow stronger???Name_____

They say "distance makes the heart grow fonder", but does distance make the electric force grow stronger?

John Travoltage

Start the simulation with John's finger pointing at the door knob. Slowly rub his foot on the carpet until he zaps his finger on the knob. Don't rub the foot too quickly, you need to see how much charge is building up in John. After each zap, move John's finger a tiny bit further away from the knob. How far away from the knob can you get his finger and still have a zap? Describe how much charge John has and how far his finger is from the knob in at least 5 different positions. Place your data in the table below.

Position of John's finger	Amount of charge in John's body	Did John get a zap?
Pointing straight at the door knob		
		No

How does distance affect the strength of the electric charge?
_____
_____
_____
_____

Balloons and Static Electricity

*Now it is time to put everything you have learned about changing the strength of electric forces together. <u>Start with **one** balloon on the simulation.</u>*

Before you add any charges to the balloon, click on the balloon and drag it to several new positions (NOT the sweater). What happens to the balloon?	_____ _____
Now rub the balloon on the right sleeve of the sweater only and transfer all of the negative charges from that sleeve to the balloon. Now try moving the balloon around to several new positions, what happens?	_____ _____
Stick the balloon to the wall. Move it away from the wall until it no longer wants to stick to the wall, what happens?	_____ _____
Rub the balloon on the sweater to pick up the rest of the	

negative charges. Stick the balloon to the wall again. Slowly move it away until it doesn't want to stick to the wall, what happens?	
Compare and contrast the movement of the balloon when it had a lesser charge and the balloon when it had a greater charge. What can you conclude about the amount of charge and the distance between objects?	

Click on two balloons now. Carefully rub the yellow balloon on the right sleeve only and pick up all of the negative charge from the right sleeve. Stick the yellow balloon to the top of the wall. Rub the green balloon over the rest of the sweater and pick up the rest of the negative charges. Stick it to the bottom of the wall.

What does the yellow balloon with a small charge do to the charges on the wall?	
What does the green balloon with a large charge do to the charges on the wall?	
Using what you have just observed, why do balloons stick to a wall even though a wall is not electrically charged? (Hint: think about what was repelled and what was attracted.)	

Reset the balloons. Charge both balloons equally this time. Make sure both balloons get exactly half of the charge on the sweater. Stick one balloon to the wall and the other balloon in the middle of the right sleeve of the sweater.

Bring the balloon on the wall to the balloon on the sweater until the two balloons touch. Release the balloon and record what happens.	
Try it again a few more times. Try bringing the balloon closer or further away from the balloon on the sweater. Record your observations.	
How did distance affect the electric force?	
Why do the balloons behave in this way?	

Does the electric force only act on objects with like charges?	

Conclusion/Summary

Summarize what you have learned about how the strength of the electric force between objects can be changed. Make sure you discuss strength of the charge and distance between objects. Support your arguments with examples from the simulations.