

Brief Concepts:

- Charge can be transferred between two bodies by means of friction.
- A conducting body allows motion of charges through it. Whereas an insulating body does not allow charge to pass through it and charge stays at same place.
- The electrostatic force between two charges can be repulsive or attractive. Its value depends upon the magnitude of the charges and distance between them.

Explore:

One balloon and Sweater:

1. Rub only a small portion of balloon against sweater. Does charge transfer take place?
If yes, who releases the charge and who takes it up? If you were to rub sweater against balloon, will the charge transfer process become reverse?
2. Drag the balloon little away from sweater and release it.
What do you observe? Does balloon come closer to sweater? If yes, why?
3. As balloon comes closer to sweater, does the pace increase/decrease/stay same?
Explain the reason.
4. Rub entire portion of balloon against sweater. Does balloon collect more charge this time?
Drag balloon away and release it. Observe its speed? Does it move faster/slower/at the same speed as earlier?
5. Drag the charged balloon again and bring it near to wall. What happens to charges of wall?
(You will observe drifting of negative charges in wall. This separation of positive and negative charges, within a body, is called **induction of charges**. This is how a charged body gets attracted to a neutral body).
6. During induction, what is the net charge on wall? Is it negatively charged/positively charged/still neutral?
7. What happens to charges in wall which are far away from contact point of balloon and wall? Are these charges also get affected? Explain reason to support your observation.
8. Keep the balloon midway between sweater and wall, is it attracted more to sweater or wall? Why does this happen?

Two Balloons, Sweater and No wall:

1. Charge both balloons by rubbing them against sweater. Separate them apart at a distance. Do they attract or repel each other? Explain reason.
2. Is it possible that both balloons can attract each other? Why or why not?

Think:

1. Select correct statement(s):
 - For a negatively charged body, number of negative charges is more than number of positive charges.
 - For a positively charged body, number of negative charges is lesser than number of positive charges.
 - In charge transfer by friction, either positive or negative charges can be transferred between the bodies.
 - In induction, only negative charges are shifted. Positive charges cannot be shifted.
2. What will happen in following cases, if two charged bodies are brought close to each other?

Charges on Bodies	Attraction/Repulsion/No Effect
Negative and Positive	
Negative and Negative	
Positive and Neutral	
Neutral and Negative	
Neutral and Neutral	

3. Why the collar of your shirt is dirtier than the rest?
4. What do you think is the reason for induction of charges in a body when charged body is brought close to it?

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