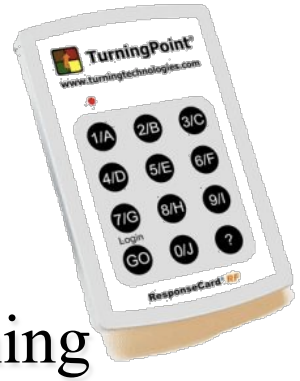
Three pithballs are suspended from thin threads. Various objects are then rubbed against other objects (nylon against silk, glass against polyester, etc.) and some (or all) of the pithballs are charged by touching them with one of these objects. It is found that pithballs 1 and 2 repel each other and that pithballs 2 and 3 repel each other. From this we can conclude that

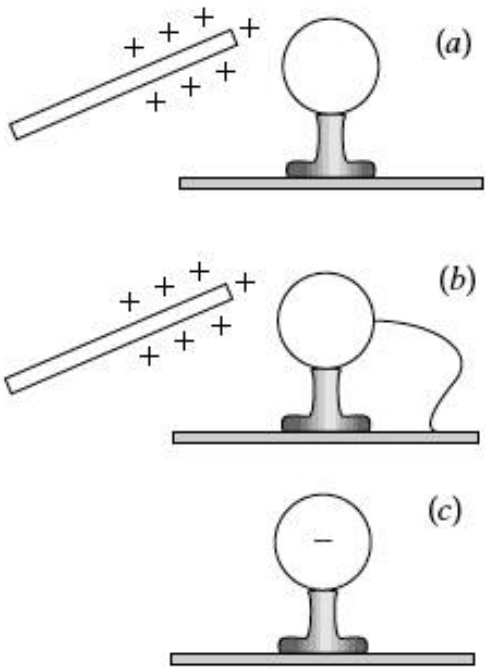


1. 1 and 3 carry charges of opposite sign.
2. 1 and 3 carry charges of equal sign.
3. All three carry the charges of the same sign.
4. One of the objects carries no charge.
5. We need to do more experiments to determine the sign of the charges.

Three pithballs are suspended from thin threads. Various objects are then rubbed against other objects (nylon against silk, glass against polyester, etc.) and some (or all) of the pithballs are charged by touching them with one of these objects. It is found that pithballs 1 and 2 attract each other and that pithballs 2 and 3 repel each other. From this we can conclude that

1. 1 and 3 carry charges of opposite sign.
2. 1 and 3 carry charges of equal sign.
3. All three carry the charges of the same sign.
4. One of the objects carries no charge.
5. We need to do more experiments to determine the sign of the charges.

A + charged object is placed near a conductor attached to an insulating pedestal (a). After the opposite side of the conductor is grounded for a short time (b), the conductor becomes negatively charged (c). Based on this information, we can conclude that within the conductor



1. both + and - charges move freely
2. only - charges move freely
3. only + charges move freely
4. We can't really conclude anything