

S8P5.b I can plan and carry out investigations to demonstrate the distribution of charge in conductors and insulators. (Include conduction, induction, and friction)

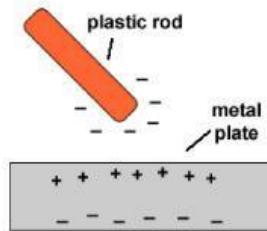
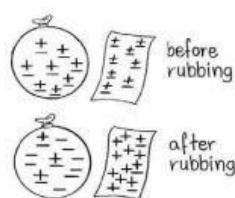
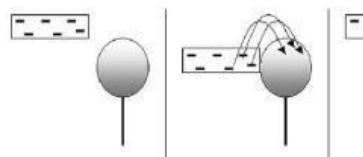


– Match the following words with their correct description.

Charge	Conductors	Insulators
Induction	Friction	Conduction

- _____ a material in which electric current does not flow freely.
- _____ a substance or material that allows electricity to flow through it.
- _____ the transfer of electrons from one object to another by direct contact.
- _____ process of generating or producing electricity in a material by bringing an electrically charged object near it.
- _____ rubbing two neutral bodies together, which causes a transfer of electrons from one body to the other body.
- _____ a quantity of electricity either positive or negative held within an object.

Identify the following as static Induction, Friction, or Conduction.



7. _____

8. _____

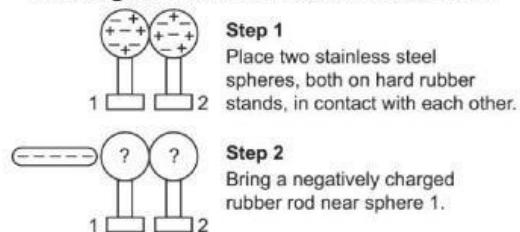
9. _____

10. What causes static discharge/shock to occur between two objects?

- When there is a large build up of opposite charges on two different objects that come into close proximity of each other.
- When there is a large build up of like charges on two different objects that come into close proximity of each other.
- When there is a large build up of opposite charges on the same object that rub against each other.
- When there is a large build up of like charges on the same object that come into close proximity of each other.

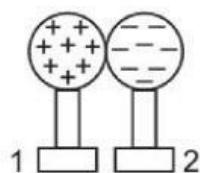
11. A student is investigating how a negatively charged rubber rod affects how charges are distributed on two stainless steel spheres that are touching each other. A diagram that shows two steps of the investigation is shown.

Investigation of the Process of Induction

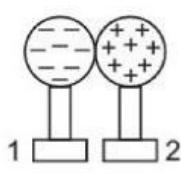


Which diagram for step 2 correctly predicts the distribution of charges on the stainless steel spheres?

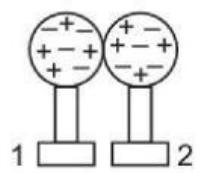
A.



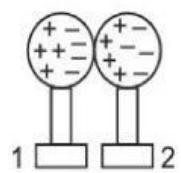
C.



B.



D.



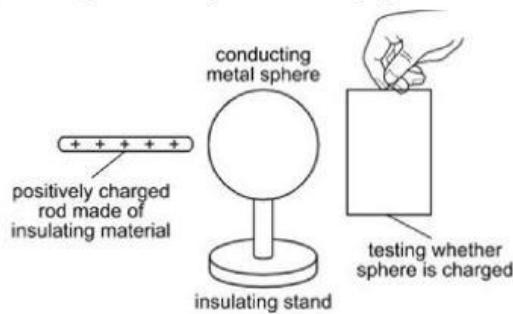
12. The picture shows a child sliding down a plastic slide.



Which statement **BEST** describes why the child's hair stands up after she slides down the slide?

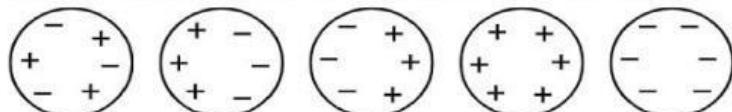
- A. Energy was transferred from the ladder to the child through conduction, causing the child's hair to become charged and stand up.
- B. Energy was transferred from the child to the slide through conduction, causing the child's hair to become charged and stand up.
- C. Friction caused a transfer of electrons between the slide and the child, making each of her like-charged hairs repel each other.
- D. Friction caused a transfer of electrons between the slide and the child, making each of her like-charged hairs attract each other through induction.

13. A student wants to investigate how to apply an electric charge to a conducting metal sphere by using an electrically charged rod made of insulating material. Pith is a light material that easily picks up an electrical charge. The student will then show that the charge remains on the sphere after the charged rod is removed by holding a neutral pith ball hanging from a string near the sphere and observing its behavior.



a. Which electric charge below will go into the empty metal sphere above?

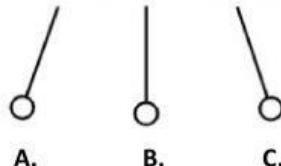
possible distributions of electric charge on conducting metal sphere

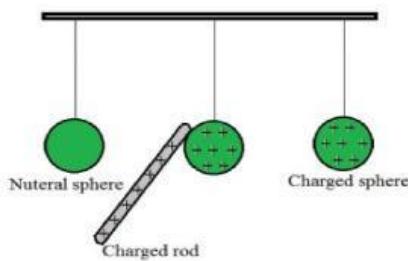


A. B. C. D. E.

b. Which neutral pith ball would demonstrate whether the sphere is charged in the testing paper above?

neutral pith balls on string





14. Which type of static electricity is shown in the picture above?

- A. Induction
- B. Conduction
- C. Polarization
- D. Friction

15. What happens when you rub a balloon on your hair?

- A. The balloon gets a positive charge. Since your hair lost electron negative charges, it now has an overall negative charge. The balloon and your hair will be repelled by each other.
- B. The balloon and your hair will have a positive charge and be attracted to each other.
- C. The balloon gets a negative charge. Since your hair lost electron negative charges, it now has an overall positive charge. The balloon and your hair will be attracted to each other.
- D. The balloon and your hair will have a negative charge and be attracted to each other.