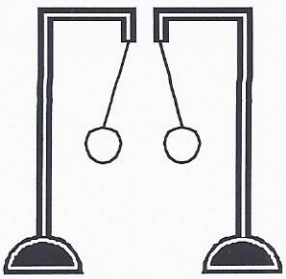
Static electricity Worksheet

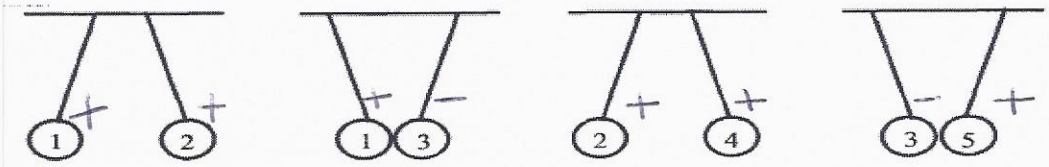
1. The diagram represents the interaction of charged spheres that you have observed.



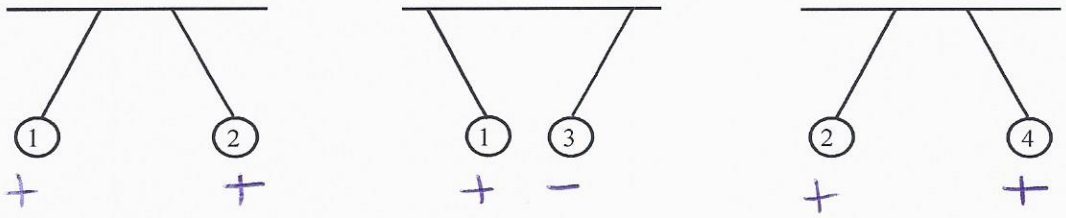
Which of the following statements describes the situation in the diagram?

A) The right-hand sphere is charged positively and the left-hand sphere negatively.
B) The two spheres are both electrically neutral.
C) The right-hand sphere is charged negatively and the left-hand sphere positively.
D) The two spheres both carry the same electrical charge.

2. You are given five electrically charged spheres and told that sphere 4 is positively charged. The following diagrams show what happens to these spheres when they are suspended in pairs close to each other. What are the charges of the other spheres?



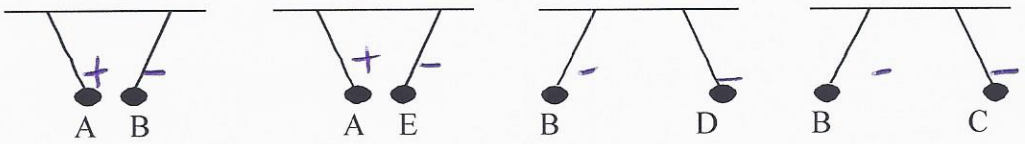
3. A student was given four electrically charged spheres.
The following diagrams show what happened when these spheres were suspended in pairs close to each other.



Which of the following statements is true?

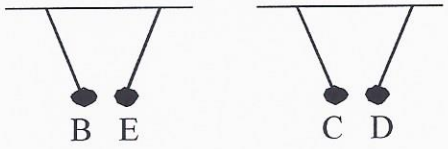
A) Spheres 1, 2, 3 and 4 have the same charge.
B) Spheres 2, 3 and 4 have the same charge.
C) Spheres 1, 2 and 4 have the same charge.
D) Spheres 1 and 3 have the same charge.

4. Pithballs A, B, C, D and E are electrically charged. The following diagrams show the positions of some of these pithballs when they are suspended two by two side by side.

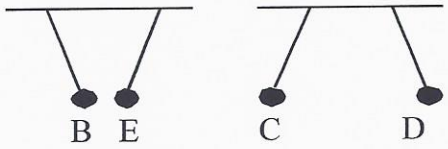


You are to suspend pithballs B and E side by side, and then do the same with pithballs C and D. Which of the following diagrams shows the positions that will be assumed by pithballs B and E and C and D?

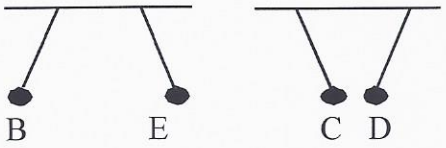
A)



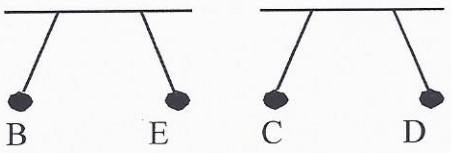
B)



C)



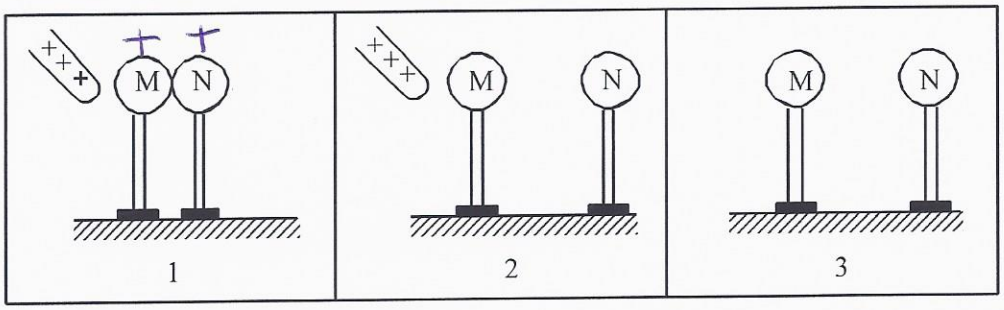
D)



5. Two conducting spheres M and N, on insulating supports, are in contact with each other. At first they are not charged.

The following three operations are performed:

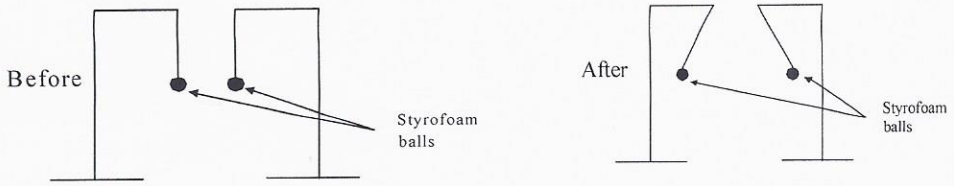
1. A positively charged rod touches sphere M.
2. Sphere N is moved away from sphere M.
3. The charged rod is moved away.



What are the charges on the spheres M and N after the operations?

A) Negative for sphere M, positive for sphere N
B) Negative for sphere M, no charge for sphere N
C) Negative for spheres M and N
D) Positive for spheres M and N

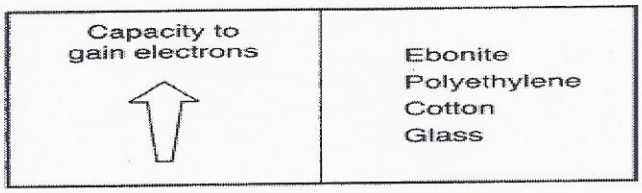
6. The following setup is available to you in the laboratory :



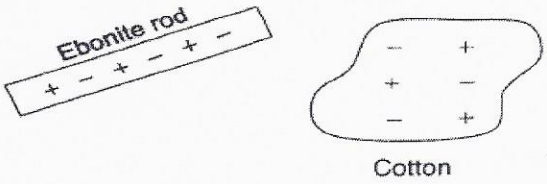
Which procedure did you carry out?

A) You touched the two styrofoam balls with a strip of vinyl that had been rubbed with a woollen cloth.
B) You touched only one styrofoam ball with a strip of vinyl that had been rubbed with a woollen cloth.
C) You touched one of the styrofoam balls with a strip of vinyl that had been rubbed with a woollen cloth and touched the other with the woollen cloth.
D) You touched both styrofoam balls with your hand.

7. In the laboratory, you are given an ebonite rod, a piece of cotton and the following electrostatic list.

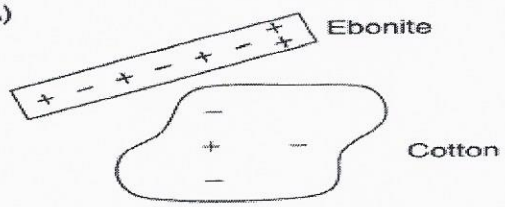


The following diagram shows the ebonite rod and the piece of cotton before they are rubbed together.

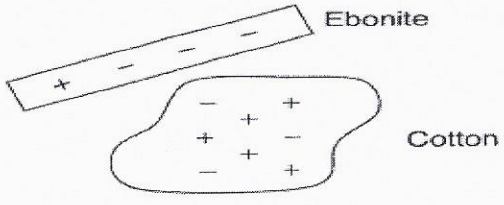


Which of the following diagrams correctly shows the transfer of electric charges after the ebonite rod and the
piece of cotton were rubbed together?

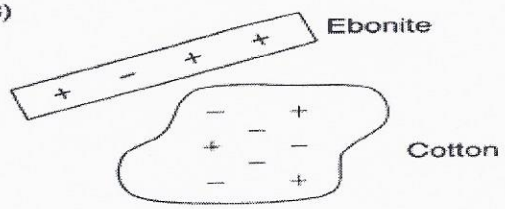
A)



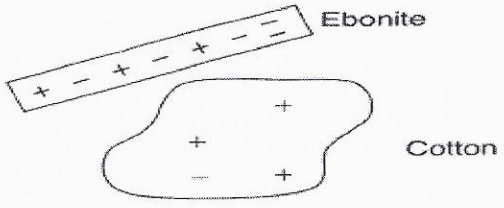
C)



B)



D)



8. Two charged spheres, A and B, are suspended from a wire.

Sphere A

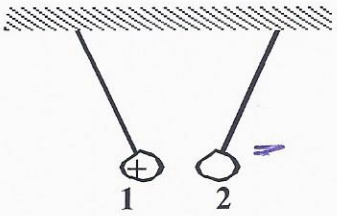
Sphere B

Repel

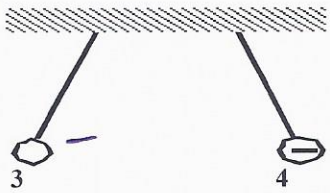
Indicate the polarity of the spheres and the behavior of the spheres when they are suspended next to each other

9. Spheres 1, 2, 3 and 4 are electrically charged. The charge on sphere 1 is positive and the charge on sphere 4 is negative. We do not know the type of charge on sphere 2 or on sphere 3.

When spheres 1 and 2 are brought near each other, they attract each other.



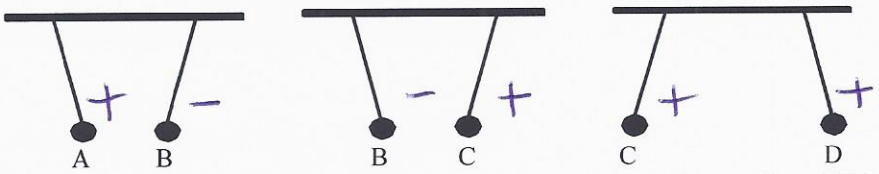
When spheres 3 and 4 are brought near each other, they repel each other.



What type of charge is on sphere 2 and on sphere 3?

A) The charge on sphere 2 is positive and the charge on sphere 3 is positive.
B) The charge on sphere 2 is negative and the charge on sphere 3 is negative.
C) The charge on sphere 2 is positive and the charge on sphere 3 is negative.
D) The charge on sphere 2 is negative and the charge on sphere 3 is positive.

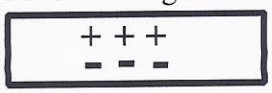
10. We are given four spheres, A, B C and D. Sphere A is positively charged and the charges on spheres B, C and D are unknown. The following diagram shows what happens to these spheres if we suspend them two by two close to each other.

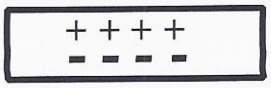


Given the diagram above, what are the charges on spheres C and D?

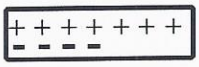
A) Sphere C is positively charged and sphere D is negatively charged.
B) Sphere C is positively charged and sphere D is positively charged.
C) Sphere C is negatively charged and sphere D is negatively charged.
D) Sphere C is negatively charged and sphere D is positively charged.

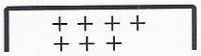
11. Silk and glass are two electrically neutral materials. Silk can be represented by

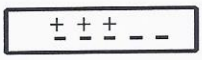
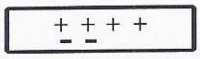


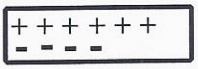
and glass by  .

After these materials are rubbed together, silk becomes negatively charged and glass becomes positively charged. Which of the following models may represent silk and glass after these materials have been rubbed together?

A) silk  glass 

B) silk  glass 

C) silk  glass 

D) silk  glass 

12. In a laboratory, a student was given the following materials:

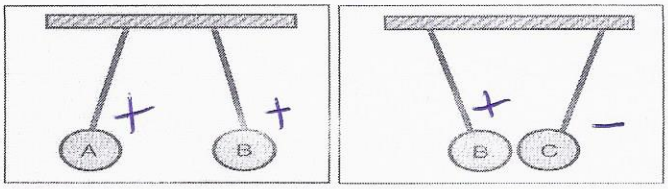
- a piece of fur +
- a plastic rod −
- a suspended balloon −

Using these materials, the student performed the following steps in the order shown below.

Step	Result
1. The plastic rod was rubbed with the piece of fur.	
2. The suspended balloon was touched with the plastic rod.	
3. The rod was brought close to the balloon.	The balloon and the rod repelled each other.
4. The fur was brought close to the balloon.	? ATTRACT

Predict the result for Step 4.

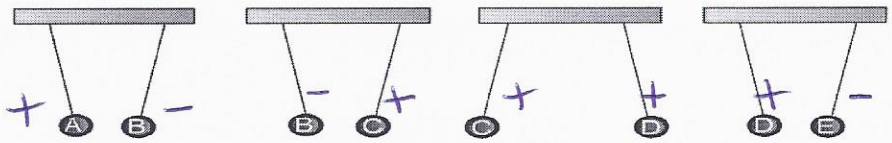
13. You are studying the behavior of three charged spheres, identified by the letters A, B and C, as shown in the diagram below.



If sphere A is positively charged, what are the charges on spheres B and C?

A) Spheres B and C are positively charged
B) Spheres B and C are negatively charged
C) Sphere B is positively charged and sphere C is negatively charged
D) Sphere B is negatively charged and sphere C is positively charged

14. Five metallic spheres were electrically charged and then suspended as shown in the diagram below:



If sphere A is positively charged, which of the spheres are negatively charged?

A) B and E B) C and D C) D and E D) B and C

15. After being rubbed on hair, a rubber balloon acquires an electrical charge. When a piece of positively charged cotton is brought close to the balloon, the two objects will attract each other. What will happen to this balloon if it is brought close to a negatively charged plastic rod and why?

A) The balloon will be repelled because it is positively charged.
B) The balloon will be repelled because it is negatively charged.
C) The balloon will be attracted because it is positively charged.
D) The balloon will be neither attracted nor repelled because it is neutral

16. The table below shows what happens when an electrically charged ruler is brought close to the following three objects: a cathode ray tube which is **negatively charged**, charged sphere 1 and charged sphere 2.

Combination	Result
Ruler is brought close to cathode ray tube.	The ray is repelled.
Ruler is brought close to sphere 1.	Sphere 1 is repelled.
Ruler is brought close to sphere 2.	Sphere 2 is attracted.

What is the electric charge on each sphere?

A) Sphere 1 is positively charged and sphere 2 is negatively charged
B) Sphere 1 is negatively charged and sphere 2 is negatively charged
C) Sphere 1 is positively charged and sphere 2 is positively charged
D) Sphere 1 is negatively charged and sphere 2 is positively charged