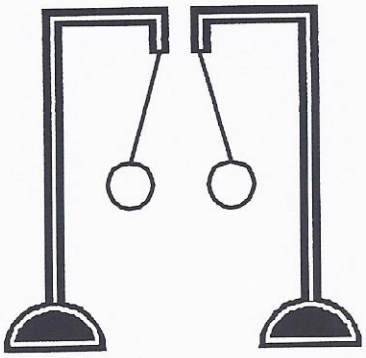
Static electricity Worksheet

1.

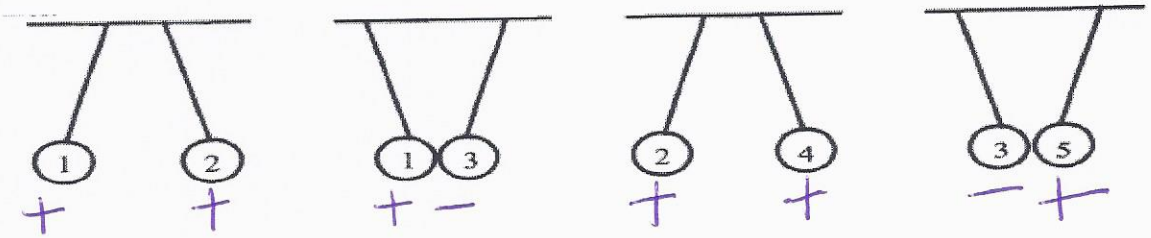
The diagram represents the interaction of charged spheres that you have observed.



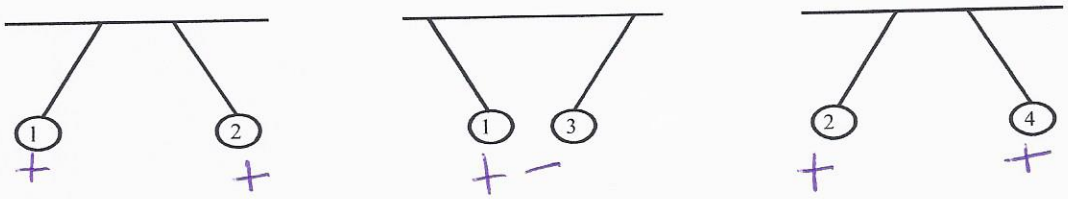
Which of the following statements describes the situation in the diagram?

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?



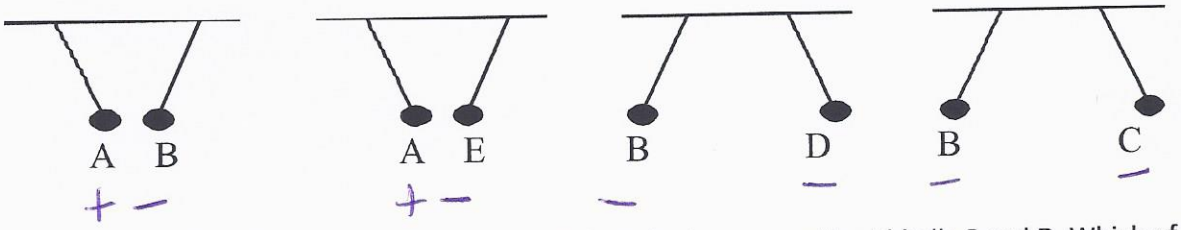
3. A student was given four electrically charged spheres.
The following diagrams show what happened when these spheres were suspended in pairs close to each other.



Which of the following statements is true?

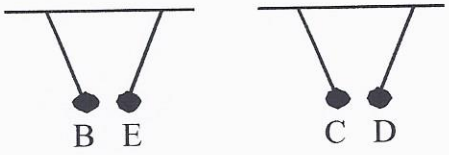
A) Spheres 1, 2, 3 and 4 have the same charge.
B) Spheres 2, 3 and 4 have the same charge.
C) Spheres 1, 2 and 4 have the same charge.
D) Spheres 1 and 3 have the same charge.

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.

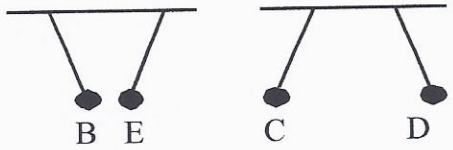


You are to suspend pithballs B and E side by side, and then do the same with pithballs C and D. Which of the following diagrams shows the positions that will be assumed by pithballs B and E and C and D?

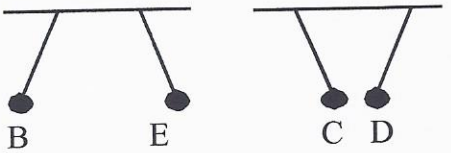
A)



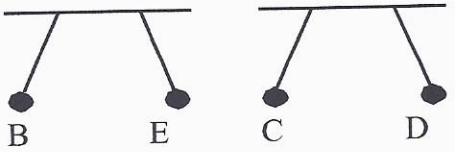
B)



C)



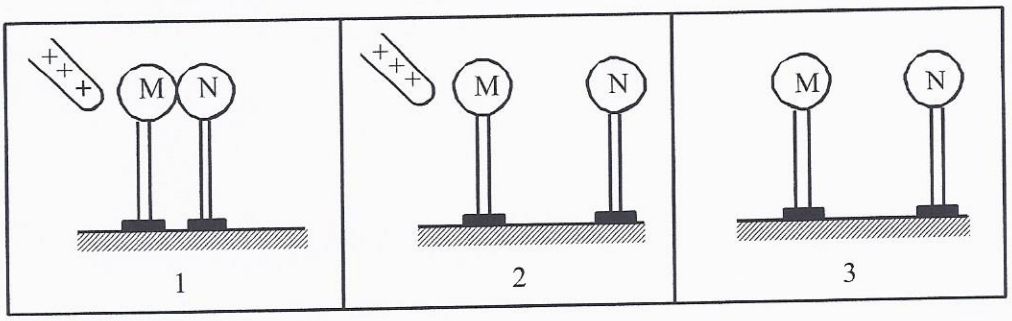
D)



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:

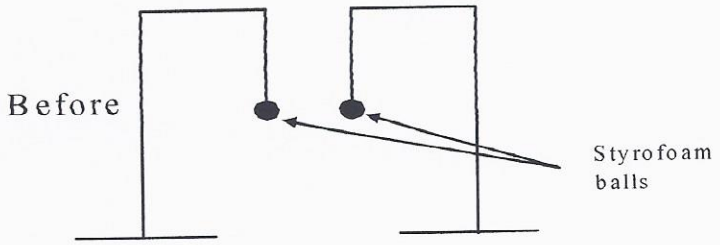
1. A positively charged rod touches sphere M.
2. Sphere N is moved away from sphere M.
3. The charged rod is moved away.



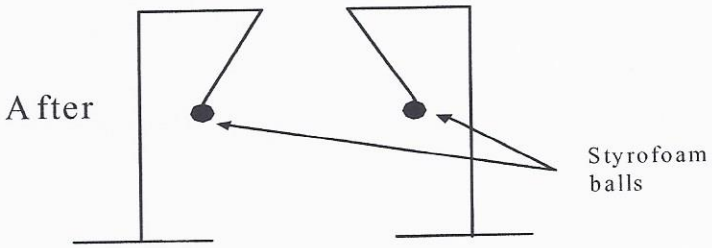
What are the charges on the spheres M and N after the operations?

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 :



After carrying out a procedure, you obtain the following results :



Which procedure did you carry out?

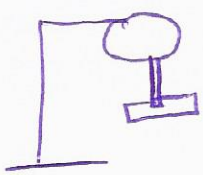
A) You touched the two styrofoam balls with a strip of vinyl that had been rubbed with a woollen cloth.
B) You touched only one styrofoam ball with a strip of vinyl that had been rubbed with a woollen cloth.
C) You touched one of the styrofoam balls with a strip of vinyl that had been rubbed with a woollen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

7. You are asked to confirm the behaviour of two electric charges with the same sign, using the following materials:

- 2 plastic rulers
- 1 piece of string
- 1 ring stand
- 1 piece of wool

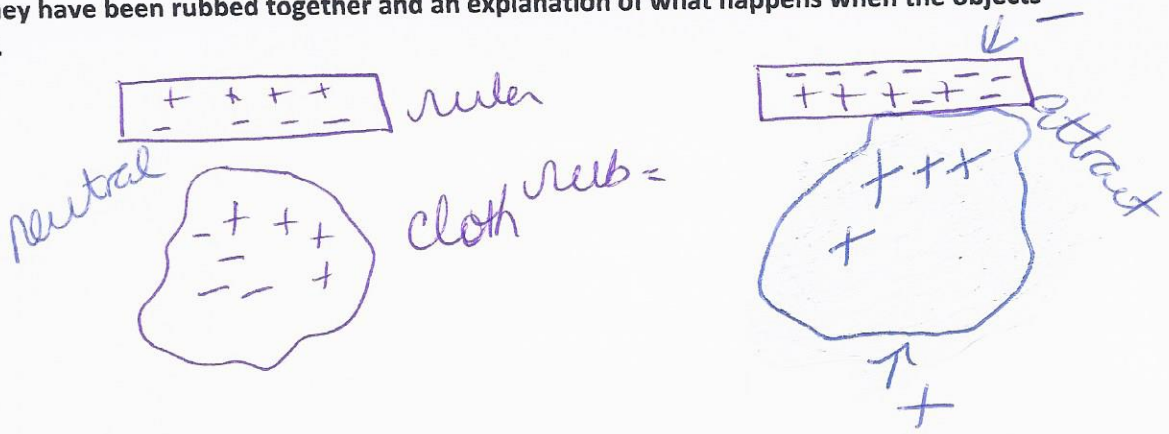
Explain the produce you would use to do this. In your explanation, list the **steps involved in this procedure** and describe **the way the charges will behave** after all these steps have been performed.

1 - Place the string on the ring stand as below.
2 - Place one ruler in the string so that it hangs in the string.
3 - Rub the ruler hanging w/ the wool
4 - Rub the other ruler w/ the wool
5. Bring the 2nd ruler to the hanging ruler & see results.
6. They should repel because they are the same charge



8. Explain why a plastic ruler and a piece of cloth become oppositely charged when they are rubbed together.

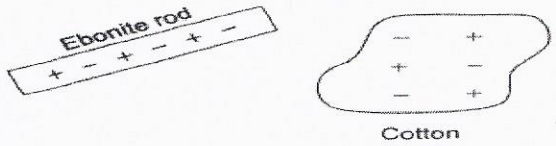
Your answer should include a diagram of the situation before the objects are rubbed together, a diagram of the situation after they have been rubbed together and an explanation of what happens when the objects are rubbed together.



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

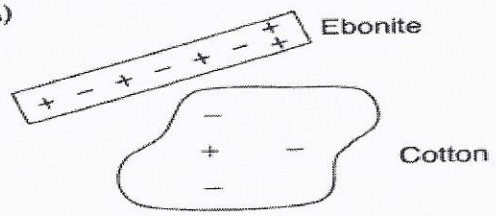
Capacity to gain electrons ⇑	
	Ebonite
	Polyethylene
	Cotton
	Glass

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

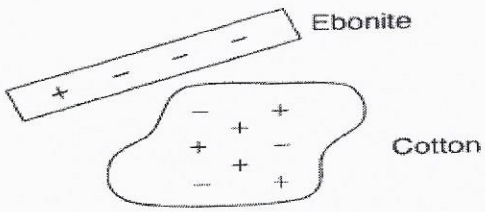


Which of the following diagrams correctly shows the transfer of electric charges after the ebonite rod and the piece of cotton were rubbed together?

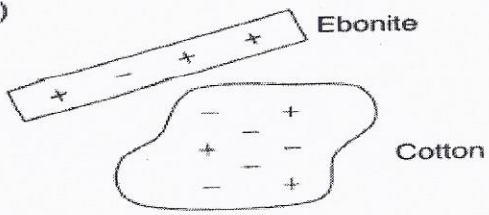
A)



C)



B)



D)