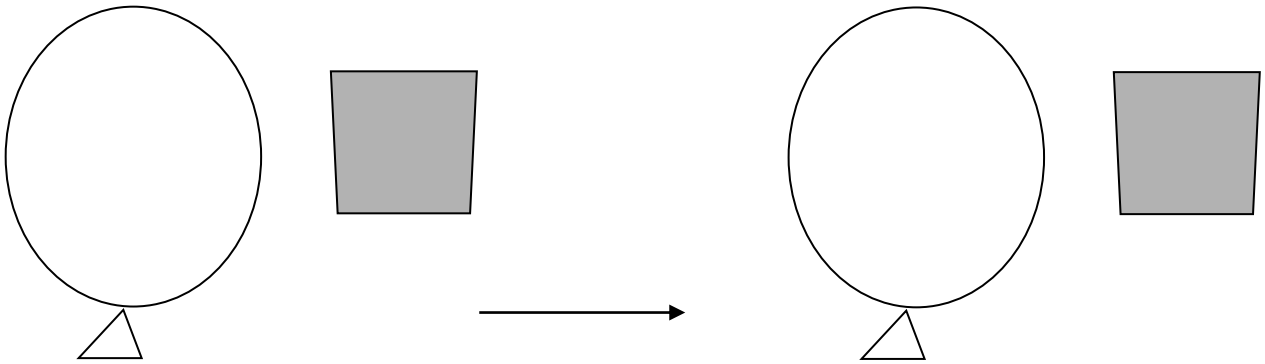
Conductors and Insulators /24

Name: _____

Directions: Add the charges to the before and after pictures to show what is happening.

POINT ONE: Static electricity needs an insulator. A balloon is an *insulator*; this means that electrons are not free to move on its surface. They are stuck in one place.

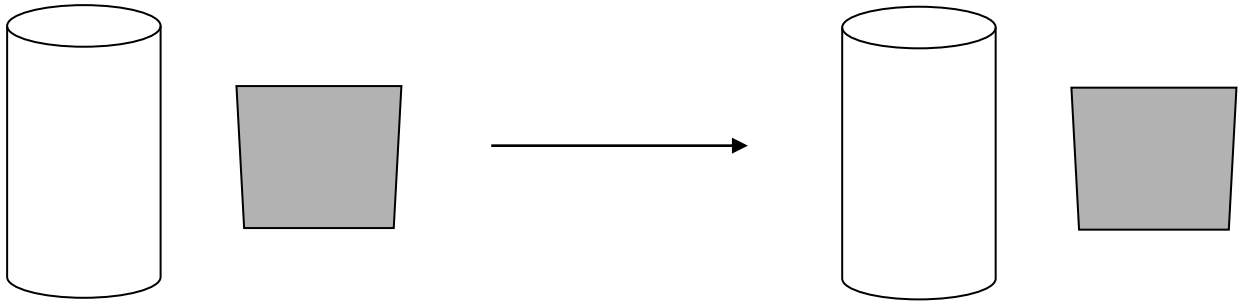


Balloon and cloth **BEFORE** being rubbed together

Balloon and cloth **AFTER** being rubbed together

The build-up of negative charges also called _____ in one place is called static electricity. It is called "static" because it does not move around. The negative charges do not move around because they are on a balloon which is made of rubber. Because of this rubber is known as an _____. (4)

POINT TWO: Conductors cannot have static electricity



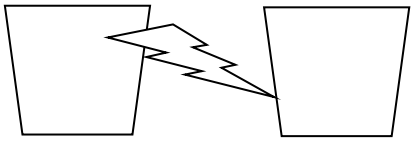
Metal rod and cloth **BEFORE** being rubbed together

Metal rod and cloth **AFTER** being rubbed together

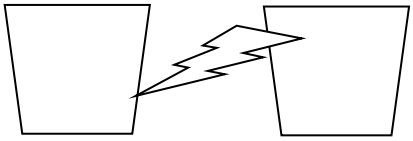
Metal is a _____, a substance which lets negative charges (also known as _____) move around freely. Because of this, negative charges do not build up in one place, and _____ electricity cannot be created.(5)

POINT THREE: When there is a difference in negative charges, charges will move. The negative charges will jump from the places where there are the *most* number to where there are the *least*. **Complete the following diagrams by adding negative charges (electrons) to show the possible relationships:**

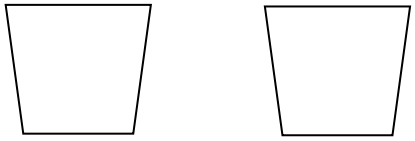
a.



b.



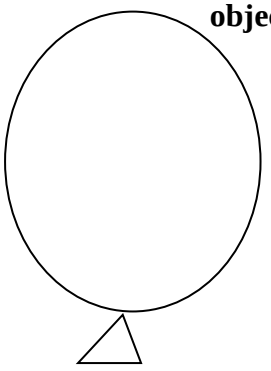
c.



Negative charges (or electrons) will always move from where there are the (greatest/fewest) number to where there are the (greatest/fewest) number. If there is a big enough difference and the two objects are close enough together, this jumping may cause a _____. (4)

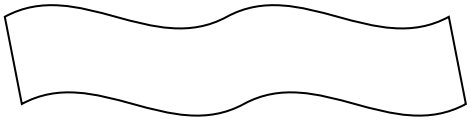
POINT FOUR: Static electricity can induce a charge separation in neutral object which can make the object move.

1.



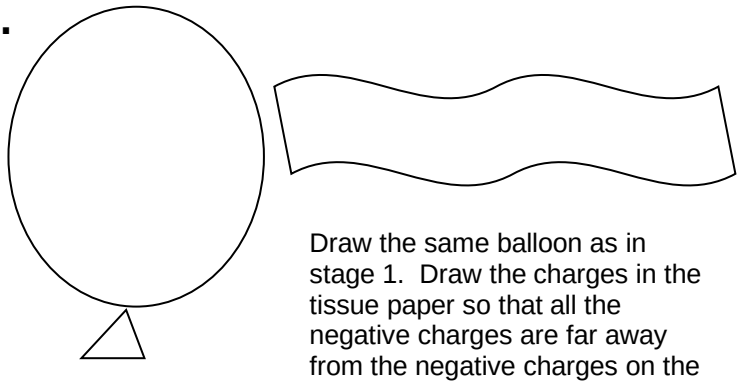
Draw the build-up of negative charges on this balloon, AFTER it has been rubbed with a cloth

2.



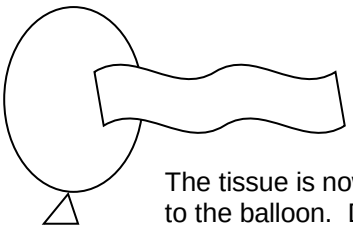
Draw the normal spread of negative charges on this piece of tissue (a neutral object)

3.



Draw the same balloon as in stage 1. Draw the charges in the tissue paper so that all the negative charges are far away from the negative charges on the balloon. As they get closer together the tissue is attracted to the balloon

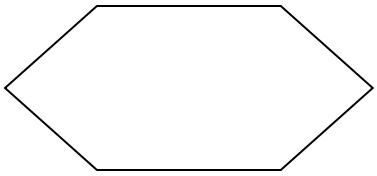
4.



The tissue is now stuck to the balloon. Draw the charges as they now appear.

The movement of electrons in a neutral object giving a temporary charge, this is called _____. If the object with a temporary charge is light enough it can be _____ towards the object that caused the temporary charge.(6)

POINT FIVE: If an object has too many electrons for the number of protons, we say it is negatively charged overall. Using the object to the right place the appropriate amount of protons and electrons to indicate a negatively charged object. (1)



If an object has too few electrons for the number of protons, we say it is positively charged overall. Using the object to the right place the appropriate number of protons and electrons to indicate a positively charged object. (1)

Give 3 examples of insulators and conductors (0.5 x 6 = 3)

Insulators	Conductors