Electroplating lab

Name _____

Purpose: To observer if it is possible to coat certain objects with a thin layer of metal. (This is called *electroplating,* or plating objects with metal using electricity.) Your job is to determine which kinds of objects can be plated and used to create a new inexpensive coin currency.

Information about metal ions:
All metal ions have a positive charge. When you run an electrical current through the solution that has metal ions, the ions migrate or move toward the wires in the solution. In this experiment the copper ion (in the Copper Sulfate – $CuSO_4$) is positive, so it moves to the negative wire. Since the wire is attached to an object, the object gets copper-coated with copper ions. This is the same process that is used for gold and silver-plating of objects.

Materials:

1 battery	Beaker
2 alligator clips (any color) Be careful: they bite!	Copper Sulfate ($CuSO_4$) solution
1 paper clip	1 toothpick
1 straw	1 object to test (e.g. coin, clip, key)
Safety goggles	

Procedure:
1. Pour copper sulfate solution into a beaker until it is one-half full.
2. Hook the alligator clamps to the negative and positive terminals of the battery.
3. Attach the object to be plated to the alligator clamp coming from the NEGATIVE
    test lead. (Look carefully: There is a minus sign on the negative side of the battery.)
4. Place both alligator clamps into the copper sulfate solution inside the beaker. They should not
    touch each other.
5. Observe whether the object turns a different color or stays the same.
6. Cleanup: Remember to dilute all chemicals used in this lab before pouring down the drain.
    Put electroplated objects in the proper waste disposal container.

Data:

Item Tested	Y/N the object electroplated	Qualitative observations – what happened?
paperclip		
toothpick		
straw		

Observations/Conclusion:
What happened to the color of the objects that were electroplated?
What color did they turn?
What color did the liquid turn?   Why did it change colors?

Based on your findings – what other items would you test for possible coin electroplating?