ACTIVITY SHEET

| Name: | Hand in instructions: |
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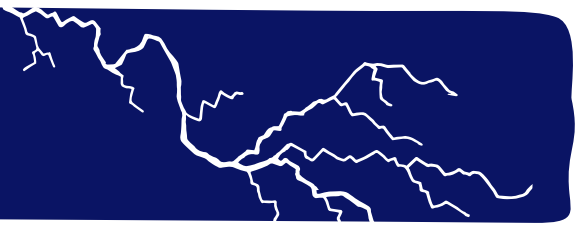
# Static Electricity



## 1. Describing static electricity

- Using a series of three labelled diagrams, explain why someone's hair sticks up on end after you comb it with a plastic comb. (Note: you can be a terrible artist and produce brilliant scientific diagrams – it's all about the labels!)
- Challenge question: Why's this hairy problem more of an issue on dry days than damp days

# 2. Static electricity facts

- Answer 'True' or 'False' to each of the statements below by circling your choice.
- Challenge: Explain each answer using examples where possible.

**Static electricity can be dangerous** True False

Why?

**Static electricity can be useful** True False

Why?

**Lightning is a form of static electricity** True False

Why?

The next seven questions are about electrostatic precipitators and how they work:

**Electrostatic precipitators are used to remove all pollutants from industrial gases** True False

Why?

**Electrostatic precipitators remove dry dust particles from industrial gases** True False

Why?

Dust particles are given a negative charge by gaining electrons from a negatively charged metal grid ☐ True ☐ False

Why?

The process gases including the negatively charged particles pass by a negatively charged collection plate ☐ True ☐ False

Why?

The collected particles can be removed from the collection plates by rapping ☐ True ☐ False

Why?

The cleaned process gases leave the electrostatic precipitator ☐ True ☐ False

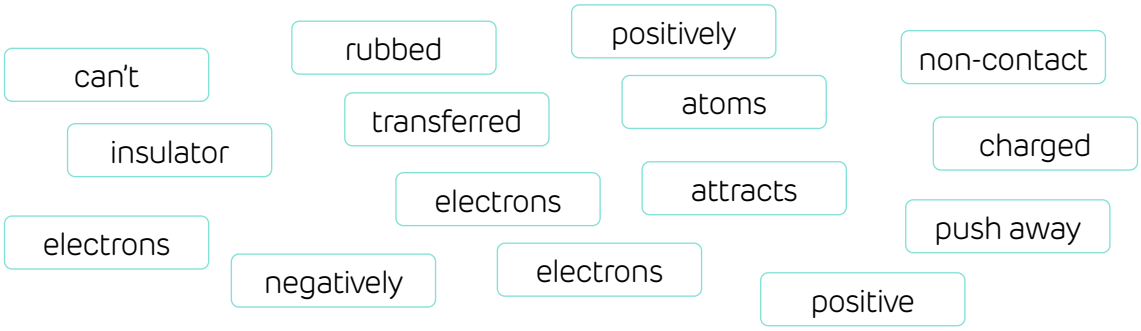
Why?

The process gases leaving the electrostatic precipitator are negatively charged ☐ True ☐ False

Why?

# 3. All about charges

- **Use the word bank to fill the gaps**




Everything is made of atoms. _____ are made of sub-atomic particles called protons, neutrons and _____. Electrons are _____ charged. If an atom loses an electron, it becomes _____charged. If an object (made of lots of atoms) gains _____, it becomes negatively charged. Electrons can be transferred between atoms – and between particles or objects or whatever you like. Positive charges _____ be moved between atoms (so this also means thay can't be moved between objects).

An electrical _____ is a material that doesn't easily allow an electric current to flow. A plastic comb is an insulating object. When two insulating objects such as a plastic comb and a soft cloth are _____ together, electrons can be _____ between them. Electrons move from the cloth to the plastic comb. This leaves a _____ charge on the cloth and an equal negative charge on the comb. If the charged comb is used to comb clean dry hair, _____ transfer to the hairs, giving each one a negative charge. Like charges ("like" here means "the same") repel each other (repel means _____). If lots of strands of hair next to each other all have a negative charge, they repel each other and the hairs stand on end to avoid each other.

Unlike charges ("unlike" here means "different") attract. So, an object with a positive charge _____ an object with a negative charge. Charged objects don't have to touch each other to experience an attractive or repulsive force. Electrostatic forces are a _____ force. An electric field is the area around a _____ object where an electrostatic force exists. The force gets weaker further from the object.