Static Electricity

What's the science story?

A big idea in physics is electricity and magnetism. The familiar everyday world we live in is largely a consequence of the properties and behaviour of electric charge. Matter is held together by electrostatic forces, and these influence chemical changes. Electricity and magnetism initially seem distinct phenomena but are later found to be closely interrelated. Understanding electricity and magnetism helps us to develop our technology and find applications that can transform our everyday lives.

Previous knowledge:

KS3

Year 7 Electricity

Year 8 Magnets

Next steps…

KS4

P2 Electricity

Keywords

Current
Charge
Voltage
Resistance
Series
Parallel
Atom

Proton
Neutron
Electron
Static
Electrons
Non-contact
Friction
Insulator

Conductor
Repel
Attract
Spark
Earthing
Discharge

Working scientifically skills:

WS3: Making predictions

WS17: Making conclusions

Assessments:

Exit tickets x 2/3 (formative)

- **Details of each exit ticket**
  - **ET Balloon**

KS3 – Year 9

Lesson No. and Title	Learning objectives	National Curriculum	Practical equipment
1. Electricity Recap	ARE – To describe the key features in a given circuit. AGD – To compare series and parallel circuits.	*This lesson could take longer depending upon knowledge of class = if students are struggling – see year 7 Electricity topic.*	
2. The atom	ARE – To describe the structure of an atom. AGD – To explain the differences between a range of atoms.		
3. Static electricity	ARE – To state what static electricity is. AGD – To explain how static electricity is produced.	• separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects	PRAC: Static circus x6 stations 1. Magic pepper – salt, pepper, comb, wool cloth 2. Bendy water - PVC pipe, cloth 3. Rolling can - PVC pipe, cloth, empty drinks can 4. Double bubble – bubble solution, straw, cloth, polycarbonate sheet, PVC pipe 5. Hair raising – Balloons, mirror 6. The levitating spell – PCV pipe, plastic bags cut into 15cm square pieces
4. The Van de Graaff generator	ARE – To describe how the Van de Graaff works. AGD – To explain in detail how the Van de Graaff works.	• separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects	DEMO: Van de Graaff generator plus accessories.

KS3 – Year 9

5. Examples of static	ARE – To describe one way in which static is used. AGD – To explain the ways static electricity is used.	• separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects	
6. Dangers of static	ARE – To describe the possible dangers of static electricity. AGD – To explain how the dangers of static can be reduced.	• separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects	
7. All about thunderstorms!	ARE – To describe what happens during a thunderstorm. AGD – To explain in detail how lightning forms.		