

Lesson Plan: Electric Charge (age 11 – 14) – Types & Behaviour of Charge.

Objectives:

Introduce concepts of electrostatic charge, the different states, and their behaviour.

Lesson introduction (15 min):

Recap on any previous learning on electrostatics. Introduce main concepts. Reference can be made to Electric Charge Student Revision Notes at www.twothirtyvolts.org . Explain experiment and learning objectives.

Lesson activity (20 min):

Group students in pairs and task them to:

- Undertake scotch tape exercise in Student Sheet.
- Undertake the plastic tube exercise in Student Sheet.

The students are to record the results on the Worksheet.

Lesson demonstration (15 min):

Select some of the students to inform the rest of the class about their findings. The Electric Charge Experiment at www.twothirtyvolts.org can be used as a demonstration experiment at this stage to re-enforce concepts.

Lesson review (10 min):

Recap on learning from experiment and establish levels of understanding. Either at this point or as an extension activity the Student Quiz on Electric Charge at www.twothirtyvolts.org can be used to establish levels of understanding.

Resources required:

Sufficient sets of the following for students to work in pairs:
Roles of scotch tape; plastic tubes (such as for table tennis balls); wool cloth; paper; cereal; salt; table tennis balls.

www.twothirtyvolts.org Electric Charge Experiment.

Student access to internet for www.twothirtyvolts.org :
Electric Charge Student Revision Notes
Electric Charge Student Quiz

Expected Outcomes:

Students will identify two types of charge (positive & negative), will observe the charging of various objects by friction, and understand that like charges repel and different charges attract.

Student sheet: Electric Charge – Types & Behaviour of Charge.

Objectives:

By the end of the session you will identify two types of charge (positive & negative), will observe the charging of various objects by friction, and understand the behaviours of the charges.

Resources required:

Roles of scotch tape; plastic tubes (such as for table tennis balls); wool cloth; paper; cereal; salt; table tennis balls.

Student access to internet for www.twothirtyvolts.org :
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Activity:

Scotch Tape Experiment:

- Tear of two 15 cm pieces of scotch tape and fold the first few centimeters of sticky sides together. Place the two strips sticky side down on a table parallel to each other. Rub the tape then pull off the table quickly.
- Then hold the two strips apart from each other and gradually bring closer together and record on the Worksheet what happens.
- Repeat the process varying the length of the tape and the amount the tape is rubbed.
- Next place one strip on the table sticky side down and then place the second strip on top of it and rub the top strip. Pull the two strips off together, then separate, hold apart and then gradually bring closer together. Record on the Worksheet what happens.
- Repeat the process varying the length of the tape and the amount the tape is rubbed.

Plastic Tube Experiment:

- Place the plastic tube over each of small pieces of paper, cereal, salt, and table tennis balls in turn and record your observations on the Worksheet.
- Rub the plastic tube with the wool cloth and repeat the process for the different materials.

Further work:

Access the Student Quiz on Electric Charge at www.twothirtyvolts.org to test understanding of subject.

Linked Resources

www.twothirtyvolts.org :
Electric Charge 11-14 Student Revision Notes
Electric Charge 11-14 Revision Quiz

Worksheet: Electric Charge – Types & Behaviour of Charge.

Scotch Tape Experiment Observations:

Rubbed Plastic Tube Experiment Observations: