MR SULLY UNFOLDS PHYSICS

# Static electricity and electric fields

**AQA 4.2.5**
Electricity · Paper 1
Physics only

Name _____ Class _____ Date _____

Rubbing two insulators together can transfer **electrons** from one to the other, leaving both charged.

**KEY IDEAS**

- The material that gains electrons becomes **negatively** charged; the one that loses electrons becomes equally **positively** charged.
- Like charges repel; unlike charges attract. These are non-contact forces.
- A charged object has an **electric field** around it, strongest close to the object.

## Section A · Recall

Grade 4–5

**1** Which particles are transferred when a balloon is rubbed on a jumper? [1]

**2** Two negatively charged balloons are held near each other. Describe and explain what happens. [2]

**3** A polythene rod becomes negatively charged when rubbed with a cloth. Explain what happens to the cloth. [2]

## Section B · Fields

Grade 5–6

**4** Draw the electric field around an isolated negatively charged sphere. [2]

**5** Describe how the force on a charged object changes as it is moved closer to another charged object. [2]

## Section C · Stretch

Grade 7+

**6** Explain why a spark can jump between a charged object and an earthed conductor. [3]

## Exam-style question

AQA style

**7** A fuel tanker is refuelling an aircraft. Fuel flows through a long plastic hose.

**a** Explain how the aircraft can become charged. [2]

**b** Explain why the aircraft is connected to earth with a metal cable before refuelling. [3]

**Total: _____ / 17**

| **How confident am I?** | Not yet | Nearly | Got it |
|---|---|---|---|
| I can explain charging by friction using electrons | ☐ | ☐ | ☐ |
| I can describe how charged objects attract and repel | ☐ | ☐ | ☐ |
| I can draw and describe electric fields | ☐ | ☐ | ☐ |