# 2.3 Electrostatics (P)

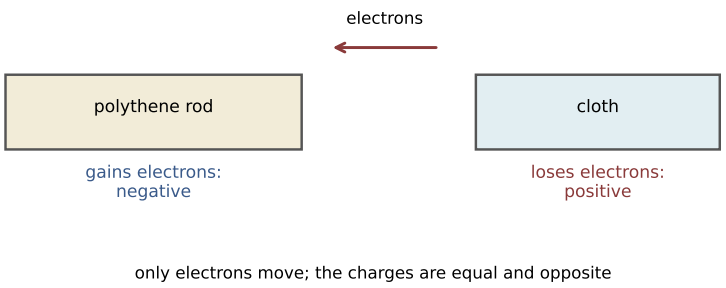
Name: _____ Class: _____ Date: _____ **Total: 17 marks**

## Objective

Cover the electrostatics (P) extension (2.22P–2.28P): conductors and insulators, charging by friction, electron transfer, attraction and repulsion, dangers and uses. Original Physics-only practice.

## 1 Key knowledge and worked examples

### ■ Charge is electrons moving




Only **electrons** transfer. Rub a polythene rod with a dry cloth: electrons move cloth → rod, so the rod becomes **negative** and the cloth **positive** (equal amounts). Unlike charges attract; like charges repel.

### ■ Danger and use

**Danger**: fuelling aircraft and tankers – flowing fuel gathers charge, a spark can ignite vapour; earthed bonding cables keep everything at the same potential. **Uses**: photocopiers charge a drum so toner sticks where the image is; inkjet printers steer charged droplets.

## 2 Practice

**2.1** (P) Name the particle transferred when insulators are charged by friction. [1]

**2.3** (P) State the force rule for like and unlike charges. [2]

**2.4** (P) Give one danger of electrostatic charging during refuelling and the precaution used. [2]

## 3 Exam-style questions

**3.1** (P) An acetate rod rubbed with a cloth becomes positive. Explain, in terms of particles, what happened to each object. [3]

**3.2** (P) Describe how a photocopier uses electrostatic charge. [3]

**3.3** (P) Explain why a charged plastic comb picks up small pieces of dry paper. [3]