Physics practice questions – electric circuits

* 1. When two different materials are rubbed together, electrons are rubbed off one material and on to the other. The material that gains electrons becomes negatively charged. The material that loses electrons becomes positively charged.
  2. Ball B will be repelled away from Ball A because they are both positively charged and similar charges repel. This force will be electrostatic.
  3. The ball will gain gravitational potential energy and swing back towards ball A

2.1) V = IR

R = V/I

2V÷0.1A = 20ohms

2.2) R2 = 2/3 x R1

2/3 x 20 = 13.3ohms

Total resistance = 20 + 13.3 = 33.3 ohms

2.3) Draw voltmeter parallel to the bulb

2.4) charge = current x time taken

1.5A x 20secs = 30 coulombs

2.5) potential difference = energy transferred ÷ charge

Energy transferred = potential difference x charge

10V x 30C = 300J

3.1) The voltmeter is in series when it is meant to be in parallel to the coil of wire

3.2) To help measure temperature of wire

3.3) The student can measure current (in series) and potential difference (parallel to wire). They can then use these results to use Ohm’s law R=V÷I

3.4) do not touch the water or the wire because water is conductive