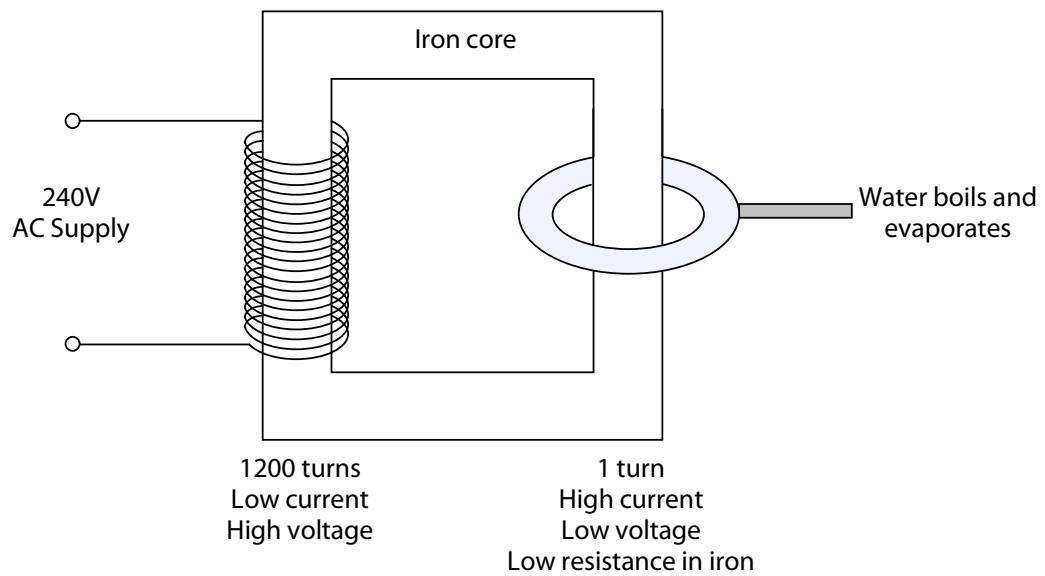
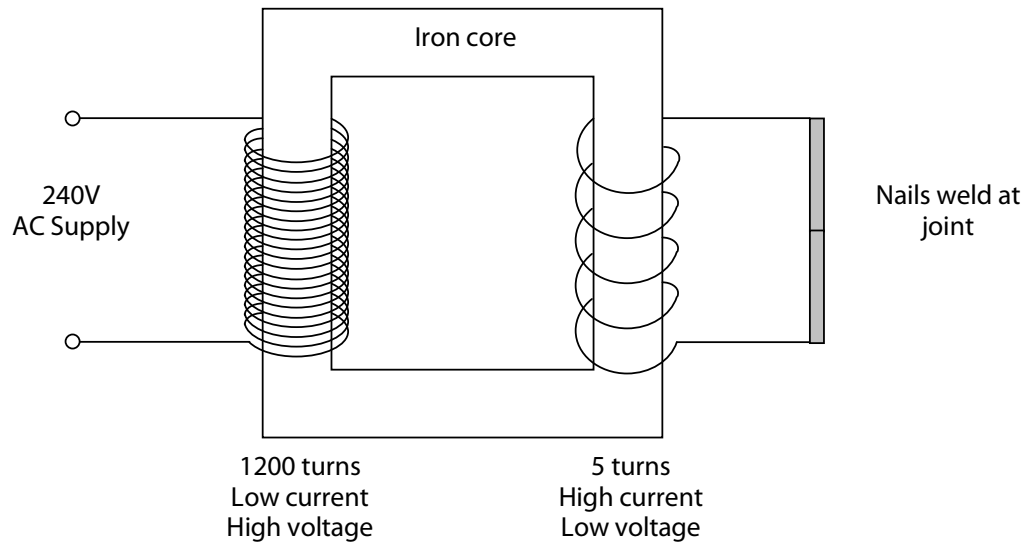


## Step-down transformer to step-up current

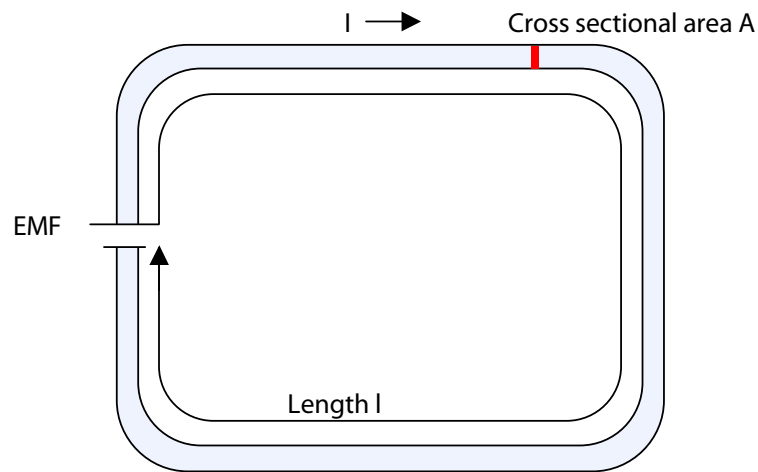
Two experiments



### Comparing electric and magnetic circuits

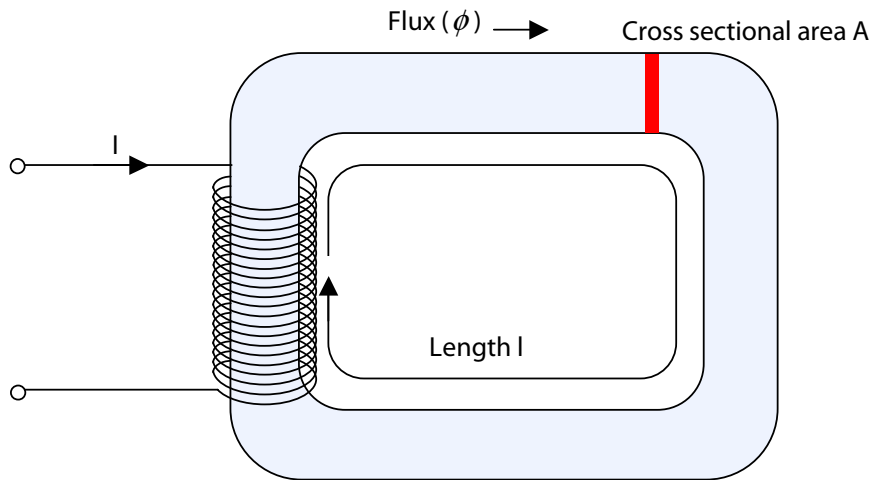
*Electric circuits*

In electric circuits current ( $I$ ) is given by  $I = GV$  where  $G$  is the conductance and  $V$  the voltage. The conductance is given by  $G = \frac{\sigma A}{l}$  so  $I = \frac{\sigma A}{l} V$ .



A similar analysis of a magnetic circuit gives that flux is driven round the circuit by the magneto motive force, comparable to the EMF in an electric circuit.

The equivalent of conductance in magnetic circuits is called permeance ( $\Lambda$ ) so  $\phi = \Lambda NI$  and given that  $\Lambda = \frac{\mu A}{l}$  then  $\phi = \frac{\mu ANI}{l}$ .



These notes are from a lesson on 06/10/2004.