H8   Transformers

All transformers are perfectly efficient unless you are told otherwise.
Complete the questions in the table:

	Turns on primary	Turns on secondary	Primary voltage /V	Secondary voltage /V	Step up or step down
H8.1	2400	(a)	230	12	(b)
H8.2	1200	60	(a)	4.5	(b)
H8.3	(a)	500	275000	11000	(b)
H8.4	20000	(a)	11000	230	(b)
H8.5	20	1000	15000	(a)	(b)

H8.6   You have a 230 V supply capable of delivering 13 A. An experiment
requires a current of 200 A that you take from a step-down transformer.
If there are 1200 turns on the primary, how many turns should there
be on the secondary?

H8.7   What is the secondary voltage across a transformer when the primary
has been attached to a 12 V battery? The primary has 2000 turns, and
the secondary has 3000 turns.

H8.8   A shaver socket is powered from the 230 V mains via a transformer.
The primary and secondary have 800 turns. What is the output
voltage?

H8.9   Calculate the current in the load fed by the secondary of a 90% efficient
step down transformer where the primary has 50× as many turns as
the secondary, and where the primary current is 5.0 A?

H8.10 A loudspeaker is powered from the secondary of a transformer with
a turns ratio of 10:1 (i.e. primary to secondary). The loudspeaker has
an 8.0 Ω resistance, which means that when the secondary voltage is
10 V, the current flowing in the secondary is 1.25 A. What resistance
does the speaker appear to have when measured on the primary side
of the transformer (i.e. take resistance as primary voltage divided by
primary current)? Neglect the resistance of the transformer itself.