

Astronomy Ranking Task: Ohm's Law

Exercise #4

Description: The table below lists six common electrical devices (labeled A – F) and some various electrical properties of the circuits to which they are connected. Each device is the only component in its own circuit save for the necessary voltage source. Assume the only resistance in each circuit is provided by the device itself.

device	R (Ω)	V (V)	I (A)	P (W)
A. toaster	15	240		
B. light bulb		120		300
C. toy		120	0.5	
D. hair dryer		120	10	
E. dehumidifier	50		4.4	
F. microwave oven	30.25			1600

A. Ranking instructions: Rank the resistances of the devices.

Ranking Order: Greatest 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ Least

Or, each device has the same resistance. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

B. Ranking instructions: Rank the amounts of voltage across each device.

Ranking Order: Greatest 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ Least

Or, each device has the same amount of voltage across it. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

C. Ranking instructions: Rank the currents through the devices.

Ranking Order: Greatest 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ Least

Or, each device has the same current through it. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

D. Ranking instructions: Rank the amounts of power dissipated by the devices.

Ranking Order: Greatest 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ Least

Or, each device dissipates the same amount of power. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:
