Practice for all formulas

In the table below fill in the appropriate triangle(s) used and give the unit for each variable.

Voltage	Power	Energy - 2 formulas

Convert the following time units:

Minutes to seconds_____   W to kW   _____

J to kJ   _____   J to kWh _____

Seconds to hours_____   Seconds to minutes _____

Hours to seconds _____

Using the above formulas and conversions, solve the following problems. Show all work.

1. What is the current intensity of a circuit with a resistance of 25 Ω and a potential difference of 25 V?

2. What is the resistance of a circuit with a current intensity of 4 A and a potential difference of 50 V?

3. A radio is on for 3 hours and has 400 W of power. What is the energy in kWh?

4. How much time elapsed in hours if a TV used 550 000 J of energy and needs 400 W of power?

5. If a TV used 700 000 J of energy and 100 W of power. How many hours did you watch TV for?

6. The circuit diagram shown below represents a heater with a resistance of 12 Ω through which flows a current of 10 A. This heater is connected to a power source of 120 volts. The heater was used for 20 minutes.
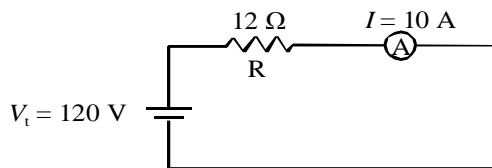
How much electric energy did the heater use?
A) 14 400 J   B) 24 000 J   C) 28 800 J   D) 1 440 000 J

7. The following graph shows the variation of the voltage across the terminals of a ceramic element as a function of the intensity of the current passing through it.
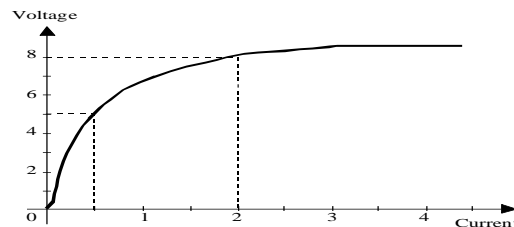
What power is dissipated when this ceramic element is connected to a voltage of 5.0 V?
A) 20 W   B) 10.0 W   C) 5.0 W   D) 2.5 W

8. What is the potential difference when a microwave runs on 1.2 A and uses 300 W of power

9. What is the power needed for a compute to be on for 4 hours which produced 5 000 J of energy?

10. What is the voltage of a circuit if it is using a 10 Ω resistor and 0.5 A of current?

11. What is the voltage if an overhead 300 W of power and 1.5 A?

12. The rating plate below indicates the characteristics of Jasmine's hair dryer

MODEL – J45-TX2	
110 V	1200 W

Jasmine took 15 minutes to dry her hair. How much electrical energy did Jasmine use to dry her hair?

A) 300 J   B) 18 000 J   C) 99 000 J   D) 1 080 000 J

13. What was the potential difference of a computer that used 55 000 J of energy when it was on for 2 hours and had 1.2 A?

14. How much time passed in minutes when a computer did 700 000 J of work and had 550 W of power?

15. What was the current intensity of a clock radio that used 50 000 J of energy when it was on for 5 hours and had 210 V?

16. What was the current intensity of a clock radio if it used 100 V and a 100 Ω resistor?

17. What is the resistance of a resistor if it uses 200 V and 5 A of current?

18. What is the power in kW when a dishwasher used 20 V and 2.5 A?

19. Wires create resistance to the flow of an electric current. This means that there is a drop in the voltage and that the wire heats up. An electrical circuit consists of a power source, an electrical device and 100 m of wire, as shown in the diagram below.

Total of 100 m of wire

Electrical device
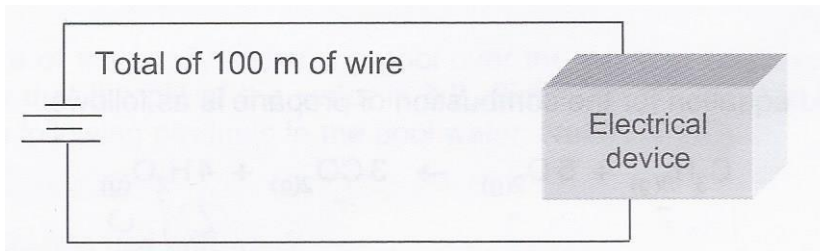
In this circuit, when the current intensity is 4 A, the maximum voltage drop due to the resistance of the wire is 1.32 V. What resistance value in the wire causes this voltage drop?

    A) 0.053 Ω   B) 0.33 Ω   C) 3.03 Ω   D) 5.28 Ω

20. How much time elapsed in hours if a TV used 50 000 J of energy and needs 40 W of power?

21. A hairdryer is on for 15 minutes and uses 220 V and 5.5 A how much energy will be used in kWh?

22. What is the potential difference of a circuit if it has a 6.5 Ω resistor and 3.0 A?

23. What is the resistance of a resistor if the power supply is set at 8 V and the current intensity is 2 A?

24. An appliance is on for 90 minutes and uses 400 W of power how much energy will be used in J?

25. How much time elapsed in minutes if a TV used 55 000 J of energy and needs 150 W of power?