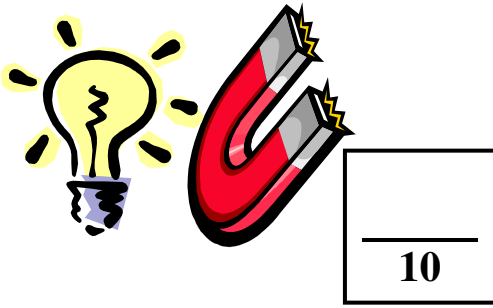


Science 10-Electricity & Magnetism

Activity 14—Chapter 5 Review



Name _____

Due Date _____

Show Me Hand In

Correct and Hand In Again By _____

1. Write the equation for **electrical power**. (In terms of voltage and current.)
2. Write the equation for **electrical energy**. (Using current, voltage and time.)
3. A kettle draws 10 A. of current when operating on a 120 V circuit.

a) Calculate the **power consumption** of the kettle in watts.

Equation:

Solution:

Answer _____

b) If the kettle operates steady for 5 minutes (300 seconds), calculate the **electrical energy** used by the kettle. (Express the energy in Joules.)

Equation:

Solution:

Answer _____

4. A dryer draws 20 A. of current when operating on a 240 V circuit.

a) Calculate the **power consumption** of the dryer in watts.

Equation:

Solution:

Answer _____

- b) If the dryer operates steady for 45 minutes, calculate the **electrical energy** used by the dryer. (Change minutes into seconds first.) (Express the energy in Joules.)

Equation:

Solution:

Answer _____

5. A 40 watt light bulb operates at 120 V.

- a) Calculate the **current** passing through the light bulb.

Equation:

Solution:

Answer _____

- b) Calculate the **electrical energy** used by the bulb if operated to 5 hours. (Calculate the energy in Joules.)

Equation:

Solution:

Answer _____

6. One **kilowatt** (kW) is equal to _____ watts.

7. Calculate the **electrical energy** consumed by a 100 watt (0.1 kW) light bulb when used for 10 hours. Express the answer in Kilowatt-hours. (kW·h)

Equation:

Solution:

Answer _____

8. A 1400 watt (1.4 kW) hair dryer operates for 15 minutes (0.25 h). Calculate the **electrical energy** used in kW·h's.

Equation:

Solution:

Answer _____

9. An electric mixer has a high power consumption but it is not a major user of energy in the home. Explain how this can be.

10. Give 3 things which could be done to **conserve** energy in the home. _____

11. What is meant by the **frequency** of Alternating Current? _____

12. What is the frequency of the AC in North America? (Give the answer in hertz (Hz))

13. Describe each of the three wires coming into the home from the power pole.

1. _____ - _____

2. _____ - _____

3. _____ - _____

14. The **voltage difference** between the neutral wire and one of the hot wires is _____ volts.

15. The voltage difference between the two hot wires is _____ volts.

16. The voltage difference between the neutral wire and the ground is _____ volts.

17. The voltage difference between a hot wire and the ground is _____ volts.

18. What is the main function of the **service panel** in the home? _____

19. What is the function of a **circuit breaker**? _____

20. Why is there a **main circuit breaker** in a service panel? _____

21. What two things cause too much current to flow through wires in a circuit?

22. Explain how circuit breakers with bi-metallic strips work. _____

23. Most common circuits in a house (lights, outlets etc.) use a _____ A breaker.
24. If you see a **double** breaker. (They look like two regular breakers stuck together.),
 this tells you that this is probably a _____ Volt circuit.
25. Stoves and electric clothes dryers must have larger breakers and larger _____, because
 more current is used by these devices.
26. Explain how a **fuse** works. _____

27. Devices on the same circuit in the home are connected in (series/parallel) _____.
28. An electrical outlet has 2 slots and a round hole. The wider slot is connected to the
 _____ wire, the narrower slot is connected to the
 _____ wire and the round hole is connected to the _____.
 Which would be the most harmful to stick something into? _____
29. In a lamp terminal, which is connected to the **hot** wire, the center or the outside?
 _____. How can the plug be made to make sure
 this will happen this way? _____

30. What has to be done to make sure that the “ground circuit” is actually well grounded? _____
31. What could happen if you touched a hot wire and some other part of your body was grounded? _____
32. Explain why the outsides of appliances are always connected to the ground wire.

33. a) What does GFCI stand for? _____
b) Where are GFCI circuits used? _____
34. a) What is the purpose of a “Step-up” transformer? _____
b) Where are they used? _____
35. a) What is the purpose of a “Step-down” transformer?

- b) Where are they used? _____
36. Why will the circuit shut off when a hot wire that has faulty insulation touches something grounded? _____
37. Why should you never remove the round prong in a 3-prong plug? _____

