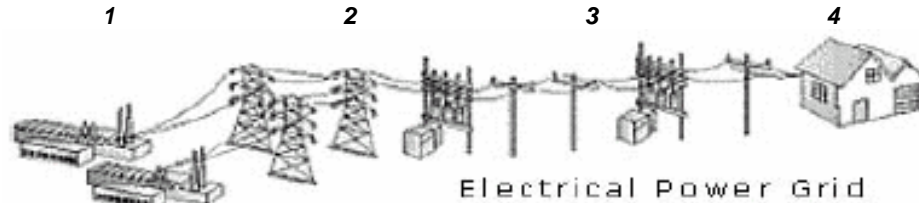## Topic 7 - Electricity in the Home

Electrical Power Grid

1. Use the illustration provided to identify where you would likely find the highest voltage …
    A. 1
    B. 2
    C. 3
    D. 4

2. It is necessary for Urban power companies to reduce voltage to communities. They are able to do this with a step-down transformer. This type of transformer reduces voltage because...
    A. **it is coiled with more wires**
    B. **it is coiled in reverse directions**
    C. **the secondary coil is larger than the primary coil**
    D. **the primary coil is larger than the secondary coil**

3. A power use meter is connected from the power lines to the outside of your home. It is then routed to a central service panel that is full of …
    A. **transistors**
    B. **transformers**
    C. **conductors**
    D. **circuit breakers**

4. The lower part of the service panel contains many fuses that are used to regulate …
    A. **branch circuits**
    B. **circuit brakers**
    C. **breaker panels**
    D. **power switches**

5. After major electrical work is done in a home, an electrical inspector is called in to determine if the electrical work has been completed to the standards outlined in the …
    A. **city bylaws**
    B. **CSA labels**
    C. **electrical code**
    D. **EnerGuide labels**

6. Technology has revolutionized the way we do things. The device able to convert information into numbers is the computer. These numbers, which are ones and zeros, are called …
    A. **binary**
   B. **bits**
    C. **bytes**
    D. **data**

7. Microcircuits are circuits that are miniaturized to fit into a small space and perform many functions. Transistors in these modern digital circuits act as …
    A. **fuses**
    B. **loads**
    C. **valves**
    D. **switches**

8. A 15A current passes through an indoor heater when it is plugged into your home outlet (110V). What is the formula to determine the power of the heater?
    A. **P = I / V**
    B. **P = V / I**
    C. **P = I x V**
    D. **P = E x t**

(P) Power in watts

(I) current in amperes

(V) voltage in volts

P = Watts
I = Amps
E = Volts
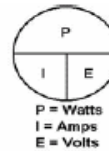
POWER = CURRENT X VOLTAGE

$CURRENT = \frac{POWER}{VOLTAGE}$

$VOLTAGE = \frac{POWER}{CURRENT}$

$E = P \times t \qquad P = E/t \qquad t = E/P$

Efficiency (%) = useful energy output (J) x 100%
                         total input energy (J)

9. A ghetto blaster has a power rating of 28 watts. If it was on each day (all day) during an average month (30 days) and the cost of electricity, in Alberta, is $0.11 per kilowatt hour. What is the cost of operating the ghetto blaster for one month?
    A. $ 2.22
    B. $ 22.18
    C. $ 221.78
    D. $ 2217.60

10. The efficiency of a device is the ratio of the useful energy that comes out of a device to the total energy that goes in. A light bulb gives off 5J of useful light energy for every 100J of electrical energy used to make it work. What is the efficiency of the light bulb?
    A. 105 %
    B. 95 %
    C. 20 %
    D. 5 %

11. "The problem with this computer game", said Matt, "is that the power bar keeps popping its circuit. I think that I need a better power bar, so I can play my game without interruption."
    A. **Don't use electricity near water**
    B. **Improper or unsafe equipment**
    C. **Keep a safe distance high voltage**
    D. **Don't use more electricity than recommended**

12. Which of the following is the lowest amount of current that can be fatal…
    A. **0.001A**
    B. **0.01V**
    C. **0.1A**
    D. **1.0A**

13. James Moore was inspecting the wiring in a new house and found that the green wire had not been connected properly in the electrical panel. The wiring did not pass safety inspection because the …
    A. *panel had a short circuit*
    B. **electrical outlets were not grounded**
    C. **electrical circuits were overloaded**
    D. **green wire was the hot wire**

14. A power line has snapped in an ice storm. One end landed on a car, with the driver still inside. The driver will not be electrocuted as long as he …
    A. **keeps calm and moves slowly out of the car**
    B. **makes sure he doesn't touch the wire as he gets out**
    C. **stays inside the car until help arrives**
    D. **doesn't step in any water as he gets out**

15. The dangers of electrical shock can vary depending on the situation. Which of the following would *likely be the most dangerous (getting a nasty shock!)* …
    A. **Touching an electrified fence on a hot summer day while wearing running shoes.**
    B. **Touching an electrified fence when you are barefoot in a rainstorm**
    C. **Climbing a metal fence on a hot summer day while wearing running shoes.**
    D. **Climbing a metal fence when you are barefoot in a rainstorm.**