

SC10F

Current Electricity Unit Review

Name:

Formulas:

$$I = \frac{Q}{t} \quad V = \frac{E}{Q} \quad V = IR \quad P = I \times V \quad P = \frac{E}{t} \quad \text{Cost} = P \times t \times \$$$

Part A: Calculation Problems

1. A charge of 15 Coulombs pass a point every 5.0S. What is the current at this point? *(3.0A)*

2. If 0.8 A of current flows through a 75 ohm resistor, what is the voltage across the resistor? *(60V)*

3. If a certain cell provides 3.0J of energy when it mover 2.0 Coulombs of charge through the cell, what is the potential difference of the cell? *(1.5V)*

4. A heater uses 2000 W of power under a load of 2140 volts. What is the amount of electric current that passes through it? *(0.94A)*

5. An iron uses 300 Watts of power in half an hour. How much energy is used up? Find your answer in Joules and Kilowatt-hours. *(540 000J, 0.15 kWh)*
6. Calculate the power rating of a coffee maker that operates on a voltage of 120V. A current of 5.7A flows through the heater in the coffee maker. *(684W)*
7. A circuit has a potential difference of 100V and a resistance of 1000 ohms. What is the current rating of the circuit? *(0.10A)*
8. If electricity costs 5 cents/kWh, how much does it cost to run a 1220W stove for 1 hour? *(\$0.061)*

9. A voltage of 60V is measured between the terminals of an appliance having a resistance of 10 ohms.

a. Calculate the current passing through the appliance. **(6.0A)**

b. If the current takes 3 seconds to cross the circuit, what is the amount of charge? **(18C)**

10. A current of 4A is used to give a charge of 288 000C. Calculate the time necessary to accomplish this. **(72000s)**

11. If there are seventy-four 100W light bulbs in a building on for 6 hours per day, what would be the total cost of having them on for 5 days if electricity costs 9 cents/kWh? **(\$19.98)**

12. A current of 1.5A is used for 3 minutes. What is the charge? **(270C)**

13. In a 10 ohm appliance, 1C of charge circulates every minute. What is the potential difference between the terminals of the appliance? *(0.17V)*

Part B: Longer Answer Questions

14. What are the 5 sources of Potential Difference? Describe each in detail.

15. Draw a circuit with 1 cell, 2 lamps in series, and ammeter, and a switch.

16. Draw a circuit with 3 cells in series, 2 motors in series, an ammeter, a switch, and a voltmeter measuring voltage rise.

17. Draw a circuit with 4 cells in parallel, 2 resistors in parallel, a voltmeter measuring voltage drop of one resistor, an ammeter, and a switch.

18. Draw a circuit with 2 cells in series, 4 lamps in parallel, an ammeter, a voltmeter measuring V_{rise} , and a switch to control each light.

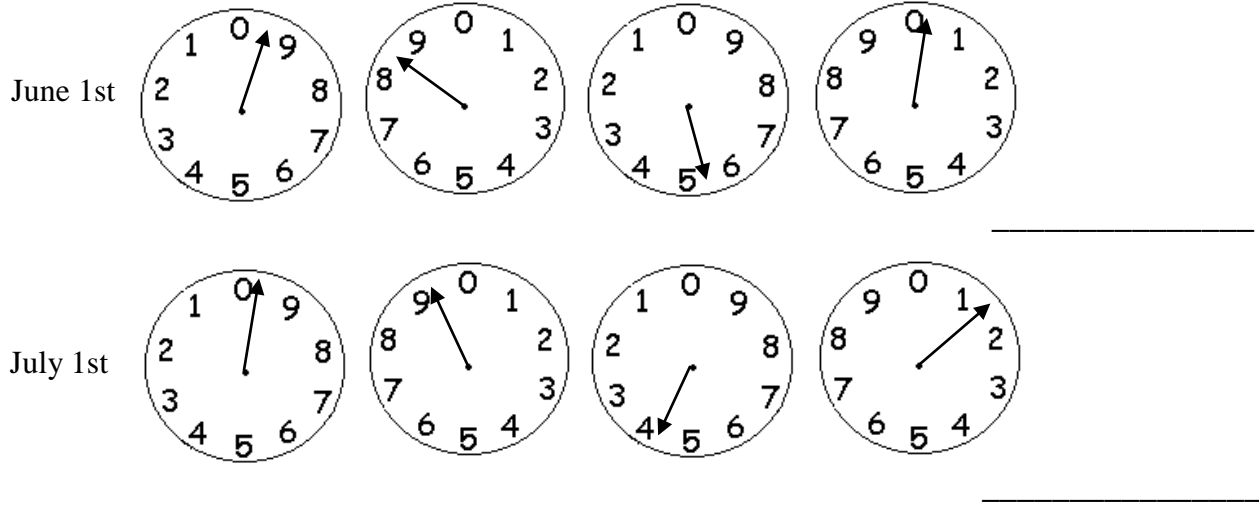
19. Draw a circuit with 6 cells in series, 3 resistors in parallel, an ammeter and switch controlling all 3 resistors. Include a voltmeter measuring a V_{drop} .

20. Complete the chart, comparing series and parallel circuits:
 (Hint: Check your rules on series and parallel circuits)

	Series	Parallel
Number of pathways		
Current at different points in the circuit		
Voltage that the loads receives compared to the cell		
Resistance		
Current if more loads are added		
What happens if a path is broken		

21. What is a similarity and a difference between a fuse and a circuit breaker?

22. Read the values on the following meters:



Find the AMOUNT of electricity used in June:

Find the cost of electricity for the month of June (Rate: 6 cents/kWh): **(\$5.46)**

23. Give the function of the three wires used in household wiring:

- a. Black Wire: _____
- b. White Wire: _____
- c. Bare Wire: _____

24. Label the following with the correct colour of wire:

