

Science 9: Current Electricity Practice Test

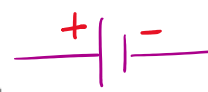



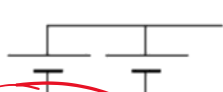



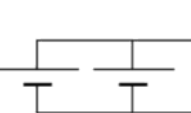
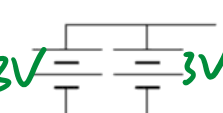
Name: _____

Modified True/False

Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

- F** 1. The amount of energy per coulomb of charge is known as ~~current~~. Voltage
- T** 2. Two or more cells in combination make up a battery. _____
- F** 3. The unit of ~~voltage~~ ^{current} is amperes. current
- T** 4. Two, 3-volt cells in series will produce a battery of 6 volts. _____
- T** 5. An ammeter should be connected in series to measure the current. _____
- F** 6. A circuit with more than one possible pathway is called a ~~series~~ circuit. parallel

Multiple Choice

- | | |
|---|--|
| <p>B 1. Which of the following describes an electric circuit?</p> <ul style="list-style-type: none"> A. stationary charges B a continuous path for electricity to flow through C. the process of building a charge through friction on the carpet D. a battery connected by plastic to a light bulb | <p>C 2. Which of the following is represented by the longer of two parallel lines in the symbol for the energy source of a circuit?</p> <ul style="list-style-type: none"> A. copper wire B. resistor C positive terminal of a cell D. negative terminal of a cell  |
| <p>B 3. An ohm is a unit of which of the following?</p> <ul style="list-style-type: none"> A. electric potential difference B resistance C. current D. power | <p>A 4. What is the purpose of a series battery of several cells?</p> <ul style="list-style-type: none"> A more voltage B. more current C. less current D. less voltage  |
| <p>C 5. Which of the following is a parallel battery of two cells?</p> <p>A. </p> <p>B. </p> <p>C </p> <p>D. </p> | |
| <p>D 6. Battery A consists of three 1.5-V cells in series and battery B consists of three 1.5-V cells in parallel. Which of the following statements is correct?</p> <ul style="list-style-type: none"> A. both batteries produce 1.5 V B. both batteries produce 4.5 V C. battery A produces 1.5 V and battery B produces 4.5 V D battery A produces <u>4.5 V</u> and battery B produces 1.5 V | |
| <p>B 9. If each cell is 1.5 V, which of the following will provide the most voltage?</p> <p>A.  4.5V</p> <p>B  6V</p> <p>C.  1.5V</p> <p>D.  3V</p> | |

Completion

Complete each statement using the words provided below:

battery	Positive	Parallel	Series	Negative
Ampere	Resistor	load	$2\ \Omega$	Voltage
Increase	Decrease	Switch	$50\ \Omega$	Current

- Adding more resistors in parallel will Lower the overall resistance of the circuit.
- A resistor is a component of a circuit that opposes current flow.
- The load is the part of the circuit that converts electrical energy into other forms.
- Electrons flow from the negative terminal to the positive terminal.
- If cells are connected in parallel, the potential difference across the battery as the same is it is across a single cell.
- The Volt is defined as one joule per coulomb (1J/C).
- ~~Five~~ skip 10 Ω resistors in parallel will have a total resistance of _____ ohms

Circuit Diagram

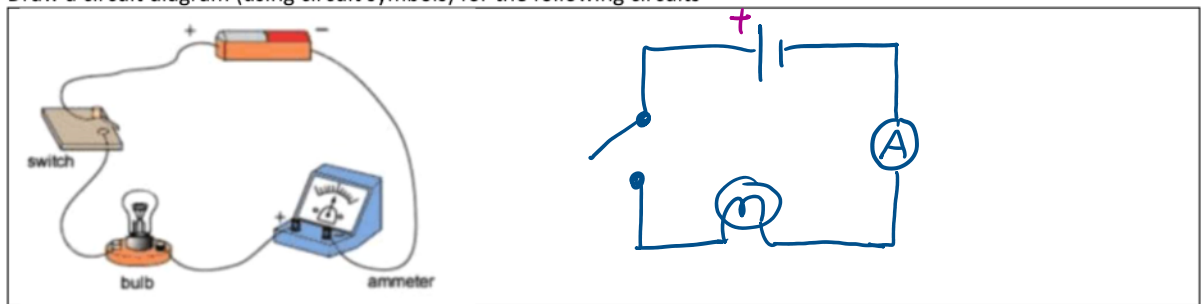
Draw the symbols for the following electrical components:	
(a) light bulb	
(b) an open switch	
(c) single cell	
(d) resistor	
(g) ammeter	
(h) voltmeter	

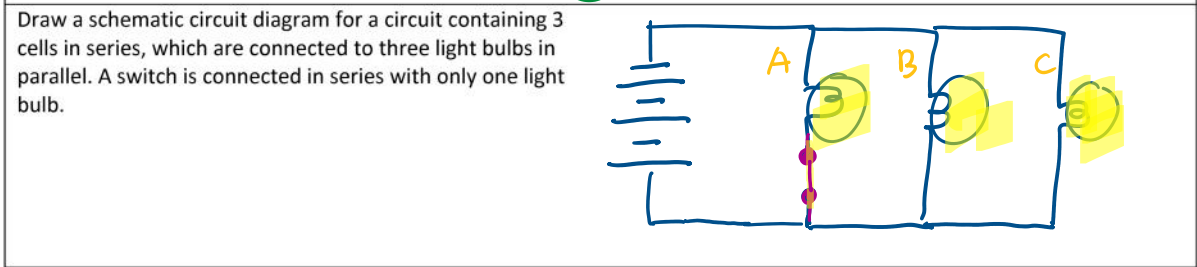
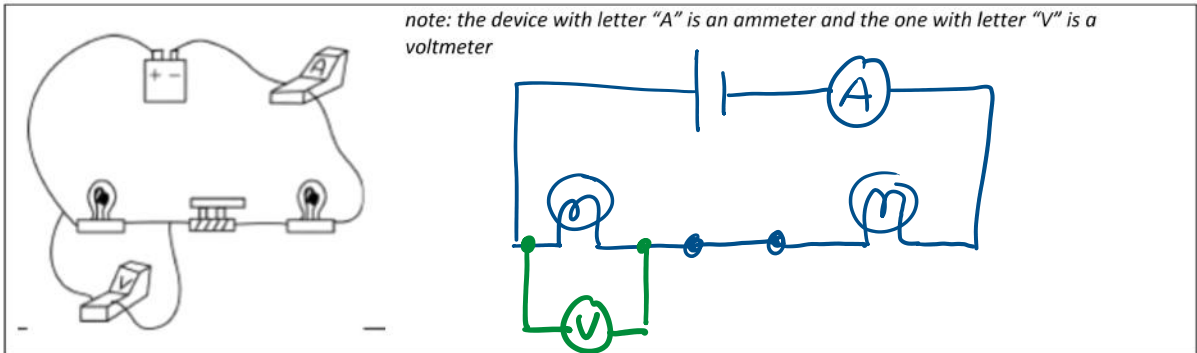
Colour	Num
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Grey	8
White	9

1. The 3 colour bands on a resistor is Yellow, Orange and Green. What is the resistance value?

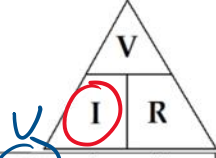
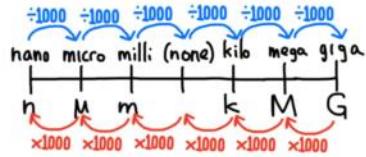
43 00000 Ω
5 zeros

Draw a circuit diagram (using circuit symbols) for the following circuits





Ohm's Law Problems:



1) What is the voltage drop across a laptop computer if it has a resistance of 2.5Ω and draws a current of 3.0 A ?

$V = IR = 3\text{A}(2.5\Omega) = 7.5\text{V}$

Answer: 7.5 V

2) An electric kettle is connected to a 120 V outlet and has a resistance of 9.6Ω . What is the current required to operate the kettle?

$I = \frac{V}{R} = \frac{120\text{V}}{9.6\Omega} = 12.5\text{A}$

Answer: 12.5 A

3) When in standby mode, a cellular phone requires a current of 0.05 A . What is its resistance if it operates at 7.0 V ?

$R = \frac{V}{I} = \frac{7\text{V}}{0.05\text{A}} = 140$

Answer: 140 Ω

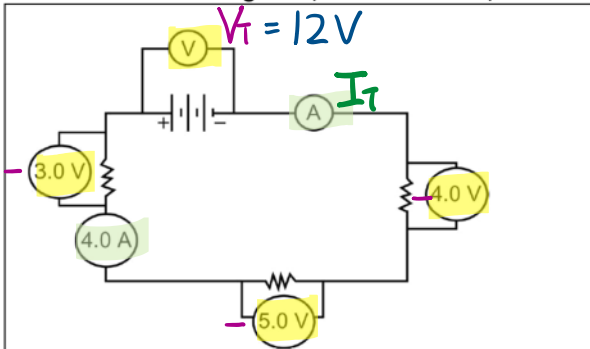
4) A $12,000 \Omega$ load is connected to a 900 V power supply. What is the current through the load.

$I = \frac{V}{R} = \frac{900\text{V}}{12000\Omega} = 0.075$

Answer: 0.075 A

Series and parallel Circuits

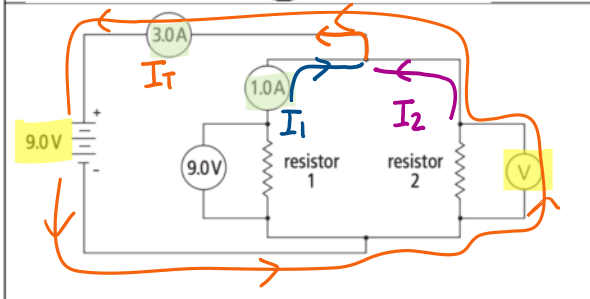
Find the unknown voltage at V, and current at A, in each of the following circuits.



$$V_T = 3V + 4V + 5V = 12V$$

$$I_T = 4A$$

$$\begin{array}{l} \text{Total Voltage on battery} = \underline{12V} \\ \text{Total Current out of the battery} = \underline{4A} \end{array}$$



$$* \text{ Also } I_T = I_1 + I_2$$

$$3A = 1A + I_2$$

$$\begin{array}{l} \text{Voltage on resistor 2} = \underline{-9V} \\ \rightarrow I_2 = 2A \end{array}$$