

Electricity Review

These questions should guide you through the topic on space exploration. You will need to be able to call up all of the following information and use it.

1. An automobile headlight has an average resistance of $24\ \Omega$. Car batteries provide a potential difference of 12 V . What amount of current passes through the headlight?

Calculations:

0.5A

2. In a portable radio, 0.5 A of current are flowing through a conductor that provides $18\ \Omega$ of resistance. What potential difference is provided by the battery?

Calculations:

9V

3. A 9 V battery maintains a current of 3 A through a portable radio. What is the resistance of the conductor?

Calculations:






3 Ω

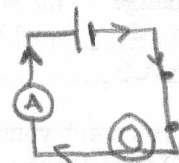
Electric Current

~~insulators~~ ~~conductors~~ ~~semiconductors~~ ~~galvanometer~~ ~~voltmeter~~
~~electric current~~ ~~amperes~~ ~~potential difference~~ ~~electric current~~

1. Electric charges move easily through COND. and less easily through Semi-Con.
Electric charges cannot move freely at all in INSUL.
2. Moving charges form a/an Elec Curr. The rate of charge movement can be measured by a Galv in standard units called AMPS.
3. Changes in the electrical energy of charges moving through a circuit are called a/an P.D. Diff., which can be measured by a/an VOLTM. in standard units called Volts.
1. If you comb your hair on a cold dry winter's day, your hair tends to stand on end because:
- (a) Each separate hair has a similar charge of electricity
 - (b) Different hairs have opposite charges of electricity
 - (c) Hair always sticks to plastic
 - (d) Hair is a good conductor of electricity

2. The unit used to measure electrical current flow is the
 (a) second
 (b) ampere
 (c) volt
 (d) joule
3. The unit used to measure potential difference (or, voltage) is the
 (a) second
 (b) ampere
 (c) volt
 (d) joule
4. If the resistance of a conductor is 98 ohms and 2.6 volts are used, what is the current?
 (a) 0.027 A
 (b) 37.7 A
 (c) 100.6 A
 (d) 255 A
5. A voltmeter connected to an electric bell reads 3.0 V and an ammeter in series with the bell reads 0.75 A. The resistance of the bell is
 (a) 0.25 ohms
 (b) 0.75 ohms
 (c) 2.25 ohms
 (d) 4.0 ohms
6. Electrical circuits that have more than one circuit path are called
 (a) series circuits
 (b) parallel circuits
 (c) short circuits
7. complete circuits Consider four small spheres A, B, C, and D. Sphere B is positively charged. B attracts A and C but repels D. A and C repel one another. What sign of electrical charge is on A, C, and D?
 $A = C = -$ $D = +$
8. The "Laws of Charges" are in three parts. Two are listed below. Fill in the blank by writing in the third part of this law.
 1. Unlike charges attract
 2. Like charges repel.
 3. CHARGE Attracts Neutral.
9. Make a circuit diagram to show a cell connected in series with a switch, a lamp, and an ammeter. Show the direction of electron flow on your diagram.
10. Draw the electrical symbol for each of the following circuit components:

- (a) a lamp 
 (b) a cell 
 (c) a battery 
 (d) a resistor 
 (e) a switch 



11. Match the appropriate term in column A with its definition in column B by placing the correct letter in the space provided beside each term.

	A	B
<u>f</u>	1. neutral	(a) instrument used to measure larger currents
<u>e</u>	2. conductors	(b) these offer zero resistance to the flow of electrons
<u>b</u>	3. superconductors	(c) a combination of cells
<u>c</u>	4. battery	(d) the cross-sectional area of a wire
<u>a</u>	5. ammeter	(e) materials that allow charges to move freely
<u>d</u>	6. gauge	(f) materials that do not carry excess electrical charge

12. (a) Consider the following statement: "For certain metallic conductors, the ratio of voltage to current is constant if the temperature remains constant." What is the name of this famous law in the study of electricity?

(b) A resistor connected to a 3.0 V battery produces a current of 0.040 A. Calculate the resistance of the resistor.

13. Two identical light bulbs are connected in series with a 3 V battery. If a third identical bulb is added in series with the first two, predict what change will occur to:

(a) the brightness of the bulbs.

All ↓ in brightness.

(b) the current flowing through each bulb.

Current ↓ Since R ↑.

14. What is the purpose of a fuse or circuit breaker in a household electrical system?

Protection.