

Student Name: 10 Adv./ Work sheet 1

For each physical quantity on the left, write the letter of the matching unit of measurement on the right.

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| _____ 1. charge | a. watt |
| _____ 2. potential energy | b. ohm |
| _____ 3. current | c. coulomb |
| _____ 4. resistance | d. joule |
| _____ 5. electric potential difference | e. ampere |
| _____ 6. power | f. volt |

Circle the letter of the choice that best completes the statement.

7. A conventional current is the flow of _____.
a. alternating current c. electrons or ions
b. electrons d. positive charge
8. The conservation of charge in a circuit implies that _____.
a. electrons cannot be created or destroyed c. electrons can move through the circuit
b. the total amount of charge is constant d. all of the above
9. The potential difference between two points in space is 1000 V, and 2 coulombs of charge is transferred from the point of lower potential to the point of higher potential. The amount of work done is _____.
a. 2×10^{-3} J c. 1000 J
b. 500 J d. 2000 J

10. A 9-V battery is connected to a toy car, and the current produced is 2 A. The rate at which energy is delivered to the toy car is _____.
a. 4.5 J c. 4.5 W
b. 18 J d. 18 W
11. A 60-W lightbulb runs for 2 hours. The energy transformed is _____.
a. 30 J c. 120,000 J
b. 120 J d. 432,000 J
12. A heater that operates at 220 W is connected to a 110-V outlet. The current through the heater is _____.
a. 0.5 A c. 2.2 A
b. 2 A d. 20 A
13. A lamp is connected to a battery of 50 V, and the current through the circuit is 2 A. The resistance of the lamp is _____.
a. $0.04\ \Omega$ c. $100\ \Omega$
b. $25\ \Omega$ d. $150\ \Omega$
14. The current through a resistor of $15\ \Omega$ is 5.0 A. The potential difference across the resistor is _____.
a. 0.33 V c. 45 V
b. 3.0 V d. 75 V
15. A series circuit has a power source of 120 V and a $150\text{-}\Omega$ resistor. The power delivered by the power source is _____.
a. 96 W c. 9.6 kW
b. 192 W d. 96 kW
16. The rating of a lightbulb is 100 W and its resistance is $50\ \Omega$. The current through the lightbulb when it is on is _____.
a. 0.5 A c. 2 A
b. 1.4 A d. 5000 A
17. The amount of energy transformed by a 150-W lightbulb in 24 h is _____.
a. 3.6 J c. 3.6 kWh
b. 130,000 J d. 3×10^3 kWh

18. A household's electric bill is \$56 for the month of February and the cost of electricity is \$0.12 per kilowatt-hour. The household used _____ of energy in this month.

- a. 6.7 kW
- b. 467 kJ
- c. 467 kWh
- d. none of the above

19. A conducting wire has a resistance of $0.02 \Omega/\text{m}$. The power of this 100-m wire when it carries a current of 20 A is _____.

- a. 0.8 J/s
- b. 8 W
- c. 800 J
- d. 800 W