

4SW Test: Gravity/Electricity/Ohm's Law**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- _____ 1. An object is said to be "in orbit" of another object when
- a. an angel is pushing heavenly bodies in a prescribed circle
 - b. it follows a continuous elliptical path of falling towards an object, but maintain their track around that object.
 - c. a satellite slowly falls into each other and disintegrates upon impact.
 - d. They leave Earth's atmosphere for the universe.
- _____ 2. The Earth's Tides are primarily caused by
- a. The Earth is spinning on it's axis
 - b. The gravitational pull of the moon on the Earth's oceans
 - c. Two angel raise the water around the world twice daily on opposite sides
 - d. the gravitational pull of the sun on the Earth's oceans
- _____ 3. In projectile motion
- a. an object with three times the mass will fall three times faster
 - b. an object with three times the vertical velocity will travel three times faster
 - c. an object with three times the horizontal velocity will travel three times farther
 - d. an object with three times the vertical velocity will travel three times farther
- _____ 4. Gravitational force is a force that acts between two _____.
- a. velocities
 - b. charges
 - c. masses
 - d. electrons
- _____ 5. Calculate the Gravity between the Moon and the Sun. The moon has a mass of 7.36×10^{22} kg. The sun has a mass of 1.99×10^{30} kg and the distance between the Moon and Sun is 1.49×10^{11} m.
- a. 4.38×10^{20} N
 - b. 6.57×10^{31} N
 - c. 6.58×10^{30} N
 - d. 2.01×10^{22} N
- _____ 6. What is the gravitaional force exerted by the 2kg mass on the 1kg mass that are 1m apart?
- a. 5.21×10^{-10} N
 - b. 3.34×10^{-11} N
 - c. 1.34×10^{-10} N
 - d. 6.67×10^{-11} N
- _____ 7. As the mass of two objects increases by a factor of two (2 times), the gravitational force exerted _____.
- a. decreases by $1/2$
 - b. doubles, (2 times the gravity)
 - c. 4 times the gravity (squared)
 - d. remains constant.
 - e. decreases by $1/4$ (inverse square)

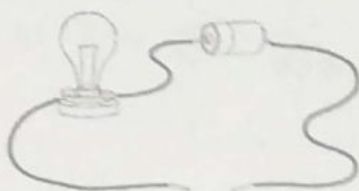
Name: _____

8. As distance doubles (2 times) between two objects, the gravitational force exerted _____.
- increases by a factor of 2 (2 times)
 - increases by a factor of 4 (4 times)
 - decreases by a factor of $1/4$
 - decreases by a factor of $1/2$
 - remains constant
9. As distance is reduced by half ($1/2$ times) between two objects, the gravitational force exerted _____.
- increases by a factor of 2 (2 times)
 - increases by a factor of 4 (4 times)
 - decreases by a factor of $1/4$
 - decreases by a factor of $1/2$
 - remains constant
10. The moving subatomic particles in electricity are also known as _____.
- voltage
 - electrons
 - resistance in Ohms
 - power
11. An Volt in electricity is the _____ in a circuit.
- amount of push behind electrons
 - electrostatic force between two charges
 - semiconductors resistance to current
 - current
12. An Ohm in electricity is the _____ in a circuit.
- push behind electrons
 - electrostatic charge
 - semiconductor's resistance
 - current
13. A _____ is a closed, conducting path.
- circuit
 - conductor
 - insulator
 - electric charge
14. A _____ is used to open or close a conducting path.
- switch
 - resistor
 - ammeter
 - power source
15. If I want to **increase** the current in a wire, I should **increase** the _____.
- voltage
 - length
 - number of lights
 - resistance
16. If I want to **decrease** the current in a wire, I should **decrease** the _____.
- voltage
 - length of the wire
 - number of lights
 - resistance

Name: _____

ID: A

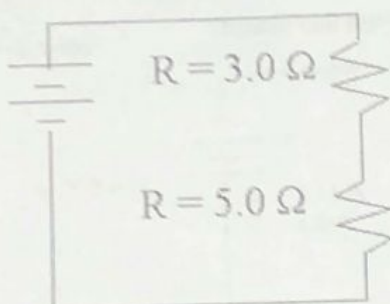
17. A student plans to make this lightbulb glow.
All of the following objects can be used to complete the circuit except -



- a. a plastic comb
- b. a copper penny
- c. a metal clip
- d. an iron nail

18. What is the current flowing through this circuit?

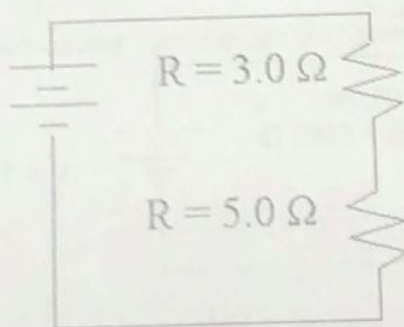
$$V = 3.0 \text{ V}$$



- a. .38 A
- b. 1.6 A
- c. 5.0 A
- d. 2.6 Coulombs / sec

19. What is the total resistance in this circuit?

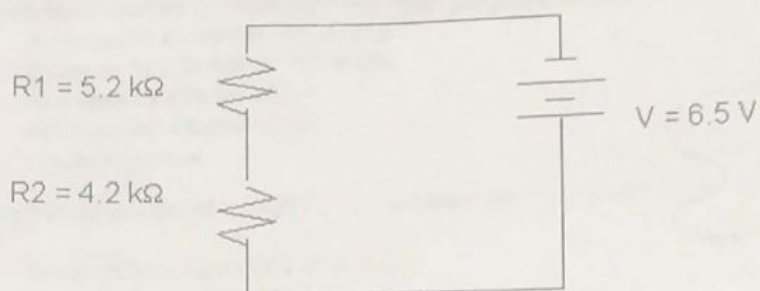
$$V = 3.0 \text{ V}$$



- a. 8.0Ω
- b. 2.0Ω
- c. 1.875Ω
- d. 0.533Ω

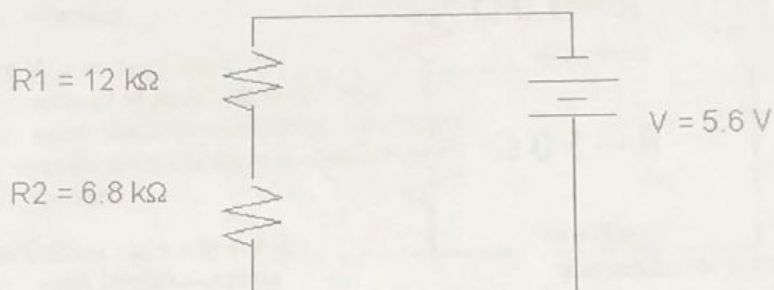
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____ 20. How much current is flowing through this circuit?



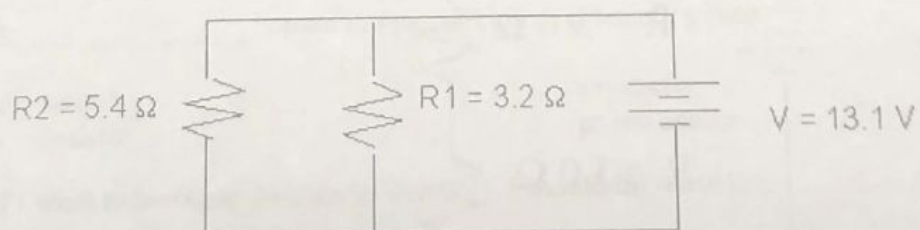
- a. .691 mA
 b. 6.91 mA
 c. .291 Amps
 d. 2.91 mA

____ 21. How much current is flowing through this circuit?



- a. .692 mA
 b. 6.92 mA
 c. .000297 Amps
 d. 2.97 mA

____ 22. What is the total resistance in this circuit?

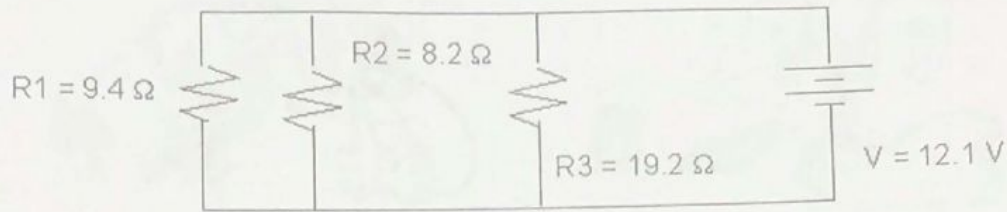


- a. 2.0Ω
 b. 8.6Ω
 c. $.50 \Omega$
 d. 4.5Ω

Name: _____

ID: A

23. What is the total resistance in this circuit?



- a. $3.6 \, \Omega$
- b. $37 \, \Omega$
- c. $.28 \, \Omega$
- d. $4.6 \, \Omega$

24. What is the current in the circuit shown in figure 1?

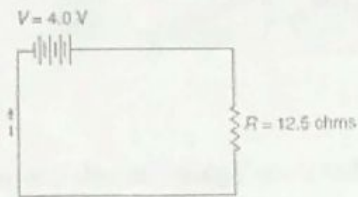
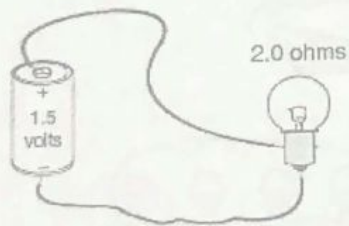


Figure 1

- a. $12.5 \, \text{A}$
- b. $0.32 \, \text{A}$
- c. $3.13 \, \text{A}$
- d. $4.0 \, \text{A}$

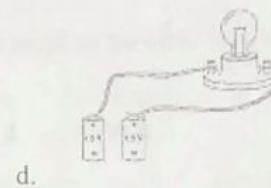
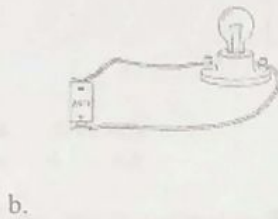
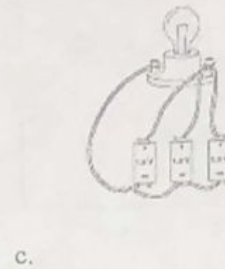
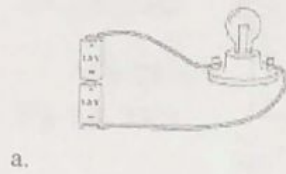


25. In this circuit, how much current flows through the lightbulb?

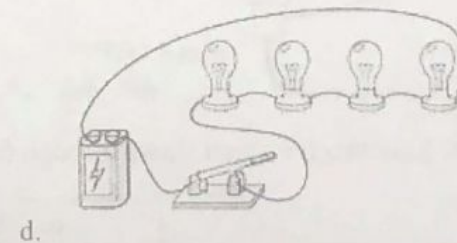
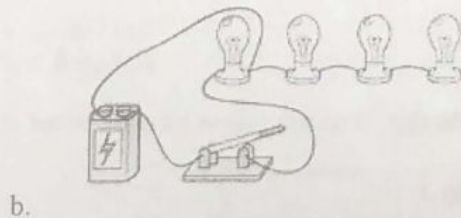
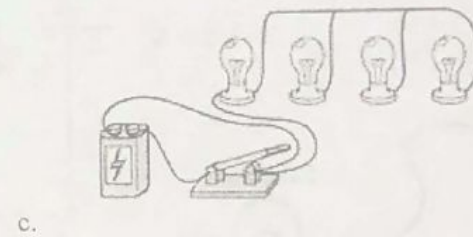
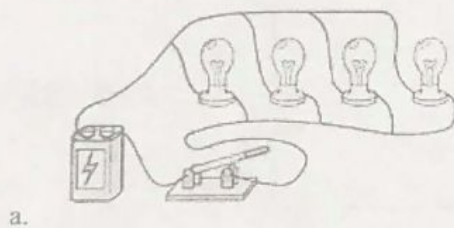
- a. $1.33 \, \text{A}$
- b. $3.0 \, \text{A}$
- c. $1,000,000 \, \text{A}$
- d. $0.75 \, \text{A}$

Name: _____

26. Which one of the circuits below will NOT cause the lightbulb to start glowing?



27. Which circuit is built so that if one lightbulb goes out, the other three lightbulbs will continue to glow?



Name: _____

ID: A

28. Which circuit is built with the lightbulbs in series?

