

Multiple Choice Question MC A certain kind of light bulb carries 0.5 ampe...

Topic: Alternating current and household circuits Type: Numerical

- 5. The resistance of a 50 watts bulb is \_\_\_\_\_ that of a 100 watts bulb, if both run on the same voltage.
  - $\rightarrow$   $\bigcirc$  one half
    - $\bigcirc$  one fourth
    - $\bigcirc$  four times
- Select 🔂 🔿 double

Accessibility: Keyboard Navigation Difficulty: Medium Topic: Ohm's law and resistance Type: Numerical

Multiple Choice Question MC The resistance of a 50 watts bulb is \_\_\_\_\_ t...

- **Select 6**. Two identical light bulbs are installed in two sockets connected in parallel and power is then applied to the combination so that both bulbs light. If one of the bulbs is then removed from its socket, the other one will
  - $\bigcirc$  get brighter.
  - $\bigcirc$  get dimmer.
  - $\rightarrow$   $\bigcirc$  remain equally bright.



 $\bigcirc$  provide extra mass at the bottom of the bulb.



Select Q

 $\rightarrow$   $\bigcirc$  insulate the metal button from the other contact point.

Accessibility: Keyboard Navigation Difficulty: Easy Topic: Electric circuits and electric current Type: Conceptual

Multiple Choice Question MC A flashlight bulb typically has a small meta...

11. In many ways, an electric circuit is like the plumbing system in your home. The voltage on an electric circuit corresponds to the \_\_\_\_\_\_ in a plumbing system.

 $\bigcirc$  trap

 $\bigcirc$  go out.

- $\rightarrow$   $\bigcirc$  pressure
  - $\bigcirc$  faucet or valve
  - $\bigcirc$  drain

Accessibility: Keyboard Navigation Difficulty: Easy Topic: Electric circuits and electric current Type: Conceptual

Multiple Choice Question MC In many ways, an electric circuit is like th... Select 🔂 12. An ohm is equal to which of these?

 $\bigcirc$  A volt.

 $\bigcirc$  A Coulomb per second.

 $\bigcirc$  An ampere per second.

 $\rightarrow$   $\bigcirc$  A volt per ampere.

Accessibility: Keyboard Navigation Difficulty: Easy Topic: Ohm's law and resistance Multiple Choice Question Type: Conceptual MC An ohm is equal to which of these? Type: Definition 13. A 1.5 V flashlight battery, a 10 ohms resistor, and a flashlight lamp are available. How should the lamp be connected in a circuit so that it would glow the brightest? ○ Connect it in series with the resistor and battery so that the bulb is next to the positive terminal of the battery.  $\rightarrow$   $\bigcirc$  Connect it directly to the battery; don't use the resistor. ○ Connect it in parallel with the battery and the resistor. Select • Connect it in series with the resistor and battery so that the bulb is next to the negative terminal of the battery. Accessibility: Keyboard Navigation Difficulty: Hard Topic: Series and parallel circuits Multiple Choice Question MC A 1.5 V flashlight battery, a 10 ohms resisto... Type: Conceptual 14. One ampere is equivalent to ○ 1 J/s.  $\rightarrow$   $\bigcirc$  1 C/s.  $\bigcirc$  1 N/C. ○ 1 V/m. Select 0  $\bigcirc$  1 ohm/volt.

> Accessibility: Keyboard Navigation Difficulty: Easy Topic: Ohm's law and resistance Type: Conceptual Type: Definition

15. A 9 ohms resistor and a 16 ohms resistor are connected in series in a circuit with a 5.0 volts battery. Assuming negligible internal resistance in the battery, the current in the 16 ohms resistor will be

 $\rightarrow \bigcirc 0.20 \text{ A.}$  $\bigcirc 0.5 \text{ A.}$  $\bigcirc 1.0 \text{ A.}$ 

○ 12 A.○ 0.16 A.

MC One ampere is equivalent to

Multiple Choice Question

Select

Select Q

Select

Accessibility: Keyboard Navigation Difficulty: Medium Topic: Series and parallel circuits Type: Numerical

Multiple Choice Question

MC A 9 ohms resistor and a 16 ohms resistor are c...

- 16. A 12 ohms resistor and a 24 ohms resistor are connected in parallel across a 6.0 V battery. The correct statement from the following is
  - $\bigcirc$  the current is the same in each resistor.
  - $\bigcirc$  the power dissipated is the same in each resistor.
  - $\rightarrow$   $\bigcirc$  the voltage difference between the ends of each resistor is the same.
  - $\bigcirc$  the larger current is in the larger resistor.

Multiple Choice Question MC A 12 ohms resistor and a 24 ohms resistor are ... Topic: Series and parallel circuits Type: Conceptual

- 17. A 12 ohms resistor and a 24 ohms resistor are connected in series with a 6.0 V battery. The correct statement is
  - $\bigcirc$  the voltage difference between the ends of each resistor is the same.
  - $\bigcirc$  the power dissipated in each resistor is the same.
  - $\rightarrow$   $\bigcirc$  the current in each resistor is the same.
  - $\bigcirc$  the smaller resistor carries the larger current.

Accessibility: Keyboard Navigation Difficulty: Medium Topic: Series and parallel circuits Type: Conceptual

Multiple Choice Question MC A 12 ohms resistor and a 24 ohms resistor are ...

Select 18. The voltage drop across a resistor is 4.0 V for a current of 1.0 A in the resistor. What is the current that will produce a voltage drop of 8.0 V across the resistor?

 $\bigcirc 0.33 \text{ A}$  $\bigcirc 1 \text{ A}$  $\rightarrow \bigcirc 2 \text{ A}$ 

Accessibility: Keyboard Navigation Difficulty: Medium Topic: Ohm's law and resistance Type: Numerical

Multiple Choice Question MC The voltage drop across a resistor is 4.0 V ... 19. The unit for electromotive force (emf) is O N. O A.

 $\bigcirc$  ohm.  $\bigcirc$  N/C.

 $\rightarrow$   $\bigcirc$  V.

Select

		Accessibility: Keyboard Navigation
		Topic: Ohm's law and resistance
	Multiple Choice Question	Type: Conceptual
Select	MC The unit for electromotive force (emf) is	Type: Definition
	20. Three bulbs have power ratings for use on a 120 volts line	: 60 watts, 100 watts and 150 watts. The one with the largest
	$\sim 150 \text{ W}$	
	$\bigcirc$ 100 W	
	$\rightarrow \bigcirc 60 \text{ W}$	
	$\rightarrow \bigcirc 00$ W.	
	O All have the same resistance.	
		Accessibility: Keyboard Navigation
		Difficulty: Easy
	Multiple Choice Question	Topic: Ohm's law and resistance
	MC Three builds have power ratings for use on a	Type: Conceptual
Select 2	21. A 40 watts incorescent built is rated for use in a 120 volts actual power dissipated in the bulb under these conditions	is
	$\bigcirc$ 0.283 W.	
	$\rightarrow$ $\bigcirc$ 28.9 W.	
	○ 30.0 W.	
	○ 47.1 W.	
		Accessibility: Keyboard Navigation
	Multiple Choice Question	Difficulty: Medium
	MC A 40 watts fluorescent bulb is rated for use	Topic. Electric energy and power Type: Numerical
Select	22. A heater is rated to dissipate 2880 W when connected to a 120 V source. The current drawn by the device is	
	○ 0.133 A.	
	$\rightarrow$ $\bigcirc$ 24 A.	
	○ 60 A.	
	○ 30 A.	
	○ 240 A.	
		Accessibility: Keyboard Navigation
		Difficulty: Easy
	Multiple Choice Question	Topic: Electric energy and power
	MC A heater is rated to dissipate 2880 W when c	Type: Numerical
	23. An unmarked resistor is being used in a circuit. To determ	ine its resistance by making voltage and current measurements,

- $\bigcirc$  the voltmeter and ammeter in parallel with the resistor.
- $\bigcirc$  the voltmeter and ammeter in series with the resistor.



 $\bigcirc$  the voltmeter in series with the resistor, and the ammeter in parallel with the resistor.

 $\rightarrow$   $\bigcirc$  the voltmeter in parallel with the resistor, and the ammeter in series with the resistor.

Accessibility: Keyboard Navigation Difficulty: Medium Topic: Series and parallel circuits Type: Conceptual

Multiple Choice Question MC An unmarked resistor is being used in a circ...

one should connect

Select 24. A student finds two ancient meters with numbered scales but no unit markings. He thinks that one is an ammeter and one is a voltmeter but doesn't know which is which. He measures the resistance of each, finding that meter A has a resistance of 5000 ohms and meter B has a resistance of 0.10 ohm. He can conclude that

 $\bigcirc$  B is the voltmeter and A is the ammeter.

- $\rightarrow$   $\bigcirc$  A is the voltmeter and B is the ammeter.
  - $\bigcirc$  A is the voltmeter but B cannot be a useful meter.
  - $\bigcirc$  B is the voltmeter but A cannot be a useful meter.
  - $\bigcirc$  neither can be a useful meter.



 $<sup>\</sup>bigcirc$  The voltage you used the previous month.

- $\bigcirc$  The electrical charge you used the previous month.
- $\bigcirc$  The electrical power you used the previous month.
- $\bigcirc$  None of these.

Accessibility: Keyboard Navigation Difficulty: Medium Topic: Electric energy and power Type: Conceptual

Multiple Choice Question MC When you pay your electric bill, what are yo...

- Select  $\mathbb{R}_{2}$  30. You have exactly 4 resistors: one 3  $\Omega$ , one 4  $\Omega$ , one 5  $\Omega$ , and one 6  $\Omega$ . How can you combine these to make a 2  $\Omega$  resistor? (The symbol  $\Omega$  stands for "ohm.")
  - $\bigcirc$  Connect the 3  $\Omega$  resistor in series with the 5  $\Omega$  resistor.
  - $\rightarrow$   $\bigcirc$  Connect the 3  $\Omega$  resistor in parallel with the 6  $\Omega$  resistor.
    - $\bigcirc$  Connect the 3  $\Omega$  resistor in parallel with the 4  $\Omega$  resistor.
    - $\bigcirc$  Connect all four resistors in parallel with each other.
    - $\bigcirc$  You can't make a 2  $\Omega$  resistor from the ones listed.







 $\rightarrow$   $\bigcirc$  None of the resistors consume current.

 $\bigcirc$  The resistors each consume the same amount of current.

Accessibility: Keyboard Navigation Difficulty: Easy Topic: Series and parallel circuits Type: Conceptual

Multiple Choice Question MC Resistors of 10 ohms, 20 ohms, and 30 ohms a...

Select ] 🔂 36. The current through a circuit consisting of a single battery and single resistor is measured to be 0.25 ampere. Another identical battery and another identical resistor are added to the circuit. The current passing through the circuit is ○ 0.125 A.

○ 0.25 A.

○ 0.50 A.

 $\rightarrow$   $\bigcirc$  dependent on how the battery and resistor are added to the circuit.

Accessibility: Keyboard Navigation Difficulty: Medium Topic: Series and parallel circuits Type: Conceptual

Multiple Choice Question MC The current through a circuit consisting of ...

- 37. Three different resistance light bulbs are connected to a 120-V outlet. The most power will be consumed by the circuit when
  - $\bigcirc$  the bulbs are in series.
  - $\rightarrow$   $\bigcirc$  the bulbs are in parallel.
    - $\bigcirc$  the least resistive bulb is in parallel with a series of the other two.
    - $\bigcirc$  the most resistive bulb is in parallel with a series of the other two.
    - $\bigcirc$  The arrangement is unimportant because the voltage is the same in all cases.

Accessibility: Keyboard Navigation Difficulty: Hard Multiple Choice Question Topic: Series and parallel circuits MC Three different resistance light bulbs are co... Type: Conceptual 38. An electric iron uses 8.0 A of current and has a power rating of 1100 W. The resistance of the iron is ○ 0.0072 W.  $\rightarrow$   $\bigcirc$  17 W. ○ 138 W. Select Q ○ 8800 W. Accessibility: Keyboard Navigation Difficulty: Easy Multiple Choice Question Topic: Electric energy and power MC An electric iron uses 8.0 A of current and h... Type: Numerical 39. A copper wire from a large spool is cut into two lengths to make extension cords, one 50 feet long and the other 75 feet long. Which of the following is true? ○ The shorter cord will dissipate more power.  $\bigcirc$  The shorter cord will have a smaller voltage. ○ The longer cord will be able to carry more current. Select Q  $\rightarrow$   $\bigcirc$  The longer cord will have more resistance. Accessibility: Keyboard Navigation Difficulty: Medium Topic: Electric energy and power Multiple Choice Question MC A copper wire from a large spool is cut into... Type: Conceptual 40. An iPod battery is rated at 3.7 volts and operates its iPod and earbuds with a direct current of 865 milliamps. What is the power rating of this iPod?  $\bigcirc$  16 Watts  $\bigcirc$  234 Watts  $\rightarrow$   $\bigcirc$  3.2 Watts Select  $\bigcirc$  3.7 Joules per second Accessibility: Keyboard Navigation Difficulty: Easy Multiple Choice Question Topic: Electric energy and power MC An iPod battery is rated at 3.7 volts and op... Type: Numerical 41. An iPod uses 3.7 volts with direct current of 865 milliamps. What is the equivalent resistance of the entire iPod system?  $\rightarrow$   $\bigcirc$  4.3 ohms  $\bigcirc$  1 ohm ○ 3200 ohms Select Q  $\bigcirc$  8.4 ohms Accessibility: Keyboard Navigation Difficulty: Easy Multiple Choice Question Topic: Electric energy and power MC An iPod uses 3.7 volts with direct current o... Type: Numerical

- 42. In a laptop computer, the power converter plugs into the wall's AC outlet and it plugs into the computer's DC power jack. The direct current is composed of
  - $\rightarrow$   $\bigcirc$  electrons moving in the wire.
    - $\bigcirc$  protons moving through the wire.
    - $\bigcirc$  both protons and electrons moving through the wire in the same direction.
    - $\bigcirc$  exactly one half of the voltage of the AC that operates the power converter.

Accessibility: Keyboard Navigation Difficulty: Easy Topic: Alternating current and household circuits Type: Conceptual

Multiple Choice Question MC In a laptop computer, the power converter pl...

Select 3. When a nerve cell fires in your big toe, it is an interaction of positive and negative ions in the membrane of the nerve cell. This membrane has structural similarities to

 $\bigcirc$  a point charge.

 $\rightarrow$   $\bigcirc$  oppositely charged parallel plates.

 $\bigcirc$  a dipole.

 $\bigcirc\,$  a solid block of positive ions embedded with a few impurities in the form of negative ions.

## Select

Accessibility: Keyboard Navigation Difficulty: Medium Multiple Choice Question Topic: Alternating current and household circuits MC When a nerve cell fires in your big toe, it ... Type: Conceptual 44. If you load up a circuit in your home with too many devices, like light bulbs or stereos, in , then you can overload the circuit and trip a circuit breaker or blow a fuse.  $\bigcirc$  series  $\rightarrow \bigcirc$  parallel ○ summer Select  $\bigcirc$  duplicate Accessibility: Keyboard Navigation Difficulty: Medium Topic: Alternating current and household circuits Multiple Choice Question MC If you load up a circuit in your home with t... Type: Conceptual 45. A resistor R is connected across a battery of negligible internal resistance. If the resistance of R is doubled, the current in R will be halved Select Difficulty: Easy Fill-in-the-Blank Question Topic: Ohm's law and resistance FB A resistor R is connected across a battery o... Type: Conceptual 46. In the water flow analogy with an electric circuit the pressure in the fluid circuit is analogous to in the electric circuit. voltage Select Difficulty: Easy Topic: Electric circuits and electric current Fill-in-the-Blank Question Type: Conceptual FB In the water flow analogy with an electric c... 47. In the water flow analogy with an electric circuit the flow meter in the fluid circuit is analogous to the in the electric circuit. ammeter Select Difficulty: Easy Fill-in-the-Blank Ouestion Topic: Electric energy and power FB In the water flow analogy with an electric c... Type: Conceptual 48. A one ohms, a two ohms, and a three ohms resistor are connected in parallel in an electric circuit: The resistor dissipating the most power will be the ohm resistor. one Select a Difficulty: Medium Topic: Electric energy and power Fill-in-the-Blank Question FB A one ohms, a two ohms, and a three ohms resist... Type: Conceptual 49. A dry cell battery is no longer useful when its (two words) becomes large. internal resistance Select Q Difficulty: Medium Fill-in-the-Blank Question Topic: Electric energy and power FB A dry cell is no longer useful when its Type: Conceptual 50. A student finds three resistors in the lab: a two ohms, a five ohms, and a 10 ohms resistor. The smallest value of resistance that the student can make using any one or any combination of the three resistors is \_\_\_\_\_\_ ohms. 1.25 Select Difficulty: Medium Fill-in-the-Blank Question Topic: Series and parallel circuits FB A student finds three resistors in the lab: ... Type: Numerical

51. In a series circuit, the most power is dissipated where the resistance is

largest

Select

Fill-in-the-Blank Question FB In a series circuit, the most power is dissi...

52. As the temperature of a wire increases, its \_\_\_\_\_\_ also increases.

Difficulty: Easy Topic: Electric energy and power Type: Conceptual

## Select

Fill-in-the-Blank Question

FB As the temperature of a wire increases, its ...

Difficulty: Easy Topic: Ohm's law and resistance Type: Conceptual

53. A resistor R is connected across a battery of negligible internal resistance. If the resistance of R is cut in half, the power dissipated in R will \_\_\_\_\_\_ (indicate change, if any).

increase

Select

Fill-in-the-Blank Question FB A resistor R is connected across a battery o... Difficulty: Medium Topic: Ohm's law and resistance Type: Conceptual