

Physics 112
Quiz #12
October 9, 2000

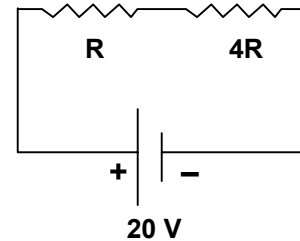
Name: _____

IF YOU WANT A QUESTION GRADED OUT OF THREE POINTS (-1 [MINUS ONE] FOR WRONG ANSWER!!) WRITE "3" IN SPACE PROVIDED ON EACH QUESTION.

$$e = 1.60 \times 10^{-19} \text{ C}$$
$$k = 9 \times 10^9 \text{ N m}^2/\text{C}^2$$

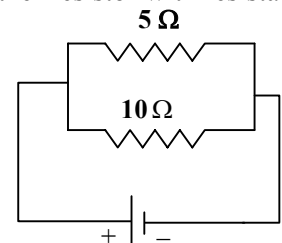
1. A resistor R and a resistor $4R$ are connected in series to a 20-V battery as shown in the diagram. What is the potential drop across the $4R$ resistor, ΔV_{4R} ?

- A. 0 V
- B. 4 V
- C. 5 V
- D. 10 V
- E. 15 V
- F. 16 V
- G. 20 V
- H. There is not enough information to answer this.



Grade out of 3? Write "3" here: _____

2. Two parallel metal plates are connected to a battery. Which of these is **true** about the situation at a point "P" midway between the plates?
- A. If there is no particle located at point P — if it is just vacuum, i.e., "empty space" — then the electric potential at point "P" is **zero**.
 - B. The electric potential at point P can **never** be zero because the electric *field* there is never zero.
 - C. The electric potential at point P will have the same value as it does **anywhere** between the plates.
 - D. A test charge q and a test charge $2q$ placed at point P will experience **different** magnitudes of electrical **potential** at that point.
 - E. A test charge q and a test charge $2q$ placed at point P will possess **different** magnitudes of electric **potential energy** at that point.
3. A 10-ohm and a 5-ohm resistor are connected in parallel to a battery as shown in the diagram. The current flowing in the 5-ohm resistor is I_5 . What will happen to I_5 if the **10-ohm** resistor is removed, and another resistor with resistance **less** than 5 ohms is put in its place? (The same battery is kept in the circuit.)



Then I_5 :

- A. will increase.
- B. will decrease.
- C. will remain equal to 0 A.
- D. will not change, but is not equal to 0 A.
- E. might increase, decrease, or remain the same, depending on the precise value of the new resistance.

Grade out of 3? Write "3" here: _____

4. Which statement is true for a series circuit?
- A. The current is the same at all points in the circuit **and** the potential is the same at all points in the circuit.
 - B. The current is the same at all points in the circuit but the potential varies from point to point.
 - C. The current varies from point to point but the potential is the same at all points in the circuit.
 - D. The current varies from point to point **and** the potential varies from point to point.