

**Physics 112**  
**Quiz #10**  
**October 2, 2000**

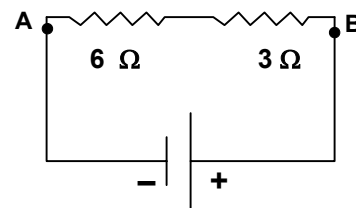
Name: \_\_\_\_\_

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

- A positive charge is fixed at the origin. When a 3-C charge is placed at point P near the origin, the 3-C charge has a **potential energy** of 12 J. If the 3-C charge is now removed, what will be the electric **potential** experienced by a 6-C charge placed at point P?
  - 2 V
  - 4 V
  - 6 V
  - 8 V
  - 9 V
  - 12 V
  - 24 V

- A 6-ohm and a 3-ohm resistor are connected in series to a battery as shown in the diagram. Consider the quantity  $|\Delta V_{AB}| = |V_A - V_B|$ . What will happen to this quantity if the 6-ohm resistor is removed, and another resistor with resistance **less** than 3 ohms is put in its place? (The same battery is left in the circuit.)

Then  $|\Delta V_{AB}|$ :



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

**Grade out of 3? Write "3" here:** \_\_\_\_\_

- A charge  $q$  and a charge  $2q$  flow through the same battery from the negative terminal to the positive terminal. Which of these statements is true about this process?
  - Both charges experience the same increase in potential, and both gain the same amount of potential energy.
  - Both charges experience the same increase in potential, but the charge  $q$  gains more potential energy.
  - Both charges experience the same increase in potential, but the charge  $2q$  gains more potential energy.
  - The charge  $q$  experiences a larger increase in potential, but both gain the same amount of potential energy.
  - The charge  $q$  experiences a larger increase in potential, but the  $2q$  charge gains more potential energy.
  - The charge  $q$  experiences a larger increase in potential, **and** gains a larger amount of potential energy.
  - The charge  $2q$  experiences a larger increase in potential, but both gain the same amount of potential energy.
  - The charge  $2q$  experiences a larger increase in potential, but the  $q$  charge gains more potential energy.
  - The charge  $2q$  experiences a larger increase in potential, **and** gains a larger amount of potential energy.

**Grade out of 3? Write "3" here:** \_\_\_\_\_

- A 2-A current is flowing in the direction shown. A 3-C charge has a potential energy of 24 J at point B. What was its potential energy at point A?

- 9 J
- 12 J
- 15 J
- 18 J
- 21 J
- 27 J
- 30 J
- 33 J
- 42 J

