

**Physics 112**  
**Quiz #13**  
**October 13, 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.**

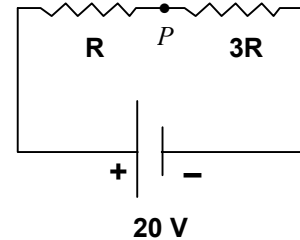
$$e = 1.60 \times 10^{-19} \text{ C}$$
$$k = 9 \times 10^9 \text{ N m}^2/\text{C}^2$$

1. A resistor  $R$  and a resistor  $3R$  are connected in series to a 20-V battery as shown in the diagram. If the potential at the negative terminal of the battery is 0 volts, what is the value of the potential at point  $P$  *between* the two resistors?

- A. 0 V
- B. 4V
- C. 5 V
- D. 10 V
- E. 12V
- F. 15 V
- G. 16 V
- H. 20 V

- I. There is not enough information to answer this.

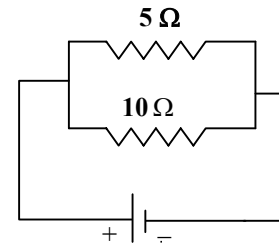
**Grade out of 3? Write "3" here: \_\_\_\_\_**



2. A 10-ohm and a 5-ohm resistor are connected in parallel to a battery as shown in the diagram. The power dissipated in the 5-ohm resistor is  $P_5$ . What will happen to  $P_5$  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  $P_5$ :

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



3. A three-ohm resistor and a four-ohm resistor are connected in series to a battery. In a separate circuit, a three-ohm resistor and a four-ohm resistor are connected in parallel to a battery with the **same** battery voltage as in the first circuit. Which resistor will have the **largest** amount of current flowing through it?

- A. The three-ohm resistor in the series circuit.
- B. The four-ohm resistor in the series circuit.
- C. The three-ohm resistor and the four-ohm resistor in the series circuit, which have the **same** amount of current flowing through them.
- D. The three-ohm resistor in the parallel circuit.
- E. The four-ohm resistor in the parallel circuit.
- F. The three-ohm resistor and the four-ohm resistor in the parallel circuit, which have the **same** amount of current flowing through them.

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

4. Resistor A has twice the resistance of resistor B. They are connected in **series** to a battery. Then:

- A. Resistor A dissipates four times as much power as resistor B.
- B. Resistor A dissipates twice as much power as resistor B.
- C. Resistor A dissipates the same amount of power as resistor B
- D. Resistor A dissipates half as much power as resistor B.
- E. Resistor A dissipates one fourth as much power as resistor B.