

1. In a parallel circuit, current adds because...
  - A) the resistances add.
  - B) energy is conserved.
  - C) charge is conserved.
  - D) the voltage adds.
  
2. The conservation of charge means that in series,
  - A) the voltage across the components is the same.
  - B) the current through the components is the same.
  - C) resistances add in an inverse way.
  
3. Which of the following statements concerning power is true?
  - A) The total power dissipated by resistors only adds in a series circuit.
  - B) The total power dissipated by resistors only adds in a parallel circuit.
  - C) The total power dissipated is equal to the total power supplied in all circuits.
  - D) None of the statements are true.
  
4. For two resistors in parallel, the voltage across each resistor
  - A) is the same.
  - B) adds up to the total voltage.
  - C) subtracts to equal the total voltage.
  - D) must equal zero.
  
5. The resistivity of a silver wire is  $1.59 \times 10^{-8} \Omega \cdot \text{m}$ . The radius of the wire is  $5.04 \times 10^{-4}$  m. If the length of the wire is 3.00 m, what is the resistance of the wire?
  - A)  $0.0598 \Omega$
  - B)  $47.0 \mu\Omega$
  - C)  $9.46 \mu\Omega$
  - D)  $0.167 \Omega$
  - E)  $1.88 \Omega$
  
6. A 12-V battery is connected to two light bulbs connected in series. The voltage across one bulb is 8 V. Determine the total voltage across the other bulb.
  - A) 0 V
  - B) 1.5 V
  - C) 4 V
  - D) 8 V
  - E) 12 V

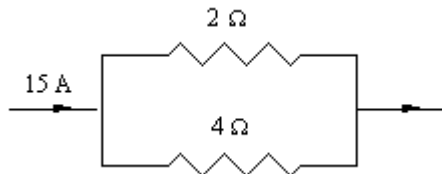
7. The a  $47\ \Omega$  resistor and a  $28\ \Omega$  resistor are connected in series. These two resistors are connected in series across a battery and the current through the  $47\ \Omega$  resistor is  $0.12\ \text{A}$ . What is the voltage of the battery?

- A)  $1.0\ \text{V}$
- B)  $5.0\ \text{V}$
- C)  $9.0\ \text{V}$
- D)  $12\ \text{V}$
- E)  $24\ \text{V}$

8. What resistance must be placed in parallel with a  $155\ \Omega$  resistor to make the equivalent resistance of  $115\ \Omega$

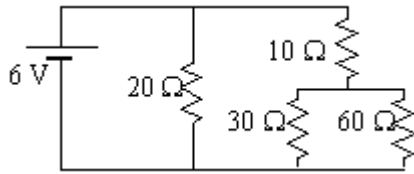
- A)  $601\ \Omega$
- B)  $446\ \Omega$
- C)  $272\ \Omega$
- D)  $119\ \Omega$
- E)  $66.0\ \Omega$

9. Two resistors are arranged in a circuit that carries a total current of  $15\ \text{A}$  as shown in the figure. Which one of the entries in the following table is correct?



- A)  $I(2\ \Omega) = 5\ \text{A}$ ,  $V(4\ \Omega) = 10\ \text{V}$
- B)  $I(2\ \Omega) = 5\ \text{A}$ ,  $V(4\ \Omega) = 20\ \text{V}$
- C)  $I(2\ \Omega) = 10\ \text{A}$ ,  $V(4\ \Omega) = 20\ \text{V}$
- D)  $I(2\ \Omega) = 15\ \text{A}$ ,  $V(4\ \Omega) = 15\ \text{V}$
- E)  $I(2\ \Omega) = 10\ \text{A}$ ,  $V(4\ \Omega) = 10\ \text{V}$

Four resistors and a 6-V battery are arranged as shown in the circuit diagram.



Use this table if desired to help with your calculations. Feel free to redraw the circuit above with equivalent resistors.

	Total	R1	R2	R3	R4
R		20 $\Omega$	10 $\Omega$	30 $\Omega$	60 $\Omega$
I					
V	6 V				

10. Determine the equivalent resistance for this circuit.

- A) 50  $\Omega$
- B) 120  $\Omega$
- C) 29  $\Omega$
- D) 5  $\Omega$
- E) 12  $\Omega$

11. What is the current through R3?

- A) 0.067 A
- B) 0.133 A
- C) 0.15 A
- D) 0.2 A
- E) 0.6 A

12. What is the voltage across R2 (the 10  $\Omega$  resistor)?

- A) 1 V
- B) 2 V
- C) 3 V
- D) 4 V
- E) 6 V

13. What is the current through R1?

- A) 0.133 A
- B) 0.15 A
- C) 0.2 A
- D) 0.3 A
- E) 0.6 A