



New Visions
Charter High Schools

Exam 2: Circuits

Name _____

School _____

Instructor **Mr. Bari** _____

Date / / Period _____

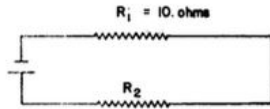
Grade **9 10 11 12**

Circuit

Name: _____

Date: _____

1. The total resistance of the series circuit shown is 15 ohms. What is the resistance of R_2 ?

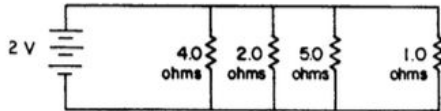


- A. less than 5.0 ohms B. 5.0 ohms
C. 15 ohms D. 25 ohms

2. If a resistor in a parallel branch of a circuit is increased in value, the voltage in that branch of the circuit should

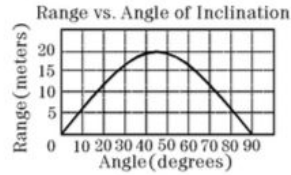
- A. decrease B. increase
C. remain the same

3. In the circuit diagram shown, what is the current through the 4.0-ohm resistor?



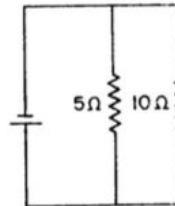
- A. 1.0 ampere B. 0.33 ampere
C. 3.0 amperes D. 48 amperes

4. In the circuit shown, if an ammeter is moved from position 1 to position 2, the current measured will



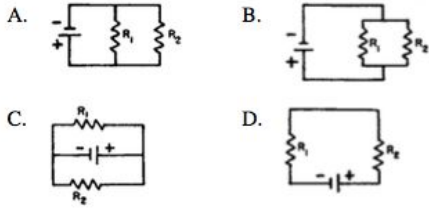
- A. decrease B. increase
C. remain the same

5. The diagram here shows a resistor of 5 ohms and a resistor of 10 ohms connected in parallel in a circuit. What is the total resistance of the circuit?



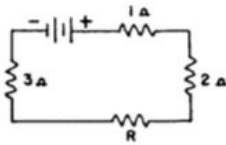
- A. less than 5 ohms
B. 5 ohms
C. 15 ohms
D. greater than 15 ohms

10. Which diagram represents resistances connected in series?

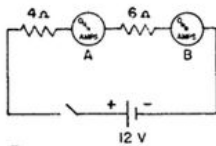


11. If the total resistance of the circuit shown is 15 ohms, what is the value of resistor R ?

- A. 6 ohms
- B. 9 ohms
- C. 12 ohms
- D. 18 ohms



12. When the circuit shown is completed, what will be the reading on the ammeter at B ?

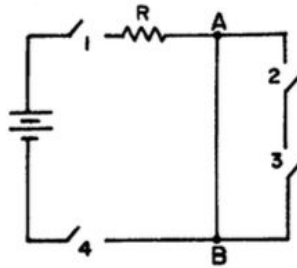


- A. less than the reading at A
- B. greater than the reading at A
- C. the same as the reading at A

13. As more resistors are added in parallel, the total resistance of a circuit

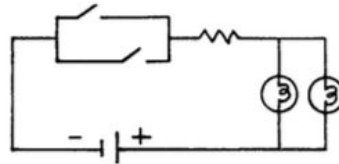
- A. decreases
- B. increases
- C. remains the same

14. In the circuit represented, which switches must be closed to produce a current in conductor AB ?



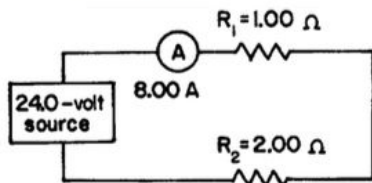
- A. 1 and 4
- B. 2 and 3
- C. 1, 2, and 3
- D. 2, 3, and 4

15. Which type of circuit is shown in the diagram?



- A. AND
- B. OR
- C. series
- D. closed

16. Base your answer(s) to the following question(s) on the diagram given.



The voltage drop across R_1 is

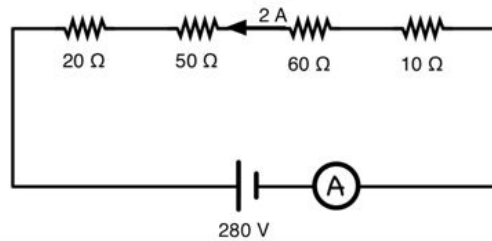
- A. 0 V B. 8.00 V
C. 12.0 V D. 24.0 V

17. What is the total resistance of the circuit?

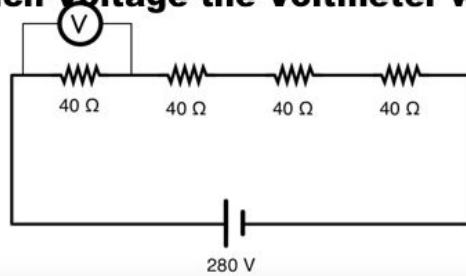
- A. 0.500 Ω B. 2.00 Ω
C. 3.00 Ω D. 4.00 Ω

Part B: Constructed Response

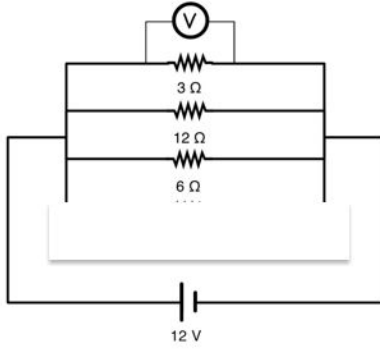
18. How much current Ammeter will read?



19. How much Voltage the Voltmeter will read?



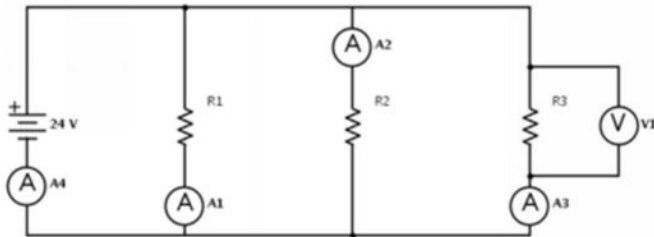
20. Complete the VIRP Table



	V	I	R	P
R1				
R2				
R3				
Total				

21

Complete the VIRP table for the circuit below knowing that A1 reads 3 amps, A2 reads 5 amps, and the power dissipated in R3 is 96 Watts.



	V	I	R	P
R1				
R2				
R3				
Total				

Electricity

$$F_e = \frac{kq_1q_2}{r^2}$$

$$E = \frac{F_e}{q}$$

$$V = \frac{W}{q}$$

$$I = \frac{\Delta q}{t}$$

$$R = \frac{V}{I}$$

$$R = \frac{\rho L}{A}$$

$$P = VI = I^2R = \frac{V^2}{R}$$

$$W = Pt = Vit = I^2Rt = \frac{V^2t}{R}$$

Series Circuits

$$I = I_1 = I_2 = I_3 = \dots$$

$$V = V_1 + V_2 + V_3 + \dots$$

$$R_{eq} = R_1 + R_2 + R_3 + \dots$$

A = cross-sectional area

E = electric field strength

F_e = electrostatic force

I = current

k = electrostatic constant

L = length of conductor

P = electrical power

q = charge

R = resistance

R_{eq} = equivalent resistance

r = distance between centers

t = time

V = potential difference

W = work (electrical energy)

Δ = change

ρ = resistivity

Parallel Circuits

$$I = I_1 + I_2 + I_3 + \dots$$

$$V = V_1 = V_2 = V_3 = \dots$$

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots$$