

Physics 3204
Unit 2: Section 2 -Current Electricity
Worksheet 4: OHM'S LAW



Part A : Multiple choice

1. In Ohm's Law, what does the symbol I represent?

- (A) Current
- (B) Load
- (C) Power
- (D) Voltage



2. Which of the following would not be an equation from Ohm's Law

- (A) $V = \frac{I}{R}$
- (B) $V = IR$
- (C) $R = \frac{V}{I}$
- (D) $I = \frac{V}{R}$

3. The current through a heater is 12 A when it is plugged into a 120 V source. What is the resistance of the heater?

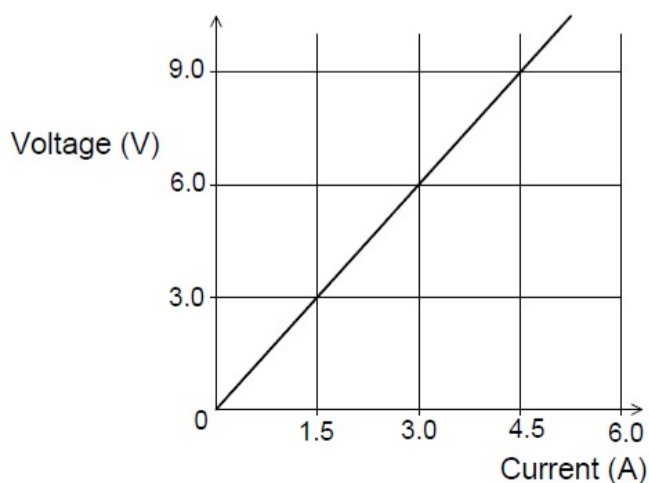
- (A) 0.10 Ω
- (B) 10 Ω
- (C) 132 Ω
- (D) 1440 Ω

4. If 0.05 A of current flows through a 40 Ω light bulb, what voltage is dropped across the light bulb?

- (A) 0.00125 V
- (B) 2.0 V
- (C) 40.05 V
- (D) 800 V

5. The graph provided represents voltage and current data for a resistor R. What is the resistance of R?

- (A) 0.50 Ω
- (B) 2.0 Ω
- (C) 4.5 Ω
- (D) 9.0 Ω



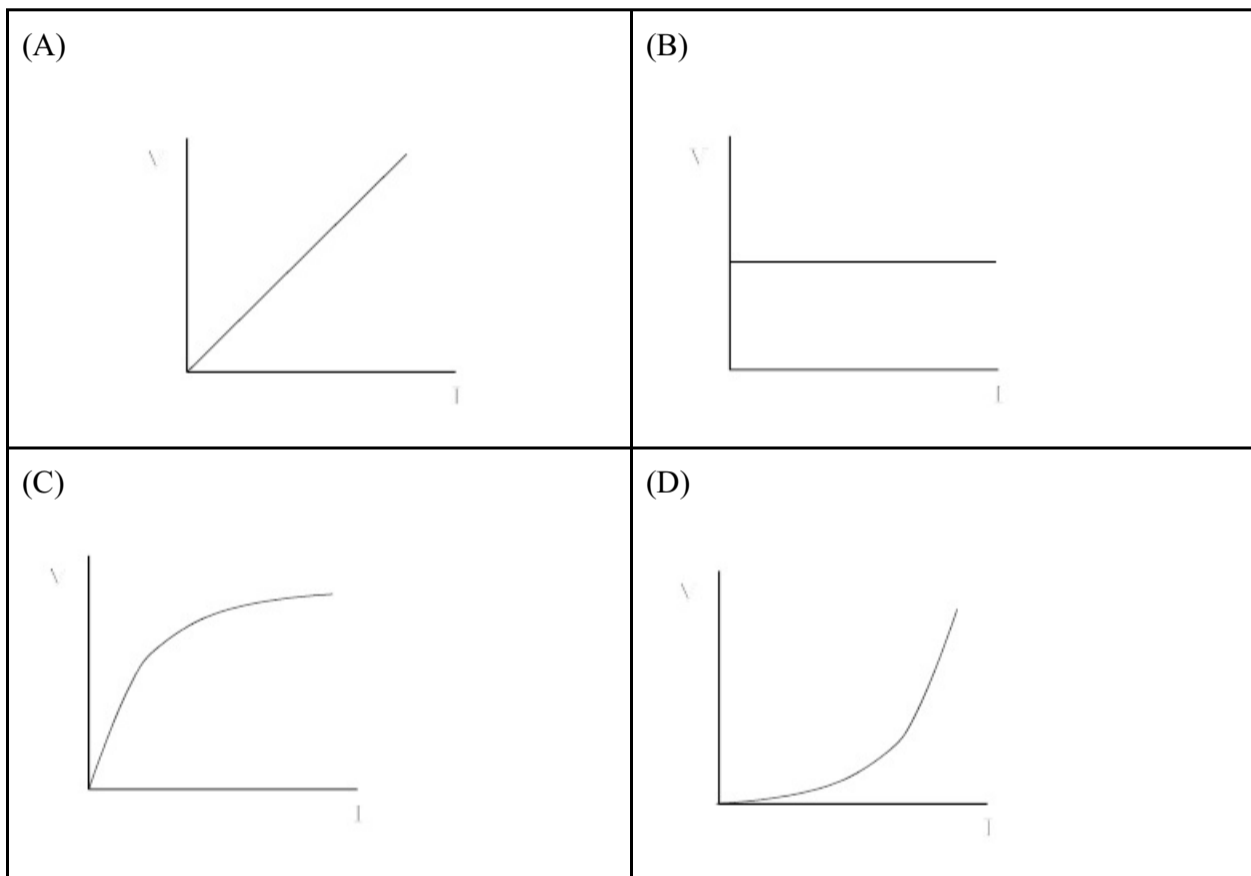
6. What potential difference must be applied to a $26\ \Omega$ resistor to cause a current of $0.50\ \text{A}$ to flow through it?

- (A) $6.5\ \text{V}$
- (B) $13\ \text{V}$
- (C) $26\ \text{V}$
- (D) $52\ \text{V}$

7. If a $75\ \Omega$ resistor is connected in parallel with an $18\ \text{V}$ battery, how much current passes through one of the resistors?

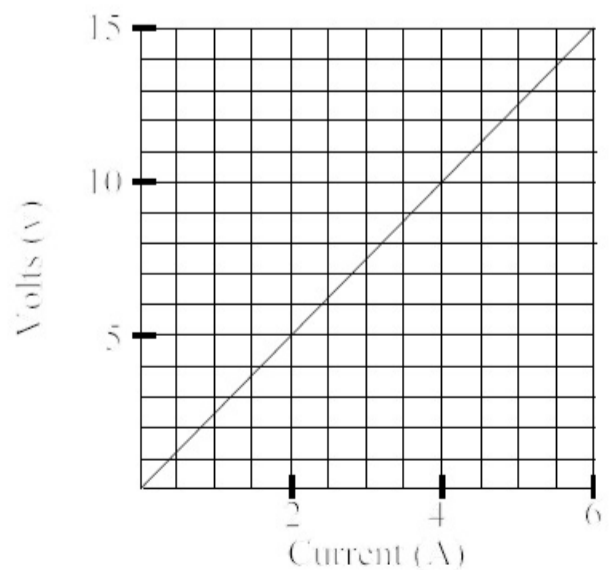
- (A) $0.12\ \text{A}$
- (B) $0.24\ \text{A}$
- (C) $0.48\ \text{A}$
- (D) $4.2\ \text{A}$

8. Which graph illustrates Ohm's Law?

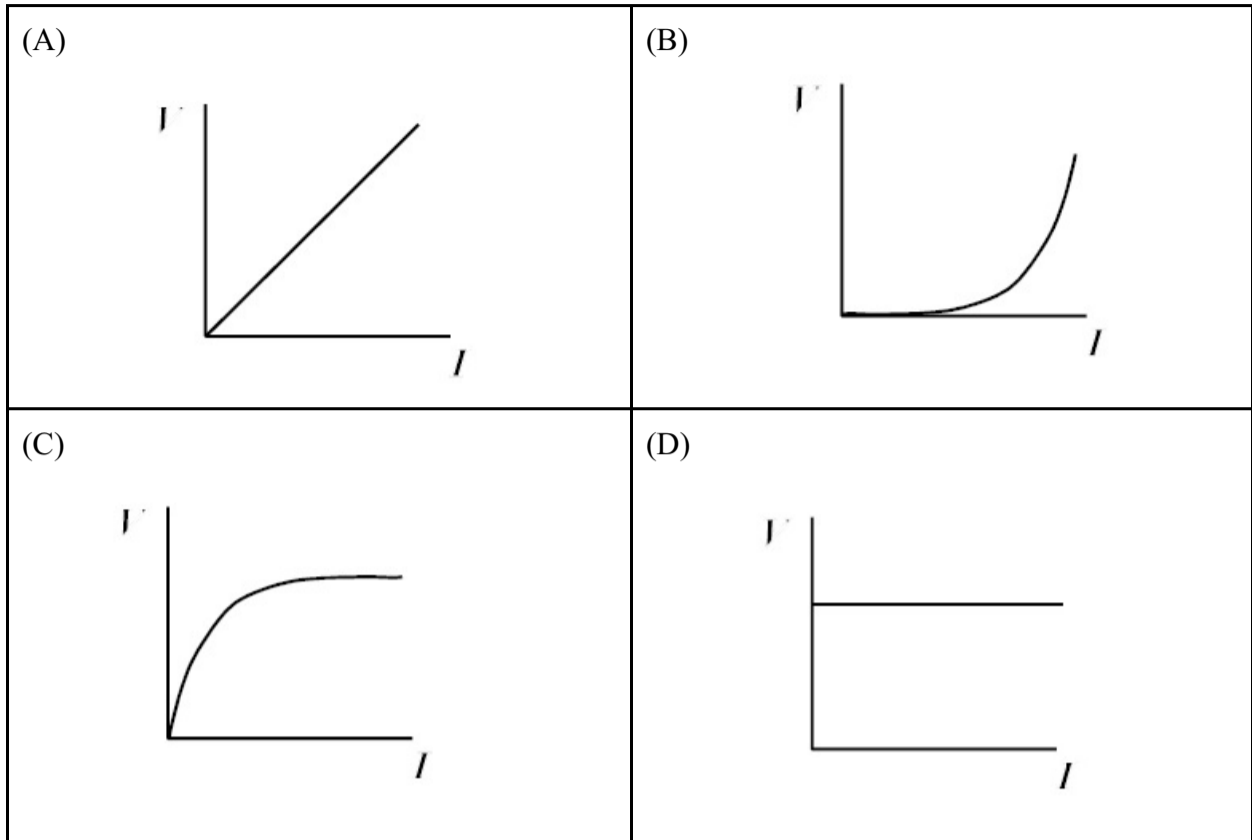


9. What is the resistance for the circuit represented in the graph below?

- (A) $0.40\ \Omega$
- (B) $2.5\ \Omega$
- (C) $6.0\ \Omega$
- (D) $15\ \Omega$



10. Which graph represents a linear circuit element?

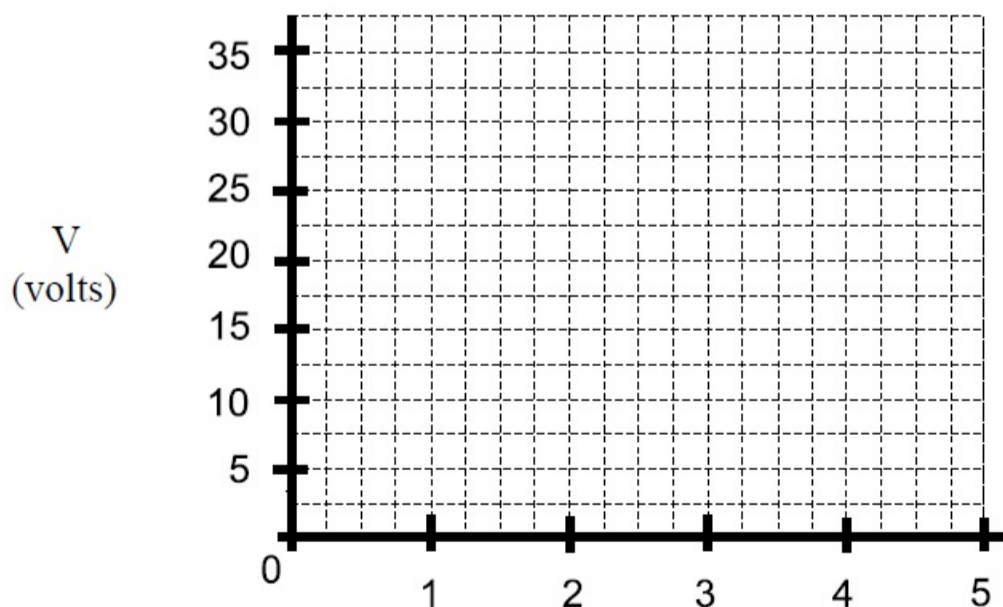


11. student measured the potential difference across, and the current through, two circuit elements, X and Y, and obtained the following data. June 2006

Element X	
Potential difference (V)	Current (A)
1	1
10	3
35	5

Element Y	
Potential difference (V)	Current (A)
5	1
15	3
25	5

Draw a clearly labelled voltage vs. current graph for each element.



- (ii) Which element obeys Ohm's law? Explain.
 (iii) Calculate the resistance of the element in (ii).

12. How much current is in a circuit that includes a 9 volt battery and a bulb with a resistance of 3 ohms?
13. A circuit contains two 1.5 volt batteries and a bulb with a resistance of 3 ohms. Calculate the current.
14. What is the voltage of a circuit with 15 A of current and toaster with 8 Ω of resistance?
15. A light bulb has a resistance of 4 Ω and a current of 2 A. What is the voltage across the bulb?
16. How many ohms of resistance must be present in a circuit that has 120 V and a current of 10 A?
17. An alarm clock draws 0.5 A of current when connected to a 120 V circuit. Calculate its resistance.
18. A portable CD player uses two 1.5 V batteries. If the current in the CD player is 2 A, what is its resistance?
19. You have a large flashlight that takes 4 D-cell batteries. If the current in the flashlight is 2 amps, what is the resistance of the light bulb? (Hint: A D-cell battery has 1.5 volts.)