01. A circuit has a resistance of 10 ohms and a current of 2 amperes. What is the voltage across the circuit?

Using Ohm's Law: V = I * R
V = 2 A * 10 ohms = 20 volts

Answer: The voltage across the circuit is 20 volts.

02. If a power supply provides a voltage of 12 volts and the circuit has a resistance of 4 ohms, what is the current flowing through the circuit?

Using Ohm's Law: I = V / R
I = 12 volts / 4 ohms = 3 amperes

Answer: The current flowing through the circuit is 3 amperes.

03. A light bulb has a resistance of 50 ohms and operates at a voltage of 120 volts. How much current does it draw?

Using Ohm's Law: I = V / R
I = 120 volts / 50 ohms = 2.4 amperes

Answer: The light bulb draws 2.4 amperes of current.

04. A circuit has a current of 5 amperes and a voltage of 20 volts. What is the resistance of the circuit?

Using Ohm's Law: R = V / I
R = 20 volts / 5 amperes = 4 ohms

Answer: The resistance of the circuit is 4 ohms.

05. A resistor dissipates power at a rate of 12 watts when a current of 2 amperes passes through it. What is the resistance of the resistor?

Using the formula for power: P = I^2 * R
12 watts = (2 amperes) ^2 * R
R = 12 watts / 4 amperes^2 = 3 ohms

Answer: The resistance of the resistor is 3 ohms.

06. A circuit has a resistance of 8 ohms and draws a current of 3 amperes. What is the power dissipated by the circuit?

Using the formula for power: P = I^2 * R
P = (3 amperes) ^2 * 8 ohms = 72 watts

Answer: The power dissipated by the circuit is 72 watts.

07. A power supply delivers a current of 2 amperes to a circuit with a resistance of 15 ohms. What is the power supplied by the source?

Using the formula for power: P = I^2 * R
P = (2 amperes) ^2 * 15 ohms = 60 watts

Answer: The power supplied by the source is 60 watts.

08. A device operates at a power of 60 watts and has a voltage of 120 volts. What is the current consumed by the device?

Using the formula for power: P = V * I
60 watts = 120 volts * I
I = 60 watts / 120 volts = 0.5 amperes

Answer: The current consumed by the device is 0.5 amperes.

09. A circuit has a voltage of 24 volts and a power of 48 watts. What is the current flowing through the circuit?

Using the formula for power: P = V * I
48 watts = 24 volts * I
I = 48 watts / 24 volts = 2 amperes

Answer: The current flowing through the circuit is 2 amperes.

10. If a resistor has a resistance of 100 ohms and a power dissipation of 2 watts, what is the current flowing through it?

Using the formula for power: P = I^2 * R
2 watts = I^2 * 100 ohms

Rearranging the formula: I = √(P / R)
I = √(2 watts / 100 ohms) = √0.02 amperes = 0.1414 amperes (approx.)

Answer: The current flowing through the resistor is approximately 0.1414 amperes.