

Tutorial 05

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

$$V = IR$$

$$= 2 \times 10$$

$$= \underline{20\text{ V}}$$

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?

$$V = IR$$

$$12 = I \times 4$$

$$I = \underline{3\text{ A}}$$

03. If a power supply provides a voltage of 120 volts and the circuit has a resistance of 50 ohms, what is the current flowing through the circuit?

$$V = IR$$

$$120 = I \times 50$$

$$I = \underline{2.4\text{ A}}$$

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

$$V = IR$$

$$20 = 5 \times R$$

$$R = \underline{4\Omega}$$

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?

$$P = VI$$

$$V = IR$$

$$12 = V \times 2$$

$$6 = 2 \times R$$

$$V = 6\text{ V}$$

$$R = \underline{3\Omega}$$

06. A C  
Wh

07. P

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

$$\begin{aligned} V &= IR \\ &= 3 \times 8 \\ &= 24 \text{ V} \end{aligned}$$

$$\begin{aligned} P &= VI \\ &= 24 \times 3 \\ &= \underline{\underline{72 \text{ W}}} \end{aligned}$$

7. 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?

$$\begin{aligned} V &= IR \\ &= 2 \times 15 \\ &= 30 \text{ V} \end{aligned}$$

$$\begin{aligned} P &= VI \\ &= 30 \times 2 \\ &= \underline{\underline{60 \text{ W}}} \end{aligned}$$

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

$$\begin{aligned} P &= VI \\ 60 &= 120 \times I \\ I &= \underline{\underline{0.5 \text{ A}}} \end{aligned}$$

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

$$\begin{aligned} P &= VI \\ 48 &= 24 \times I \\ I &= \underline{\underline{2 \text{ A}}} \end{aligned}$$

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

$$\begin{aligned} P &= I^2 R \\ 2 &= I^2 \times 100 \\ I^2 &= \frac{2}{100} \\ I &= \frac{\sqrt{2}}{10} = \frac{1.414}{10} \end{aligned}$$

$$I = \underline{\underline{0.1414 \text{ A}}}$$

11. A circuit has a resistance of 20 ohms and a voltage of 120 volts. What is the current flowing through the circuit?

$$V = JR$$

$$120 = J \times 20$$

$$J = \underline{6A}$$

12. A power supply delivers a current of 5 amperes to a circuit with a resistance of 10 ohms. What is the voltage across the circuit?

$$V = JR$$

$$= 5 \times 10$$

$$= \underline{50V}$$

13. A device operates at a power of 75 watts and draws a current of 2 amperes. What is the voltage supplied to the device?

$$P = VI$$

$$75 = V \times 2$$

$$V = \underline{37.5V}$$

14. A circuit has a current of 0.5 amperes and a resistance of 30 ohms. What is the voltage across the circuit?

$$V = JR$$

$$= 0.5 \times 30$$

$$= \underline{15V}$$

15. A resistor dissipates power at a rate of 8 watts and has a resistance of 4 ohms. What is the current flowing through the resistor?

$$P = VI$$

$$8 = JR \times I$$

$$8 = I^2 \times 4$$

$$I^2 = 2$$

$$I = \underline{1.414A}$$

What

16. A circuit has a voltage of 36 volts and a resistance of 6 ohms. What is the power dissipated by the circuit?
- $$P = VI$$
- $$P = V \times \frac{V}{R}$$

$$P = 36 \times \frac{36}{6}$$

$$P = \underline{\underline{216\text{ W}}}$$

17. A power supply delivers a voltage of 240 volts to a circuit with a resistance of 20 ohms. What is the current flowing through the circuit?

$$V = IR$$

$$240 = I \times 20$$

$$I = \underline{\underline{12\text{ A}}}$$

18. A device operates at a voltage of 12 volts and draws a current of 3 amperes. What is the power consumed by the device?

$$P = VI$$

$$= 12 \times 3$$

$$= \underline{\underline{36\text{ W}}}$$

19. A circuit has a resistance of 25 ohms and a power of 100 watts. What is the current flowing through the circuit?

$$P = VI$$

$$P = JR \times I$$

$$P = I^2 R$$

$$100 = I^2 \times 25$$

$$I^2 = 4$$

$$I = \underline{\underline{2\text{ A}}}$$

20. If a resistor has a resistance of 5 ohms and a current of 2 amperes passing through it, what is the power dissipated by the resistor?

$$P = VI$$

$$P = JR \times I$$

$$P = I^2 R$$

$$P = 2^2 \times 5$$

$$P = \underline{20W}$$