

Multiple formulas Worksheet

1. What is the resistance of a resistor if a circuit is on for 28 minutes, used 25 000 J of energy and had 3 A?

$$R = \frac{V}{I} \quad \frac{4.9}{3} = 1.7 \Omega$$

$$\frac{V = E}{I t} \quad \frac{25000}{3 \times 28 \times 60} = 4.9 \text{ V}$$

2. What is the resistance of a resistor if it used 0.9 A and 650 W of power?

$$R = \frac{V}{I} \quad \frac{722.9}{0.9} = 802.5 \Omega$$

$$\frac{V = R}{I} \quad \frac{650}{0.9} = 722.2 \text{ V}$$

3. What is the resistance of a resistor if it uses 920 V and 180 W of power?

$$R = \frac{V}{I} \quad \frac{920}{0.2} = 4600 \Omega$$

$$I = \frac{P}{V} \quad \frac{180}{920} = 0.2 \text{ A}$$

4. What is the power of an appliance if it needs 220 V when it has a 10 Ω resistor?

$$P = I V \quad 220 \times 22 = 4840 \text{ W}$$

$$I = \frac{V}{R} \quad \frac{220}{10} = 22 \text{ A}$$

5. What is the resistance of a resistor if a circuit is on for 30 minutes, used 20 000 J of energy and had 2 A?

$$R = \frac{V}{I} \quad \frac{5.6}{2} = 2.8 \Omega$$

$$\frac{V = E}{I t} \quad \frac{20000}{2 \times 30 \times 60} = 5.6 \text{ V}$$

6. What is the power of an appliance if it needs 610 V when it has a 200 Ω resistor?

$$P = I V \quad 610 \times 3.05 = 1860.5 \text{ W}$$

$$I = \frac{V}{R} \quad \frac{610}{200} = 3.05 \text{ A}$$

7. What is the power of an appliance in kW if it works on 7 A and has a 3.9Ω resistor?

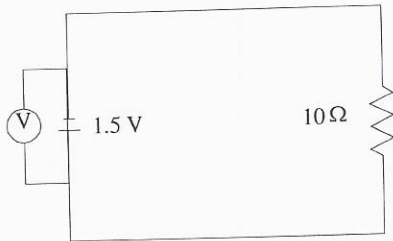
$$P = IV$$

$$\frac{7 \times 27.3}{1000} = 0.19 \text{ kW}$$

$$V = RI$$

$$7 \times 3.9 = 27.3 \text{ V}$$

8. How many joules of heat will the following circuit give off in exactly one hour of use?



$$E = I V t$$

$$0.15 \text{ A} \times 1.5 \text{ V} \times 3600$$

$$810 \text{ J}$$

$$I = \frac{V}{R} = \frac{1.5}{10} = 0.15 \text{ A}$$

9. You connect a fan to a 12-V power source. The total resistance of the wires used is 10Ω . You operate the fan for 20 min. How much energy is used by the wires during this period?

A) 4.8 J

B) 288 J

C) 2 400 J

D) 17 280 J

$$E = I V t$$

$$1.2 \times 12 \times 20 \times 60$$

$$I = \frac{V}{R} = \frac{12}{10} = 1.2 \text{ A}$$