

RESISTANCE WORKSHEET

1. A voltmeter connected across the ends of a heating coil indicates a potential difference of 60 V when an ammeter shows a current through the coil of 3.0 A. What is the resistance of the coil?
2. A flashlight bulb has a resistance of $7.5\ \Omega$ and is connected to a dry cell with a potential difference of 3.0 V. What current passes through the bulb?
3. What is the potential difference across a motor with a resistance of $40\ \Omega$ if the motor draws a current of 6.0 A?
4. What is the resistance of a toaster that draws a current of 6.0 A from a 120 V source?
5. A refrigerator compressor draws 2.5 A from a 120 V source. What is the resistance of the compressor?
6. What voltage is required to push 1.8 A through a $20\ \Omega$ resistor?
7. What is the potential difference of 4.0 A of current as it passes through a $5000\ \Omega$ resistor.
8. What current is allowed to flow through a $32\ \Omega$ resistor when a potential difference of 24 V is applied?
9. A $25\ \Omega$ resistor is able to handle up to 0.5 A of current before it overheats and melts. What is the maximum potential difference the resistor can accept.
10. A string of eight Christmas tree lights connected in series to a 120 V source draws a current of 0.75 A. Find:
 - a) the total resistance of the string of light
 - b) the resistance of each light
 - c) the potential difference across each light
11. A portable radio is designed to operate at a potential difference of 6.0 V and a current of 250 mA. The only power source available is a 10.0 V source. What resistance must be added in series with the radio to make it operate properly?

Answers:

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| 1. $20\ \Omega$ | 4. $20\ \Omega$ | 7. 20000 V | 10. a) 160 W |
| 2. 0.4 A | 5. $48\ \Omega$ | 8. 0.75 A | b) $20\ \Omega$ c) 15 V |
| 3. 240 V | 6. 36 V | 9. 12.5 V | 11. $16\ \Omega$ |