



3. Determinar el calor desarrollado en tres minutos por un caudín para soldar cuya potencia es de 180 Watts.

4. Una plancha eléctrica tiene una resistencia de  $35\Omega$  y se conecta durante 30 minutos a una diferencia de potencial de 110V. ¿Qué cantidad de calor produce?

● Respuesta

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1.

$$I = 5A$$

$$V = 220V$$

$$t = 2 \text{ min}$$

$$t = 2 \text{ min} \left( \frac{60s}{1 \text{ min}} \right) = 120s$$

$$I = \frac{V}{R} \quad R = \frac{V}{I}$$

$$R = \frac{V}{I} = \frac{220V}{5A} = 44\Omega$$

$$Q = 0.24(5A)^2 (44\Omega) (120s) = 31680cal$$

2.

$$R = 60\Omega$$

$$I = 9A$$

$$V = 120V$$

$$t = 8 \text{ min} \quad t = 8 \text{ min} \left( \frac{60s}{1 \text{ min}} \right) = 480s$$

$$Q = 0.24(9A)^2 (60\Omega) (480s) = 559872cal$$

3.

$$P = 180W$$

$$t = 3 \text{ min} \quad t = 3 \text{ min} \left( \frac{60s}{1 \text{ min}} \right) = 180s$$

$$P = I^2R$$

$$Q = 0.24I^2Rt = 0.24Pt$$

$$Q = 0.24Pt$$

$$Q = 0.24Pt = 0.24(180W)(180s) = 7776cal$$

4.

$$R = 35\Omega$$

$$V = 110V$$

$$t = 30 \text{ min} \quad I = \frac{V}{R} = \frac{110V}{35\Omega} = 3.14A$$

$$t = 30 \text{ min} \left( \frac{60s}{1 \text{ min}} \right) = 1800s$$

$$Q = 0.24I^2Rt$$

$$Q = 0.24(3.14A)^2(35\Omega)(1800s) = 149077.2cal$$