

Questão	Resposta
1	$d = 100 \frac{\text{km}}{\text{h}} \times 0,36 \text{ s} = \frac{100}{3,6} \frac{\text{m}}{\text{s}} \times 0,36 \text{ s} = 10 \text{ m}$ $a = \frac{\Delta v}{\Delta t} = \frac{-100 \text{ km/h}}{5 \text{ s}} = \frac{-100}{3,6 \times 5} \text{ m/s}^2 = -5,6 \text{ m/s}^2$
2	$Q = mL$ $m = \frac{Q}{L} = \frac{2400 \text{ kcal}}{80 \text{ cal/g}} = 30000 \text{ g} = 30 \text{ kg}$ $Q = mc\Delta T$ $30 \times 10^3 \times 30 = 900 \text{ kcal}$
3	<p>A distância percorrida é dada pela área sob a curva referente a cada carro.</p> $d_A = \frac{1}{2} (2 \times 2) + 2 (5 - 2) = 8 \text{ m}$ $d_B = \frac{1}{2} \times 2 \times (4 + 1) + 1 \times (5 - 2) = 8 \text{ m}$ $a = \frac{2}{2} \frac{\text{m}}{\text{s}^2} = 1 \text{ m/s}^2$
4	<p>A velocidade de queda dos corpos não depende da massa, logo $\frac{v_1}{v_2} = 1$</p> $\frac{E_1}{E_2} = \frac{\frac{1}{2} m_1 v_1^2}{\frac{1}{2} m_2 v_2^2} = \frac{m_1}{m_2} = \frac{1}{2}$
5	$P = \frac{V^2}{R} = \frac{120 \times 120}{5} = 2880 \text{ W}$ $E = P \times t = 2880 \times \frac{1}{6} = 0,48 \text{ kWh}$
6	$G \frac{Mm}{r^2} = ma_c$ $m \frac{v^2}{r} = m\omega^2 r = mr \left(\frac{2\pi}{T} \right)^2$ $M = \frac{4\pi^2 \left(\frac{r}{T} \right)^2 r}{6,7 \times 10^{-11}} = \frac{4\pi^2}{6,7 \times 10^{-11}} \left(\frac{1,5 \times 10^{11}}{3 \times 10^7} \right)^2 1,5 \times 10^{11} = \frac{4\pi^2 (10^8)}{6,7 \times 4} 1,5 \times 10^{22} \simeq 2 \times 10^{30} \text{ kg}$ $M \sim 10^{30} \text{ kg}$
7	$\lambda f = v$ $\lambda = \frac{v}{f} = \frac{340}{10} = 34 \text{ m}$
8	$\frac{1}{p} + \frac{1}{q} = \frac{1}{f}$ $\frac{1}{q} = \frac{1}{f} - \frac{1}{p} = \frac{1}{40} - \frac{1}{120} = \frac{1}{60} \Rightarrow q = 60 \text{ cm}$ $\frac{h}{H} = \frac{q}{p}$ $h = \frac{q}{p} \times H = \frac{60}{120} \times 10 = 5 \text{ cm}$
9	$V = Ed$ $= 2 \times 10^4 \times 2 \times 10^{-2} = 400 \text{ V}$
10	$d = 2r = 20 \text{ cm} \Rightarrow r = 10 \text{ cm} \Rightarrow A = \pi r^2 = 3,14 \times 100$ $P = \frac{942 \times 10}{3,14 \times 100} = 30 \text{ N/cm}^2$