

Ex: 1)

$$\Delta x = 1 \text{ km}$$

$$V = 1000 \text{ m}$$

$$= \frac{1}{3,6} = 0,278 \text{ m/s}$$

$$\Delta t = 1 \text{ hora}$$

$$3600 \text{ s}$$

$$60 \times 60 = 3600 \text{ s}$$

Ex: 2: ABC

$$AB = 10 \text{ m}$$

$$V_A = 10 \text{ m/s}$$

$$BC = 15 \text{ m}$$

$$V_B = 5 \text{ m/s}$$

a) $\bar{V} = ?$

$$\bar{V} = \frac{V_1 + V_2}{2} = \frac{10 + 5}{2} = \frac{15}{2} = 7,5 \text{ m/s}$$

b) $V_m = ?$

Média das Velocidades

$$b) \quad 10 = \frac{10}{t} \Rightarrow t = \frac{10}{10} = 1 \text{ s}$$

$$\bar{V} = \frac{15}{t} \Rightarrow t = \frac{15}{5} = 3 \text{ s}$$

$$V_m = \frac{10 + 15}{1 + 3} = \frac{25}{4} = 6,25 \text{ m/s} \quad \text{Velocidade média}$$

EXERCÍCIOS:

1) $R = 60 \text{ cm}$

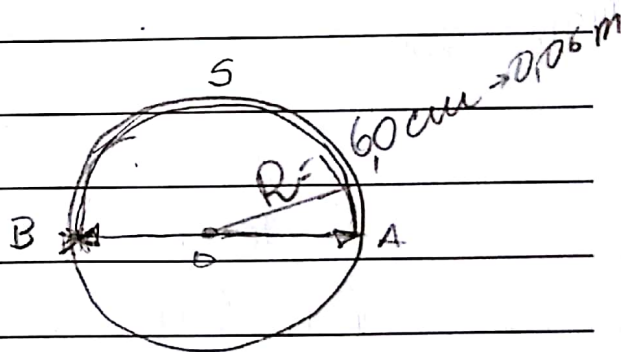
$1/2 \text{ Volta em } 24 \text{ s}$

a) distância percorrida (S) ?

b) $V_m = ?$

c) $| \Delta x | = ?$

d) $\bar{V}_m = ?$



$$C = 2\pi R \Rightarrow C \Rightarrow 1/2 \text{ Volta}$$

$$S = 2\pi R$$

$$S = 2 \cdot 3,14 \cdot 0,06$$

$$S = 0,38 \text{ m}$$

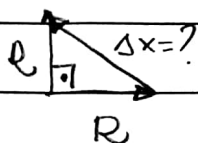
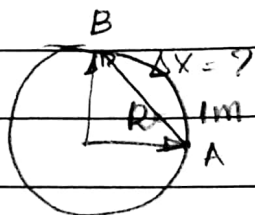
$$V_m = \frac{0,38}{24} = 0,016 \text{ m/s}$$

$$\bar{V}_m = 0,02 \text{ m/s}$$

e) $| \Delta x | = 0,06 + 0,06 = 0,12 \text{ m}$

d) $\bar{V}_m = \frac{0,12}{24} = 5 \cdot 10^{-3} \text{ m/s}$

2)



$$\Delta X^2 = R_A^2 + R_B^2$$

$$\Delta X^2 = 1 + 1$$

$$\Delta X = \sqrt{2}$$

$$\Delta X = 1,41 \text{ m}$$

3) $X = 120 \text{ km} \rightarrow t = 14 \text{ h}$

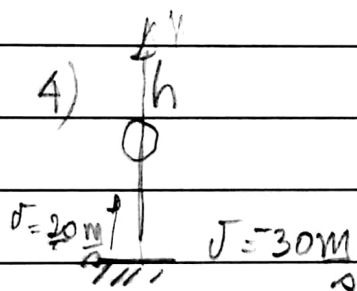
$$X = 270 \rightarrow t = 16 \text{ h}$$

$$V_{em} = \frac{270 - 120}{16 - 14} = \frac{150}{2} = 75 \frac{\text{km}}{\text{h}}$$

a) $V_{em} = ?$

b) tipo mov. $\rightarrow$ NÃO É POSSÍVEL

4)



$$\Delta t = 0,010 \text{ s}$$

$$a = ?$$

$$a = \frac{20 - (-30)}{0,010} = \frac{20 + 30}{0,010} = \frac{50}{0,010} = 5000 \frac{\text{m}}{\text{s}^2}$$

$$a_m = 5,00 \times 10^3 \frac{\text{m}}{\text{s}^2}$$

5) $d = 1000 \text{ m}$

$$V_{em} = 4,0 \frac{\text{m}}{\text{s}}$$

$$d_1 = 100 \text{ m} \rightarrow \Delta t = 12 \text{ s} \quad 500 \text{ m} \rightarrow 60 \text{ s}$$

$$d_2 = 100 \text{ m} \rightarrow \Delta t = 60 \text{ s} \quad 500 \text{ m} \rightarrow 300 \text{ s}$$

$$t_t = 360 \text{ s}$$

$$\frac{4,0 \cdot 1000}{t}$$

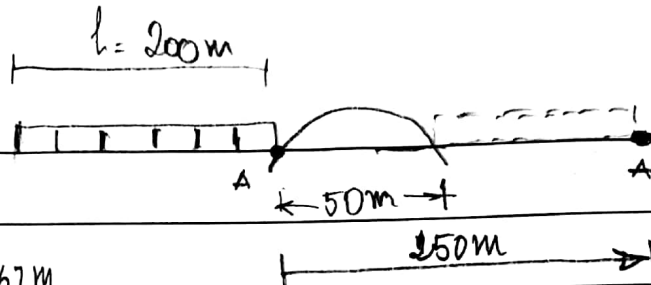
$$t = \frac{1000}{4,0}$$

$$t = 250 \text{ s}$$

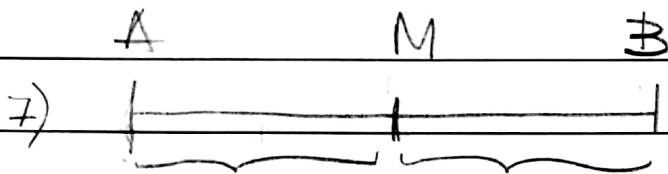
6) $l = 200 \text{ m}$

$l_{\text{ponte}} = 50 \text{ m}$

$$v = \frac{60 \text{ km}}{h} \div 3,6 = 16,67 \text{ m/s}$$



$$16,67 = \frac{250}{t} \quad t = \frac{250}{16,67} = 14,99 \approx 15 \text{ s}$$



$$v_m = \frac{\Delta x}{\Delta t}$$

$$v = 20 \frac{\text{km}}{h}$$

$$l_b = 80 \text{ km}$$

$$20 = \frac{x}{\Delta t_1}$$

$$80 - x = \frac{x}{\Delta t_2}$$

$$v_m = \frac{\Delta x}{\Delta t} = \frac{x + x}{\frac{x}{20} + \frac{x}{80}} = \frac{2x}{\frac{4x + x}{80}} = \frac{2x}{\frac{5x}{80}} = \frac{2x \cdot 80}{5x} = \frac{160x}{5x} = 32 \frac{\text{km}}{h}$$

$$v_m = \frac{2x}{\frac{5x}{80}} = \frac{2x \cdot 80}{5x} = \frac{160x}{5x} = 32 \frac{\text{km}}{h}$$

$$8) \quad V_1 = 60 \frac{\text{km}}{\text{h}} \div 16.67 \frac{\text{m}}{\text{s}}$$

$$a = \frac{21.67 - 16.67}{10} = 0.5 \frac{\text{m}}{\text{s}^2}$$

$$V_2 = 78 \frac{\text{km}}{\text{h}} \div 21.67 \frac{\text{m}}{\text{s}}$$

$$\Delta t = 10 \text{ s}$$

$$9) \quad V = 72 \frac{\text{km}}{\text{h}} \div 20 \frac{\text{m}}{\text{s}} \quad a = \frac{0 - 20}{4}$$

$$\Delta t = 4 \text{ s}$$

$$a = -5 \frac{\text{m}}{\text{s}^2}$$

$$V = 0$$

$$a = ?$$