

Movimiento circular uniforme

Movimiento	# Vueltas	r(m)	t(s)	T(s)	f(Hz)	ω (Rad/s)	V(m/s)
Lento	5	0,1m	1,74	0,34s	2,87	2,13	0,213
Rápido	5	0,1m	0,96	0,19s	5,20	1,19	0,119

$$r = 10 \text{ cm} \cdot \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) = \underline{0,1 \text{ m}}$$

- 5 vueltas **lento**
1,74 segundos.

$$f = \frac{5}{1,74} = \underline{2,87 \text{ Hz}}$$

$$T = \frac{1}{f} = \frac{1}{2,87} = \underline{0,34 \text{ s}}$$

$$\begin{aligned} \omega &= 2\pi \cdot f \\ &= 2\pi \cdot (0,34) \\ &= \underline{2,13 \frac{\text{rad}}{\text{s}}} \end{aligned}$$

$$\begin{aligned} v &= \omega \cdot r \\ &= (2,13 \text{ rad/s}) (0,1 \text{ m}) \\ &= \underline{0,213 \text{ m/s}} \end{aligned}$$

• 5 vueltas **Rápido**
0,96 segundos

$$F = \frac{5}{0,96} = \underline{5,20 \text{ Hz}}$$

$$T = \frac{1}{F} = \frac{1}{5,20} = \underline{0,19 \text{ s}}$$

$$\begin{aligned}\omega &= 2\pi \cdot F \\ &= 2\pi \cdot (0,19) \\ &= \underline{1,19 \frac{\text{rad}}{\text{s}}}\end{aligned}$$

$$\begin{aligned}V &= \omega \cdot r \\ &= (1,19 \frac{\text{rad}}{\text{s}})(0,1 \text{ m}) \\ &= \underline{0,119 \frac{\text{m}}{\text{s}}}\end{aligned}$$

# Vueltas	r(m)	t(s)	F(Hz)	V(m/s)	a _c (m/s ²)	m(kg)	F _c (N)
10	0,37	0,93s	1,07	2,16	12,60	0,015	1,51
15	0,37	0,93s	1,072	2,16	12,60	0,015	0,189

$$r = 37 \text{ cm} \cdot \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) = 0,37 \text{ m}$$

- 10 vueltas
9,39 segundos.

$$F = \frac{10}{9,39} = \underline{1,07 \text{ Hz}}$$

$$T = \frac{1}{F} = \frac{1}{1,07} = \underline{0,93 \text{ s}}$$

$$\begin{aligned} \omega &= 2\pi \cdot F \\ &= 2\pi \cdot (0,93) \\ &= \underline{5,84 \frac{\text{rad}}{\text{s}}} \end{aligned}$$

$$\begin{aligned} V &= \omega \cdot r \\ &= (5,84 \frac{\text{rad}}{\text{s}}) (0,37 \text{ m}) \\ &= \underline{2,16 \frac{\text{m}}{\text{s}}} \end{aligned}$$

marfil

$$a_c = \frac{v^2}{r}$$

$$a_c = \frac{(2,16 \text{ m/s})^2}{0,37 \text{ m}}$$

$$a_c = \underline{12,60 \text{ m/s}^2}$$

• El objeto pesa 120g

$$m = 120 \text{ g} \cdot \left(\frac{1 \text{ Kg}}{1.000 \text{ g}} \right) = \underline{0,12 \text{ Kg}}$$

$$F_c = m \cdot a_c$$
$$= (0,12 \text{ Kg}) (12,60 \text{ m/s}^2)$$

$$F_c = \underline{1,51 \text{ N}}$$

• 15 vueltas

• 13,99 segundos

$$F = \frac{15}{13,99} = \underline{1,072 \text{ Hz}}$$

$$T = \frac{1}{F} = \frac{1}{1,072} = \underline{0,93}$$

$$\begin{aligned}\omega &= 2\pi \cdot F \\ &= 2\pi \cdot (0,93) \\ &= \underline{5,84 \frac{\text{rad}}{\text{s}}}\end{aligned}$$

$$\begin{aligned}V &= \omega \cdot r \\ &= \left(5,84 \frac{\text{rad}}{\text{s}}\right) (0,37\text{m}) \\ &= \underline{2,16 \frac{\text{m}}{\text{s}}}\end{aligned}$$

$$\begin{aligned}a_c &= \frac{V^2}{r} \\ a_c &= \frac{(2,16 \text{ m/s})^2}{0,37\text{m}}\end{aligned}$$

$$a_c = \underline{12,60 \text{ m/s}^2}$$

$$F_c = m \cdot a_c$$
$$= (0,12 \text{ Kg}) (12,60 \text{ m/s}^2)$$

$$F_c = \underline{1.51} \text{ N}$$



