

Procedimiento.

1. Haga girar el disco, Primero de manera suave y luego de manera lenta.
2. Luego tome el tiempo en que realiza 5 giros en ambas direcciones y registre los valores en la tabla.
3. Realice los calculos necesarios para llenar la tabla.

Respuesta.

giros lentos

C.D.

$$m = 0.55 \text{ oz}$$

$$r = 6 \text{ cm} \rightarrow 0.06 \text{ m}$$

$$t/s = 6.40 \text{ s.}$$

$$f = 0.78 \text{ Hz}$$

$$T = 1.28 \text{ s}$$

$$\omega = 4.90 \frac{\text{rad}}{\text{s}}$$

$$v = 0.294 \frac{\text{m}}{\text{s}}$$

5 vueltas

6.40 segundos

$$\begin{aligned} \omega &= 2\pi f \\ &= 2\pi(0.78) \\ &= 4.90 \frac{\text{rad}}{\text{s}} \end{aligned}$$

$$f = \frac{5}{6.40} = 0.78 \text{ Hz}$$

$$T = \frac{1}{f} = \frac{1}{0.78} = 1.28 \text{ s.}$$

$$v = \omega \cdot r$$

$$= \left(4.90 \frac{\text{rad}}{\text{s}} \right) \cdot (0.06 \text{ m}).$$

$$v = 0.294 \frac{\text{m}}{\text{s}}$$

Giros rapido. CD 5

$$f = \frac{5}{3.50} = 1.42 \text{ Hz}$$

$$m = 0.55 \text{ oz}$$

5 vueltas

$$r = 6 \text{ cm} = 0.06 \text{ m}$$

3.50 segundos

$$t/s = 3.50/s$$

$$T = 0.70/s$$

$$f = 1.42 \text{ Hz}$$

$$\omega = 8.92 \frac{\text{rad}}{\text{s}}$$

$$\begin{aligned} \omega &= 2\pi \cdot f \\ &= 2\pi \cdot (1.42) \\ &= 8.92 \frac{\text{rad}}{\text{s}} \end{aligned}$$

$$\begin{aligned} v &= \omega \cdot r \\ &= (8.92 \frac{\text{rad}}{\text{s}})(0.06 \text{ m}) \end{aligned}$$

$$v = 0.5352 \frac{\text{m}}{\text{s}}$$

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2 Tabla de valores.

Movimiento	# vueltas	r (m)	t (s)	T (s)	f (Hz)	ω (rad/s)	v (m/s)
Lento	5	6cm (0.06m)	6.40 s	1.28 s	0.78 Hz	4.90 $\frac{\text{rad}}{\text{s}}$	0.294 $\frac{\text{m}}{\text{s}}$
Rapido.	5	6cm (0.06m)	3.50 s	0.70 s	1.42 Hz	8.92 $\frac{\text{rad}}{\text{s}}$	0.5352 $\frac{\text{m}}{\text{s}}$

4 Toma una masa atada a una cuerda y segun la siguiente tabla realiza los calculos.

Calculos - Procedimientos, #1

$$m = 500 \text{ g} \rightarrow 0.5 \text{ kg}$$

$$r = 71 \text{ cm} \rightarrow 0.71 \text{ m}$$

$$t = 11.49 \text{ seg}$$

$$f = 0.87 \text{ Hz}$$

$$v = 3.87 \frac{\text{m}}{\text{s}}$$

$$a_c = 21.09 \text{ m/s}^2$$

$$m = 0.5 \text{ kg}$$

$$f_c = 10.54 \text{ N}$$

$$\begin{aligned} & 10 \text{ vueltas} \\ & 11.49 \text{ segundos} \end{aligned}$$

$$\rightarrow f = \frac{10}{11.49} = 0.87 \text{ Hz}$$

$$\begin{aligned} \omega &= 2\pi \cdot f \\ &= 2\pi \cdot (0.87) \\ &= 5.46 \frac{\text{rad}}{\text{s}} \end{aligned}$$

$$\begin{aligned} v &= \omega \cdot r \\ &= (5.46 \frac{\text{rad}}{\text{s}}) (0.71 \text{ m}) \end{aligned}$$

$$v = 3.87 \frac{\text{m}}{\text{s}}$$

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

$$a_c = \frac{(3.87 \text{ m/s})^2}{0.71 \text{ m}}$$

$$a_c = 21.09 \text{ m/s}^2$$

$$\begin{aligned} f_c &= m \cdot a_c \\ &= (0.5 \text{ kg}) \cdot (21.09 \text{ m/s}^2) \\ f_c &= 10.54 \text{ N} \end{aligned}$$

$$500 \text{ g} \left(\frac{1.0 \text{ kg}}{1000 \text{ g}} \right) = 0.5 \text{ kg}$$

#2 ↓

$$m = 500 \text{ g} \rightarrow 0.5 \text{ kg}$$

$$r = 71 \text{ cm} \rightarrow 0.71 \text{ m}$$

$$t = 16.13 \text{ seg}$$

$$f = 0.93 \text{ Hz}$$

$$v = 4.14 \frac{\text{m}}{\text{s}}$$

$$a_c = 24.14 \text{ m/s}^2$$

$$m = 0.5 \text{ kg}$$

$$F_c = 14.07 \text{ N}$$

$$\bullet \frac{15 \text{ vueltas}}{16.13 \text{ segundos}} \rightarrow f = \frac{15}{16.13} = 0.93 \text{ Hz}$$

$$\bullet \omega = 2\pi \cdot f$$

$$= 2\pi \cdot (0.93)$$

$$= 5.84 \frac{\text{rad}}{\text{s}}$$

$$\bullet v = \omega \cdot r$$

$$= (5.84 \frac{\text{rad}}{\text{s}}) (0.71 \text{ m})$$

$$v = 4.14 \frac{\text{m}}{\text{s}}$$

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

$$a_c = \frac{(4.14 \text{ m/s})^2}{0.71 \text{ m}}$$

$$a_c = 24.14 \text{ m/s}^2$$

$$\bullet F_c = m \cdot a_c$$

$$= (0.5 \text{ kg}) (24.14 \text{ m/s}^2)$$

$$F_c = 14.07 \text{ N}$$

$$500 \text{ g} \left(\frac{1.0 \text{ kg}}{1000 \text{ g}} \right) = 0.5 \text{ kg}$$

Tabla de valores.

# Vueltas	r (m)	t (s)	f (Hz)	v (m/s)	a _c (m/s ²)	m (kg)	F _c (N)
10	71cm (0.71m)	11.49/s	0.87 Hz	3.87 m/s	21.09 m/s ²	0.5 kg	10.54 N
15	71cm (0.71m)	16.13/s	0.93 Hz	4.14 m/s	24.14 m/s ²	0.5 kg	14.07 N