



# **Mi Universidad**

**Nombre del alumno: Yoselin Sánchez**

**Materia : Física**

**Nombre del profesor: Juan José Ojeda**

**5to semestre**

**Enfermería bachillerato**

# PROBLEMATARIO 4 UNIDAD

1. Datos

$$F = ?$$

$$A = 100 \text{ cm}^2$$

$$P = 200 \text{ N}$$

$$a = 15 \text{ cm}^2$$

$$\frac{F}{A} = \frac{P}{a} = F = \frac{PA}{a}$$

$$F = 1332.33 \checkmark$$

$$F = \frac{(200)(100)}{15} = 1333.33 \text{ N}$$

2. Datos

$$D = 30 \text{ cm}$$

$$d = 2 \text{ cm}$$

$$F = ?$$

$$F = 35000 \text{ N}$$

$$a = \pi d^2 / 4$$

$$A = \pi D^2 / 4$$

$$\frac{F}{A} = \frac{P}{a} = F = \frac{PA}{a}$$

$$P = \frac{F(a)}{A} = \frac{(35000)(\pi(2)^2/4)}{\pi(30)^2/4} = 155.55 \text{ N}$$

$$P = 155.55 \text{ N} \checkmark$$

3. Datos

$$d = 3 \text{ cm}$$

$$D = 40 \text{ cm}$$

$$F = 180 \text{ N}$$

$$A = \pi r^2$$

$$A_1 = (\pi)(0.03 \text{ m})^2$$

$$A_1 = 0.0028 \text{ m}^2$$

$$A_2 = (\pi)(0.4)^2$$

$$A_2 = 0.50 \text{ m}^2$$

$$\frac{F}{A_1} = \frac{P}{A_2}$$

$$180 \text{ N} = P$$

$$0.0028 \text{ m}^2 = 0.50 \text{ m}^2$$

$$P = (0.50 \text{ m}^2) \left( \frac{180 \text{ N}}{0.0028 \text{ m}^2} \right)$$

$$P = 32271.4 \text{ N} \checkmark$$

4. Datos

$$A = 314 \text{ cm}^2$$

$$a = 3.14 \text{ cm}^2$$

$$F = 5000 \text{ N}$$

$$\frac{F}{A_1} = \frac{P}{A_2}$$

$$A_1 = 314$$

$$5000 \text{ N} = P$$

$$3.14 = 314$$

$$P = \frac{(5000)(3.14)}{314}$$

$$P = 5 \text{ N} \checkmark$$



5. Datos

$$F = 2500 \text{ nW}$$

$$a = 22 \text{ cm}^2$$

$$P = 150 \text{ nW}$$

$$\frac{F}{A} = \frac{P}{a} \quad a = 22 \text{ cm}^2 = 0.22 \text{ m}^2$$

$$A = \frac{F}{P} \cdot a$$

$$A = \left( \frac{2500}{150} \right) (22)$$

$$A = 376.66 \text{ cm}^2$$

6. Datos

$$P = 655 \text{ nW}$$

$$a = 20 \text{ cm}$$

$$a = 20 \text{ cm} = 0.2 \text{ m}$$

$$V = a \cdot a \cdot a$$

$$V = (0.2 \text{ m})^3 = 0.008$$

$$P_a = P - E$$

$$P_a = 655 \text{ nW} - 78.48 =$$

$$E = d \cdot g \cdot v$$

$$E = (1000) (9.81) (0.008) = 78.48 \text{ nW}$$

$$= 576.52 \text{ nW}$$

7. Datos

$$d = 2$$

$$2 \text{ mca} \cdot \frac{2.54 \text{ cm}}{1 \text{ mca}} = 5.08 \text{ cm}$$

$$V = 4 \text{ m}^3/\text{seg}$$

$$Q = A \cdot v$$

$$A = \frac{Q}{v}$$

$$A = \frac{4}{5.08}$$

$$A = 20.26 \text{ cm}^2$$

8. Datos

$$t = ?$$

$$V = 10 \text{ m}^3$$

$$Q = 40 \text{ l/s}$$

$$= 0.04 \text{ m}^3/\text{s}$$

$$Q = \frac{V}{t}$$

$$t = \frac{V}{Q} = \frac{10}{0.04}$$

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

10. - Datos

$$V = 1800 \text{ A}$$

$$t = 1 \text{ min}$$

$$Q = \frac{V}{t} \quad Q = 1800$$

$$Q = \frac{1800}{1} \times \frac{1 \text{ min}^3}{1000} \times \frac{1 \text{ min}}{60 \text{ seg}} \quad Q = 0.03 \text{ m}^3/\text{s}$$

$$\rho = \rho_2 = 1000 \text{ kg/m}^3 \quad (0.03 \text{ m}^3/\text{s})$$

$$= 30 \text{ kg/seg}$$

11. - Datos

$$d = 3.81 \text{ cm}$$

$$V = 3 \text{ m/seg}$$

$$D = 2.54 \text{ cm}$$

$$Q_1 = Q_2$$

$$(A_1)(V_1) = (A_2)(V_2)$$

$$A = (\pi) \left( \frac{D^2}{4} \right)$$

$$(A_1)(V_1) = (A_2)(V_2)$$

$$(V_1) (\pi) (d^2/4) = (V_2) (\pi) (D^2/4)$$

$$V_2 = (V_1) (d^2/A^2) = [(300)(3.81)] / (2.54^2) = (75 \text{ cm/seg}) = 0.75 \text{ m/s}$$

$$V = 0.75 \text{ m/s}$$

