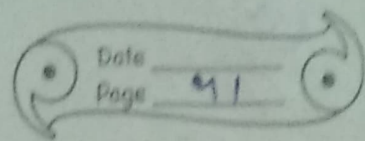


w

Home Assignment



① Given,

Depth of water = 2m (h)

Density of water = $1 \text{ g/cm}^3 = 1000 \text{ kg/m}^3$ (ρ)

Acceleration due to gravity = 10 m/s^2 (g)

We know that pressure, $= h\rho g$

$$= 2 \times 1000 \times 10$$

$$= 20000 \text{ N/m}^2$$

$$= 20000 \text{ Pa}$$

② Pressure = $\frac{\text{Force}}{\text{Area}}$

$$\Rightarrow \text{Force} = \text{Pressure} \times \text{Area}$$

Given, Force = $60 \times 9.8 \text{ N}$

$$\text{Area} = 6 \times 10^{-3}$$

$$\text{Pressure} = \frac{60 \times 9.8 \times 10^3}{6} = 98000 \text{ N}$$

③ (a) If valve is removed, then the water will flow from A to B.

(b) D will travel the largest distance as Pressure increases with depth because the further down we go the greater the weight of the liquid above

60

Home Assignment

- ① lower than
- ② Colour of the fluid
- ③ The pressure at the base of each vessel is given by $h\rho g$ where ρ is a density of water, g is acceleration due to gravity and h is the height of the water column in that vessel.

So,

pressure of the base \propto the height of water level

So, decreasing order of the pressure is

$$\mathbf{D > B > A > C}$$

Home Assignment

①. Force = 16 N

Area = 50 cm² = 5 × 10⁻⁴ m²

Pressure = $\frac{\text{Force}}{\text{Area}} = \frac{16}{50 \times 10^{-4}} = \frac{16 \times 10^4}{50} = 3200 \text{ Pa}$

②. Pressure = $\frac{\text{Force}}{\text{Area}}$

Force = Pressure × Area

= 50000 × 0.20

= 10000 N

① $Pressure = \frac{Force}{Area}$

$$Area = \frac{Force}{Pressure} = \frac{300}{1500} = \frac{1}{5} = 0.2 m^2$$

$$0.2 \times 10000$$

$$= 2000 cm^2$$

Home Assignment

1. $Pressure = \rho g h$

$$h = \frac{Pressure}{\rho g}$$

So, it will fall if $p > \rho_w$

② (i) Statement - 1 is false and statement 2 is true.

(ii) Statement 1 and Statement 2 are true

Statement - 2 is a correct explanation for Statement 1