w

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Home Assignment

① Given,
Depth of water = 2m (h)
Density of water = $1 g/cm^2 = 1000 kg/m^3$ (ρ)
Acceleration due to gravity = 10m/s (g)
We know that pressure, = $h\rho g$
$= 2 \times 1000 \times 10$
$= 20000 N/m^2$
$= 20000 Pa$

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

~~$\Rightarrow$ Force = Pressure x Area~~

Given, Force = 60×9.8 N
Area = 6×10^{-3}
Pressure = $\frac{60 \times 9.8 \times 10^3}{6} = 98000 N$

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

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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

~~D~~ $D > B > A > C$

Home Assignment

1. Force = 16 N

Area = $50\ cm^2 = 5 \times 10^{-4}\ m^2$

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

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

$$\text{Force} = \text{Pressure} \times \text{Area}$$
$$= 50000 \times 0.20$$
$$= 10000\ N$$

(a) Pressure = $\frac{\text{Force}}{\text{Area}}$

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

0.2×10000

$= 2000 cm^2$

Home Assigment

1. Pressure = $h\rho g$

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

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

(2) (i) Statement -1 is false and statement 2 is true
(ii) Statement 1 and Statement 2 are are true Statement-2 is a correct explanation for Statement 1