Liquid Pressure

$P = h\rho g$

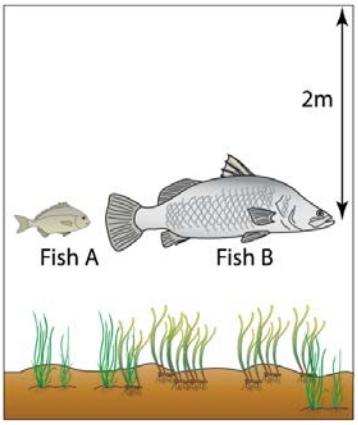
h = depth *(m)*
ρ = density *(kg m^{-3})*
g = gravitational Field Strength *(N kg^{-1})*

Pressure in Liquid

$P = P_{atm} + h\rho g$

h = depth *(m)*
ρ = density *(kg m^{-3})*
g = gravitational Field Strength *(N kg^{-1})*
P_{atm} = atmospheric Pressure *(Pa or N m^{-2})*

Example 1



The diagram shows 2 fishes in water. The density of the water is 1025 kg/m^3. The surface area of fish A is 300cm^2 and the surface area of fish B is 2000cm^2. Find

a. the pressure exerted by the water on fish A.

b. the pressure exerted by the water on fish B.

c. the force exerted by the water on fish A.

d. the force exerted by the water on fish B.

[a. 20500Pa; b. 20500Pa; c. 615N; d. 4100N]
[Step by step solution]

Example 2

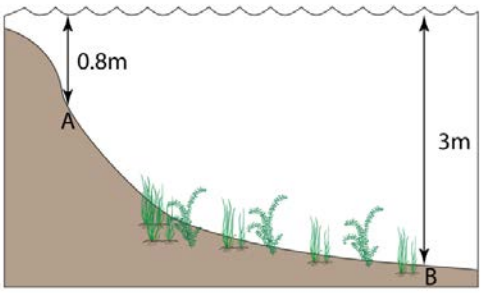


Figure to the left shows the cross section of a sea near a seaside. Find the difference of the pressure between point A and point B. [Density of seawater = 1050kg/m^3]

[23,100 Pa]
[Step by step solution]

Example 3

Find the pressure at a depth of 20 m in water when the atmospheric pressure is 100000 Pa. The density of water is 1000 kg/m^3.

[300,000Pa]
[Step by step solution]