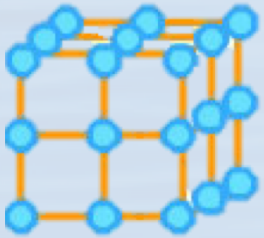
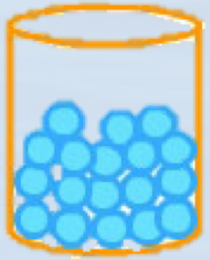
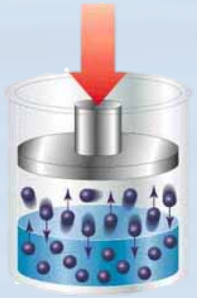
Physics Recap

Establishing a Partial Pressure







Physics Recap Establishing a Partial Pressure

- You have to compress a chamber to 36msw using 12% and 2% heliox, you want 400 mbs ppO_2 on arrival. To what depth would you blowdown using the 12%?

(pO_2 required - Initial pO_2) - (Depth in MSW x Low%) ÷ (High % - Low %)

(400mbar - 210mbar) - (36 msw x 2%) ÷ (12% - 2%)

190mbar - 72 ÷ 10

= 11.8msw (on 12% O_2)

Physics Recap Establishing a Partial Pressure

- You have to pressurise 12 divers to 45 msw in a 35 m^3 chamber, giving a pO_2 of 450 mbar. You have 16/84 and 4/96 heliox mixes available.

  To what depth would you pressurise using the 16%, what will be the % O_2 and how much mixed gas, in total, will you use?

$$\frac{(450_{mb} - 210_{mb}) - (45_{msw} \times 4\%)}{(16\% - 4\%)} \quad \textbf{so} \quad \frac{240_{mb} - 180}{12\%} = \textbf{5.0 msw on 16\%}$$

$$\textbf{O}_2\textbf{\%} = \frac{pO_2 \times 100}{AP} \quad \textbf{so} \quad \frac{0.45mb \times 100}{5.5_{b(a)}} = \textbf{8.18\%} \text{ (Daltons Law)}$$

$$\textbf{Gas used} = P \times V \quad \textbf{so} \quad 4.5 \text{ bar} \times 35m^3 = \textbf{157.5m}^3 \textbf{ of mixed gas}$$