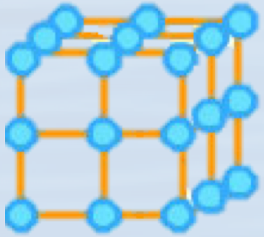
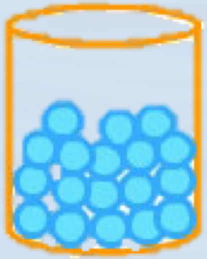
Physics Recap

Temperature and Depth





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Physics Recap Temperature & Depth

5. A 10 L bailout is charged to 200bar. The temperature reaches 36°C. After lying on deck for half an hour the temperature drops to 22°C. What will be the pressure reading? **(Add 273 for centigrade to kelvin)**

$$P2 = \frac{P1 \times T2}{T1}$$

P1 = 200 bar

T2 = $22^{O}C + 273^{K}$ = **295 kelvin**

T1 = $36^{O}C + 273^{K}$ = **309 kelvin**

$$P2 = \frac{200 \times 295}{309} =$$ **190.9 bar**

NB: When calculating temperatures changes with High Pressure gas, you do not need to work in ABSOLUTE, but if you do, you will of course be right.

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Physics Recap Temperature & Depth

- After filling a bail out bottle to 220 Bar it reaches a temperature of 29ºC. What pressure will it be at 7ºC?

Charles Law = $P2 = \frac{P1 \times T2}{T1}$

So = **P1** = 220bar, **T1** = (29^{o}C + 273Kelvin) = 302, **T2** = (5^{o}C + 273Kelvin) = 278

So P2 = $\frac{220\text{bar} \times 278}{302}$ = **202.5bar**

Physics Recap Temperature & Depth

- After filling a bail out bottle to 200 Bar it reaches a temperature of 30ºC. What pressure will it be at 4ºC?

  Charles Law = **P2 = P1 x T2 ÷ T1**

P1 = 200

T1 = 30 + 273 = 303

T2 = 4 + 273 = 277

P2 = 200 x 277 ÷ 303

= 182.8

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Physics Recap Temperature & Depth

- After filling to 3500psi a bail-out bottle is at a temperature of 40℃. What will the be the pressure when the temperature drops to 4℃

Charles Law = **P2 = P1 x T2 ÷ T1**

P1 = 3500psi = 238.09ata

T1 = 40 + 273k = 313

T2 = 4 + 273k = 277

P2 = 238.09 x 277 ÷ 313

= 210.70ata

x 14.7

= 3097psi

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