HW #3 Due Sept. 22, 2017 Solution

#1 For panel A (Top) Two Points on the line are x ($=^{27}Al/^{24}Mg$) $= 0$ y ($=^{26}Mg/^{24}Mg$) $= 0.1393$

$x = 140$ $y = 0.1438$

so y intercept $= 0.1393$

slope $= \frac{\Delta y}{\Delta x} = \frac{0.1438 - 0.1393}{140} = 3.21 \times 10^{-5}$

For panel B Two points on the line are

$(x, y) = (0, 0.1390)$ and $(120, 0.145)$

so y intercept $= 0.1390$

slope $= \frac{\Delta y}{\Delta x} = \frac{0.145 - 0.139}{120} = 5.0 \times 10^{-5}$

The initial $\frac{^{26}Al}{^{27}Al}$ ratios would be 3.21×10^{-5} and 5.0×10^{-5}

The initial $\frac{^{26}Mg}{^{24}Mg}$ ratios would be 0.1393 and 0.1390

#2 In δ notation with $\left(\frac{^{26}Mg}{^{24}Mg}\right)_{std} = 0.1394$

the initial δ values would be

A) $1000 * \left(\frac{0.1393}{0.1394} - 1\right) = -0.72$

B) $1000 * \left(\frac{0.1390}{0.1394} - 1\right) = -2.87$

To show a more significant δ value consider the right most point in panel A, with $\frac{^{26}Mg}{^{24}Mg} = 0.1427$

For it, $\delta = 1000 \times \left(\frac{0.1427}{0.1394} - 1\right) = 23.67$