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## Isotopic abundance practice problems worksheet

The element bromine consists of three naturally occurring isotopes. The mass spectrum of molecular Br<sub>2</sub> shows three peaks with a mass of 158 u, 160 u and 162 u. You can use this information to determine which isotope of Br occurs naturally. 79 u, 81 u Calculate the elemental atomic mass of mg if the naturally occurring isotopes are 24 Mg, 25Mg and 26Mg. Their mass and abundance are as follows: Isotope atomic mass isotope abundance 24Mg 23.98504 u 78.70% 25Mg 24.98584 u 10.7 13% 26Mg 25.98259 u 11.17% 24.31 u Lithium elemental atomic mass 6.941 you and two naturally occurring isotope gels, 6Li and 7Li. The crowds were 6.0151 you and 7.0160 u. What are the natural abundances of lithium isotopes (2 decimal places)? 6Li: 7.49%, 7Li: 92.51% How many peaks would be observed in the mass spectrum of h<sub>2</sub>S + ion? Hydrogen has two stable isotopes, 1H and 2H, and sulphur has 4 stable isotopes, 32S, 33S, 34S and 36S. Let's say the ion doesn't derelict into smaller pieces. Seven of the compounds C, H, and Cl show two peaks in the mass spectrum, one at 52 you and the other at 50 u. What is the reasonable molecular formula for this compound? Let's say there are only 1H, 12C, 35Cl and 37Cl in the compound. CH3Cl What is 19F's nuclear mandatory energy (4 significant figures) when the experimental mass is 18.9984 u? 2.367 x 10-11 J What is nuclear binding energy in 1271 joules (up to 4 significant figures) if the test mass is 126.9004 u? 1.724 x 10-10 J In this worksheet, we will practice calculating the percentage isotope abundance from the relative atomic mass and isotope mass. Question 1: Chlorine has two stable isotopes, 35Cl and 37Cl, atomic masses 34.9689 you and 36.9659 u. In an average chlorine sample, the relative abundance of 37Cl is 3735Cl=0.3196. Calculate the mean absolute abundance 37Cl. A46.97% B19.02% C51.56% D24.22% E40.49% Calculate the average atomic mass of chlorine. A35.61 u B36.48 u C36.33 u D35.97 u E35.45 u Q2: Gallium with two stable isotopes, 69Ga and 71Ga, 68.9256 atomic mass, you and 70.9247 u. Calculate to 3 significant numbers, the abundance of 71Ga is a sample gallium average atomic mass69.723 u. Calculate to 3 significant numbers, the abundance of 69Ga is a sample gallium with an average atomic mass of 69.620 u. Q3: Magnesium has three stable isotopes, 24Mg, 25Mg, and 26Mg, atomic masses 23.9850 u, 24.9858 u, and 25.9826 u. The natural abundance of 24Mg and 25Mg was 78.99% and 10.00%. Calculate the average atomic mass of magnesium. A24.31 u B24.98 u C24.20 u D24.10 u E24.88 u Relative abundance of magnesium isotopes in the A-pattern 2524MgMg=0.11815 and 2624MgMg=0.14687. Calculate to 4 significant numbers, the absolute abundance of 24Mg in the analye. B58.10% C79.05% D77.98% E73.50% Q4: Antimony has two stable isotopes, 121Sb and 123Sb, atomic masses 120.9038 you and 122.9042 u. In an average antimony sample, 123Sb relative abundance was 123121SbSb=0.7479. Calculate the mean absolute abundance 123Sb. A42.79% B14.42% C33.71% D20.13% E25.21% Calculate the average atomic mass of antimony. A121.86 u B122.05 u C121.90 u D121.41 u E121.76 u Q5: Silicon with three stable isotopes, 28Si, 29Si and 30Si, with atomic masses of 27.9769 u, 28.9765 u, and 29.9738 u. Natural abundance of 28Si and 29Si is 92.23% and 4.68% respectively. Calculate it to 4 significant numbers, the average atomic mass of silicon. A28.05 u B28.03 u C28.09 u D28.11 u E28.02 u Relative abundance of silicon isotopes in the pattern A 2928SiSi=0.08069 and 3029SiSi=0.49583. Calculate that 4 significant numbers, the absolute abundance of 28Si in the same format. A63.43% B63.10% C88.97% D89.23% E87.93% The element bromine has three naturally occurring isotopes. The mass spectrum of molecular Br<sub>2</sub> shows three peaks with a mass of 158 u, 160 u and 162 u. 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