Avogadro's Number

Avogadro's number (6.022×10^{23}) is the number of atoms of an element needed so that the element's weight in grams is equal to the element's atomic mass.

Use Avogadro's number to calculate how many atoms of each element are in one gram of the substance, and then divide your answer by 1,000,000,000 to get the number of atoms in a nanogram.

Element	Grams		Molar Mass		Avogadro's Number		# of Atoms in one Gram		# of Atoms in a Nanogram
Hydrogen	1	÷	1.0080	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Helium	1	÷	4.0026	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Carbon	1	÷	12.011	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Oxygen	1	÷	15.999	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Calcium	1	÷	40.08	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Iron	1	÷	55.85	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Copper	1	÷	63.54	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Silver	1	÷	107.87	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Gold	1	÷	196.97	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	
Lead	1	÷	207.19	×	6.022×10^{23}	=		Divide this by 1,000,000,000 =	