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mole in chemistry a standard scientific unit for measuring large quantities of very small entities such as atoms molecules or other specified particles the mole designates an extremely large number of units $6.02214076 \times 10^{23}$ general information unit system si unit of amount of substance symbol mol the mole symbol mol is a unit of measurement the base unit in the international system of units si for amount of substance a quantity proportional to the number of elementary entities of a substance the mole is an amount unit similar to familiar units like pair dozen gross etc it provides a specific measure of the number of atoms or molecules in a bulk sample of matter 4 1 measurement and scale the mole concept 4 2 molar mass 4 3 mole mass conversions 4 4 percentage composition 4 5 empirical and molecular formulas 4 s the mole and measurements in chemistry summary the mole is the unit of measurement in the international system of units si for amount of substance it is defined as the amount of a chemical substance that contains as many elementary entities e g atoms molecules ions electrons or photons the concept of a mole is based on avogadro s hypothesis equal volumes of all gases at the same temperature and pressure contained the same number of molecules and the number of particles in a mole 6.0221415×10^{23} is commonly referred to as avogadro s number typically rounded to 6.02×10^{23} for most calculations the mole is an si unit used to measure the amount of any substance the abbreviation for mole is mol one mole is exactly $6.02214076 \times 10^{23}$ particles the particles could be something small like electrons or atoms or something large like elephants or stars what is a mole about this unit get ready to better understand chemical reactions with stoichiometry master the art of measuring substances using avogadro s number and explore how the mighty mole helps us predict the outcomes of chemical reactions definition what is a mole in chemistry definition 2 this entry was posted on june 25 2014 by todd helmenstine updated on october 25 2021 the mole is the s unit for quantity that is exactly 6.022×10^{23} particles in chemistry a mole is an si base unit for quantity the mole provides a link between an easily measured macroscopic property bulk mass and an extremely important fundamental property number of atoms molecules and so forth a mole of a substance is that amount in which there are $6.02214179 \times 10^{23}$ discrete entities atoms or molecules it provides a specific measure of the number of atoms or molecules in a bulk sample of matter a mole is defined as the amount of substance containing the same number of discrete entities atoms molecules ions etc as the number of atoms in a sample of pure ^{12}C weighing exactly 12 g a mole is a very important unit of measurement that chemists use a mole of something means you have $6.02214076 \times 10^{23}$ of that thing like how having a dozen eggs means you have twelve eggs chemists have to measure using moles for very small things like atoms molecules or other particles it provides a specific measure of the number of atoms or molecules in a bulk sample of matter a mole is defined as the amount of substance containing the same number of discrete entities such as atoms molecules and ions as the number of atoms in a sample of pure ^{12}C weighing exactly 12 g one latin connotation for the word mole is the molar mass of an atom and the atomic mass of an atom have the same numerical values but units are different for instance the atomic mass of ce mg is 24 31 g mol^{-1} therefore one mole of ce mg weighs 24 31 g in practical terms the mole helps chemists measure stuff it helps express the amounts of atoms or molecules in a chemical reaction cause a half mole of oxygen molecules O_2 to react with a mole of hydrogen molecules H_2 and you get a mole of water H_2O equal to about 18 grams of substance the mole is defined as the number of atoms contained in exactly 12 grams of carbon 12 the isotope chemist have measured this number and it turns out to be 6.0221415×10^{23} we can think of the term mole as a number just like the word dozen represents the number 12 adapted from pearson the mole is a unit used to measure the number of atoms molecules or in the case of ionic compounds formula units in a given mass of a substance the mole is defined as the amount of substance that contains the number of carbon atoms in exactly 12 g of carbon 12 and consists of avogadro s number 6.022×10^{23} of atoms of carbon 12 to calculate the number of moles of an element use the formula $n = \frac{m}{M}$ where m is the mass of the element and M is the molecular weight how much is 1 mole to grams the mass of one mole of a substance is equal to its molar mass in grams twelve players complete challenges while trying to identify the one among them who s sabotaging their missions in this reboot of the cult classic series watch trailers learn more

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