Ian is the reason why its atomic

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FaganChemistry Honors19 December 2017Finding Amount of Atoms in Copper, Tin, Lead and 50 mL WaterPurpose The purpose of this lab is to find the amount of atoms in Copper, Lead and Tin samples as well as the amount of atoms in 50 mL of water by finding their mass and converting it to moles and then to atoms. IntroductionOn the Periodic Table, the atomic mass is measured based on the mass of one mole of the specific element. For instance, the atomic mass of Sodium is 22. 99, so the mass of one mole of sodium is 22. 99. This is called its Molar Mass.

Because of this fact, one is able to find the number of atoms, moles, and the mass of any element based off of a sample of an element. There are 6 x 1023 atoms in 1 mole of any element, which is needed to find the number of moles. Tin is relatively rare because it only makes up about 2 parts per million of the Earth’s crust, and is combined with copper to make an important alloy called bronze. It is solid at room temperature and has a melting point of 449. 47 degrees Fahrenheit; its boiling point is 4, 715 degrees Fahrenheit. Tin’s atomic symbol is Sn to stand for stannum, the Latin word for tin. Lead is incredibly useful for water pipes because of its ductility, malleability and resistant to corrosion and water leaks, and the Romans used lead for their water pipes; however, it is toxic to humans, so it ended up giving lead poisoning to many Romans and becoming a factor in the fall of the Roman Empire.

Before we knew about this property of lead, it was widely used in cosmetics, paint, solder, pipes, and gasoline. Lead only makes up around . 0013 % of

the Earth’s crust, but it is not considered rare because it is fairly widespread and easy to extract. Lead is also solid at room temperature, with a melting point of 621. 4 degrees Fahrenheit and a boiling point of 3, 180. 2 degrees Fahrenheit. Contrary to popular belief, pencils don’t, and never did, contain lead in them.

Lead’s Latin name is plumbum which is the reason why its atomic symbol is Pb. Copper is one of the oldest metals found in the Middle East and is also the only metal, other than gold, that occurs naturally as a different color than silver or gray. Copper is solid at room temperature, melts at 1, 984. 32 degrees Fahrenheit, and boils at 5, 301 degrees Fahrenheit. If all of the copper wire in a car were laid out, it would stretch 0. 9 miles.

The Latin name Copper is cuprum, which explains its atomic symbol Cu. MaterialsTriple Beam Balance69. 042g of Copper69. 25g of Lead67. 5g of Tin50 mL of WaterGraduated CylinderGogglesProcedureTake mass of Copper, Lead and Tin sampleTake mass of graduated cylinderTake mass of graduated cylinder with 50 mL of waterSubtract mass of graduated cylinder with water by the mass of the graduated cylinderDataData Qualitative (Observations)Copper: Cylindrical, Solid, Hard, Brown, ShinyLead: Cylindrical, Solid, Hard, Grey, DarkTin: Cylindrical, Solid, Hard, Light Grey, DullWater: Clear, Liquid, Fills ContainerData QuantitativeMass of Metals and WaterMetal / SampleMass (g)Copper (Cu)69. 02gLead (Pb)69. 25gTin (Sn)67.

50gWater (H2O)48. 83gCalculationsFormula for Moles: (g = grams, M = molar mass) Moles = g*1 mol / MFormula for Atoms: (m = moles, E = Amount of elements)Atoms = (m * (6. 022*1023) / 1 mol) * ECalculated

DataCalculations for Amount of Atoms in Metals and WaterMetalMass (g)SubstitutionMolesFormula for AtomsAtomsCopper (Cu)69. 02g69. 02g*1 mol .

63. 55g1. 0861mol1. 0861 x 6. 022×1023 . 1 mol6.

54 x 1023 atoms Lead (Pb)69. 25g69. 25g*1 mol . 207. 2g. 3342mol.

3342 x 6. 022×1023 . 1 mol2. 10 x 1023 atomsTin (Sn)67. 50g67.

50g*1 mol . 118. 7g. 5687mol. 5687 x 6.

022×1023 . 1 mol3. 42 x 1023 atomsWater (H2O)48. 83g48. 83g*1 mol . 18. 016g2.

7104mol2. 7104 x 6. 022×1023 x 3 . 1 mol4. 90 x 1023 atomsConclusionTo conclude, the purpose of this experiment was to find the number of atoms in Copper, Lead, Tin and Water by finding the mass and using mole conversion formulas to convert from grams to moles and then to atoms. The results came out to be that in our copper sample contained 6.

54 x 1023 atoms, our lead sample had 2. 10 x 1023 atoms, our tin sample had 3. 42 x 1023 atoms, and our water sample had 4. 90 x 1023 atoms.

This lab can be related to real life because if someone is trying to find the mass of a compound that they have the number of atoms in that compound,

then that can be easily calculated. One procedural error that could have happened during the experiment was that the initial measurement of the graduated cylinder still had water in it, so it was not an exact measurement when the water was added. This could have impacted the results because instead of getting the exact measurement of 50mL of water, it will be less because the graduated cylinder already had water in it so the mass was greater than it should have been. Work Citedhttps://www. livescience. com/29377-copper. htmlhttps://www. livescience. com/39304-facts-about-lead. htmlhttps://www. livescience. com/37355-tin. html