

Hey there! Let's talk about a synthetic diamond. Imagine you have a shiny, beautiful diamond in your hand. Now, the density of this diamond is like how packed together the molecules are inside. Density tells us how heavy an object is for its size. For our diamond, the density is 3.40 grams per cubic centimeter. This means for every cubic centimeter of the diamond, it weighs 3.40 grams.

Now, let's talk about mass. Mass is how much stuff (or molecules) something is made of. Our diamond has a mass of 6.97 grams. This is the total amount of 'stuff' that makes up our diamond.

In order to find the volume of the diamond, we can use a simple formula:  $\text{Volume} = \text{Mass} / \text{Density}$ . Since we have the mass and the density of the diamond, all we need to do is divide the mass by the density to find the volume.

So, for our diamond, the volume would be 6.97 grams divided by 3.40 grams per cubic centimeter. This will give us the volume in cubic centimeters. Remember to write your answer to the hundredths place, which means two decimal points after the whole number. I hope this helps you understand how to calculate the volume of a diamond!

If you have any more questions, feel free to ask!