Mass Is Conserved—Volume Is Not! Worksheet

Data Table

Demo	Solutions		Final Volume (mL) Prediction	Final Volume (mL) Actual
Demo 1	_____ mL of water	_____ mL of water		
Demo 2	_____ mL of water	_____ mL of ethyl alcohol		
Demo 3	_____ mL of hydrochloric acid	_____ mL of sodium hydroxide		

Questions

1. Calculate the final mass for each demonstration using the following densities.

   Water—0.9982 g/mL
   Ethyl alcohol—0.789 g/mL
   2 M hydrochloric acid solution—1.0333 g/mL

   2 M Sodium hydroxide solution—1.0805 g/mL
   1 M Sodium chloride solution—1.0385 g/mL
   0.9823 M Sodium chloride solution—1.0378

Demo	Solutions		Final Mass (g)
Demo 1	_____ g of water	_____ g of water	_____ g of water
Demo 2	_____ g of water	_____ g of ethyl alcohol	_____ g of solution
Demo 3	_____ g of hydrochloric acid	_____ g of sodium hydroxide	_____ g of solution

2. Explain how accurately your final volume predictions matched the actual final volume.

3. Explain the reasoning for the final volume after combining ethyl alcohol and water. Draw an example.

4. Write the balanced equation for the neutralization of hydrochloric acid and sodium hydroxide.

5. Using the balanced equation and the density information, show the mathematical calculation for the final volume of solution in demonstration 3.