

The **ScienceMath** project: **Mass and Volume of a Liquid**
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Teaching material

The idea of teaching implementation

This hands-on exercise is about different properties of liquids and finding a relationship between mass and volume. First the students have to measure six or more pairs of mass and volume of two liquids. Then they should draw a graph of their data and answer to the questions below.

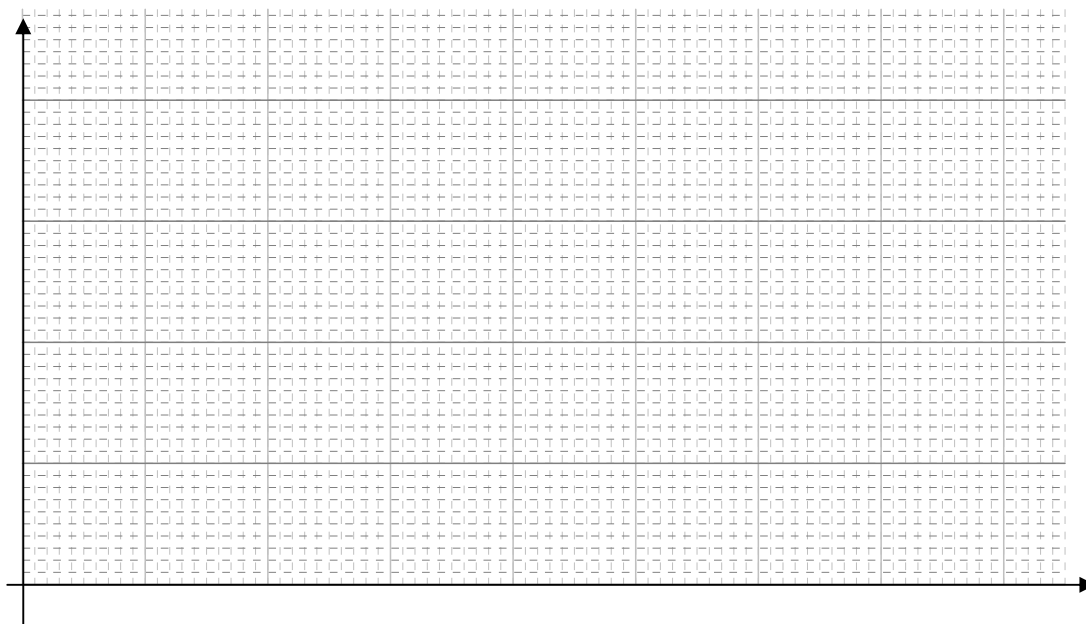
Procedure and equipment needed/ worksheet

(see next pages – to copy)

Questions:

1. What varies? What is kept constant?

2. What can be said about the relationship between volume and mass of liquid?



Graph 1: Masses of water and ethanol as a function of volume

More questions:

3. What is similar to water and ethanol?

4. What is different with water and ethanol?

5. What does the graph above show you about the relationship between volume and mass?

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6. Determine proportionality constants between volume and mass for water and ethanol.

7. What is the physical meaning of this proportionality constant?

8. What is the unit of the constant calculated in question 6? What other units could be used for it?

9. The title in the graph 1 says: Masses of water and ethanol as a function of volume. What does it mean?

10. Write the equations of the graphs of water and ethanol in the graph 1.

11. What were the main sources of uncertainty of your data?

12. Find the literature values for your results.