

Solids, liquids and gases explained

Grade 6 science (Year 7 · Class 6) · Lab answers

Use the sample table to check your own method. Remember that the percentage decrease is worked out from the start volume, and that every measurement has an uncertainty of about half the smallest division.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS1-4

Question 1 Mean air volume

$(16 + 14 + 15) \div 3 = 45 \div 3 = \mathbf{15 \text{ mL}}$.

Question 2 Percentage decrease

Decrease = $40 - 15 = 25 \text{ mL}$. $25 \div 40 \times 100 = \mathbf{62.5 \%}$.

Question 3 Explain the water result

Water particles are already touching, so there is no space left for them to move into.

Liquids cannot be compressed.

Question 4 Reading uncertainty

Reading uncertainty is about $\pm \mathbf{0.5 \text{ mL}}$. The air results range from 14 mL to 16 mL, a range of 2 mL.

Question 5 Predict a new start volume

The final volume is $15/40 = 0.375$ of the start. $60 \times 0.375 = \mathbf{22.5 \text{ mL}}$.

Question 6 Source of error

Air leaking past the plunger or the cap, and not pushing the plunger fully in each time. Either one would make the final volume **larger**.

Question 7 Improve the lab

Repeat more trials and use a clamp or a block to push to the same fixed point; or use a smaller syringe with a finer scale for **more precise** readings.