HIGH SCHOOL CHEMISTRY

CHAPTER 1

Set 1: Matter

Free Sample

Sample pages adapted from the full Matter study set. Try them, then get the whole set.

Try it, then get the whole set

7	5	23	★
files in the full set	sample sections	original diagrams	Honors kept separate

- Sample pages from the notes, revision sheets, traps, practice, flashcards and lab skills
- Answers included for every sample question
- Honors material clearly marked so Regular students can skip it

For high school chemistry, Regular and Honors. Chapter 1: Matter, Measurement, and Problem Solving.
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FREE SAMPLE · SET 1 OF 3

Try the Matter set before you buy

This free sampler shows you sample pages adapted from six of the seven files in the full **Matter** study set: the notes, the revision sheets, the exam traps, the practice questions, the flashcards and the lab skills. If you like how these pages teach, the full set gives you the whole topic, start to finish.

7	23	★	✓
files in the full set	original diagrams	Honors kept separate	answers for everything

What's in the full Matter set

File	What it does for you
1 · Complete Study Notes	Six lessons that teach the whole topic in plain words, with worked examples and quick checks.
2 · Quick Revision Sheets	The topic on a few pages: tables, flowcharts, memory tricks and a one-page cheat sheet.
3 · Exam Traps and Common Mistakes	The mistakes that cost students points, and how to dodge each one.
4 · Practice Question Bank	Questions by lesson, easy to hard, with full worked answers and a separate Honors section.
5 · Quizzes and Unit Test	Timed quizzes and a full unit test with a fully explained answer key.
6 · Glossary and Flashcards	Every key term defined, plus cut-out flashcards.
7 · Lab Skills for Tests	What tests ask about labs: safety, equipment, reading data and sources of error, with four data sets, test-style questions and answers.

NOTE | Regular or Honors?

Honors material sits in blue boxes marked ★ HONORS . Regular students can skip every one of them and still master the topic.

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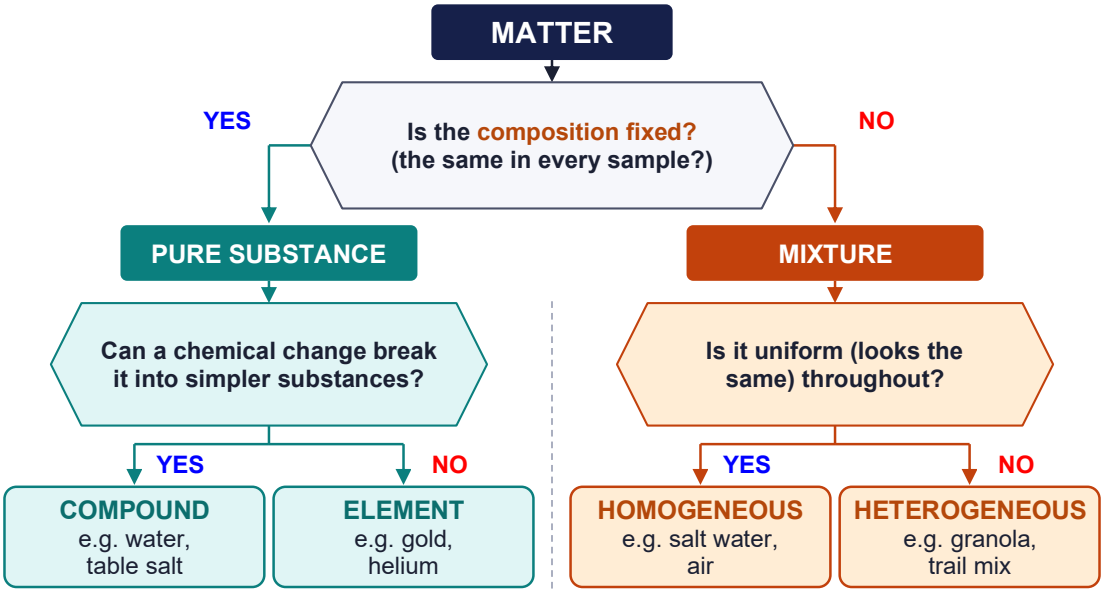
SAMPLE 1 From the Complete Study Notes

SAMPLE PAGE | FREE SAMPLE

This page is adapted from **Complete Study Notes**, one of the seven files in the full Matter set.

Pure substance or mixture?



EXAM TRAP

Uniform does not mean pure. Salt water, air and brass all look the same throughout, and all three are mixtures.

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WORKED EXAMPLE | Is air a pure substance?

Step 1. Is the composition fixed? No. Air is mostly nitrogen and oxygen, but the amount of water vapor changes from a dry desert to a humid beach.

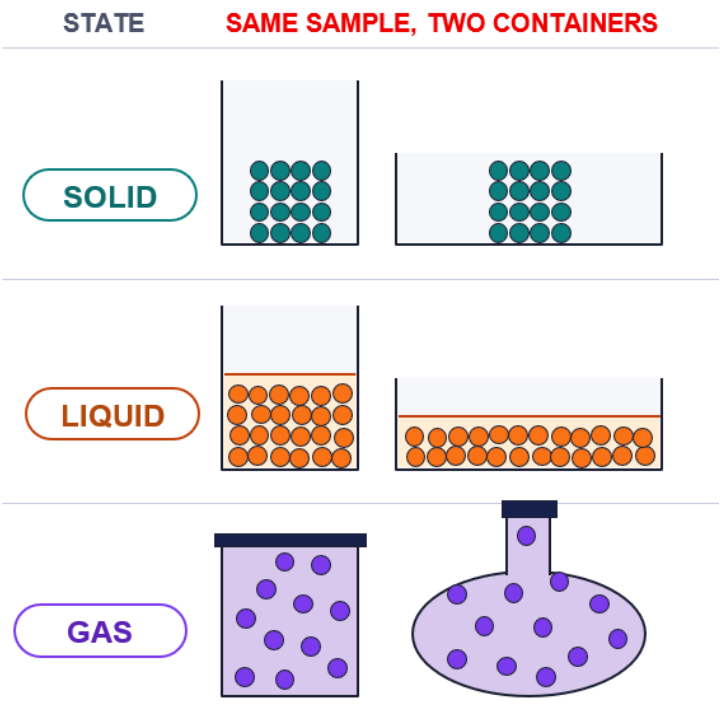
Step 2. So it is a mixture. Is it uniform? Yes. You cannot see separate parts, even under a microscope.

Answer: air is a **homogeneous mixture** (a solution of gases), not a pure substance.

SAMPLE 2 From the Quick Revision Sheets

SAMPLE PAGE | FREE SAMPLE

This page is adapted from **Quick Revision Sheets**, one of the seven files in the full Matter set.



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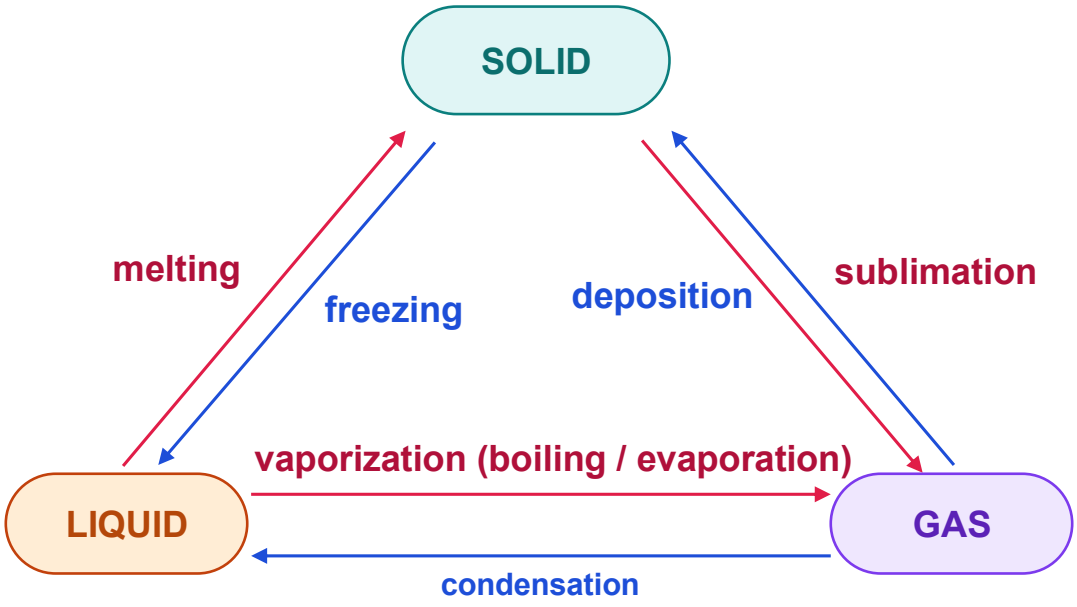
	Solid	Liquid	Gas
Shape	fixed	takes container's	takes container's
Volume	fixed	fixed	fills container
Particles	packed, in a pattern	close, random	far apart
Motion	vibrate in place	slide past	fast, everywhere
Compressible?	no	no	**yes**



→ energy ABSORBED (heat in) → energy RELEASED (heat out)

Change	From → to	Energy	You see it when...
Melting	solid → liquid	**in**	butter softens in a pan
Freezing	liquid → solid	out	ice cubes form
Vaporization	liquid → gas	**in**	a puddle dries; a pot boils
Condensation	gas → liquid	out	a mirror fogs after a shower
Sublimation	solid → gas	**in**	dry ice fogs
Deposition	gas → solid	out	frost on a window

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MEMORY TRICK | Energy in or out?

Heading **toward gas** = energy **in**. Heading **toward solid** = energy **out**. And every phase change is a **physical** change.

SAMPLE 3 From Exam Traps and Common Mistakes

SAMPLE PAGE | FREE SAMPLE

This page is adapted from **Exam Traps and Common Mistakes**, one of the seven files in the full Matter set.

EXAM TRAP | Trap: "Sugar disappeared, so it's a chemical change."

Why students fall for it: the sugar seems to vanish.

The truth: dissolving is a **physical** change. The sugar is still sugar; boil off the water and you get it back.

Exam-proof answer: "Physical change. No new substance forms; the sugar can be recovered by evaporation."

EXAM TRAP | Trap: "The log lost mass, so mass was destroyed."

Why students fall for it: the ash weighs much less than the log.

The truth: mass is conserved. Most of the log's mass left as **gases** (carbon dioxide and water vapor) that you didn't weigh.

Exam-proof answer: "Mass is conserved. The missing mass escaped as gas because the system was open."

EXAM TRAP | Trap: "O_2 has two atoms, so it's a compound."

The truth: a compound needs **two or more different elements**. O_2 has only oxygen, so it is an **element** (a diatomic one).

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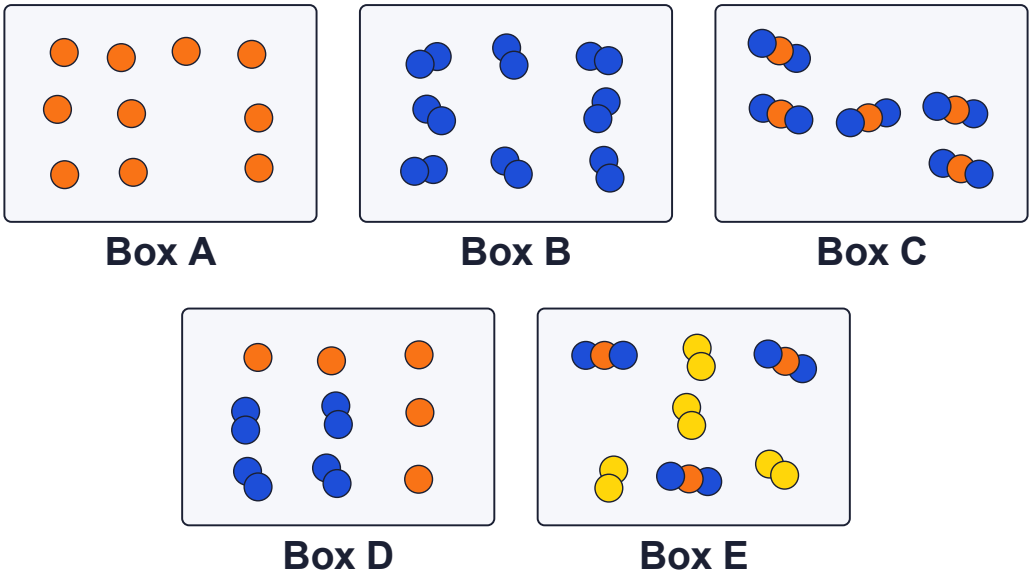
SAMPLE 4 From the Practice Question Bank

SAMPLE PAGE | FREE SAMPLE

This page is adapted from **Practice Question Bank**, one of the seven files in the full Matter set.

Try these five, then check your answers at the bottom of the page.



1. Which box in the diagram above shows a **compound**?
2. Which box shows a **mixture of an element and a compound**?
3. Classify each change as physical or chemical: (a) a nail rusts (b) ice cream melts (c) bread is toasted.
4. In an open cup, 25.0 g of baking soda is added to 40.0 g of vinegar. Bubbles form. Afterward, the cup's contents have a mass of 63.8 g. What mass of gas escaped?
5. ★ HONORS A cup of hot tea gives off 2.00 kcal of heat as it cools. Convert 2.00 kcal to kilojoules. (1 kcal = 4.184 kJ)

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ANSWER KEY | Answers

1. Box C (one kind of particle, made of two different atoms bonded). 2. Box E. 3. (a) chemical (b) physical (c) chemical.

4. Mass before = 25.0 g + 40.0 g = 65.0 g. Escaped gas = 65.0 g − 63.8 g = **1.2 g** of carbon dioxide.

5. ★ HONORS $2.00\ \text{kcal} \times \frac{4.184\ \text{kJ}}{1\ \text{kcal}} = 8.37\ \text{kJ}$

SAMPLE 5 Flashcards and Lab Skills

SAMPLE PAGE | FREE SAMPLE

This page is adapted from **Glossary and Flashcards**, one of the seven files in the full Matter set.

Front	Back
Intensive property	Does not depend on the amount of matter. Examples: density, boiling point, color.
Filtrate	The liquid that passes through the filter paper.
Law of conservation of mass	Mass is neither created nor destroyed in a chemical or physical change.
Potential energy	Stored energy, due to position or composition (chemical energy).

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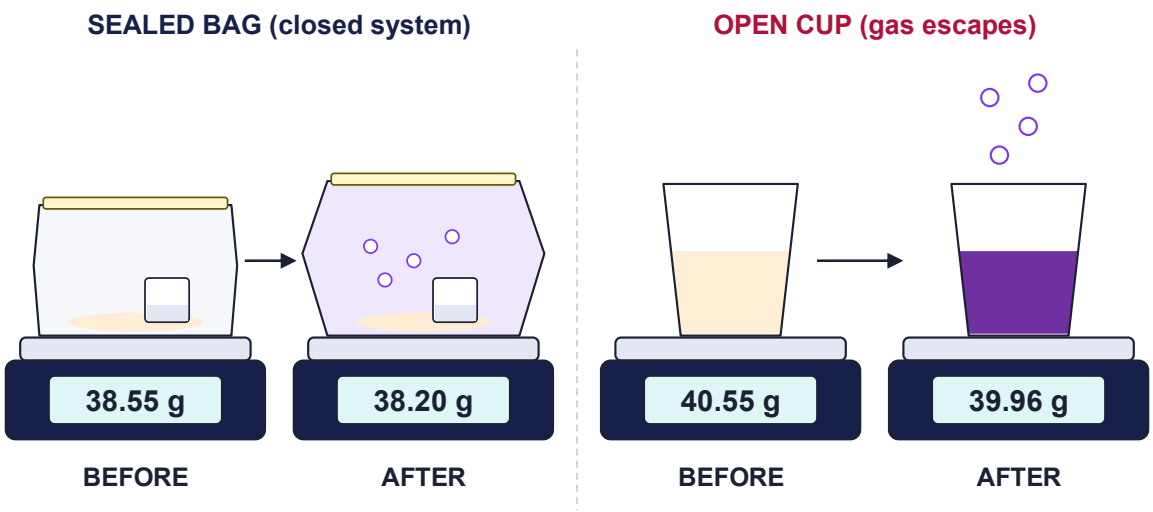
SAMPLE PAGE | FREE SAMPLE

This page is adapted from **Lab Skills for Tests**, one of the seven files in the full Matter set.

Data set: conservation of mass, open cup vs sealed bag

A class mixed baking soda and vinegar twice: once in an open cup and once in a sealed zip-top bag. Each setup was weighed before and after the fizzing stopped.



Setup	Before (g)	After (g)	Change (g)
Open cup	40.55	39.96	−0.59
Sealed bag	38.55	38.20	−0.35

ANSWER KEY | What the data show

Open cup: the mass dropped by 0.59 g because carbon dioxide gas escaped into the room. The cup is an open system.

Sealed bag: nothing left the bag, so the mass of matter inside did not change. The reading still dropped because the bag puffed up; the full file explains why in an Honors box.

The full file has four data sets like this one, plus lab safety, equipment, sources of error and test-style lab questions, all with answers.

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Get the Full Matter Set

You've seen a few pages. The full set covers **all of Matter**, start to finish.

- ✓ **Complete Study Notes:** six lessons, worked examples and quick checks.
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- ✓ **Exam Traps and Common Mistakes:** the mistakes that cost points, fixed.
- ✓ **Practice Question Bank:** questions by lesson with full worked answers.
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Also in this series: Set 2, Measurement, and Set 3, Problem Solving. Each set works on its own.

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