Solid

Liquid

Gas

Matter

Environmental Studies • Revision Notes

Topic: The Material World – From Atoms to Ecosystems

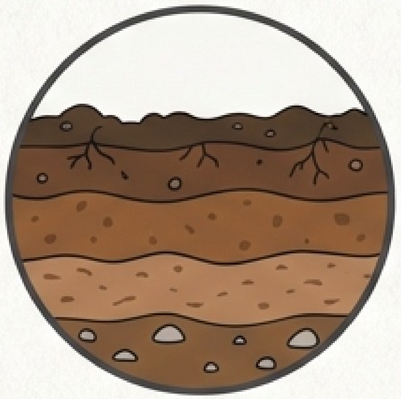
1. Introduction to Matter

Matter is anything that has **mass** and occupies **space**.

Everything in the environment is made up of matter.

Air

Water



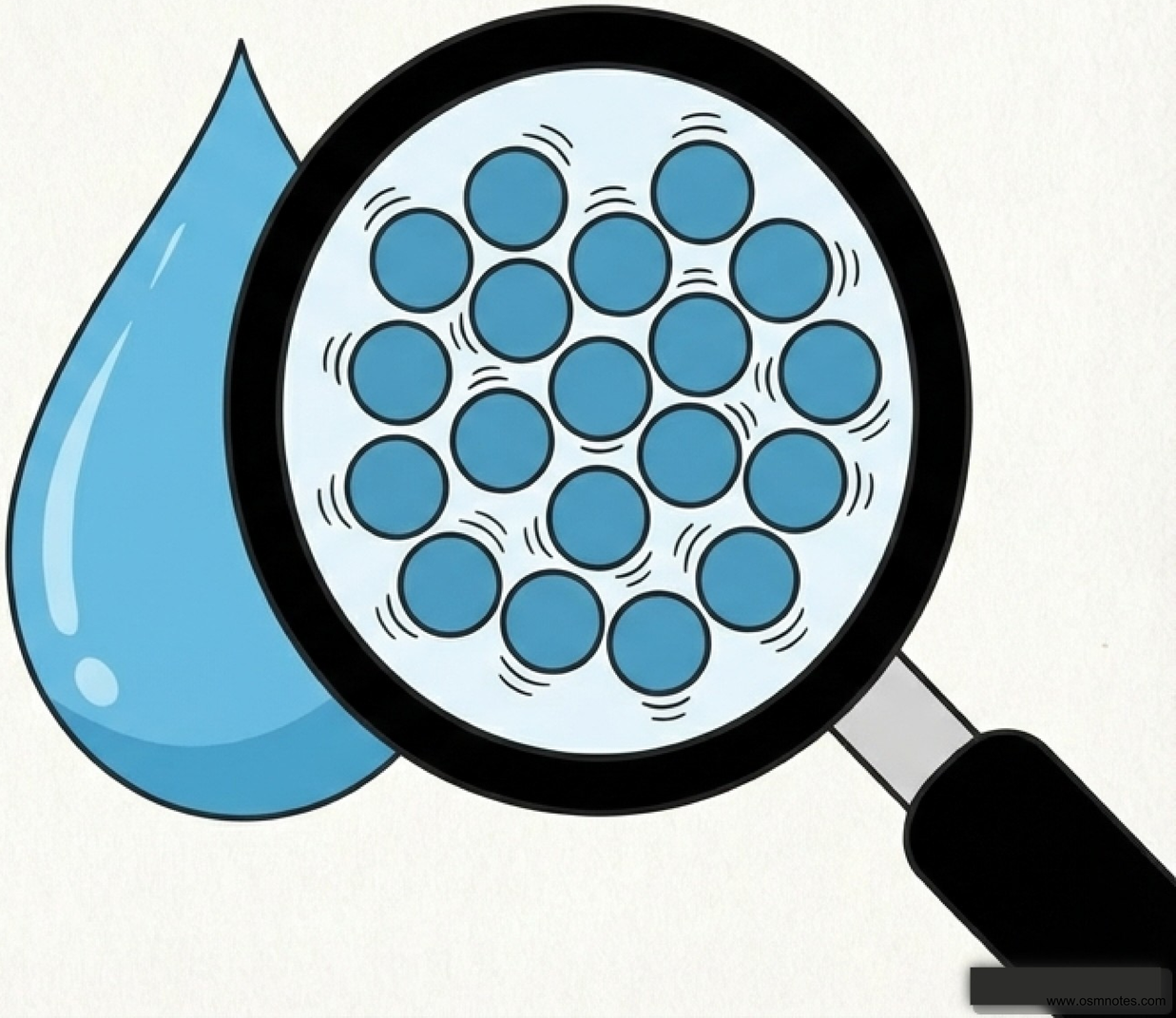
Soil

Plants

Animals & Human Beings

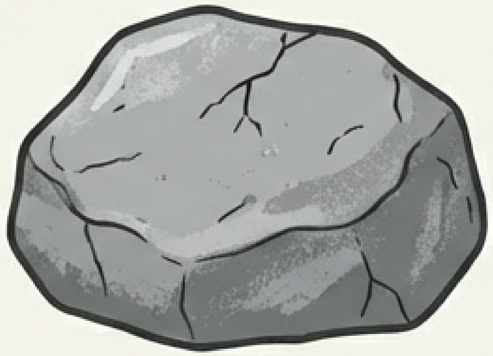
2. Composition & Characteristics

- Matter has mass and occupies space.
- Matter is made up of tiny particles called **atoms** and **molecules.**
- These particles are in constant motion.



3. Types of Matter (Physical States)

SOLID



- Fixed Shape.
- Fixed Volume.

Examples: Stone, Wood, Ice

LIQUID

- No Fixed Shape.
- Fixed Volume.

Examples: Water, Oil

GAS

- No Fixed Shape.
- No Fixed Volume.

Examples: Oxygen, Carbon Dioxide

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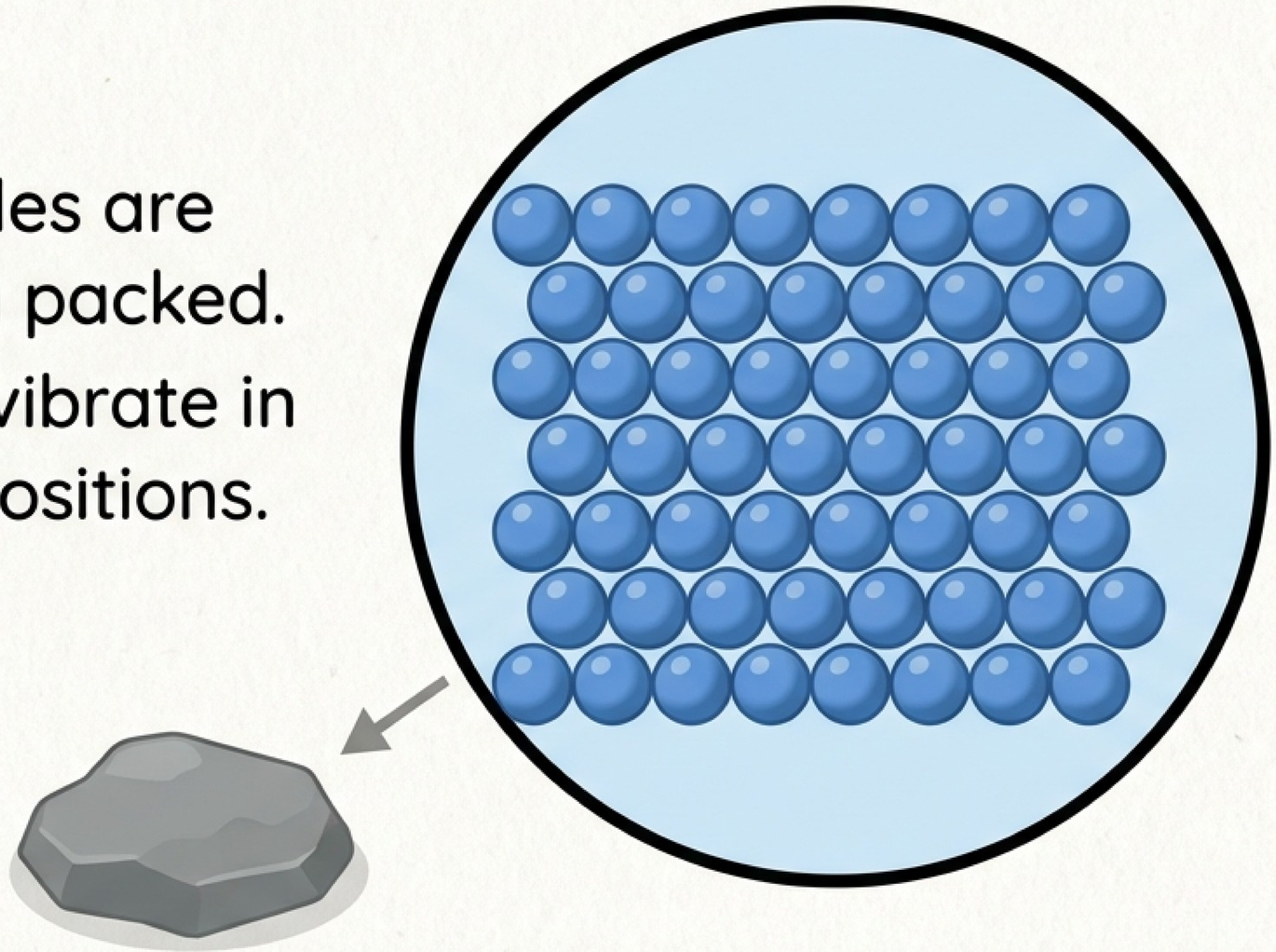
Deep Dive: Solids

- Particles are closely packed.
- They vibrate in fixed positions.

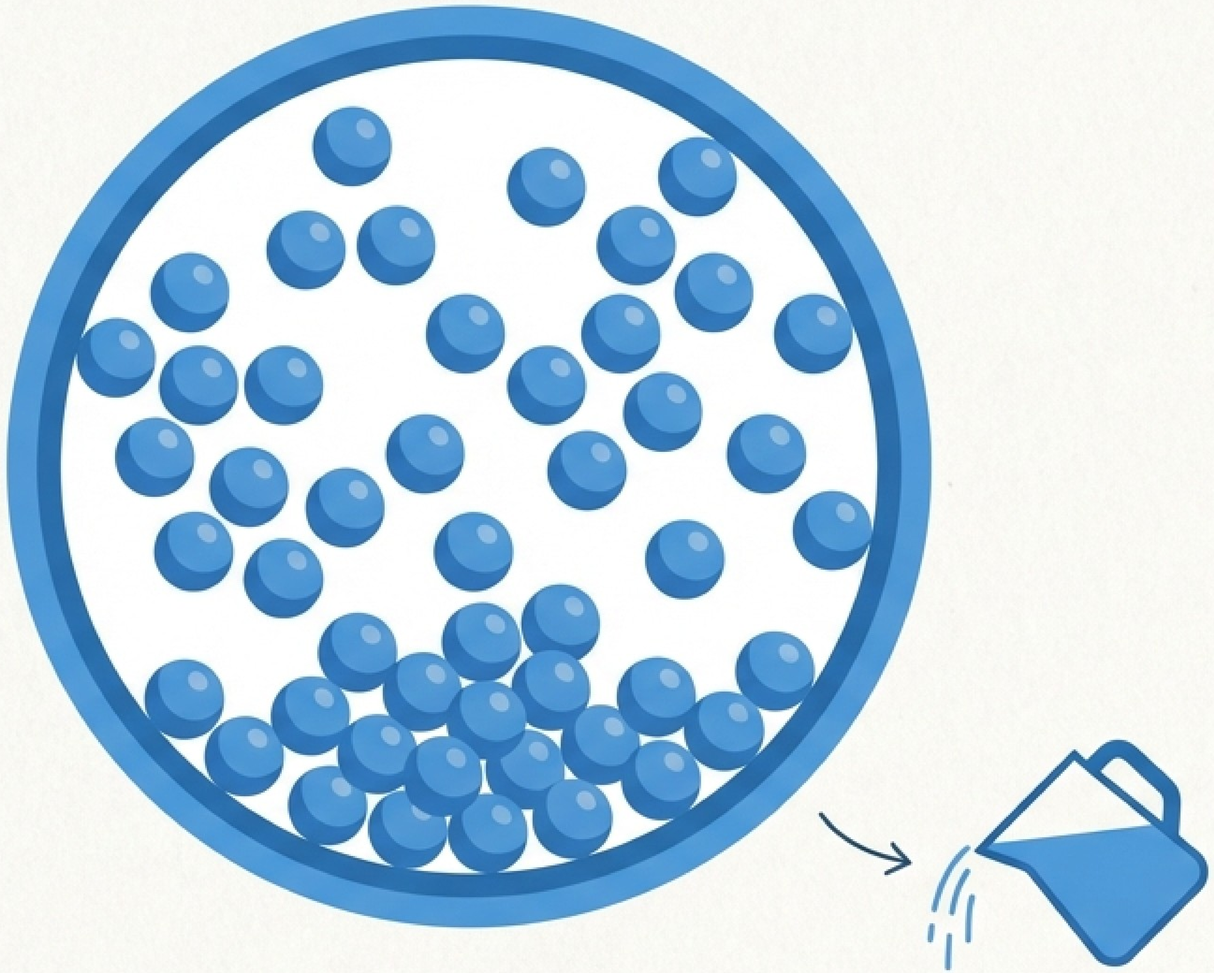


Properties: Rigid & Fixed.

Deep Dive: Liquids

- Particles are loosely packed.

- They can slide over each other.

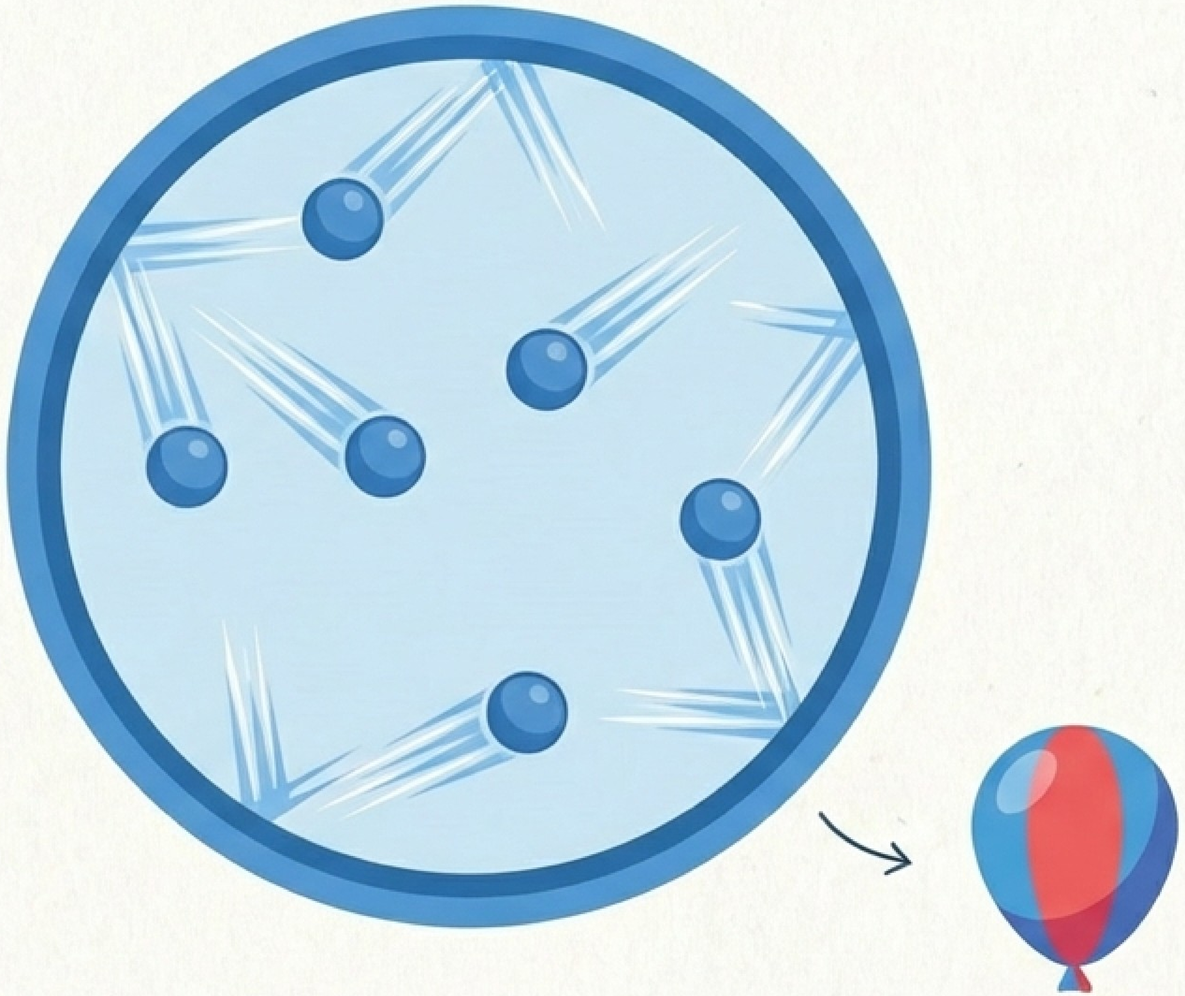


Properties: Fluid & Adaptable.

Deep Dive: Gases

- Particles are far apart.

- They move freely at high speed.



Properties: Compressible & Fast.

5. Changes in State (Heating)

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5. Changes in State (Cooling)

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6. Matter and the Environment

Changes in matter affect environmental balance.

Water Cycle

Carbon Cycle

Nitrogen Cycle

Matter plays an important role in these essential cycles.

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7. Types of Change

Physical Change

No new substance formed.

Chemical Change

New substance formed.

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8. Reactions in Nature: Rusting

Type: Chemical Change

Iron + Oxygen/Air + Moisture ⟶ Rust

Iron reacts with oxygen to form a new substance.

8. Reactions in Nature: Burning

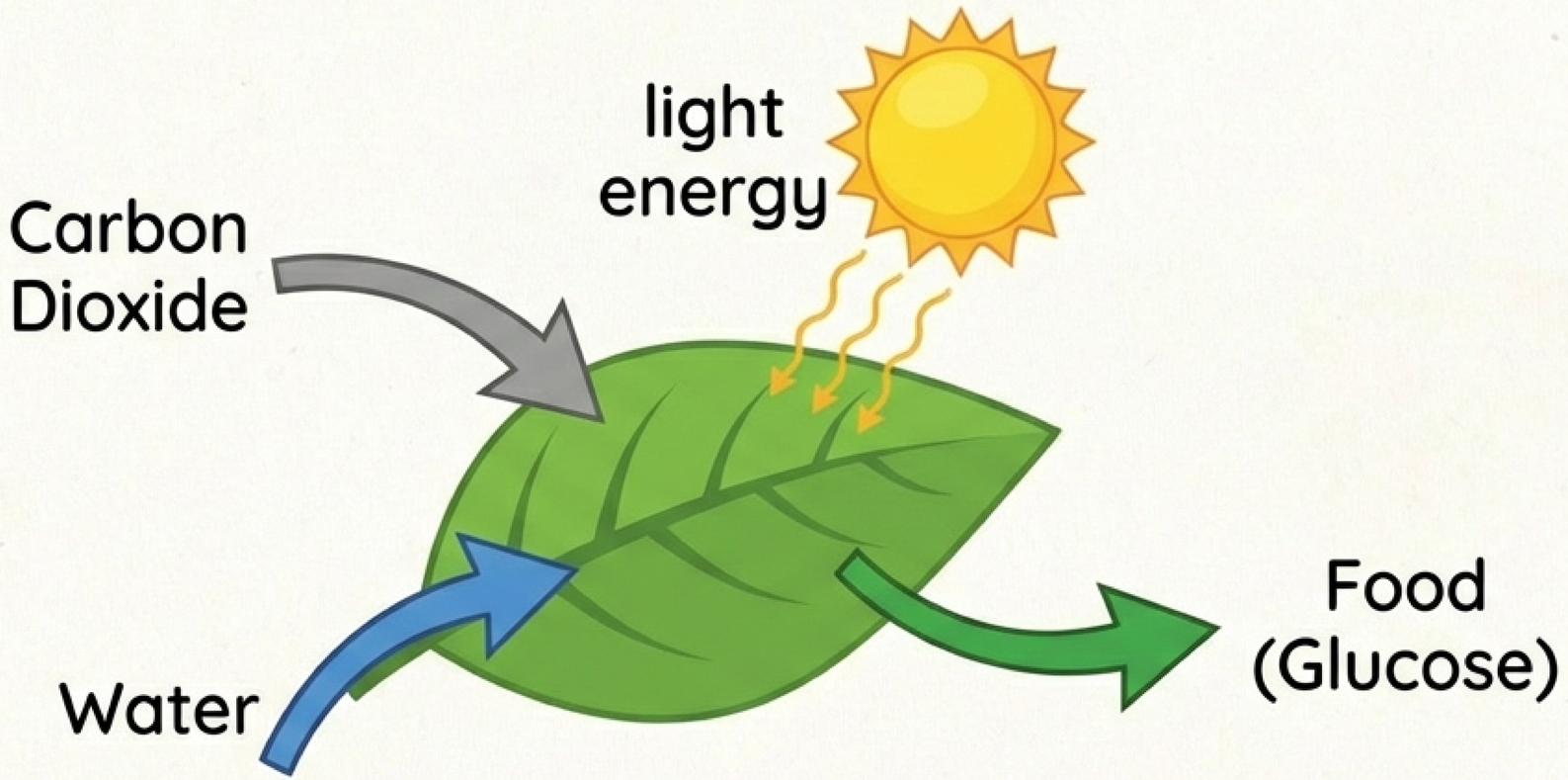
Type: Chemical Change

Reaction with oxygen producing heat and light.

An irreversible change that generates energy.

8. Reactions in Nature: Photosynthesis

Type: Chemical Change (Biological)



Plants convert carbon dioxide and water into food.

9. Quick Revision (Question 1)

Which state of matter has a fixed shape and volume?

a) Liquid 
b) Gas 
c) Solid 
d) Plasma 

Answer: c) Solid

9. Quick Revision (Question 2)

Evaporation is the change from:

a) Solid to liquid 
b) Liquid to gas 
c) Gas to liquid 
d) Solid to gas 

Answer: b) Liquid to gas

9. Quick Revision (Question 3)

Rusting of iron is a:

a) Physical change
b) Chemical change
c) Reversible change
d) Temporary change

Answer: b) Chemical change

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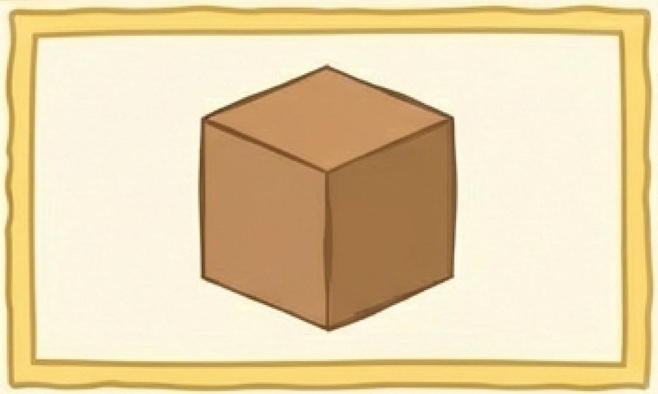
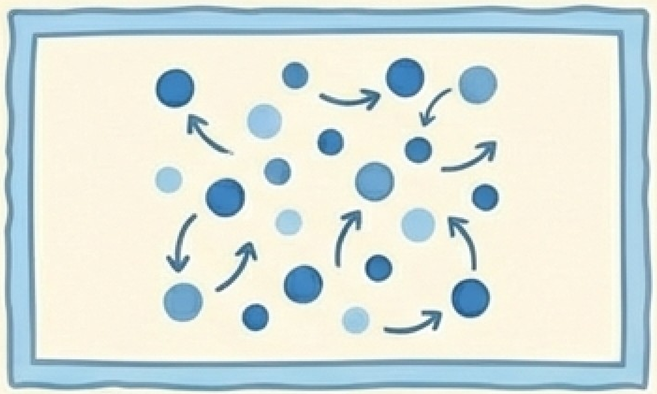
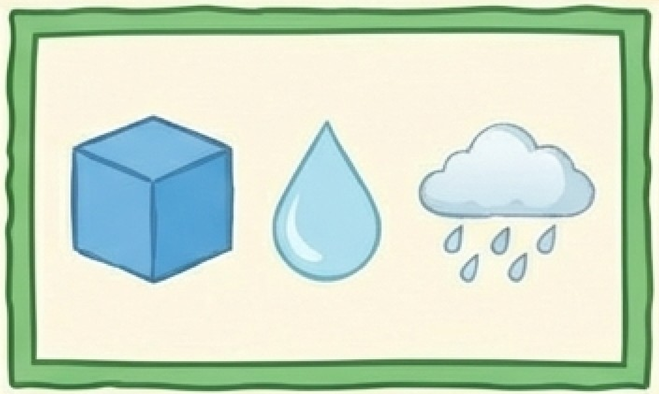
Summary Sheet



Matter: Has mass, occupies space.

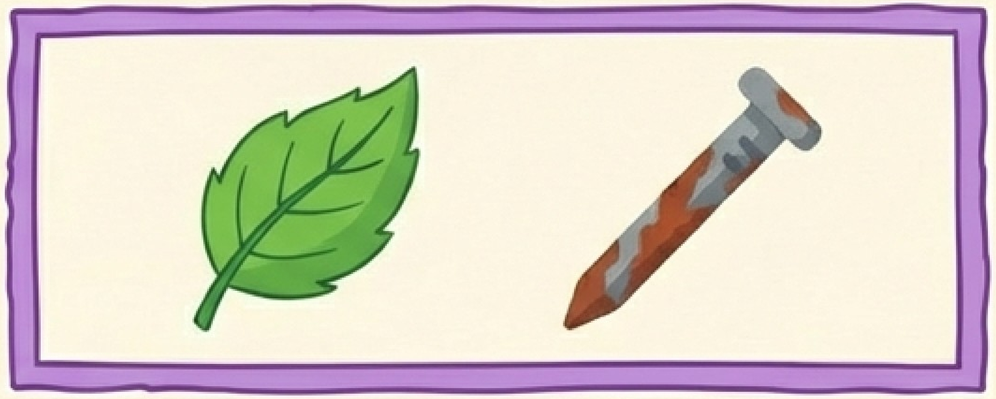


Particles: In constant motion.



States: Solid (Fixed), Liquid (Flows), Gas (Free).

Changes: Melting/Evap (Heat added), Freezing/Condense (Heat removed).



Reactions: Physical (Appearance only) vs Chemical (New substance).

Quicksand
Based on Environmental Studies Notes.