Chapter 1 – Lesson 1.1 – Slide 1

Chapter 1 – Lesson 1.1 – Slide 1

Title: Everything is Made of Particles

Bullet Points:

* Everything around us is made of tiny particles too small to see.

* These particles are constantly moving.

* In solids, particles are close together and vibrate.

* In liquids and gases, particles move more freely.

* This movement causes diffusion.

Suggested Visual: A simple diagram showing particles in a solid, liquid, and gas, with arrows indicating particle movement. The particles should be different colors/shapes to visually represent different substances.

Optional Think Prompt: How might the movement of particles explain why a smell spreads throughout a room?

Chapter 1 – Lesson 1.1 – Slide 2

Chapter 1 – Lesson 1.1 – Slide 2

Title: Diffusion: Mixing of Particles

Bullet Points:

* Diffusion is the mixing of particles due to their random movement.

* Particles move from areas of high concentration to areas of low concentration.

* This continues until particles are evenly spread.

* Diffusion happens faster in gases than in liquids because particles move faster in gases.

* Examples: perfume spreading in a room, tea dissolving in water.

Suggested Visual: An animation or diagram showing the diffusion of colored particles (e.g., purple dye) in water, gradually spreading out.

Optional Think Prompt: Can you think of another example of diffusion in everyday life?

Chapter 1 – Lesson 1.1 – Slide 3

Chapter 1 – Lesson 1.1 – Slide 3

Title: Types of Particles

Bullet Points:

* Atoms are the smallest particles that cannot be broken down chemically.

* Some substances are made of single atoms (e.g., argon).

* Molecules are two or more atoms joined together (e.g., water, oxygen).

* Ions are atoms or groups of atoms with a charge (e.g., in table salt).

Suggested Visual: A diagram showing a single atom, a simple molecule (like O2), and a simple ion (like Na+). Clearly label each type of particle.

Optional Think Prompt: How are atoms, molecules, and ions different from each other?

Chapter 1 – Lesson 1.2 – Slide 1

Chapter 1 – Lesson 1.2 – Slide 1

Title: States of Matter: Solids

Bullet Points:

* Solids have a definite shape and volume.

* Particles in solids are tightly packed and vibrate in fixed positions.

* Solids do not flow.

* Solids are incompressible (you can't easily squeeze them).

* Examples: ice, rock, iron.

Suggested Visual: A microscopic image of a solid’s crystal structure, showing tightly packed particles.

Optional Think Prompt: Why do solids maintain their shape and volume?

Chapter 1 – Lesson 1.2 – Slide 2

Chapter 1 – Lesson 1.2 – Slide 2

Title: States of Matter: Liquids

Bullet Points:

* Liquids have a definite volume but no definite shape.

* Liquids flow easily.

* Particles in liquids are close together but can move around.

* Liquids are relatively incompressible.

* Examples: water, oil, milk.

Suggested Visual: A diagram showing liquid particles loosely packed and moving past one another, taking the shape of their container.

Optional Think Prompt: Why do liquids take the shape of their container?

Chapter 1 – Lesson 1.2 – Slide 3

Chapter 1 – Lesson 1.2 – Slide 3

Title: States of Matter: Gases

Bullet Points:

* Gases have no definite shape or volume.

* Gases fill their container completely.

* Particles in gases are far apart and move rapidly.

* Gases are easily compressed.

* Examples: air, oxygen, carbon dioxide.

Suggested Visual: A diagram showing gas particles widely spaced and moving randomly in all directions within a container.

Optional Think Prompt: Why are gases easily compressed compared to solids and liquids?

Chapter 1 – Lesson 1.2 – Slide 4

Chapter 1 – Lesson 1.2 – Slide 4

Title: Changes of State

Bullet Points:

* Melting: solid to liquid

* Freezing: liquid to solid

* Boiling/Evaporation: liquid to gas

* Condensation: gas to liquid

* Sublimation: solid directly to gas (e.g., dry ice)

* Deposition: gas directly to solid (e.g., frost)

Suggested Visual: A diagram illustrating the changes of state using arrows connecting the different states.

Optional Think Prompt: Can you describe a situation where you observe more than one change of state happening?

Chapter 1 – Lesson 1.2 – Slide 5

Chapter 1 – Lesson 1.2 – Slide 5

Title: Heating Curve

Bullet Points:

* A heating curve shows how temperature changes as a substance is heated.

* Plateaus on the curve indicate changes of state (melting and boiling).

* The temperature remains constant during a change of state.

* The length of the plateau indicates the amount of energy needed for the change.

Suggested Visual: A typical heating curve graph for water, showing the plateaus at 0°C and 100°C.

Optional Think Prompt: Why does the temperature stay constant during melting and boiling?

Chapter 1 – Lesson 1.3 – Slide 1

Chapter 1 – Lesson 1.3 – Slide 1

Title: Particle Arrangement in Solids, Liquids, and Gases

Bullet Points:

* Solids: particles are closely packed in a regular arrangement.

* Liquids: particles are close together but randomly arranged.

* Gases: particles are far apart and randomly arranged.

Suggested Visual: Three diagrams side-by-side depicting the arrangement of particles in a solid, liquid, and gas, respectively. Use circles to represent particles.

Optional Think Prompt: How does the arrangement of particles affect the properties of each state of matter?

Chapter 1 – Lesson 1.4 – Slide 1

Chapter 1 – Lesson 1.4 – Slide 1

Title: A Closer Look at Gases: Pressure

Bullet Points:

* Gas pressure is caused by gas particles colliding with the walls of their container.

* More collisions mean higher pressure.

* Pressure can be increased by increasing temperature or decreasing volume.

* Pressure is measured in Pascals (Pa) or atmospheres (atm).

Suggested Visual: A diagram of a container with gas particles colliding with its walls, with arrows representing the force of the collisions.

Optional Think Prompt: How could you increase the pressure of a gas in a sealed container?