

**These notes are posted on my site for the following reasons:**

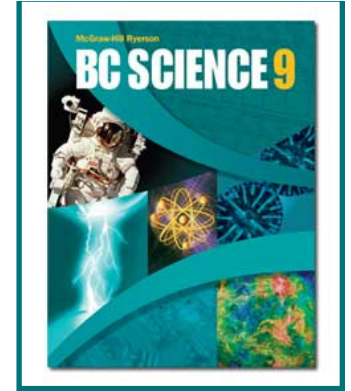
- **for students to copy in their own hand-writing**
  - **in order to complete their class notes**
  - **if student did not have enough time in class**
  - **if student was away and missed this section**
- **for assistants and tutors to follow progress of the concepts taught**

**Photocopied/printed notes can not be used during the Unit Notebook Check in class.**

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# 1.2 Investigating Matter

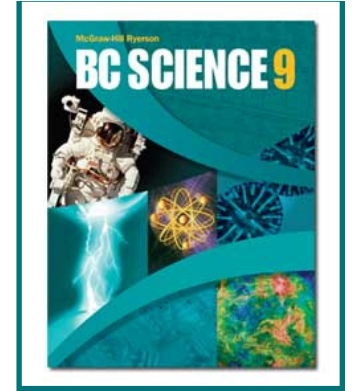
Matter is anything that has mass and volume.



- **Mass** is the amount of matter in a substance or object.
- Mass is often measured in grams or kilograms.
- **Volume** is the amount of space a substance or an object occupies.
- Volume is often measured in litres.
- More information and practice on pages 480 - 483

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# Chemical Change



- A chemical change is a change in matter that occurs when substances combine to form new substances.

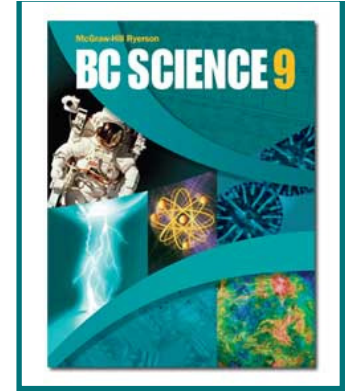
- For example, fireworks



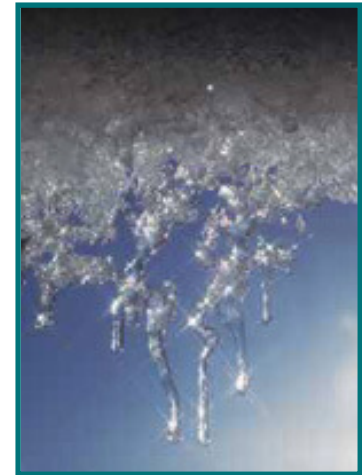
- Find Out Activity 1-2A Bag of Change

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# Physical Change and Changes of State

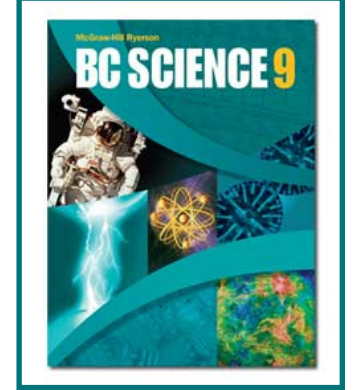


- When a physical change occurs, there may be a change in appearance, but no new substances are formed.
  - For example, when ice or snow melts to water, this physical change is a change of state. No new substances are formed.



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# The Particle Model of Matter



- Describes the behaviour of matter
- Matter is made of small particles.
  - There are spaces between the particles.
    - Gases have more space than liquids.  
Liquids have more space than solids.
- Particles are always moving.
- Particles are attracted to each other. The strength of attraction depends on the type of particle.

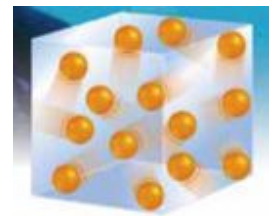
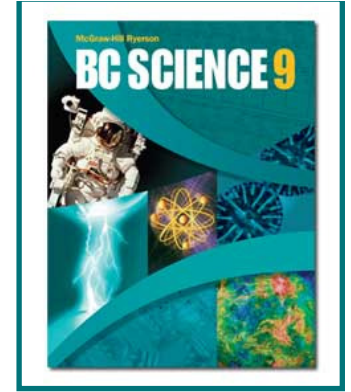
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# The Kinetic Molecular Theory

- Describes what happens to matter when the kinetic energy of particles changes.

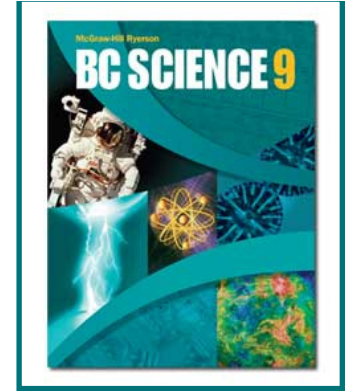
The main points in the theory are:

- Matter is made of small particles.
- There is empty space between particles.
- Particles are constantly moving.
  - Solid particles are packed together and cannot move freely. They can only vibrate.
  - Liquid particles are farther apart and can slide past each other.
  - Gas particles are far apart and move around quickly.
- Energy makes particles move.



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# The Kinetic Molecular Theory and Changes of State



## Solid

Particles are close together, fixed in position and vibrating.

## Melting

As temperature increases, particles' kinetic energy increases.

## Liquid

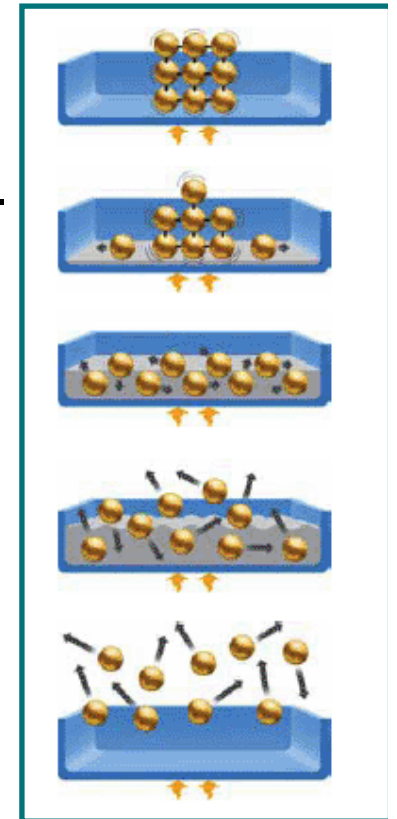
Particles are still close, but slide past one another.

## Boiling

As temperature increases, particles' kinetic energy continues to increase, creating more space.

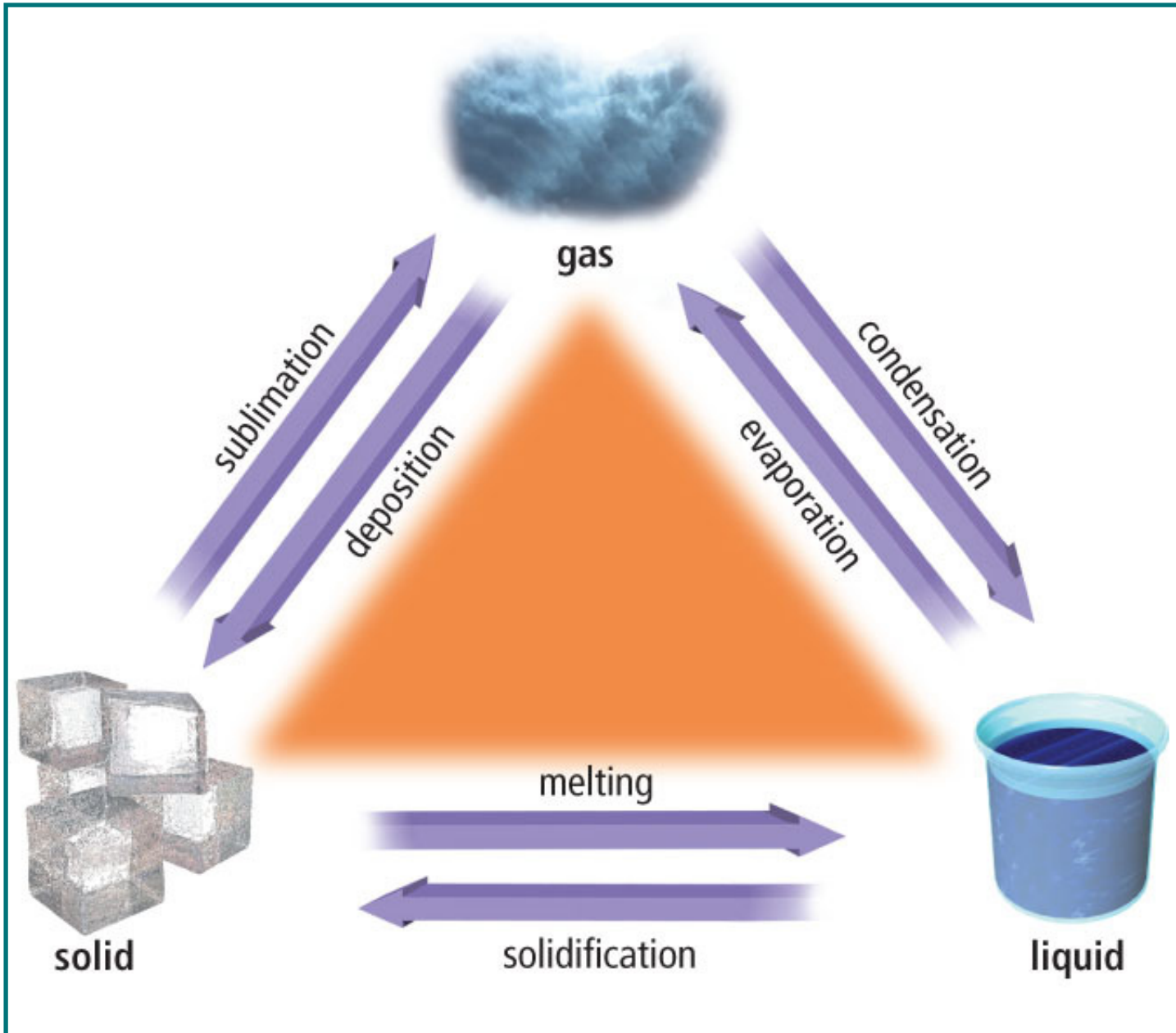
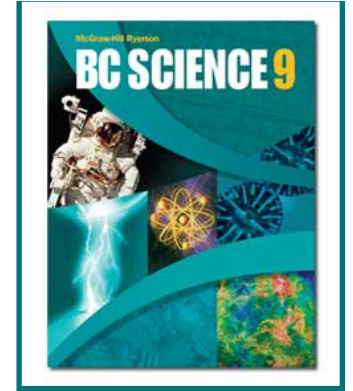
## Gas

Particles are highly energetic and moving freely.



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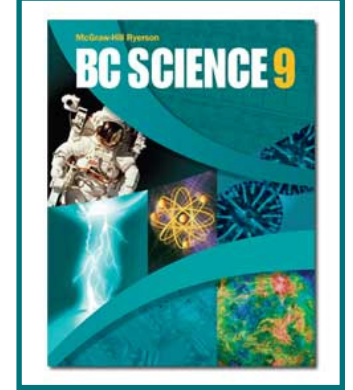
# Temperature and Changes of State



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# Describing Matter



- Physical Properties
  - Qualitative - state, colour, malleability
  - Quantitative - conductivity, viscosity, density
- Pure Substances
  - Element - a pure substance that cannot be broken down or separated into simpler substances (e.g., gold)
  - Compound - a pure substance composed of at least two elements (e.g., water)

**Take the Section 1.2 Quiz**

See pages 22 - 23