5.1 Matter In Nature
Jirim Dalam Alam

1. Matter is anything that has mass and occupies space.
   Jirim ialah semua benda yang mempunyai jisim dan memenuhi ruang.
2. Examples of matter are humans, animals and plants.
   Antara contoh jirim ialah manusia, haiwan dan tumbuhan.
3. Examples of non-matter are sound, heat, light, electric and vacuum.
   Antara contoh benda bukan jirim ialah bunyi, haba, cahaya, elektrik dan vakum.
4. Physical properties of matter are boiling point, melting point, solubility and heat conduction.
   Sifat fizik jirim ialah takat didih, takat lebur, kebolehan melarut dan kekonduksian haba.
5. Chemical properties of matter are corrosion and flammability.
   Sifat kimia jirim ialah pengaratan dan kebolehbakaran.
6. We can classify materials based on their density, boiling point, melting point and solubility.
   Kita boleh mengelaskan bahan berdasarkan ketumpatan, takat didih, takat lebur dan keterlarutannya.

5.2 Three States of Matter
Tiga Keadaan Jirim

1. Matter is made up of small and discrete particles.
   Jirim terdiri daripada zarah-zarah kecil dan diskret.
2. The three states of matter: solid, liquid and gas.
   Tiga keadaan jirim: pepejal, cecair dan gas.

Properties *Sifat*	**Solid** *Pepejal*	**Liquid** *Cecair*	**Gas** *Gas*
Arrangements of particles *Susunan zarah*	Fixed *Tetap*	Random *Rawak*	Random *Rawak*
Movement of particles *Pergerakan zarah*	Vibrate only *Bergetar sahaja*	Moderate *Sederhana*	Fairly rapid *Sangat cepat*
Force *Daya*	Very strong *Sangat kuat*	Moderately strong *Sederhana kuat*	Negligible *Boleh diabaikan*
Kinetic energy of particles *Tenaga kinetik zarah*	Low *Rendah*	Moderately *Sederhana tinggi*	Very high *Sangat tinggi*

3. Kinetic theory of matter:
Teori kinetik jirim:
   (a) Matter is made up of tiny particles.
   Jirim terdiri daripada zarah-zarah halus.
   (b) The particles are constantly moving.
   Zarah-zarah sentiasa bergerak.
   (c) The kinetic energy of particles increases when the temperature is increased.
   Tenaga kinetik zarah meningkat apabila suhu meningkat.

4. Diffusion is the movement of particles from a region with more particles to a region with less particles.
Resapan ialah pergerakan zarah-zarah dari suatu kawasan yang mempunyai banyak zarah-zarah ke suatu kawasan yang mempunyai sedikit zarah-zarah.

5. Diffusion occurs the fastest in gases, followed by liquids and solids.
Resapan berlaku paling cepat dalam gas, diikuti cecair dan pepejal.

6. Changes of state of matter is the physical change of one state of matter to another.
Perubahan keadaan jirim adalah perubahan daripada suatu keadaan jirim ke keadaan jirim yang lain secara fizikal.

7. Heat causes the changes of state of matter.
Haba menyebabkan perubahan keadaan jirim.

8. Haba diserap:
Heat absorbed:
   - Boiling (liquid → gas)
   Pendidihan (cecair → gas)
   - Evaporation (liquid → gas)
   Penyejatan (cecair → gas)
   - Melting (solid → liquid)
   Peleburan (pepejal → cecair)
   - Sublimation (solid → gas)
   Pemejalwapan (pepejal → gas)

9. Heat released:
Haba dibebaskan:
   - Freezing (liquid → solid)
   Pembekuan (cecair → pepejal)
   - Condensation (gas → liquid)
   Kondensasi (gas → cecair)
   - Pemejalwapan (gas → pepejal)
   Sublimation (gas → solid)

10. Changes in the state of matter in everyday life:
Perubahan keadaan jirim dalam kehidupan harian:
   (a) Ice melts at room temperature (solid → liquid)
   Ais melebur pada suhu bilik (pepejal → cecair)
   (b) Water freezes when it is kept in the freezer of a refrigerator (liquid → solid)
   Air membeku apabila diletakkan dalam bahagian beku dalam peti sejuk (cecair → pepejal)
   (c) Salt is obtained from sea water by evaporation (liquid → solid)
   Garam diperoleh daripada laut melalui penyejatan (cecair → pepejal)
   (d) Dry ice sublimes at room temperature (solid → gas)
   Ais kering memejalwap pada suhu bilik (pepejal → gas)