Year 7 Science – Term One KO

1. Tier 3 Vocab

- **Atom** Basic building blocks of all substances.
- **Chemical energy store** Energy stored because of the chemical composition of an object.
- **Conservation of energy** Energy cannot be created or destroyed, only transferred from one store to another.
- **Dissipation** The spreading out of energy so it is stored less usefully.
- **Efficiency** A measure of how much energy is usefully transferred.
- **Elastic potential energy store** Stored in a compressed or twisted elastic material.
- **Energy transfer** Energy moved from one store to another.
- **Gravitational energy store** Stored because of the position of the object above ground.
- **Joule** Unit of energy
- **Kinetic energy store** Stored in a moving object.
- **Mass** Amount of matter something contains, kilograms.
- **Temperature** A measure of how hot something is.
- **Work** Causes energy to be transferred from one store to another.

2. Energy stores and pathways

Objects can have **stored energy** either because of:

- Their chemical composition – **chemical energy**
- Their movement – **kinetic energy**
- Their temperature – **thermal energy**
- Their position in a field – **gravitational potential energy, magnetic energy, electrostatic energy**
- Compression or distortion of an elastic material – **elastic potential energy**

Energy can transfer from one store to another along one of four energy pathways:

- Mechanical - ***Force acts upon an object***
- Electrical - ***Electric current flow***
- Heat - ***Temperature difference between objects***
- Radiation - ***Electromagnetic waves or sound***

3. Energy transfers

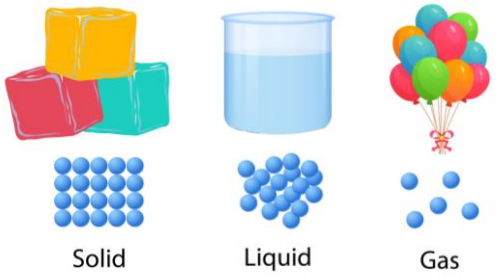
- The unit for energy is the **joule.**
- The **law of conservation of energy** states**:**
  Energy **<u>cannot</u>** be created or destroyed, only transferred from one store to another.
- Energy can be **transferred** to other useful **energy stores** or **dissipated**.
- If energy is dissipated, it spreads out and gets transferred to less useful stores (e.g. heating due to friction).
- **Efficiency** is a measure of how much energy is usefully transferred.
- Efficiency can be increased by using ways to reduce 'wasted' energy - **insulation, streamline design, lubrication of moving parts**, etc.

4. States of matter

- In solids the particles are **closely spaced** in a **regular pattern** and **vibrating**.
- In liquids there is **random motion** but the particles are all in **contact**.
- In a gas there is **rapid random motion** and the particles are **widely spaced**.
- Liquids and gases **flow** and completely **fill** their container. Gases can be **compressed**.
- Substances can between states:
  - **Freezing** – Liquid turns to a solid.
  - **Melting** – Solid turns to a liquid.
  - **Boiling / Evaporating** – Liquid turns to a gas.
  - **Condensation** – Gas turns to a liquid.
  - **Sublimation** – Solid turns directly into a gas.

5. Heat and temperature

- **Heat** is an **energy store** whereas **temperature** is a measure of how hot something is.
- Temperature is measured with a **thermometer**.
- The units for temperature are degrees Celsius (°C)
- If two objects at different temperatures are placed next to each other, the object at the higher temperature transfers **thermal energy** to the object at the lower temperature until they are both at the same temperature
- For example, a hot cup of coffee has a higher temperature than the room it is in. The coffee will transfer thermal energy to the room and cool down until they are equal temperatures.



6. Command Words

These are the key words in a question that tell you how the question should be answered.

State – requires you to recall a key fact without any further information needed.

Example:
State the law of conservation of energy.
Answer: Energy cannot be created or destroyed, only transferred from one store to another.

Describe – say what will happen, but <u>without</u> any reason why.

Example:
Describe what happens to the kinetic energy store of a car as its speed increases.
Answer: The kinetic energy store of the car will increase as speed increases.