Ormiston Victory Academy

**Subject: Science**

Victory Vitals

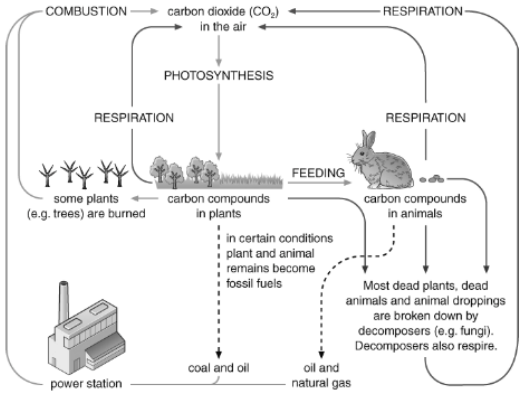
# Unicellular Organisms

Organisms are classified into five kingdoms. Viruses are not living and so are not in a kingdom.

| Cell part | Kingdom | | | | |
|---|---|---|---|---|---|
| | prokaryotes (all unicellular) | protoctists (mainly unicellular) | fungi (mainly multicellular) | plants (all multicellular) | animals (all multicellular) |
| cytoplasm | ✓ | ✓ | ✓ | ✓ | ✓ |
| cell membrane | ✓ | ✓ | ✓ | ✓ | ✓ |
| nucleus | × | ✓ | ✓ | ✓ | ✓ |
| mitochondria | × | ✓ | ✓ | ✓ | ✓ |
| cell wall | ✓ | ×/✓ | ✓ | ✓ | × |
| chloroplasts | × | ×/✓ | × | ✓ | × |

Bacteria; Some bacteria are important in making yoghurt and cheese. These bacteria use a type of anaerobic respiration to ferment milk:
Protoctists; There are many different types of protoctist and some can photosynthesise:
carbon dioxide + water → glucose + oxygen
Photosynthesising protoctists are therefore producers

The carbon cycle, many unicellular microorganisms are decomposers and play an important part in the carbon cycle.




# Energy transfers

When we know the temperature of something, we know how hot it is, not how much internal energy (thermal energy) is in it.
**Temperature is measured in degrees Celsius (°C).**
**Internal (thermal) energy is measured in joules (J).**
The amount of thermal energy stored in something depends on:
- how hot it is (its temperature)
- the material it is made from
- its mass.

**Energy can transferred by heating in multiple ways:**

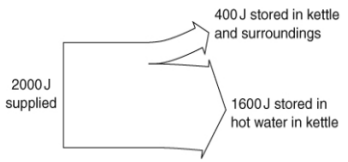
1.Conduction- takes place in solids mainly can happen in liquids.
2.Convection – takes place in liquids and gas.
3.Infrared radiation- transfers through a vacuum (empty space)
4.Evaporation – takes place in a liquid

## Efficiency

Not all energy is transferred usefully. Wasted energy is often transferred by heating. The percentage of useful energy produced by something is known as its efficiency.

$$\text{efficiency} = \frac{\text{useful energy transferred}}{\text{total energy supplied}} \times 100\%$$

The **Sankey diagram** shows the energy transfers in a kettle. The width of each arrow shows the amount of energy it represents. The energy stored in the kettle and the surroundings is wasted energy.




$$\text{efficiency of kettle} = \frac{1600\ \text{J}}{2000\ \text{J}} \times 100\%$$

$$= 80\%$$

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**Vocabulary:**

Bacterium
Fungus
Prokaryote
Protoctist
Aerobic respiration
Anaerobic respiration

**Vocabulary:**

Asexual reproduction
Flagellum
Pseudopod
Pyramid of numbers
Carbon Cycle
Ecosystem

Conduction
Convection
Infrared radiation
Evaporation
Efficiency
Power
Sankey diagram

Watt (W)
Solar cell
Solar panel
Reflect
Thermal conductor
Thermal insulator
Thermal imagery

Videos

Quizzes