

B1.1 Characteristics of living organisms

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1 Describe the characteristics of living organisms by defining: (a) movement as an action by an organism or part of an organism causing a change of position or place (b) respiration as the chemical reactions in cells that break down nutrient molecules and release energy for metabolism (c) sensitivity as the ability to detect and respond to changes in the internal or external environment (d) growth as a permanent increase in size and dry mass (e) reproduction as the processes that make more of the same kind of organism (f) excretion as the removal of waste products of metabolism and substances in excess of requirements (g) nutrition as the taking in of materials for energy, growth and development

Remember MRS GREN, and all living organisms show **all seven**.

Definitions

Movement: an action by an organism or part of an organism causing a **change of position or place** e.g. animal walking; plant leaves turning towards light..

Respiration: **chemical reactions in cells** that **break down nutrient molecules** and **release energy for metabolism**. NOT the same as breathing (gas exchange)

Sensitivity: the ability to **detect and respond to changes** in the **internal or external environment**. A change detected is a **stimulus**, e.g. light, temperature, blood glucose.

Growth: a **permanent increase in size and dry mass**, Temporary increases (e.g. drinking water) don't count.

Reproduction: the **processes that make more of the same kind of organism**. Sexual (two parents, variation) or asexual (one parent, identical offspring).

Excretion: the **removal of waste products of metabolism** and **substances in excess of requirements** e.g. CO₂ (lungs), urea (urine), excess water and salts. NOT the same as egestion (removing undigested food).

Nutrition: the **taking in of materials for energy, growth and development**. Animals ingest food; plants make food by photosynthesis.

Characteristic	Key words in definition
Movement	change of <i>position</i> or <i>place</i>
Respiration	chemical reactions, <i>cells</i> , <i>energy</i> , metabolism
Sensitivity	<i>detect and respond</i> , internal/external environment
Growth	<i>permanent</i> increase, size and <i>dry mass</i>
Reproduction	more of the <i>same kind</i> of organism
Excretion	waste of <i>metabolism</i> , <i>excess</i> substances
Nutrition	materials for <i>energy</i> , <i>growth</i> , <i>development</i>

Don't confuse respiration/breathing or excretion/egestion.