Chapter 1: Characteristics and classification of living organisms

IGCSE Biology

1.1 Characteristics of living organisms

Objectives:

Describe the characteristics of living organisms by defining the terms: nutrition movement, respiration, sensitivity, growth, reproduction, excretion, and

Characteristics of living things

In groups of approximately 5, create a list of characteristics of living organisms o Hint: what are things that all living organisms do?

Characteristics of living things

- In your group of approximately 5, come up characteristics of living organisms with a definition for each of the 7
- Movement, Respiration, Sensitivity, Growth, Reproduction, Excretion, Nutrition

Movement

an action by an organism causing a change of position or place

- Plants move when they grow
- Roots move down into soil, leaves and stems move up toward light
- Animals move to obtain food/avoid being caught

down nutrient molecules and release energy the chemical reactions in cells that break Respiration

- Involves chemical reactions happening in cells to breakdown glucose
- Glucose + oxygen → carbon dioxide + water Oxygen is usually needed
- Use energy for movment, growth, repair and reproduction

Sensitivity the environment the ability to detect and respond to changes in

- Plants respond to the sun by moving leaves to face the light
- Animals have sense receptors (cells) for detecting light, sound, touch, pressure, and Some flowers open/close at day/night

chemicals in the air and in food

permanent increase in size Growth

- Involves making more complex molecules Plants grow throughout their lives such as proteins
- Animals stop growing when they reach a certain size

kind of organism the processes that make more of the same Reproduction

- Asexual reproduciton involves one parent giving rise to the parent of offspring that are often identical to each other and
- Sexula reproduction involves two parent organisms to the next generation producing gametes (sex cells) which fuse to give rise
- Offspring show variation they are not identical to each other or to their parents

substances in excess of requirements removal from organisms of toxic materials and Excretion

- Metabolism is all the chemical reactions that occur in an organism
- Animals breathe out carbon dioxide; other wastes they are removed when leaves fall off Plants store waste substances in their leaves so
- leave the body in the urine

development taking in of materials for energy, growth and Nutrition

- Green plants photosynthesis
- energy from sunlight is absorbed and used to turn
- Animals CO₂ and water into simple sugars
- process of taking in food is called ingestion eat plants/animals to gain energy and nutrients

Acronym to remember

- M ovement
- **R** espiration
- S ensitvity
- G rowth
- **R** eproduction
- E xcretion
- N utrition

1.2 Classification

Objectives:

State that organisms can be classified into groups by the features that they share

Classification

- Living organisms can be classified into 5 major groups called kingdoms:
- Animals
- Plants
- Fungi
- Protists
- Prokaryotes (bacteria)
- Organisms in each kingdom show similar features

Classification

- Kingdoms are subdivided into phyla Smallest grouping of organisms: species (singluar: phylum)
- Kingdom, Phylum, Class, Order, Family, Genus, Species

1.2 Binomial System

Objectives:

- State that organisms can be classified into groups by the features that they share **Define** species
- naming species Define and describe the binomial system of

Binomial System

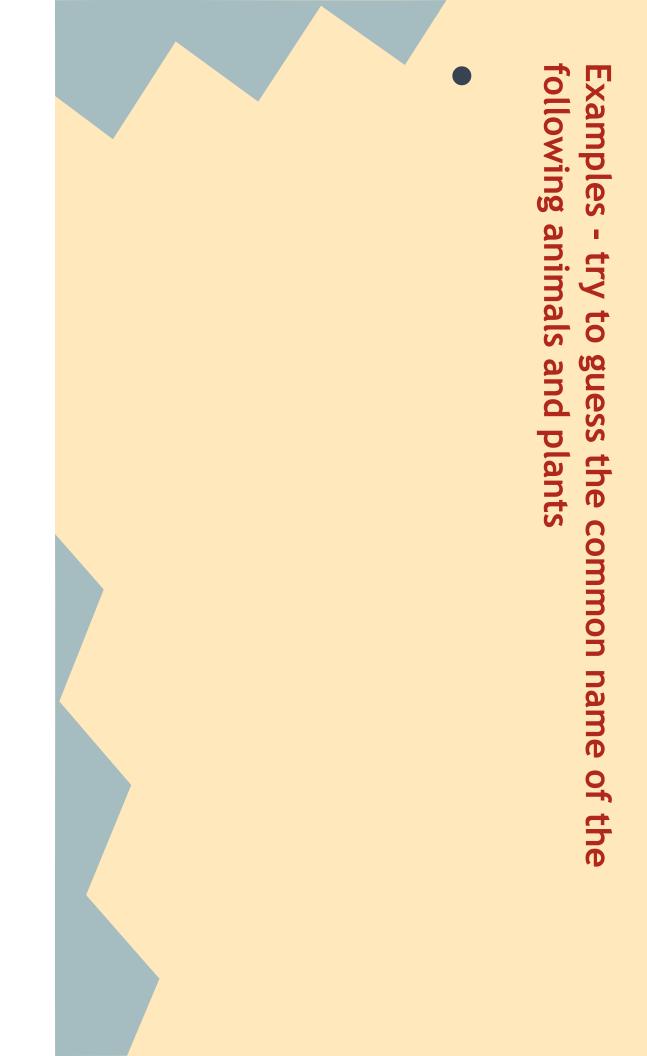
- alike A species is a group of individuals that look Binomial system means 'two names'
- live in the same habitat and breed together producing fertile offspring which can breed with
- Each species is given two name one another

Binomial System

- First name is for the genus
- group of species that are closely related but do not breed with one another
- Second name is the trivial name that is applied to one species within the genus never use the trivial/species name on its own

Writing the Binomial Name

- Genus species or Genus species
- The Genus is always capitalized
- 0 The species is always lowercase
- the full name must always be *italicized* (computer) or <u>underlined</u> (hand written), never both!



following animals and plants Examples - try to guess the common names of the

- 1. Canis latrans
- Lynx rufus
 Bobcat
 Hadrurus arizonensis
 Arizona Desert
- 4. Cercidium floridum 5. Carnegiea gigantea
- 1. Coyote

- Scorpion
- 4. Palo verde tree
- 5. Saguaro cactus