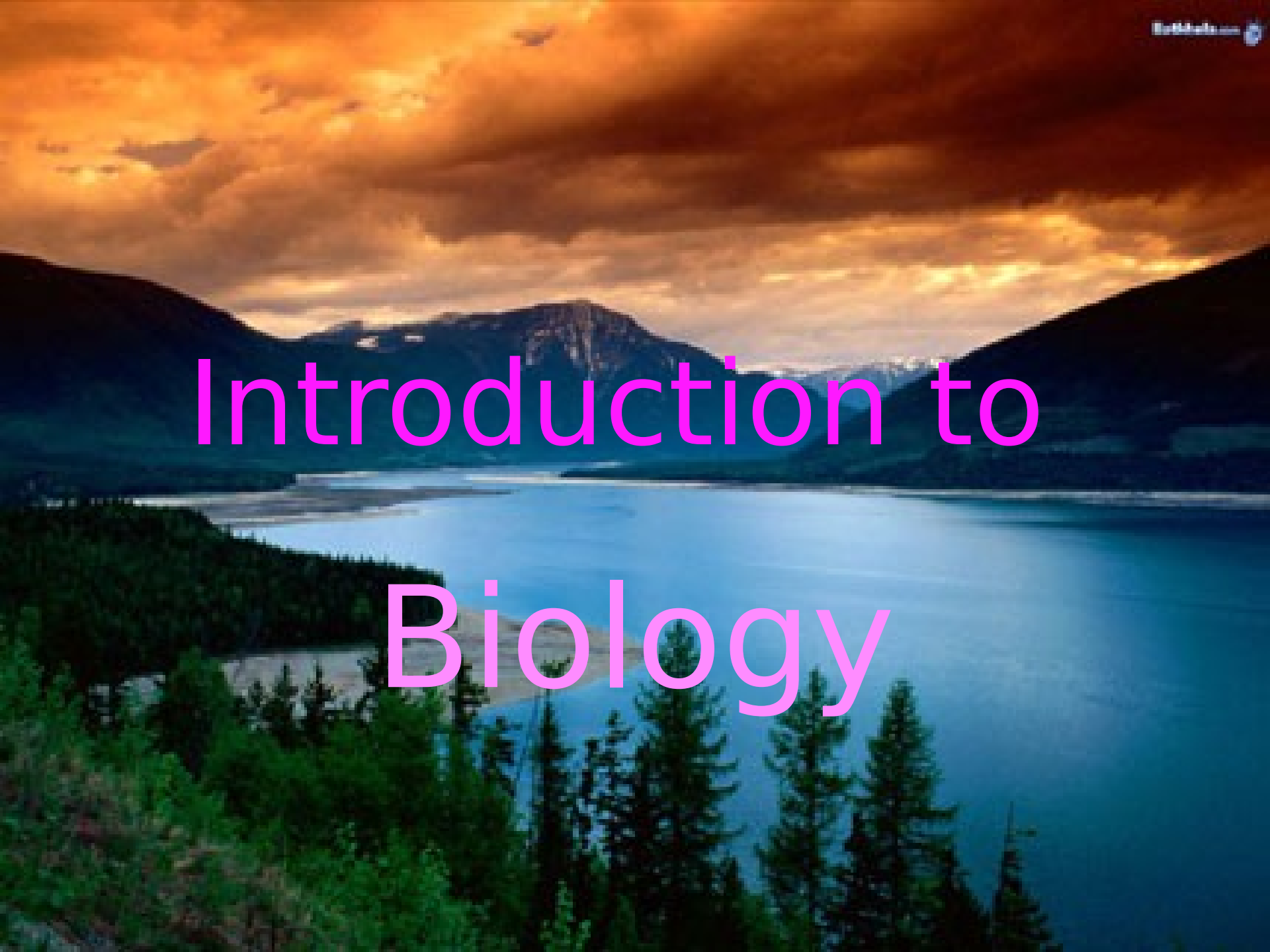

Introduction to
Biology

Define Biology

- Biology- living organism study/life study

List branches of Biology

- Major-Zoology-animal study & Botany-plant study
- Others include; Ecology, Genetics, ornithology(birds), osteorithology (fish),Microbiology, Entomology (insects)

Explain the importance of Biology

- Career development/ prequisite,
- Understanding physiology,
- Disease prevention,
- Collaboration internationally,
- Food supply,
- Solution to environmental problems,
- Scientific skills/ method,

State the characteristics of living organisms (MR.NIGER CELL)

- Movement-change in position
- Respiration-ATP synthesis/ energy release
- Nutrition-nutrient acquisition & use
- Irritability-stimulus response
- Growth-(protoplasm increase) & development (differentiation)
- Excretion-removal metabolic waste,
- Reproduction-new life from existing life,
- Cell-basic structural & functional unit

State the main differences between plant animals

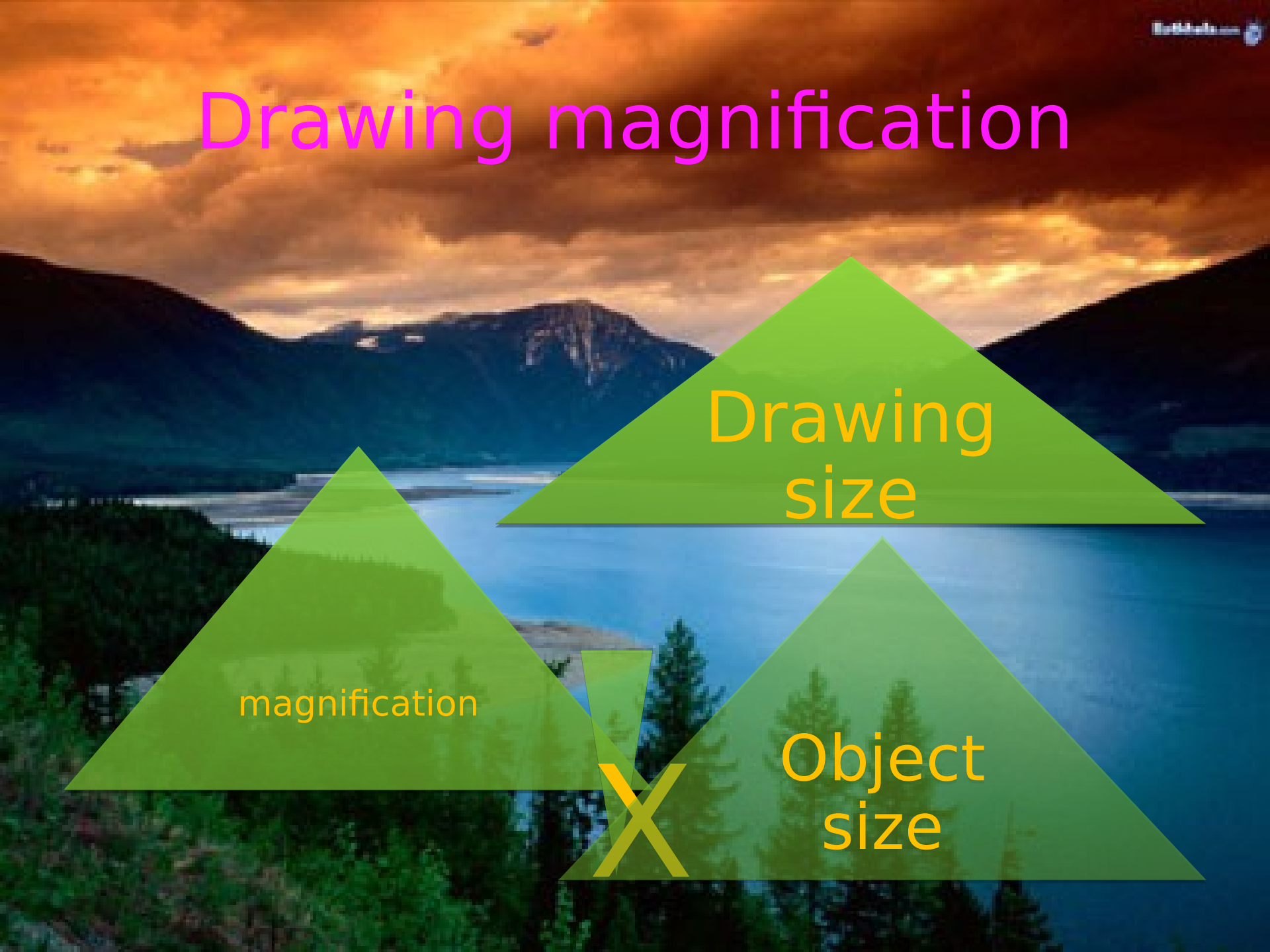
Plants	animals
Chlorophyll/autotrophic	Chlorophyll absent/heterotrophic
Cell wall outside the cell membrane	Cell membrane outer most
Slow response	Rapid response
sessile	motile
Excretory organs absent/simple	Excretory organs complex
Growth Limited to meristems	Growth Wide spread
Infinite growth	Definite growth
Starch & oils storage	Glycogen & fats storage

Classification I & II
Form I & III

Use the magnifying lens to observe the external features of plants and animals

- Magnification
- Observations,
- Record in drawing,
- Calculation of the magnification
- Magnification is drawing size divided by object size

Drawing magnification



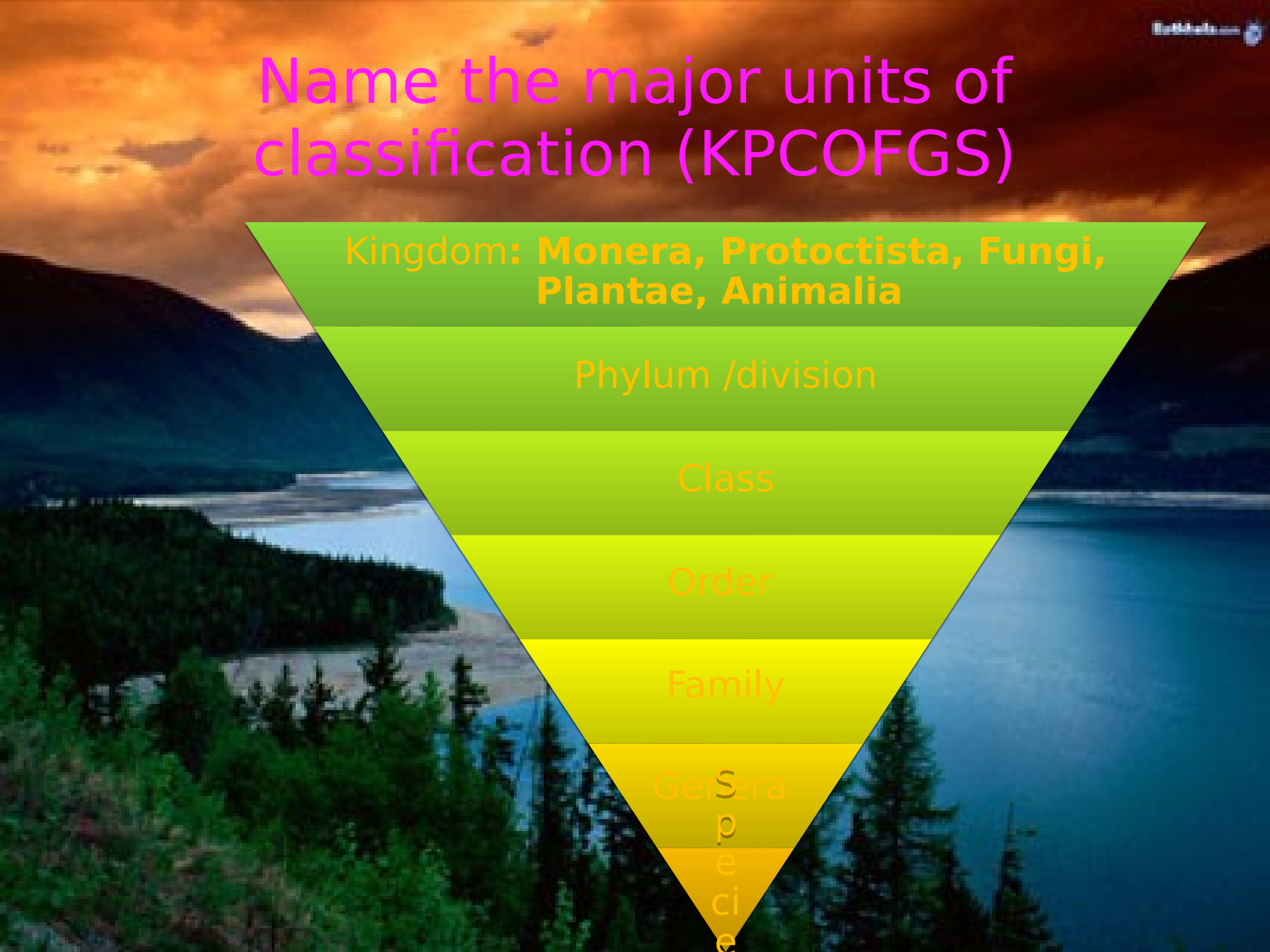
Record observations of the main external characteristics of living organisms, preserved specimens and photographs

Plantae,	Arthropoda	Chordata
Roots; types	Exoskeleton	Endoskeleton
Rhizoids; moss	Body segmentation; type & number	Backbone
Stems; types Herbaceous & woody	Jointed appendages; number & type	Body covering; fur, feathers, scales, skin
Leaves; types Parallel & reticulate venation	Mouth parts	Eyes
Flowers; types 3 floral parts & 4/5 floral parts	Wings	Fins, Legs & wings
Fruits; types True & false ; Freshy & dry fruits Simple,aggregate & compound fruits	Eyes (type & number)	Glands

State the necessity and significance of classification

- Create order/easy study,
- Predictions,
- Phylogenetic relationships,
- *identification/naming*
- *placement of new organism*

Name the major units of classification (KPCOFGS)



State the application of binomial nomenclature in naming organisms.

- *enables biologists to communicate internationally,*
- *Latin name,*
- *Genera species* when written Genera species

Binomial nomenclature

- a name with a genera & specific part.

Classification II
Form 3

State briefly the general principles of classification of living organisms

- Same Taxa (common characteristics)
- Phylogenetic/ evolutionally relationship
- Binomial nomenclature,

State general characteristics of each of the five kingdoms

- **Monera,**
- **Protoctista,**
- **Fungi,**
- **Plantae,**
- **Animalia.**

Five kingdoms compared

kingdom	CELL type	Nucleus membrane	Cell wall	nutrition
Monera e.g. bacteria	Unicellular	prokaryotic	Protein/mucin capsule	chemosynthesis
Protoctista e.g. *Amoeba spp.*	unicellular	eukaryotic	Is absent	Heterotrophic (intracellular digestion)
Fungi/mycota e.g. moulds,	Unicellular / multicellular	eukaryotic	Chitin cell wall	Saprophytic
Plantae e.g.Hibiscus spp.	Multicellular	eukaryotic	Cellulose cell wall	Photosynthesis
Animalia e.g. Insects	multicellular	eukaryotic	Is absent	heterotrophic

State the main characteristics of Arthropoda, chordata

Animalia Phylum	Skeleton	Body segmentation	appendages
Arthropoda e.g. Insects	Exoskeleton (chitin)	Body segmented	Jointed appendages
Chordata e.g. mammals	Endoskeleton (notochord-backbone)	Is absent	Entire appendages

State the main characteristics of major division of plantae

Division	Vascular bundles	Differentiation	Alternation of generation
Bryophyta			
Pteridophyta			
Spermatophyta			

State the characteristics of classes of spermatophyta

Describe the main characteristics of classes of Arthropoda and chordata

Use observable external features to construct simple dichotomous keys of plants and animals

Use already constructed dichotomous keys to identify organisms