

Classification



Test Revision Workbook

Name: _____



Year 7 Classification

MUST (C)	check	T.I.	SHOULD (B)	check	T.I.	COULD (A)	check	T.I.
Classifies organisms using observable similarities and differences and applying simple classification keys.			Classifies organisms using observable similarities and differences, constructing and applying classification keys.			Classifies unfamiliar organisms using observable similarities and differences, constructing and applying varied classification keys.		
Identify that organisms have both a common and scientific name.			Describe the two-part naming system created by Carl Linnaeus. Identify the genus and species of an organism.			Deconstruct the scientific name of an organism and explain how each part of the name describes feature of an organism.		
Identify why classification systems are used and how they have changed over time.			Summarise how and why biological classification systems have changed over time.					
Identify similarities and differences between organisms based on their features.			Able to construct branch classification key.			Able to construct tabular classification key.		
Able to classify organisms using a branching or tabular classification key.								
Explain the difference between living and non-living organisms. List the 8 characteristics shared by all living things using MR NGREWW.			Describe the 8 characteristics shared by all living things using the MR NGREWW. Able to justify if an organism is living using MR NGREWW.			Compare and contrast the differences between living, non-living, potential to be living and dead organisms using MR NGREWW.		
Know that living organisms are classified using Kingdom, Phylum, Class, Order, Family, Genus.								
List the 5 different Kingdoms that make up all life of Earth.			Identify the common features of organisms in each Kingdom using the following terminology: unicellular, multicellular, autotroph, cell wall, nucleus and heterotroph.			Explain how the common features help organisms in each Kingdom to function.		
Identify the different division and classes of plants. Classify plants based off their features.			List the common features of for each class of plant.					

Identify the common features of invertebrates.		List the 6 main different phyla of the invertebrates.		Differentiate between the 6 main types of phyla and correctly identify organisms for each phyla. Justify the classification of each organism.		
Identify the common features of vertebrates.		Name the 5 different classes of vertebrates. List the main features of each class using the following terminology.		Define the term Chordates and list the common classes of chordates. Explain why all vertebrates are chordates but not all chordates are vertebrates.		
Know that Aboriginal and Torres Strait Islander Peoples differ with respect to classification approaches and purpose.		Describe how Aboriginal and Torres Strait Islander Peoples differ classification systems from that to contemporary science.		Explain why Aboriginal and Torres Strait Islander Peoples differ classification systems from that to contemporary science.		

Classification Vocabulary Sheet

Vocabulary Word	Definition
Dichotomous key	
Exoskeleton	
Invertebrate	
Non-living	
Binomial system	
Ectotherm	
Autotroph	
Genus	
Endotherm	

1. Classification Organises Our World

Success Criteria

- explain that classification systems were developed to help scientists communicate information about organisms
- describe some of the changes in classification systems
- describe the two-part naming system devised by Carl Linnaeus
- identify the genus and species of an organism



1.1 Explain that classification systems were developed to help scientists communicate information about organisms

Many people have tried to make more sense of living things by classifying them into smaller groups based on similarities.

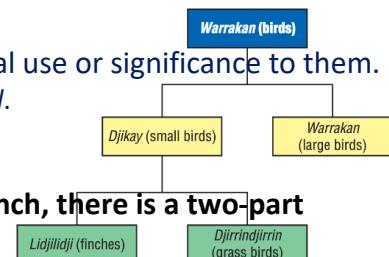
Example

Australian Aboriginal people only give a specific name to those that have a special use or significance to them.

- e.g. the macadamia nut (part of their diet) was given the name *kindal kindal*.



Dichotomous key – is a tool used to organise or classify information, at each branch, there is a two-part statement.



1.2 Describe some of the changes in classification systems

Carl Linnaeus (1707 – 1778) simplified the system by changing the descriptions to single words and reduced the number of classification groups to seven.



KINGDOM: ANIMALIA
e.g. insect, fish, bird, lizard, kangaroo, fox, tiger, jungle cat, domestic cat
PHYLUM: CHORDATA
e.g. fish, bird, lizard, kangaroo, fox, tiger, jungle cat, domestic cat
CLASS: MAMMALIA
e.g. kangaroo, fox, tiger, jungle cat, domestic cat
ORDER: CARNIVORA
e.g. fox, tiger, jungle cat, domestic cat
FAMILY: FELIDAE
e.g. tiger, jungle cat, domestic cat
GENUS: FELIS
e.g. jungle cat, domestic cat
SPECIES: FELIS CATUS
e.g. domestic cat

1.3 describe the two-part naming system devised by Carl Linnaeus

A scientific name is a name that describes the appearance of organism or where it was first discovered.

A binomial system is used by scientists to name specific organisms.

A **binomial** name has two parts.

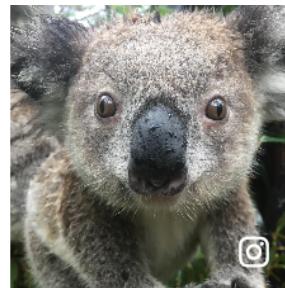
Genus species

Example of a scientific name:

Phascolarctos cinereus

Common name:

Koala



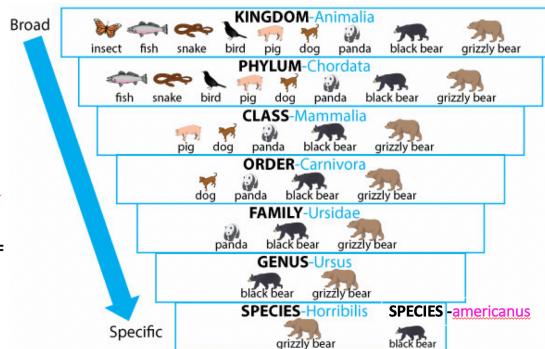
Eg.

Grizzly bear

Genus: *Ursus*

Species: *horribilis*

Scientific name: =
Ursus horribilis



The Steps:

1. Identify the Genus and species
2. Write the Genus name first with a capital letter
3. Write the species name second with a lower case letter
4. Underline both words

1.4 Identify the genus and species of an organism

Genus

is the category that groups organisms with common features.

Macropus: Kangaroos
Wallaroos

Wallabies
Tree-kangaroos

Species

is **the most** specific category and distinguishes the organism from others that are part of the same genus.
Species names are unique.



Macropus giganteus

Macropus rufus

Macropus fuliginosus

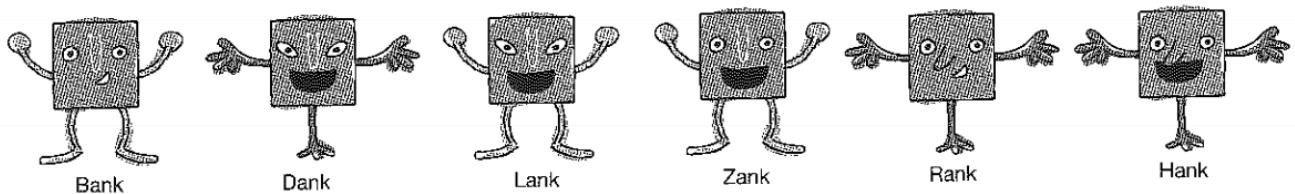
1. Review questions

1. Why do we classify (group) organisms?

2. Scientists classify living things into smaller groups based on their similarities. Using an example, explain this statement.

3. What is a dichotomous key? Account for the reason why a key is described a dichotomous.
-
-

4. Here are six square people. Construct a dichotomous key to identify them.



5. Why do you think it's helpful to have a scientific name for living things?
-
-

6. Why do you think it's helpful to have a scientific name for living things?

Blue and yellow macaw
(*Ara ararauna*)

Class: Aves
Order: Psittaciformes (parrots)
Family: Psittacidae (true parrots)
Genus: *Ara* (macaws)
Species: *ararauna*
(blue and yellow macaw)

7. What is the scientific name for this organism?
-

8. Why do you think that Carl Linnaeus chose to name organisms by their genus and species rather than by their kingdom and phylum?
-
-



2. Living Organisms Have Characteristics in Common

- Describe the eight characteristics shared by all living things using the acronym MR N GREWW.

Success Criteria



1.1 There are 8 characteristics that all living things have in common.

To remember the characteristics, just remember

MR N GREWW.

M - Living things can **MOVE** by themselves.

E.g. Sunflowers turn their heads to follow the sun as it moves across the sky.

R - Living things can **REPRODUCE**. They can make new individuals that grow up and look like them.

E.g. Elephants can reproduce.

N - Living things need **NUTRITION**. They need nutrients to survive.

E.g. Animals get most of their nutrients by eating food and drinking.

G - Living things **GROW** as they grow older. When fully grown, they resemble their parents.

E.g. Mushrooms start off as tiny spores.

R - Living things **RESPOND** to change.

E.g. The sunflowers are responding to the changing stimuli of light and warmth.

E - Living things **EXCHANGE** GASES with their environment.

E.g. Plants and animals have organs (e.g. lungs, gills) and structures to exchange oxygen and other gases.

W - Living things produce **WASTES**. The chemical reactions including air, food & water occur in our bodies producing wastes.

E.g. Animals get remove wastes by exhaling, sweating, urinating and defecating.

W - Living things require **WATER**. It is needed for many jobs.

E.g. It transports substances in our bodies and it is involved in many chemical reactions.

Living- it needs nutrition and water, and is able to move by itself, reproduce, exchange gases, grow, respond to stimuli and produce wastes.

Non-Living- it does not have the above characteristics.

Examples

Living



Non-Living



1. Review questions

1. Complete the mnemonic below to outline the meaning of each feature.

M _____
R _____

N _____

G _____
R _____
E _____
W _____
W _____

2. Classify the following as living or non-living.

A cat _____

Salt _____

A drop of water _____

Bacteria _____

An ant _____

Grass _____

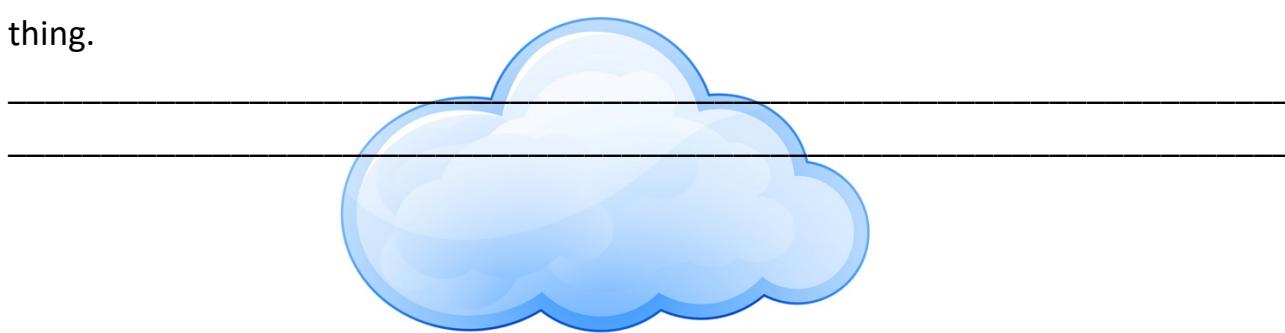
Mould _____

Computer _____

3. Choose one of the items in Question 2 that you classified as living and outline why it is living.

4. Choose one of the items in Question 2 that you classified as non-living and outline why it is living.

5. A cloud can grow, it can reproduce, it can move. Explain whether or not it is a living thing.



3. Kingdoms and Invertebrates

Success Criteria

- Explain that Life on Earth is classified by scientists into 5 kingdoms.
- Understand that classification is based on cell structure, what the organisms look like and how they absorb nutrients.
- Explain that invertebrates have either an exoskeleton or no skeleton
- Identify the six main phyla of invertebrates.

3.1 Explain that life on Earth is classified by scientists into 5 kingdoms.

KINGDOM	BODY FORM AND MOVEMENT	GETTING FOOD	EXAMPLES
Animalia	Multicellular with specialised eukaryotic cells.	Heterotrophic	Mammals, birds, reptiles, fish, amphibians, insects, worms, sponges
Plantae	Multicellular with specialised eukaryotic cells. Cells have a cell wall made of cellulose.	Autotrophic	Trees, flowering plants, conifers, mosses, ferns
Fungi	Multicellular, usually, with specialised eukaryotic cells. Cells have a cell wall made of chitin.	Heterotrophic	Fungi, moulds, mushrooms, yeasts, mildews
Monera	Tiny single-celled organisms with prokaryotic cells. Some form chains or mats or colonies.	Heterotrophic; a few are autotrophic	Bacteria, blue-green algae
Protista	Small single-celled organisms with a eukaryotic cell. Some form chains or colonies. Usually found floating in water.	Heterotrophic or autotrophic	Algae, amoebas, plankton, protozoans



3.2 Understand that classification is based on cell structure, what the organisms look like and how they absorb nutrients.

Taxonomists ask three questions when they are trying to classify the cells of an organism.

- Does the cell keep all its genetic material (DNA) inside a nucleus?
- Does a cell have a cell wall?
- Does the cell use sunlight to make its own food (autotroph) or not (heterotroph)?

Vocabulary

- Multicellular** – living things with more than one cell.
Unicellular – living things consisting of only one cell.
Taxonomist – is a biologist that classifies organisms.
Nucleus – is the control centre of the cell.
Cell wall – provides additional support to a cell.

3.3 Explain that invertebrates have either an exoskeleton or no skeleton.

INVERTEBRATES – animals that have an **exoskeleton** or no skeleton at all.

Examples – beetles, slugs & crabs.



Vocabulary

Endoskeleton – animals with an internal skeleton.

Exoskeleton – animals with an external skeleton.

3.4 Identify the six main phyla of invertebrates.



1

Arthropods

- » segmented body (body divided into parts)
- » paired and jointed legs
- » exoskeleton

Examples: insect, spider, scorpion, centipede

2

Poriferans

- » spongy body with holes
- » found in water attached to rocks

Examples: breadcrumb sponge, glass sponge



3

Molluscs

- » soft body
- » usually have a protective shell

Examples: snail, octopus, oyster, mussel, slug

4

Cnidarians

- » soft, hollow body
- » live in water
- » tentacles

Examples: coral, jellyfish, anemone



5

Nematodes, platyhelminths and annelids

- » soft, long body
- » can be segmented, flat or round

Examples: leech, tapeworm, flatworm

6

Echinoderms

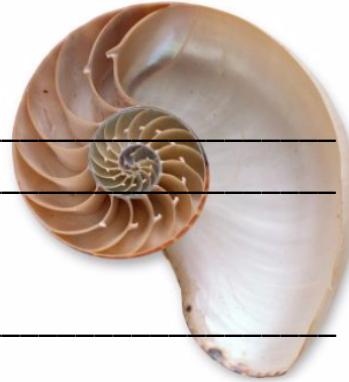
- » rough, spiny skin
- » arms extend from centre of body
- » found in the sea

Examples: sea urchin, sea star



1. Review questions

1. List the five main kingdoms.

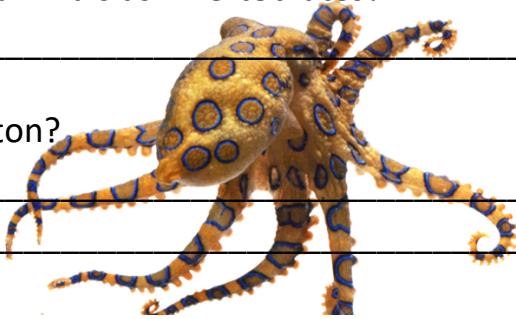


2. Which of the kingdoms, consist of unicellular organisms?

3. Name 2 features of Kingdom Fungi.

4. How is an animal different from a plant?

5. What characteristics do scientists use to classify animals as invertebrates?



6. How is an exoskeleton different to an endoskeleton?

7. What are the distinguishing features between Molluscs and Echinoderms?

8. How are worms different to cnidarians?

9. Arthropods account for the largest number of organisms in Kingdom Animalia. Which of the features might explain their level of success?

10. A new invertebrate was found to have three pairs of legs. Suggest which group it best fits into.



4. Vertebrates

Success Criteria

- Explain that vertebrates are sorted into five Classes – mammals, fish, birds, reptiles and amphibians
- Use the terms endotherm and ectotherm to group the vertebrates.



4.1 Explain that vertebrates are sorted into five Classes – mammals, fish, birds, reptiles and amphibians. Use the terms endotherm and ectotherm to group the vertebrates.

Vertebrates – animals with a spine or backbone.

Examples – humans, cats & dogs.

Vocabulary

Endotherms – vertebrates that have a constant body temperature.
Ectotherms – vertebrates with a body temperature that changes with the environment.

Vertebrates can be broken down into further subgroups called **classes** based on:

- body covering,
- how their young are born,
- body temperature.

Classes of vertebrates:

Mammalia

Aves

Reptilia

Amphibia

Pisces



CLASS	BODY COVER	REPRODUCTION	BREATHING	BODY TEMPERATURE	COMMON NAME
Aves	Feathers	Eggs	Lungs	Endotherm	Birds
Pisces	Moist scales	Eggs	Gills	Ectotherm	Fish
Mammalia	Skin with hair or fur	Mostly live young	Lungs	Endotherm	Mammals
Reptilia	Moist scales	Eggs	Lungs	Ectotherm	Reptiles
Amphibia	Moist skin	Eggs	Gills and lungs	Ectotherm	Amphibians

1. Review questions

1. List the five classes of vertebrates.

2. Determine if each of the following statements is **true** or **false**.

- a) Kingdom is a bigger group than phylum. _____
- b) Plants are in the Kingdom Animalia. _____
- c) A frog is an example of a reptile. _____
- d) A lizard is an example of an amphibian. _____

3. What determines whether an animal is a vertebrate or an invertebrate?

4. Identify the following classes of vertebrates according to these features.

- A Gills, aquatic, bony skeleton, scales _____
- B Lay eggs with external shell, backbone, body covered in feathers _____
- C Skeleton made of cartilage, gills, fins _____

5. Complete the table below.

	FISH	AMPHIBIANS	REPTILES	BIRDS	MAMMALS
Ectothermic or endothermic?					
Body covering?					
Birth from egg or womb?					

6. Construct a dichotomous key to classify a sea turtle, shark and tree frog.

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