United Arab Emirates
Ministry of Education



الإمـــارات العـربيـة المتحدة
وزارة التربيـــة والتعليـــم

Science Summary for Grade 4 for Term 1

DONE BY: OM MANSOUR

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Chapter 1

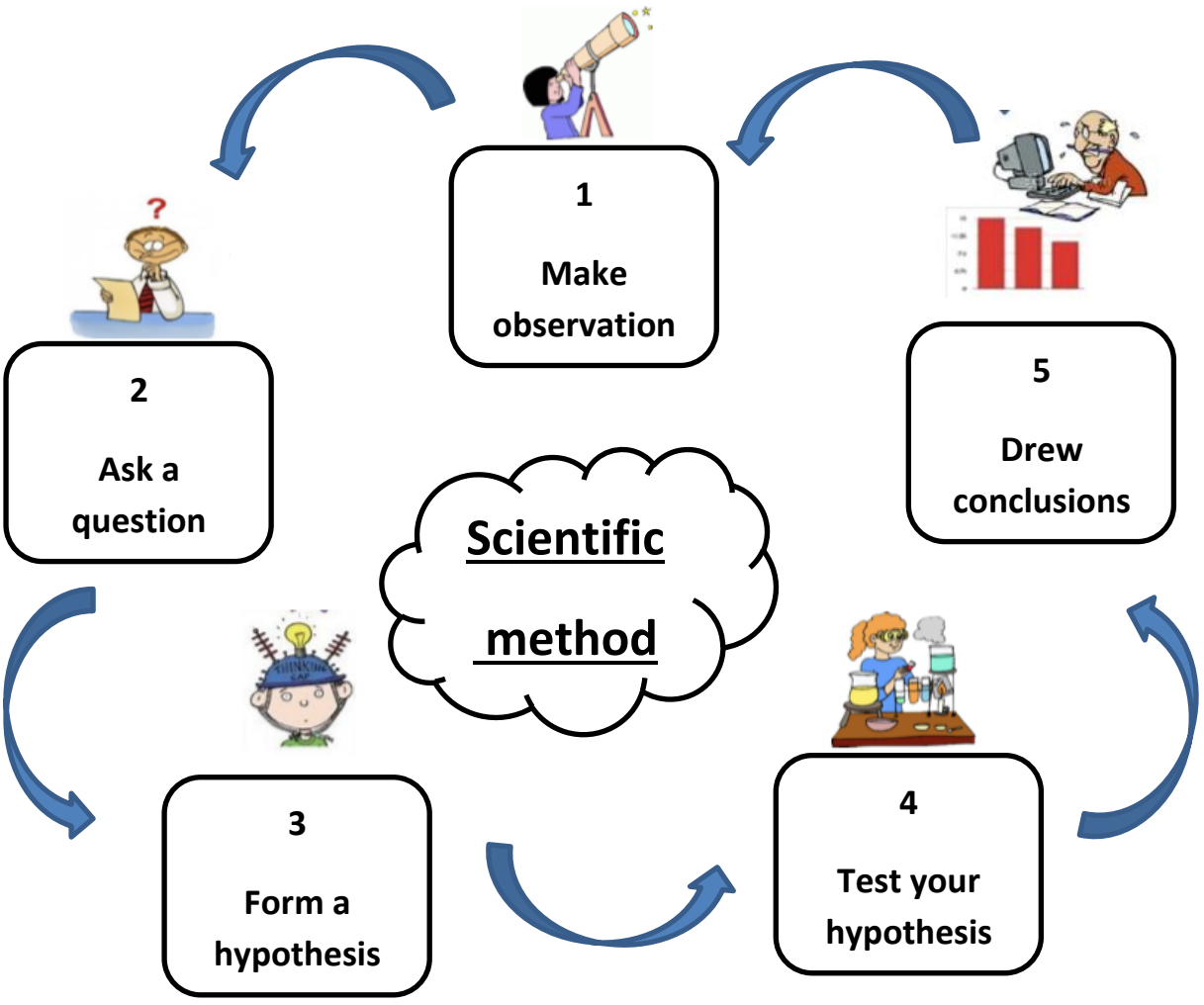
Lesson 1: Be a Scientist

Scientific method: is a process that scientists use to answer questions.

Variable: is something that changes or varies.

A hypothesis: statement that can be tested to answer questions.

An experiment: is a scientific test that can be used to support a hypothesis.



Chapter 2 Lesson 1: Cells

Cells: the smallest unit of living matter.

Trait: a characteristic of a living thing.

Kingdom: the largest group into which organisms can be classified.

Spore: one of the cells in a seedless plant that grows into a new organism.

Photosynthesis: the process by which plants use the sun's energy to make food from water and carbon dioxide.

Oxygen: a gas in air and water.

Organism: is a living thing that carries out five basic life function or jobs.

Living things function:

*reproduce  *grow 

*use food for energy 

*react to changes 

*get rid of wastes 

Science Grade 4 Term One

What do living things need:

*water and food  *a place to live 

* Gas: oxygen

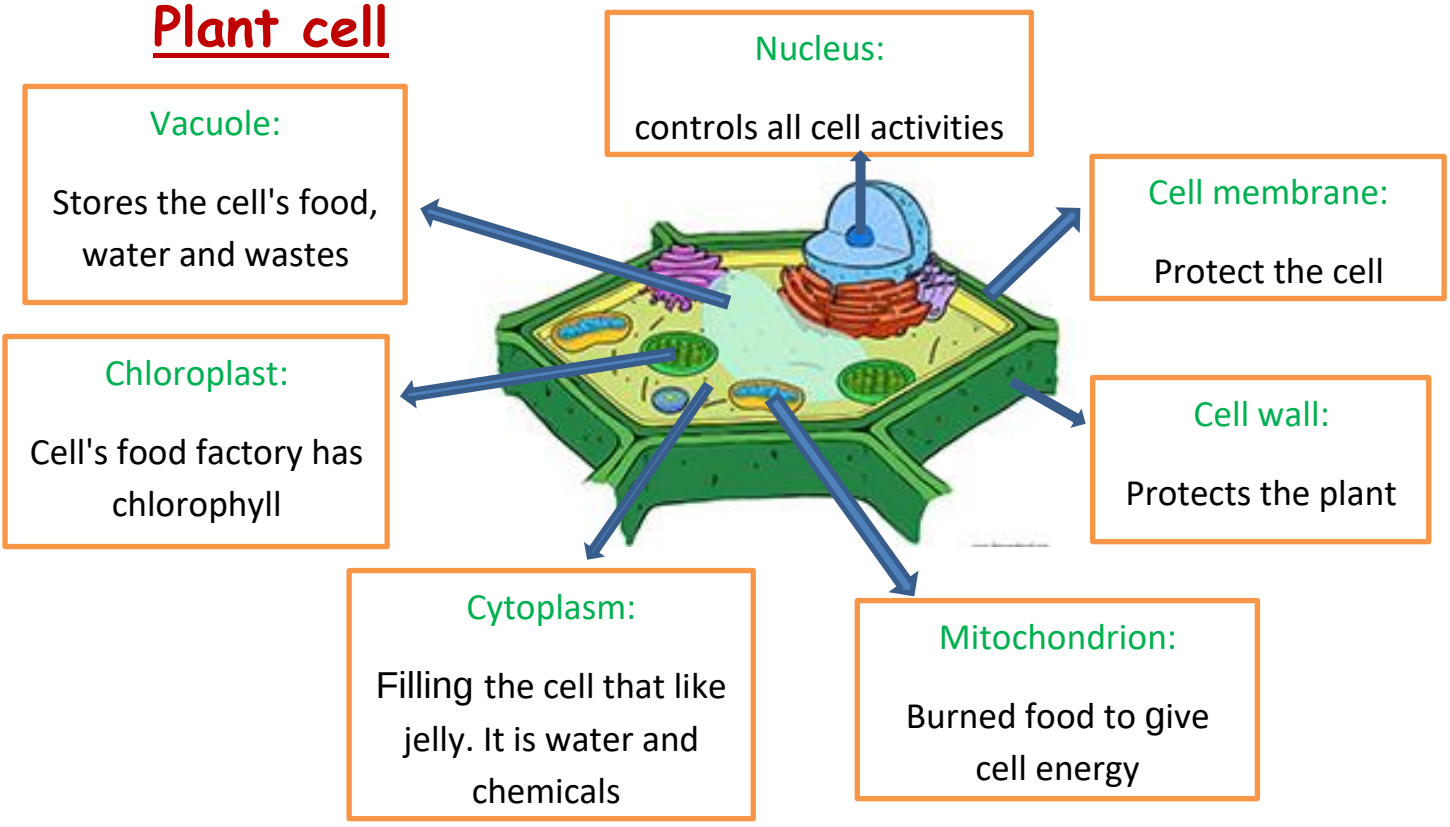
Carbon dioxide for plants 

What are living things made of?

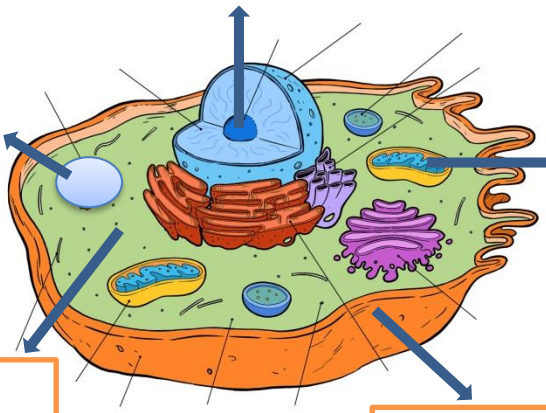
*viruses: can't reproduce by themselves.

*human, animals and plants: can reproduce.

Plant cell



Animals cell



Nucleus:

controls all cell activities

Vacuole:

Stores the cell's food, water and wastes

Mitochondrion:

Burned food to give cell energy

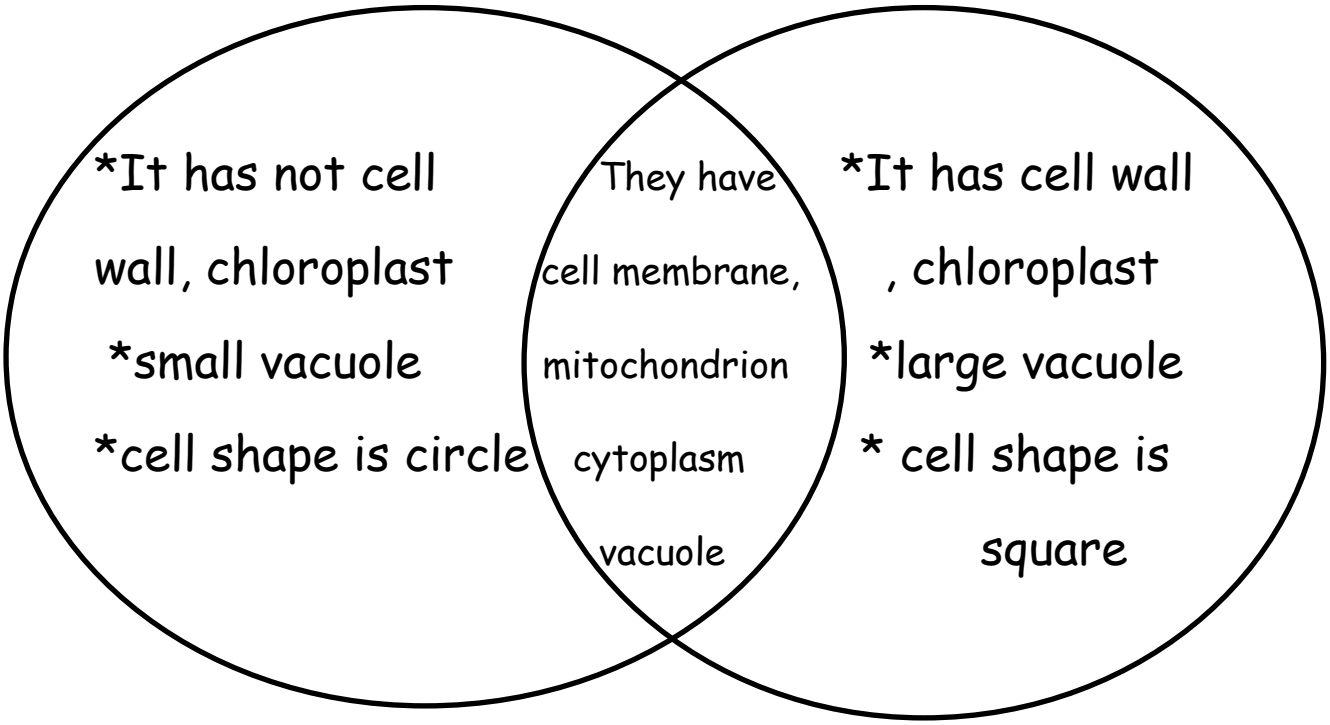
Cytoplasm:

Filling the cell that like jelly. It is water and chemicals

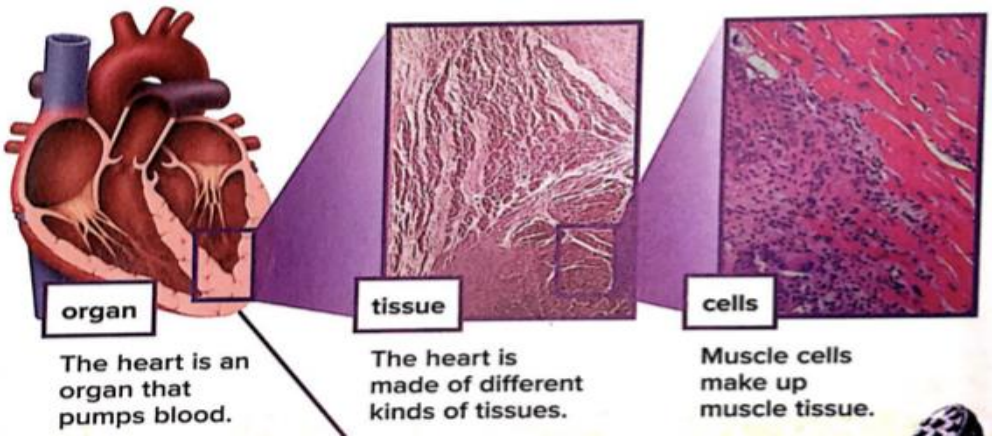
Cell membrane:

Protect the cell

What is the similar and different between plant and animals cells:



levels of Organization:



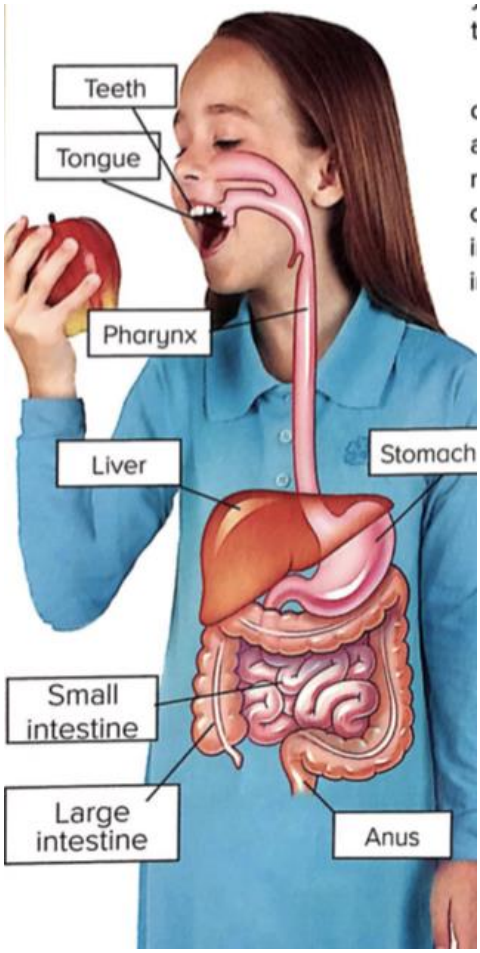
A tissue: is a group of similar cells that work together to perform a job.

Organ: the tissues in an organ work together to carry out a job.

Organ system: to perform a life function.

The Digestive system

The Digestive system: breaks down the food.



Digestive System	Main Function	Time
Mouth	Chewing and breaking down food	5–30 seconds
Esophagus	Swallowing and transporting food	10 seconds
Stomach	Acidic juices help break down food further	2–24 hours
Small intestine	Nutrients are absorbed into the blood	3–4 hours
Large intestine	Removes water from unused food	18h–2days

Microscopes: makes small things look much bigger. Also used to study viruses.



Lesson 2: Classifying Living Things

A kingdom: is the largest group into which organisms can be classified.

Classifying Organisms

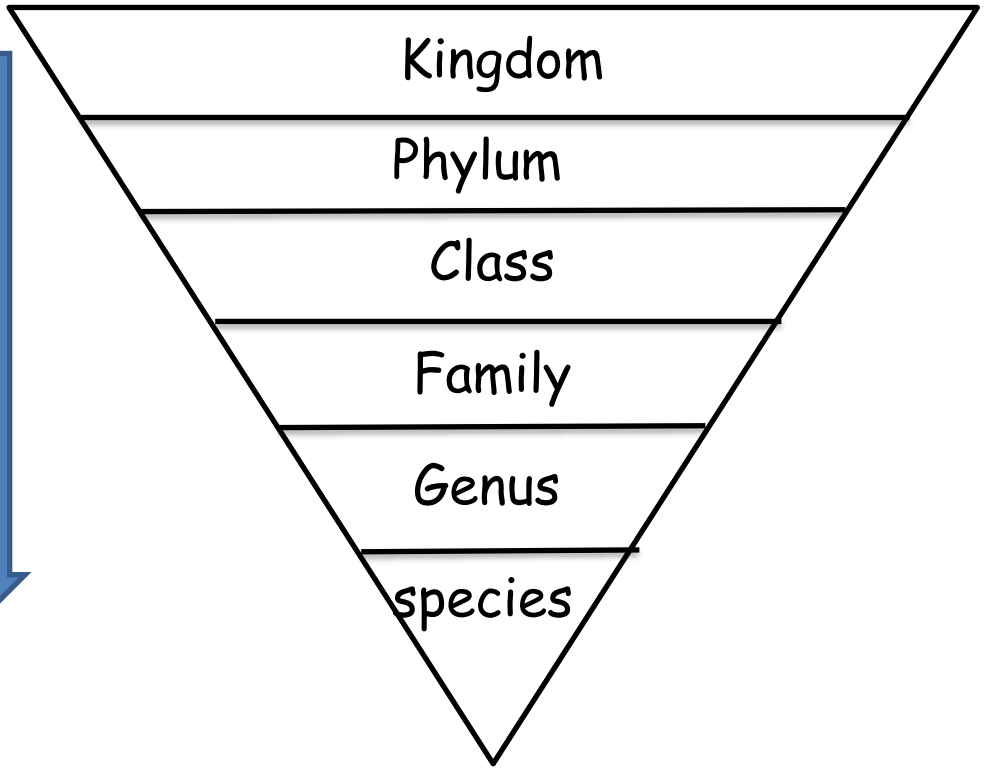


Kingdom	archaea	bacteria	protists	fungi	plants	animals
Number of Cells	one	one	one or many	one or many	many	many
Nucleus	no	no	yes	yes	yes	yes
Food	make their own or get food from other organisms	make their own or get food from other organisms	make their own or get food from other organisms	get food from other organisms	make their own food	get food from other organisms
Move from Place to Place	yes	yes	yes	no	no	yes

These groups from largest to smallest:

Largest group

smallest group



Microorganisms: are living things too small to be seen with just your eyes.

What kings of organisms have only one cell?

1. Bacteria and Archaea
2. Fungi
3. Protists

	Bacteria and Archaea
Number of cell	1 or more
Nucleus	x
Food	Make their own or get food from other organisms.
Information	Some bacteria can cause infections and diseases. Some bacteria are help break down food in your digestive system.

	Fungi
Number of cell	1 or more
Nucleus	✓
Food	Get food from other organisms.
Information	They have traits of both plants and animals . They like plants, their cells have a cell wall. They like animals, fungi cells do not have chloroplasts. They can't make their own food.
Example	yeast

	Protists
Number of cells	1 or more
Nucleus	
Food	Make their own or get food from other organisms.
Information	It cause malaria diseases.
Example	algae + paramecium

Paramecium: has a structure that pumps out extra water from inside the cell.

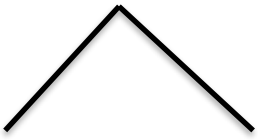
How are organisms named?

Scientists use naming system to classify living things.

The first part: genus.

The second part: species.

For example: Gray wolf



part two (species) part one (genus)

Question: *What is the genus of an organism? Wolf

*What is the species of an organism? Gray

Chapter 3: The Animal kingdom

Muscular system: the organ system made up of muscles that move bones.

Digestive system: the organ system that breaks down food for energy.

Heredity: the passing of traits from parents to offspring.

Metamorphosis: a life cycle including four stages of growth: egg, larva, pupa and adult.

Lesson 1: System in Animals

A system: is a group of parts that works together.

1. The skeletal system

Consist of bones

- supports an animal body.

- protect the organ inside.

2. The muscular system

Consist of muscles

- to move

- pull on the bones

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3. The nervous system

(the master control system of the body)

Consist of nerve cells, brain, spinal cord and sense organs.

- help animals use sense (sight, hearing, taste, touch and smell)

- to detect changes in their surroundings

4. The respiratory system

Consist of gills or lungs to exchange gases with the water or the air.

- brings oxygen to the blood and removes carbon dioxide gas from the blood.

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5. The circulatory system

Consist of the heart, blood and blood vessels.

- to move blood through the body

The blood carries oxygen, food and water to the body's cells.

Fish heart has two chambers

An amphibian heart has two chambers

Mammals and birds heart have four chambers.

Sponges and cnidarians do not have hearts

6. The excretory system

Consist of *the liver and kidneys filter wastes from the blood.

*the bladder stores liquid wastes.

*the skin sweats to remove excess minerals.

*lungs and gills remove waste gases from cells.

- they produce wastes.

7. The digestive system

Consist of (mouth – stomach – liver – intestine) in mammals.

- break down food for energy.

Lesson 2: Animal life cycle

The stages of growth and changes:

1. birth
2. growth
3. reproduction
4. death

life cycle: the stages of growth and changes make up an organism.

Life span: how long it can usually live in the wild.

Metamorphosis: has several separate growth stages.

A clone: is an exact copy of its parents.

Heredity: the passing of inherit traits from their parents.

An egg: the female cell.

A sperm: the male cell.

An embryo: the fertilized egg grows.

Fertilized: when an egg and sperm join.

Types of metamorphosis:

	Incomplete metamorphosis	Complete metamorphosis
Definition	difference in growth stages is hard to see.	Different in growth stages is easy to see
Stages	1. egg 2. nymph then sheds its skin 3. adult	1. egg 2. larva 3. pupa 4. adult
examples	Damselfly- grasshopper- termites	Butterfly- beetles- flies- mealworms

How do animals reproduce?

	One parent	Two parent
Definition	An exact copy of its parents	An embryo has traits from both its parents.
	1. budding: a bud forms on the adult's body. After some time, the bud breaks. For example: hydra 2. Regeneration: a whole animal develops from just a part of the original animals. For example: sea star	When an egg from female and a sperm from male join, offspring are produced. For example: birds, cat, cow…

What is inherited?

	Inherited behavior	Instinct	Learned behavior
Definition	Is a set of action that parents pass on to their offspring.	Is a way of action that an animals does not have to learn.	When an animal changes its behavior through experience.
Example	blinking	Birds built nest. Spiders spin webs.	Rid a bike

Chapter 4: Adaptations and Survival

Adaptation: a trait or behavior that helps a living thing survive in its environment.

Camouflage: an adaption in which an animal can hide by blending in with its surroundings.

Mimicry: when one kind of living thing has similar traits to another.

Tropism: the response of a plant to something in its environment.

Accommodation: an individual organism's response to changes in its ecosystem.

Extinct: when the last of a species dies.

Variation: are differences among members of the same species.

Natural selection: an organism with favorable variations is well suited to its environment.

An extinct: species no longer exists. Species become extinct because they cannot adapt.

Echolocation: the returning echoes tell the bat where the food is located.

Lesson 1: Change Over Time

Kind of adaptation

Physical characteristics

A horse: walked on spread-out toes. This helped them move through swamps and mud.

A hummingbird's beak is long and narrow. Ti gets food from thin flowers.

A polar bear's fur helps it keep warm.

The trunk of an elephant allows it to grasp things and feed itself.

The fennec fox has large ears that give off heat.

Camels can close their nostrils to keep out sand. They store fat in humps. Wide hooves help them walk on sand.

Behaviors

Hibernating: when an animal hibernates, it lives off its body fat and uses very little energy.

Migration: to change location periodically. Birds migrate from cooler to warmer places.

Camouflage: helps animals hide. In winter arctic fox's fur matches the white snow. In summer, their fur matches the brown soil.

Mimicry: when one kind of living things looks like another kind. Honeybee looks like hoverflies

Body structures: snakes and lizards have poison in their jaws. Hedgehogs covered with spines.

Lesson 2: Animal Senses

How do animals use their senses?

- Learned about the world around them.
- Help them stay safe.
- Help them find food.
- Find others of their own kind.
- Move around.

How do senses help animals survive?

- **Sight:** Owl: have a large eyes that help them see pray in the dark

  Housefly: its eyes made up of thousands of tiny eyes. This allows them to see movement in any direction.
- **Hearing:** bats: the returning echoes tell the bat where the food.
- **Smell:** Dogs: leave scent when they walk or mark their territory to tell others to stay away.

  Mosquitos: use their sense of smell to find mammals.
- **Taste:** Butterflies: use their sense of taste to find a plant is a good to lay eggs.
- **Touch:** Earthworm sense vibration in the ground.

What other senses help animals survive?

- **Animals can sense electricity:** Dolphins, Sharks, and Ray: use this sense to find prey.
- **Animals can sense heat:** Snakes and Mosquitos: use this sense to find prey
- **Animals can sense direction:** Geese and Monarch butterflies: use this sense to know where to go.

Lesson3: Plants Adaptation with Their Surroundings

A stimulus: is something in an environment that causes a living thing to respond.

A tropism: is the response of a plant to something in its environment.

How does a plant react or respond to a stimulus?

1. **Light:** plants growing towered the source of the light.
2. **Water:** plants growing their roots towered the water source.
3. **Gravity:** the roots of plants grow downward the same direction as the pull of gravity. The stem grow upward , away from gravity.
4. **Chemical:** plants use chemical to grow.
5. **Heat:** plants use heat to grow.

What are some plant adaptations?

- **A cactus:** it has soft tissue that holds water- it has a thick, waxy cover to keep the water inside.
- **Cold winter:** plants lose their leaves to protect them from drying out. Trees uses stored food.
- **In spring:** tree grows new leaves and begins storing food for the next winter.

Lesson 4: Change in Ecosystems

Pollution: adding harmful things to the air, water or land.

Accommodation: an individual's response to change.

Endangered: a living thing that has few of its kind left.

What causes an ecosystem to change?

Natural Event

***Volcanoes**

***Hurricanes**

***Landslides**

***Droughts**

***Earthquakes**

Living Things

A locust: is a kind of grasshopper. They eat any plants. They leave a whole community without food.

A gator hole: an alligator movements in a muddy water create a hole. Birds and other animals move to gator holes when their own habitats get too dry.

People

***Deforestation**

***Overpopulation**

***Pollution**

***Protection :**

*driving less and use hybrid cars.

*remove harmful substances.

*plant new tree.

*recycle paper, glass and plastic.

Turn off the water when you brushing your teeth.

Extinction: when plants and animals are gone forever or disappearance.

How does extinction happen?

Because of people.

1. They build houses
2. They grow crops
3. They hunt
4. They bring in new kinds of species.

How can people prevent extinction?

The UAE succeeded in saving the Arabian Oryx from extinction by most important project called: " Increasing Arabian Oryx Project".

Chapter 5: The Health of Living Things

Nutrient: substance in foods that your body needs for growth, repair, and for energy.

Balanced diet: meals and snacks that provide the proper amounts of foods from each food group daily.

Carbohydrate: a nutrient your body uses as a main source of energy.

Protein: a nutrient needed for growth and repair of body tissues.

Hygiene: the practice of keeping clean.

Physical fitness: the heart, lungs, muscles, and other body parts are all working at their best.

Vitamins: are nutrients that help your body grow and carry out certain function.

Minerals: are another type of nutrient that help your body grow and function properly.

Lesson 1: Choosing Healthful Foods:

What are healthful foods to eat?

1. Fruit.
2. Vegetables.
3. Grains.
4. Protein.
5. Water: *carries nutrients.
   *waste throughout your body.
   *helps to keep your body temperature.

A balanced Diet:

(snack – breakfast – lunch – dinner)

What are the nutrients your body needs?

1. Carbohydrates:
   *two types of carbohydrates:
   1. Starches: for example: bread, pasta, and cereals. *your body breaks down starches into sugar
   2. Sugar: for example: sweeten food, fruit, and milk.

2. Proteins:

   For example: meat, beans, fish, eggs, milk and nuts.

   *help make up muscles and other tissues.

3. Fats and Oils:

   For example: meat, cheese, milk, butter, margarine

   *junk food such as: cakes, candy, pies, cookies, and chips.

   *fish and nuts are good sources of oil.

   *corn oil and canola oil can be used in cooking.

4. Vitamins:

   Vitamin A: helps keep your eyes, gums, and skin healthy. *found in carrots, pumpkins, and leafy vegetables.

   Vitamin C: helps keep your blood, bones, teeth, and gums healthy. *found in citrus fruits.

5. Minerals:
   Calcium build teeth and bones. *found in milk.
   Iron keeps red blood cells working properly.*found in meats and leafy vegetables.

How do you choose healthy foods?

1. Breakfast: is an important meal in the morning. Eat grains, fruit and vegetables. Egg for protein.
2. Choosing Snakes: to lost weight choose fruits, vegetables, low-fat crackers, low-fat yogurt, and cheese. *snakes only when you are hungry.
3. Avoiding Salt: too much salt in your diet can lead too high blood pressure. That can affect your heart, blood vessels, and kidneys.
4. Dinning Out: many restaurant menu items are high in fat, sugar, and salt. Avoid ordering jumbo-sized portions and cola.

Lesson 2: Staying Healthy, Fit, and Safe.

Disease: is caused by an abnormal condition in your body.

Infectious disease: is a disease transmitted from one living organism to another.

Non-infectious diseases: are not transmitted from one person to another.

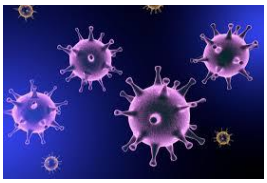
How are diseases transmitted?

1. Shaking hands/ Sneezing
2. Air
3. Patient's tools (objects)
4. Contaminated food or drink
5. Animals

How do you know that you are sick?

1. Your body temperature rises. Normal body temperature of 37 degree Celsius.
2. Sore throat indicates
3. Skin and eye redness
4. Vomiting 5. Severe diarrhea
6. Cough 7. Fatigue
8. Need to sleep

Types of Germs:

	virus	Becteria	Fungi
What are they?	Non –living microorganisms	One-celled organism	Plant- like and heterotrophic organisms
Where do they live?	Inside animal and plant cells	In air, water, soil, on animals and plants	In air, water, soil, on animals and plants
What do they cause?	Influenza, s smallpox, pneumonia and infantile paralysis	Cholera tuberculosis	Foot fungus Ringworm (skin infection)
			

Habits: are action that you do over and over again.

Hygiene: is the practice of keeping clean.

What are good health habits?

1. Washing hands.
2. Taking baths or showers.
3. Wearing clean clothes.
4. Taking care of your skin.
5. Clean and trim your nails.
6. Comb or brush your hair.
7. Brush your teeth and flossing once a day.

*Ways help your body to resist diseases:

Vaccination: is a physician injects you with a small amount of the germ that your body recognizes.

For example, the measles disease infects the human body once in a life time.

Antibiotics: is a medicine used to cure a health condition caused by bacteria.

For example, Alexander Fleming was the first scientist to discover the antibiotic called penicillin.

Physical fitness: the heart, lungs, muscles, and other body parts are all working at their best.

Endurance: the ability to perform an activity without becoming tired.

How can you stay physically fit?

1. Riding a bike.
2. Jumping rope.
3. Playing team sports, such as football and basketball.
4. Sleep: children between 5 to 12 need about 9 to 11 hours of sleep every night.