ESS 2: Igneous, metamorphic and sedimentary rocks have unique characteristics that can be used for identification and/or classification.

1. ☆ I can identify rocks from the three main types (igneous, metamorphic or sedimentary) using the following criteria:
   - ☆ the composition of the rock (what material make up the rock)
   - ☆ the types of minerals present in the rock
   - ☆ the size of the minerals present in the rock
   - ☆ the shape of the minerals in the rock

2. ☆ I can use information gathered about how a rock broke down (weathered) and it's transportation (erosion) to interpret its history of formation and the environment in which it formed.

ESS 3: Igneous, metamorphic and sedimentary rocks form in different ways.

1 ☆ I know that igneous rocks form when magma or lava cools and crystallizes.

2 ☆ I know that metamorphic rocks form when extreme heat and extreme pressure is applied to existing rock.

3 ☆ I know that sedimentary rocks form when existing rock weathers chemically or physically; then the weathetred material is compressed and lithifies (the compaction and cementation of sediments that change it into sedimentary rock).

4 ☆ I can compare and contrast the type of environments that a rock forms using the rock cycle.

5 ☆ I can study the existing bedrock in Ohio to understand Ohio's geological history and past environmental conditoions. Example: formation of sandstone and limestone in Ohio indicates that a shallow sea once covered Ohio.

ESS 5: Rocks, minerals, and soils have common and practical uses.

1 ☐ I can determine how rocks, minerals, and soil can be used based on their specific physical properties.

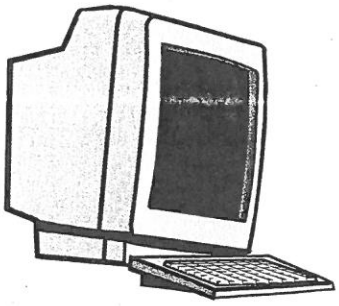
- ☐ I know minerals and rocks can be used in construction. Example: gypsum, gravel and sand.
- ☐ I know minerals and rocks can be used to create energy. Example: fossil fuels (coal) and radioactive materials (plutonium and uranium).
- ☐ I know minerals and rocks can be for domestic uses, such as jewelry (gems) and pottery (clay).
- ☐ I know minerals and rocks can be used for technology. Example: lithium for long lasting batteries and silica for computers.
- ☐ I know minerals and rocks can be used for transportation. Example: road salt and asphalt.
- ☐ I know minerals and rocks can be used for agriculture. Example: lime, minerals for fertelizers.

2 ☐ I know that nearly all manufactured material requires some kind of geological resource.

3 ☐ I know that most geologoical resources considered nonrenewable (they will take millions and millions of years to reform if at all).

4 ☐ I can conserve natural resources through the conservation or reducing the use of these resources. Example: alternative energy sources such as solar instead of fossil fuels which are nonrenewable.

5 ☐ I know that extaction methods for getting fossil fuels (strip-mining and open pit mining) can be harmful to the environment.

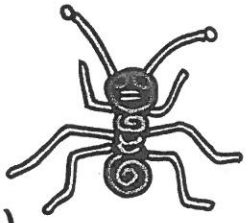


LSS 1: Cells are the fundamental unit of life. (1)

LSS 3: Cells carry on specific functions that sustain life.

1 ☆ I can understand the three parts to the Modern Cell Theory.

- ☆ I know that all living things are made of cells.
- ☆ I know that cells are the basic unit of structure and function of all living things.
- ☆ I know that all cells come from existing cells (mitosis).



2 ☆ I can determine if an organism is single-celled, that one cell must carry out all the basic functions of life.

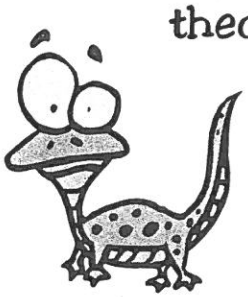
3 ☆ I can determine if an organism is multicellular, the cells that form these organisms are organized at various levels to carry out all the basic functions of life.

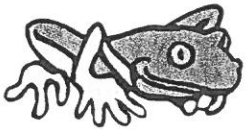
4 ☆ I know that different body tissues and organs can be made up of different kinds of cells.

5 ☆ I know that for animals, cells in similar tissues and organs are similar.

6 ☆ I know the tissues and organs found in plants differ slightly from similar tissues in animals.

7 ☆ I can use the Modern Cell Theory to show how scientific theories have developed over time (wheat grains and mice)





LSS 1: Cells are the fundamental unit of life. (2)

LSS 3: Cells carry on specific functions that sustain life.

8 ☆ I can recognize the cell wall, cell membrane and nucleus in the following:

- ☆ eubacteria
- ☆ protista
- ☆ fungi

9 ☆ I can recognize the nucleus, mitochondria, chloroplast, ribosome, plasma membrane, vacuole, and lysosome in plant cells such as ferns or angiosperms (structure).

10 ☆ I can recognize the function of the following organelles:

- ☆ cell wall - gives support to plant cells
- ☆ cell (plasma) membrane - lets substances in and out of cell (gas exchange) which also maintains the cells homeostasis (this is when everything in the cell is functioning properly)
- ☆ nucleus - control center of the cell.
- ☆ mitochondria - releases energy from food and transfers it throughout the cell to run the cell
- ☆ chloroplast (plastids) - energy capture and transfer throughout the cell and photosynthesis
- ☆ ribosome - responsible for synthesis (building) proteins for the cell
- ☆ endoplasmic reticulum - transports material through the cell
- ☆ vacuole - storage space for food and water
- ☆ lysosome - waste disposal system for cell
- ☆ cytoplasm - holds organelles and also to create pseudopods for cell movement

11 ☆ I know that the function of individual organelles is important to the function of the whole cell.

example: plastids (chloroplasts) manufacture sugars needed as food for the cell; mitochondria gives cell energy to do its job; ribosomes build proteins needed by an organism such as insulin, hair, nails, ect.

12 ☆ I know that cells take in nutrients and energy to perform work, such as making various molecules and proteins needed by the cell or organism.

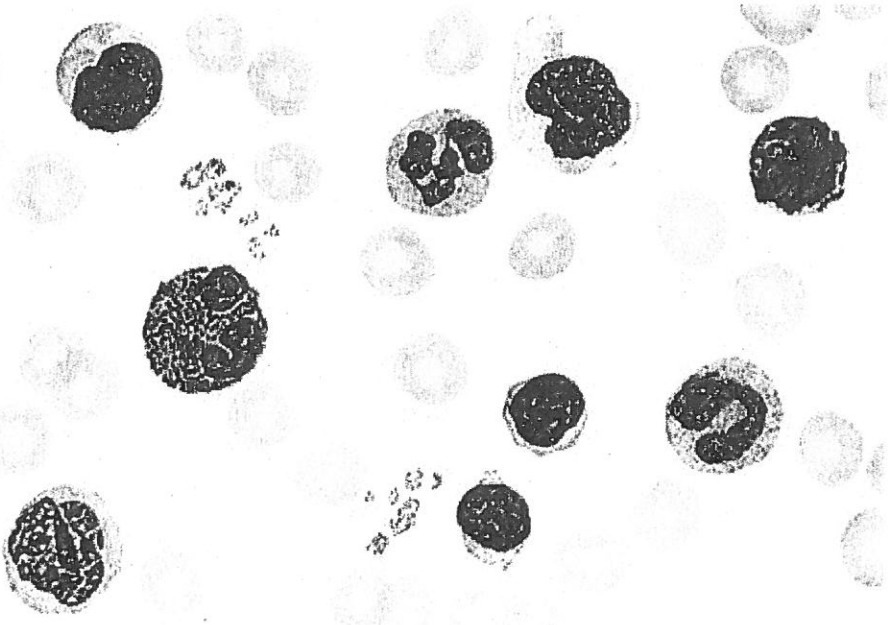
13 ☆ I can investigate conditions that minimize cellular function, such as dehydration.

LSS 1: Cells are the fundamental unit of life (3)

LSS 3: Cells carry on specific functions that sustain life.

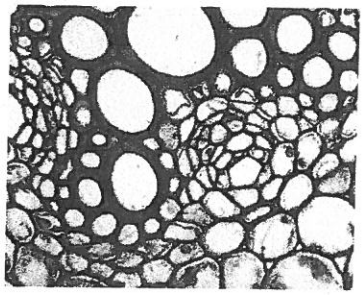
14 ☆ I know the structure of cellular organelles is related to its function. ex.: Endoplasmic Reticulum is ropey and all throughout the cell because its function is to transport material through the cell.

15 ☆ I know the shape of cells is related to its function ex.: Red blood cells are rounded to flow easily and nerve cells are web-like to carry messages throughout the body.



LSS 2: All cells come from pre-existing cells.

1 ☆ I know that individual organisms do not live forever, therefore reproduction is necessary for the continuation of every species.



2 ☆ I know cells repeatedly divide which results in more cells.

3 ☆ I can identify the seven phases of mitosis.

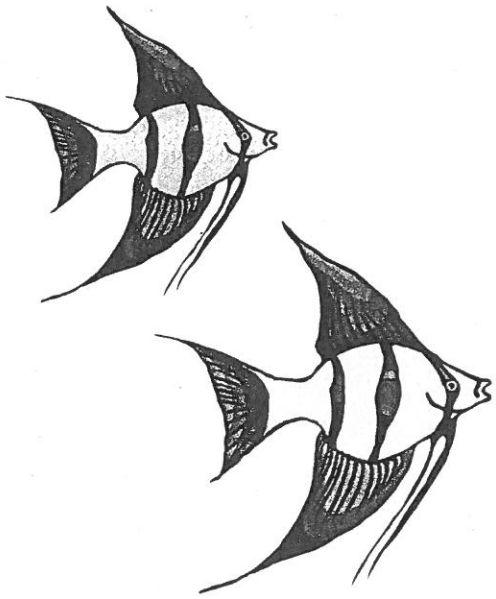
4 ☆ I know that reproduction is a way for an organism to transmit genetic information from one generation to the next. (traits)

5 ☆ I know that all cells contain chromosomes, which contain genetic material.

6 ☆ I can identify past misconceptions and explain how evidence (experiments of Rudi and Pasteur) can lead to new knowledge and better explanations.

7 ☆ I know that in single-celled organisms, the process of binary fission produces a new organism (yeast).

8 ☆ I know that in multi-celled organisms, body cells multiply for growth and repair.



LSS 4: Living systems at all levels of organization demonstrate the complementary nature of structure and function (1).

1 ☆ I can use a microscope to view a:

- ☆ cell
- ☆ tissue
- ☆ organ

2 ☆ I can compare the similarities of a cell, tissue, organ, and organ system, such as each one is made of material that has to work together to perform a specific function.

3 ☆ I can contrast the differences of a cell, tissue, organ, and organ system, such as different body tissues and organs are made of different kinds of cells. Example: muscle cells work together to form muscle tissue.

4 ☆ I know the level of organization within organisms includes cells, tissues, organs, organ systems and whole organisms.

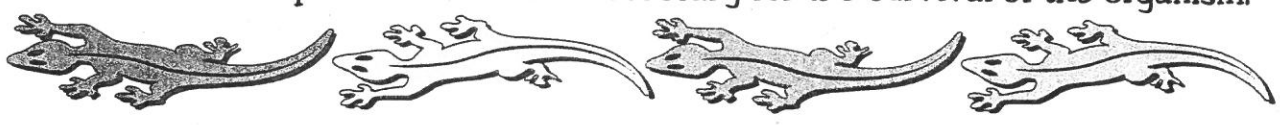
5 ☆ I can identify cells that perform specialized functions in multicellular organisms, such as blood, nerve, skin, and muscle cells.

6 ☆ I can identify a group of specialized cells that form a tissue, such as muscle cells working together forms muscle tissue.

7 ☆ I can identify different tissues that are grouped together to form an organ, such as muscle tissue, connective tissue, and valve tissue helps make up the heart organ.

8 ☆ I can identify different organs that work together to form an organ system, such as the brain and the spinal cord help make up the nervous system.

9 ☆ I know that all of the parts of an organism (cells, tissues, organs, organ systems) function as a whole to perform the tasks necessary for the survival of the organism.



LSS 4: Living systems at all levels of organization demonstrate the complementary nature of structure and function (2).

10 ☆ I know that organisms have diverse body plans - the blueprint for the way the body of an organism is laid out.

11 ☆ I can identify the two main types of symmetry in organisms:

- ☆ Bilateral Symmetry - When the left side of the organism mirrors its right side. Most animals, including humans, are bilateral.
- ☆ Radial Symmetry - When an organisms identical parts are arranged in a circular fashion around a central axis. It resembles a pie where there is no right or left side. Floating animals, such as jellyfish, have radial symmetry.

12 ☆ I know that organisms have diverse internal structures, such as gills in fish.

13 ☆ I can use similarities in an organisms body plan, symmetry, external and internal structures (their characteristics) to classify them into the groups Kingdom, Phylum, Class, Order, Family, Genus, and Species.

14 ☆ I can determine the environment that organisms can survive in is based upon its body plans, symmetry and internal structures. Ex.: polar bear in the arctic, fish in the ocean, camel in the desert.

15 ☆ I can investigate the tissues, organs, cell structures, organ systems and symmetry of plants and animals and understand that all living things have certain characteristics in common such as a need for energy, reproduction, getting rid of wastes, etc.