



sequence of changes in form is called a life cycle. Some insects change from egg to larva to pupa to adult.

MU 4.11 Each kind of animal goes through its own stages of growth and development during its life span.

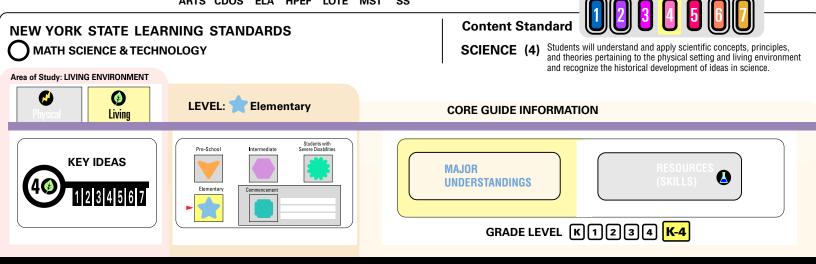
MU 4.1g The length of time from an animal's birth to its death is called its life span

MU 4.2a Growth is the process by which plants and animals increase in size. MU 4.2b Food supplies the energy and materials necessary for growth and repair

Life spans of different animals vary.

NEW YORK STATE LEARNING STANDARD DOCUMENTS









Living things are both similar to and different from each other and from nonliving things.

There are basic characteristics, needs, and functions common to all living things. Nonliving things are present innature or are made by living things. Younger students' ideas about the characteristics of organisms develop from their basic concepts of living and nonliving things. As students are given opportunities to observe and classify living and nonliving things, they

should be reminded that living and nonliving things are sometimes given attributes they do

not really have. Understanding the variety and complexity of life and its processes can help students develop respect for their own and for all life. It should also lead them to better realize the value of all life on this fragile planet.



Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.

> As students investigate the continuity of life, emphasis should be placed on how plants and animals reproduce their own kind. Teachers should lead students to make observations about how the offspring of familiar animals compare to one another and to their parents. Students know that animals reproduce their own kind-rabbits have rabbits (but you can usually tell one baby from another), cats have kittens that have different markings (but cats never have puppies), and so forth. This idea should be strengthened by a

large number of examples, both plant and animal, upon which the students can draw. Students should move from describing individuals directly (e.g., she has blue eyes) to naming traits and classifying individuals with respect to those traits (e.g., eye color: blue). Students can be encouraged to keep lists of things that animals

and plants get from their parents, things that they don't get, and things that the students are not sure about either way.



40 Individual organisms and species change over time.

> Throughout time, plants and animals have changed depending on their environment. In learning how organisms have been successful in their habitats, students should observe and record information about plants and animals. They should begin to recognize how differences

among individuals within a species can help an organism or population to survive. Students at this level will identify the behaviors and physical adaptations that allow organisms to survive in



The continuity of life is sustained through reproduction and development.

> It is essential for organisms to produce offspring so that their species will continue. Patterns of reproduction, growth, and development of an organism are stages in its life cycle. Life cycle stages are sequential and occur throughout the life span of the organism. The characteristics of the cycle of life vary from organism to organism

Note: Younger students may have difficulty in recognizing the continuity of life. Using organisms with a short life cycle as examples will be important in getting the concept across. It is important for younger students to observe life cycle changes in selected animals.



Organisms maintain a dynamic equilibrium that

Students need many opportunities to observe a eliminating waste. Students need many variety of organisms for the patterns of similarities and differences of the life functions used to sustain life. All organisms carry out basic life functions in order to sustain life. These life functions include growing, taking in nutrients, breathing, reproducing, and

opportunities to observe and compare these similarities and differences in a variety of organisms. Specimens that could provide these opportunities may include guppies, mealworms, and gerbils, as well as fish, insects, mammals, birds, amphibians, reptiles, plants, and fungi.



Plants and animals depend on each other and their physical environment.

> Plants and animals interact in a number of ways that affect their survival. The survival of plants and animals varies, in response to their particular environment. As the physical environment changes over time, plants and animals change. Younger students should

focus on simple, observable associations of organisms with their environments. Their studies of interactions among organisms within an environment should start with relationships they can directly observe.



Human decisions and activities have Key 7 had a profound impactiving environments. had a profound impact on the physical and

> Humans are dependent upon and have an impact on their environment. Students should recognize how human decisions cause environmental changes to occur.

Students should be given opportunities to identify and investigate the factors that positively or negatively affect the physical environment and its resources.

Living Environment **SAMPLE TASKS**

grow a plant or observe a pet, investigating what it requires to stay alive, including evaluating the relative importance and necessity of

investigate differences in personal body characteristics, such as temperature, pulse, heart rate, blood pressure, and reaction time.

interact with a classroom pet, observe its behaviors, and record what they are able to teach the animal, such as navigation of a maze or performance of tricks, compared to that which remains constant, such as eye color, or number of digits on an appendage.

use breeding records and photographs of racing horses or pedigreed animals to recognize that variations exist from generation to generation but "like begets like/

relate physical characteristics of organisms to habitat characteristics (e.g., long hair and fur color change for mammals

> visit a farm or a zoo and make a written or pictorial comparison of members of a litter and identify characteristics that may provide an advantage.

grow bean plants or butterflies; record and describe stages of



observe a single organism over a period of weeks and describe such life functions as moving, eating, resting, and eliminating.

observe and demonstrate reflexes such as pupil dilation and

analyze the extent to which diet and exercise habits meet cardiovascular, energy, and nutrient requirements.

investigate how humans depend on their environment (neighborhood), by observing, recording, and discussing the interactions that occur in carrying out their everyday lives.

observe the effects of sunlight on growth for a garden vegetable.

give examples of how inventions and innovations have changed the environment.

describe benefits and burdens of those changes.