

Evolution Unit

Essential

EvE.1 - Construct an explanation for how natural selection leads to adaptation of populations through the four factors that describe the primary process of evolution: (1) overproduction, (2) variation, (3) heritability, and (4) reproductive advantage.

Level 3 Description	Describe how natural selection leads to adaptation of populations. Define and correctly use the terms: fitness, variation, adaptation. Use data to support that organisms with an advantageous heritable trait which tend to increase in proportion to organisms lacking this trait. (HS-LS4-3) Describe how the structural, physiological, or behavioral adaptations of organisms can lead to competitive advantages based upon environmental factors. Describe and list the four factors of the process of evolution. Define the terms overproduction and inheritance.
Level 4 Description	Using evidence, describe how natural selection leads to adaptation of populations. Define and use terms consistently correctly: fitness, variation, adaptation. Using a model, predict, report, and explain the outcome of organisms with an advantageous heritable trait which tend to increase in proportion to organisms lacking this trait. (HS-LS4-3) Describe how the structural, physiological, and behavioral adaptations of organisms can lead to competitive advantages based upon environmental factors. Describe and use the four factors to explain an example of the process of evolution. Define and appropriately use the terms overproduction and inheritance as they apply to the four factors.

Supporting

EvS.1 - Describe that ancestry and evolution are supported by multiple lines of evidence.

Level 3 Description	Given a set of data, communicate scientific information of common ancestry and biological evolution. List and define evidence for evolution and determining the relationship between organisms (e.g., fossil record, comparative anatomy, physiological traits, genetic information, and/or the ability to produce fertile offspring).
Level 4 Description	Given a set of data, communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. List, describe and explain the different evidence for evolution and determining the relationship between organisms (e.g., fossil record, comparative anatomy, physiological traits, genetic information, and/or the ability to produce fertile offspring).

EvS.2 - Compare and contrast multiple mechanisms of evolution (e.g., natural selection, genetic drift, gene flow, coevolution) and explain how each accounts for the diversity of life.

Level 3 Description	Describe mechanisms of evolution (e.g., natural selection, genetic drift) and apply the knowledge to account for the diversity of life.
Level 4 Description	Describe and differentiate the mechanisms of evolution (e.g., natural selection, genetic drift) and apply the knowledge to account for the diversity of life.

EvS.3 - Create evolutionary trees and describe the relationships between organisms based on similarities and differences in traits.

Level 3 Description	Use characteristics to properly categorize different organisms. Define species. List different kingdoms. Create a cladogram when given a list of organisms and their traits.
Level 4 Description	Use characteristics to properly categorize different organisms and communicate the divisions. Define and give a specific example of a species. List different kingdoms, give a representative organisms for each, and differentiate kingdoms by listing characteristics. Create a cladogram with properly labeled divisions when given a list of organisms and their traits.

EvS.4 - Make a claim using evidence that changes in environmental conditions may result in: increases in the population of some species, extinction of other species, and the appearance of new species.

Level 3 Description	Properly uses evidence to support one of the claims that environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. Define speciation.
Level 4 Description	Properly uses evidence to support the claims that environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. Describe how new species develop and provide examples.