

Variation in Traits Lessons: Scope and Sequence

Lesson Number	Focus Question(s)	Main Learning Goal	Science Content Storyline
1a/b	How are living things of the same kind alike and different?	The traits of individuals of the same kind of living thing can show variation.	Living things have traits that help us identify them. Among individuals of the same kind of living thing, some traits show variation and other traits don't. <i>Traits</i> are features or characteristics of an individual that may be visible or hidden. <i>Variations</i> are differences in traits among individuals of the same kind of living thing.
2a/b	Do plants show variation in traits? How do we know?	Like animals, plants show variation in traits.	Animals like ladybugs, cats, dogs, and people have traits that are alike and different. But what about plants? Observation and measurement can help us determine whether plants of the same kind show variation in traits.
3a/b	Why do trait variations among desert beetles matter?	Within a species, trait variations affect which individuals survive longer than others in their environment.	In the wild, living things of the same kind show variation in traits. Models can help us predict how trait variation will affect the predator-prey relationship in a specific environment. These models show how differences, or variations, in certain traits help some living things survive better than others in their environment.
4a/b	How can data help us explain why trait variations among desert beetles matter?	Data from a model can be used as evidence to support ideas that explain why trait variations affect which individuals are more likely to survive longer in their environment.	Variations among individuals of the same kind of living thing mean that some individuals are more likely to survive longer than others in their environment. Data from a model can be used as evidence to support an explanation of how trait variations affect which individuals are more likely to survive. Critiquing and asking questions about one another's ideas can help us develop the best explanation possible. Based on the data and evidence from a model, we can conclude that better-camouflaged individuals are most likely to survive longer in their environment.
5a	What happens if the beetles' environment changes?	Variation in traits and the environment affect which plants or animals of the same kind survive long enough to produce young (babies).	Often, trait variation means that some individuals of the same kind of living thing are more likely to survive than others in their environment. If the environment changes, individuals with certain trait variations are more likely to survive for a longer time. This means that both trait variation and the environment affect which individuals are more likely to survive.
5b	How do trait variations help living things survive if their environment changes?		
6a/b	Do babies of living things have the	Living things inherit many traits from their parents.	Some living things of the same kind survive longer in their environment than others. Living things that survive long enough can produce young and

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	same traits as their parents? How do you know?		pass on their traits to the next generation. The traits these babies inherit make them look similar to, but not exactly like, their parents.
7a/b	When mice survive long enough to have babies, what will the next generation look like?	Variation in traits and the environment affect which living things of the same kind survive long enough to produce young.	Trait variations, such as the color of a mouse's fur, can affect which living things of the same kind survive in their environment and which don't. In a particular environment, some trait variations give certain individuals a better chance of surviving and producing offspring that will carry those variations into the next generation.