

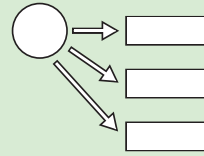
Patterns



Observing and defining patterns in natural phenomena helps us identify possible relationships between them. We can explore these connections to better understand the relationships that exist.

CROSSCUTTING CONCEPT

Cause and Effect

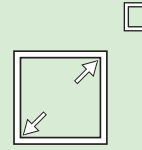


Making sense of the causes of natural phenomena helps us better understand our world.

To identify a cause, we define patterns that we observe to determine whether the phenomena are truly related or only happen to occur together by chance.

CROSSCUTTING CONCEPT

Scale, Proportion, and Quantity

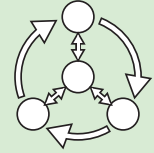


Natural phenomena occur at every scale and in different quantities.

To find relationships among phenomena, we need to consider how the size and quantity of the components may affect the system we are observing. The size and quantity of a phenomenon also determines whether it can be observed and studied directly or indirectly.

CROSSCUTTING CONCEPT

Systems and System Models

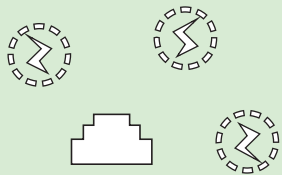


The natural world is too complex to study all at once. To figure out phenomena, we study the components and the relationships between them. We call these interacting components a system.

We can develop models that help us identify and explain the components of a system and how they interact. Models can help us understand the system and make predictions about how it works.

CROSSCUTTING CONCEPT

Energy and Matter

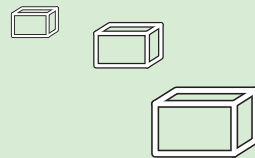


Energy and matter exist at all scales. All natural systems contain matter and use energy. As energy flows through and is used within systems, it drives the cycling of matter.

We can examine and model the interactions between matter and energy to explain how systems work.

CROSSCUTTING CONCEPT

Structure and Function



The structure, or shape, of an object often determines how it functions in a system.

Knowing the structure and function of objects at different scales can help us explain natural phenomena and how they work in the natural world.

CROSSCUTTING CONCEPT

Stability and Change



Some factors cause systems to remain stable or change over time. Identifying these factors helps us understand and explain natural phenomena.

CROSSCUTTING CONCEPT