

Grades 6, 7, 8

Adopted 2022

Patterns CC.1

1. Macroscopic patterns are related to the nature of microscopic and atomic-level structure. 68.CC.1.1
2. Patterns in rates of change and other numerical relationships can provide information about natural and human designed systems. 68.CC.1.2
3. Patterns can be used to identify cause and effect relationships. 68.CC.1.3
4. Graphs, charts, and images can be used to identify patterns in data. 68.CC.1.4

Cause and Effect: Mechanism and Prediction CC.2

1. Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation. 68.CC.2.1
2. Cause and effect relationships may be used to predict phenomena in natural or designed systems. 68.CC.2.2
3. Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. 68.CC.2.3

Scale, Proportion, and Quantity CC.3

1. Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small. 68.CC.3.1
2. The observed function of natural and designed systems may change with scale. 68.CC.3.2
3. Proportional relationships (e.g., speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes. 68.CC.3.3
4. Scientific relationships can be represented through the use of algebraic expressions and equations. 68.CC.3.4
5. Phenomena that can be observed at one scale may not be observable at another scale. 68.CC.3.5

Systems and System Models CC.4

1. Systems may interact with other systems; they may have subsystems and be a part of larger complex systems. 68.CC.4.1

2. Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems. 68.CC.4.2

3. Models are limited in that they only represent certain aspects of the system under study. 68.CC.4.3

**Energy and Matter:
Flows, Cycles, and
Conservation** CC.5

1. Matter is conserved because atoms are conserved in physical and chemical processes. 68.CC.5.1

2. Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. 68.CC.5.2

3. Energy may take different forms (e.g. energy in fields, thermal energy, energy of motion). 68.CC.5.3

4. The transfer of energy can be tracked as energy flows through a designed or natural system. 68.CC.5.4

**Structure and
Function** CC.6

1. Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the shapes, composition, and relationships among its parts; therefore, complex natural and designed structures/systems can be analyzed to determine how they function. 68.CC.6.1

2. Structures can be designed to serve particular functions by taking into account properties of different materials and how materials can be shaped and used. 68.CC.6.2

**Stability and
Change** CC.7

1. Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and forces at different scales, including the atomic scale. 68.CC.7.1

2. Small changes in one part of a system might cause large changes in another part. 68.CC.7.2

3. Stability might be disturbed either by sudden events or gradual changes that accumulate over time. 68.CC.7.3

4. Systems in dynamic equilibrium are stable due to a balance of feedback mechanisms. 68.CC.7.4
