

**Access Physical Science**

**(#7920022)**

February 2021

# Access Physical Science

# (#7920022)

# Course Standards

## [SC.912.E.7.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/1893)

Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon.

**Clarifications:**  
Describe that the Earth system contains fixed amounts of each stable chemical element and that each element moves among reservoirs in the solid earth, oceans, atmosphere and living organisms as part of biogeochemical cycles (i.e., nitrogen, water, carbon, oxygen and phosphorus), which are driven by energy from within the Earth and from the Sun.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.E.7.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8233) | Identify cycles that occur on Earth, such as the water and carbon cycles, and the role energy plays in them. |  |  |  |
| [SC.912.E.7.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8234) | Recognize the phases of the water cycle that occur on Earth and the role energy plays in the water cycle. |  |  |  |
| [SC.912.E.7.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8235) | Recognize that clouds release rain (part of the water cycle). |  |  |  |
| Resources: |  |  |  |  |

## [SC.912.L.18.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/2050)

Identify the reactants, products, and basic functions of photosynthesis.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.L.18.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8401) | Identify the products and function of photosynthesis. |  |  |  |
| [SC.912.L.18.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8402) | Recognize that the function of photosynthesis is to produce food for plants. |  |  |  |
| [SC.912.L.18.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8403) | Recognize that plants need water, light, and air to grow. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.L.18.8:](https://www.cpalms.org/Public/PreviewStandard/Preview/2051)

Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.L.18.In.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8404) | Identify that cells release energy from food so the organism can use it (cellular respiration). |  |  |  |
| [SC.912.L.18.Su.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8405) | Recognize that cells get energy from food. |  |  |  |
| [SC.912.L.18.Pa.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8406) | Identify that food is a source of energy. |  |  |  |
| Resources: |  |  |  |  |

## [SC.912.L.18.12:](https://www.cpalms.org/Public/PreviewStandard/Preview/2055)

Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.

**Clarifications:**  
Annually assessed on Biology EOC.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.L.18.In.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/8413) | Identify that special properties of water, such as the ability to moderate temperature and dissolve substances, help to sustain living things on Earth. |  |  |  |
| [SC.912.L.18.Su.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8414) | Identify the important role of water in sustaining life of plants and animals. |  |  |  |
| [SC.912.L.18.Pa.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/8415) | Recognize that plants and animals use water to live. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.1.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/1856)

Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:

1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts).
2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines).
3. **Examine books and other sources of information to see what is already known,**
4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).
5. **Plan investigations,** (Design and evaluate a scientific investigation).
6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).
7. **Pose answers, explanations, or descriptions of events,**
8. **Generate explanations that explicate or describe natural phenomena (inferences),**
9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.1.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8166) | Identify a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Identify a scientific question 2. Examine reliable sources of informtion to identify what is already known 3. Develop a possible explanation (hypothesis) 4. Plan and carry out an experiment 5. Gather data based on measurement and observations 6. Evaluate the data 7. Use the data to support reasonable explanations, inferences, and conclusions. |  |  |  |
| [SC.912.N.1.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8167) | Recognize a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Recognize a scientific question 2. Use reliable information and identify what is already known 3. Create possible explanation 4. Carry out a planned experiment 5. Record observations 6. Summarize results 7. Reach a reasonable conclusion. |  |  |  |
| [SC.912.N.1.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8168) | Recognize a problem related to a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Observe objects and activities 2. Follow planned procedures 3. Recognize a solution. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.1.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/1857)

Describe and explain what characterizes science and its methods.

**Clarifications:**  
Science is characterized by empirical observations, testable questions, formation of hypotheses, and experimentation that results in stable and replicable results, logical reasoning, and coherent theoretical constructs.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.1.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8169) | Describe the processes used in scientific investigations, including posing a research question, forming a hypothesis, reviewing what is known, collecting evidence, evaluating results, and reaching conclusions. |  |  |  |
| [SC.912.N.1.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8170) | Identify the basic process used in scientific investigations, including questioning, observing, recording, determining, and sharing results. |  |  |  |
| [SC.912.N.1.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8171) | Recognize a process used in science to solve problems, such as observing, following procedures, and recognizing results. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.1.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/1858)

Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.

**Clarifications:**  
Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.1.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8169) | Describe the processes used in scientific investigations, including posing a research question, forming a hypothesis, reviewing what is known, collecting evidence, evaluating results, and reaching conclusions. |  |  |  |
| [SC.912.N.1.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8170) | Identify the basic process used in scientific investigations, including questioning, observing, recording, determining, and sharing results. |  |  |  |
| [SC.912.N.1.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8171) | Recognize a process used in science to solve problems, such as observing, following procedures, and recognizing results. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.N.1.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/1859)

Identify sources of information and assess their reliability according to the strict standards of scientific investigation.

**Clarifications:**  
Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.1.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8166) | Identify a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Identify a scientific question 2. Examine reliable sources of information to identify what is already known 3. Develop a possible explanation (hypothesis) 4. Plan and carry out an experiment 5. Gather data based on measurement and observations 6. Evaluate the data 7. Use the data to support reasonable explanations, inferences, and conclusions. |  |  |  |
| [SC.912.N.1.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8167) | Recognize a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Recognize a scientific question 2. Use reliable information and identify what is already known 3. Create possible explanation 4. Carry out a planned experiment 5. Record observations 6. Summarize results 7. Reach a reasonable conclusion. |  |  |  |
| [SC.912.N.1.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8168) | Recognize a problem related to a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Observe objects and activities 2. Follow planned procedures 3. Recognize a solution. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.N.1.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/1860)

Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.

**Clarifications:**  
Recognize that contributions to science can be made and have been made by people from all over the world.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.1.In.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8172) | Identify that scientific investigations are sometimes repeated in different locations. |  |  |  |
| [SC.912.N.1.Su.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8173) | Recognize that scientific investigations can be repeated in different locations. |  |  |  |
| [SC.912.N.1.Pa.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8174) | Recognize that when a variety of common activities are repeated the same way, the outcomes are the same. |  |  |  |
| Resources: |  |  |  |  |

### [**SC.912.N.1.6:**](https://www.cpalms.org/Public/PreviewStandard/Preview/1861)

Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.

**Clarifications:**  
Collect data/evidence and use tables/graphs to draw conclusions and make inferences based on patterns or trends in the data.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.1.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8166) | Identify a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Identify a scientific question 2. Examine reliable sources of information to identify what is already known 3. Develop a possible explanation (hypothesis) 4. Plan and carry out an experiment 5. Gather data based on measurement and observations 6. Evaluate the data 7. Use the data to support reasonable explanations, inferences, and conclusions. |  |  |  |
| [SC.912.N.1.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8167) | Recognize a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Recognize a scientific question 2. Use reliable information and identify what is already known 3. Create possible explanation 4. Carry out a planned experiment 5. Record observations 6. Summarize results 7. Reach a reasonable conclusion. |  |  |  |
| [SC.912.N.1.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8168) | Recognize a problem related to a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Observe objects and activities 2. Follow planned procedures 3. Recognize a solution. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.N.1.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/1862)

Recognize the role of creativity in constructing scientific questions, methods and explanations.

**Clarifications:**  
Work through difficult problems using creativity, and critical and analytical thinking in problem solving (e.g. convergent versus divergent thinking and creativity in problem solving).

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.1.In.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8175) | Identify that scientists use many different methods in conducting their research. |  |  |  |
| [SC.912.N.1.Su.4:](file:///C:\Public\PreviewAccessPoint\Preview\8176) | Recognize that scientists use a variety of methods to get answers to their research questions. |  |  |  |
| [SC.912.N.1.Pa.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8177) | Recognize that people try different ways to complete a task when the first one does not work. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.2.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/1866)

Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).

**Clarifications:**  
Science is the systematic and organized inquiry that is derived from observations and experimentation that can be verified or tested by further investigation to explain natural phenomena (e.g. Science is testable, pseudo-science is not; science seeks falsifications, pseudo-science seeks confirmations.)

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.2.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8178) | Identify examples of investigations that involve science. |  |  |  |
| [SC.912.N.2.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8179) | Identify questions that can be answered by science. |  |  |  |
| [SC.912.N.2.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8180) | Recognize an example of work by scientists. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.2.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/1867)

Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.

**Clarifications:**  
Identify scientific questions that can be disproved by experimentation/testing. Recognize that pseudoscience is a claim, belief, or practice which is presented as scientific, but does not adhere to strict standards of science (e.g. controlled variables, sample size, replicability, empirical and measurable evidence, and the concept of falsification).

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.2.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8181) | Distinguish between questions that can be answered by science and observable information and questions that can’t be answered by science and observable information. |  |  |  |
| [SC.912.N.2.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8179) | Identify questions that can be answered by science. |  |  |  |
| [SC.912.N.2.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8180) | Recognize an example of work by scientists. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.2.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/1868)

Identify examples of pseudoscience (such as astrology, phrenology) in society.

**Clarifications:**  
Determine if the phenomenon (event) can be observed, measured, and tested through scientific experimentation.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.2.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8181) | Distinguish between questions that can be answered by science and observable information and questions that can’t be answered by science and observable information. |  |  |  |
| [SC.912.N.2.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8179) | Identify questions that can be answered by science. |  |  |  |
| [SC.912.N.2.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8180) | Recognize an example of work by scientists. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.2.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/1869)

Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.

**Clarifications:**  
Recognize that ideas with the most durable explanatory power become established theories, but scientific explanations are continually subjected to change in the face of new evidence.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.2.In.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8182) | Recognize that scientific knowledge can be challenged or confirmed by new investigations and reexamination. |  |  |  |
| [SC.912.N.2.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8183) | Recognize that what is known about science can change based on new information. |  |  |  |
| [SC.912.N.2.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8184) | Recognize a variety of cause-effect relationships related to science. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.N.2.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/1870)

Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.

**Clarifications:**  
Recognize that scientific questions, observations, and conclusions may be influenced by the existing state of scientific knowledge, the social and cultural context of the researcher, and the observer's experiences and expectations. Identify possible bias in qualitative and quantitative data analysis.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.2.In.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8185) | Identify major contributions of scientists. |  |  |  |
| [SC.912.N.2.Su.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8186) | Recognize major contributions of scientists. |  |  |  |
| [SC.912.N.2.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8180) | Recognize an example of work by scientists. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.3.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/1871)

Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.

**Clarifications:**  
Explain that a scientific theory is a well-tested hypothesis

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.3.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8187) | Recognize that a scientific theory is developed by repeated investigations of many scientists and agreement on the likely explanation. |  |  |  |
| [SC.912.N.3.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8188) | Recognize that scientific theories are supported by evidence and agreement of many scientists. |  |  |  |
| [SC.912.N.3.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8189) | Recognize examples of cause-effect descriptions or explanations related to science. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.3.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/1872)

Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.

**Clarifications:**  
Recognize that scientific argument, disagreement, discourse, and discussion create a broader and more accurate understanding of natural processes and events.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.3.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8187) | Recognize that a scientific theory is developed by repeated investigations of many scientists and agreement on the likely explanation. |  |  |  |
| [SC.912.N.3.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8188) | Recognize that scientific theories are supported by evidence and agreement of many scientists. |  |  |  |
| [SC.912.N.3.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8189) | Recognize examples of cause-effect descriptions or explanations related to science. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.3.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/1873)

Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships.

**Clarifications:**  
Recognize that a scientific theory provides a broad explanation of many observed phenomena while a scientific law describes how something behaves.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.3.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8190) | Identify examples of scientific laws that describe relationships in the natural world, such as Newton’s laws. |  |  |  |
| [SC.912.N.3.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8191) | Recognize examples of scientific laws that describe relationships in nature, such as Newton’s laws. |  |  |  |
| [SC.912.N.3.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8189) | Recognize examples of cause-effect descriptions or explanations related to science. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.N.3.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/1874)

Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions.

**Clarifications:**  
Recognize that theories do not become laws, theories explain laws. Recognize that not all scientific laws have accompanying explanatory theories.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.3.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8187) | Recognize that a scientific theory is developed by repeated investigations of many scientists and agreement on the likely explanation. |  |  |  |
| [SC.912.N.3.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8190) | Identify examples of scientific laws that describe relationships in the natural world, such as Newton’s laws. |  |  |  |
| [SC.912.N.3.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8188) | Recognize that scientific theories are supported by evidence and agreement of many scientists. |  |  |  |
| [SC.912.N.3.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8191) | Recognize examples of scientific laws that describe relationships in nature, such as Newton’s laws. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.N.3.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/1875)

Describe the function of models in science, and identify the wide range of models used in science.

**Clarifications:**  
Describe how models are used by scientists to explain observations of nature.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.3.In.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8192) | Identify ways models are used in the study of science. |  |  |  |
| [SC.912.N.3.Su.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8193) | Recognize ways models are used in the study of science. |  |  |  |
| [SC.912.N.3.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8194) | Recognize a model used in the context of one’s own study of science. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.4.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/1876)

Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.

**Clarifications:**  
Recognize that no single universal step-by-step scientific method captures the complexity of doing science. A number of shared values and perspectives characterize a scientific approach.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.4.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8195) | Identify ways scientific knowledge and problem solving benefit people. |  |  |  |
| [SC.912.N.4.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8196) | Recognize ways scientific knowledge and problem solving benefit people. |  |  |  |
| [SC.912.N.4.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8197) | Recognize science information that helps people. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.N.4.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/1877)

Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental.

**Clarifications:**  
Identify examples of technologies, objects, and processes that have been modified to advance society, and explain why and how they were modified. Discuss ethics in scientific research to advance society (e.g. global climate change, historical development of medicine and medical practices).

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.N.4.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8198) | Identify that costs and benefits must be considered when choosing a strategy for solving a problem. |  |  |  |
| [SC.912.N.4.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8199) | Recognize that some strategies may cost more to solve a problem. |  |  |  |
| [SC.912.N.4.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8200) | Recognize a local problem that can be solved by science. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.8.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/1902)

Differentiate among the four states of matter.

**Clarifications:**  
Differentiate among the four states of matter (solid, liquid, gas and plasma) in terms of energy, particle motion, and phase transitions. (Note: Currently five states of matter have been identified.)

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.8.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8257) | Classify states of matter as solid, liquid, and gaseous. |  |  |  |
| [SC.912.P.8.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8258) | Identify examples of states of matter as solid, liquid, and gaseous. |  |  |  |
| [SC.912.P.8.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8259) | Select an example of a common solid, liquid, and gas. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.8.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/1903)

Differentiate between physical and chemical properties and physical and chemical changes of matter.

**Clarifications:**  
Discuss volume, compressibility, density, conductivity, malleability, reactivity, molecular composition, freezing, melting and boiling points. Describe simple laboratory techniques that can be used to separate homogeneous and heterogeneous mixtures (e.g. filtration, distillation, chromatography, evaporation).

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.8.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8260) | Compare characteristics of physical and chemical changes of matter. |  |  |  |
| [SC.912.P.8.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8261) | Identify examples of physical and chemical changes. |  |  |  |
| [SC.912.P.8.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8262) | Recognize a common chemical change, such as cooking, burning, rusting, or decaying. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.8.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/1905)

Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom.

**Clarifications:**  
Explain that electrons, protons and neutrons are parts of the atom and that the nuclei of atoms are composed of protons and neutrons, which experience forces of attraction and repulsion consistent with their charges and masses.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.8.In.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8263) | Identify the nucleus as the center of an atom. |  |  |  |
| [SC.912.P.8.Su.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8264) | Recognize that atoms are tiny particles in materials, too small to see. |  |  |  |
| [SC.912.P.8.Pa.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8265) | Recognize that the parts of an object can be put together to make a whole. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.8.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/1906)

Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.

**Clarifications:**  
Use the periodic table and electron configuration to determine an element's number of valence electrons and its chemical and physical properties. Explain how chemical properties depend almost entirely on the configuration of the outer electron shell.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.8.In.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8266) | Recognize that the periodic table includes all known elements. |  |  |  |
| [SC.912.P.8.Su.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8267) | Recognize examples of common elements, such as oxygen and hydrogen. |  |  |  |
| [SC.912.P.8.Pa.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8268) | Recognize that the parts of an object can be put together to make a whole. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.8.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/1908)

Interpret formula representations of molecules and compounds in terms of composition and structure.

**Clarifications:**  
Write chemical formulas for simple covalent (HCl, SO2, CO2, and CH4), ionic (Na+ + Cl- +NaCl) and molecular (O2, H2O) compounds. Predict the formulas of ionic compounds based on the number of valence electrons and the charges on the ions.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.8.In.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8272) | Identify formulas for common compounds, such as H2O and CO2. |  |  |  |
| [SC.912.P.8.Su.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8273) | Match common chemical formulas to their common name, such as H2O to water. |  |  |  |
| [SC.912.P.8.Pa.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8271) | Match common compounds to their names or communication symbols. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.8.8:](https://www.cpalms.org/Public/PreviewStandard/Preview/1912)

Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.

**Clarifications:**  
Classify chemical reactions as synthesis (combination), decomposition, single displacement (replacement), double displacement, and combustion.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.8.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8260) | Compare characteristics of physical and chemical changes of matter. |  |  |  |
| [SC.912.P.8.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8261) | Identify examples of physical and chemical changes. |  |  |  |
| [SC.912.P.8.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8262) | Recognize a common chemical change, such as cooking, burning, rusting, or decaying. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.8.11:](https://www.cpalms.org/Public/PreviewStandard/Preview/1910)

Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.

**Clarifications:**  
Use experimental data to illustrate and explain the pH scale to characterize acid and base solutions. Compare and contrast the strengths of various common acids and bases.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.8.In.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/8274) | Identify properties of common acids and bases. |  |  |  |
| [SC.912.P.8.Su.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/8275) | Categorize common materials or foods as acids or bases. |  |  |  |
| [SC.912.P.8.Pa.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/8276) | Recognize that some acids and bases can be dangerous and identify related hazard symbols. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.10.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/1916)

Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.

**Clarifications:**

Differentiate between kinetic and potential energy. Recognize that energy cannot be created or destroyed, only transformed. Identify examples of transformation of energy: Heat to light in incandescent electric light bulbs; Light to heat in laser drills; Electrical to sound in radios; Sound to electrical  in microphones; Electrical to chemical in battery rechargers; Chemical to electrical in dry cells; Mechanical to electrical in generators [power plants]; Nuclear to heat in nuclear reactors; Gravitational potential energy of a falling object is converted to kinetic energy then to heat and sound energy when the object hits the ground.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8279) | Identify examples of energy being transformed from one form to another (conserved quantity). |  |  |  |
| [SC.912.P.10.Su.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8280) | Recognize energy transformations that occur in everyday life, such as solar energy to electricity. |  |  |  |
| [SC.912.P.10.Pa.1:](https://www.cpalms.org/Public/PreviewStandard/Preview/8281) | Observe and recognize examples of the transformation of electrical energy to light and heat. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.10.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/1911)

Compare and contrast work and power qualitatively and quantitatively.

**Clarifications:**

Describe both qualitatively and quantitatively how work can be expressed as a change in mechanical energy, and the concept of power as the rate at which work is done per unit time. Recognize that when a net force, F, acts through a distance on an object of mass, m, work is done on the object.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8282) | Identify power as work done in a certain amount of time using measurable terms, such as watts or horsepower. |  |  |  |
| [SC.912.P.10.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8283) | Recognize the relationship between work and power, such as power is how fast a person or machine does work. |  |  |  |
| [SC.912.P.10.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8284) | Recognize that work requires energy. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.10.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/1918)

Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter.

**Clarifications:**

Explain the mechanisms (convection, conduction and radiation) of heat transfer. Explain how heat is transferred (energy in motion) from a region of higher temperature to a region of lower temperature until equilibrium is established. Solve problems involving heat flow and temperature changes by using known values of specific heat and/or phase change constants (latent heat). Explain the phase transitions and temperature changes demonstrated by a heating or cooling curve.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8285) | Relate the transfer of heat to the states of matter, including gases result from heating, liquids result from cooling a gas, and solids result from further cooling a liquid. |  |  |  |
| [SC.912.P.10.Su.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8286) | Observe and recognize ways that heat travels, such as through space (radiation), through solids (conduction), and through liquids and gases (convection). |  |  |  |
| [SC.912.P.10.Pa.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8287) | Recognize the source and recipient of heat transfer. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.10.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/1865)

Relate temperature to the average molecular kinetic energy.

**Clarifications:**

Recognize that the internal energy of an object includes the energy of random motion of the object's atoms and molecules, often referred to as thermal energy.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8285) | Relate the transfer of heat to the states of matter, including gases result from heating, liquids result from cooling a gas, and solids result from further cooling a liquid. |  |  |  |
| [SC.912.P.10.Su.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8286) | Observe and recognize ways that heat travels, such as through space (radiation), through solids (conduction), and through liquids and gases (convection). |  |  |  |
| [SC.912.P.10.Pa.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8287) | Recognize the source and recipient of heat transfer. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.10.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/1665)

Distinguish between endothermic and exothermic chemical processes.

**Clarifications:**  
Classify chemical reactions and phase changes as exothermic (release thermal energy) or endothermic (absorb thermal energy).

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8289) | Describe a process that gives off heat (exothermic), such as burning, and a process that absorbs heat (endothermic), such as water coming to a boil. |  |  |  |
| [SC.912.P.10.Su.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8290) | Recognize common processes that give off heat (exothermic), such as burning, and processes that absorb heat (endothermic), such as water coming to a boil. |  |  |  |
| [SC.912.P.10.Pa.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8288) | Identify materials that provide protection (insulation) from heat. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.10.10:](https://www.cpalms.org/Public/PreviewStandard/Preview/1921)

Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear).

**Clarifications:**

Recognize and discuss the effect of each force on the structure of matter and the evidence for it.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/8294) | Identify fundamental forces, including gravitational and electromagnetic. |  |  |  |
| [SC.912.P.10.Su.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8295) | Recognize fundamental forces, such as gravitational. |  |  |  |
| [SC.912.P.10.Pa.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8296) | Recognize that an object falls unless stopped (gravity). |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.10.12:](https://www.cpalms.org/Public/PreviewStandard/Preview/1667)

Differentiate between chemical and nuclear reactions.

**Clarifications:**

Describe how chemical reactions involve the rearranging of atoms to form new substances, while nuclear reactions involve the change of atomic nuclei into entirely new atoms. Identify real-world examples where chemical and nuclear reactions occur every day.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8291) | Identify that atoms can be changed to release energy, such as in nuclear power plants, and recognize one related safety issue. |  |  |  |
| [SC.912.P.10.Su.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/8292) | Recognize that nuclear power plants generate electricity and can be dangerous. |  |  |  |
| [SC.912.P.10.Pa.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/8293) | Recognize the universal symbols for radioactive and other hazardous materials. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.10.14:](https://www.cpalms.org/Public/PreviewStandard/Preview/1699)

Differentiate among conductors, semiconductors, and insulators.

**Clarifications:**

Describe band structure, valence electrons, and how the charges flow or rearrange themselves between conductors and insulators.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/8297) | Identify common conductors and insulators of electricity. |  |  |  |
| [SC.912.P.10.Su.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/8298) | Recognize common objects that conduct electricity (conductors) and objects that do not conduct electricity (insulators). |  |  |  |
| [SC.912.P.10.Pa.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/8299) | Recognize safe and unsafe practices related to the use of electricity, such as keeping foreign objects out of electrical sockets and not using electrical devices around water. |  |  |  |
| Resources: |  |  |  |  |

### [SC.912.P.10.15:](https://www.cpalms.org/Public/PreviewStandard/Preview/1700)

Investigate and explain the relationships among current, voltage, resistance, and power.

**Clarifications:**

Use Ohm's and Kirchhoff's laws to explain the relationships among circuits.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.8:](https://www.cpalms.org/Public/PreviewStandard/Preview/8300) | Identify that some electrical devices use different types of power sources and explain what might happen if incorrect electrical components are used. |  |  |  |
| [SC.912.P.10.Su.8:](https://www.cpalms.org/Public/PreviewStandard/Preview/8301) | Recognize that some electrical devices use different types of power sources. |  |  |  |
| [SC.912.P.10.Pa.8:](https://www.cpalms.org/Public/PreviewStandard/Preview/8302) | Demonstrate opening and closing an electrical circuit to turn an electrical device on and off. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.10.18:](https://www.cpalms.org/Public/PreviewStandard/Preview/1926)

Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications.

**Clarifications:**

Describe the electromagnetic spectrum (i.e., radio waves, microwaves, infrared, visible light, ultraviolet, X-rays and gamma rays) in terms of frequency, wavelength and energy. Solve problems involving wavelength, frequency, and energy.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.9:](https://www.cpalms.org/Public/PreviewStandard/Preview/8305) | Identify common applications of electromagnetic waves moving through different media, such as radio waves, microwaves, x-rays, or infrared. |  |  |  |
| [SC.912.P.10.Su.10:](https://www.cpalms.org/Public/PreviewStandard/Preview/8306) | Recognize examples of electromagnetic waves moving through different media, such as microwave ovens, radios, and x-rays. |  |  |  |
| [SC.912.P.10.Pa.10:](https://www.cpalms.org/Public/PreviewStandard/Preview/8307) | Recognize primary and secondary colors in visible light. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.10.21:](https://www.cpalms.org/Public/PreviewStandard/Preview/1929)

Qualitatively describe the shift in frequency in sound or electromagnetic waves due to the relative motion of a source or a receiver.

**Clarifications:**

Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler effect).

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.10.In.9:](https://www.cpalms.org/Public/PreviewStandard/Preview/8305) | Identify common applications of electromagnetic waves moving through different media, such as radio waves, microwaves, x-rays, or infrared. |  |  |  |
| [SC.912.P.10.Su.10:](https://www.cpalms.org/Public/PreviewStandard/Preview/8306) | Recognize examples of electromagnetic waves moving through different media, such as microwave ovens, radios, and x-rays. |  |  |  |
| [SC.912.P.10.Pa.10:](https://www.cpalms.org/Public/PreviewStandard/Preview/8307) | Recognize primary and secondary colors in visible light. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.12.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/1932)

Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time.

**Clarifications:**

Solve problems involving distance, velocity, speed, and acceleration. Create and interpret graphs of 1-dimensional motion, such as position versus time, distance versus time, speed versus time, velocity versus time, and acceleration versus time where acceleration is constant.

Florida Standards Connections: MAFS.912.N-VM.1.3 (+) Solve problems involving velocity and other quantities that can be represented by vectors.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.12.In.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8311) | Identify acceleration as a change in speed or direction. |  |  |  |
| [SC.912.P.12.Su.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8312) | Recognize that acceleration generally involves a change in speed. |  |  |  |
| [SC.912.P.12.Pa.2:](https://www.cpalms.org/Public/PreviewStandard/Preview/8313) | Identify the speed and direction of a moving object, including fast and slow, up and down, round and round, straight line. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.12.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/1933)

Interpret and apply Newton's three laws of motion.

**Clarifications:**

Explain that when the net force on an object is zero, no acceleration occurs; thus, a moving object continues to move at a constant speed in the same direction, or, if at rest, it remains at rest (Newton's first law). Explain that when a net force is applied to an object its motion will change, or accelerate (according to Newton's second law, F = ma). Predict and explain how when one object exerts a force on a second object, the second object always exerts a force of equal magnitude but of opposite direction and force back on the first: F1 on 2 = -F1 on 1 (Newton's third law).

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.12.In.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8314) | Recognize various situations that show Newton’s third law of motion: for every action there is an equal and opposite reaction. |  |  |  |
| [SC.912.P.12.Su.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8315) | Recognize the action and reaction in a situation that show Newton’s third law of motion: for every action there is an equal and opposite reaction. |  |  |  |
| [SC.912.P.12.Pa.3:](https://www.cpalms.org/Public/PreviewStandard/Preview/8316) | Identify the source of the force moving an object. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.12.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/1934)

Describe how the gravitational force between two objects depends on their masses and the distance between them.

**Clarifications:**

Describe Newton's law of universal gravitation in terms of the attraction between two objects, their masses, and the inverse square of the distance between them.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.12.In.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8317) | Identify examples of how gravity attracts other objects, such as people to Earth or orbits of planets in the Solar System. |  |  |  |
| [SC.912.P.12.Su.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8318) | Identify that gravity is a force that attracts objects. |  |  |  |
| [SC.912.P.12.Pa.4:](https://www.cpalms.org/Public/PreviewStandard/Preview/8319) | Recognize that things fall down toward Earth unless stopped or held up (gravity). |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.12.7:](https://www.cpalms.org/Public/PreviewStandard/Preview/1936)

Recognize that nothing travels faster than the speed of light in vacuum which is the same for all observers no matter how they or the light source are moving.

**Clarifications:**

Recognize that regardless of the speed of an observer or source, *in a vacuum* the speed of light is always *c*.

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.12.In.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/8320) | Recognize that the speed of light is always the same. |  |  |  |
| [SC.912.P.12.Su.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/8321) | Recognize that light travels very fast. |  |  |  |
| [SC.912.P.12.Pa.5:](https://www.cpalms.org/Public/PreviewStandard/Preview/8322) | Recognize ways to stop light from traveling, such as closing a door. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.12.10:](https://www.cpalms.org/Public/PreviewStandard/Preview/1939)

Interpret the behavior of ideal gases in terms of kinetic molecular theory.

**Clarifications:**

Using the kinetic molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), pressure and temperature (Gay-Lussac's law), and number of particles in a gas sample (Avogadro's hypothesis).

### Related Access Points

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [SC.912.P.12.In.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8323) | Identify that gases exert pressure in a closed surface, such as pressure inside a basketball or a hot air balloon. |  |  |  |
| [SC.912.P.12.Su.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8324) | Recognize that a gas can exert pressure, such as in balloons, car tires, or pool floats. |  |  |  |
| [SC.912.P.12.Pa.6:](https://www.cpalms.org/Public/PreviewStandard/Preview/8325) | Recognize that some objects contain air, such as balloons, tires, and balls. |  |  |  |
| Resources: |  |  |  |  |

[SC.912.P.12.11:](https://www.cpalms.org/Public/PreviewStandard/Preview/1940)

Describe phase transitions in terms of kinetic molecular theory.

**Clarifications:**

Explain, at the molecular level, the behavior of matter as it undergoes phase transitions.

[SC.912.P.12.12:](https://www.cpalms.org/Public/PreviewStandard/Preview/1942)

Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction.

**Clarifications:**

Various factors could include:  temperature, pressure, solvent and/or solute concentration, sterics, surface area, and catalysts. The rate of reaction is determined by the activation energy, and the pathway of the reaction can be shorter in the presence of enzymes or catalysts. Examples may include: decomposition of hydrogen peroxide using manganese (IV) oxide; nitration of benzene using concentrated sulfuric acid; hydrogenation of a C=C double bond using nickel.

**Access Courses:** Access courses are intended only for students with a significant cognitive disability. Access courses are designed to provide students with access to the general curriculum. Access points reflect increasing levels of complexity and depth of knowledge aligned with grade-level expectations. The access points included in access courses are intentionally designed to foster high expectations for students with significant cognitive disabilities.   
  
Access points in the subject areas of science, social studies, art, dance, physical education, theatre, and health provide tiered access to the general curriculum through three levels of access points (Participatory, Supported, and Independent). Access points in English language arts and mathematics do not contain these tiers, but contain Essential Understandings (or EUs). EUs consist of skills at varying levels of complexity and are a resource when planning for instruction.

**English Language Development ELD Standards Special Notes Section:**

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Social Studies.  For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL’s need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: [Click here](http://www.cpalms.org/uploads/docs/standards/eld/SC.pdf)

For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at [Click here](mailto:sala@fldoe.org).