The Nature of Science
Measurement Topic: Scientific Knowledge
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Comparing the results of similar experiments and determining reasons for any inconsistencies (UNIT: Introduction to Science) • Constructing reasonable scientific explanations supported by facts found in books or evidence from observations and/or investigations (UNIT: Introduction to Science) • Differentiating between observation and inference in scientific explanations (UNIT: Introduction to Science)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements

Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:**
	• Recognizing or recalling specific terminology such as:
	  o Observation
	  o Inference
	• Performing basic processes, such as:
	  o Recognizing or recalling examples of the reasons investigations might turn out differently
	  o Recognizing or recalling examples of appropriate evidence used to back up scientific explanations

1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Nature of Science
Measurement Topic: Scientific Inquiry – The Scientific Method
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Planning and conducting simple investigations *(e.g., formulating a testable question, planning a fair test, making systematic observations, and developing logical conclusions)* (UNIT: Introduction to Science)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Investigation o Fair test o Logical conclusions • Performing basic processes, such as: o Identifying the parts of and conducting a teacher provided investigation
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Nature of Science
Measurement Topic: Scientific Inquiry – Data Collection and Analysis
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Making accurate measurements with appropriate units (centimeters, meters, Celsius, Fahrenheit, grams, seconds, minutes) (UNIT: Introduction to Science) • Safely using appropriate tools and simple equipment, for investigations, to gather scientific data and extend the senses (UNIT: Introduction to Science) • Communicating the results of investigations and describing the investigations in ways that enable others to repeat them (UNIT: Introduction to Science) • Organizing, displaying, and interpreting data from observations and investigations in simple bar graphs, line plots, line graphs, and/or stem-and-leaf plots (UNIT: Introduction to Science)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements

Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:**
	• Recognizing or recalling specific terminology such as:
	  o Volume,
	  o Capacity
	  o Mass
	  o Temperature
	• Performing basic processes, such as:
	  o Recognizing or recalling accurate statements about or examples of measurements of length, height, weight, mass, temperature, distance and area
	  o Recognizing or recalling accurate statements about safety procedures when conducting an investigation
	  o Recognizing or recalling accurate statements about the importance of keeping accurate records when performing investigations
	  o Recognizing or recalling examples of bar graphs, line plots and stem-and-leaf plots

1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Nature of Science
Measurement Topic: Scientific Enterprise – Science and Society
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Identifying scientists of various groups *(i.e. gender, country of origin, socioeconomic status, age)* and their contributions (UNIT: Introduction to Science)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Diversity o Scientific enterprise • Performing basic processes, such as: o Recognizing or recalling accurate statements about scientists in a grade level appropriate area
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Nature of Science
Measurement Topic: Common Themes in Science
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Describing how the parts of a system work together (UNIT: Introduction to Science) • Identifying and measuring things that change and describing the different ways they change (UNIT: Introduction to Science) • Identifying objects that are at the extremes in size, weights, ages and speeds (UNIT: Introduction to Science) • Explaining the role of models in studying objects, events, and processes (UNIT: Introduction to Science)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Scale o Model o System • Performing basic processes, such as: o Recognizing or recalling accurate statements about the parts of a system o Recognizing or recalling examples of things that change o Recognizing or recalling examples of extremes o Identifying objects, events and processes that can be studied best by using models
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Living Environment
Measurement Topic: Needs of Organisms
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Explaining the necessity of food for the survival, growth, and repair of animals (UNIT: Ecosystems)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Repair • Performing basic processes, such as: o Recognizing or recalling accurate statements about the necessity of food
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Living Environment
Measurement Topic: Plant and Animal Adaptations
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Identifying individual differences in organisms from the same population that could give them an advantage or disadvantage in the competition for resources and reproduction (UNIT: Species Over Time)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Competition o Reproduction • Performing basic processes, such as: o Recognizing or recalling accurate statements about the adaptive features of animals
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Living Environment
Measurement Topic: Fossils and Extinction
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Analyzing organisms and environmental conditions of the past using fossil evidence (UNIT: Species Over Time) • Comparing fossils with each other and with living organisms to determine similarities and differences (UNIT: Species Over Time) • Describing processes (human related, natural events) that can lead to the extinction of a species (UNIT: Species Over Time)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Environmental Conditions o Extinction • Performing basic processes, such as: o Recognizing or recalling accurate statements about information from fossil evidence about organisms and environmental conditions of the past o Recognizing or recalling accurate statements about or examples of the similarities and differences between fossils and living things o Recognizing or recalling accurate statements about the processes that lead to the extinction of species
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Living Environment
Measurement Topic: Food Chains and Webs
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Analyzing the role of plants in food chains and webs (UNIT: Ecosystems) • Classifying various organisms as producers, herbivores, carnivores, omnivores, or decomposers (UNIT: Ecosystems) • Comparing and contrasting simple food chains and food webs (UNIT: Ecosystems)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements

Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:**
	• Recognizing or recalling specific terminology such as:
	  o Producers
	  o Herbivores
	  o Omnivores
	  o Food web
	• Performing basic processes, such as:
	  o Recognizing or recalling accurate statements about simple food chains and webs

1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Living Environment
Measurement Topic: Ecosystems
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Describing components of an ecosystem that have an effect on the behavior and types of organisms in the ecosystem (UNIT: Ecosystems) • Classifying the interaction of organisms (*e.g., predator/prey, beneficial to both organisms, beneficial to one and harmful to another, or beneficial to one and neither harmful nor helpful to another*) (UNIT: Ecosystems) • Describing changes to an ecosystem from natural causes *(e.g., disease, fire, flood, erosion, drought, and succession)* (UNIT: Ecosystems) • Describing changes to an ecosystem from human causes (UNIT: Ecosystems) • Describing changes (beneficial, neutral or detrimental) caused by organisms in the ecosystem (UNIT: Ecosystems)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Predator o Prey o Ecosystem, • Performing basic processes, such as: o Recognizing or recalling accurate statements about or examples of the interaction of organisms o Recognizing or recalling accurate statements about the components of an ecosystem o Recognizing or recalling accurate statements about the changes to an ecosystem caused by natural causes, humans and organisms living in the ecosystem
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Living Environment
Measurement Topic: Genetics and Heredity
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Differentiating between those traits shared between parent and offspring that are inherited and those that are learned (UNIT: Species Over Time)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Inherited traits o Learned traits
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

The Living Environment
Measurement Topic: Animal Body Structures and Functions
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Describing the parts of the ear and their functions (UNIT: Sound)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Cochlea • Performing basic processes, such as: o Recognizing or recalling accurate statements about the parts of the ear and its functions
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

Physical Science
Measurement Topic: Sound
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Describing the relationship between vibrations and the production of sound (UNIT: Sound) • Describing the variables that affect pitch (UNIT: Sound) • Explaining how sound energy travels through solids, liquids, and gas (UNIT: Sound) • Comparing and contrasting sounds produced by various objects in terms of pitch and amplitude (UNIT: Sound)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Pitch o Amplitude • Performing basic processes, such as: o Recognizing or recalling accurate statements about the relationship between vibrations and the production of sound o Recognizing or recalling accurate statements about the variables that affect pitch o Recognizing or recalling accurate statements about sound energy moving through solids, liquids and gasses o Recognizing or recalling accurate statements about the sound, amplitude and pitch
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

Physical Science
Measurement Topic: Light
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Describing the refraction, reflection, transmission, and/or absorption of light as it interacts with objects that are transparent, translucent, and opaque (UNIT: Light) • Describing the visible spectrum of light (UNIT: Light)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Refraction o Reflection o Transmission o Absorption • Performing basic processes, such as: o Recognizing or recalling accurate statements about or examples of the refraction, reflection, transmission, and/or absorption of light o Recognizing or recalling the components of the visible spectrum of light
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

Earth and Space Science
Measurement Topic: The Changing Earth
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Comparing and contrasting major features of the earth's surface *(e.g., ocean, sea, lake, pond, mountain, hill, mesa, plateau)* (UNIT: The Changing Surface of Earth) • Describing the variety of forces involved in weathering, erosion and deposition (UNIT: The Changing Surface of Earth) • Describing how physical/mechanical weathering (e.g., wind, water, ice, and gravity) causes change to the Earth's surface over time (UNIT: The Changing Surface of Earth)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Mesa o Mechanical weathering o Erosion • Performing basic processes, such as: o Recognizing or recalling accurate statements about physical/mechanical weathering o Recognizing or recalling accurate statements about erosion and deposition
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements

Earth and Space Science
Measurement Topic: Earth Materials and Responsible Use
Grade Four

Evidence shows student has met or exceeded the learning target

4.0	**In addition to score 3.0, in-depth inferences and applications that go beyond what was taught**
3.5	In addition to score 3.0, in-depth inferences and applications with partial success
Score 3.0	**Student exhibits no major errors or omissions and demonstrates understanding by:** • Comparing and contrasting types of earth materials (UNIT: Rocks and Minerals) • Describing properties used to identify minerals and determine the mineral makeup of rocks (UNIT: Rocks and Minerals) • Comparing and contrasting the observable features and formation processes of igneous, sedimentary, and metamorphic rocks (UNIT: Rocks and Minerals) • Describing the identifying properties of common rock samples (UNIT: Rocks and Minerals) • Comparing the components and properties (e.g., compressibility, water retention, color) of various soil types (UNIT: Ecosystems) • Demonstrating and describing the practices of reducing, reusing and recycling and other conservation measures (UNIT: Conservation of Natural Resources) • Classifying manufactured products according to the Earth materials from which they are made (UNIT: Conservation of Natural Resources)

Evidence shows misunderstanding, misconceptions, or omissions

2.5	No major errors or omissions regarding score 2.0 elements with partial knowledge of score 3.0 elements
Score 2.0	**Student exhibits major errors or omissions with score 3.0 elements. No major omissions regarding the simpler details and processes such as:** • Recognizing or recalling specific terminology such as: o Metamorphic o Sedimentary o Gabbro • Performing basic processes, such as: o Recognizing or recalling examples of igneous , sedimentary and metamorphic rocks o Recognizing or recalling the properties used to identify minerals and mineral makeup of rocks o Recognizing or recalling accurate statements about the properties of soil types o Identifying examples of Earth materials that can be recycled o Recognizing or recalling examples of reduce, reuse and recycle or other conservation measures o Recognizing or recalling accurate statements about manufactured products and the material from which they are made
1.5	Partial knowledge of score 2.0 elements Major errors or omissions regarding score 3.0 elements
1.0	**With assistance, student demonstrates partial understanding of some of score 2.0 elements and some of score 3.0 elements**
0.5	With assistance, a partial understanding of some of score 2.0 elements but not score 3.0 elements