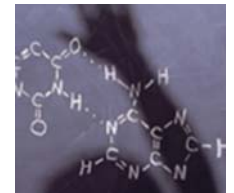


# Grade 3 Science

## STAAR Field Guide



## STAAR

The State of Texas of Assessment of Academic Readiness (STAAR) is based on the Texas Essential Knowledge and Skills (TEKS). Most of the state standards, if they are eligible for assessment in a multiple choice/short answer format, will be assessed on STAAR.

STAAR is designed as a vertical system. Just as the TEKS are structured in a vertically aligned manner, so is STAAR. Learning from one grade level is aligned with learning at the next grade level. Some skills are developed over the course of a student's educational career from kindergarten through high school, while other skills and learning may begin at a particular grade level and serve as the foundation for later learning. STAAR is an assessment of academic readiness. In other words, we can sum up the variation between the current assessment program (TAKS) and STAAR by reframing the questions we are asking.

**TAKS:** TAKS was designed to help teachers answer this question:

- Did students learn what they were supposed to learn in the current year's grade?

**STAAR:** STAAR is designed to ensure that teachers answer these questions:

- Did students learn what they were supposed to learn in the current year's grade?
- Are students ready for the next grade?
- And are they also ready for the grade after that?

So what's the big deal about that shift? Fundamentally, it requires that teachers relook at curriculum and instruction in a very different way than they have under previous assessment systems (TABS, TEAMS, TAAS, TAKS). Not only are teachers required to have a deep understanding of the content of the grade level they are teaching, but they must also be firmly grounded in how the content of that current grade level prepares students for subsequent grade levels. Overemphasis on grade level attainment ONLY may create a context where teachers in subsequent grade levels have to reteach foundational skills to accommodate for the gap created by the lack of appropriate emphasis earlier. It may require students "unlearn" previous ways of conceptualizing content and essentially start all over.

## STAAR: focus, clarity, depth

[The TEKS] are designed to prepare students to succeed in college, in careers and to compete globally. However, consistent with a growing national consensus regarding the need to provide a more clearly articulated K–16 education program that focuses on fewer skills and addresses those skills in a deeper manner (TEA).

STAAR is designed around three concepts: focus, clarity, and depth:

**Focus:** STAAR will focus on grade level standards that are critical for that grade level and the ones to follow.

**Clarity:** STAAR will assess the eligible TEKS at a level of specificity that allow students to demonstrate mastery.

**Depth:** STAAR will assess the eligible TEKS at a higher cognitive level and in novel contexts.

## STAAR: the assessed curriculum – readiness, supporting, and process standards

A key concept that underpins the design of STAAR is that all standards (TEKS) do not play the same role in student learning. Simply stated, some standards (TEKS) have greater priority than others – they are so vital to the current grade level or content area that they must be learned to a level of mastery to ensure readiness (success) in the next grade levels. Other standards are important in helping to support learning, to maintain a previously learned standard, or to prepare students for a more complex standard taught at a later grade.

By assessing the TEKS that are most critical to the content area in a more rigorous ways, STAAR will better measure the academic performance of students as they progress from elementary to middle to high school. Based on educator committee recommendations, for each grade level or course, TEA has identified a set of readiness standards - the TEKS which help students develop deep and enduring understanding of the concepts in each content area. The remaining knowledge and skills are considered supporting standards and will be assessed less frequently, but still play a very important role in learning.

**Readiness standards** have the following characteristics:

- They are essential for success in the current grade or course.
- They are important for preparedness for the next grade or course.
- They support college and career readiness.
- They necessitate in-depth instruction.
- They address broad and deep ideas.

**Supporting standards** have the following characteristics:

- Although introduced in the current grade or course, they may be emphasized in a subsequent year.
- Although reinforced in the current grade or course, they may be emphasized in a previous year.
- They play a role in preparing students for the next grade or course but not a central role.
- They address more narrowly defined ideas.

**STAAR assesses the eligible TEKS at the level at which the TEKS were written.**

STAAR is a more rigorous assessment than TAKS (and TAAS, TEAMS, TABS before that). The level of rigor is connected with the cognitive level identified in the TEKS themselves. Simply stated, STAAR will measure the eligible TEKS at the level at which they are written.

The rigor of items will be increased by

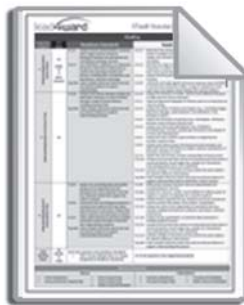
- assessing content and skills at a greater depth and higher level of cognitive complexity
- assessing more than one student expectation in a test item

The rigor of the tests will be increased by

- assessing fewer, yet more focused student expectations and assessing them multiple times and in more complex ways
- including a greater number of rigorous items on the test, thereby increasing the overall test difficulty

## About the STAAR Field Guide

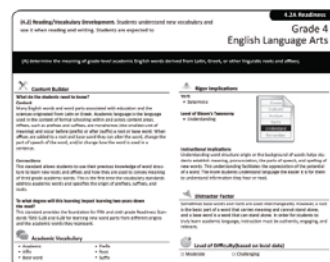
The STAAR Field Guide for Teachers is designed as a tool to help teachers prepare for instruction. The tools and resources in this guide are designed to supplement local curriculum documents by helping teachers understand how the design and components of STAAR are connected to the scope and sequence of instruction. In order to help students attain even higher levels of learning as assessed on STAAR, teachers need to plan for increasing levels of rigor. This guide contains the following components:



**STAAR Grade Level Snapshot** – one page overview of the standards assessed on STAAR, how those standards are classified (readiness, supporting, or process), the reporting categories around which those standards are clustered, and the number of items that will be on the test from each reporting category and from each type of standard.



**STAAR Readiness Standards: A Vertical Look** – a vertical look at the readiness standards in grade bands to show the progression of the assessment between grade levels



**STAAR Readiness and Supporting Standards Analysis Sheets**– overviews of the nature of each readiness and supporting standard assessed on STAAR, designed to be used in planning to build teacher content knowledge and ensure that current grade level instruction reinforces previous learning and prepares students for future grade levels.



**STAAR-Curriculum Planning Worksheet** – a tool to organize the pages in this guide to be used in planning and professional development

### Steps to Success

1. Download the TEA Documents to add to your STAAR Teacher Field Guide
  - STAAR Blueprint
  - Assessed Curriculum Documents
  - STAAR Test Design
  - STAAR Reference Materials
2. Review the STAAR Snapshot for your course/grade level and content area
  - Note the readiness standards
  - With your team, explore why those TEKS are classified as readiness standards – which criteria do they meet
  - Review the supporting standards and note any that may have played a larger role on TAKS
3. Review the STAAR Readiness Standards: A Vertical Look
  - Discuss how the readiness standards connect between grade levels
  - Explore the specific differences between the aligned readiness standards at each grade level
4. Review the components of the STAAR Readiness and Supporting Standards Analysis Sheets
  - Use the samples on pages 6 and 7 to explore the analysis sheets
  - Add additional information based on the discussion on the team
5. Create STAAR-Curriculum Planning Packets for each unit or grading period
  - Collect either the Scope and Sequence document (if it includes the TEKS standards for each unit of instruction) OR Unit Plan documents (where the TEKS standards are bundled together into units of instruction)
  - The STAAR Field Guide is arranged by standard type (readiness or supporting) in numeric order of the standards. You may need to photocopy certain pages/standards if they are repeated throughout multiple units.
  - Use the scope and sequence or unit plan documents to identify the TEKS taught in each unit/grading period
  - Compile the STAAR Readiness and Supporting Standards Analysis Sheets that correspond to the TEKS each unit/grading period
  - After the pages/standards are sorted into their appropriate unit, create a method of organizing the documents (binder, folder, file, etc).
6. Plan for instruction
  - Collect the curriculum documents used for planning
  - Use the STAAR- Curriculum Planning Worksheet as you plan each unit. The worksheet provides guiding questions and reflection opportunities to aide you in maximizing the material in the STAAR Field Guide.
  - Determine where the team needs additional learning
  - Evaluate instructional materials
  - Review the plan for appropriate levels of rigor

## How to read STAAR Readiness Standards analysis pages

Student Expectation

Texas Essential Knowledge and  
Skills Statement

Standard and Indication of  
"Readiness" or "Supporting"

Grade and Subject

**Content Builder-** The basics of the content within the standard are extracted in a bulleted list. Connections to prior learning/other standards are explained. Future implications of mastery of this standard are described to assist in understanding the impact of this learning in the future.

**Academic Vocabulary-** Vocabulary words are extracted directly from the standard and/or associated with the instruction of the content within the standard.

**Level of Difficulty-** Standards are labeled either Challenging or Moderate. This determination is made by the campus using previous year data.

**Rigor Implications-** Uses the verb(s) from the Student Expectation to indicate the cognitive complexity of the standard and which level of Bloom's Taxonomy should be addressed during instruction, Instructional implications are also highlighted.

**Distractor Factor** - Alerts teachers to areas where students traditionally struggle, have misconceptions, or may need reinforcement.

The screenshot shows a detailed analysis of the standard 5.3A. At the top, it identifies the standard as '5.3A Readiness' for 'Grade 5 Math'. The 'Student Expectation' is: '(5.3) Number, operation, and quantitative reasoning. The student adds, subtracts, multiplies, and divides to solve meaningful problems. The student is expected to (A) use addition and subtraction to solve problems involving whole numbers and decimals;'. The 'Texas Essential Knowledge and Skills Statement' is: '(5.3) Number, operation, and quantitative reasoning. The student adds, subtracts, multiplies, and divides to solve meaningful problems. The student is expected to'. The 'Content Builder' section lists 'Addition' (whole numbers, decimals) and 'Subtraction' (whole numbers, decimals). It also includes 'Connections' to previous grades and 'Future implications'. The 'Rigor Implications' section lists the verb 'Add', 'Subtract', and 'Solve', and the 'Level of Bloom's Taxonomy' as 'Applying'. It includes a 'Distractor Factor' alerting teachers to student struggles with adding and subtracting. The 'Academic Vocabulary' section lists 'Add', 'Subtract', and 'Decimal'. The 'Level of Difficulty' is labeled as 'Challenging'. The page is numbered '4' and has a copyright notice '© 2011 lead4ward'.

## How to read STAAR Supporting Standards analysis pages

Student Expectation

Texas Essential Knowledge and  
Skills Statement

Standard and Indication of  
“Readiness” or “Supporting”

Grade and Subject

**Supporting the Readiness  
Standards** - Most supporting  
standards support a readiness  
standard in the current grade  
level. This section discusses the  
relationships of the standards  
that are often taught together.

**Academic Vocabulary**- Words  
are extracted directly from the  
standard and/or associated with  
the instruction of the content  
within the standard.

**5.1B Supporting**  
Grade 5 Math

(5.1) Number, operation, and quantitative reasoning. The student uses place value to represent whole numbers and decimals. The student is expected to

**(B) use place value to read, write, compare, and order decimals through the thousandths place.**

**Supporting the Readiness Standards**  
What Readiness Standard(s) or concepts from the Readiness Standards does it support?  
5.3A use addition and subtraction to solve problems involving whole numbers and decimals.  
How does it support the Readiness Standard(s)?  
This standard supports 5.3A by providing students continued practice reading, writing, comparing, and ordering decimals. This will support students as they solve addition and subtraction problems involving decimals.  
*May be adjusted according to local curriculum.*

**Academic Vocabulary**

- Compare
- Order
- Decimal
- Tenths
- Hundredths
- Thousandths

**Rigor Implications**  
Verb  
• Write  
• Compare  
• Order  
Level of Bloom's Taxonomy  
• Analyzing

**Instructional Implications**  
To appropriately adhere to the standard, students should be provided the opportunity to practice reading numbers aloud using place value, writing numbers that have been dictated using place value, and comparing and ordering decimals based on their the value.

**Rigor Implications**- Uses the verb(s) from the Student Expectation to indicate the cognitive complexity of the standard and which level of Bloom's Taxonomy should be addressed during instruction, Instructional implications are also highlighted.

## Curriculum – STAAR Planning Worksheet



Course/Grade Level \_\_\_\_\_

Readiness Standards

Content Area \_\_\_\_\_

Grading Period/Unit \_\_\_\_\_

Supporting Standards

Action Steps	Guiding Questions & Notes
Read each analysis page.	<p>What stands out?</p> <p>How many of the standards are a “Challenging” level of difficulty?</p> <p>How many of the standards are a high level of rigor (above apply on Bloom’s Taxonomy)?</p>
<i>Content Builder</i> (Readiness Standards only)	<p>What other connections could you add to this section? Write them on your analysis pages!</p> <p>This content important for students’ future learning. How will you assess retention?</p>
<i>Supporting the Readiness Standards</i> (Supporting Standards only)	<p>How can you use this information as you plan lessons?</p> <p>Do the supporting standards match with the readiness standards in your unit bundle? If not, arrange them according to your curriculum. Address the questions again “Which Readiness Standards does it support? How does it support the Readiness Standard(s)?”</p>



## Curriculum - STAAR Planning Worksheet



Action Steps	Guiding Questions & Notes
Vocabulary	<p>What strategies will you use to ensure mastery of the vocabulary for each standard in this unit?</p> <p>What is your plan if students do not master the vocabulary?</p>
Use the <i>Distractor Factor</i>	<p>How can you address the information in the Distractor Factor section?</p> <p>From your teaching experience, is there anything you would add to this? Write it on your analysis pages!</p>
Reflection	<p>How have you taught this content in the past?</p> <p>How will you teach it differently this year?</p> <p>How will you utilize the readiness and supporting standards for formative and summative assessment?</p>

Reporting Category	Readiness Standards	Supporting Standards
<b>1 Matter and Energy</b>	<p>3.5.A measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float*</p>	<p>3.5.B describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container</p> <p>3.5.C predict, observe and record changes in the state of matter caused by heating or cooling<sup>Δ</sup></p> <p>3.5.D explore and recognize that a mixture is created when two materials are combined such as gravel and sand and metal and plastic paper clips</p>
<b>2 Force, Motion, and Energy</b>	<p>3.6.A explore different forms of energy, including mechanical, light, sound, and heat/thermal in everyday life*</p>	<p>3.6.B demonstrate and observe how position and motion can be changed by pushing and pulling objects to show work being done such as swings, balls, pulleys, and wagons<sup>Δ</sup></p> <p>3.6.C observe forces such as magnetism and gravity acting on objects*</p>
<b>3 Earth and Space</b>	<p>3.7.A explore and record how soils are formed by weathering of rock and the decomposition of plant and animal remains*</p> <p>3.8.B describe and illustrate the sun as a star composed of gases that provides light and heat energy for the water cycle*</p> <p>3.8.D identify the planets in earth's solar system and their position in relation to the sun<sup>Δ</sup></p>	<p>3.7.C identify and compare different landforms, including mountains, hills, valleys, and plains</p> <p>3.7.B investigate rapid changes in the earth's surface such as volcanic eruptions, earthquakes, and landslides<sup>Δ</sup></p> <p>3.7.D explore the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved</p> <p>3.8.A observe, measure, record and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction and precipitation*</p> <p>3.8.C construct models that demonstrate the relationship of the sun, earth, and moon, including orbits and positions*</p>
<b>4 Organisms and Environments</b>	<p>3.9.A observe and describe the physical characteristics of environments and how they support populations and communities within an ecosystem<sup>Δ</sup></p> <p>3.10.A explore how structures and functions of plants and animals allow them to survive in a particular environment*</p>	<p>3.9.B identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field*</p> <p>3.9.C describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations</p> <p>3.10.B explore that some characteristics of organisms are inherited such as the number of limbs on an animal or flower color and recognize that some behaviors are learned in response to living in a certain environment such as animals using tools to get food*</p> <p>3.10.C investigate and compare how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady bugs<sup>Δ</sup></p>

**Process Standards (Scientific Investigation and Reasoning Skills)**

3.1.A	demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat
3.1.B	make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics
3.2.A	plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world
3.2.B	collect data by observing and measuring using the metric system and recognize differences between observed and measured data
3.2.C	construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data
3.2.D	analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations
3.2.E	demonstrate that repeated investigations may increase the reliability of results
3.2.F	communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion
3.3.A	in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student
3.3.B	draw inferences and evaluate accuracy of product claims found in advertisements and labels such as toys and food
3.3.C	represent the natural world using models such as volcanoes or Sun, Earth, and Moon system and identify their limitations, including size, properties and materials
3.3.D	connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists
3.4.A	collect, record, and analyze information using tools, including microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, compasses, magnets, collecting nets, notebooks, sound recorders, and Sun, Earth, and Moon system models; timing devices, including clocks and stop watches; and materials to support observation of habitats of organisms such as terrariums and aquariums
3.4.B	use safety equipment as appropriate, including safety goggles and gloves

\* = Aligned with STAAR Assessed Curriculum at Grades 5  
<sup>Δ</sup> = Student Expectation specifically included in STAAR Assessed Curriculum at Grade 5 (classified as a Readiness or Supporting Standard in Grade 3 based on its characteristics as part of the Grade 3 Science curriculum)

**NOTE:** The classification of standards on this TEKS Snapshot represents the reviewed and synthesized input of a sample of Texas Science teachers. This TEKS Snapshot DOES NOT represent a publication of the Texas Education Agency. District curriculum materials may reflect other classifications.

## Grade 3 Science

**(3.5) Matter and energy.** The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used. The student is expected to:

**(A) Measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float.**



## Content Builder

**What do the students need to know?**

## Content

**Students will measure, test, and record the physical properties of matter.**

- Temperature
- Mass
- Magnetism
- Ability to sink or float in water

## Connections

In second grade, students explored matter by classifying its physical properties and determining whether it was a solid or a liquid. Students will now build on this knowledge through measuring, testing, and recording the physical properties of matter. Students will extend their learning through investigating temperature, mass, magnetism, and buoyancy (the ability to sink or float). A related standard in this grade level is 3.5C.

Note: This is the first time the concept of density is introduced.

## To what degree will this learning impact learning two years down the road?

This readiness standard supports fourth grade readiness standard 4.5A as students continue to measure, compare, and now contrast physical states of matter. They will look at three states of matter (solid, liquid, gas). These standards will also directly support the fifth grade readiness standard 5.5A, a tested standard. In fifth grade, students classify matter based on its physical properties, including density, solubility, and energy conduction.



## Academic Vocabulary

- Mass
- Temperature
- Magnetism
- Matter
- Physical properties



## Rigor Implications

## Verb

- Measure, Test, Record

## Level of Bloom's Taxonomy

- Applying
- Remembering



## Instructional Implications

The concept of physical properties of matter was taught directly throughout the primary grades. The third grade standard is important in that it extends the learning of physical properties of matter by having students perform investigations at a higher level of understanding/application. Students will now measure and test temperature, mass, magnetism, and buoyancy. Also note that the verb "record" in the standards means through a chart or a graph.



## Distractor Factor

Students will only use lower-level adjectives such as color, size, or shape of properties to sort or describe matter. Students will need to be provided hands-on investigations with temperature, mass, magnetism, and buoyancy to help them extend their learning from the primary grades.



## Level of Difficulty (based on local data)

- ☐ Moderate ☐ Challenging

**(3.6) Force, motion, and energy.** The student knows that forces cause change and that energy exists in many forms. The student is expected to:

## Grade 3 Science

**(A) Explore different forms of energy, including mechanical, light, sound, and eat/thermal in everyday life**



### Content Builder

**What do the students need to know?**

#### Content

- Determine how forms of energy affect everyday life, including mechanical, light, sound, and heat/thermal energy.
- The student knows that forces cause change and that energy exists in many forms

#### Connections

In second grade, students investigated the effects on an object caused by increasing and decreasing the amounts of light, heat, and sound energy. (TEKS 2.6A) Students will now expand this learning to include mechanical and thermal/heat energy.

**To what degree will this learning impact learning two years down the road?**

The concept of energy has been built upon from kindergarten and will continue to fifth grade. The third grade standard builds from the basic understanding of energy by introducing thermal/heat and mechanical energy. This new information will then build in fourth grade readiness standard 4.6A with the addition of electrical energy, and tested readiness standard 5.6A in fifth grade, where students will explore the uses of these forms of energy.



### Academic Vocabulary

- Light energy
- Mechanical energy
- Sound energy
- Thermal energy/heat energy
- Reflection



### Rigor Implications

#### Verb

- Explore

#### Level of Bloom's Taxonomy

- Remembering



#### Instructional Implications

Provide opportunities for models of these different forms of energy. It is critical in building understanding to provide investigations. It is also important for students to know that one model may show several types of energy. Note that the transformation of energy is not addressed in K-3.



### Distractor Factor

Students may not have strong background knowledge in the types of energy. To strengthen understanding, provide several samples teach type of energy. Suggested Examples:

- Mechanical: engines, wind-up toys
- Sound – music player, phone, voice
- Heat/thermal – Sun, flash light, lamps, fire, oven
- Light: Sun, Lamps, fire, flashlight



### Level of Difficulty (based on local data)

- ☐ Moderate ☐ Challenging

**(3.7) Earth and space.** The student knows that the Earth consists of natural resources and its surface is constantly changing. The student is expected to:

## Grade 3 Science

**(A) Explore and record how soils are formed by weathering of rock and the decomposition of plant and animal remains.**



### Content Builder

#### What do the students need to know?

##### Content

- The student knows that Earth consists of natural resources and its surface is constantly changing
- Students determine how soil is formed and what causes the formation, including weathering and decomposition of plants and animals.
- Soil is composed of sand, silt, clay and humus.

##### Connections

This is a new concept for third grade. Focus instruction on weathering and decomposition. Second grade K.7A, 1.7A, and 2.7A are background TEKS where students observed and described rocks and soils. In third grade, weathering and decomposition are introduced.

#### To what degree will this learning impact learning two years down the road?

3.7A indirectly supports fourth grade (TEA Supporting standard/ Lead4ward Readiness Standard) 4.7A, and tested readiness standard 5.7A, as it builds on the conceptual understandings of the formation of soil and rocks in the Earth science strand.



### Academic Vocabulary

- |             |                 |
|-------------|-----------------|
| • Soil      | • Loam          |
| • Sediments | • Sand          |
| • Humus     | • Weathering    |
| • Clay      | • Decomposition |



### Rigor Implications

#### Verb

- Explore, Record

#### Level of Bloom's Taxonomy

- Remembering



#### Instructional Implications

Students will need to know that humus is not a type of soil, it is an organic matter that is mixed in with soil. Provide students with hands-on descriptive investigations (process skills 3.3A, B, and C can be utilized).



### Distractor Factor

Instruction and hands-on activities will focus on weathering, not erosion. Weathering takes place as rocks are broken down into progressively smaller pieces by the effects of weather. Erosion is the process by which soil and rock are removed from the Earth's surface by natural processes such as wind or water flow, and then transported and deposited in other locations. This concept will be introduced in fourth grade 4.7B.



### Level of Difficulty (based on local data)

☐ Moderate

☐ Challenging

**(3.8) Earth and space.** The student knows there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

## Grade 3 Science

**(B) Describe and illustrate the Sun as a star composed of gases that provides light and heat energy for the water cycle.**



### Content Builder

**What do the students need to know?**

#### Content

Students will need to know that the Sun:

- Is composed of Gases
- Is a star
- Is the center of our solar system
- Provides light and heat energy (solar energy)
- Generates heat and light that provide energy for the water cycle, warm the earth, and provide sunlight for plants.

#### Connections

In the primary grades, students have observed and looked for patterns of objects in the sky. Students have identified the Sun and understand there is a pattern to its appearance. Students also have background understanding of the stages in the water cycle. This third grade TEKS 3.8B is an introduction to what the Sun is, its composition, and the importance of the Sun.

**To what degree will this learning impact learning two years down the road?**

In fourth grade, students will build on third grades learning through TEKS 4.8B, where the role of the Sun is explored through the water cycle and the movement of water on the surface of the Earth. In fifth grade, students will learn, through supporting standard 5.8B, how the Sun and ocean interact through the water cycle.



### Academic Vocabulary

- Sun
- Star
- Gas
- Heat energy
- Water Cycle



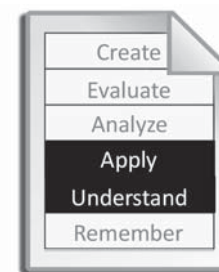
### Rigor Implications

#### Verb

- Describe, Illustrate

#### Level of Bloom's Taxonomy

- Understanding
- Applying



#### Instructional Implications

In third grade, students will gain the basic understanding that the Sun provides the heat necessary for the water cycle. In fourth grade, they will learn the major role the Sun plays in the water cycle.



### Distractor Factor

- Many students think the Sun is a planet or that the Sun is the largest star.



### Level of Difficulty (based on local data)

- ☐ Moderate ☐ Challenging

**(3.8) Earth and space.** The student knows there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

## Grade 3 Science

### (D) Identify the planets in Earth's solar system and their position in relation to the Sun.



#### Content Builder

##### What do the students need to know?

##### Content

- Identify the order of the planets in relation to the Sun.

##### Connections

Students will need to know the location of the planets in our solar system and how their positions relate to the sun. This is a new concept in this grade level.

##### To what degree will this learning impact learning two years down the road?

This standard does not support a fourth grade TEKS, however it will help with background understanding for fifth grade supporting standard 5.8D. This standard also supports 5.8C with important information about the planets in Earth's solar system and their position in relation to this Sun.



#### Academic Vocabulary

- |           |                |
|-----------|----------------|
| • Mercury | • Uranus       |
| • Venus   | • Neptune      |
| • Earth   | • Solar system |
| • Mars    | • Revolution   |
| • Jupiter | • Rotation     |
| • Saturn  | • Orbit        |



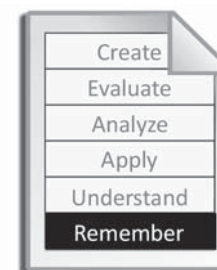
#### Rigor Implications

##### Verb

- Identify

##### Level of Bloom's Taxonomy

- Remembering



##### Instructional Implications

To help learning, provide opportunities where students create their own models and/or visual representations of the solar system, demonstrating the relationship between planets and the Sun, including relative distance and position.



#### Distractor Factor

Students may still want to include Pluto as a planet. Students may think that the planets line up in a linear pattern.



#### Level of Difficulty (based on local data)

☐ Moderate

☐ Challenging



## Grade 3 Science

**(3.9) Organisms and environments.** The student knows that organisms have characteristics that help them survive and can describe patterns, cycles, systems, and relationships within the environments. The student is expected to:

**(A) Observe and describe the physical characteristics of environments and how they support populations and communities within an ecosystem.**



### Content Builder

#### What do the students need to know?

##### Content

- Students will need to know that ecosystems are made up of living things and non-living things that coexist.
- Students will need to know that energy transfers through food chains in ecosystems.
- Physical characteristics of living organisms (plants and animals) and nonliving (air, water, rocks/soil/minerals, sunlight, climate, natural resources)
- How environments support populations and communities in an ecosystem.

##### Connections

The big idea of this standard is that students know and understand that living organisms within an ecosystem interact with one another and with their environment. This standard builds on the second grade TEKS 2.9A.

#### To what degree will this learning impact learning two years down the road?

This standard directly supports 5.9A by having students focus on the physical characteristics of environments that will impact how organisms live and survive within an ecosystem



### Academic Vocabulary

- Environment
- Ecosystems
- Populations
- Communities



### Rigor Implications

#### Verb

- Observe, Describe

#### Level of Bloom's Taxonomy

- Remembering
- Understanding



#### Instructional Implications

Provide students with the opportunity to observe and describe environments and how they support the population and communities within an ecosystem.

Students will need to know that a population is a group of animals of the same species, a community consists of two or more populations of different species occupying the same space, and an ecosystem is a system combining all the living organisms and physical (abiotic) factors in an environment.



### Distractor Factor

Students may have difficulty with determining the difference between population and communities. Activities, pictures, and discussions to show the distinction are important so misconceptions are not formed at this grade level.



### Level of Difficulty (based on local data)

- ☐ Moderate ☐ Challenging



**(3.10) Organisms and environments.** The student knows that organisms undergo similar life processes and have structures that help them survive within their environments. The student is expected to:

## Grade 3 Science

**(A) Explore how structures and functions of plants and animals allow them to survive in a particular environment.**



### Content Builder

**What do the students need to know?**

#### Content

- Students will need to know that the structure and function of animals help them survive by their movement, finding food, and protection.
- Students will need to know that the structure and function of plants help them with survival and protection.
- Explore structures and functions of plants and animals and how they help them to survive in a particular environment.

#### Connections

In second grade, TEKS 2.9B introduced students to the factors in an environment that can affect growth and behavior in living things. Students will build on this knowledge in third grade by learning how structure and functions in plants and animals help them to survive in their environment.

**To what degree will this learning impact learning two years down the road?**

This standard supports fifth grade supporting standard 5.9C.



### Academic Vocabulary

- Structure
- Function
- Adaptation
- Body coverings
- Coloration



### Rigor Implications

#### Verb

- Explore

#### Level of Bloom's Taxonomy

- Remembering



#### Instructional Implications

When talking about special characteristics, be sure to describe details such as body structures, coverings and colorations. Students do not need to memorize the various adaptations of different species. It is important that they be able to recognize and identify adaptations when they encounter them.



### Distractor Factor

Students might believe that environment determines structure.



### Level of Difficulty (based on local data)

☐ Moderate

☐ Challenging

## Grade 3 Science

**(3.5) Matter and energy.** The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used. The student is expected to:

**(B) Describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This standard introduces new concepts related to matter at this grade level. Students will need to understand that solids have a definite shape and that liquids and gases take the shape of their containers. It will build the understanding to support fourth and fifth grade standards.

**How does it support the Readiness Standard(s)?**

In this grade level, students will measure, test, and record physical properties of matter. By fourth grade, students will contrast the physical properties of matter with the additional properties of size, volume, physical state, and buoyancy. The third grade standard directly supports Readiness Standard 5.5A, where students will classify matter based on its physical properties.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Physical properties
- Mass
- Matter
- Magnetism



### Rigor Implications

**Verb**

- Describe, Classify, Demonstrate

**Level of Bloom's Taxonomy**

- Understanding
- Applying



**Instructional Implications**

Provide students with opportunities where they can describe and classify matter as solids, liquids or gases.

Possible misconceptions to watch for include: small particulate solids (salt, sand) are mistakenly considered liquids because they can be poured, solids are always heavier than liquids and liquids are always heavier than gases, and gases are not matter because they are invisible.

## Grade 3 Science

**(3.5) Matter and energy.** The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used. The student is expected to:

**(C) Predict, observe and record changes in the state of matter caused by heating or cooling.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

In third grade, students will predict, observe, and record changes in the state of matter caused by heating and cooling. Prior to this grade level, they have only observed and compared changes in materials due to heating and cooling. This grade level introduces the states of matter.

**How does it support the Readiness Standard(s)?**

Although this standard does not directly support a readiness standard, it does align with fifth grade tested supporting standard 5.5B, where students will identify boiling and freezing/melting points of water. It also supports TEKS 5.5A, where students will classify matter based on physical properties.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- |                    |                              |
|--------------------|------------------------------|
| • States of matter | • Gases                      |
| • Liquids          | • Heat                       |
| • Solids           | • Thermal energy/heat energy |



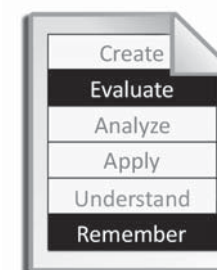
### Rigor Implications

**Verb**

- Predict, Observe, Record

**Level of Bloom's Taxonomy**

- Evaluating
- Remembering



**Instructional Implications**

Students need to be actively involved in the process of changing materials through the addition or removal of heat energy. This process should connect back to states of matter and how energy creates change (such as change of state).

## Grade 3 Science

**(3.5) Matter and energy.** The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used. The student is expected to:

**(D) Explore and recognize that a mixture is created when two materials are combined such as gravel and sand and metal and plastic paper clips.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

In TEKS 3.5D, students are introduced to this new concept and will learn that when two or more materials are combined, a mixture is created. This standard also addresses the concept that the physical properties of the ingredients do not change when the materials are combined. This standard aligns with 4.5C and supporting standard 5.5C.

**How does it support the Readiness Standard(s)?**

This standard helps support 5.5C. In fifth grade, 5.5C supports the readiness standard 5.5A as important information to allow students to differentiate between mixtures and solutions.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Mixture



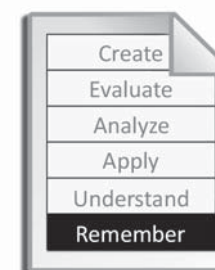
### Rigor Implications

**Verb**

- Explore, Recognize

**Level of Bloom's Taxonomy**

- Remembering



**Instructional Implications**

This is a new concept for third grade, and it is one that will be built upon in fourth and fifth grades. Students should have opportunities to explore and recognize mixtures that can be easily separated.

## Grade 3 Science

**(3.6) Force, motion and energy.** The student knows that forces cause change and that energy exists in many forms. The student is expected to:

**(B) Demonstrate and observe how position and motion can be changed by pushing and pulling objects to show work being done such as swings, balls, pulleys, and wagons.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

In second grade, students learned about the position and movements of objects through standards 2.6C and 2.6D. 3.6B builds on this, however, this standard is an isolated student expectation that is a tested STAAR supporting standard. It will not be revisited in fourth or fifth grade.

**How does it support the Readiness Standard(s)?**

This standard does not support a readiness standard.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Push
- Pull
- Motion
- Mechanical energy
- Force



### Rigor Implications

**Verb**

- Demonstrate, Observe

**Level of Bloom's Taxonomy**

- Remembering



**Instructional Implications**

For this standard, students will need to understand that objects will gain mechanical energy when a force is applied to it. A force is a push or a pull, and it can cause objects to change direction or speed. Students will also need to understand that in order to move objects with more mass, more force will need to be applied.

**(3.6) Force, motion, and energy.** The student knows that forces cause change and that energy exists in many forms. The student is expected to:

## Grade 3 Science

**(C) Observe forces such as magnetism and gravity acting on objects.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This standard addresses the conceptual understanding of forces. Specifically, gravity and magnetism and how they act on objects. Students will build on this understanding in fourth and fifth grades. In fourth grade and fifth grade, students will design experiments that will test the effect of force on an object. (4.6D, supporting standard 5.6D)

**How does it support the Readiness Standard(s)?**

This conceptual understanding will be built upon in the middle school grades and will support eighth grade readiness standards.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Force
- Push
- Pull
- Magnetism
- Gravity



### Rigor Implications

**Verb**

- Observe

**Level of Bloom's Taxonomy**

- Remembering



**Instructional Implications**

Students will need opportunities to be able to test, observe, and determine what happens when a push or pull is applied to an object. Materials such as swings, balls, pulleys, and wagons are just examples, not all inclusive. Have students observe objects in their everyday life.

## Grade 3 Science

**(3.7) Earth and space.** The student knows that the Earth consists of natural resources and its surface is constantly changing. The student is expected to:

**(C) Identify and compare different landforms, including mountains, hills, valleys, and plains.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

In previous grades, students learned about rocks and soil. In third grade, students are introduced to standard 3.7C, where they learn about major landforms on Earth. This is an isolated standard and is used in fourth and fifth grade for background vocabulary when changes to landforms are introduced.

**How does it support the Readiness Standard(s)?**

This standard provides background knowledge and vocabulary development for fifth grade readiness standard 5.7B.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Landform
- Hill
- Mountain
- Valley
- Plain



### Rigor Implications

**Verb**

- Investigate

**Level of Bloom's Taxonomy**

- Applying



**Instructional Implications**

Students will need to know that the Earth's surface changes rapidly due to volcanic eruptions, earthquakes, and landslides. They will also need to understand the difference between rapid and slow changes to the Earth's surface.

**(3.7) Earth and space.** The student knows that the Earth consists of natural resources and its surface is constantly changing. The student is expected to:

## Grade 3 Science

**(B) Investigate rapid changes in the Earth's surface such as volcanic eruptions, earthquakes, and landslides.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This third grade standard supports learning standards in fourth and fifth grades. The concept of changes to the Earth's surface will continue in fourth grade with TEKS 4.7B in identifying slow changes to the Earth's surface. In fifth grade, students will be tested on readiness standard 5.7B in recognizing landforms and how they were formed from changes caused by wind, water, and ice.

**How does it support the Readiness Standard(s)?**

This standard supports readiness standard 5.7B

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Landform
- Earthquakes
- Landslides
- Volcano
- Flood



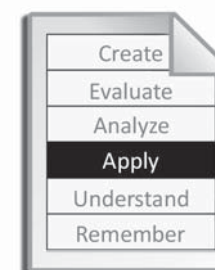
### Rigor Implications

**Verb**

- Investigate

**Level of Bloom's Taxonomy**

- Applying



### Instructional Implications

This new concept, introduced at third grade, will provide students with background knowledge for fourth and fifth grade. Students at this grade level will need to be provided with hands-on investigations in which they must identify the type of change and what caused the rapid change to the surface of the Earth.



## Grade 3 Science

**(3.7) Earth and space.** The student knows that the Earth consists of natural resources and its surface is constantly changing. The student is expected to:

**(D) Explore the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This concept was introduced and explored in the primary grades and will be built upon in third grade through an exploration of the characteristics and usefulness of natural resources. This standard aligns with fourth grade supporting standard 4.7C, where students classify renewable resources, and will build to readiness standard 5.7C.

**How does it support the Readiness Standard(s)?**

This standard provides background content for fifth grade readiness standard 5.7C.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Natural Resource
- Conserve



### Rigor Implications

**Verb**

- Explore

**Level of Bloom's Taxonomy**

- Remembering



**Instructional Implications**

The big idea of this standard is to explore characteristics of natural resources and how they can be conserved using examples from everyday life. Students may not have an understanding of what conserving is, so provide opportunities for discussions or examples of conservation.

**(3.8) Earth and space.** The student knows there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

## Grade 3 Science

**(A) Observe, measure, record and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction and precipitation**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This concept was introduced and explored in the primary grades. In third grade, students will observe, measure, and record patterns in weather in different locations. Students will now see the larger picture of patterns in nature and how different locations on Earth are subject to different weather patterns. This standard aligns with supporting standards 4.8A and 5.8A.

**How does it support the Readiness Standard(s)?**

This standard does not support a readiness standard.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Temperature
- Wind direction
- Precipitation



### Rigor Implications

**Verb**

- Observe, Measure, Record, Compare

### Level of Bloom's Taxonomy

- Remembering
- Understanding
- Applying



### Instructional Implications

Provide students with weather data from different locations. Different locations may include the school yard, cities, states, or countries.

**(3.8) Earth and space.** The student knows there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

## Grade 3 Science

**(C) construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

Background knowledge of this standard was formed in first and second grade. In third grade, students will construct models in order to understand the relationship of the Sun, Earth, and Moon. There will not be a standard that will build on this understanding until fifth grade supporting standard 5.8D, in which students will identify and compare the physical characteristics of the Sun, Earth, and Moon.

**How does it support the Readiness Standard(s)?**

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Rotation
- Tilted
- Revolution
- Axis



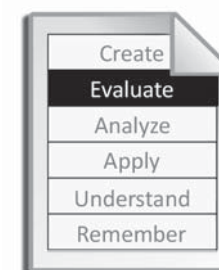
### Rigor Implications

**Verb**

- Construct

**Level of Bloom's Taxonomy**

- Evaluating



### Instructional Implications

In this standard, students should understand that the moon rotates as it revolves around the Earth. Modeling is necessary to understand the relationships between the Sun, Earth, and Moon. Students should also be able to demonstrate the relationship of the Sun, Earth, and Moon, including orbits, positions, and relative sizes.

## Grade 3 Science

**(3.9) Organisms and environments.** The student knows that organisms have characteristics that help them survive and can describe patterns, cycles, systems, and relationships within the environments. The student is expected to:

**(B) Identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

In kindergarten through second grade, students learned the basics of food chains. In third grade, students build on this knowledge through identifying and describing the flow of energy in a food chain, and extending this learning to predict how changes in a food chain affect the ecosystem. Students will continue to learn about the flow of energy through food webs and changes in the ecosystem in fourth grade standard 4.9B, and in fifth grade readiness standard 5.9B.

**How does it support the Readiness Standard(s)?**

The content provided in this standard aligns to fifth grade readiness standard 5.9B

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Ecosystems
- Interact
- Population
- Habitat
- Communities
- Food chain
- Transfer
- Flow of energy



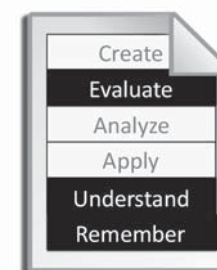
### Rigor Implications

**Verb**

- Identify, Describe, Predict

**Level of Bloom's Taxonomy**

- Remembering
- Understanding
- Evaluating



**Instructional Implications**

There may be students who do not understand that food chains illustrate energy relationships, and that the arrows go in the same direction as the energy. Provide learning opportunities to address these misconceptions.

## Grade 3 Science

**(3.9) Organisms and environments.** The student knows that organisms have characteristics that help them survive and can describe patterns, cycles, systems, and relationships within the environments. The student is expected to:

**(C) Describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

In first and second grade, students have learned about the behaviors of animals and the environment around them. In third grade, students will gain the understanding that environmental changes affect living things in both positive and negative ways. This standard does not build in fourth grade, but aligns to fifth grade supporting standard 5.9C, where students predict the effects of changes in an ecosystem caused by living organisms.

**How does it support the Readiness Standard(s)?**

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Flood
- Drought
- Perish
- Modify
- Thrive



### Rigor Implications

**Verb**

- Describe

**Level of Bloom's Taxonomy**

- Understanding



**Instructional Implications**

Have a discussion, with examples, that illustrates that organisms can change their environment to better survive, and that ecosystems can be changed by their inhabitants or by natural occurrences. Also address that not all changes to an ecosystem are negative.

## Grade 3 Science

**(3.10) Organisms and environments.** The student knows that organisms undergo similar life processes and have structures that help them survive within their environments. The student is expected to:

**(B) Explore that some characteristics, such as the number of limbs on an animal or flower color of organisms, are inherited, and recognize that some behaviors are learned in response to living in a certain environment, such as animals using tools to get food.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This standard aligns to fifth grade readiness standard 5.10B, where students will differentiate between inherited traits of plants and animals.

**How does it support the Readiness Standard(s)?**

In third grade, students explore characteristics that are inherited and behaviors that are learned in response to living in a certain environment. In fourth grade, students will demonstrate that some characteristics are inherited while behaviors are learned. This supports the fifth grade standard, which will have students differentiating between inherited traits and learned behaviors.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Traits
- Learned behaviors
- Inherited traits



### Rigor Implications

**Verb**

- Explore

**Level of Bloom's Taxonomy**

- Remembering



**Instructional Implications**

Provide students with examples and pictures of plants and animals (young and adult) where they can observe variations (flower color, shape of leaves, number of limbs, type of beaks, etc.) to see that these characteristics can be inherited. Also, provide opportunities to discuss learned behaviors in animals.

## Grade 3 Science

**(3.10) Organisms and environments.** The student knows that organisms undergo similar life processes and have structures that help them survive within their environments. The student is expected to:

**(C) Investigate and compare how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady bugs.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

In the primary grades, students learned about the important parts and functions of plants and animals. This learning is built upon in third grade with the investigations of life cycles. Students will continue to learn about specific life cycles in fourth grade, and will learn about complete and incomplete metamorphosis through supporting standard 5.10C in fifth grade.

**How does it support the Readiness Standard(s)?**

This standard does not support a readiness standard.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Metamorphosis
- Life cycle
- Stages
- Growth



### Rigor Implications

**Verb**

- Investigate, Compare

**Level of Bloom's Taxonomy**

- Understanding
- Applying



**Instructional Implications**

Students will need exposure to many different kinds of life cycles of plants and animals to be able to compare similarities and differences among the stages. Students need to understand that life cycles are a series of stages. Be sure to include, in activities and discussions, tomato plants, frogs, and lady bugs.