Pacing Guide

Level 5 Module 3

Orbit and Rotation with Capstone Project on Forces and Energy

Each *PhD Science® TEKS Edition* Level 5 lesson requires 45 minutes of instructional time. This guide is intended for teachers who are providing in-person instruction. This guide presents lesson objectives and activities by concept and multiple pacing options to allow teachers to maximize instructional time while remaining responsive to student needs. Choose one or more options for each lesson. Note that pacing options do not omit parts of lessons.

Pacing Option Key

Lesson Split: This symbol identifies single lessons teachers may split across 2 days.

Cross-Curricular Activity: This symbol identifies parts of lessons teachers may incorporate during instructional time for other content areas, such as English, math, social and emotional learning, and center time. Teachers may implement these parts before or after science instruction; for example, if the class reads a *PhD Science* core text during English instruction, students can discuss the core text during science instruction rather than reading the full text during that time.

Investigation Preparation: This symbol identifies preparation the teacher may do in advance of an investigation. This advance preparation does not interfere with student learning.

Instructional Routine: This symbol identifies opportunities to use alternative instructional routines. See the Implementation Guide for information on instructional routines.

Teacher Think Aloud: This symbol identifies activities that are appropriate for a teacher Think Aloud. Suggested primarily for use during station activities, this option allows completion of these activities as a class. During a teacher Think Aloud, the teacher assumes the role of a student and verbalizes the thought process of a student completing the activity to engage students with intentional questioning techniques. The teacher may also ask students to model appropriate procedures and participate in collaborative conversations.

Shared Media Experience: This symbol identifies media (e.g., videos, images) that the teacher may share with the whole class rather than having students view the media individually or in groups. After students observe the media as a class, they complete an activity.

Focal Point: This symbol identifies parts of lessons teachers should emphasize. For example, in an activity with multiple resources (e.g., videos, texts, charts), a focal point identifies the most important resources, thus ensuring the coherence of the lessons.

Instructional Note: This symbol identifies parts of lessons that have instructional notes that describe time-saving strategies. Examples of such instructional notes are Differentiation supports that provide sentence frames for writing assignments and Teacher Notes that suggest alternative activities.

Daily Video: This symbol identifies specific Level 3 and Level 4 lessons on the digital platform that review readiness standards for the module. Resources within the digital platform to support these lessons include the Learn Anywhere Plan, Daily Videos, Science Journal, and Science Journal Support.

Module at a Glance

This module contains 29 lessons and 17 lessons in the capstone project on Forces and Energy. Even with lesson splits, this module should take no more than 52 days to complete. This maximum number of days ensures the implementation of all Level 5 modules within a school year that has 150 days of science instruction.

Orbit and Rotation

Anchor Phenomenon: Views from Earth and Space Essential Question: How can we explain our observations of the Sun, the Moon, and stars from Earth?	**Recommended Number of Days**	**TEKS and ELPS Alignment**
Concept 1 (Lessons 1–9, 14): Patterns of the Sun **Focus Question:** How can we explain our observations of the Sun? The apparent daily motion of the Sun across the sky can be explained by Earth's rotation. The daily pattern of daytime and nighttime on Earth can be explained by the exposure of different parts of Earth to the Sun at different times.	11–12 days	3.8D, 4.8C, 5.2A, 5.2B, 5.2C, 5.2D, 5.2F, 5.2G, 5.3A, 5.3B, 5.3C, 5.4, 5.6C, 5.8C, 5.8D ELPS: 3B, 3E, 3F, 3J, 4A, 4E, 4I, 5G
Application of Concepts (Lessons 10–13): Science Challenge **Phenomenon Question:** How can we use the Earth–Sun system to tell time at different locations on Earth? The Sun's apparent motion from east to west across the sky can be used to tell time at different locations on Earth.	4 days	5.2D, 5.2F, 5.3A, 5.3B, 5.3C, 5.8C ELPS: 3D, 3E
Concept 2 (Lessons 15–20): Patterns of the Moon **Focus Question:** How can we explain our observations of the Moon? The apparent daily motion of the Moon across the sky can be explained by Earth's rotation. The monthly pattern of changing moonrise times on Earth can be explained by the Moon's orbit around Earth.	7–8 days	4.8C, 5.2B, 5.2C, 5.2D, 5.2F, 5.3A, 5.3B, 5.3C, 5.4, 5.6C, 5.8C, 5.8D ELPS: 1A, 1C, 3F, 3G, 4E
Concept 3 (Lessons 21–26): Patterns of the Stars **Focus Question:** How can we explain our observations of stars? The apparent daily motion of stars across the sky can be explained by Earth's rotation. The yearly pattern of star visibility on Earth can be explained by Earth's orbit around the Sun.	7–8 days	3.8D, 5.2A, 5.2B, 5.2C, 5.2D, 5.2F, 5.2G, 5.3A, 5.3B, 5.3C, 5.4, 5.6C, 5.8C, 5.8D ELPS: 2B, 2E, 3F, 3H, 4E
Application of Concepts (Lessons 27–29): End-of-Module Socratic Seminar, Assessment, and Debrief **Essential Question:** How can we explain our observations of the Sun, the Moon, and stars from Earth? Earth's rotation on its axis, Earth's orbit around the Sun, and the Moon's orbit around Earth cause observable patterns in Earth's sky.	3 days	5.2D, 5.2F, 5.3A, 5.3C, 5.6C, 5.8C, 5.8D ELPS: 3F

Capstone Project on Forces and Energy

Lesson Sets	Recommended Number of Days	TEKS and ELPS Alignment
Lesson 1: Forces and Energy in DART Rail **Phenomenon Question:** How does DART Rail use forces and energy to move people from place to place? Engineers designed DART Rail to help people move from place to place.	1 day	3.6B, 5.3B, 5.3C, 5.4 ELPS: 2E, 4A
Lessons 2–4: Moving a Light Rail Train **Phenomenon Question:** How do light rail trains start moving? A stronger force can move an object faster than a weaker force can.	3 days	5.2A, 5.2B, 5.2C, 5.2D, 5.4, 5.6D ELPS: 1A, 3E
Lesson 5: Slowing and Stopping a Light Rail Train **Phenomenon Question:** How do light rail trains slow down and stop? Friction can cause moving objects to slow down and stop.	1 day	3.6B, 5.2F, 5.4 ELPS: 3H
Lessons 6–7: Electrical Circuits in a Light Rail System **Phenomenon Question:** How can electrical energy be used to move a light rail train? Conductors and insulators can be used to direct the flow of electricity.	2 days	5.2D, 5.3B, 5.4, 5.5A, 5.6A, 5.6B ELPS: 1C, 3H
Lessons 8–9: Energy Forms in DART Rail **Phenomenon Question:** How are different forms of energy used in the DART Rail System? Circuits can be arranged in different ways to transform electrical energy into other forms of energy.	2 days	5.2C, 5.2F, 5.4, 5.6A, 5.6B ELPS: 1C
Lessons 10–12: Lights in the DART Rail System **Phenomenon Question:** How is light used in the DART Rail System? Light can be used to communicate and to help people see.	3 days	5.2C, 5.2D, 5.3B, 5.4, 5.6A, 5.6B ELPS: 3H
Lessons 13–17: Engineering Challenge **Phenomenon Question:** How can we make a light rail system more accessible? Science and engineering practices can be used to improve the accessibility of a light rail system.	5 days	5.2A, 5.2B, 5.2C, 5.2D, 5.2E, 5.2F, 5.2G, 5.4, 5.5A, 5.6A, 5.6B, 5.6C, 5.6D ELPS: 3E

Year at a Glance

This year at a glance chart shows where all three modules fit in a year. To ensure completion of each module, it is recommended to teach science five days a week.

Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Module 1			Module 2			Module 3				

Level 5 Considerations

Teacher Choice Days

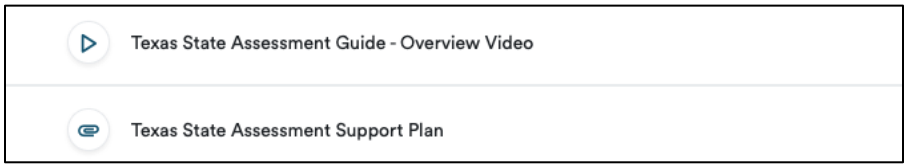
Teacher choice days are included in the pacing guide to reteach or review to help prepare students for the **Texas State Assessment for Level 5**.

TEKS and Texas State Assessment

The TEKS addressed in this module are included at the end of this document.

This symbol is used in the pacing guide to indicate lessons with review content to prepare students for the **Texas State Assessment for Level 5.**

Refer to the **Texas State Assessment Support Plan** for additional information on planning for the **Texas State Assessment for Level 5**. This plan as well as an overview video can be found on Great Minds' digital platform.



Module 3: Orbit and Rotation

Concept 1: How can we explain our observations of the Sun? 11–12 days

Focus Standards

5.6C Demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted.

5.8C Demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky.

5.8D Identify and compare the physical characteristics of the Sun, Earth, and Moon.

Review Standards

3.8D Identify the planets in Earth's solar system and their position in relation to the Sun.

4.8C Collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time.

Lessons 1–2: Views from Earth and Space		**Lessons 3–4: The Sky**	
Lesson 1: Explain how humans can use observed patterns of celestial bodies for navigation.	**Lesson 2:** Develop an initial model to explain observations of the Sun, the Moon, and stars from Earth.	**Lesson 3:** Develop an analogy to explain the differences between Earth's atmosphere and outer space.	**Lesson 4:** Gather evidence that gravity affects all matter on Earth by pulling matter toward Earth's center.
Day 1: Launch through Explore Celestial Navigation **Day 2:** Identify Patterns through Land Use Differentiation note in Explore Celestial Navigation.	Use Differentiation note in Land.	Use third Teacher Note in Differentiate Between Earth's Atmosphere and Outer Space.	Focus on two videos from the Northern Hemisphere and two videos from the Southern Hemisphere in Identify Evidence of Gravity. Think aloud testing the effect of forces on air particles in Demonstrate Forces Acting on Air.

Concept 1: How can we explain our observations of the Sun? (continued)

Lessons 5–7: Apparent Motion of the Sun			Lessons 8–9: Sunrise and Sunset
Lesson 5: Plan to investigate how the angle and direction of light affect shadows.	**Lesson 6:** Investigate how the angle and direction of light affect shadows.	**Lesson 7:** Use observed shadow patterns to determine the apparent east-to-west motion of the Sun.	**Lesson 8:** Develop a model to explain the apparent east-to-west motion of the Sun.
	Use Differentiation note in Launch. Think aloud investigation for Distance of Light Source variable in Collect Data.	Use the first Teacher Note in Launch.	Use Differentiation note in Read About Galileo.
Lessons 8–9: Sunrise and Sunset	**Lessons 10–13: Science Challenge**	**Lesson 14: Apparent Sunrise**	**Teacher Choice Day**
Lesson 9: Use a space-view model to support claims about the locations on Earth experiencing daytime and nighttime.	**See next page for Science Challenge lessons.**	**Lesson 14:** Gather evidence to determine that refraction of light causes apparent sunrise to differ from actual sunrise.	**Objective:** Support mastery of 4.8C
Build mini Earth models in Develop Space-View Model before the lesson. Use Differentiation note in Make a Claim About Daytime and Nighttime. Use an alternative collaborative conversation routine in Update Anchor Model.			Use digital platform resources to review Level 4 Module 2 Spotlight on Weather and Sky Lessons 4 and 5 Daily Videos. **Reteach or review day to help prepare students for the Texas State Assessment for Level 5.**

<table>
<tr><td colspan="4">Science Challenge: How can we use the Earth–Sun system to tell time at different locations on Earth? 4 days
Focus Standards
5.8C Demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky.</td></tr>
<tr><td colspan="4">Lessons 10–13: Science Challenge</td></tr>
<tr><td>Lesson 10: Model how humans can use the apparent position of the Sun to tell time.</td><td>Lesson 11: Model how sundials track time around the world.</td><td>Lesson 12: Prepare to share models to explain how the Earth–Sun system affects time around the world.</td><td>Lesson 13: Present models of how the Earth–Sun system affects time around the world.</td></tr>
<tr><td></td><td>  Build space-view sundial models in Model Space-View Sundial before the lesson.</td><td>  Use a timer to pace presentations in Share Models and Explanations.</td><td>Conceptual Checkpoint</td></tr>
<tr><td>Science Challenge</td><td>Science Challenge</td><td>Science Challenge</td><td>Science Challenge</td></tr>
</table>

Concept 2: How can we explain our observations of the Moon? 7–8 days

Focus Standards

5.6C Demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted.

5.8C Demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky.

5.8D Identify and compare the physical characteristics of the Sun, Earth, and Moon.

Review Standards

4.8C Collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time.

Lesson 15: The Moon	Lessons 16–17: The Moon's Orbit		Lessons 18–20: Appearance of the Moon
Lesson 15: Develop a model to explain the Moon's apparent motion from east to west across Earth's sky.	**Lesson 16:** Analyze moonrise and moonset times to determine when the Moon is overhead.	**Lesson 17:** Model the Moon's orbit around Earth to explain changing moonrise and moonset times.	**Lesson 18:** Gather evidence to explain how objects that do not emit light are seen.
	Think aloud January 1 data in Analyze Moonrise and Moonset Times.	**Day 1:** Launch through Analyze Moonrise and Moonset Data **Day 2:** Model Moon's Orbit through Land Think aloud January data in Analyze Moonrise and Moonset Data.	

Concept 2: How can we explain our observations of the Moon? (continued)

Lessons 18–20: Appearance of the Moon		Teacher Choice Day
Lesson 19: Explain why the Moon is visible from Earth.	**Lesson 20:** Explain how the Moon's orbit around Earth makes the Moon appear to change shape.	**Objective:** Support mastery of 4.8C.
Use an alternative collaborative conversation routine in Launch.	Color black half of each Moon in Explore Apparent Shape of the Moon before the lesson.	Use digital platform resources to review Level 4 Module 2 Spotlight on Weather and Sky Lesson 6 Daily Video.
Use second paragraph of second Teacher Note in Draw Ray Diagrams.		**Reteach or review day to help prepare students for the Texas State Assessment for Level 5.**
	Conceptual Checkpoint	

Concept 3: How can we explain our observations of stars? 7–8 days

Focus Standards

5.6C Demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted.

5.8C Demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky.

5.8D Identify and compare the physical characteristics of the Sun, Earth, and Moon.

Review Standards

3.8D Identify the planets in Earth's solar system and their position in relation to the Sun.

Lessons 21–22: Appearance of Stars		**Lessons 23–24: Apparent Motion of Stars**	
Lesson 21: Research the characteristics of stars, and model how distance affects a star's apparent size.	**Lesson 22:** Model how distance affects a star's apparent brightness.	**Lesson 23:** Model the apparent motion of stars.	**Lesson 24:** Use a model to explain why Polaris appears to be stationary from the perspective of Earth.
 Use Differentiation note in Compare Objects in the Sky.	 **Day 1:** Launch through Investigate Effect of Distance on Apparent Brightness **Day 2:** Model Apparent Brightness of Stars through Land  Complete Land after the lesson.	 Think aloud Earth-view student model in Model Apparent Motion of Stars.	 Place stars for Earth-view student models in Model Location of Polaris before the lesson.  Use Fishbowl routine to model Earth-view student model in Model Location of Polaris.

Concept 3: How can we explain our observations of stars? (continued)

Lessons 25–26: Changes in Star Visibility		Teacher Choice Day
Lesson 25: Analyze star maps from different times of the year to identify patterns in star visibility.	**Lesson 26:** Develop a model to explain the positions of stars at different times of the year.	**Objective:** Support mastery of 3.8D.
Record 6 months of star map data in the class data table in Analyze Star Maps before the lesson.	Place month labels in Model Earth's Orbit around the classroom before the lesson.	Use digital platform resources to review Level 3 Module 3 Spotlight on the Solar System Lesson 5 Daily Video.
Focus on students completing 6 months of star map data in Analyze Star Maps.		**Reteach or review day to help prepare students for the Texas State Assessment for Level 5.**

<table>
<tr><td colspan="3">Application of Concepts: How can we explain our observations of the Sun, the Moon, and stars from Earth? — 3 days

Focus Standards

5.6C Demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted.

5.8C Demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky.

5.8D Identify and compare the physical characteristics of the Sun, Earth, and Moon.</td></tr>
<tr><td colspan="3">Lessons 27–29: Patterns in the Sky</td></tr>
<tr><td>Lesson 27: Explain how Earth’s rotation on its axis, Earth’s orbit around the Sun, and the Moon’s orbit around Earth cause observable patterns in Earth’s sky.</td><td>Lesson 28: Explain how Earth’s rotation on its axis, Earth’s orbit around the Sun, and the Moon’s orbit around Earth cause observable patterns in Earth’s sky.</td><td>Lesson 29: Explain how Earth’s rotation on its axis, Earth’s orbit around the Sun, and the Moon’s orbit around Earth cause observable patterns in Earth’s sky.</td></tr>
<tr><td>  Use English Language Development note in Engage in Socratic Seminar.</td><td rowspan="2">End-of-Module Assessment</td><td rowspan="2">End-of-Module Debrief</td></tr>
<tr><td>Socratic Seminar</td></tr>
</table>

Capstone Project: Forces and Energy

Focus Standards: 17 days

3.6B Demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.

5.5A Classify matter based on measurable, testable, and observable physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating using water as a reference point), solubility in water, and the ability to conduct or insulate thermal energy or electric energy.

5.6A Explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.

5.6B Demonstrate that the flow of electricity in closed circuits can produce light, heat, or sound.

5.6C Demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted.

5.6D Design a simple experimental investigation that tests the effect of force on an object.

Lesson 1: Forces and Energy in DART Rail	**Lessons 2–4: Moving a Light Rail Train**		
Lesson 1: Develop an initial model to show how a DART Rail train moves.	**Lesson 2:** Plan can investigation to explore how forces with different strengths affect the speed of a light rail train.	**Lesson 3:** Investigate how forces with different strengths affect the speed of a light rail train.	**Lesson 4:** Investigate how forces of equal strength affect the speed of light rail trains with different masses.
Use first Teacher Note in Develop Light Rail Train Model.	Use Differentiation note in Develop Initial Claim.		Use Differentiation note in Plan and Conduct Mass Investigation.

Capstone Project: Forces and Energy (continued)

Lesson 5: Slowing and Stopping a Light Rail Train	Lessons 6–7: Electrical Circuits in a Light Rail System		Lessons 8–9: Electrical Circuits in a Light Rail System
Lesson 5: Explore how a DART Rail system slows down and stops.	**Lesson 6:** Develop a circuit model to demonstrate the flow of electricity in a light rail system.	**Lesson 7:** Determine locations of electrical conductors and electrical insulators in a pantograph.	**Lesson 8:** Observe circuits to identify patterns in energy transformation.
	Use inline Teacher Note in Review Circuits. Use Differentiation note in Develop Light Rail Circuit Model. Use alternative instructional routine in Compare Models.	Use Differentiation note in Investigate Pantograph Materials.	Use second Teacher Note in Prepare to Visit Device Stations. Use alternative collaborative conversation routine in Land.
Lessons 8–9: Electrical Circuits in a Light Rail System	**Lessons 10–12: Lights in the DART Rail System**		
Lesson 9: Compare different types of circuits containing multiple devices.	**Lesson 10:** Identify how design features of lights in the DART Rail system relate to each light's purpose.	**Lesson 11:** Investigate the uses of reflected light in the DART Rail system.	**Lesson 12:** Explore how light is used to communicate in the DART Rail system.
	Share light videos while students complete Lesson 10 Activity Guide A in Visit Video Stations.		Share communication lights videos while students complete Lesson 12 Activity Guide in Analyze Communication Lights. Prepare the class Communication Lights chart by adding headings before the lesson in Analyze Communication Lights.

Capstone Project: Forces and Energy (continued)

Lessons 13–17: Engineering Challenge			
Lesson 13: Apply the engineering design process to design and test solutions to make a light rail system more accessible.	**Lesson 14:** Apply the engineering design process to design and test solutions to make a light rail system more accessible.	**Lesson 15:** Apply the engineering design process to design and test solutions to make a light rail system more accessible.	**Lesson 16:** Apply the engineering design process to design and test solutions to make a light rail system more accessible.
	 Use first sidebar Teacher Note in Prepare for Ask, Imagine, and Plan Stages.  Use first Teacher Note in Ask About, Imagine, and Plan Solutions.  Use second Differentiation note in Ask About, Imagine, and Plan Solutions.	 Use Teacher Note in Propose and Create Solutions.	
Engineering Challenge	**Engineering Challenge**	**Engineering Challenge**	**Engineering Challenge**

Lessons 13–17: Engineering Challenge
Lesson 17: Apply the engineering design process to design and test solutions to make a light rail system more accessible.
Engineering Challenge

Texas Essential Knowledge and Skills (TEKS)

Focus Standards	
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
3.6B	demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.
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
3.8D	identify the planets in Earth's solar system and their position in relation to the Sun.
4.8	Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system. The student is expected to
4.8C	collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time.
5.5	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
5.5A	classify matter based on measurable, testable, and observable physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating using water as a reference point), solubility in water, and the ability to conduct or insulate thermal energy or electric energy.
5.6	Force, motion, and energy. The student knows that energy occurs in many forms and can be observed in cycles, patterns, and systems. The student is expected to
5.6A	explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy;
5.6B	demonstrate that the flow of electricity in closed circuits can produce light, heat, or sound;
5.6C	demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted.
5.6D	design a simple experimental investigation that tests the effect of force on an object.
5.8	Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system. The student is expected to
5.8C	demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky; and
5.8D	identify and compare the physical characteristics of the Sun, Earth, and Moon.

Investigation and Reasoning Standards
5.2 Scientific investigation and reasoning. The student uses scientific practices during laboratory and outdoor investigations. The student is expected to
5.2A describe, plan, and implement simple experimental investigations testing one variable;
5.2B ask well defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology;
5.2C collect and record information using detailed observations and accurate measuring;
5.2D analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence;
5.2E demonstrate that repeated investigations may increase the reliability of results;
5.2F communicate valid conclusions in both written and verbal forms; and
5.2G construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information.
5.3 Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to
5.3A analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing;
5.3B draw or develop a model that represents how something that cannot be seen such as the Sun, Earth, and Moon system and formation of sedimentary rock works or looks; and
5.3C connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.
5.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to
5.4 collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, and notebooks; timing devices; and materials to support observations of habitats or organisms such as terrariums and aquariums.