CCPS Science Unit Plan

Grade	2nd	Subject	Science	Unit #	3
Unit Name	Properties and Changes of Matter		Timeline	6 weeks November 4th - December 30th	
How to use the Framework	This Framework should be used to implement daily science instruction. The resources and instructional strategies reflected in the Framework will provide a foundation for effective implementation and student mastery of standards. Please see the hyperlinked abbreviation document to ensure understanding of all abbreviations used with this framework. Science Framework Abbreviations .pdf CCPS Department of Science Website for access to all unit frameworks				
Unit Overview	*All resources related to this Framework are embedded in this document or can be located via the Science Department website. **Background Information:** In this Unit, students classify matter according to physical properties. They will conduct simple investigations to understand that when a structure is assembled and disassembled, the weight is the same as the weight of its parts. Assembling blocks together and rearranging them provides a foundation that matter isn't lost or goes away, but just changes how the parts are arranged to create something different. They will also explain how some changes are reversible and some are irreversible. Matter can change. Some changes are irreversible. Changes in matter can be changes in state or composition. An example of a change of state that can be reversed is freezing water because it can be changed back into liquid water. An example of an irreversible change is frying an egg because it is impossible to get the egg back into its uncooked state. This unit asks students to gather information and communication about the changes that occur in objects. **Prerequisites:** Kindergarten- Unit I : Physical Attributes (SKP1a,b,c) **By the end of this unit the student will be able to**: • *ask questions* in order to describe and categorize various objects based on their physical characteristics. • *explain* how structures created from small pieces (such as linking cubes or building blocks) can be taken apart and reassembled to form new and different structures. • *use observational evidence* to explain that certain changes in matter due to heating or cooling can be reversed, while others cannot be undone. • **By the end of this unit the teacher should:** • *ensure* that students are able to ask questions to describe and categorize various objects according to their physical characteristics. • *guide* students in explaining how structures made from small pieces (like linking cubes or building blocks) can be disassembled and reassembled to create new and different structures. • *assist* students in using empirical observations to explain that certain changes in matter due to heating or cooling are reversible, while others are not. Science-2nd-Teacher-Notes.pdf				
Lesson Plan guidance	Link the following : https://drive.google.com/file/d/1dDFitw1NesctodMZ9XAr7zc0-S5GZKPB/view?usp=drive_link				

document and template	

Standards

GSE	Science and Engineering Practices	Crosscutting Concepts
S2P1. Obtain, evaluate, and communicate information about the properties of matter and changes that occur in objects. a. Ask questions to describe and classify different objects according to their physical properties. (Clarification statement: Examples of physical properties could include color, mass, length, texture, hardness, strength, absorbency, and flexibility.) b. Construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures. c. Provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible. (Clarification statement: Changes in matter could include heating or freezing of water, baking a cake, boiling an egg.)	**Asking Questions and Defining Problems** A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world works and which can be empirically tested. **Constructing Explanations and Designing Solutions** The products of science are explanations and the products of engineering are solutions.	**Cause and Effect** Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering. **Energy and Matter** Tracking energy and matter flows, into, out of, and within systems helps one understand their system's behavior. **Structure and Function** The way an object is shaped or structured determines many of its properties and functions. **Patterns** Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them. Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. **Scale, Proportion, and Quantity** In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.

NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas

The Phenomenon Protocol	
Anchoring Phenomena	**Learning Targets**
S2P1a.pdf	Students will ask questions to describe and clarify different objects according to their physical properties..
S2P1b.pdf	Students will construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures.
S2P1c.pdf	Students provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible.

Weekly Lesson Tasks

Navigation: Week 1 | Week 2 | Week 3 | Week 4| Week 5 | Week 6| Return to top | Additional Resources

Week 1 Standards | Phenomenon | Weekly Lessons				
GSE: S2P1.a.	**Focused Concept:** Ask questions to describe and classify different objects according to their physical properties			
Learning Targets:	Students will ask questions to describe and clarify different objects according to their physical properties.			
Lab Safety and Materials:	**General Safety Practices**			
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions			
Phenomenon: Melting Ice			**DQ:** Does the mass of ice change when it melts?	
Day 1: Opening	**Day 2 : Guided Practice/**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**

	Transition			
Phenomenon Introduction (5-7 minutes) Show students the phenomenon card: Melting Ice Use the see, think wonder strategy to guide student thinking. Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity (10-15 minutes)** **Savvas Lesson 1 pg.7 What is Different?** Have students follow the procedures laid out in the following activity: **What is Different?** The teacher should record the observations of the students throughout the activity on chart paper. **uInvestigate Lab** What is Different? **Savvas** Objective: Students will make observations about objects. Then they will classify the objects three	**Introduce the Driving Question: (7-10 minutes)** Have students review the driving question: *Does the mass of ice change when it melts?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer. Be sure to create a reference for students to have throughout the week. ****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format. **Objective:** Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating	**Graphic Organizer and Materials (2-3 minutes for students to access)** Students will need and will use the student lab sheet for "Sharing Properties" **Objective:** Students describe the physical properties of various objects and compare objects with similar properties. **Materials** eraser pompom spoon bag of water hand lens container of water **Investigation Facilitation (25-30 minutes)** Distribute materials to each student. Students will observe and think of descriptive words for the items. Students will record these words in the data table on the lab sheet. Teacher holds up a ball and asks: "What words can describe this object?" (Possible responses: round, rubber, smooth) Record answers on chart paper. Students will select an object from their materials similar to the ball, recording their choice and	**Text Annotation Strategy (30-45 minutes)** Have students read and annotate the following text: "Solids and Liquids Text" The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy: K-2 Annotation Protocol Students should complete the following student handout as they work through the text annotation protocol: K-2 Text Annotation Student Document (editable) Text Annotation Student Document PDF During the teacher-led discussion, the teacher should ask the following questions: *How is mass related to matter?* *What is the main difference between solids and liquids in terms of their shape?* *What do solids and liquids have in common?* **TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the	**Claim-Evidence-Reasoning (15-25 minutes)** Students will write a response to the following driving question in the CER format. *Does the mass of ice change when it melts?* Review the claim-evidence-reasoning poster with the students **TEACHER NOTE: Provide students with sentence starters by sharing on the board: K-2 Claim-Evidence-Reasoning Sentence Starters Have students write their claim-evidence-reasoning **writing a claim** Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question. **writing evidence** Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim. **writing the reasoning** Students will use textual evidence from the "text annotation graphic organizer" to

different ways based on their properties.
**TEACHER NOTE:
In this lab, students may choose to sort objects by size, shape, weight, color, texture, material, or state (solid, liquid). The groups they sort will depend on the materials used. Students may need assistance establishing the criteria they'll use to sort the objects. Teacher should ask guiding questions to help students make connections by describing and clarifying different objects according to their physical properties.

Materials
cup
book
ball
eraser
calculator
water
magnet
letters

the process of developing skills for effective argumentation.
Claim-Evidence-Reasoning (CER) (10-12 minutes)

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the claim-evidence-reasoning poster with students.

As a class or in student groups, provide students with this week's claim- evidence-reasoning sample.

Student Sample

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol:

Claim-Evidence-Reasoning Record Observations Document (google doc)

Claim-Evidence-Reasoning Record Observation Document PDF

1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.

2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.

reasoning on their data sheets (Possible responses: eraser - rubber and smooth; pom-pom - round like the ball).

Ask each group which object they picked and why. Repeat with all objects.

Ask Students:

Why do you believe understanding physical properties is important?

**TEACHER NOTE: In this lab, the teacher should facilitate students' understanding that the words we use to describe objects are called physical properties. These properties include observable characteristics such as color, shape, size, texture, strength, flexibility, mass, hardness, absorbency, and whether the object is a solid or a liquid.

groups will change to limit time used for transitioning.
Vocabulary Strategy
(10-15 minutes)
matter
classify
texture
flexibility
physical property

Four Square
Provide students with the graphic organizer (editable) or pdf handout, explaining its four sections: word, meaning, picture, and sentence.

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words.

Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review various artifacts (pictures, images, primary sources, charts) to build knowledge of the term.

Have students collaborate to complete the four square strategy for the other vocabulary terms.

Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics.

Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.

generate the reasoning or justification in the CER format. Have students use the following template to write their claim-evidence-reasoning (CER)
K-2 Student Writing Template (editable)
K-2 Student Writing Template (pdf)

**TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions:

How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?

Assessment for Learning
(10-15 minutes)

Have students complete the following assessment.
Unit III Assessment I (edit)

Unit III Assessment I PDF

	3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions. Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoning Questions **Teacher Note: As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.			

Week 2 Standards | Phenomenon | Weekly Lessons		
GSE: S2P1.a.	**Focused Concept:** Ask questions to describe and classify different objects according to their physical properties	
Learning Targets:	Students will ask questions to describe and clarify different objects according to their physical properties.	
Lab Safety and Materials:	**General Safety Practices**	
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions	
Phenomenon: Melting Ice		**DQ:** Does the mass of ice change when it melts?

Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
Phenomenon Introduction (5-7 minutes) Show students the phenomenon card: Melting Ice Use the see, think wonder strategy to guide student thinking. Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity (10-15 minutes)** **Properties of Matter** Have students follow the procedures laid out in the following activity: The teacher should record the observations of the students throughout the activity on chart paper. **GaDOE Lab** **Properties of Matter** Objective: Students will make observations about objects. Then they will classify the objects by color, length, texture, flexibility, and absorbency. Have students follow the procedure provided in the lab.	**Introduce the Driving Question: (7-10 minutes)** Have students review the driving question: *Does the mass of ice change when it melts?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer. Be sure to create a reference for students to have throughout the week. ****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format. **Claim-Evidence-Reasoning (CER)(10-12 minutes)**	**Graphic Organizer and Materials (2-3 minutes for students to access)** Students will need and will use the student lab and lab sheet for **Properties of Materials Lab** **Objective:** Students identify the physical properties of a set of materials in order to classify them.. **Materials** 1 marker (per group) 1 rock (per group) 1 textbook (per group) 1 apple (per group) 1 stick of gum without the wrapper (per group) 1 paper towel (per group) 1 rubber band (per group) 1 triple beam balance (per group) **Investigation Facilitation (34-40 minutes)** **TEACHER NOTE: In this lab, teacher should facilitate a discussion to help students recall prior knowledge before starting the lab. For instance, teacher may ask, 'What are physical properties?' The teacher can then compile a list of potential physical properties on chart paper to ensure students consider various types during the activity. These properties might include color, mass, length, texture, hardness, strength, absorbency, states of	**Text Annotation Strategy (30-45 minutes)** Have students read and annotate the following text: "Comparing Solids" The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy: **K-2 Text Annotation Protocol** Students should complete the following student handout as they work through the text annotation protocol: K-2 Text Annotation Student Document (editable) Text Annotation Student Document During the teacher-led discussion, the teacher should ask the following questions: *How are bowling balls and tennis balls different in terms of size and texture?* *What are some properties you can use to describe a solid?* *What can a tennis ball do that a bowling ball cannot?* **TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to	**Claim-Evidence-Reasoning (15-25 minutes)** Students will write a response to the following driving question in the CER format. *Does the mass of ice change when it melts?* Review the claim-evidence-reasoning poster with the students **TEACHER NOTE: Provide students with sentence starters by sharing on the board: K-2 CER Sentence Starters Have students write their claim-evidence-reasoning **writing a claim** Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question. **writing evidence** Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim. **writing the reasoning** Students will use textual evidence from the "text

**TEACHER NOTE:
In this lab, the teacher should help students create questions to classify objects based on their physical properties, such as color, mass, length, texture, hardness, strength, absorbency, and flexibility.

Materials
popsicle sticks
cotton ball
piece of paper
bubble wrap
straw
plastic spoons
pencil
tissue paper

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students: "Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the claim-evidence-reasoning poster with students.

As a class or in student groups, provide students with this week's claim-evidence-reasoning sample.

Student Sample

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol:

Claim-Evidence-Reasoning Record Observations Document (google doc)

Claim-Evidence-Reasoning Record Observation Document PDF

1. Identify the student's claim in

matter, and flexibility." Teacher should also model how to use a triple beam balance and ruler (inches) before asking students to measure the mass and length of each object.I

Teacher should consider the following facilitation points (Procedure):

1. Provide each student with a set of materials.

2. Allow time for students to handle and examine each object.

3. Students use a ruler and a triple beam balance to measure the length and mass of the items.

4. Students will fill out the first part of the data sheet.

5. Students will practice categorizing the materials by sorting them into groups based on their physical properties.

6. Students should complete the second part of the data sheet

Ask Students:

How could you modify a flexible object to make it rigid?

students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Strategy
(10-15 minutes)

Vocabulary
materials
hardness
strength
weight
absorbency

Four Square
Provide students with the graphic organizer (editable) or pdf handout, explaining its four sections: word, meaning, picture, and sentence.

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words.

Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review various artifacts (pictures, images, primary sources, charts) to build knowledge of the term.

Have students collaborate to complete the four square strategy for the other vocabulary terms.

Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics.

annotation graphic organizer" to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)
K-2 Student Writing Template (editable)
K-2 Student Writing Template (pdf)
**TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions:

How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?

Assessment for Learning:
(10-15 minutes)

Students will complete this week's CER for the assessment.

	the sample and have the teacher or students write their observations or questions. *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoning Questions **Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.		Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	

Week 3 Standards | Phenomenon | Weekly Lessons	
GSE: S2P1.b.	**Focused Concept:** Construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures.
Learning Targets:	Students will construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures.
Lab Safety and Materials:	**General Safety Practices**

SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions			
Phenomenon: Sturdy Bird Nest			**DQ:** How can I take something apart and make something different?	
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon Introduction (5-7 minutes) Show students the phenomenon card: Sturdy Bird Nest Use the see, think wonder strategy to guide student thinking. Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity (10-15 minutes)** **How can you change objects?** Have students follow the procedures laid out in the following activity: The teacher should record the observations of the students throughout the activity on chart paper. **uInvestigate Lab** How can you change objects?	**Introduce the Driving Question: (7-10 minutes)** Have students review the driving question: *How can I take something apart and make something different?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer. Be sure to create a reference for students to have throughout the week. **Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry	**Graphic Organizer and Materials (2-3 minutes)** Students will need and use the student lab and lab sheet for **Building Blocks Lab** **Objective:** Students will explore how smaller pieces are assembled, disassembled, and reassembled in more than one way to create a larger object. **Materials:** 20 blocks or building toys 1 metric ruler **Investigation Facilitation (25-30 minutes)** **TEACHER NOTE:Teacher will facilitate students through the activity. Students will use 20 blocks or other building toys that will be placed in separate containers or plastic baggies provided by the teacher. Teacher should consider the following facilitation points for	**Text Annotation Strategy (30-45 minutes)** Have students read and annotate the following text: "The Perfect Nest" The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy: **K-2 Text Annotation Protocol** Students should complete the following student handout as they work through the text annotation protocol: K-2 Text Annotation Student Document (editable) Text Annotation Student Document During the teacher-led discussion, the teacher should ask the following questions: *What might happen to a bird's nest if it gets damaged or taken apart? How do you think a bird would fix it?*	**Claim-Evidence-Reasoning (15-25 minutes)** Students will write a response to the following driving question in the CER format. *How can I take something apart and make something different?* Review the claim-evidence-reasoning poster with the students **TEACHER NOTE: Provide students with sentence starters by sharing on the board: K-2 CER Sentence Starters Have students write their claim-evidence-reasoning **writing a claim** Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question. **writing evidence** Students should provide observational or numerical data

Objective: Students will make a plan and then change the shape and color of clay.

**TEACHER NOTE:
Teacher will need to facilitate second graders in understanding making a plan: Teacher may use possible conversation with students:
"When we are engaged in science labs, it's like going on an adventure! Just like we need a map for an adventure, we need a plan for our labs. A plan helps us know what we will do, what materials we need, and what steps to follow. This way, we can make sure our lab goes smoothly and we can learn new things!"
**TEACHER NOTE: Guide students to see that developing and using a model allows them to make observations, form explanations, and use the evidence and their explanations to back up their arguments they make.

Have students follow the procedure provided in the lab.

**TEACHER NOTE:
In this lab, the students will construct explanations when using evidence from their observations.(With guidance from the teacher)

Teacher should consider the following facilitation points for the lab:

1. Distribute a ball of clay to each group.

activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

Claim-Evidence-Reasoning (CER) (10-12 minutes)

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the claim-evidence-reasoning poster with students.
As a class or in student groups, provide students with this week's claim-evidence-reasoning sample.

Student Sample

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol:

the lab:

1. Divide students into groups of 4-5

2. Have each group construct a structure using all 20 blocks.

3.Students will draw their structure.

4. Disassemble and build a new structure.

5. Draw each new structure, creating a total of four different structures.

Ask students:

What happens when you take apart building blocks and put them back together in a different way?

**TEACHER NOTE:
This question helps second graders understand the concept of changing the arrangement of parts to create something new.

(This question prompts students to think about disassembly)

How do birds put their nests together, and what steps do you think they follow to make sure the nest is strong and safe?

(This question helps students understand the process and sequence of constructing something,)

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Strategy
(10-15 minutes)
assemble
disassemble
reassemble
rearrange

Four Square
Provide students with the graphic organizer (editable) or pdf handout, explaining its four sections: word, meaning, picture, and sentence.

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words.

Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review

as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning
Students will use textual evidence from the "text annotation graphic organizer" to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)
K-2 Student Writing Template (editable)
K-2 Student Writing Template (pdf)
**TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions:

How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?

Assessment for Learning
(10-15 minutes)

Unit III Assessment II PDF

Unit III Assessment II (edit)

2. Students will flatten the clay and add three drops of food coloring to the surface. 3. Students will fold and knead the clay until the color is evenly distributed. 4. Instruct students to create a plan for reshaping the clay into an animal or another form. 5. Students will present their plan to the teacher before proceeding to reshape the clay. Ensure that surfaces are protected with newspaper or plastic. *Ask students:* *What kind of changes did you see?* **Materials** clay (refer to the safety lab protocol above) 3 to 5 drops of food coloring plastic gloves	Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoning Record Observation Document PDF *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoning Questions ****Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.		various artifacts (pictures, images, primary sources, charts) to build knowledge of the term. Have students collaborate to complete the four square strategy for the other vocabulary terms. Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	

GSE: S2P1.b.	**Focused Concept:** Construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures.			
Learning Targets:	Students will construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures			
Lab Safety and Materials:	**General Safety Practices**			
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions			
Phenomenon: Sturdy Bird Nest			**DQ:** How can I take something apart and make something different?	
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon Introduction (5-7 minutes) Show students the phenomenon card: Sturdy Bird Nest Use the see, think wonder strategy to guide student thinking. Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity (10-15 minutes)** **Flashlight Lab** Have students follow the procedures laid out in the	**Introduce the Driving Question: (7-10 minutes)** Have students review the driving question: *How can I take something apart and make something different?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer. Be sure to create a reference for	**Graphic Organizer and Materials (2-3 minutes)** Students will need and will use the student lab and lab sheet for **Tower Building pgs. 2-3** **Objective:** Students explore how smaller pieces assembled, disassembled, and reassembled in more than one way to create a larger object. **Materials:** 1 plastic baggie (per group) 50 mini marshmallows (per group) 100 toothpicks (per group)	**Text Annotation Strategy (30-45 minutes)** Have students read and annotate the following text: "Block Building Text" The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy: **K-2 Text Annotation Protocol** Students should complete the following student handout as they work through the text annotation protocol: K-2 Text Annotation Student Document (editable) Text Annotation Student Document	**Claim-Evidence-Reasoning (15-25 minutes)** Students will write a response to the following driving question in the CER format. *How can I take something apart and make something different?* Review the claim-evidence-reasoning poster with the students **TEACHER NOTE: Provide students with sentence starters by sharing on the board: K-2 CER Sentence Starters Have students write their claim-evidence-reasoning **writing a claim** Have students develop a claim which is their answer to the

following activity: **Flashlight Lab**

The teacher should record the observations of the students throughout the activity on chart paper.

Objective: Students observe the parts of a flashlight and explore how to put the flashlight back together.

**TEACHER NOTE: Guide students to see that developing and using a model allows them to make observations, form explanations, and use the evidence and their explanations to back up their arguments they make.

Have students follow the procedure provided in the lab.

**TEACHER NOTE:
In this lab, the students will reassemble take apart each group's flashlight and place the parts in a ziplock before distributing it to students.

Teacher should consider the following for the lab:

1. Divide the class into groups of 4.

2. Give each group a disassembled flashlight.

3. Have students observe and draw the pieces on their data sheets.

Students should discuss the contents of the bag in their

students to have throughout the week.

****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

Claim-Evidence-Reasoning (CER) (10-12 minutes)

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the claim-evidence-reasoning poster with students.

As a class or in student groups, provide students with this week's claim-evidence-reasoning sample.

Student Sample

1 ruler (cm) (per group)

Investigation Facilitation (35-40 minutes)

Before activity: Allow the marshmallows to dry out, uncovered for 24 hours to improve results and help the towers to hold together.

**TEACHER NOTE:In this lab the teacher will facilitate by reading to the students the following: "Marshy Marshmallow, Inc. wants to hire you to design a tower for their new complex. Build a model of your proposed building using marshmallows and toothpicks."

**TEACHER NOTE: Guide students to see that developing and using a model allows them to make observations, form explanations, and use the evidence and their explanations to back up their arguments they make.
Teacher should consider the following for the lab:
Activity Requirements:
Groups must draw a plan for their structure before building.
The tower must be 30 cm tall.
The tower must stand on its own for at least 15 seconds.
**TEACHER NOTE:
Teacher will need to facilitate second graders in understanding making a plan: Teacher may use possible conversation with students:
"When we are engaged in science labs, it's like going on an adventure! Just like we need

During the teacher-led discussion, the teacher should ask the following questions:

What shapes and sizes of blocks do you think are the best for building a tall and stable structure?

(This question encourages students to think about the physical properties of different shapes and sizes and how they contribute to stability and height.)

If your block tower falls apart, how can you figure out what went wrong and rebuild it better?

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Strategy
(10-15 minutes)
assemble
disassemble
reassemble
rearrange

Four Square
Provide students with the graphic organizer (editable) or pdf handout, explaining its four sections: word, meaning, picture, and sentence.

driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.
writing evidence
Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning
Students will use textual evidence from the "text annotation graphic organizer" to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)
K-2 Student Writing Template (editable)
K-2 Student Writing Template (pdf)
**TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions:

How are your thoughts or understanding similar to another writer on the topic?
How are your thoughts or understanding different to another writer on the topic?

groups. *Ask students:* *Does the flashlight work in its current state?* Students should be challenged to assemble the parts and get the flashlight to work again. **Materials:** 1 flashlight (per group) 1 flashlight battery (per group) 1 plastic bag (per group)	The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol: Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoning Record Observation Document PDF *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoning Questions ****Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary.	a map for an adventure, we need a plan for our labs. A plan helps us know what we will do, what materials we need, and what steps to follow. This way, we can make sure our lab goes smoothly and we can learn new things!" *Follow the teacher note above to help guide students in creating a plan for their design. Students will build their model based on their design plan and test it to see if it can stand on its own. Students may refine their model if the structure does not meet the requirements. Teacher should review measuring using centimeters.* Teacher should ask the following question: *How would you compare the first structure you built with blocks to your tower?*	Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review various artifacts (pictures, images, primary sources, charts) to build knowledge of the term. Have students collaborate to complete the four square strategy for the other vocabulary terms. Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	*What would you like to learn more about? Why?* **Assessment for Learning:** **(10-15 minutes)** Students will complete this week's CER for the assessment.

	Students will explicitly learn vocabulary on Day 4.			

Week 5 Standards | Phenomenon | Weekly Lessons				
GSE: S2P1.c.	**Focused Concept:** Students provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible. (Clarification statement: changes in matter could include heating or freezing of water, baking a cake, or boiling an egg)			
Learning Target:	Students will provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible. (Clarification statement: changes in matter could include heating or freezing of water, baking a cake, or boiling an egg)			
Lab Safety:	**General Safety Practices**			
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions			
Phenomenon: Popcorn				**DQ:** How did the popcorn change?
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon Introduction (5-7 minutes) Show students the phenomenon card: Popcorn Use the see, think wonder strategy to guide student thinking. Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on	**Introduce the Driving Question: (7-10 minutes)** Have students review the driving question: *How did the popcorn change?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question	**Graphic Organizer and Materials (2-3 minutes)** Students will need and use the student sheet for **Marshmallow Heat Up!** **Objective:** Students discover the effect heat has on marshmallows. **Materials:** Hot plate, oven mittens, 2 large marshmallows	**Text Annotation Strategy (30-45 minutes)** Have students read and annotate the following text: "A Camping Trip" The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy: **K-2 Text Annotation Protocol**	**Claim-Evidence-Reasoning (15-25 minutes)** Students will write a response to the following driving question in the CER format. *How did the popcorn change?* Review the claim-evidence-reasoning poster with the students

chart paper and refer back to initial student ideas throughout the week.

Inquiry Activity
(10-15 minutes)

Heating and Cooling Lab

uInvestigate Lab
How does heating and cooling change matter? **Savvas pg.55**

Have students follow the procedures laid out in the following activity:

The teacher should record the observations of the students throughout the activity on chart paper.

Objective: Students investigate how crayons change when they get hot and then change again when they get cold.

**TEACHER NOTE: Guide students to see that developing and using a model allows them to make observations, form explanations, and use the evidence and their explanations to back up their arguments they make.

Have students follow the procedure provided in the lab.
**TEACHER NOTE:
In this lab, the teacher should facilitate students as they observe that heating the crayon can make it change from a solid to a liquid. Cooling the liquid wax can make it change from a liquid to a solid again. Students should start to observe reversible and irreversible.

Click here to access question words reference chart

The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer.

Be sure to create a reference for students to have throughout the week.
****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

Claim-Evidence-Reasoning (CER) (10-12 minutes)

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the

(per student), 1 wooden skewer (per student), 1 small paper plate (per student)

Investigation Facilitation
(35-40 minutes)

Before activity: Distribute two marshmallows, one medium skewer, one oven mitten, and one paper plate to each student

**TEACHER NOTE:In this lab the students will observe how heating and cooling a marshmallow changes its appearance. Teacher should address any misconceptions throughout the activity.

**TEACHER NOTE: Guide students to see that developing and using a model allows them to make observations, form explanations, and use the evidence and their explanations to back up their arguments they make.

Teacher facilitation points:

1. Students place a marshmallow on a skewer and lay it on a paper plate next to another marshmallow.

2. Teacher assists students in turning on the hot plate, following all safety protocols.
3. Teacher will heat two groups of student marshmallows at a time.

4. Students will wear an oven mitt on one hand to hold the skewer, keeping their other hand

Students should complete the following student handout as they work through the text annotation protocol:

K-2 Text Annotation Student Document (editable)

Text Annotation Student Document

During the teacher-led discussion, the teacher should ask the following questions:

What happens to a marshmallow when you hold it over a fire, and why does it change?

(This question encourages students to observe the effects of heat and understand the basic principles of heating and temperature change)

What do you think happens to the marshmallow if we let it cool down after roasting it?

(This question prompts students to consider the cooling process, how the marshmallow changes when it cools, and the reversible or irreversible nature of those changes.)

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

**TEACHER NOTE: Provide students with sentence starters by sharing on the board:

K-2 CER Sentence Starters

Have students write their claim-evidence-reasoning

writing a claim
Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.
writing evidence
Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning
Students will use textual evidence from the "text annotation graphic organizer" to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)
K-2 Student Writing Template (editable)
K-2 Student Writing Template (pdf)

**TEACHER NOTE: Have students review the student sample(s) of

Teacher should facilitate students: remove the paper from the crayon, break the crayon into small pieces, and place the small pieces in a cup. Students should then apply heat from a hand held hair dryer and observe what happens to the crayon. Once the crayon has melted, students should record the temperature of the crayon. Teacher should facilitate students as they place the melted crayon in a cooler filled with ice. Students will then record the difference in the crayon from heating and cooling. **Materials:** crayons freezer hot plate or hair dryer thermometer ice cube trays metal spoon cooler	claim-evidence-reasoning poster with students. As a class or in student groups, provide students with this week's claim-evidence-reasoning sample. The teacher will pull students samples from earlier in the unit for peer review. Be sure to hide student names. **TEACHER NOTE: Student Sample Share with students from a CER your students have completed. Be sure to remove or hide student names. Ask your students to analyze their peers' work during this week's unit to review the C-E-R strategy. The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol: Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoning Record Observation Document PDF *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their*	behind their back for safety. 5. Students will observe the marshmallow as it heats for two minutes. 6. After heating, students will place the marshmallow back on the plate next to the unheated marshmallow. Students will observe and discuss the changes as the marshmallow cools. *Ask Students: After step 1; What do you think will happen to a marshmallow when it is heated?* *Ask Students after step 5; What is happening to the marshmallow as the heat is applied?* *Ask Students after step 6; How does the heated marshmallow compare to the one that is not heated?*	**Vocabulary Strategy** **(10-15 minutes)** heating cooling irreversible reversible melting **Four Square** Provide students with the graphic organizer (editable) or pdf handout, explaining its four sections: word, meaning, picture, and sentence. Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review various artifacts (pictures, images, primary sources, charts) to build knowledge of the term. Have students collaborate to complete the four square strategy for the other vocabulary terms. Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions: *How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?* **Assessment for Learning** **(10-15 minutes)** **Unit Three Assessment 3**

	observations or questions. *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoning Questions ****Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.			

Week 6 Standards | Phenomenon | Weekly Lessons	
GSE: S2P1.c.	**Focused Concept:** Students provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible. (Clarification statement: changes in matter could include heating or freezing of water, baking a cake, or boiling an egg)
Learning Target:	Students will provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible. (Clarification statement: changes in matter could include heating or freezing of water, baking a cake, or boiling an egg)
Lab Safety:	**General Safety Practices**
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions

Phenomenon: Popcorn	**DQ:** How did the popcorn change?			
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon Introduction (5-7 minutes) Show students the phenomenon card: Popcorn Use the see, think wonder strategy to guide student thinking. Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity (10-15 minutes)** **Way Too Hot!** **Mystery Science** How does heating and cooling change matter? Have students follow the procedures laid out in the following activity: Lab Activity Directions **Slides 2-10** The teacher should record the observations of the students throughout the activity on chart paper. Objective: Students will observe and construct an explanation that some changes in matter caused by heating and cooling	**Introduce the Driving Question: (7-10 minutes)** Have students review the driving question: *How did the popcorn change?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer. Be sure to create a reference for students to have throughout the week. ****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format. **Claim-Evidence-Reasoning (CER) (10-12 minutes)**	**Graphic Organizer and Materials (2-3 minutes)** Students will need and use the student lab sheet for: Heat it Up! Lab Sheets 1 & 2 **Objective:** Students discover the effect heat has on different materials. **Materials:** 1 Small 6-cup muffin tin (per teacher), 6 Small 6-cup muffin tins (1 per group), 6 Rocks (1 per group), 6 crayons (1 per group), 1 Ice chest or cooler (per class), 2 Hot plates or griddles (per class), 1 Stopwatch (per group) **Consumable:**1 Piece of chocolate (per class), 1 Pat of butter (per group), 1 Package popcorn kernels (per class), 30 mL Pancake batter (5 mL per group), 1 Bag of ice (per class) **Investigation Facilitation (35-40 minutes)** **TEACHER NOTE: Guide students to see that developing and using a model allows them to make observations, form explanations, and use the evidence and their explanations to back up their arguments they make.	**Text Annotation Strategy (30-45 minutes)** Have students read and annotate the following text: Changes from Heat The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy: **K-2 Text Annotation Protocol** Students should complete the following student handout as they work through the text annotation protocol: K-2 Text Annotation Student Document (editable) Text Annotation Student Document During the teacher-led discussion, the teacher should ask the following questions: *What do you think happens to a liquid, like water, when it is put in the freezer, and why?* *(This question prompts students to think about the cooling process and how it causes liquids to change into solids, reinforcing the idea of phase changes due to temperature changes)*	**Claim-Evidence-Reasoning (15-25 minutes)** Students will write a response to the following driving question in the CER format. *How did the popcorn change?* Review the claim-evidence-reasoning poster with the students **TEACHER NOTE: Provide students with sentence starters by sharing on the board: K-2 CER Sentence Starters Have students write their claim-evidence-reasoning **writing a claim** Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question. **writing evidence** Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim. **writing the reasoning**

can be reversed and some are irreversible. **TEACHER NOTE: Guide students to see that developing and using a model allows them to make observations, form explanations, and use the evidence and their explanations to back up their arguments they make. Have students follow the procedure provided in the lab. **Materials:** Refer to the science safety protocol (hot water) materials needed for this activity are found here: Lab Activity Directions **TEACHER NOTE: In this lab, the teacher should facilitate students by following the link to the Mystery Science lab (slides 2-10)	**Objective:** Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation. The teacher should state the following to students: "Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas." Review the claim-evidence-reasoning poster with students. As a class or in student groups, provide students with this week's claim-evidence-reasoning sample. **TEACHER NOTE: Student Sample Share with students from a CER your students have completed. Be sure to remove or hide student names. Ask your students to analyze their peers' work during this week's unit to review the C-E-R strategy. The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol:	**TEACHER NOTE: Students will observe heating and cooling. Teacher will follow the link Teacher Facilitation Lab for activity directions. ***Ask Students:*** *How would you explain a reversible change of matter?* ***Ask Students:*** *How would you explain an irreversible change of matter?*	*What do you think happens to a crayon if you leave it in the hot sun, and how does it change in color, size, and shape?* *(This question encourages students to think about the various effects of heat, such as melting, which can alter a crayon's physical properties like color (fading or blending), size (expanding or shrinking), and shape (melting into a different form).* **TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning. **Vocabulary Strategy** **(10-15 minutes)** heating cooling irreversible reversible melting **Four Square** Provide students with the graphic organizer (editable) or pdf handout, explaining its four sections: word, meaning, picture, and sentence. Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to work in collaborative groups. Actively	Students will use textual evidence from the "text annotation graphic organizer" to generate the reasoning or justification in the CER format. Have students use the following template to write their claim-evidence-reasoning (CER) K-2 Student Writing Template (editable) K-2 Student Writing Template (pdf) **TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions: *How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?* **Assessment for Learning:** **(10-15 minutes)** Students will complete this week's CER for the assessment.

	Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoning Record Observation Document PDF *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoning Questions ****Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.		monitor and facilitate small group discussions and review various artifacts (pictures, images, primary sources, charts) to build knowledge of the term. Have students collaborate to complete the four square strategy for the other vocabulary terms. Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	

Labs / Investigations

Mandatory Labs	Explore Learning Science 4 Us	Mystery Science/PHet
Sharing Properties **Properties of Materials Lab** **Building Blocks** **Tower Building** **Marshmallow Heat Up!** **Heat it Up!**	**Science 4 Us Changes in Matter Module**	**Way Too Hot!**

Additional- Resources/Tasks	
Supplemental Labs	Science 4 Us Changes in Matter Module
Culminating Performance Task	Does the mass of ice change when it melts? CER Task How can I take something apart and make something different? CER Task How did the popcorn change? CER Task
STEM Activities	GaDOE Boat, Kite, Balloon
	Link the following : https://drive.google.com/file/d/1dDFitw1NesctodMZ9XAr7zc0-S5GZKPB/view?usp=drive_link