Connecticut Alternate Science Assessment

Grade 8 Performance Tasks

Earth Science

Storyline 1: Earth Systems

Storyline 2: Natural Resources

PUBLISHED FALL 2018

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Storyline 1: Earth Systems

Grade 8 Performance Task

Earth Science
Storyline 1: Earth Systems
Grade 8 Performance Task

Guiding Questions: How do water and wind affect the Earth's surface? How does water move through the Earth's atmosphere and land? What factors affect the weather?

NGSS Learning Progressions	Grade 8		
	NGSS Standard Performance Expectations	**Connecticut Alternate Science Essence Statements**	**Core Extensions**
ESS2.C The Roles of Water in Earth's Surface Processes	MS-ESS2-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	CTAS-MS-ESS2-2 Construct an explanation based on evidence for how the movements of water, ice, and wind can change the Earth's surface. CTAS-MS-ESS2-4 Use a model to explain how the sun's energy and gravity cause water to cycle between the land and the atmosphere.	1. From provided visuals, identify the effect of waves on a beach over time. (CTAS-MS-ESS2-2) 2. From provided visuals, describe how ice freezing and melting can change the land. (CTAS-MS-ESS2-2) 3. Construct an explanation based on provided evidence for how wind changes a landform on the Earth's surface. (CTAS-MS-ESS2-2) 4. Provide examples showing that water can exist as a solid, a liquid, or a gas, depending on its temperature. (CTAS-MS-ESS2-4) 5. From given components, complete a model of the water cycle by describing the relationships among the components (i.e., evaporation of water on land → condensation/cloud formation → precipitation of rain or snow → falls back to the land). (CTAS-MS-ESS2-4) 6. Given a model of the water cycle, describe the effect that the sun's energy (heat) and the Earth's gravity have on water. (CTAS-MS-ESS2-4)
ESS2.D Weather and Climate	MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.	CTAS-MS-ESS2-5 Use data to provide evidence of atmospheric conditions that result in precipitation.	

NGSS Learning Progressions	Grade 8		
	NGSS Standard Performance Expectations	**Connecticut Alternate Science Essence Statements**	**Core Extensions**
			7. Based on the provided evidence, relate cloud types to associated weather. (CTAS-MS-ESS2-5) 8. When given a set of temperature data, make a connection between the temperature change and precipitation. (CTAS-MS-ESS2-5)
Appropriate Vocabulary	Precipitation, evaporation, condensation, gravity, water cycle, wind, heat, solid, liquid, gas, temperature, thermometer, cloud types/descriptions (white and fluffy vs. dark and heavy)		

Earth Science
Storyline 1: Earth Systems
Grade 8 Performance Task

General Overview:
Earth's surface is constantly changing through the actions of wind and water. Water continually cycles between different forms on Earth and in the atmosphere. Students will explore how landforms look before and after weathering. Students will describe different components acting within the water cycle. Students will use a model and data to understand how evidence of cloud types and temperature data can help scientists predict coming weather patterns.

List of Materials Needed:
Teacher-Provided Resources:

ACTIVITY 4

- 1 Cup of Room Temperature Water

Instructions for Preparing Materials:
Teachers must collect all relevant materials prior to the administration of each activity. The Card, Sentence Strip, and Strip Resources will need to be cut out. Resources are listed according to the Resource Identifier, which appears on the back of each Resource. The Resources needed for the administration of each activity are listed according to these Resource Identifiers in the Teacher Notes section of each activity.

List of Resources:

- Activity 1 Resource 1: Sandcastle Poster
- Activity 1 Resource 2: Cards 2a – 2c
    - Card 2a – tall sandcastle
    - Card 2b – flat sand
    - Card 2c – hole in sand
- Activity 1 Resource 3: Sentence Strips 3a – 3c
    - Sentence Strip 3a – carried sand away
    - Sentence Strip 3b – made sand cleaner
    - Sentence Strip 3c – sand into rock
- Activity 2 Resource 1: Before and After Freezing Poster
- Activity 2 Resource 2: Cards 2a – 2c
    - Card 2a – bigger
    - Card 2b – smaller
    - Card 2c – warmer
- Activity 2 Resource 3: Before and After Snow Melt Poster

- Activity 2 Resource 4: Cards 4a – 4c
    - Card 4a – bigger
    - Card 4b – smaller
    - Card 4c – slower
- Activity 3 Resource 1: Sand Dune Before and After Poster
- Activity 3 Resource 2: Sentence Strips 2a – 2c
    - Sentence Strip 2a – new sand dune
    - Sentence Strip 2b – changed position of sand dune
    - Sentence Strip 2c – made sand dune taller
- Activity 4 Resource 1: Cards 1a – 1c
    - Card 1a – solid
    - Card 1b – gas
    - Card 1c – liquid
- Activity 5 Resource 1: Water Cycle Poster 1
- Activity 5 Resource 2: Cards 2a – 2c
    - Card 2a – Runoff
    - Card 2b – Evaporation
    - Card 2c – Condensation
- Activity 6 Resource 1: Water Cycle Poster 2
- Activity 6 Resource 2: Cards 2a – 2d
    - Card 2a – Runoff
    - Card 2b – Evaporation
    - Card 2c – Condensation
    - Card 2d – Precipitation
- Activity 6 Resource 3: Strips 3a – 3c
    - Strip 3a – water
    - Strip 3b – sidewalk
    - Strip 3c – raindrops
- Activity 7 Resource 1: Cloud Types Poster
- Activity 7 Resource 2: Cloud Type Chart Poster
- Activity 7 Resource 3: Cards 3a – 3d
    - Card 3a – Cirrus
    - Card 3b – Stratus
    - Card 3c – Cumulus
    - Card 3d – Cumulonimbus
- Activity 8 Resource 1: Weather Data Table Poster
- Activity 8 Resource 2: Strips 2a – 2c
    - Strip 2a – Day 1 and 2
    - Strip 2b – Day 2 and 3
    - Strip 2c – Day 3 and 4

- Activity 8 Resource 3: Sentence Strips 3a – 3c
    - Sentence Strip 3a – warmest
    - Sentence Strip 3b – freezing
    - Sentence Strip 3c – same

ACTIVITY 1

Essence Statement: CTAS-MS-ESS2-2 Construct an explanation based on evidence for how the movements of water, ice, and wind can change the Earth's surface.

Core Extension 1: From provided visuals, identify the effect of waves on a beach over time. (CTAS-MS-ESS2-2)

Teacher Notes:

Collect the following resources for this activity:

- Activity 1 Resource 1: Sandcastle Poster
- Activity 1 Resource 2: Cards 2a – 2c
  - Card 2a – tall sandcastle
  - Card 2b – flat sand
  - Card 2c – hole in sand
- Activity 1 Resource 3: Sentence Strips 3a – 3c
  - Sentence Strip 3a – carried sand away
  - Sentence Strip 3b – made sand cleaner
  - Sentence Strip 3c – sand into rock

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about some ways that water can change Earth's surface." |

2. Display Resource 1: Sandcastle Poster for the student.

3. Indicate Resource 1.

SAY	"A boy builds a sandcastle on a beach *(indicate the first box).* After a while, the ocean waves came closer and closer to the sandcastle. The second picture shows the sandcastle after the first wave hit the sandcastle *(indicate the second box).*"

4. | **ASK** | "Which picture shows how the sandcastle will change after several waves hit it?" |

5. Provide Resource 2: Cards 2a – 2c to the student. Indicate and read each Card.

   a. Indicate Card 2a.

SAY	"tall sandcastle"

   b. Indicate Card 2b.

SAY	"flat sand"

   c. Indicate Card 2c.

SAY	"hole in the sand"

6. | **ASK AGAIN** | "Which picture shows how the sandcastle will change after several waves hit it?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Card 2b.

| **SAY** | "The boy watched the waves change the sandcastle. After several waves hit the sandcastle, there was nothing left of the sandcastle and there was just flat sand." |

9. | **ASK** | "Which sentence describes why the sandcastle changed?" |

10. Provide Resource 3: Sentence Strips 3a – 3c to the student. Indicate and read each Sentence Strip.

a. Indicate Sentence Strip 3a.

| **SAY** | "Waves carried the sand away." |

b. Indicate Sentence Strip 3b.

| **SAY** | "Waves made the sand cleaner." |

c. Indicate Sentence Strip 3c.

| **SAY** | "Waves turned the sand into rock." |

11. | **ASK AGAIN** | "Which sentence describes why the sandcastle changed?" |

12. Allow student to respond and record response.

13. Indicate Sentence Strip 3a.

| **SAY** | "Waves carried the sand away." |

14. | **SAY** | "We are now finished with this activity." |

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Card 2b.

SAY	"The boy watched the waves change the sandcastle. After several waves hit the sandcastle, there was nothing left of the sandcastle and there was just flat sand."

2.

ASK	"Which sentence describes why the sandcastle changed?"

3. Provide Resource 3: Sentence Strips 3a – 3c to the student. Indicate and read each Sentence Strip.

   a. Indicate Sentence Strip 3a.

SAY	"Waves carried the sand away."

   b. Indicate Sentence Strip 3b.

SAY	"Waves made the sand cleaner."

   c. Indicate Sentence Strip 3c.

SAY	"Waves turned the sand into rock."

4.

ASK AGAIN	"Which sentence describes why the sandcastle changed?"

5. Allow student to respond and record response.

6. Indicate Sentence Strip 3a.

SAY	"Waves carried the sand away."

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. Which picture shows how the sandcastle will change after several waves hit it?
   a. Card 2b – flat sand
2. Which sentence describes why the sandcastle changed?
   a. Sentence Strip 3a – Waves carried the sand away.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to make a prediction about how the sandcastle will change after several waves hit the sandcastle (Card 2b); ***and*** • is unable to describe why the sandcastle changed (Sentence Strip 3a).	The student **does not** demonstrate understanding.	0
Student… • is able to make a prediction about how the sandcastle will change after several waves hit the sandcastle (Card 2b); ***and*** • is unable to describe why the sandcastle changed (Sentence Strip 3a). **OR** • is unable to make a prediction about how the sandcastle will change after several waves hit the sandcastle (Card 2b); ***and*** • **after scaffolding,** is able to describe why the sandcastle changed (Sentence Strip 3a).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to make a prediction about how the sandcastle will change after several waves hit the sandcastle (Card 2b); ***and*** • is able to describe why the sandcastle changed (Sentence Strip 3a).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 2

Essence Statement: CTAS-MS-ESS2-2 Construct an explanation based on evidence for how the movements of water, ice, and wind can change the Earth's surface.

Core Extension 2: From provided visuals, describe how ice freezing and melting can change the land. (CTAS-MS-ESS2-2)

Teacher Notes:

Collect the following resources for this activity:

- Activity 2 Resource 1: Before and After Freezing Poster
- Activity 2 Resource 2: Cards 2a – 2c
  - Card 2a – bigger
  - Card 2b – smaller
  - Card 2c – warmer
- Activity 2 Resource 3: Before and After Snow Melt Poster
- Activity 2 Resource 4: Cards 4a – 4c
  - Card 4a – bigger
  - Card 4b – smaller
  - Card 4c – slower

Steps to Follow:

1.

SAY	"In this activity, we are going to talk about how when ice freezes and melts it can change the land."

2. Display Resource 1: Before and After Freezing Poster for the student.
3. Indicate Resource 1.

SAY	"These are two pictures of the same rock before and after water freezes in a crack of the rock. Here is a crack in a rock that fills with water *(indicate '**Before Freezing**')*. When the temperature gets cold, the water freezes in the crack *(indicate '**After Freezing**').*"

4.

ASK	"What happens to the crack in the rock after the water freezes?"

5. Provide Resource 2: Cards 2a – 2c to the student. Indicate and describe each Card.

a. Indicate Card 2a.

SAY	"The crack gets bigger."

b. Indicate Card 2b.

SAY	"The crack gets smaller."

c. Indicate Card 2c.

SAY	"The crack gets warmer."

6. | **ASK AGAIN** | "What happens to the crack in the rock after the water freezes?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Card 2a.

| **SAY** | "The crack in the rock gets **bigger** after the water freezes." |

9. Display Resource 3: Before and After Snow Melt Poster for the student.

10. Indicate Resource 3.

| **SAY** | "These are two pictures of the same stream before and after snow melts. Here is a stream with just a little bit of water in it *(indicate '**Before Snow Melt**')*. As ice melts from snow, more water fills the stream (*indicate '**After Snow Melt**')*." |

11. | **ASK** | "What happens to the stream after the snow melts?" |

12. Provide Resource 4: Cards 4a – 4c to the student. Indicate and describe each Card.

a. Indicate Card 4a.

| **SAY** | "The stream gets bigger." |

b. Indicate Card 4b.

| **SAY** | "The stream gets smaller." |

c. Indicate Card 4c.

| **SAY** | "The stream gets slower." |

13. | **ASK AGAIN** | "What happens to the stream after the snow melts?" |

14. Allow student to respond and record response.

15. Indicate Card 4a.

| **SAY** | "The stream gets **bigger** after the snow melts." |

16. | **SAY** | "We are now finished with this activity." |

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Card 2a.

SAY	"The crack in the rock gets **bigger** after the water freezes."

2. Display Resource 3: Before and After Snow Melt Poster for the student.
3. Indicate Resource 3.

SAY	"These are two pictures of the same stream before and after snow melts. Here is a stream with just a little bit of water in it *(indicate '**Before Snow Melt**')*. As ice melts from snow, more water fills the stream (*indicate '**After Snow Melt**')*."

4.

ASK	"What happens to the stream after the snow melts?"

5. Provide Resource 4: Cards 4a – 4c to the student. Indicate and describe each Card.
   a. Indicate Card 4a.

SAY	"The stream gets bigger."

   b. Indicate Card 4b.

SAY	"The stream gets smaller."

   c. Indicate Card 4c.

SAY	"The stream gets slower."

6.

ASK AGAIN	"What happens to the stream after the snow melts?"

7. Allow student to respond and record response.
8. Indicate Card 4a.

SAY	"The stream gets **bigger** after the snow melts."

9.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. What happens to the crack in the rock after the water freezes?
   a. Card 2a – bigger; The crack in the rock gets **bigger** after the water freezes.
2. What happens to the stream after the snow melts?
   a. Card 4a – bigger; The stream gets **bigger** after the snow melts.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify what happens to the crack in the rock when the water freezes (Card 2a); ***and*** • is unable to identify what happens to the stream after the snow melts (Card 4a).	The student **does not** demonstrate understanding.	0
Student… • is able to identify what happens to the crack in the rock when the water freezes (Card 2a); ***and*** • is unable to identify what happens to the stream after the snow melts (Card 4a). **OR** • is unable to identify what happens to the crack in the rock when the water freezes (Card 2a); ***and*** • **after scaffolding,** is able to identify what happens to the stream after the snow melts (Card 4a).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify what happens to the crack in the rock when the water freezes (Card 2a); ***and*** • is able to identify what happens to the stream after the snow melts (Card 4a).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 3

Essence Statement: CTAS-MS-ESS2-2 Construct an explanation based on evidence for how the movements of water, ice, and wind can change the Earth's surface.

Core Extension 3: Construct an explanation based on provided evidence for how wind changes a landform on the Earth's surface. (CTAS-MS-ESS2-2)

Teacher Notes:

Collect the following resources for this activity:

- Activity 3 Resource 1: Sand Dune Before and After Poster
- Activity 3 Resource 2: Sentence Strips 2a – 2c
  - Sentence Strip 2a – new sand dune
  - Sentence Strip 2b – changed position of sand dune
  - Sentence Strip 2c – made sand dune taller

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about how wind can change the Earth's surface." |

2. Display Resource 1: Sand Dune Before and After Poster for the student.

3. Indicate Resource 1.

SAY	"A sand dune used to look like this *(indicate the sand dune on the top).* The sand dune was tall and big. Over time, wind changed the sand dune *(indicate the sand dune on the bottom)*."

4. | **ASK** | "Which sentence describes how the wind changed the sand dune over time in this picture?" |

5. Provide Resource 2: Sentence Strips 2a – 2c to the student. Indicate and read each Sentence Strip.

   a. Indicate Sentence Strip 2a.

SAY	"The wind created a new sand dune."

   b. Indicate Sentence Strip 2b.

SAY	"The wind changed the position of the sand dune."

   c. Indicate Sentence Strip 2c.

SAY	"The wind made the sand dune taller."

6. | **ASK AGAIN** | "Which sentence describes how the wind changed the sand dune over time in this picture?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Sentence Strip 2b.

SAY	"The wind changed the position of the sand dune."

9.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, remove the incorrect Sentence Strip chosen by the student.

SAY	"[Insert description of incorrect Sentence Strip chosen by the student] is not the correct answer."

2.

ASK	"Which sentence describes how the wind changed the sand dune over time in this picture?"

3. Provide remaining Resource 2: Sentence Strip 2a – 2c to the student. Indicate and read each remaining Sentence Strip.

a. Indicate Sentence Strip 2a.

SAY	"The wind created a new sand dune."

b. Indicate Sentence Strip 2b.

SAY	"The wind changed the position of the sand dune."

c. Indicate Sentence Strip 2c.

SAY	"The wind made the sand dune taller."

4.

ASK AGAIN	"Which sentence describes how the wind changed the sand dune over time in this picture?"

5. Allow student to respond and record response.

6. Indicate Sentence Strip 2b.

SAY	"The wind changed the position of the sand dune."

7.

SAY	"We are now finished with this activity."

The correct answer is as follows:

1. Which sentence describes how the wind changed the sand dune over time in this picture?
    a. Sentence Strip 2b – The wind changed the position of the sand dune.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to describe how the sand dune changed over time (Sentence Strip 2b).	The student **does not** demonstrate understanding.	0
Student… • **after scaffolding,** is able to describe how the sand dune changed over time (Sentence Strip 2b).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student … • is able to describe how the sand dune changed over time (Sentence Strip 2b).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 4

Essence Statement: CTAS-MS-ESS2-4 Use a model to explain how the sun's energy and gravity cause water to cycle between the land and the atmosphere.

Core Extension 4: Provide examples showing that water can exist as a solid, a liquid, or a gas, depending on its temperature. (CTAS-MS-ESS2-4)

Teacher Notes:

Collect the following resources for this activity:

- Activity 4 Resource 1: Cards 1a – 1c
  - Card 1a – solid
  - Card 1b – gas
  - Card 1c – liquid

Teacher-Provided Resources:

- 1 Cup of Room Temperature Water

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about how water can change forms based on the temperature of the water." |
2. Place one cup of room temperature water on the table for the student.
3. Indicate the cup of water.

SAY	"This is a cup of water. The water in this cup is liquid."

4. | **ASK** | "What will happen to the water after it freezes? Will the water become a solid, become a gas, or stay a liquid?" |
5. Provide Resource 1: Cards 1a – 1c to the student. Indicate and read each Card.
   a. Indicate Card 1a.

SAY	"solid"

   b. Indicate Card 1b.

SAY	"gas"

   c. Indicate Card 1c.

SAY	"liquid"

6. | **ASK AGAIN** | "What will happen to the water after it freezes? Will the water become a solid, become a gas, or stay a liquid?" |
7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Card 1a.

SAY	"Water will become a **solid** after it freezes."

9.

ASK	"What will happen to the water after it boils? Will the water become a gas or stay a liquid?"

10. Provide remaining Resource 1: Card 1b and Card 1c to the student. Indicate and read each remaining Card.

a. Indicate Card 1b.

SAY	"gas"

b. Indicate Card 1c.

SAY	"liquid"

11.

ASK AGAIN	"What will happen to the water after it boils? Will the water become a solid, become a gas, or stay a liquid?"

12. Allow student to respond and record response.

13. Indicate Card 1b.

SAY	"Water will become a **gas** after it boils."

14.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Card 1a.

SAY	"Water will become a **solid** after it freezes."

2.

ASK	"What will happen to the water after it boils? Will the water become a gas or stay a liquid?"

3. Provide remaining Resource 1: Card 1b and Card 1c to the student. Indicate and read each remaining Card.

   a. Indicate Card 1b.

SAY	"gas"

   b. Indicate Card 1c.

SAY	"liquid"

4.

ASK AGAIN	"What will happen to the water after it boils? Will the water become a solid, become a gas, or stay a liquid?"

5. Allow student to respond and record response.

6. Indicate Card 1b.

SAY	"Water will become a **gas** after it boils."

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. What will happen to the water after it freezes? Will the water become a solid, become a gas, or stay a liquid?
   a. Card 1a – solid; Water will become a **solid** after it freezes.
2. What will happen to the water after it boils? Will the water become a solid, become a gas, or stay a liquid?
   a. Card 1b – gas; Water will become a **gas** after it boils.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify what happens to liquid water after it freezes (Card 1a); ***and*** • is unable to identify what happens to liquid water after it boils (Card 1b).	The student **does not** demonstrate understanding.	0
Student… • is able to identify what happens to liquid water after it freezes (Card 1a); ***and*** • is unable to identify what happens to liquid water after it boils (Card 1b). **OR** • is unable to identify what happens to liquid water after it freezes (Card 1a); ***and*** • **after scaffolding,** is able to identify what happens to liquid water after it boils (Card 1b).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify what happens to liquid water after it freezes (Card 1a); ***and*** • is able to identify what happens to liquid water after it boils (Card 1b).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 5

Essence Statement: CTAS-MS-ESS2-4 Use a model to explain how the sun's energy and gravity cause water to cycle between the land and the atmosphere.

Core Extension 5: From given components, complete a model of the water cycle by describing the relationships among the components (i.e., evaporation of water on land → condensation/cloud formation → precipitation of rain or snow → falls back to the land). (CTAS-MS-ESS2-4)

Teacher Notes:

Collect the following resources for this activity:

- Activity 5 Resource 1: Water Cycle Poster 1
- Activity 5 Resource 2: Cards 2a – 2c
  - Card 2a – Runoff
  - Card 2b – Evaporation
  - Card 2c – Condensation

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about the water cycle." |
2. Display Resource 1: Water Cycle Poster 1 for the student.
3. Indicate Resource 1.

SAY	"This poster shows the water cycle. This part of the water cycle is where rain or snow falls to the ground from clouds in the sky *(indicate **'Precipitation'**)*. This part of the water cycle is called '**Precipitation**'."

4. Provide Resource 2: Card 2a to the student.
5. Indicate Card 2a.

SAY	"This Card is labeled '**Runoff**'. Runoff occurs when water on the land flows toward the ocean."

6. | **ASK** | "Where should the label '**Runoff**' be placed on the water cycle?" |
7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.
8. If the student chose the correct answer, reiterate the student's correct answer. Place chosen answer Card in the correct location on the Resource 1: Water Cycle Poster 1.
9. Provide Resource 2: Card 2b to the student.
10. Indicate Card 2b.

SAY	"This Card is labeled '**Evaporation**'. Evaporation occurs when water on Earth's surface turns into vapor and moves into the atmosphere."

11. | **ASK** | "Where should the label '**Evaporation**' be placed on the water cycle?" |

12. Allow student to respond and record response.

13. If the student chose the correct answer, reiterate the student's correct answer. Place chosen answer Card in the correct location on the Resource 1: Water Cycle Poster 1.

14. Provide Resource 2: Card 2c to the student.

15. Indicate Card 2c.

| **SAY** | "This Card is labeled '**Condensation**'. Condensation occurs when water vapor in the atmosphere turns back into a liquid and forms a cloud." |

16. | **ASK** | "Where should the label '**Condensation**' be placed on the water cycle?" |

17. Allow student to respond and record response.

18. If the student chose the correct answer, reiterate the student's correct answer. Place chosen answer Card in the correct location on the Resource 1: Water Cycle Poster 1.

19. | **SAY** | "We are now finished with this activity." |

Scoring Guidance and Scaffolding

Scaffolding:

*Note: Optionally, you may ask the student the third question, "Where should the label '**Condensation**' be placed on the water cycle?", if the scaffold is applied. However, if you choose to ask the third question and the student answers the third question correctly, the student will still receive one point.*

1. After student makes first incorrect attempt, place Card 2a in the correct position on the Resource 1: Water Cycle Poster 1.
2. Indicate the correctly placed Card 2a.

SAY	"Runoff occurs here on the hill. Gravity pulls the water downhill, and it flows to the ocean."

3. Provide Resource 2: Card 2b to the student.
4. Indicate Card 2b.

SAY	"This Card is labeled '**Evaporation**'. Evaporation occurs when water on Earth's surface turns into vapor and moves into the atmosphere."

5.

ASK	"Where should the label '**Evaporation**' be placed on the water cycle?"

6.

Allow student to respond and record response.

7. If the student chose the correct answer, reiterate the student's correct answer. Place chosen answer Card in the correct location on the Resource 1: Water Cycle Poster 1.
8.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. Where should the label "**Runoff**" be placed on the water cycle?
    a. Card 2a – Runoff should be placed in the box on the green hill.
2. Where should the label "**Evaporation**" be placed on the water cycle?
    a. Card 2b – Evaporation should be placed in the box directly above the ocean.
3. Where should the label "**Condensation**" be placed on the water cycle?
    a. Card 2c – Condensation should be place in the box on the cloud.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to place any of the labels in the correct position on the water cycle poster.	The student **does not** demonstrate understanding.	0
Student… • is able to place one or two labels in the correct position on the water cycle poster. **OR** • **after scaffolding,** is able to place one or two labels in the correct position on the water cycle poster.	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to place all three labels in the correct position on the water cycle poster.	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 6

Essence Statement: CTAS-MS-ESS2-4 Use a model to explain how the sun's energy and gravity cause water to cycle between the land and the atmosphere.

Core Extension 6: Given a model of the water cycle, describe the effect that the sun's energy (heat) and the Earth's gravity have on water. (CTAS-MS-ESS2-4)

Teacher Notes:

Collect the following resources for this activity:

- Activity 6 Resource 1: Water Cycle Poster 2
- Activity 6 Resource 2: Cards 2a – 2d
  - Card 2a – Runoff
  - Card 2b – Evaporation
  - Card 2c – Condensation
  - Card 2d – Precipitation
- Activity 6 Resource 3: Strips 3a – 3c
  - Strip 3a – water
  - Strip 3b – sidewalk
  - Strip 3c – raindrops

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about how the sun's energy and the Earth's gravity affect the water in the water cycle." |
2. Display Resource 1: Water Cycle Poster 2 for the student.
3. Indicate Resource 1.

SAY	"This is a completed water cycle *(read and indicate each labeled part of the water cycle)*."

4. | **ASK** | "What is one part in the water cycle where gravity pulls water downward?" |
5. Provide Resource 2: Cards 2a – 2d to the student. Indicate and read each Card.
   a. Indicate Card 2a.

SAY	"Runoff"

   b. Indicate Card 2b.

SAY	"Evaporation"

   c. Indicate Card 2c.

SAY	"Condensation"

   d. Indicate Card 2d.

SAY	"Precipitation"

6. | **ASK AGAIN** | "What is one part in the water cycle where gravity pulls water downward?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Card 2a and Card 2d.

| **SAY** | "Gravity pulls water downward as runoff and as precipitation in the water cycle." |

9. | **ASK** | "How does heat from the sun affect water in the water cycle?" |

10. Provide Resource 3: Strips 3a – 3c to the student. Indicate and read each Strip.

a. Indicate Strip 3a.

| **SAY** | "warms water until it evaporates" |

b. Indicate Strip 3b.

| **SAY** | "warms the sidewalk until it is hot" |

c. Indicate Strip 3c.

| **SAY** | "warms raindrops into snowflakes" |

11. | **ASK AGAIN** | "How does heat from the sun affect water in the water cycle?" |

12. Allow student to respond and record response.

13. Indicate Strip 3a.

| **SAY** | "Heat from the sun warms water until it evaporates." |

14. | **SAY** | "We are now finished with this activity." |

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Card 2a and Card 2d.

SAY	"Gravity pulls water downward as runoff and as precipitation in the water cycle."

2.

ASK	"How does heat from the sun affect water in the water cycle?"

3. Provide Resource 3: Strips 3a – 3c to the student. Indicate and read each Strip.

   a. Indicate Strip 3a.

SAY	"warms water until it evaporates"

   b. Indicate Strip 3b.

SAY	"warms the sidewalk until it is hot"

   c. Indicate Strip 3c.

SAY	"warms raindrops into snowflakes"

4.

ASK AGAIN	"How does heat from the sun affect water in the water cycle?"

5. Allow student to respond and record response.

6. Indicate Strip 3a.

SAY	"Heat from the sun warms water until it evaporates."

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. What is one part in the water cycle where gravity pulls water downward?
   a. Card 2a – Runoff

   OR

   b. Card 2d – Precipitation
2. How does heat from the sun affect water in the water cycle?
   a. Strip 3a – warms water until it evaporates

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify one part in the water cycle where gravity pulls water downward (Card 2a **or** Card 2d); ***and*** • is unable to describe how heat from the sun affects water in the water cycle (Strip 3a).	The student **does not** demonstrate understanding.	0
Student… • is able to identify one part in the water cycle where gravity pulls water downward (Card 2a **or** Card 2d); ***and*** • is unable to describe how heat from the sun affects water in the water cycle (Strip 3a). **OR** • is unable to identify one part in the water cycle where gravity pulls water downward (Card 2a **or** Card 2d); ***and*** • **after scaffolding,** is able to describe how heat from the sun affects water in the water cycle (Strip 3a).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify one part in the water cycle where gravity pulls water downward (Card 2a **or** Card 2d); ***and*** • is able to describe how heat from the sun affects water in the water cycle (Strip 3a).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 7

Essence Statement: CTAS-MS-ESS2-5 Use data to provide evidence of atmospheric conditions that result in precipitation.

Core Extension 7: Based on the provided evidence, relate cloud types to associated weather. (CTAS-MS-ESS2-5)

Teacher Notes:

Collect the following resources for this activity:

- Activity 7 Resource 1: Cloud Types Poster
- Activity 7 Resource 2: Cloud Type Chart Poster
- Activity 7 Resource 3: Cards 3a – 3d
  - Card 3a – Cirrus
  - Card 3b – Stratus
  - Card 3c – Cumulus
  - Card 3d – Cumulonimbus

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about cloud types. We will talk about what type of weather each cloud type is related to." |
2. Display Resource 1: Cloud Types Poster for the student.
3. Indicate Resource 1.

SAY	"Here are images of some common types of clouds. Cirrus clouds are thin and high in the sky *(indicate the circus clouds)*. Stratus clouds are low and flat in the sky *(indicate the stratus clouds)*. Cumulus clouds are low and rounded in the sky *(indicate the cumulus clouds)*. Cumulonimbus clouds are very tall and thick in the sky *(indicate the cumulonimbus clouds)*."

4. Display Resource 2: Cloud Type Chart Poster for the student.
5. Indicate Resource 2.

SAY	"Here is a chart. The left side of the chart is labeled '**Weather**'. The right side of the chart is labeled '**Cloud Type**'."

6. | **ASK** | "Which cloud type is likely to be in the sky when there is stormy weather?" |
7. Provide Resource 3: Cards 3a – 3d to the student. Indicate and read each Card.
   a. Indicate Card 3a.

SAY	"Cirrus"

   b. Indicate Card 3b.

SAY	"Stratus"

c. Indicate Card 3c.

SAY	"Cumulus"

d. Indicate Card 3d.

SAY	"Cumulonimbus"

8.

ASK AGAIN	"Which cloud type is likely to be in the sky when there is stormy weather?"

9. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

10. Indicate Card 3d.

SAY	"When there is stormy weather, there will be **Cumulonimbus**, or tall and thick, clouds in the sky."

11.

ASK	"Which cloud type is likely to be in the sky when there is sunny weather?"

12. Provide remaining Resource 3: Cards 3a – 3c to the student. Indicate and read each remaining Card.

a. Indicate Card 3a.

SAY	"Cirrus"

b. Indicate Card 3b.

SAY	"Stratus"

c. Indicate Card 3c.

SAY	"Cumulus"

13.

ASK AGAIN	"Which cloud type is likely to be in the sky when there is sunny weather?"

14. Allow student to respond and record response.

15. Indicate Card 3a and Card 3c.

SAY	"When there is sunny weather, there will either be **Cirrus** (thin and high) or **Cumulus** (low and rounded) clouds in the sky."

16.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Card 3d.

SAY	"When there is stormy weather, there will be **Cumulonimbus**, or tall and thick, clouds in the sky."

2.

ASK	"Which cloud type is likely to be in the sky when there is sunny weather?"

3. Provide remaining Resource 3: Cards 3a – 3c to the student. Indicate and read each remaining Card.

   a. Indicate Card 3a.

SAY	"Cirrus"

   b. Indicate Card 3b.

SAY	"Stratus"

   c. Indicate Card 3c.

SAY	"Cumulus"

4.

ASK AGAIN	"Which cloud type is likely to be in the sky when there is sunny weather?"

5. Allow student to respond and record response.

6. Indicate Card 3a and Card 3c.

SAY	"When there is sunny weather, there will either be **Cirrus** (thin and high) or **Cumulus** (low and rounded) clouds in the sky."

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. Which cloud type is likely to be in the sky when there is stormy weather?
   a. Card 3d – Cumulonimbus
2. Which cloud type is likely to be in the sky when there is sunny weather?
   a. Card 3a – Cirrus

   OR

   b. Card 3c – Cumulus

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to predict the cloud type that is likely to be in the sky when there is stormy weather (Card 3d); ***and*** • is unable to predict the cloud type that is likely to be in the sky when there is sunny weather (Card 3a **or** Card 3c).	The student **does not** demonstrate understanding.	0
Student… • is able to predict the cloud type that is likely to be in the sky when there is stormy weather (Card 3d); ***and*** • is unable to predict the cloud type that is likely to be in the sky when there is sunny weather (Card 3a **or** Card 3c). **OR** • is unable to predict the cloud type that is likely to be in the sky when there is stormy weather (Card 3d); ***and*** • **after scaffolding,** is able to predict the cloud type that is likely to be in the sky when there is sunny weather (Card 3a **or** Card 3c).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to predict the cloud type that is likely to be in the sky when there is stormy weather (Card 3d); ***and*** • is able to predict the cloud type that is likely to be in the sky when there is sunny weather (Card 3a **or** Card 3c).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 8

Essence Statement: CTAS-MS-ESS2-5 Use data to provide evidence of atmospheric conditions that result in precipitation.

Core Extension 8: When given a set of temperature data, make a connection between the temperature change and precipitation. (CTAS-MS-ESS2-5)

Teacher Notes:

Collect the following resources for this activity:

- Activity 8 Resource 1: Weather Data Table Poster
- Activity 8 Resource 2: Strips 2a – 2c
  - Strip 2a – Day 1 and 2
  - Strip 2b – Day 2 and 3
  - Strip 2c – Day 3 and 4
- Activity 8 Resource 3: Sentence Strips 3a – 3c
  - Sentence Strip 3a – warmest
  - Sentence Strip 3b – freezing
  - Sentence Strip 3c – same

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about temperature and precipitation." |
2. Display Resource 1: Weather Data Table Poster for the student.
3. Indicate Resource 1.

SAY	"Students measured the temperature outside for four days in a row. They recorded whether there was precipitation. On Day 1, the temperature was 40° with precipitation (*indicate '**Day 1**' row)*. On Day 2, the temperature was 38° with precipitation (*indicate '**Day 2**' row)*. On Day 3, the temperature was 30° with precipitation *(indicate '**Day 3**' row)*. On Day 4, the temperature was 29° with precipitation *(indicate '**Day 4**' row)*."

4. | **ASK** | "During which days did it most likely snow?" |
5. Provide Resource 2: Strips 2a – 2c to the student. Indicate and read each Strip.
   a. Indicate Strip 2a.

SAY	"Day 1 and 2"

   b. Indicate Strip 2b.

SAY	"Day 2 and 3"

   c. Indicate Strip 2c.

SAY	"Day 3 and 4"

6. | **ASK AGAIN** | "During which days did it most likely snow?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Strip 2c.

| **SAY** | "Snow likely occurred during Day 3 and Day 4." |

9. | **ASK** | "What evidence shows that snow most likely occurred during Day 3 and Day 4?" |

10. Provide Resource 3: Sentence Strips 3a – 3c to the student. Indicate and read each Sentence Strip.

a. Indicate Sentence Strip 3a.

| **SAY** | "Day 3 and Day 4 had the warmest temperatures." |

b. Indicate Sentence Strip 3b.

| **SAY** | "Day 3 and Day 4 had freezing temperatures." |

c. Indicate Sentence Strip 3c.

| **SAY** | "Day 3 and Day 4 had nearly the same temperatures." |

11. | **ASK AGAIN** | "What evidence shows that snow most likely occurred during Day 3 and Day 4?" |

12. Allow student to respond and record response.

13. Indicate Sentence Strip 3a.

| **SAY** | "Day 3 and Day 4 had freezing temperatures." |

14. | **SAY** | "We are now finished with this activity." |

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Strip 2c.

SAY	"Snow likely occurred during Day 3 and Day 4."

2.

ASK	"What evidence shows that snow most likely occurred during Day 3 and Day 4?"

3. Provide Resource 3: Sentence Strips 3a – 3c to the student. Indicate and read each Sentence Strip.

   a. Indicate Sentence Strip 3a.

SAY	"Day 3 and Day 4 had the warmest temperatures."

   b. Indicate Sentence Strip 3b.

SAY	"Day 3 and Day 4 had freezing temperatures."

   c. Indicate Sentence Strip 3c.

SAY	"Day 3 and Day 4 had nearly the same temperatures."

4.

ASK AGAIN	"What evidence shows that snow most likely occurred during Day 3 and Day 4?"

5. Allow student to respond and record response.

6. Indicate Sentence Strip 3a.

SAY	"Day 3 and Day 4 had freezing temperatures."

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. During which days did it most likely snow?
   a. Strip 2c – Day 3 and 4
2. What evidence shows that snow most likely occurred during Day 3 and Day 4?
   a. Sentence Strip 3b – Day 3 and Day 4 had freezing temperatures.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify the days during which snow most likely occurred (Strip 2c); ***and*** • is unable to identify the evidence that shows that snow most likely occurred during Day 3 and Day 4 (Sentence Strip 3b).	The student **does not** demonstrate understanding.	0
Student… • is able to identify the days during which snow most likely occurred (Strip 2c); ***and*** • is unable to identify the evidence that shows that snow most likely occurred during Day 3 and Day 4 (Sentence Strip 3b). **OR** • is unable to identify the days during which snow most likely occurred (Strip 2c); ***and*** • **after scaffolding,** is able to identify the evidence that shows that snow most likely occurred during Day 3 and Day 4 (Sentence Strip 3b).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify the days during which snow most likely occurred (Strip 2c); ***and*** • is able to identify the evidence that shows that snow most likely occurred during Day 3 and Day 4 (Sentence Strip 3b).	The student demonstrates understanding independently without scaffolding.	2

Connecticut Alternate Science Assessment

Earth Science

Storyline 2: Natural Resources

Grade 8 Performance Task

Earth Science
Storyline 2: Natural Resources
Grade 8 Performance Task

Guiding Questions: What are Earth's natural resources? How do humans impact Earth's natural resources? How can humans reduce their negative impact on Earth's natural resources?

NGSS Learning Progressions	Grade 8		
	NGSS Standard Performance Expectations	**Connecticut Alternate Science Essence Statements**	**Core Extensions**
ESS3.A Natural Resources	MS-ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.	CTAS-MS-ESS3-1 Use evidence to explain that natural resources (fresh water, soil, fossil fuels) used by humans are often limited and not easily replaced by natural processes.	1. Distinguish between renewable resources (e.g., sun, water, wind) and non-renewable resources (e.g., soil, fossil fuels). (CTAS-MS-ESS3-1) 2. Identify two ways that people use water in everyday life (e.g., brushing teeth, taking a bath, cooking). (CTAS-MS-ESS3-4) 3. Complete a causal chain (e.g., flow chart) to describe the formation of a non-renewable resource over time. (CTAS-MS-ESS3-1) 4. Identify two ways that people can reduce the amount of waste they produce. (CTAS-MS-ESS3-3) 5. Recognize that some materials can be recycled. (CTAS-MS-ESS3-3)

NGSS Learning Progressions	Grade 8		
	NGSS Standard Performance Expectations	**Connecticut Alternate Science Essence Statements**	**Core Extensions**
ESS3.C Human Impacts on Earth Systems	MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.* MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	CTAS-MS-ESS3-3 Evaluate a method for minimizing human impact (waste production) on the environment.* CTAS-MS-ESS3-4 Analyze data to provide evidence of the amount of water used by humans for everyday purposes.	6. Describe one positive aspect or one limitation of recycling. (CTAS-MS-ESS3-3) 7. Given a scenario, compare two methods that may be used to reduce humans' waste impact on the environment. (CTAS-MS-ESS3-3) 8. From provided evidence, compare the distribution of a renewable and a non-renewable resource. (CTAS-MS-ESS3-1) 9. Based on provided data, compare the amount of water used in different activities. (CTAS-MS-ESS3-4) 10. Analyze water-use data to support a claim about the amount of water used by a growing population over time. (CTAS-MS-ESS3-4)
Appropriate Vocabulary	Renewable resource, non-renewable resource, reduce, reuse, recycle, waste, consume, conserve, units of measurement (gallons, liters), organisms, pressure, landfill		

***Indicates a NGSS Standard Performance Expectation or Connecticut Alternate Science Essence Statement that incorporates engineering design.**

Earth Science
Storyline 2: Natural Resources
Grade 8 Performance Task

General Overview:
Earth provides valuable resources to humans. In this task, students will differentiate between renewable and non-renewable resources. Students will compare the availability of different types of resources. Students will also focus on how humans can attempt to reduce the negative effects of using Earth's resources. Students will compare ways to help humans use Earth's resources responsibly.

List of Materials Needed:
Teacher-Provided Resources:
There are no Teacher-Provided Resources that are required for this Performance Task.

Instructions for Preparing Materials:
Teachers must collect all relevant materials prior to the administration of each activity. The Card, Sentence Strip, and Strip Resources will need to be cut out. Resources are listed according to the Resource Identifier, which appears on the back of each Resource. The Resources needed for the administration of each activity are listed according to these Resource Identifiers in the Teacher Notes section of each activity.

List of Resources:
- Activity 1 Resource 1a: Renewable Box Poster
- Activity 1 Resource 1b: Non-Renewable Box Poster
- Activity 1 Resource 2: Cards 2a – 2d
    - Card 2a – sun
    - Card 2b – soil
    - Card 2c – coal
    - Card 2d – wind
- Activity 2 Resource 1: Panels 1a – 1d
    - Panel 1a – student brushing teeth
    - Panel 1b – student washing hands
    - Panel 1c – student doing homework
    - Panel 1d – student playing drums
- Activity 3 Resource 1: Formation of Coal Poster
- Activity 3 Resource 2: Cards 2a – 2c
    - Card 2a – dead plants
    - Card 2b – wind
    - Card 2c – sun

- Activity 3 Resource 3: Cards 3a – 3c
  - Card 3a – plants
  - Card 3b – rocks
  - Card 3c – coal
- Activity 4 Resource 1: Reduces Waste List Poster
- Activity 4 Resource 2: Cards 2a – 2d
  - Card 2a – reuse cloth grocery bags
  - Card 2b – throw extra food away
  - Card 2c – use paper plates
  - Card 2d – drink from a reusable water bottle
- Activity 5 Resource 1: Kitchen Countertop Poster
- Activity 5 Resource 2: Cards 2a – 2e
  - Card 2a – water bottle
  - Card 2b – food scraps
  - Card 2c – soda can
  - Card 2d – paper
  - Card 2e – batteries
- Activity 6 Resource 1: Panel 1a and Panel 1b
  - Panel 1a – Before Recycling
  - Panel 1b – After Recycling
- Activity 6 Resource 2: Sentence Strips 2a – 2c
  - Sentence Strip 2a – burned
  - Sentence Strip 2b – landfill
  - Sentence Strip 2c – used again
- Activity 7 Resource 1a: Cloth Bags Poster
- Activity 7 Resource 1b: Paper Bags Poster
- Activity 7 Resource 2: Sentence Strips 2a – 2d
  - Sentence Strip 2a – groceries
  - Sentence Strip 2b – cars
  - Sentence Strip 2c – landfills
  - Sentence Strip 2d – reusable
- Activity 8 Resource 1: Number of Water and Coal Deposits in the United States Poster
- Activity 8 Resource 2: Sentence Strips 2a – 2c
  - Sentence Strip 2a – coal
  - Sentence Strip 2b – water
  - Sentence Strip 2c – equal
- Activity 8 Resource 3: Cards 3a – 3c
  - Card 3a – decreases
  - Card 3b – increases
  - Card 3c – stays the same
- Activity 9 Resource 1: Water Use of Three Activities Poster

- Activity 9 Resource 2: Cards 2a – 2c
  - Card 2a – Bath
  - Card 2b – Brushing Teeth
  - Card 2c – Washing Dishes
- Activity 9 Resource 3: Cards 3a – 3c
  - Card 3a – about 5 gallons
  - Card 3b – about 50 gallons
  - Card 3c – about 500 gallons
- Activity 10 Resource 1: Water Use Data Table Poster
- Activity 10 Resource 2: Sentence Strips 2a – 2d
  - Sentence Strip 2a – increased
  - Sentence Strip 2b – decreased
  - Sentence Strip 2c – increased/decreased
  - Sentence Strip 2d – decreased/increased

ACTIVITY 1

Essence Statement: CTAS-MS-ESS3-1 Use evidence to explain that natural resources (fresh water, soil, fossil fuels) used by humans are often limited and not easily replaced by natural processes.

Core Extension 1: Distinguish between renewable resources (e.g., sun, water, wind) and non-renewable resources (e.g., soil, fossil fuels). (CTAS-MS-ESS3-1)

Teacher Notes:

Collect the following resources for this activity:

- Activity 1 Resource 1a: Renewable Box Poster
- Activity 1 Resource 1b: Non-Renewable Box Poster
- Activity 1 Resource 2: Cards 2a – 2d
  - Card 2a – sun
  - Card 2b – soil
  - Card 2c – coal
  - Card 2d – wind

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about Earth's resources. Some of Earth's resources are renewable and some resources are non-renewable. Renewable resources form naturally in a short period of time. They cannot be used up. Non-renewable resources do not form in a short period of time. They can be used up before any more are able to form." |
2. Display Resource 1a: Renewable Poster and Resource 1b: Non-Renewable Poster for the student.
3. Indicate Resource 1a and Resource 1b.

   | **SAY** | "Here are two boxes. The first box is labeled '**Renewable**' *(indicate Resource 1a)*. The second box is labeled '**Non-Renewable**' *(indicate Resource 1b)*." |
4. Provide Resource 2: Cards 2a – 2d to the student. Indicate and read each Card.
   a. Indicate Card 2a.

      | **SAY** | "sun" |
   b. Indicate Card 2b.

      | **SAY** | "soil" |
   c. Indicate Card 2c.

      | **SAY** | "coal" |
   d. Indicate Card 2d.

      | **SAY** | "wind" |

5. Indicate Resource 2: Cards 2a – 2d.

SAY	"Some of these resources are renewable and some of these resources are non-renewable. Let's place these resources in the correct box where they belong."

6. Indicate Card 2a.

ASK	"Is the sun a renewable resource or a non-renewable resource?"

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Card 2a.

SAY	"The sun is a renewable resource. Let's place the sun card in the '**Renewable**' box."

9. Indicate Card 2b.

ASK	"Is soil a renewable resource or a non-renewable resource?"

10. Allow student to respond and record response.

11. Indicate Card 2b.

SAY	"Soil is a non-renewable resource. Let's place the soil card in the '**Non-Renewable**' box."

12. Indicate Card 2c.

ASK	"Is coal a renewable resource or a non-renewable resource?"

13. Allow student to respond and record response.

14. Indicate Card 2c.

SAY	"Coal is a non-renewable resource. Let's place the coal card in the '**Non-Renewable**' box."

15. Indicate Card 2d.

ASK	"Is wind a renewable resource or a non-renewable resource?"

16. Allow student to respond and record response.

17. Indicate Card 2d.

SAY	"Wind is a renewable resource. Let's place the wind card in the '**Renewable**' box."

18.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

Note: Optionally, you may ask the student the third question and/or fourth question, "Is coal a renewable resource or a non-renewable resource?" and "Is wind a renewable resource or a non-renewable resource?", if the scaffold is applied. However, if you choose to ask the third question and/or fourth question and the student answers the third question and/or fourth question correctly, the student will still receive one point.

1. After student makes first incorrect attempt, place Card 2a in the '**Renewable**' box.

SAY	"The sun is a renewable resource."

2. Indicate Card 2b.

ASK	"Is soil a renewable resource or a non-renewable resource?"

3. Allow student to respond and record response.

4. Indicate Card 2b.

SAY	"Soil is a non-renewable resource. Let's place the soil card in the '**Non-Renewable**' box."

5.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. Is the sun a renewable resource or a non-renewable resource?
    a. Card 2a – The sun is a renewable resource.
2. Is soil a renewable resource or a non-renewable resource?
    a. Card 2b – Soil is a non-renewable resource.
3. Is coal a renewable resource or a non-renewable resource?
    a. Card 2c – Coal is a non-renewable resource.
4. Is wind a renewable resource or a non-renewable resource?
    a. Card 2d – Wind is a renewable resource.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to distinguish either renewable resource (Card 2a or Card 2d); ***and*** • is unable to distinguish either non-renewable resource (Card 2b or Card 2c).	The student **does not** demonstrate understanding.	0
Student… • is able to distinguish one or both renewable resource(s) (Card 2a and/or Card 2d); ***and*** • is unable to distinguish one or both non-renewable resource(s) (Card 2b and/or Card 2c). **OR** • is unable to distinguish one or both renewable resource(s) (Card 2a and/or Card 2d); ***and*** • **after scaffolding,** is able to distinguish one non-renewable resource (Card 2b or Card 2c).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to distinguish both renewable resources (Card 2a and Card 2d); ***and*** • is able to distinguish both non-renewable resources (Card 2b and Card 2c).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 2

Essence Statement: CTAS-MS-ESS3-4 Analyze data to provide evidence of the amount of water used by humans for everyday purposes.

Core Extension 2: Identify two ways that people use water in everyday life (e.g., brushing teeth, taking a bath, cooking). (CTAS-MS-ESS3-4)

Teacher Notes:

Collect the following resources for this activity:

- Activity 2 Resource 1: Panels 1a – 1d
  - Panel 1a – student brushing teeth
  - Panel 1b – student washing hands
  - Panel 1c – student doing homework
  - Panel 1d – student playing drums

Prior to the administration of this activity, teacher may cut apart Panels 1a – 1d.

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about ways that people use water in everyday life." |
2. Display Resource 1: Panels 1a – 1d for the student.
3. Indicate Resource 1.

SAY	"Here are panels that show a student doing four activities at home. The student is brushing her teeth *(indicate Panel 1a)*. The student is washing her hands *(indicate Panel 1b)*. The student is doing her homework *(indicate Panel 1c)*. The student is playing the drums *(indicate Panel 1d)*."

4. | **ASK** | "What is one activity that uses water?" |
5. Provide Resource 1: Panels 1a – 1d to the student. Indicate and describe each Panel.
   a. Indicate Panel 1a.

SAY	"The student is brushing her teeth."

   b. Indicate Panel 1b.

SAY	"The student is washing her hands."

   c. Indicate Panel 1c.

SAY	"The student is doing her homework."

   d. Indicate Panel 1d.

SAY	"The student is playing the drums."

6. | **ASK AGAIN** | "What is one activity that uses water?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. If the student chose the correct answer, reiterate the student's correct answer. Set chosen Panel aside.

9. | **ASK** | "What is another activity that uses water?" |

10. Provide remaining Resource 1: Panels 1a – 1d to the student. Indicate and describe each remaining Panel.

a. Indicate Panel 1a.

| **SAY** | "The student is brushing her teeth." |

b. Indicate Panel 1b.

| **SAY** | "The student is washing her hands." |

c. Indicate Panel 1c.

| **SAY** | "The student is doing her homework." |

d. Indicate Panel 1d.

| **SAY** | "The student is playing the drums." |

11. | **ASK AGAIN** | "What is another activity that uses water?" |

12. Allow student to respond and record response.

13. If the student chose the correct answer, reiterate the student's correct answer. Set chosen Panel aside.

14. | **SAY** | "We are now finished with this activity." |

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Panel 1a.

SAY	"Water is used when the student is brushing her teeth."

2.

ASK	"What is another activity that uses water?"

3. Provide remaining Resource 1: Panels 1b – 1d to the student. Indicate and describe each remaining Panel.

   a. Indicate Panel 1b.

SAY	"The student is washing her hands."

   b. Indicate Panel 1c.

SAY	"The student is doing her homework."

   c. Indicate Panel 1d.

SAY	"The student is playing the drums."

4.

ASK AGAIN	"What is another activity that uses water?"

5. Allow student to respond and record response.

6. If the student chose the correct answer, reiterate the student's correct answer. Set chosen Panel aside.

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. What is one activity that uses water?
   a. Panel 1a – The student is brushing her teeth.

   OR

   a. Panel 1b – The student is washing her hands.
2. What is another activity that uses water?
   a. Panel 1a – The student is brushing her teeth.

   OR

   b. Panel 1b – The student is washing her hands.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify one activity that uses water (Panel 1a or Panel 1b); ***and*** • is unable to identify another activity that uses water (Panel 1a or Panel 1b).	The student **does not** demonstrate understanding.	0
Student… • **with or without scaffolding,** is able to identify one activity that uses water (Panel 1a or Panel 1b).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify one activity that uses water (Panel 1a or Panel 1b); ***and*** • is able to identify another activity that uses water (Panel 1a or Panel 1b).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 3

Essence Statement: CTAS-MS-ESS3-1 Use evidence to explain that natural resources (fresh water, soil, fossil fuels) used by humans are often limited and not easily replaced by natural processes.

Core Extension 3: Complete a causal chain (e.g., flow chart) to describe the formation of a non-renewable resource over time. (CTAS-MS-ESS3-1)

Teacher Notes:

Collect the following resources for this activity:

- Activity 3 Resource 1: Formation of Coal Poster
- Activity 3 Resource 2: Cards 2a – 2c
  - Card 2a – dead plants
  - Card 2b – wind
  - Card 2c – sun
- Activity 3 Resource 3: Cards 3a – 3c
  - Card 3a – plants
  - Card 3b – rocks
  - Card 3c – coal

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about how coal forms over millions of years. Coal is a non-renewable resource." |
2. Display Resource 1: Formation of Coal Poster for the student.
3. Indicate Resource 1.

   | **SAY** | "Coal forms over millions of years through a series of steps. The remains of organisms must be on the ground to start coal formation." |

4. | **ASK** | "What must be in an area to start the first step of coal formation?" |
5. Provide Resource 2: Cards 2a – 2c to the student. Indicate and read each Card.
   a. Indicate Card 2a.

      | **SAY** | "dead plants" |

   b. Indicate Card 2b.

      | **SAY** | "wind" |

   c. Indicate Card 2c.

      | **SAY** | "sun" |

6. | **ASK AGAIN** | "What must be in an area to start the first step of coal formation?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Card 2a.

SAY	"Dead plants are needed to start the process of coal formation."

9. Place Card 2a in the first blank box of Resource 1.

10. Indicate Card 2a.

SAY	"Plants fall to the bottom of the swamp. Dirt and rocks build up on top of the dead remains. The dead remains of plants are trapped under heat and pressure."

11.

ASK	"What resource forms in the last step?"

12. Provide Resource 3: Cards 3a – 3c to the student. Indicate and read each Card.

a. Indicate Card 3a.

SAY	"plants"

b. Indicate Card 3b.

SAY	"rocks"

c. Indicate Card 3c.

SAY	"coal"

13.

ASK AGAIN	"What resource forms in the last step?"

14. Allow student to respond and record response.

15. Indicate Card 3c.

SAY	"Coal is the resource that forms in the last step."

16.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Card 2a.

SAY	"Dead plants are needed to start the process of coal formation."

2. Place Card 2a in the first blank box of Resource 1.
3. Indicate Card 2a.

SAY	"Plants fall to the bottom of the swamp. Dirt and rocks build up on top of the dead remains. The dead remains of plants are trapped under heat and pressure."

4.

ASK	"What resource forms in the last step?"

5. Provide Resource 3: Cards 3a – 3c to the student. Indicate and read each Card.
   a. Indicate Card 3a.

SAY	"plants"

   b. Indicate Card 3b.

SAY	"rocks"

   c. Indicate Card 3c.

SAY	"coal"

6.

ASK AGAIN	"What resource forms in the last step?"

7. Allow student to respond and record response.
8. Indicate Card 3c.

SAY	"Coal is the resource that forms in the last step."

9.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. What must be in an area to start the first step of coal formation?
   a. Card 2a – dead plants
2. What resource forms in the last step?
   a. Card 3c – coal

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify that dead plants (Card 2a) are needed to start the first step of coal formation; ***and*** • is unable to identify that coal is formed in the last step (Card 3c).	The student **does not** demonstrate understanding.	0
Student… • is able to identify that dead plants (Card 2a) are needed to start the first step of coal formation; ***and*** • is unable to identify that coal is formed in the last step (Card 3c). **OR** • is unable to identify that dead plants (Card 2a) are needed to start the first step of coal formation; ***and*** • **after scaffolding,** is able to identify that coal is formed in the last step (Card 3c).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify that dead plants (Card 2a) are needed to start the first step of coal formation; ***and*** • is able to identify that coal is formed in the last step (Card 3c).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 4

Essence Statement: CTAS-MS-ESS3-3 Evaluate a method for minimizing human impact (waste production) on the environment.*

Core Extension 4: Identify two ways that people can reduce the amount of waste they produce. (CTAS-MS-ESS3-3)

Teacher Notes:

Collect the following resources for this activity:

- Activity 4 Resource 1: Reduces Waste List Poster
- Activity 4 Resource 2: Cards 2a – 2d
  - Card 2a – reuse cloth grocery bags
  - Card 2b – throw extra food away
  - Card 2c – use paper plates
  - Card 2d – drink from a reusable water bottle

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about actions that people can take to reduce the amount of waste that they produce." |

2. Display Resource 1: Reduces Waste List Poster for the student.

3. Indicate Resource 1.

SAY	"Here is a blank list. It is titled '**Reduces Waste List**'."

4. | **ASK** | "What is one action that will reduce the amount of waste that people produce?" |

5. Provide Resource 2: Cards 2a – 2d to the student. Indicate and read each Card.

   a. Indicate Card 2a.

SAY	"reuse cloth grocery bags"

   b. Indicate Card 2b.

SAY	"throw extra food away"

   c. Indicate Card 2c.

SAY	"use paper plates"

   d. Indicate Card 2d.

SAY	"drink from a reusable water bottle"

6. | **ASK AGAIN** | "What is one action that will reduce the amount of waste that people produce?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. If the student chose a correct answer, reiterate the student's correct answer. Set chosen Card aside.

9.

ASK	"What is another action that will reduce the amount of waste that people produce?"

10. Provide remaining Resource 2: Cards 2a – 2d to the student. Indicate and read each remaining Card.

a. Indicate Card 2a.

SAY	"reuse cloth grocery bags"

b. Indicate Card 2b.

SAY	"throw extra food away"

c. Indicate Card 2c.

SAY	"use paper plates"

d. Indicate Card 2d.

SAY	"drink from a reusable water bottle"

11.

ASK AGAIN	"What is another action that will reduce the amount of waste that people produce?"

12. Allow student to respond and record response.

13. If the student chose a correct answer, reiterate the student's correct answer. Set chosen Card aside.

14.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Card 2a.

SAY	"Reusing grocery bags is a way to reduce the amount of waste that people produce. Let's place this Card on the list."

2. Place Card 2a on Resource 1.

3.

ASK	"What is another action that will reduce the amount of waste that people produce?"

4. Provide remaining Resource 2: Cards 2b – 2d to the student. Indicate and read each remaining Card.

   a. Indicate Card 2b.

SAY	"throw extra food away"

   b. Indicate Card 2c.

SAY	"use paper plates"

   c. Indicate Card 2d.

SAY	"drink from a reusable water bottle"

5.

ASK AGAIN	"What is another action that will reduce the amount of waste that people produce?"

6. Allow student to respond and record response.

7. If the student chose a correct answer, reiterate the student's correct answer. Set chosen Card aside.

8.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. What is one action that will reduce the amount of waste that people produce?
   a. Card 2a – reuse cloth grocery bags
   OR
   b. Card 2d – drink from a reusable water bottle
2. What is another action that will reduce the amount of waste that people produce?
   a. Card 2a – reuse cloth grocery bags
   OR
   b. Card 2d – drink from a reusable water bottle

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify one action to reduce the amount of waste that people produce (Card 2a or Card 2d); ***and*** • is unable to identify another action to reduce the amount of waste that people produce (Card 2a or Card 2d).	The student **does not** demonstrate understanding.	0
Student… • is able to identify one action to reduce the amount of waste that people produce (Card 2a or Card 2d). • is unable to identify another action to reduce the amount of waste that people produce (Card 2a or Card 2d). **OR** • is unable to identify one action to reduce the amount of waste that people produce (Card 2a or Card 2d). • **after scaffolding,** is able to identify another action to reduce the amount of waste that people produce (Card 2d).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify both actions to reduce the amount of waste that people produce (Card 2a and Card 2d).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 5

Essence Statement: CTAS-MS-ESS3-3 Evaluate a method for minimizing human impact (waste production) on the environment.*

Core Extension 5: Recognize that some materials can be recycled. (CTAS-MS-ESS3-3)

Teacher Notes:

Collect the following resources for this activity:

- Activity 5 Resource 1: Kitchen Countertop Poster
- Activity 5 Resource 2: Cards 2a – 2e
  - Card 2a – water bottle
  - Card 2b – food scraps
  - Card 2c – soda can
  - Card 2d – paper
  - Card 2e – batteries

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about different materials that are found in a kitchen that can be recycled." |
2. Display Resource 1: Kitchen Countertop Poster for the student.
3. Indicate Resource 1.

SAY	"This poster shows a kitchen countertop. On the countertop, there is a water bottle *(indicate the water bottle)*, some scraps of food *(indicate the food scraps)*, a soda can *(indicate the soda can)*, some pieces of paper *(indicate the pieces of paper)*, and some batteries *(indicate the batteries)*."

4. | **SAY** | "The following things can be recycled *(indicate the recycling containers)*: aluminum, paper, and plastic." |
5. | **ASK** | "What are three materials in this picture that can be recycled?" |
6. Provide Resource 2: Cards 2a – 2e to the student. Indicate and read each Card.
   a. Indicate Card 2a.

SAY	"water bottle"

   b. Indicate Card 2b.

SAY	"food scraps"

   c. Indicate Card 2c.

SAY	"soda can"

d. Indicate Card 2d.

SAY	"paper"

e. Indicate Card 2e.

SAY	"batteries"

7.

ASK AGAIN	"What are three materials in this picture that can be recycled?"

8. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

9. As the student chooses each correct answer, reiterate the student's correct answer. Set chosen Cards aside.

10.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

Note: Optionally, you may ask the student to identify a third material that can be recycled if the scaffold is applied. However, if you choose to ask the student to identify a third material that can be recycled and the student provides a correct answer, the student will still receive one point.

1. After student makes first incorrect attempt, indicate Card 2a.

SAY	"A water bottle can be recycled."

2.

ASK	"What is another material that can be recycled?"

3. Provide remaining Resource 2: Cards 2b – 2e to the student. Indicate and read each remaining Card.

a. Indicate Card 2b.

SAY	"food scraps"

b. Indicate Card 2c.

SAY	"soda can"

c. Indicate Card 2d.

SAY	"paper"

d. Indicate Card 2e.

SAY	"batteries"

4. | **ASK AGAIN** | "What is another material that can be recycled?" |

5. Allow student to respond and record response.

6. If the student chooses a correct answer, reiterate the student's correct answer. Set chosen Card aside.

7. | **SAY** | "We are now finished with this activity." |

Correct answers are as follows:

1. What are three materials in this picture that can be recycled?
    a. Card 2a – water bottle
    b. Card 2c – soda can
    c. Card 2d – paper

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify any material that can be recycled (Card 2a, Card 2c, or Card 2d).	The student **does not** demonstrate understanding.	0
Student… • is able to identify one or two materials that can be recycled (Card 2a, Card 2c, or Card 2d). **OR** • is unable to identify one material that can be recycled (Card 2a, Card 2c, or Card 2d). • **after scaffolding,** is able to identify a second material that can be recycled (Card 2c or Card 2d).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify all three materials that can be recycled (Card 2a, Card 2c, and Card 2d).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 6

Essence Statement: CTAS-MS-ESS3-3 Evaluate a method for minimizing human impact (waste production) on the environment.*

Core Extension 6: Describe one positive aspect or one limitation of recycling. (CTAS-MS-ESS3-3)

Teacher Notes:

Collect the following resources for this activity:

- Activity 6 Resource 1: Panel 1a and Panel 1b
  - Panel 1a – Before Recycling
  - Panel 1b – After Recycling
- Activity 6 Resource 2: Sentence Strips 2a – 2c
  - Sentence Strip 2a – burned
  - Sentence Strip 2b – landfill
  - Sentence Strip 2c – used again

Prior to the administration of this activity, teacher may cut apart Panel 1a and Panel 1b.

Steps to Follow:

1. | **SAY** | "In this activity, we are going to identify a positive aspect of recycling used paper." |
2. Display Resource 1: Panel 1a and Resource 1: Panel 1b for the student.
3. Indicate Panel 1a and Panel 1b.

SAY	"These are two pictures of the same piece of paper before and after recycling. This first picture is titled '**Before Recycling**' *(indicate Panel 1a)*. This first picture shows a crumpled piece of used paper. This is a picture of the same piece of paper titled '**After Recycling**' *(indicate Panel 1b)*. This second picture shows what that crumpled piece of paper looks like after it was recycled into a new piece of clean paper."

4. | **ASK** | "What is a positive aspect of recycling used paper?" |
5. Provide Resource 2: Sentence Strips 2a – 2c to the student. Indicate and read each Sentence Strip.
   a. Indicate Sentence Strip 2a.

SAY	"The paper will be burned."

   b. Indicate Sentence Strip 2b.

SAY	"The paper will be thrown in a landfill."

   c. Indicate Sentence Strip 2c.

SAY	"The paper will be used again."

6. | **ASK AGAIN** | "What is a positive aspect of recycling used paper?" |

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Sentence Strip 2c.

| **SAY** | "A positive aspect of recycling used paper is that the paper will be used again." |

9. | **SAY** | "We are now finished with this activity." |

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, remove Sentence Strip 2a.

| **SAY** | "The paper will be burned is not the correct answer." |

2. | **ASK AGAIN** | "What is a positive aspect of recycling used paper?" |

3. Provide remaining Resource 2: Sentence Strip 2b and Sentence Strip 2c to the student. Indicate and read each remaining Sentence Strip.

   a. Indicate Sentence Strip 2b.

| **SAY** | "The paper will be thrown in a landfill." |

   b. Indicate Sentence Strip 2c.

| **SAY** | "The paper will be used again." |

4. Allow student to respond and record response.

5. Indicate Sentence Strip 2c.

| **SAY** | "A positive aspect of recycling used paper is that the paper will be used again." |

6. | **SAY** | "We are now finished with this activity." |

The correct answer is as follows:

1. What is a positive aspect of recycling used paper?
   a. Sentence Strip 2c – The paper will be used again.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify a positive aspect of recycling used paper (Sentence Strip 2c).	The student **does not** demonstrate understanding.	0
Student… • **after scaffolding,** is able to identify a positive aspect of recycling used paper (Sentence Strip 2c).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify a positive aspect of recycling used paper (Sentence Strip 2c).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 7

Essence Statement: CTAS-MS-ESS3-3 Evaluate a method for minimizing human impact (waste production) on the environment.*

Core Extension 7: Given a scenario, compare two methods that may be used to reduce humans' waste impact on the environment. (CTAS-MS-ESS3-3)

Teacher Notes:

Collect the following resources for this activity:

- Activity 7 Resource 1a: Cloth Bags Poster
- Activity 7 Resource 1b: Paper Bags Poster
- Activity 7 Resource 2: Sentence Strips 2a – 2d
  - Sentence Strip 2a – groceries
  - Sentence Strip 2b – cars
  - Sentence Strip 2c – landfills
  - Sentence Strip 2d – reusable

Steps to Follow:

1. | **SAY** | "In this activity, we are going to compare two different ways Jane and Mike try to reduce their impact on the environment when they go shopping for groceries." |
2. Display Resource 1a: Cloth Bags Poster for the student.
3. Display Resource 1b: Paper Bags Poster for the student.
4. Indicate Resource 1a and Resource 1b.

   | **SAY** | "Jane and Mike both try to reduce the amount of waste they produce. Jane uses cloth bags at the store *(indicate Resource 1a)*. Mike uses paper bags at the store *(indicate Resource 1b)*." |

5. | **ASK** | "What is one way that both Jane and Mike reduce the amount of waste they produce?" |
6. Provide Resource 2: Sentence Strips 2a – 2d to the student. Indicate and read each Sentence Strip.
   a. Indicate Sentence Strip 2a.

      | **SAY** | "They both buy too many groceries." |

   b. Indicate Sentence Strip 2b.

      | **SAY** | "They both still drive cars to the store." |

   c. Indicate Sentence Strip 2c.

      | **SAY** | "They both are keeping plastic bags out of landfills." |

d. Indicate Sentence Strip 2d.

SAY	"They both are using reusable materials."

7.

ASK AGAIN	"What is one way that both Jane and Mike reduce the amount of waste they produce?"

8. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

9. If the student chose a correct answer, reiterate the student's correct answer. Set chosen Sentence Strip aside.

10.

ASK	"What is another way that both Jane and Mike reduce the amount of waste they produce?"

11. Provide remaining Resource 2: Sentence Strips 2a – 2d to the student. Indicate and read each remaining Sentence Strip.

a. Indicate Sentence Strip 2a.

SAY	"They both buy too many groceries."

b. Indicate Sentence Strip 2b.

SAY	"They both still drive cars to the store."

c. Indicate Sentence Strip 2c.

SAY	"They both are keeping plastic bags out of landfills."

d. Indicate Sentence Strip 2d.

SAY	"They both are using reusable materials."

12.

ASK AGAIN	"What is another way that both Jane and Mike reduce the amount of waste they produce?"

13. Allow student to respond and record response.

14. If the student chooses a correct answer, reiterate the student's correct answer. Set chosen Sentence Strip aside.

15.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Sentence Strip 2c.

SAY	"Both Jane and Mike are keeping plastic bags out of landfills."

2.

ASK	"What is another way that both Jane and Mike reduce the amount of waste they produce?"

3. Provide remaining Resource 2: Sentence Strips 2a – 2d to the student. Indicate and read each remaining Sentence Strip.

   a. Indicate Sentence Strip 2a.

SAY	"They both buy too many groceries."

   b. Indicate Sentence Strip 2b.

SAY	"They both still drive cars to the store."

   c. Indicate Sentence Strip 2c.

SAY	"They both are keeping plastic bags out of landfills."

   d. Indicate Sentence Strip 2d.

SAY	"They both are using reusable materials."

4.

ASK AGAIN	"What is another way that both Jane and Mike reduce the amount of waste they produce?"

5. Allow student to respond and record response.

6. If the student chose a correct answer, reiterate the student's correct answer. Set chosen Sentence Strip aside.

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. What is one way that both Jane and Mike reduce the amount of waste they produce?
   a. Sentence Strip 2c – They both are keeping plastic bags out of landfills.
   OR
   b. Sentence Strip 2d – They both are using reusable materials.
2. What is another way that both Jane and Mike reduce the amount of waste they produce?
   a. Sentence Strip 2c – They both are keeping plastic bags out of landfills.
   OR
   b. Sentence Strip 2d – They both are using reusable materials.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify one way that both Jane and Mike reduce the amount of waste they produce (Sentence Strip 2c or Sentence Strip 2d); ***and*** • is unable to identify another way that both Jane and Mike reduce the amount of waste they produce (Sentence Strip 2c or Sentence Strip 2d).	The student **does not** demonstrate understanding.	0
Student… • is able to identify one way that both Jane and Mike reduce the amount of waste they produce (Sentence Strip 2c or Sentence Strip 2d); ***and*** • is unable to identify another way that both Jane and Mike reduce the amount of waste they produce (Sentence Strip 2c or Sentence Strip 2d). **OR** • is unable to identify a one way that both Jane and Mike reduce the amount of waste they produce (Sentence Strip 2c or Sentence Strip 2d); ***and*** • **after scaffolding,** is able to identify another way that both Jane and Mike reduce the amount of waste they produce (Sentence Strip 2d).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify one way that both Jane and Mike reduce the amount of waste they produce (Sentence Strip 2c or Sentence Strip 2d); ***and*** • is able to identify another way that both Jane and Mike reduce the amount of waste they produce (Sentence Strip 2c or Sentence Strip 2d).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 8

Essence Statement: CTAS-MS-ESS3-1 Use evidence to explain that natural resources (fresh water, soil, fossil fuels) used by humans are often limited and not easily replaced by natural processes.

Core Extension 8: From provided evidence, compare the distribution of a renewable and a non-renewable resource. (CTAS-MS-ESS3-1)

Teacher Notes:

Collect the following resources for this activity:

- Activity 8 Resource 1: Number of Water and Coal Deposits in the United States Poster
- Activity 8 Resource 2: Sentence Strips 2a – 2c
  - Sentence Strip 2a – coal
  - Sentence Strip 2b – water
  - Sentence Strip 2c – equal
- Activity 8 Resource 3: Cards 3a – 3c
  - Card 3a – decreases
  - Card 3b – increases
  - Card 3c – stays the same

Steps to Follow:

1. | **SAY** | "In this activity, we are going to talk about where fresh water and coal are available in the United States. You can find fresh water in rain, rivers, streams, lakes, and underground. Water is a renewable resource. Coal is a non-renewable resource." |
2. Display Resource 1: Number of Water and Coal Deposits in the United States Poster for the student.
3. Indicate Resource 1.

SAY	"Here is a graph that shows the number of water and coal deposits in the United States. The y-axis is labeled '**Number of States**' *(indicate y-axis)*. The x-axis is labeled '**Water**' under the first blue bar *(indicate '**Water**' bar)*, and '**Coal**' under the second black bar *(indicate '**Coal**' bar).* The blue bar for '**Water**' goes to 50. The black bar for '**Coal**' goes to 22."

4. | **ASK** | "How do the number of states with water compare to the number of states with coal?" |
5. Provide Resource 2: Sentence Strips: 2a – 2c to the student. Indicate and read each Sentence Strip.
   a. Indicate Sentence Strip 2a.

SAY	"There are more states with coal."

   b. Indicate Sentence Strip 2b.

SAY	"There are more states with water."

c. Indicate Sentence Strip 2c.

SAY	"There are an equal number of states with coal and water."

6.

ASK AGAIN	"How do the number of states with water compare to the number of states with coal?"

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Sentence Strip 2b.

SAY	"There are more states with water."

9. Indicate Resource 1.

SAY	"Coal is a non-renewable resource."

10.

ASK	"What happens to the amount of available coal after we continue to use it?"

11. Provide Resource 3: Cards 3a – 3c to the student. Indicate and describe each Card.

a. Indicate Card 3a.

SAY	"The amount of coal **decreases** because new coal cannot easily be made."

b. Indicate Card 3b.

SAY	"The amount of coal **increases** because new coal can easily be made."

c. Indicate Card 3c.

SAY	"The amount of coal **stays the same**."

12.

ASK AGAIN	"What happens to the amount of available coal after we continue to use it?"

13. Allow student to respond and record response.

14. Indicate Card 3a.

SAY	"The amount of coal **decreases** because new coal cannot easily be made."

15.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, Sentence Strip 2b.

SAY	"There are more states with water, since you can find water in 50 states in the United States."

2.

ASK	"What happens to the amount of available coal after we continue to use it?"

3. Provide Resource 3: Cards 3a – 3c to the student. Indicate and describe each Card.

   a. Indicate Card 3a.

SAY	"The amount of coal **decreases** because new coal cannot easily be made."

   b. Indicate Card 3b.

SAY	"The amount of coal **increases** because new coal can easily be made."

   c. Indicate Card 3c.

SAY	"The amount of coal **stays the same**."

4.

ASK AGAIN	"What happens to the amount of available coal after we continue to use it?"

5. Allow student to respond and record response.

6. Indicate Card 3a.

SAY	"The amount of coal **decreases** because new coal cannot easily be made."

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. How do the number of states with water compare to the number of states with coal?
   a. Sentence Strip 2b – There are more states with water.
2. What happens to the amount of available coal after we continue to use it?
   a. Card 3a – decreases

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to compare the number of states with water to the number of states with coal (Sentence Strip 2b); ***and*** • is unable to identify what happens to the amount of coal after it is used (Card 3a).	The student **does not** demonstrate understanding.	0
Student… • is able to compare the number of states with water to the number of states with coal (Sentence Strip 2b); ***and*** • is unable to identify what happens to the amount of coal after it is used (Card 3a). **OR** • is unable to compare number of states with water to the number of states with coal (Sentence Strip 2b); ***and*** • **after scaffolding,** is able to identify what happens to the amount of coal after it is used (Card 3a).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to compare the number of states with water to the number of states with coal (Sentence Strip 2b); ***and*** • is able to identify what happens to the amount of coal after it is used (Card 3a).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 9

Essence Statement: CTAS-MS-ESS3-4 Analyze data to provide evidence of the amount of water used by humans for everyday purposes.

Core Extension 9: Based on provided data, compare the amount of water used in different activities. (CTAS-MS-ESS3-4)

Teacher Notes:

Collect the following resources for this activity:

- Activity 9 Resource 1: Water Use of Three Activities Poster
- Activity 9 Resource 2: Cards 2a – 2c
  - Card 2a – Bath
  - Card 2b – Brushing Teeth
  - Card 2c – Washing Dishes
- Activity 9 Resource 3: Cards 3a – 3c
  - Card 3a – about 5 gallons
  - Card 3b – about 50 gallons
  - Card 3c – about 500 gallons

Steps to Follow:

1. | **SAY** | "In this activity, we are going to compare the amount of water that is used in different activities that people do every day: taking a bath, brushing teeth, and washing dishes." |
2. Display Resource 1: Water Use of Three Activities Poster for the student.
3. Indicate Resource 1.

SAY	"This bar graph shows the amount of water that is used during three different activities. The bar graph is titled '**Water Use of Three Activities**' *(indicate title)*. The y-axis is called '**Gallons of Water Used**' *(indicate y-axis)* and the x-axis is called '**Activities**'. Taking a bath uses 35 gallons of water *(indicate '**Bath**' bar)*. Brushing your teeth uses 4 gallons of water *(indicate '**Brushing Teeth**' bar)*. Washing dishes uses 10 gallons of water *(indicate '**Washing Dishes**' bar)*."

4. | **ASK** | "Which activity uses the most amount of water?" |
5. Provide Resource 2: Cards 2a – 2c to the student. Indicate and read each Card.
   a. Indicate Card 2a.

SAY	"Bath"

   b. Indicate Card 2b.

SAY	"Brushing Teeth"

c. Indicate Card 2c.

SAY	"Washing Dishes"

6.

ASK AGAIN	"Which activity uses the most amount of water?"

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Card 2a.

SAY	"Taking a **bath** uses the most amount of water."

9.

ASK	"What is the most likely estimate of the amount of water that the student will use when they do all three activities?"

10. Provide Resource 3: Cards 3a – 3c to the student. Indicate and describe each Card.

a. Indicate Card 3a.

SAY	"about 5 gallons"

b. Indicate Card 3b.

SAY	"about 50 gallons"

c. Indicate Card 3c.

SAY	"about 500 gallons"

11.

ASK AGAIN	"What is the most likely estimate of the amount of water that the student will use when they do all three activities?"

12. Allow student to respond and record response.

13. Indicate Card 3b.

SAY	"The student will use **about 50 gallons** when they take a bath, brush their teeth, and wash dishes."

14.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Card 3a.

SAY	"Taking a **bath** uses the most amount of water."

2.

ASK	"What is the most likely estimate of the amount of water that the student will use when they do all three activities?"

3. Provide Resource 3: Cards 3a – 3c to the student. Indicate and describe each Card.

   a. Indicate Card 3a.

SAY	"about 5 gallons"

   b. Indicate Card 3b.

SAY	"about 50 gallons"

   c. Indicate Card 3c.

SAY	"about 500 gallons"

4.

ASK AGAIN	"What is the most likely estimate of the amount of water that the student will use when they do all three activities?"

5. Allow student to respond and record response.

6. Indicate Card 3b.

SAY	"The student will use **about 50 gallons** when they take a bath, brush their teeth, and wash dishes."

7.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. Which activity uses the most amount of water?
   a. Card 2a – Bath
2. What is the most likely estimate of the amount of water that the student will use when they do all three activities?
   a. Card 3b – about 50 gallons

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to determine which activity uses the most amount of water (Card 2a); ***and*** • is unable to estimate how much water the student will use when they do all three activities (Card 3b).	The student **does not** demonstrate understanding.	0
Student… • is able to determine which activity uses the most amount of water (Card 2a); ***and*** • is unable to estimate how much water the student will use when they do all three activities (Card 3b). **OR** • is unable to determine which activity uses the most amount of water (Card 2a); ***and*** • **after scaffolding,** is able to estimate how much water the student will use when they do all three activities (Card 3b).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to determine which activity uses the most amount of water (Card 2a); ***and*** • is able to estimate how much water the student will use when they do all three activities (Card 3b).	The student demonstrates understanding independently without scaffolding.	2

ACTIVITY 10

Essence Statement: CTAS-MS-ESS3-4 Analyze data to provide evidence of the amount of water used by humans for everyday purposes.

Core Extension 10: Analyze water-use data to support a claim about the amount of water used by a growing population over time. (CTAS-MS-ESS3-4)

Teacher Notes:

Collect the following resources for this activity:

- Activity 10 Resource 1: Water Use Data Table Poster
- Activity 10 Resource 2: Sentence Strips 2a – 2d
  - Sentence Strip 2a – increased
  - Sentence Strip 2b – decreased
  - Sentence Strip 2c – increased/decreased
  - Sentence Strip 2d – decreased/increased

Cover the final row of the data table until you ask the second question.

Steps to Follow:

1. | **SAY** | "In this activity, we are going to look at water-use data used by different sizes of populations." |

2. Display Resource 1: Water Use Data Table Poster for the student. ***Cover the final row of the data table***.

3. Indicate Resource 1.

SAY	"Here is a data table titled '**Water Use**' *(indicate title)* that shows the population and amount of water used in the United States in two years. The data shows that in 1950, there was a population of 170 million people and the amount of water used was 180 billion gallons per day *(indicate first row)*. In 2000, there was a population of 280 million people and the amount of water used was 340 billion gallons per day *(indicate second row)*."

4. | **ASK** | "Some people claim that water use will keep increasing as the population grows. How does the data support this claim?" |

5. Provide Resource 2: Sentence Strips 2a – 2d to the student. Indicate and read each Sentence Strip.

   a. Indicate Sentence Strip 2a.

SAY	"The population and the amount of water use both increased."

   b. Indicate Sentence Strip 2b.

SAY	"The population and the amount of water use both decreased."

c. Indicate Sentence Strip 2c.

SAY	"The population increased, but the amount of water use decreased."

d. Indicate Sentence Strip 2d.

SAY	"The population decreased, but the amount of water use increased."

6.

ASK AGAIN	"Some people claim that water use will keep increasing as the population grows. How does the data support this claim?"

7. Allow student to respond and record response. If no response or if incorrect response, proceed to scaffolding instructions.

8. Indicate Sentence Strip 2a.

SAY	"The population and the amount of water use both increased."

9. Display Resource 1: Water Use Data Table Poster for the student. ***Uncover the final row of the data table***.

10. Indicate Resource 1.

SAY	"New data shows the population and water use from the year 2010 *(indicate final row)*. The population changed from 280 million people to 310 million people. The amount of water used changed from 340 billion gallons per day to 290 billion gallons per day."

11.

ASK	"The claim is that water use will keep increasing every year as the population grows. How does this new data show that the claim is wrong?"

12. Provide remaining Resource 2: Sentence Strips 2b – 2d to the student. Indicate and read each remaining Sentence Strip.

a. Indicate Sentence Strip 2b.

SAY	"The population and the amount of water use both decreased."

b. Indicate Sentence Strip 2c.

SAY	"The population increased, but the amount of water use decreased."

c. Indicate Sentence Strip 2d.

SAY	"The population decreased, but the amount of water use increased."

13.

ASK AGAIN	"The claim is that water use will keep increasing every year as the population grows. How does this new data show that the claim is wrong?"

14. Allow student to respond and record response.

15. Indicate Sentence Strip 2c.

SAY	"The population increased, but the amount of water use decreased."

16.

SAY	"We are now finished with this activity."

Scoring Guidance and Scaffolding

Scaffolding:

1. After student makes first incorrect attempt, indicate Sentence Strip 2a.

SAY	"The population and the amount of water use both increased."

2. Display Resource 1: Water Use Data Table Poster for the student. ***Uncover the final row of the data table***.

3. Indicate Resource 1.

SAY	"New data shows the population and water use from the year 2010 *(indicate final row)*. The population changed from 280 million people to 310 million people. The amount of water used changed from 340 billion gallons per day to 290 billion gallons per day."

4.

ASK	"The claim is that water use will keep increasing every year as the population grows. How does this new data show that the claim is wrong?"

5. Provide remaining Resource 2: Sentence Strips 2b – 2d to the student. Indicate and read each remaining Sentence Strip.

a. Indicate Sentence Strip 2b.

SAY	"The population and the amount of water use both decreased."

b. Indicate Sentence Strip 2c.

SAY	"The population increased, but the amount of water use decreased."

c. Indicate Sentence Strip 2d.

SAY	"The population decreased, but the amount of water use increased."

6.

ASK AGAIN	"The claim is that water use will keep increasing every year as the population grows. How does this new data show that the claim is wrong?"

7. Allow student to respond and record response.

8. Indicate Sentence Strip 2c.

SAY	"The population increased, but the amount of water use decreased."

9.

SAY	"We are now finished with this activity."

Correct answers are as follows:

1. Some people claim that water use will keep increasing as the population grows. How does the data support this claim?
    a. Sentence Strip 2a – The population and the amount of water use both increased.
2. The claim is that water use will keep increasing every year as the population grows. How does this new data show that the claim is wrong?
    a. Sentence Strip 2c – The population increased, but the amount of water use decreased.

Content Guidance	Rating	Score
Student… • gives NO response. **OR** • is unable to identify how the data supports the claim (Sentence Strip 2a); ***and*** • is unable to identify how the data shows that the claim is wrong (Sentence Strip 2c).	The student **does not** demonstrate understanding.	0
Student… • is able to identify how the data supports the claim (Sentence Strip 2a); ***and*** • is unable to identify how the data shows that the claim is wrong (Sentence Strip 2c). **OR** • is unable to identify how the data supports the claim (Sentence Strip 2a); ***and*** • **after scaffolding,** is able to identify how the data shows that the claim is wrong (Sentence Strip 2c).	The student demonstrates limited understanding typically requiring additional support through scaffolding.	1
Student… • is able to identify how the data supports the claim (Sentence Strip 2a); ***and*** • is able to identify how the data shows that the claim is wrong (Sentence Strip 2c).	The student demonstrates understanding independently without scaffolding.	2