

## Task Examples

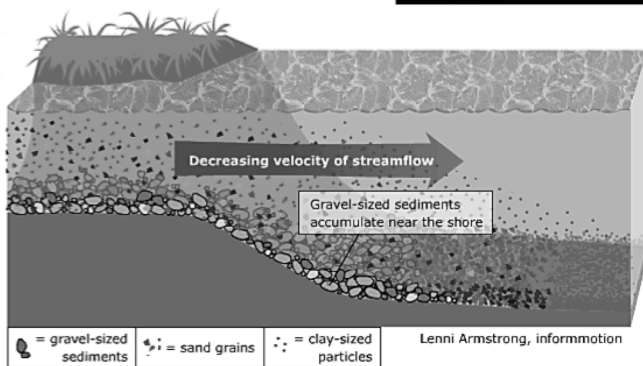
**Instructions:** Review the six assessment tasks on the following pages. Choose one and modify it to align to the NGSS Performance Expectation MS-ESS2-1 using the Design Pattern for Modeling. Consider the clarification statement and assessment boundary in making your modifications.

<b>MS-ESS2-1 Earth's Systems</b>		
<p>Students who demonstrate understanding can:</p> <p><b>MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.</b>  <i>[Clarification Statement: Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth's materials.] [Assessment Boundary: Assessment does not include the identification and naming of minerals.]</i></p>		
<p>The performance expectation above was developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i>:</p>		
<p><b>Developing and Using Models</b>                      Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.</p> <ul style="list-style-type: none"> <li>Develop and use a model to describe phenomena.</li> </ul>	<p><b>ESS2.A: Earth's Materials and Systems</b></p> <ul style="list-style-type: none"> <li>All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.</li> </ul>	<p><b>Stability and Change</b></p> <ul style="list-style-type: none"> <li>Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and processes at different scales, including the atomic scale.</li> </ul>
<p><i>Connections to other DCIs in this grade band:</i>  <b>MS.PS1.A ; MS.PS1.B ; MS.PS3.B ; MS.LS2.B ; MS.LS2.C ; MS.ESS1.B ; MS.ESS3.C</b></p>		
<p><i>Articulation of DCIs across grade-bands:</i>  <b>4.PS3.B ; 4.ESS2.A ; 5.ESS2.A ; HS.PS1.B ; HS.PS3.B ; HS.LS1.C ; HS.LS2.B ; HS.ESS2.A ; HS.ESS2.C ; HS.ESS2.E</b></p>		
<p><i>Common Core State Standards Connections:</i>                      ELA/Literacy -  <b>SL.8.5</b> Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. (<i>MS-ESS2-1</i>)</p>		

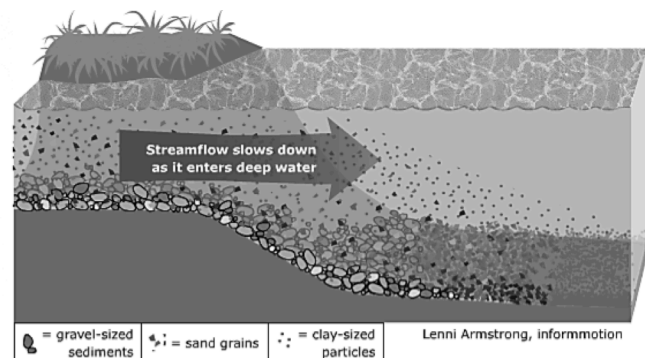
## Assessment Task 1

Watch the animation at

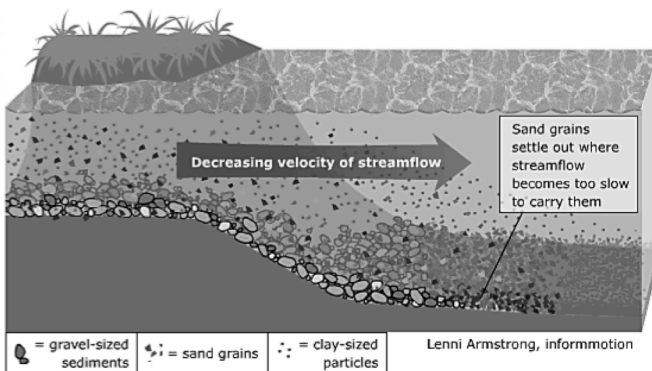
[http://www.classzone.com/books/earth\\_science/terc/content/visualizations/es0604/es0604page01.cfm?chapter\\_no=visualization](http://www.classzone.com/books/earth_science/terc/content/visualizations/es0604/es0604page01.cfm?chapter_no=visualization) [Key screenshots of animation are provided below.]



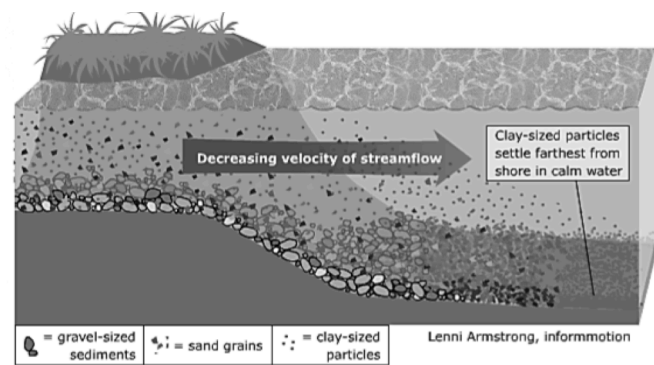
1



2



3



4

In the rock cycle, what is likely to happen to the rock fragments after they have settled to the bottom of the lake here, over a long period of time? Be prepared to explain the process.

- The rock fragments will form new igneous rocks.
- The rock fragments will form new sedimentary rocks.
- The rock fragments will become new metamorphic rocks.
- The rock fragments will not change at all, once they settle to the bottom.

Explain your thinking using what you know about the process of rock formation.

## Assessment Task 2

How might plants break rocks down through physical weathering?

- Live plants can split rocks apart, when they grow inside cracks in the rock.
- Live plants release carbon dioxide to break down rocks.
- Plants cannot break down rocks, since rocks always stay the same.

Based on your answer, what can you conclude about rock weathering?

## Assessment Task 3

River



Image source: [http://en.wikipedia.org/wiki/File:Rhone\\_River\\_SPOT](http://en.wikipedia.org/wiki/File:Rhone_River_SPOT)

The picture above shows a river running into lake. If you took a picture of this location a thousand years from now, what would you expect to observe?

- The landscape would look the same.
- There would be less mud and sediment.
- Deposition would make the delta larger and flatter.
- Deposition would cause the water in the river to disappear.

Explain your answer choice.

Source: Based on task from Contingent Pedagogies Project

## Assessment Task 4

Write an informational essay that explains the relationship between the geosphere and the rock cycle. Use a conceptual model to support your claims.

## Assessment Task 5



Source: <http://www.gly.uga.edu/railsback/FieldImages.html>

This picture shows plants growing in the cracks of a rock.

### Part 1

Create a 3-panel storyboard showing what the rock may look like several years from now and the events that will take place.

- Label your pictures.
- For each picture write a sentence caption explaining what is going on. You may use your textbook to find evidence to support your pictures.

### Part 2

Share your storyboard with a partner and answer the following questions.

1. What information does your partner's storyboard show about physical weathering by plants?
2. What, if anything, is missing from your partner's storyboard that is important in the process of weathering by plants?
3. Do you disagree with anything that this included in this storyboard? Explain.
4. How could your partner's storyboard be improved?

### Part 3

Use the feedback from your partner to revise your storyboard.

# Assessment Task 6

Source: <http://www.learner.org/interactives/rockcycle/diagram2.html>

## The Rock Cycle Diagram

YOUR SCORE: 0  
TIME: \_\_\_\_\_

The Rock Cycle

See if you can put your knowledge of rock types and geologic processes together to map out the rock cycle.

You will have a total of five minutes to answer a series of questions that will help you complete the rock cycle diagram. Each question is worth two points and you will have one chance to select the right answer.

**BEGIN**

## The Rock Cycle Diagram

YOUR SCORE: 0  
TIME: \_\_\_\_\_

The Rock Cycle

1. When rocks are affected by weathering and erosion, they change into which of the following?

- Lava
- Magma
- Sediment

## The Rock Cycle Diagram

YOUR SCORE: 2  
TIME: \_\_\_\_\_

The Rock Cycle

2. When sediment is compacted and cemented, it changes into which of the following?

- Igneous rock
- Metamorphic rock
- Sedimentary rock

## The Rock Cycle Diagram

YOUR SCORE: 4  
TIME: \_\_\_\_\_

The Rock Cycle

3. When heat and pressure are applied to a sedimentary rock, it changes into which of the following?

- Igneous rock
- Metamorphic rock
- Sediment

## The Rock Cycle Diagram

YOUR SCORE: 6  
TIME: \_\_\_\_\_

The Rock Cycle

4. When melting of a metamorphic rock occurs, it changes into which of the following?

- Igneous rock
- Magma
- Sediment

## The Rock Cycle Diagram

YOUR SCORE: 8  
TIME: \_\_\_\_\_

The Rock Cycle

5. When magma is cooled, it changes into which of the following?

- Igneous rock
- Metamorphic rock
- Sedimentary rock

