

4/25/2014



**Assessing with
Learning
Progressions in
Science**

FOSS LANDFORMS

Photo by Joanne Johnson

Instructional Tools

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Instructional Tools

In this packet you will find a set of instructional supports for science materials. These documents represent the work-in-progress of teachers in the Assessing with Learning Progressions in Science Project, a Math Science Partnership through the Northwest Educational Service District in Washington State. While we encourage others to use the materials, please know the power of these tools lies in the collaborative discussion and analysis that occurs during their creation. We strongly suggest that anyone utilizing these tools make them your own, adjusting them to fit your teaching context and district priorities. Professional development tools to aid you in this process are available on the ALPS project web page www.nwesd.org/nwalps. For access to editable versions of these documents please contact Nancy Menard nmenard@nwesd.org.

Overview of the Tools (not every unit tool-set will include all of these tools)

Unit Overview

The unit overview grid lays out learning targets or important scientific ideas from Washington State Standards for each investigation in the module and clarifies the success criteria for each learning target. It also details the formative assessments that have been designed to assess each target in the investigation.

Learning Progressions

A learning progression is a graphical representation of the path students take toward mastery of a science “big idea”. The ALPS *Learning Progression* documents include a description of an important big idea from the *Washington State Science Learning Standards* and the progression of building-block learning targets that students master on their way toward an understanding of that big idea. For each building-block learning target the student success criteria is identified and one or more formative assessment tasks to elicit evidence of student understanding are suggested.

Formative Assessment Tasks

The suggested formative assessment tasks are examples of tools used by the teachers in the ALPS project to gather evidence of student understanding. The *Assessment Task Cover Sheet* details each assessment and gives administration tips and suggestions for instructional adjustments based on some of the common student struggles they encountered.






Student Work Samples

Selected student work samples from students in ALPS classrooms give a picture of the range of student responses gathered from sample formative assessments. The *Student Work Sample Cover Sheet* describes the student work samples and the teacher’s interpretation of student understanding.

Landforms Unit Overview

Lesson	Learning Targets & Success Criteria		Assessment
Prior Learning	Prerequisite	Lesson to be taught before starting the kit: ✓ I can... use scale to show the size and shape relationships between different objects. ✓ I can...use directionality to identify placement of objects.	See additional lesson on scale and directionality called: "Introduction to scale"
Investigation 1 Part 1	Models	🎯 A model is not exactly the same as the thing being represented ✓ I can... evaluate the differences between the model and the object or process that it represents	Create a Venn Diagram comparing a model and the object it represents.
Investigation 1 Part 2	Models	🎯 Models and maps are ways of representing landforms and human structures. ✓ I can... explain how the model or map can be used to understand the system.	Identify the system represented by a map or model, and then give an example of a situation where a map or model would be useful. Explain your thinking
Design Challenge	Engineering	🎯 A model is a simplified representation of an object, event, or system in the natural world. ✓ I can...use scale and directionality in my school ground model.	
	Prerequisite	Intentionally pre-teach lesson vocabulary: deposition, sediment, basin, channel, meander, landform, canyon, delta, plateau, erosion	

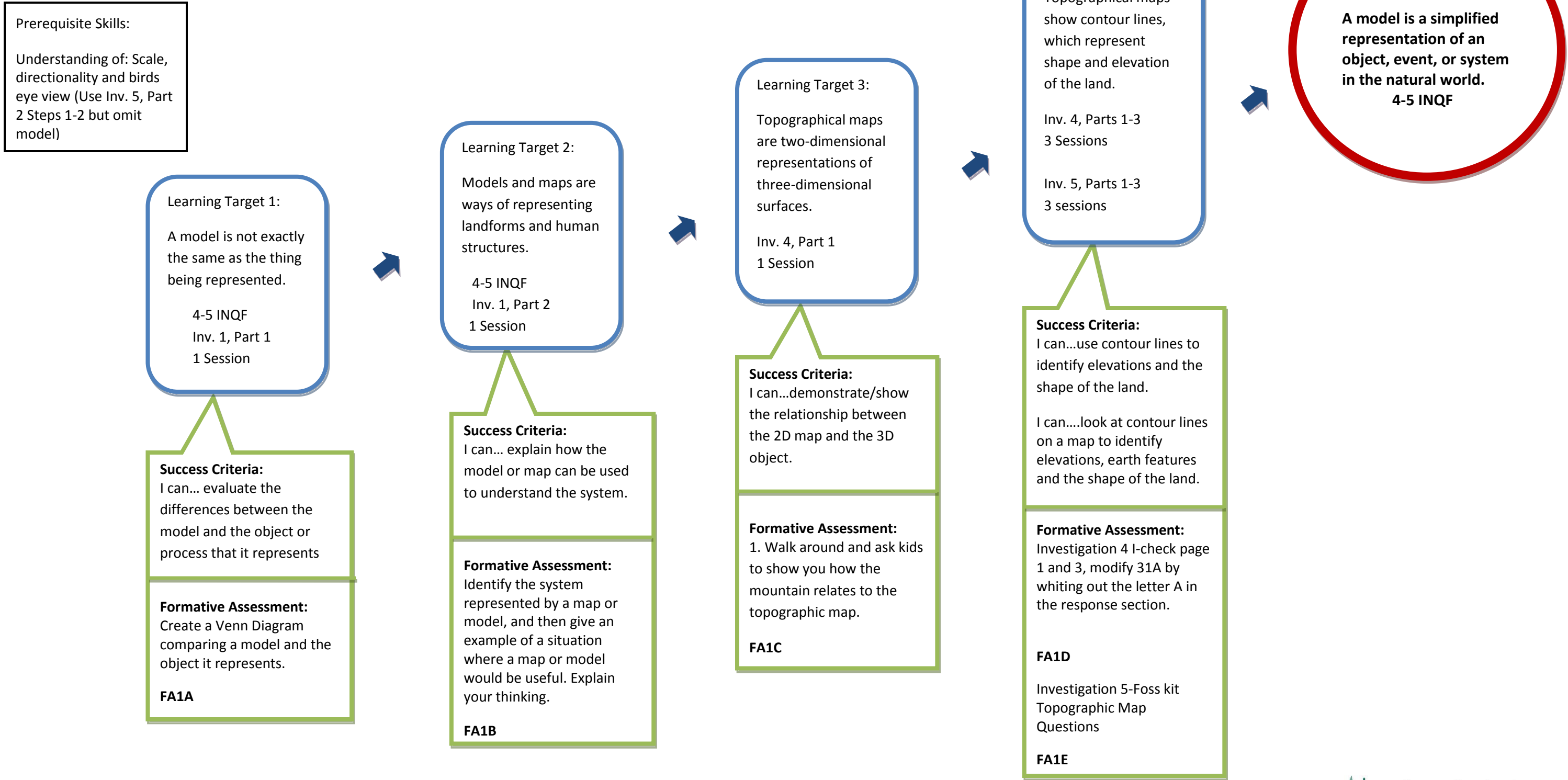
Lesson	Learning Targets & Success Criteria		Assessment
Investigation 2 Part 1	Earth Materials	<p>🎯 Erosion is the movement of earth by various natural processes.</p> <p>I can...define erosion and the major forces that cause it.</p>	Use the Frayer Model (definition, characteristics, examples, non-examples, center circle contains erosion)
<i>Use before Investigation 2 Part 2</i>	Supplemental Learning	<p>Supplement with a video on erosion and weathering.</p> <p>Video Suggestions: <i>Bill Nye: Weathering, Discovery Ed or Brain Pop</i></p>	Use word sort activity called: "Weathering, Erosion, Deposition Sorting Activity"-Not in FOSS kit
Investigation 2 Part 2	Earth Materials	<p>🎯 Weathering is the breaking down of rock caused by various physical processes..</p> <p>I can...describe weathering and give examples of different causes of weathering.</p>	<p>T/F/Justification</p> <ol style="list-style-type: none"> 1. Water can break rocks apart. (T) 2. Wind can't damage rocks. (F) 3. Weathering process is about rocks not sand. (F) 4. Weathering creates new soil. (T)
Investigation 2 Part 3	Earth Materials	<p>🎯 Soils are formed by weathering, erosion, decaying of matter and deposition</p> <p>✓ I can...explain how soil is formed and describe its composition.</p>	<p>Concept Cartoon: What is soil made of? Which child do you agree with? Explain why.</p> <ol style="list-style-type: none"> 1. Soil is made up of dirt. 2. Soil is made up of rocks, pebbles, sand, and clay. 3. Soil= salt+oil. 4. Soil is made up of animal waste.
Investigation 2 Part 2	Earth Materials	<p>🎯 Erosion plays an important role in the formation of soil and landforms.</p> <p>✓ I can...identify examples that show change in landforms and soil due to erosion.</p>	Use the unlabeled landform map from the landforms journal cover to label and/or draw in two examples of landforms and two examples of change in soil.

Lesson	Learning Targets & Success Criteria		Assessment
Design Challenge	Engineering	 <i>Erosion can affect ecosystems. (4-5 ES2F)</i> <i>Systems: A system can be analyzed by the study of its subsystems and larger more inclusive systems. (4-5 SYSA,B,C,D)</i> ✓ I can... represent a model of how erosion affects an ecosystem and make modifications to optimize their design to save the town from the river flow.	
	Prerequisite	✓ I can...identify the parts and functions of simple systems. ✓ I can...identify the input and outputs	<i>Use the supplemental lessons:</i> 1. “System of a Dum Dum” 2. “System of a Pencil”
Investigation 3 Part 1	Systems	 Systems contain subsystems that contribute to their functionality ✓ I can... describe how parts of a system interact.	Sketch a stream table system. Label its subsystems (parts), and explain how they interact with the whole system.
Investigation 3 Part 2	Systems	 Change in a system input may change output of a system. ✓ I can...describe the effect on a system if the input is changed.	1. T-Table with input and output of stream table: Input Output 1. 1. 2. 2.  2 .What differences did you observe in landforms when the slope was changed?
Investigation 3 Part 3	Systems	 Erosion can affect ecosystems. ✓ I can... predict how erosion may affect an ecosystem.	1.Investigation 3: I-check , pg. 4 (4 locations to build a house)

Lesson	Learning Targets & Success Criteria		Assessment
Investigation 4 Part 1	Models	<ul style="list-style-type: none"> Topographical maps are two-dimensional representations of three-dimensional surfaces. ✓ I can...demonstrate/show the relationship between the 2D map and the 3D object. 	1. Walk around and ask kids to show you how the mountain relates to the topographic map.
Investigation 4 Parts 1-3	Models	<ul style="list-style-type: none"> Topographical maps show contour lines, which represent shape and elevation of the land. ✓ I can...use contour lines to identify elevations and the shape of the land. 	Investigation 4 I-check page 1 and 3, modify 31A by whiting out the letter A in the response section.
Investigation 5 Part 1-3	Models	<ul style="list-style-type: none"> Topographical maps show contour lines, which represent shape and elevation of the land on a map. ✓ I can....look at contour lines on a map to identify elevations, earth features and the shape of the land. 	FOSS Embedded Assessment: Investigation 5: Student sheet pages 21-24 (Choose one) Pg. 21- Mount Shasta Questions Pg. 22- Bird's Eye View Pg. 23- Death Valley Questions Pg. 24- Grand Canyon Questions

Learning Progression 1

FOSS Landforms: Investigation 1, 4, & 5 Models



LANDFORMS

Big Idea: A model is a simplified representation of an object, event, or system in the natural world.

Formative Assessment Task Cover Sheet

Learning Target #1	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Create a Venn Diagram comparing a model and the object it represents	Administration Tips: Investigation 1 Part 1 Suggestions for Instructional Adjustments: Start a model museum so that kids have many examples of various models and how they relate to what they represent.
Learning Target: A model is not exactly the same as the thing being represented	
Success Criteria: I can... evaluate the differences between the model and the object or process that it represents	
Student Task Sheet Included: yes Student Work Samples Included: no	

Learning Target #2	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Identify the system represented by a map or model, and then give an example of a situation where a map or model would be useful. Explain your thinking.	Administration Tips: Investigation 1 Part 2
Learning Target: Models and maps are ways of representing landforms and human structures.	
Success Criteria: I can... explain how the model or map can be used to understand the system.	
Student Task Sheet Included: yes Student Work Samples Included: yes	

LANDFORMS

Big Idea: A model is a simplified representation of an object, event, or system in the natural world.

Learning Target #3	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Walk around and ask kids to show you how the mountain relates to the topographic map.	Administration Tips: Investigation 4 Part 1
Learning Target: Topographical maps are two-dimensional representations of three-dimensional surfaces.	
Success Criteria: I can....demonstrate/show the relationship between the 2D map and the 3D object.	
Student Task Sheet Included: yes Student Work Samples Included: no	

Learning Target #4	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Using FA4B kids analyze contour lines.	Administration Tips: Investigation 4 Parts 1-3 Investigation 5 Parts 1-3
Learning Target: Topographical maps show contour lines, which represent shape and elevation of the land.	
Success Criteria: I can....use contour lines to identify elevations and the shape of the land. I can....look at contour lines on a map to identify elevations, earth features and the shape of the land.	
Student Task Sheet Included: yes Student Work Samples Included: no	

LANDFORMS

Big Idea: **Systems:** A system can be analyzed by the study of its subsystems and larger more inclusive systems.

Formative Assessment Task Cover Sheet

Learning Target #1, Assessment Task	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Sketch a stream table system. Label its subsystems (parts), and explain how they interact with the whole system.	Administration Tips: Investigation 3 Part 1 Suggestions for Instructional Adjustments: Break down other systems into subsystems explaining how they contribute to the functionality of the system. (Grandfather Clock, Ecosystem, Computer, Bicycle, etc.)
Learning Target: Systems contain subsystems that contribute to their functionality.	
Success Criteria: I can... describe how parts of a system interact.	
Student Task Sheet Included: yes Student Work Samples Included: no	



Name _____

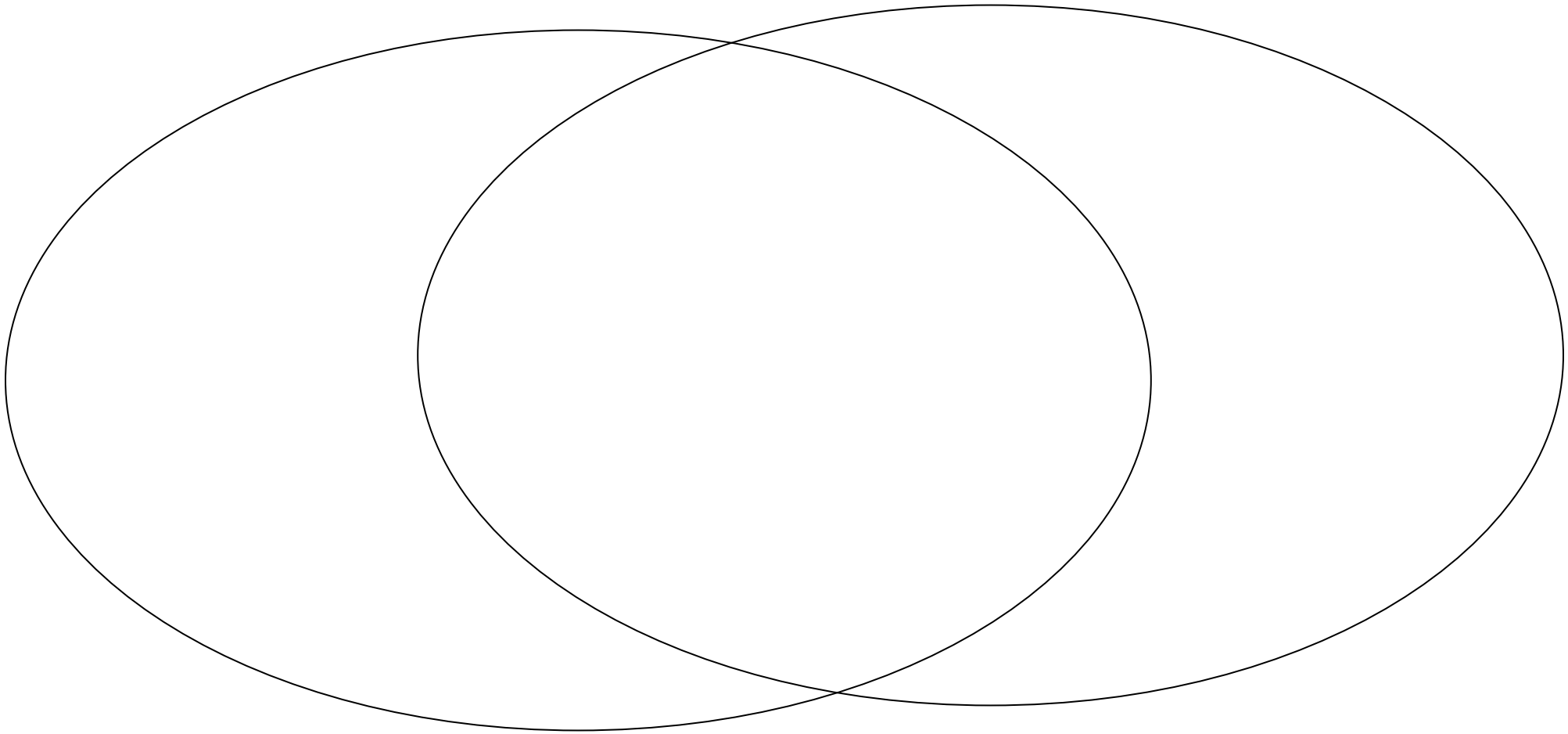
Date _____

Science – Landform Kit Investigation # 1

Fill out the Venn Diagram comparing a model and the object it represents.

Object: _____

Model _____



LANDFORMS

Big Idea: A model is a simplified representation of an object, event, or system in the natural world.

Target #2, Assessment: Use of Maps and Models

Formative Assessment Student Work Cover Sheet

Student Work Description

Sample 1: Student understands that a map is useful for helping you get to where you want to be and a model is a convenient substitute for the real thing. This student may overgeneralize how accurate a model may be.

Sample 2: Student understands cardinal directions and how to put them to use on a map. Student understands the difference between a map and a model.

Sample 3: Student understands that maps contain marked locations. Student understands that a model is the representation of the real thing.



Name _____

Date _____

Science – Landform Kit

Learning Progression #1 - Investigation # 4

1) Give a situation where a map would be useful. _____

List at least two reasons why a map is useful in this situation

2) Give a situation where a model would be useful. _____

List at least two reasons why a model is useful in this situation. _____

Teacher Name_____ Date_____

Science – Landform Kit

Investigation # 4

Walk around and ask kids to show you how the mountain relates to the topographic map.

Kids who grasped the concept	Kids who need more explanation



Name _____

Date _____

2-3-12

Sample 1

Source - Landform Kit

Learning Progression #1 - Investigation # 4

1) A situation where a map would be useful is if someone
didn't know where to go and they were trying
to find a house or a store. people don't want
to get lost so they want a map to know where
to go
because People don't want to go the wrong way
if they don't mean to. Maps help you go the right
way so that you don't get lost. Maps help you
so much. You could use a map when you go
on a vacation and you didn't know where to go.

2) A situation where a model would be useful is if you didn't
want to show a real car you could make
a model of a car. A model of something can
really help you if you didn't want to bring
the actual thing in to show the people.
because on a model of a car it is exactly like
the real thing just in a smaller version.
Models are very helpful when you need it and
you don't want to bring the real thing in.

Name _____

Date

2/3/12

Source - Landform Kit

Sample 2

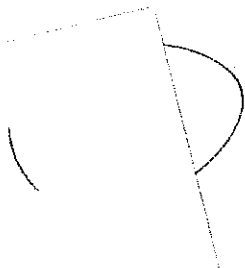
Learning Progression #1 - Investigation # 4

1) A situation where a map would be useful is on vacations,
traveling and sailing

because it helps you find directions
like north west east south.

2) A situation where a model would be useful is for
scientists

because they would need models
for figuring what
stuff are in it.



Name _____

Date _____

Science — Landform Kit

Sample 3

Learning Progression #1 - Investigation # 4

1) A situation where a map would be useful is if i'm lost in the
woods, or in a land.

because it will show me where to find places
like a buffet, a school, a house

2) A situation where a model would be useful is my house it
will show you where my dogs are,
or the bathroom

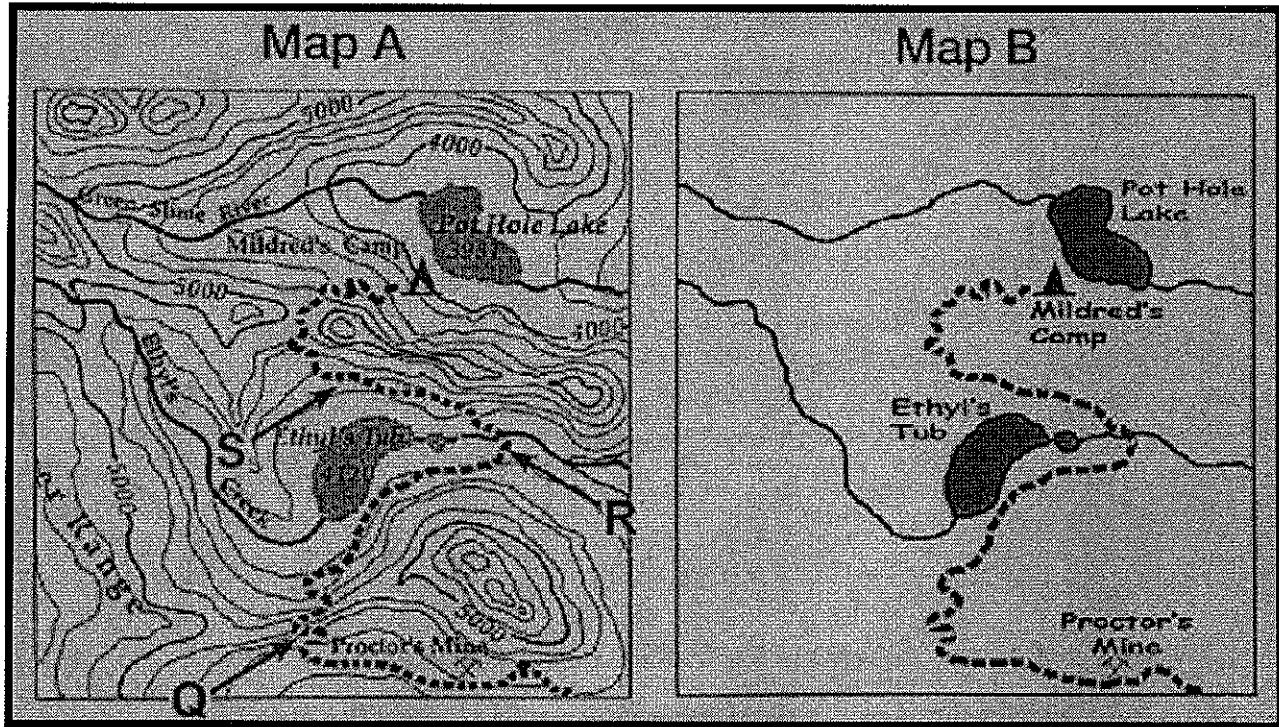
because it will show you my hole house.

Name _____

Date _____

Science – Landform Kit

Investigation # 4



1) Pam and her family were planning a hike. Pam found two maps of the same area. Her friend recommended that she use the topographic map.

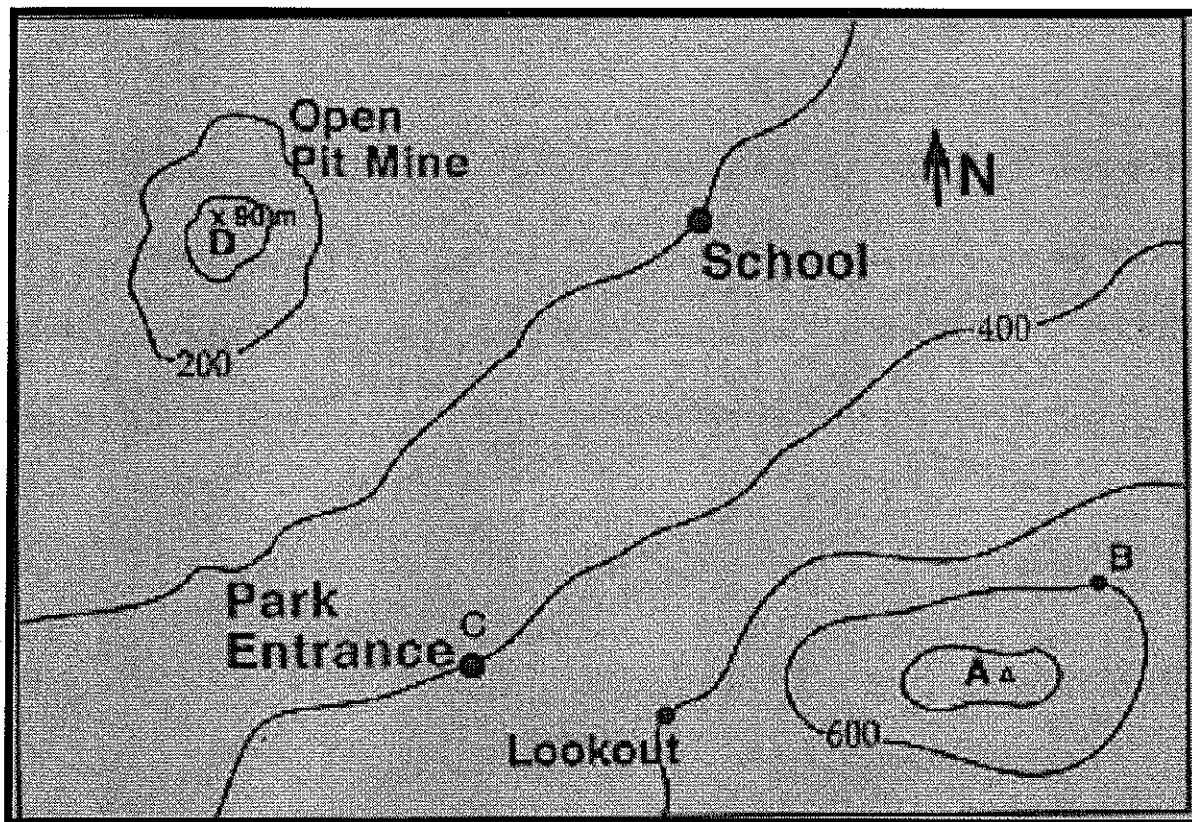
a) Which map is the topographic map? (circle one) Map A Map B

Why would Pam's friend recommend using the topographic map for the hike?

b) Which letter on the map is the steepest part of the trail? _____

How do you know it is the steepest part of the trail?

2)



a) What is the highest point on this map? _____

Explain why you chose that elevations.

b) Which letter indicates the lowest point on the map? _____

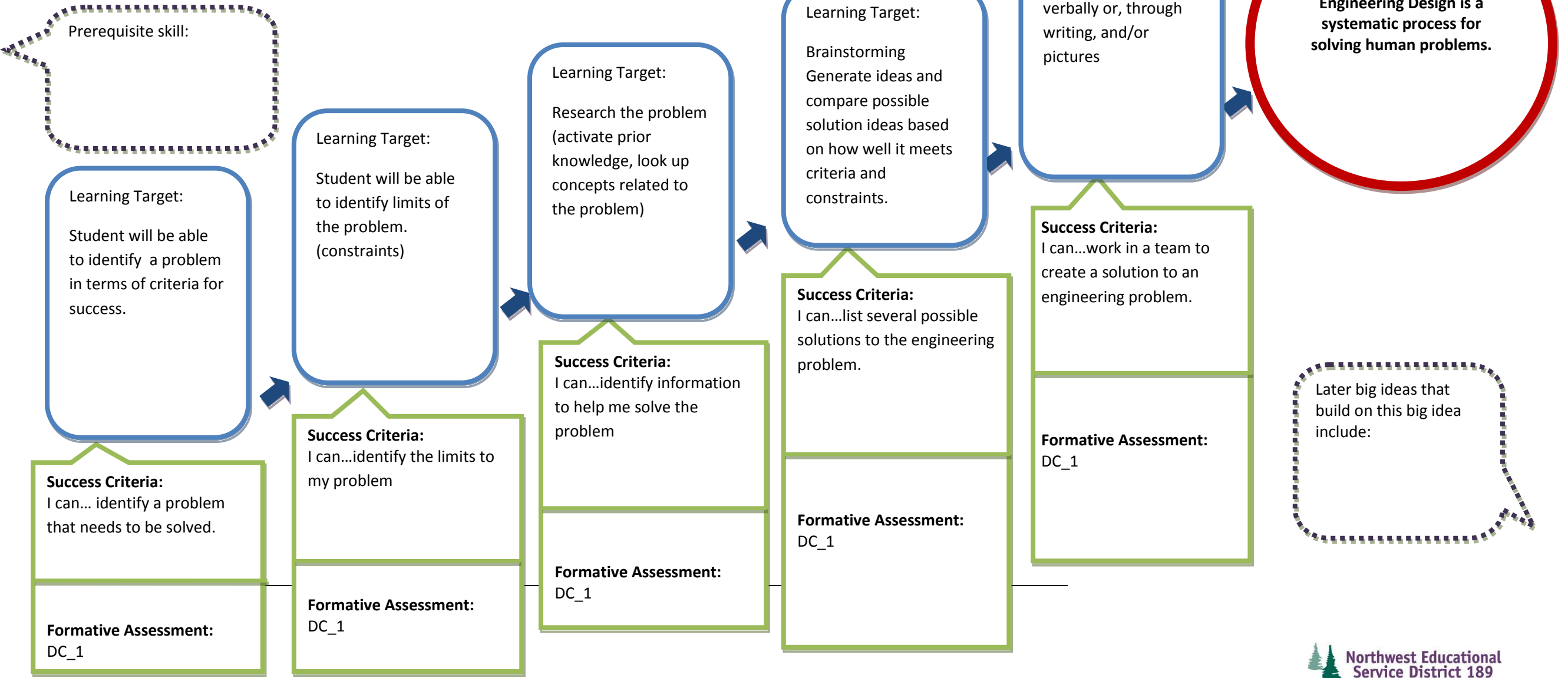
What is the elevation at the lowest point? _____

c) What is the difference in elevation between the park entrance and the lookout? _____

Learning Progression

Materials: Landforms Design Challenge 1

Grade level: 5th



Introduction to Scale

The following activity may be used to introduce

- Mapping
- Directionality
- Bird's-eye view
- Scale

Depending on students' skill level, this activity may introduce scale as a visual concept or may introduce the use of measurement and ratio in developing scale.

Materials:

- Graph paper for each student

Activity:

1. Each student places three to four items on his/her desktop.
2. Students stand and view desktop from a bird's-eye view.
3. Students discuss the relative size of each of the items in comparison to the area of the desktop.
4. On graph paper (no names on papers yet), students draw a scaled down representation of the perimeter of their desktop.
5. Students locate position of items on desktop by north, east, south, and west, and add a compass rose in the margin of the graph paper.
6. Each student draws a scaled down representation of each item as it appears from a bird's-eye view on the desk.
7. Teacher collects and redistributes the students' desk maps. Students walk about and identify the desktop shown on the map. Students leave the maps on desks and return to own seat.
8. Hold a class discussion concerning ease of identifying the correct desk. What made the desk easy/difficult to identify?
9. Discuss importance of accurate use of scale and directionality.
10. On the back of their map, each student writes, in their own words, a definition of scale.

Landforms

Challenge Title: Create a Model of School Grounds

Targeted Engineering Practices *select the engineering practices taught in this challenge*

- ☐ Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- ☐ Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem
- ☐ Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Connected Scientific Content Ideas

A model is a simplified representation of an object, event, or system in the natural world.

Description of Student Success Criteria:

At the completion of this task students will be able to:

Students will be able to accurately represent the school yard using scale and directionality in their design.

LANDFORMS Kit – Investigation 1

Dear Students,

Each year, the safety committee meets to find the safest places on our school grounds to line up during a fire drill. I am making a presentation to that committee next week. I need you to help me with a problem. I need an accurate model of our school grounds to show the committee, but I don't have time to create one.

In order to create an accurate model, it is important that you carefully observe the features of the school grounds. It is also important that you record accurate details and take clear notes.

Thank you in advance and I look forward to seeing the models you will create.

Sincerely,

School Principal

TASK I

Problem: Create a model in the stream table that represents your school grounds.

Available Materials: You may use half of a stream table, earth materials, craft sticks, and blue gram pieces (and whatever additional materials are available in the room or outside).

Criteria for a successful solution to the problem: Your team will create a model that shows the school buildings and school grounds and any playground structures.

Constraints: The model must be built in the stream table. You can only use the materials available in the classroom or that you have collected from the school grounds.

Background Knowledge: Prior to the design challenge students will need lessons and activities on scale, map key, directionality (compass rose), and birds eye view.

LANDFORMS Kit – Investigation 1

Dear Students,

Your models were very well done and showed me a lot of detail. Unfortunately, the stream table models are too difficult for me to carry to the meeting. I need you to transfer your model data to something that is flat and easy to carry.

Sincerely,

School Principal

TASK II:

Problem: Transfer your data to some material that is flat and can be easily transported.

Available Materials: Transparent graph sheets, wipe off markers, scotch tape, and models already created in stream tables.

Criteria for a successful solution to the problem: Your team will draw a map of our school grounds. The school building, playground, and parking lots need to be included on your map. Draw your map to scale with a North arrow. Your map must be clear and easy to read.

Constraints: You need to show the school building, all portables, fences, bus lanes and parent pick up lanes, parking lots, sidewalks, and grassy or bark areas and the paved areas of the schoolyard.

LANDFORMS Kit – Investigation 1

Dear Students,

Your transparency maps were very well done, but the safety committee didn't understand what some of the symbols and areas were. They need an accurate scale map of the school grounds in order to finalize the school safety plan.

I am anxious to see the maps that you produce.

Sincerely,

School Principal

TASK III:

Task: Your team will draw an accurate scale map of the school grounds.

Problem: Draw an accurate scale map of our school grounds.

Available Materials: Transparencies, stream tables, wipe off markers, paper, pencils, and colored pencils.

Criteria for a successful solution to the problem: Your team will draw a scale map of the school grounds with a North arrow and map key included. Your map must be clear and easy to read.

Constraints: You need to show the school building, all portables, fences, bus lanes and parent pick up lanes, parking lots, sidewalks, and grassy or bark areas and the paved areas of the schoolyard.

- Your map must be drawn to scale.
- Use a compass rose to show the cardinal directions
- You must have a map key to explain your scale and any other symbols or colors that you use in your map.
- Your map needs to be drawn on map grid provided (student sheet #5)

Background Knowledge: Prior to the design challenge review with students scale, map key, directionality (compass rose), and birds eye view.

Learning Progression 2

FOSS Landforms: Investigation 2 Earth Materials

Prerequisite:

Introduce students to vocabulary and intentionally use through out investigations. (See attached Investigation 2 vocab. sheet)

Learning Target 1:
Weathering is the breaking down of rock caused by various physical processes.

4-5 ESC2B
Inv. 2, Part 2
Steps 1-8
1 Session

Success Criteria:
I can...describe weathering and give examples of different causes of weathering.

Formative Assessment:
T/F/Justification

- 1. Water can break rocks apart. (T)
- 2. Wind can't damage rocks. (F)
- 3. Weathering process is about rocks not sand. (F)
- 4. Weathering creates new soil. (T)

FA2B

Learning Target 2:

Erosion is the movement of earth by various natural processes.

4-5 ESC2C
Inv. 2, Part 1
1 Session

Success Criteria:
I can...define erosion and the major forces that cause it.

Formative Assessment:

Use the Frayer Model (definition, characteristics, examples, non-examples, center circle contains erosion)

FA2A

NOTE: Supplement with video on erosion and weathering. (eg: Bill Nye, Discovery Ed or Brain Pop)

Learning Target 3:

Soils are formed by weathering, erosion, decaying of matter and deposition.

4-5 ESC2D
Inv. 2, Part 2
Steps 9-10
1 Session

Success Criteria:
I can...explain how soil is formed and describe its composition.

Formative Assessment:
Concept Cartoon: What is soil made of?

Which child do you agree with? Explain why.

- 1. Soil is made up of dirt.
- 2. Soil is made up of rocks, pebbles, sand, and clay.
- 3. Soil= salt+oil.
- 4. Soil is made up of animal waste.

FA2C

Learning Target 4:

Erosion plays an important role in the formation of soil and landforms.

4-5 ESC2F
Inv. 2, Part 2
Steps 11-14
1 Session

Success Criteria:
I can...identify examples that show change in landforms and soil due to erosion.

Formative Assessment:
Use the unlabeled landform map from the landforms journal cover to label and/or draw in two examples of landforms and two examples of change in soil.

FA2D



LANDFORMS

Big Idea: **Formation of Earth Materials:** Earth materials are formed by various natural processes

Formative Assessment Task Cover Sheet

Learning Target #1, Assessment Task	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Use the Frayer Model (definition, characteristics, examples, non-examples, center circle contains erosion)	Administration Tips: Investigation 2 Part 1: You will need to complete a Frayer Model on another concept first so that students understand how to complete a Frayer Model. Suggestions for Instructional Adjustments: You may want to insert a Bill Nye video about erosion before having the kids complete the assessment.
Learning Target: Erosion is the movement of earth by various natural processes.	
Success Criteria: I can...define erosion and the major forces that cause it	
Student Task Sheet Included: yes Student Work Samples Included: no	

Learning Target #2, Assessment Task	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: T/F Justification 1. Water can break rocks apart. (T) 2. Wind can't damage rocks. (F) 3. Weathering process is about rocks not sand. (F) 4. Weathering creates new soil. (T)	Administration Tips: Investigation 2 Part 2 As you complete part 2 be sure to introduce and explain the term "weathering." Suggestions for Instructional Adjustments: Look for additional resources about weathering.
Learning Target: Weathering is the breaking down of rock caused by various physical processes	
Success Criteria: I can...describe weathering and give examples of different causes of weathering.	
Student Task Sheet Included: yes Student Work Samples Included: yes	

LANDFORMS

Big Idea: **Formation of Earth Materials: Earth materials are formed by various natural processes**

Learning Target #3, Assessment Task	
Assessment Task Details	Teacher Background
<p>Brief Description of the Assessment Task: Concept Cartoon: What is soil made of? Which child do you agree with? Explain why.</p> <ol style="list-style-type: none"> 1. Soil is made up of dirt. 2. Soil is made up of rocks, pebbles, sand, and clay. 3. Soil= salt+oil. 4. Soil is made up of animal waste 	<p>Administration Tips: Investigation 2 Part 3 You may want the children to name or number the figures first so that they can properly talk about them in the assessment.</p>
<p>Learning Target : Soils are formed by weathering, erosion, decaying of matter and deposition</p>	
<p>Success Criteria: I can...explain how soil is formed and describe its composition.</p>	
<p>Student Task Sheet Included: yes Student Work Samples Included: no</p>	

LANDFORMS

Big Idea: **Formation of Earth Materials:** Earth materials are formed by various natural processes

Learning Target #4, Assessment Task	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Use the unlabeled landform map from the landforms journal cover to label and/or draw in two examples of landforms and two examples of change in soil.	Administration Tips: Investigation 2 Part 3
Learning Target: Erosion plays an important role in the formation of soil and landforms.	
Success Criteria: I can...identify examples that show change in landforms and soil due to erosion	
Student Task Sheet Included: yes Student Work Samples Included: no	

Name _____

Date _____

Science – Landform Kit Investigation # 2

Use the Frayer model below to define Erosion.

<u>Definition:</u>			<u>Characteristics:</u>
		Erosion	
<u>Examples:</u>			<u>Non-Examples:</u>

LANDFORMS

Big Idea: **Formation of Earth Materials:** Earth materials are formed by various natural processes.

Target 2, Assessment: T/F Justification

Formative Assessment Student Work Cover Sheet

Student Work Description

Sample 1: Student understands the weathering process and justifies answer with complete thoughts.

Sample 3: Student understands the weathering process and uses correct scientific vocabulary.

Name _____

Date _____

Science – Landform Kit Investigation #2

Decide whether the statement is True or False and then write a sentence or two about why you think this way.

Statement	True	False	Why I think so...
1. Water can break rocks apart.			
2. Wind can't damage rocks			
3. Weathering process is about rocks not sand.			
4. Weathering creates new soil.			



Name _____

Date _____

Science – Landform Kit

Investigation #2

Decide whether the statement is True or False and then write a sentence or two about why you think this way.

Statement	True	False	Why
1. Water can break rocks apart.	✓		Water is forceful and potent and particle by particle it erodes the rocks beneath it.
2. Wind can't damage rocks		✓	Wind can move really fast and rip up sand and pieces of rock and create sand storms.
3. Weathering process is about rocks not sand.		✓	Weathering can happen to anything. It just takes time.
4. Weathering creates new soil.	✓		Weathering can erode rock and bring it to other places with different particles, creating new soil.

Name

Date

Science – Landform Kit

Investigation #2

Decide whether the statement is True or False and then write a sentence or two about why you think this way.

Statement	True	False	Why I think so...
1. Water can break rocks apart.	✓	X	Heavy rainfall can weather rocks, b/c it hits the rock hard.
2. Wind can't damage rocks	X	✓	Wind CAN damage rock, b/c after time it would wear away the rock's face.
3. Weathering process is about rocks not sand.	X	✓	Sand is what the little bits of worn off rock turn into. Tiny pieces of rock = sand.
4. Weathering creates new soil.	✓	X	It does create soil, b/c the bits of rock, mud and clay that were part of the rock become soil.

Name _____

Date _____

Science – Landform Kit Investigation #2 Learning Progression #2 – FA2B

Decide whether the statement is True or False and then write a sentence or two about why you think this way.

Statement	True	False	Why I think so...
1. Water can break rocks apart.	✓		I think this because when water gets into cracks in the rocks it freezes and expands weakening the rock.
2. Wind can't damage rocks		✓	This is false because wind picks up sand and then the sand chips the rocks.
3. Weathering process is about rocks not sand.	✓		This true because weathering breaks only rocks apart.
4. Weathering creates new soil.		✓	I think this false because only erosion can get to the rocks.

Name Date 11-14-13

Science – Landform Kit Investigation #2 Learning Progression #2 – FA2B

Decide whether the statement is True or False and then write a sentence or two about why you think this way.

Statement	True	False	Why I think so...
1. Water can break rocks apart.	✓		I learned that in a video.
2. Wind can't damage rocks		✓	because it erodes the rock when wind hits it.
3. Weathering process is about rocks not sand.		✓	Weathering picks up sand only and brings it to a new spot.
4. Weathering creates new soil.	✓		I know this because in a video it said weathering creates new soil.

Name Date

Science – Landform Kit Investigation #2 Learning Progression #2 – FA2B

Decide whether the statement is True or False and then write a sentence or two about why you think this way.

Statement	True	False	Why I think so...
1. Water can break rocks apart.	✓		because when water freezes it becomes ice which breaks up rock
2. Wind can't damage rocks		✓	because weathering chips peices over time
3. Weathering process is about rocks not sand.		✓	because weathering can turn rocks into sand
4. Weathering creates new soil.	✓		Weathering breaks down peices of rock which over time becomes soil

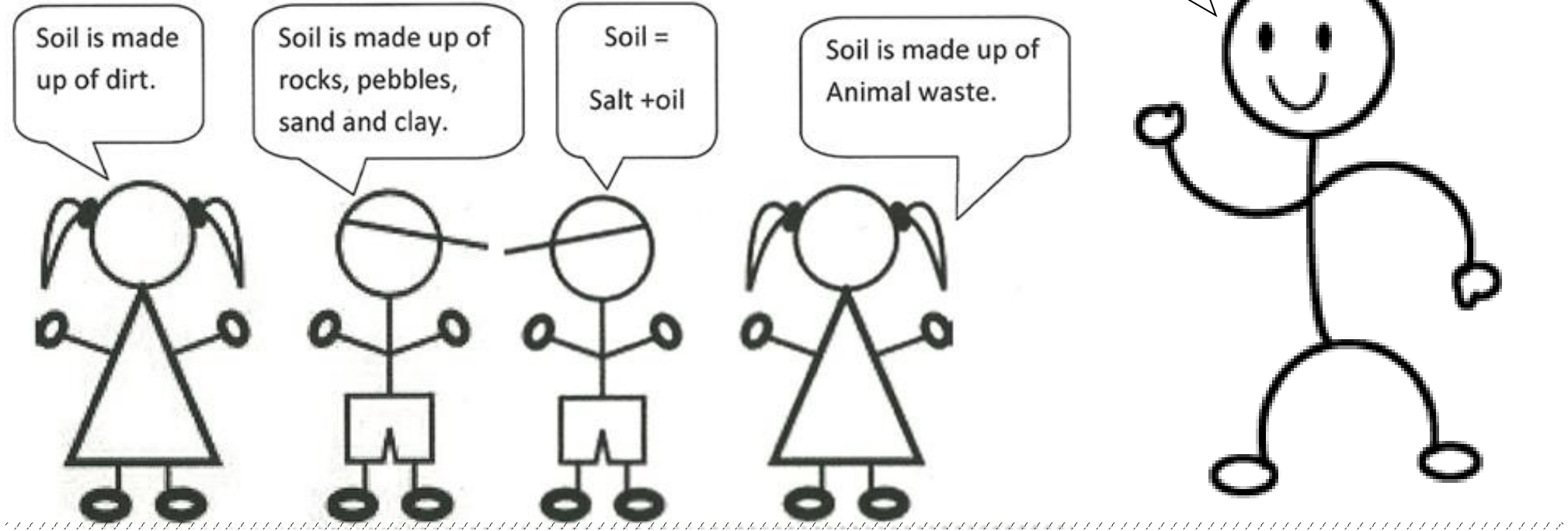
Name _____

Date _____

Science – Landform Kit

Investigation #2

This teacher is asking his students about an important learning goal from their Landform kit.



Which student do you agree with? Explain why.

Name _____

Date _____

Science – Landform Kit

investigation #2

1. Label two landforms.
2. Label an existing example or draw/label a new example of erosion.
3. Label an existing example or draw/label a new example of deposition.



FOSS Landforms, Picture from Investigation Duplicate Master, Landforms Journal Student Sheet, page 2.2000.
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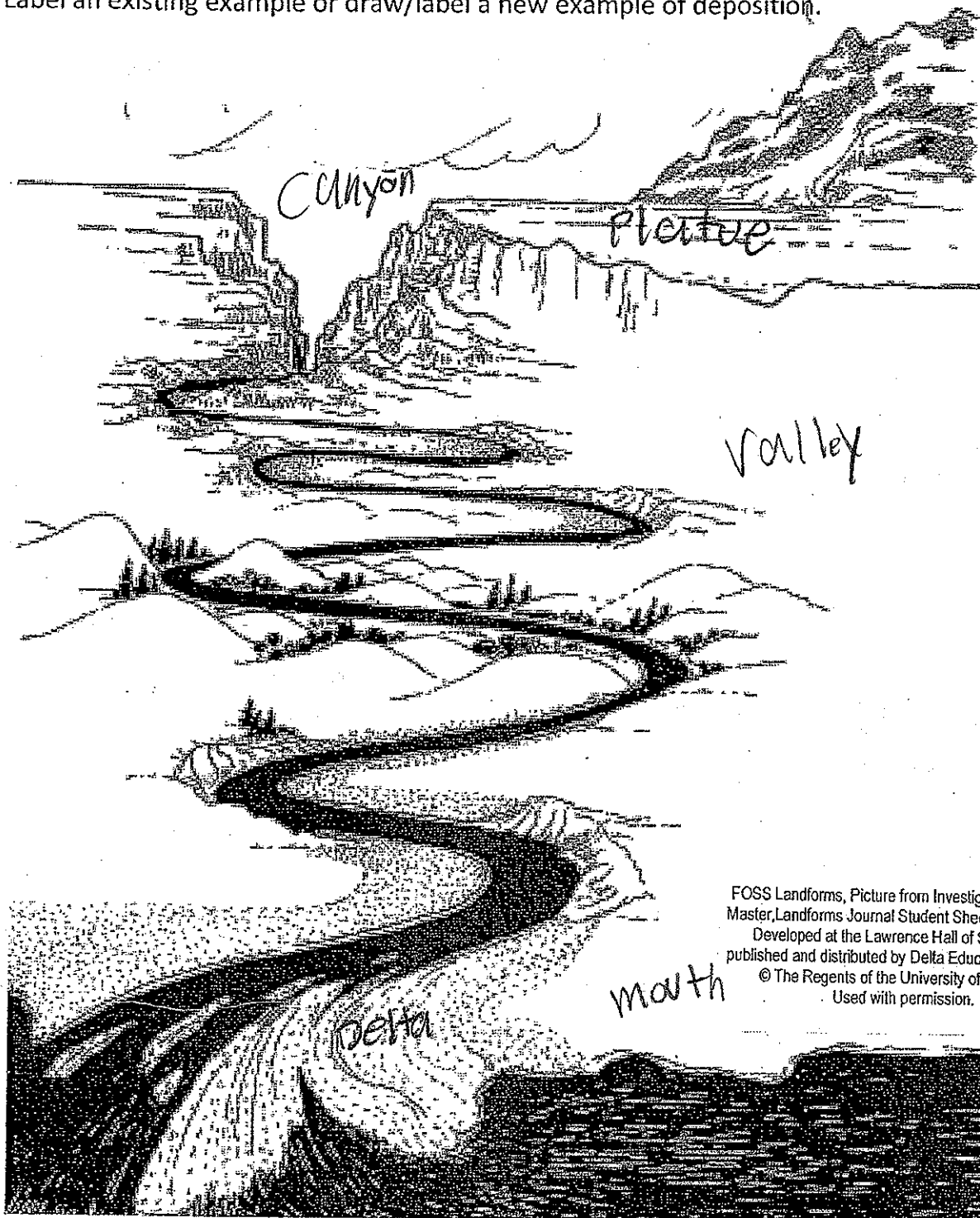
Name _____

Date _____

Science – Landform Kit

investigation #2

1. Label two landforms.
2. Label an existing example or draw/label a new example of erosion:
3. Label an existing example or draw/label a new example of deposition.



FOSS Landforms, Picture from Investigation Duplicate Master, Landforms Journal Student Sheet, page 2.2000. Developed at the Lawrence Hall of Science and published and distributed by Delta Education. Copyright © The Regents of the University of California. Used with permission.

Name

Date 11-14-13

Science – Landform Kit

Investigation #2

1. Label two landforms.
2. Label an existing example or draw/label a new example of erosion:
3. Label an existing example or draw/label a new example of deposition.



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Master, Landforms Journal Student Sheet, page 2.2000.
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11-18-13

Name

Landforms Reflective Prompt

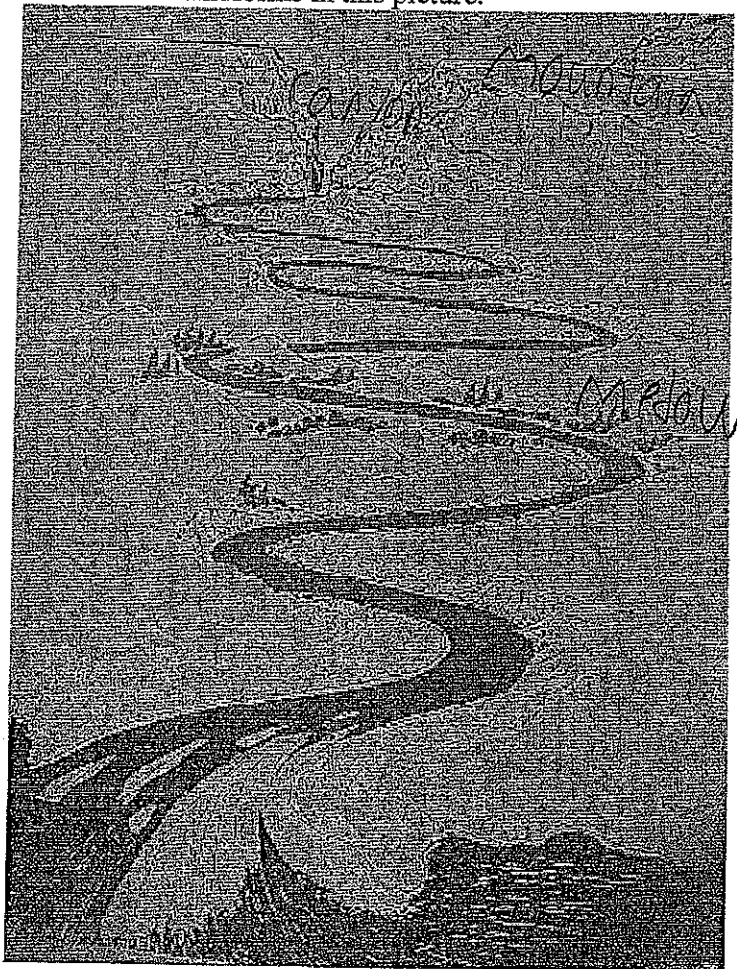
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



Name

~~XXXXXXXXXXXXXXXXXXXX~~ #18 10-14-B

Landforms Reflective Prompt

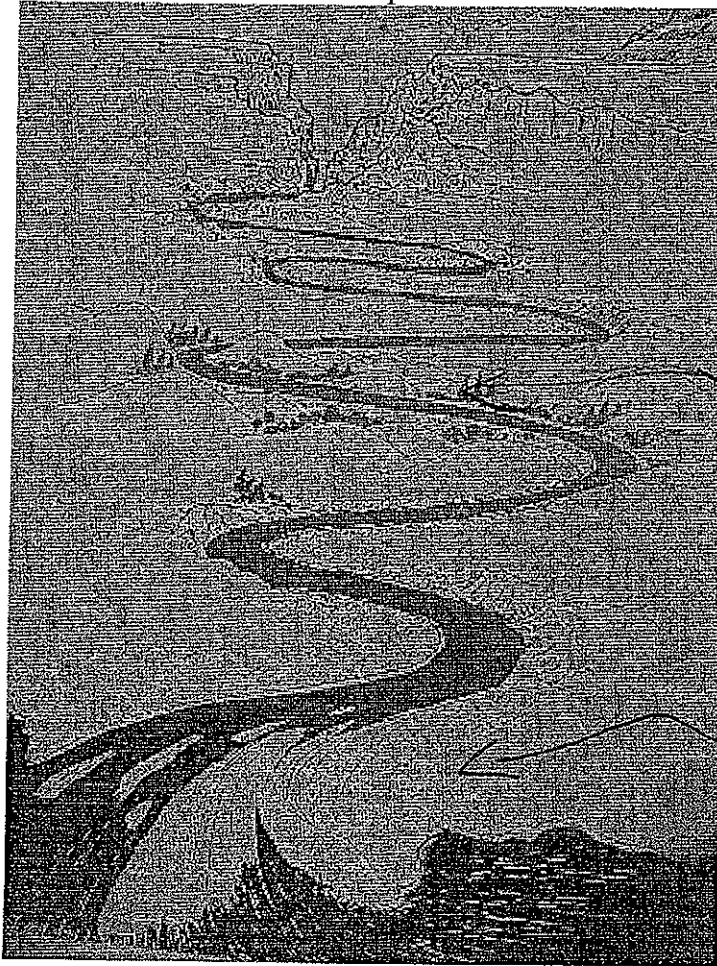
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



California
intermountains

Plateau

East West
Coast

Name

11-18

Landforms Reflective Prompt

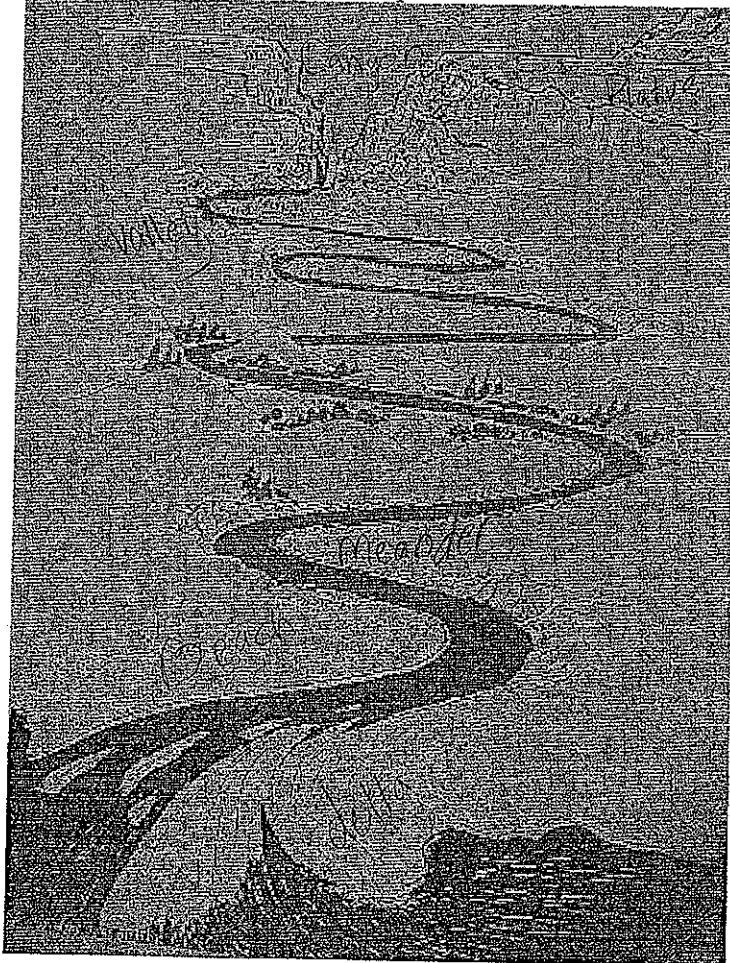
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



Date _____

investigation #2

-
- Canyon
- Water erosion
- Valley
- delta deposition
- FOSS Landforms, Picture from Investigating Master Landforms Journal Student Sheet
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 published and distributed by Delta Education
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 Used with permission.

Landforms Learning Progression #2 - FA2D

Name

~~XXXXXX~~

#9

10-14

Landforms Reflective Prompt

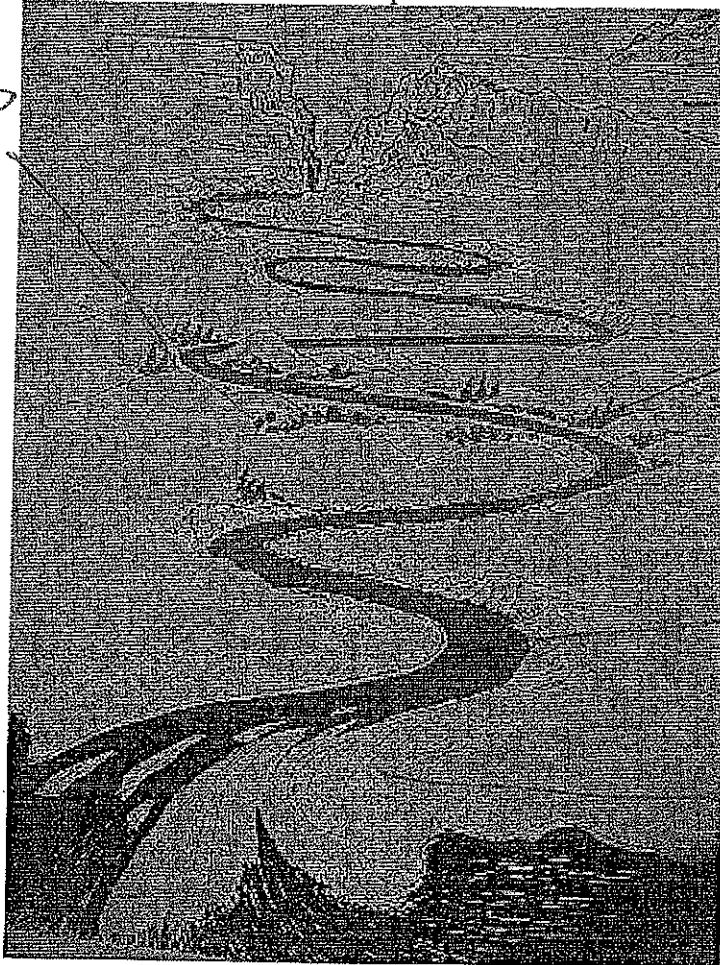
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



hills

Cliffs

bush

road

sand

Name _____

~~10-14-13~~

10-14-13

Landforms Reflective Prompt

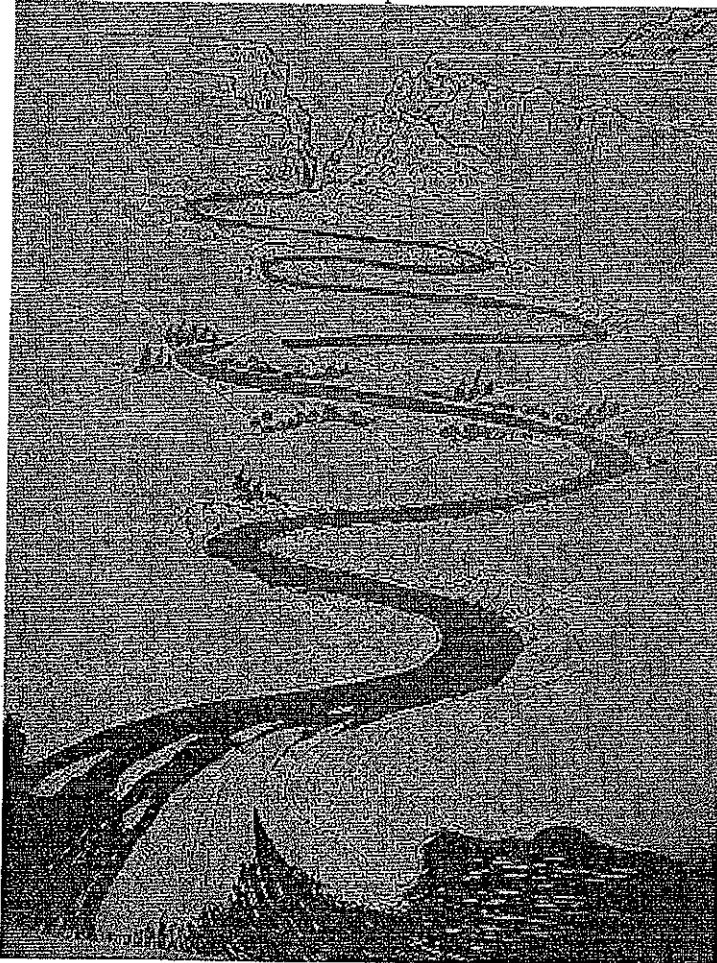
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



canyon
river
rock wall

Name: [redacted]

11-18

Landforms Reflective Prompt

BIG IDEA:

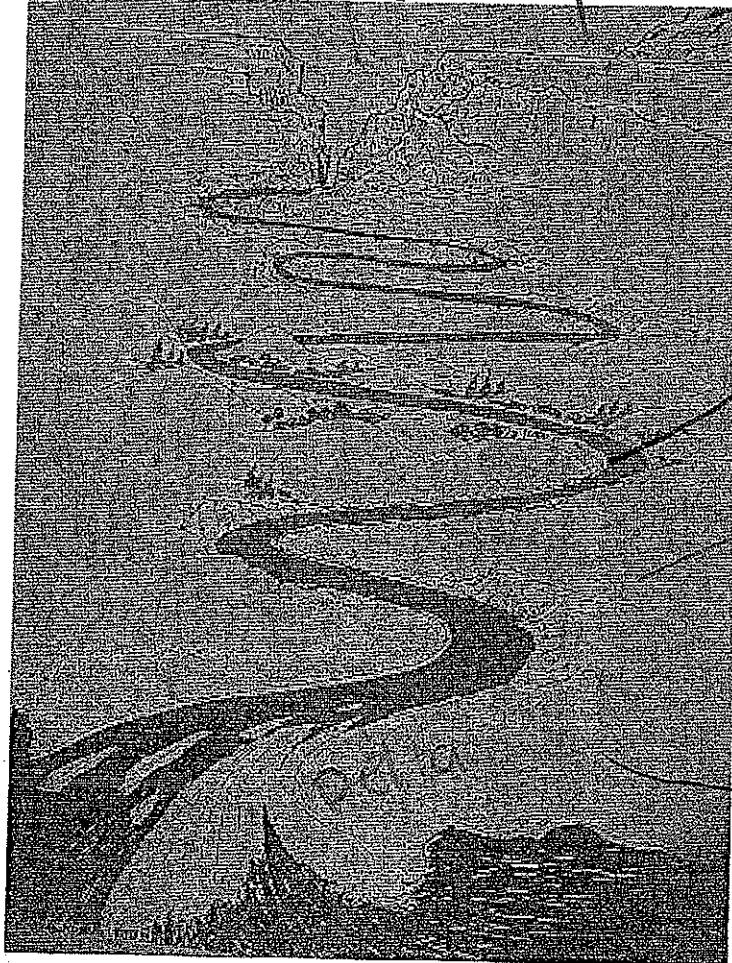
Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

canyon plateau

Label all the landforms in this picture.



meander

valley

mouth

Landforms Reflective Prompt

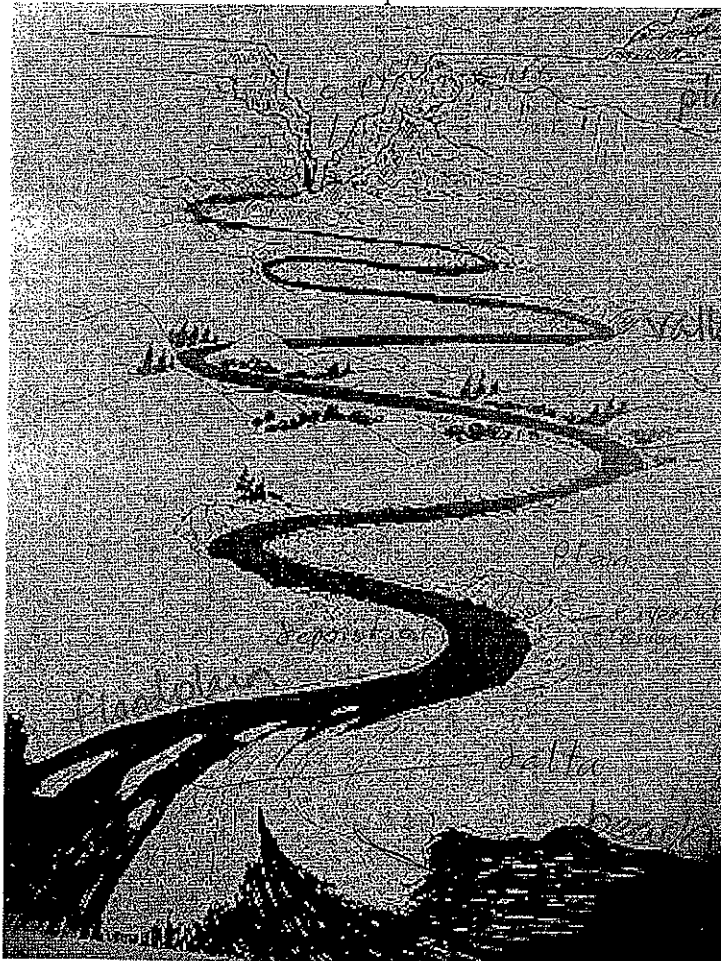
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



mountain

plateau

valley

meander

plain

deposition

deltas

alluvial fan

75
10

~~gluten-free~~

Landforms Reflective Prompt

BIG IDEA:

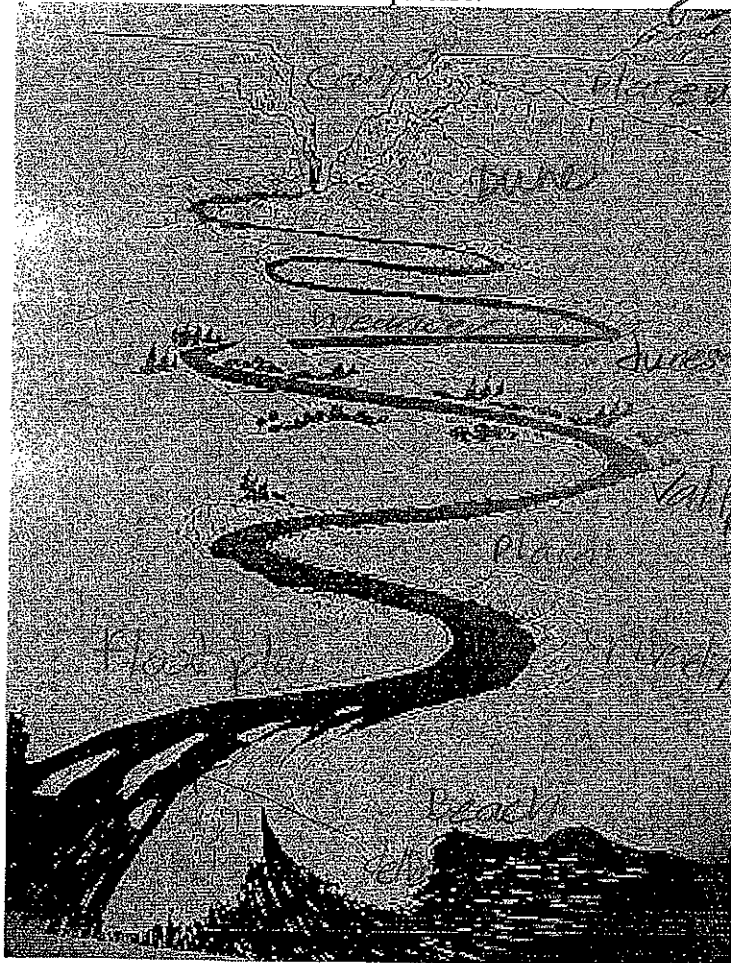
Earth materials and landforms are formed by various natural processes.

7/8
10

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



mountain

valley

valley

rocks

beach

Landforms

Landforms Reflective Prompt

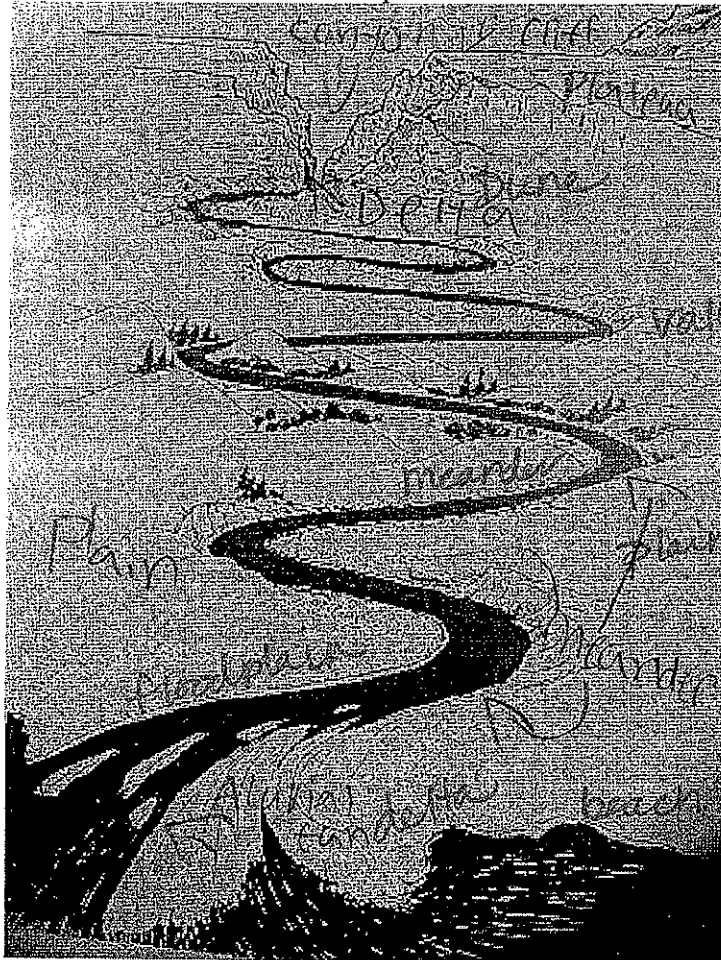
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



+2
10

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Landforms Reflective Prompt

19
10

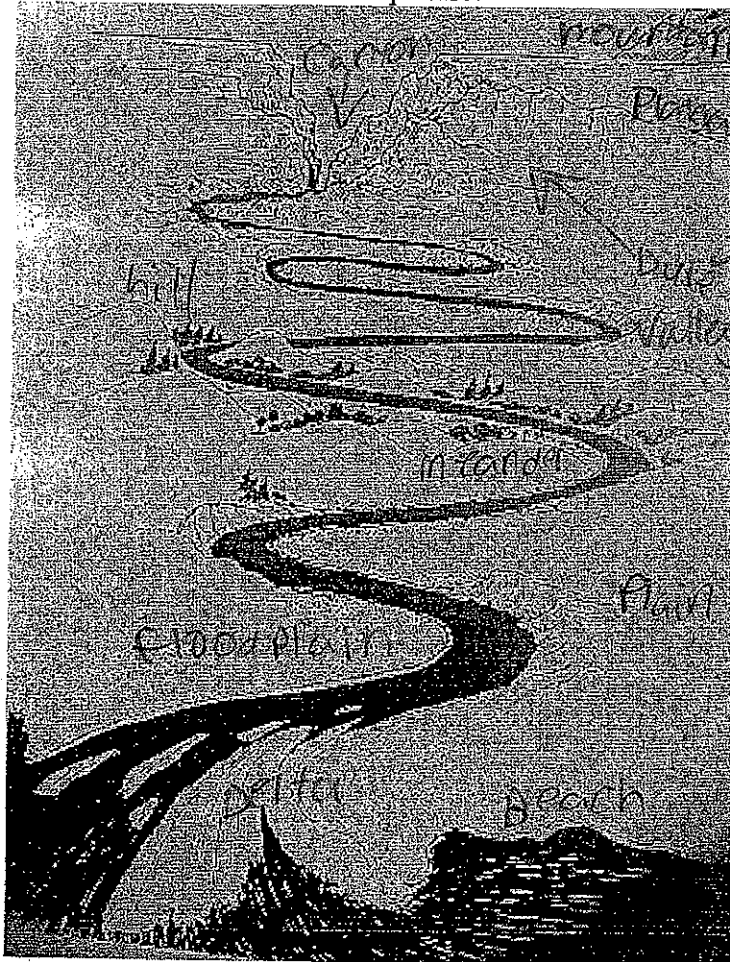
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



~~Handwritten scribble~~

$\frac{+8}{10}$

Landforms Reflective Prompt

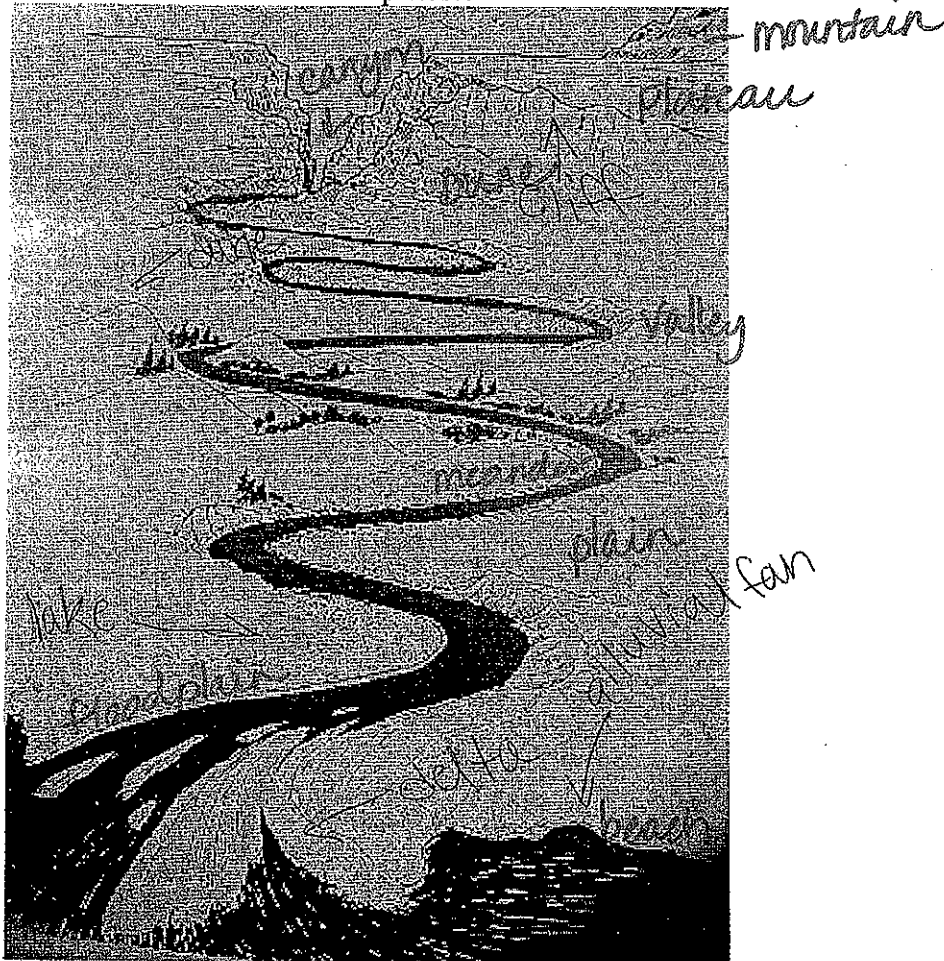
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Landforms Reflective Prompt

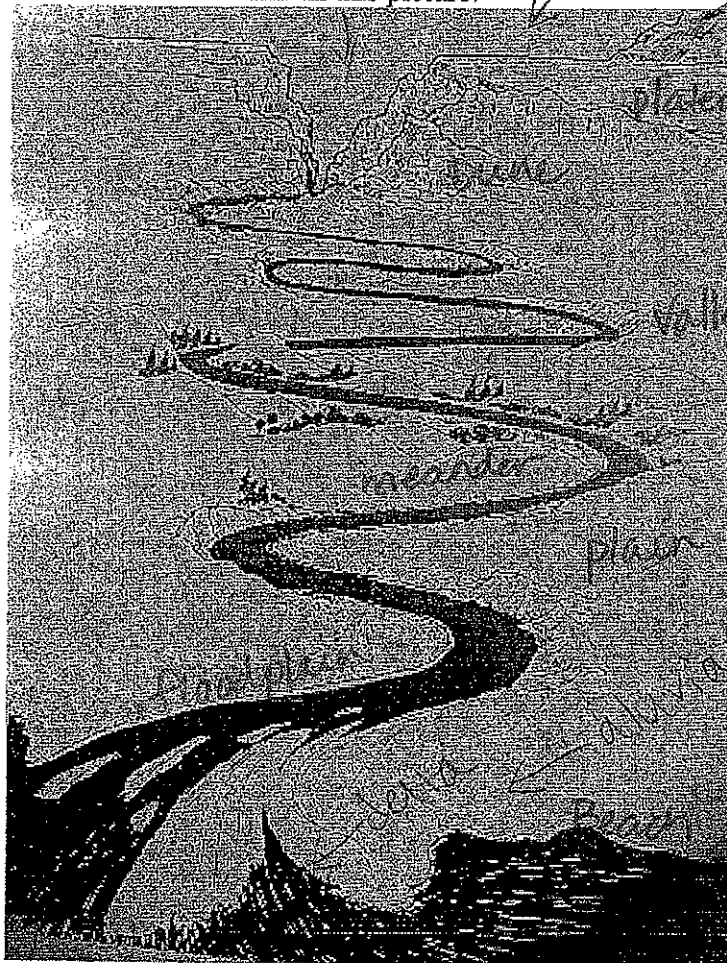
BIG IDEA:

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Teacher Directions:

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Label all the landforms in this picture.



+2
10

1-16-14
Science

Name

Landforms Reflective Prompt

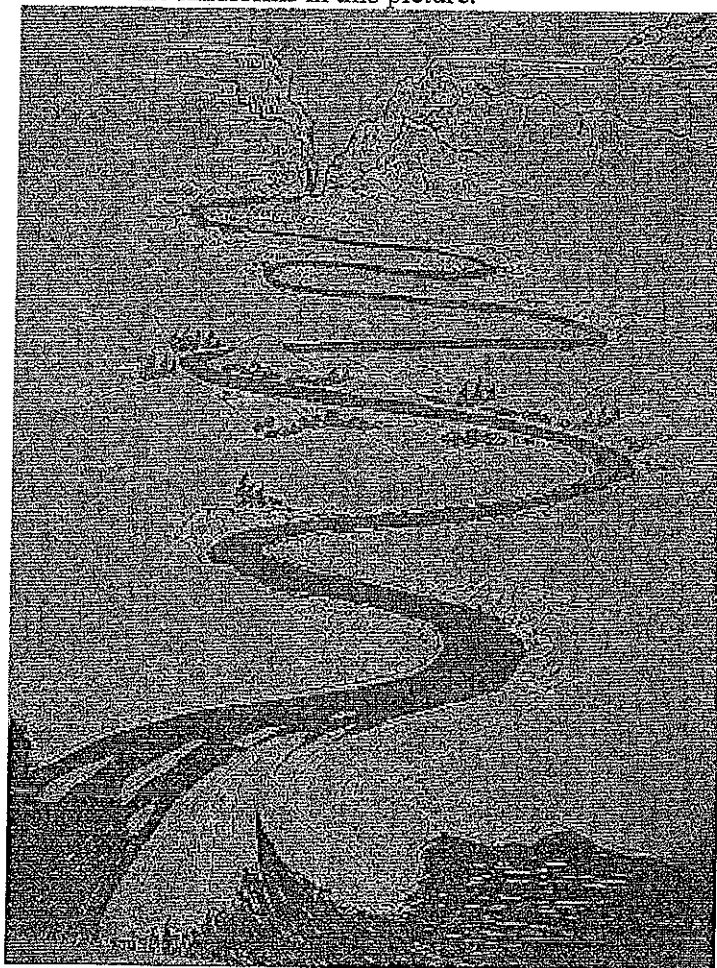
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Name

Landforms Reflective Prompt

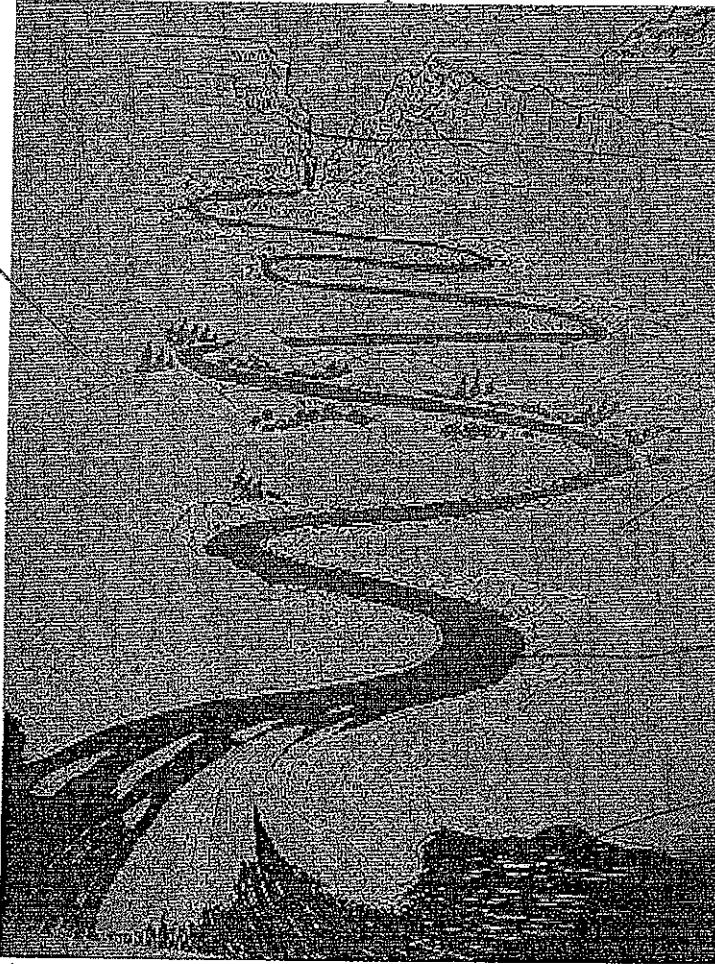
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



hills

Canyon

desert

stream

river

Name [REDACTED]

Landforms Reflective Prompt

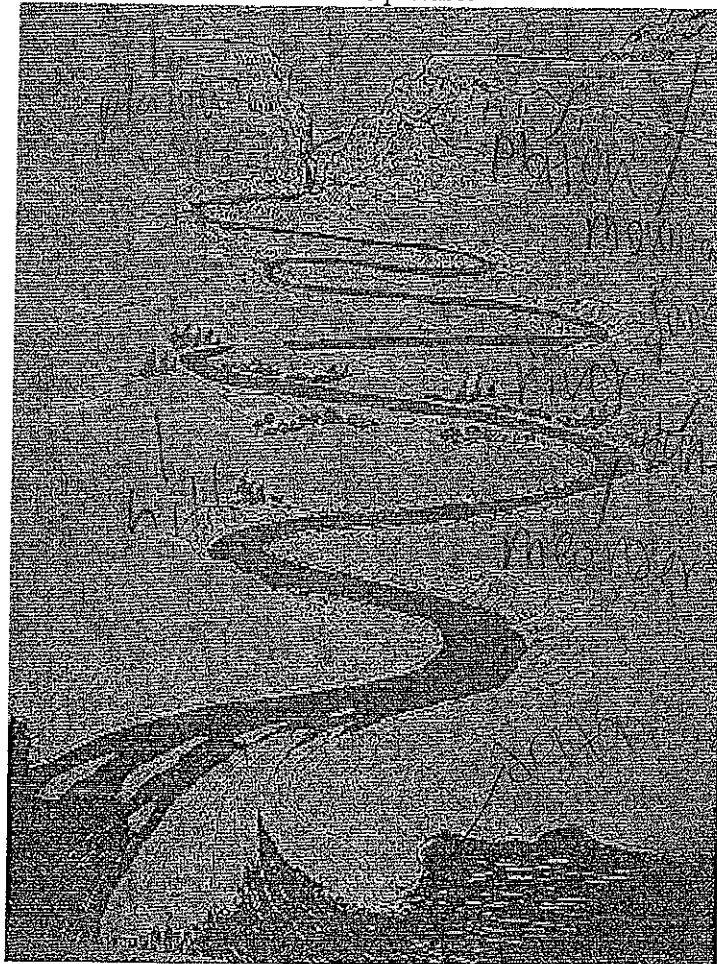
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Name _____

Landforms Reflective Prompt

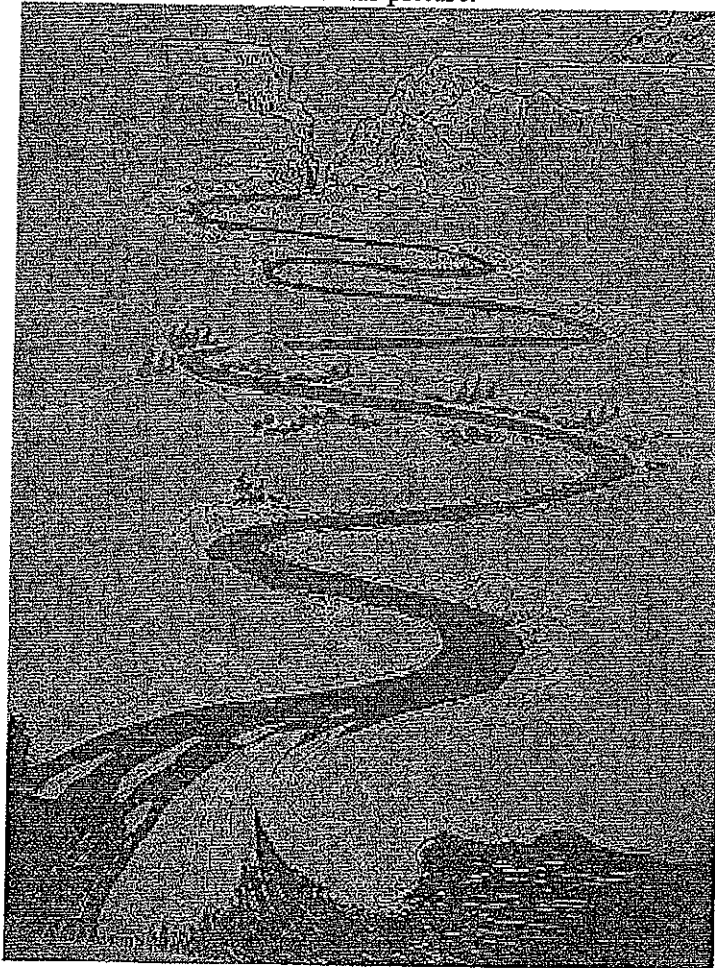
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Label all the landforms in this picture.



Name



Landforms Reflective Prompt

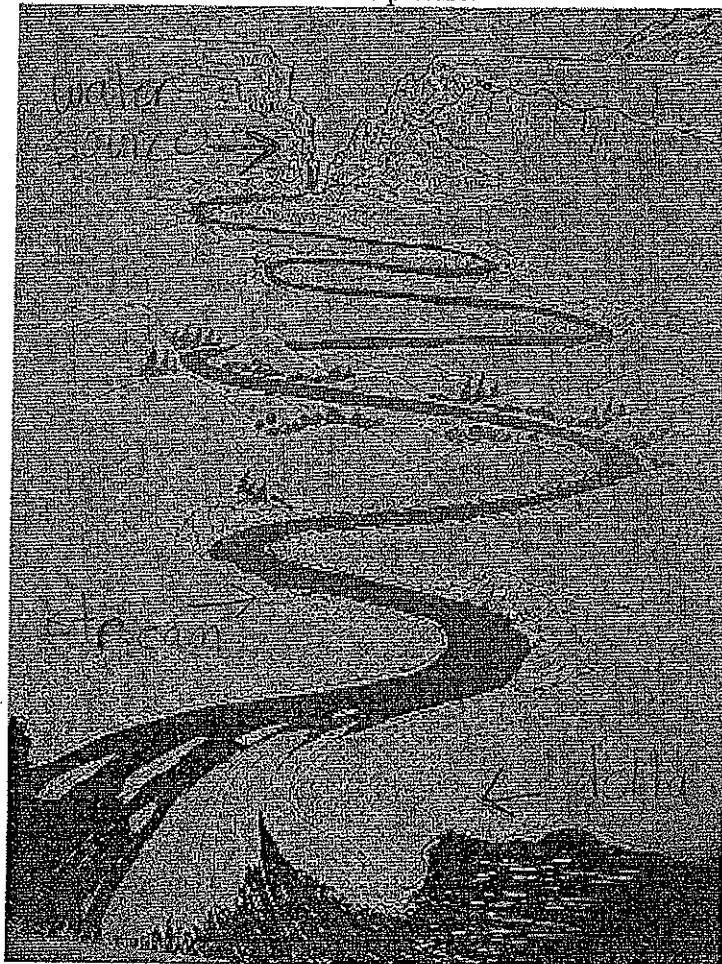
BIG IDEA:

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Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



Name _____

Landforms Reflective Prompt

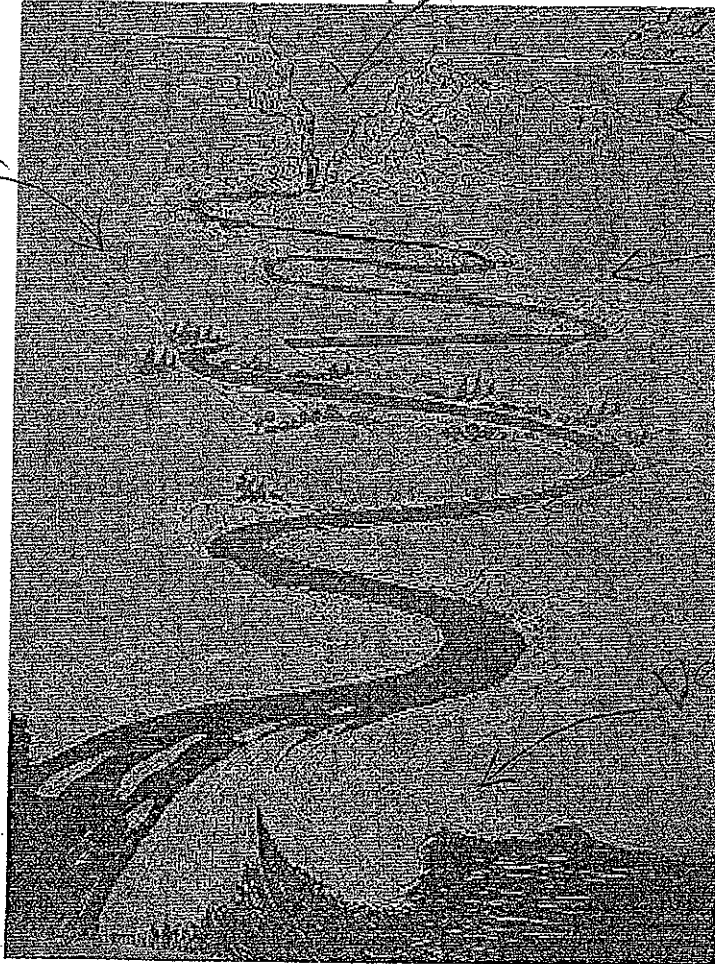
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



Canyon

Plateau

River

Delta

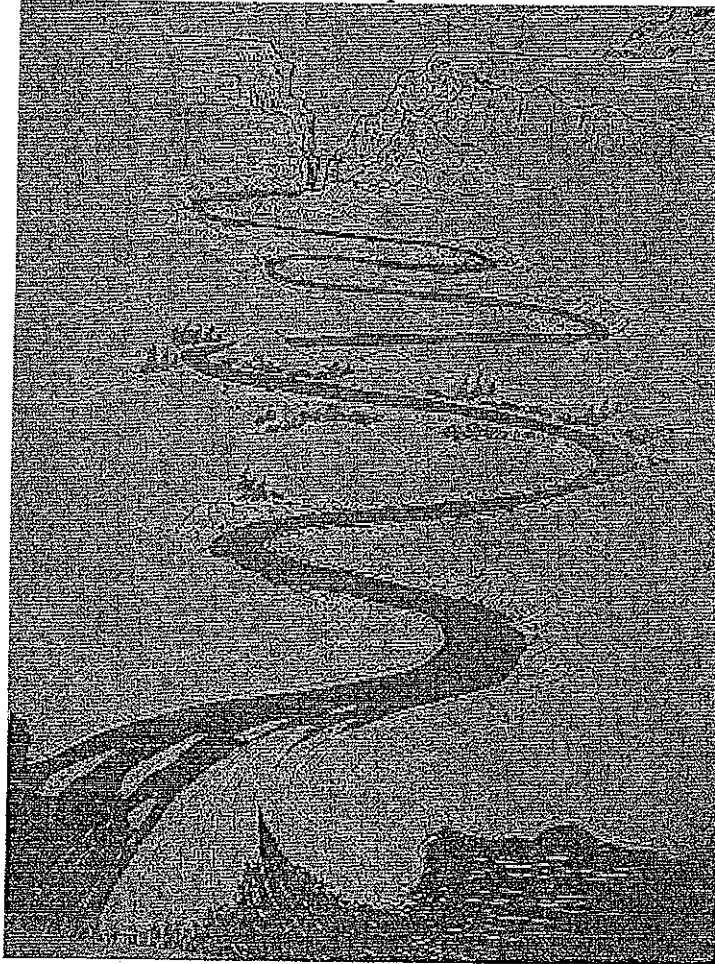
Sand
hill

MINNAPOLIS

BIG IDEA:

Teacher Directions:

Label all the landforms in this picture.



Name _____

~~Wang~~

Landforms Reflective Prompt

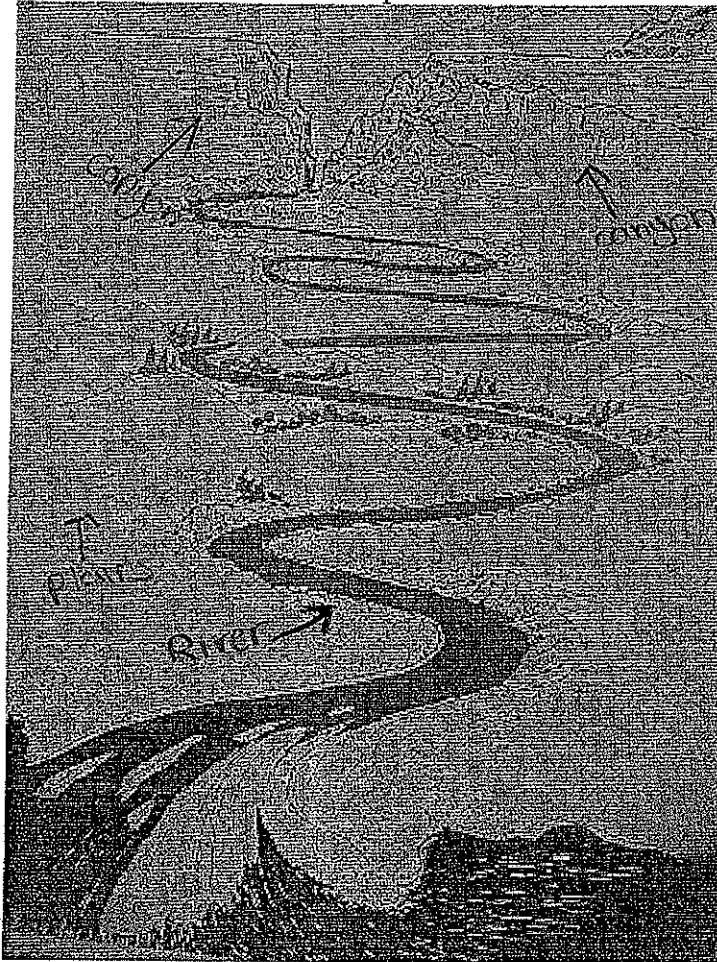
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

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Label all the landforms in this picture.



Name _____

Landforms Reflective Prompt

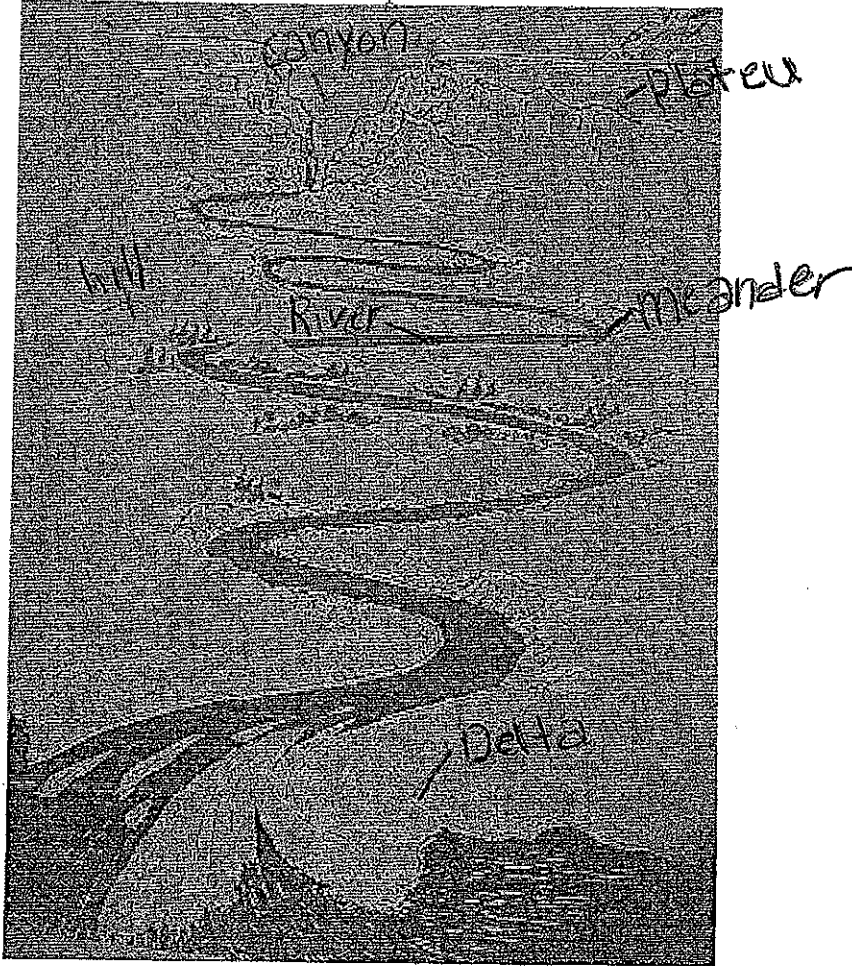
BIG IDEA:

Earth materials and landforms are formed by various natural processes.

Teacher Directions:

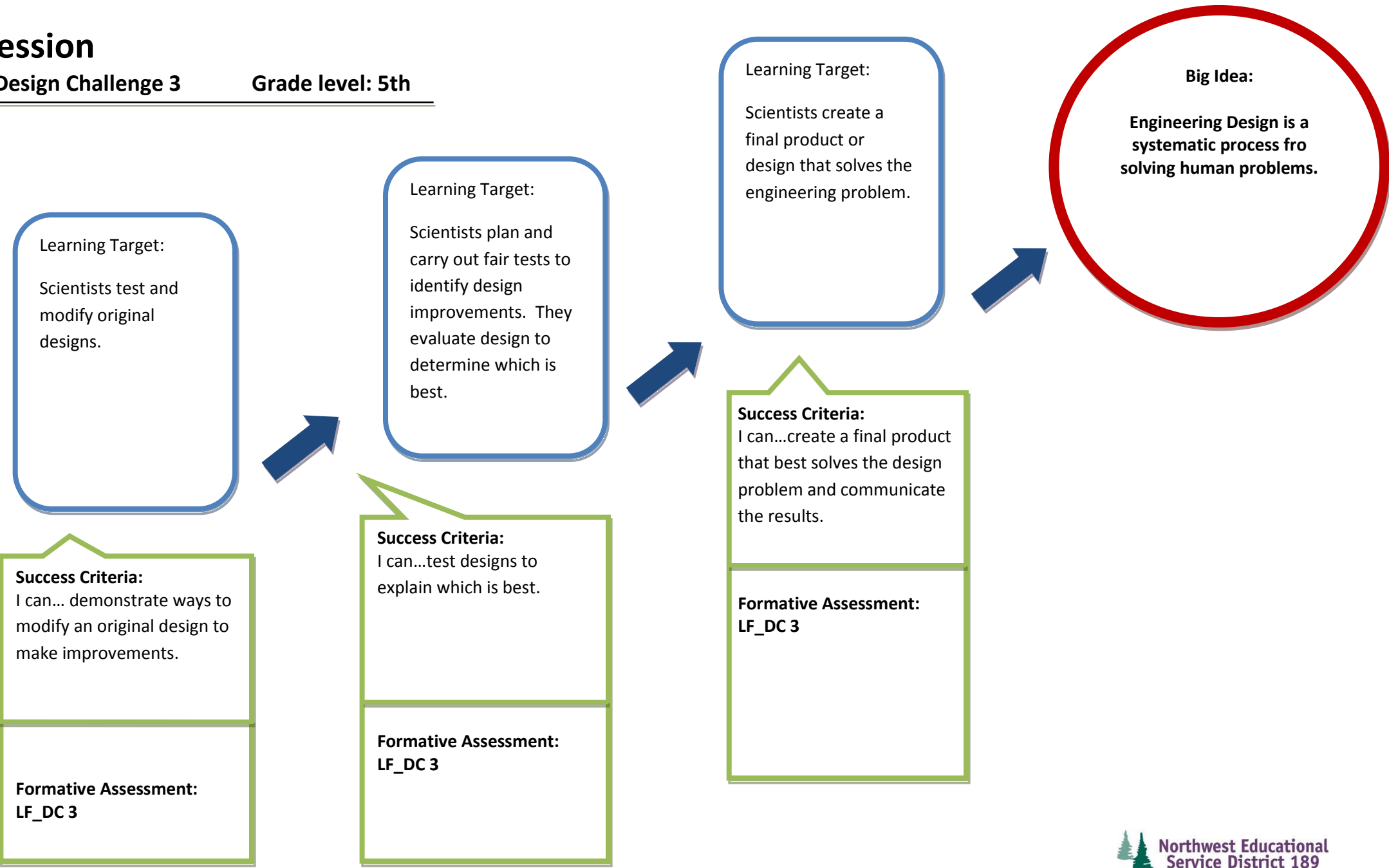
Use the cover of the Landforms Journal from the kit. Administer early in the unit, after investigation 3 and at the end of the unit.

Label all the landforms in this picture.



Learning Progression

Materials: Landform Design Challenge 3 Grade level: 5th



Landforms

Challenge Title: Save a Town

Targeted Engineering Practices *select the engineering practices taught in this challenge*

- ☐ Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- ☐ Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem
- ☐ Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Connected Scientific Content Ideas

- *Erosion can affect ecosystems. (4-5 ES2F)*
- *Systems: A system can be analyzed by the study of its subsystems and larger more inclusive systems. (4-5 SYSA,B,C,D)*

Description of Student Success Criteria:

At the completion of this task students will be able to:

Students will be able to represent a model of how erosion affects an ecosystem and make modifications to optimize their design to save the town from the river flow.

Landforms Design Challenge #3:

Design Brief:

Problem: There is a town that is in danger of eroding away. Your challenge is to design a system to protect the town from erosion when a water source is introduced to the stream table.

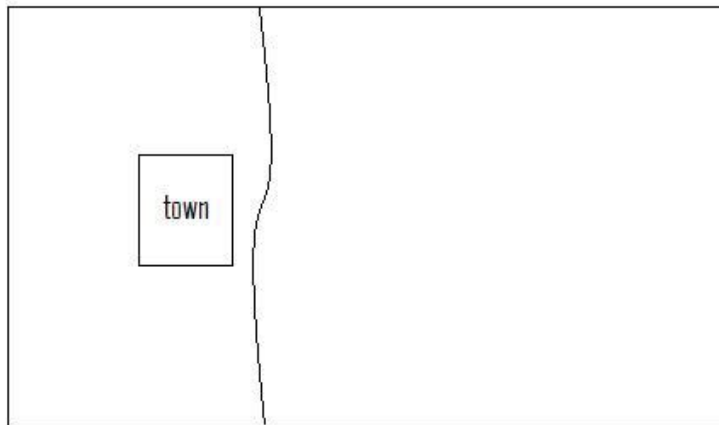
Specifications:

Criteria: Using the materials provided, you must protect the town from erosion.

Materials:

- Standard Stream-table set-up (see poster)
- ½ of a 3 X 5 notecard
- Building materials
 - \$20 Popsicle sticks
 - \$10 Blue one gram cubes
 - \$5 Paper Clips
 - \$5 Rubber Band

Constraints: You will have a budget of \$100 dollars for materials. The town should be placed in the center of the earth material and you may not move the town.



Background Research: You will need to access your understanding of how erosion affects landforms.

Task:

Day 1: Your team will need to set up a standard stream table, brainstorm possible designs, and select materials. Then create your first design and test it.

To test your design, you must pass one liter of water through the “flood” water source. In your teams,

observe the results and discuss what went well and what did not.

Day 2: Using your discussions and expertise from day one, modify and improve your design so that it does a better job of protecting the town. Observe the results and discuss what went well and what did not.

Day 3: Repeat the steps from Day 2. Be prepared to share your design process with the class discussing what went well and what didn't, and describe your best design.

Learning Progression 3

FOSS Landforms: Investigation 3

Prerequisite skill:

Models can be used to understand systems.
NGSS: Appendix F Practice 2 Developing and using Models
To build prior system knowledge. Consider using the simple system activities before teaching this Big Idea. **Use the Dum Dum and pencil simple system activity*

Learning-Target 1:

Systems contain subsystems that contribute to their functionality

4-5 SYSA, B
Inv. 3, Part 1
1 Session

Success Criteria:
I can... describe how parts of a system interact.

Formative Assessment:
Sketch a stream table system. Label its subsystems (parts), and explain how they interact with the whole system.

FA3A

Learning Target 2:

Change in a system input may change output of a system.

4-5 SYSC
Inv. 3, Part 2
1 Session

Success Criteria:
I can...describe the effect on a system if the input is changed.

Formative Assessment:
1. T-Table with input and output of stream table:
Input Output
1. → 1.
2. → 2.

2 .What differences did you observe in landforms when the slope was changed?

FA3B

Learning Target 3:

Erosion can affect ecosystems.

4-5 SYSD
4-5 ES2F
Inv. 3, Part 3
2 Sessions

Success Criteria:
I can... predict how erosion may affect an ecosystem.

Formative Assessment:
1.Investigation 3: I-check , pg. 4 (4 locations to build a house)

FA3C

Big Idea:

Systems: A system can be analyzed by the study of its subsystems and larger more inclusive systems.
4-5 SYSA, B, C, D

Later big ideas that build on this big idea include:

Technology involves changing the natural world to meet human needs and wants.

4-5 APPA



SYSTEM of a DUM DUM!

Name: _____

Period: _____

Date: _____

Purpose:

To analyze a system in its simplest form, let's examine a DUM DUM Lollipop.

Instructions:

Please follow the instructions below...and DON'T EAT YOUR LOLLIPOP...yet!

1. Why is a lollipop considered a system?

2. Identify the three main PARTS of the lollipop system.

a.

b.

c.

3. Sketch a diagram of your lollipop system in the box below. Label the 3 main PARTS and describe the FUNCTION of each part.

4. Systems interact with their environment by moving matter, energy or information throughout the system.

Describe how matter was moved through the lollipop system:

Describe how energy was moved through the lollipop system:

Describe how information was moved through the lollipop system:

5. What might happen if ONE of the PARTS of your lollipop system were lost or broken? Choose one of the parts you listed and explain.



Understanding Systems

Our world is made up of many systems. Systems can be simple or complex. Scientists study systems in order to better understand our world.

All systems share these characteristics:

1. _____
2. _____
3. _____

Your pencil is a SYSTEM!

1. Review the three characteristics of a system and explain why your pencil is a system.

2. Pencil System

Main Parts of the System	Function of the Part
1.	
2.	
3.	

3. Sketch a diagram of your pencil system. LABEL ALL PARTS!

Systems interact with the world by moving MATTER, ENERGY or INFORMATION throughout the system.

4. Describe how MATTER was moved through your pencil system:

5. Describe how ENERGY was moved through your pencil system:

6. Describe how INFORMATION was moved through your pencil system:

7. What might happen if ONE of the PARTS of your pencil system were lost or broken? (Choose one of the parts you listed and explain.)

Practice analyzing a System!

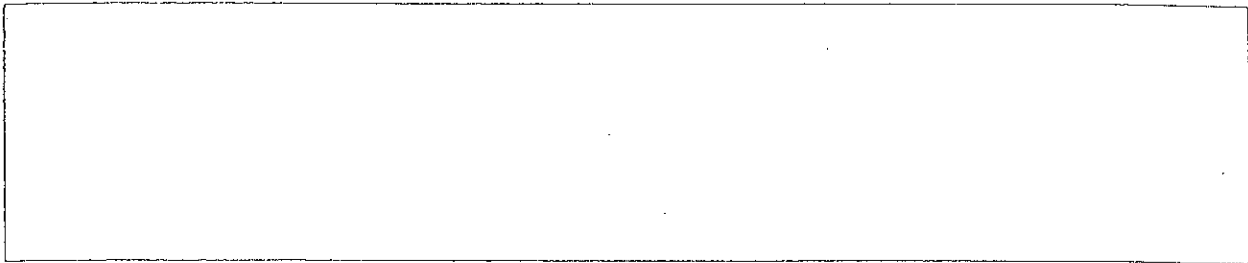
You will be given a system. Answer the following questions about the system:

1. Review the three characteristics of a system and explain why _____ is a system.

2. _____ System

Main Parts of the System	Function of the Part
1.	
2.	
3.	

3. Sketch a diagram of your system. LABEL ALL PARTS!



Systems interact with the world by moving MATTER, ENERGY or INFORMATION throughout the system.

4. Describe how MATTER was moved through your system:

5. Describe how ENERGY was moved through your system:

6. Describe how INFORMATION was moved through your system:

7. What might happen if ONE of the PARTS of your system were lost or broken? (Choose one of the parts you listed and explain.)

LANDFORMS

Big Idea: **Systems:** A system can be analyzed by the study of its subsystems and larger more inclusive systems.

Formative Assessment Task Cover Sheet

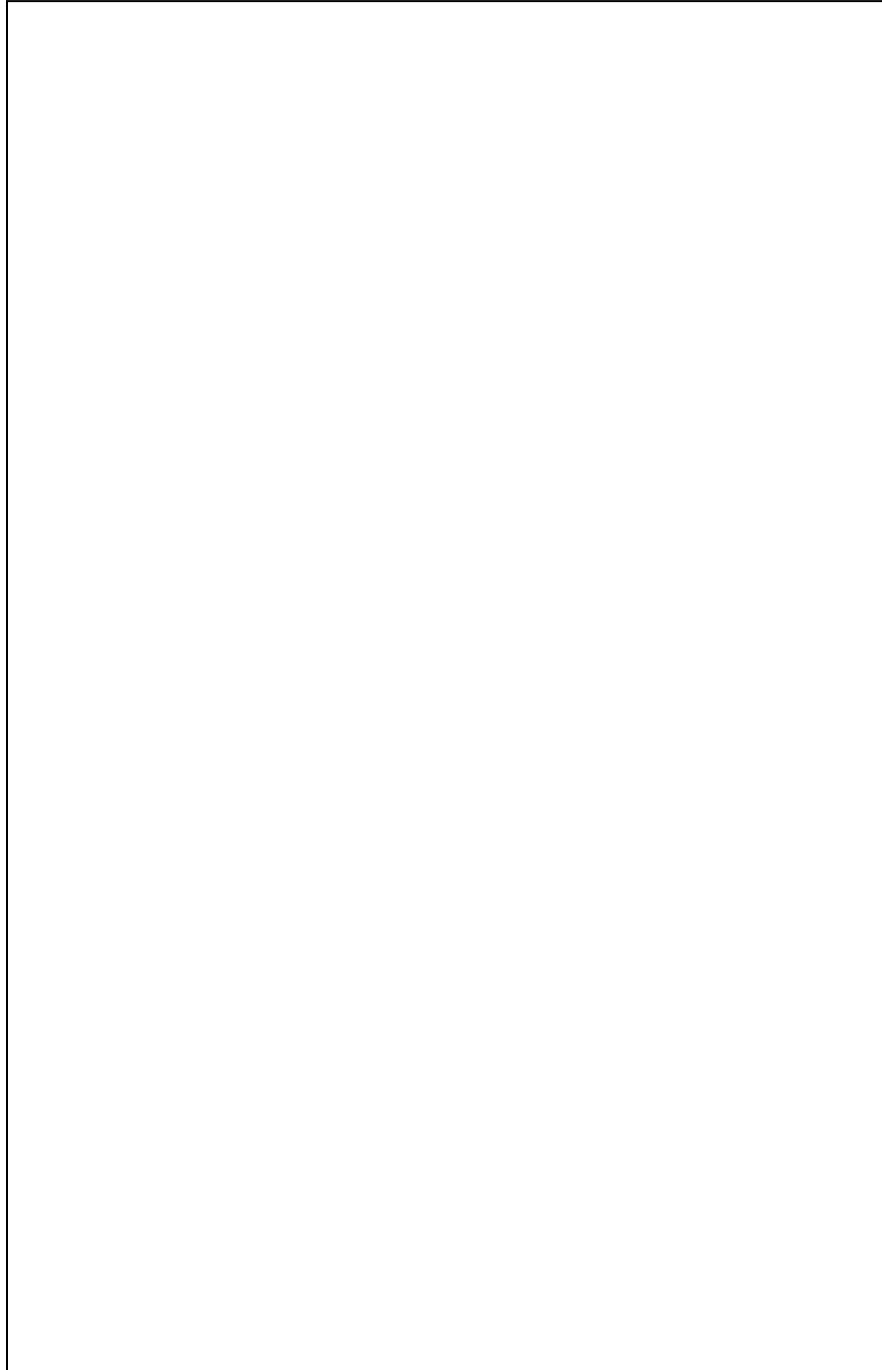
Learning Target #1, Assessment Task	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Sketch a stream table system. Label its subsystems (parts), and explain how they interact with the whole system.	Administration Tips: Investigation 3 Part 1 Suggestions for Instructional Adjustments: Break down other systems into subsystems explaining how they contribute to the functionality of the system. (Grandfather Clock, Ecosystem, Computer, Bicycle, etc.)
Learning Target: Systems contain subsystems that contribute to their functionality.	
Success Criteria: I can... describe how parts of a system interact.	
Student Task Sheet Included: yes Student Work Samples Included: no	

Name _____

Date _____




Science – Landform Kit Investigation # 3

Sketch a stream table system. Label its subsystems (parts) and how they interact with the whole system.



LANDFORMS

Big Idea: **Systems:** A system can be analyzed by the study of its subsystems and larger more inclusive systems.



Learning Target #2, Assessment Task							
Assessment Task Details	Teacher Background						
<p>Brief Description of the Assessment Task: T-Table with input and output of stream table:</p> <table><tr><td>Input</td><td>Output</td></tr><tr><td>1.</td><td>1.</td></tr><tr><td>2. </td><td>2.</td></tr></table> <p>2 .What differences did you observe in landforms when the slope was changed?</p>	Input	Output	1.	1.	2. 	2.	<p>Administration Tips: Investigation 3 Part 2 Make sure that you talk about what input/outputs are. One example is number machines; another example would be a bicycle.</p>
Input	Output						
1.	1.						
2. 	2.						
<p>Learning Target: Change in a system input may change output of a system.</p>							
<p>Success Criteria: I can....describe the effect on a system if the input is changed.</p>							
<p>Student Task Sheet Included: yes Student Work Samples Included: yes</p>							

Name _____

Date _____

Science – Landform Kit Investigation # 3

1) Fill out the T-table below with input and outputs of the stream table.

Input		Output	
1)		1)	
			
2)		2)	
			

2) What differences did you observe in landforms when the slope changed?



Name

Date

Science - Landform Kit

Investigation # 3

Happy V-Day!
 You're the best!
 ✓

1) Fill out the T-table below with input and outputs of the stream table.

Input	Output
1) Slope	1) Land spread out and more erosion happened
2) flood	2) more erosion happened and deep canyons were formed

2) What differences did you observe in landforms when the slope changed?

The difference was that land spread out to create a delta. Also more erosion happened. Another is water moved quickly.



Name

Date

Science - Landform Kit

Investigation # 3

1) Fill out the T-table below with input and outputs of the stream table.

Input	Output
1) Water 	1) The water made the plateau wet and made the sand move to create canyons and deltas.
2) Flood 	2) Flood made the water move faster to create deeper canyons and larger deltas.

2) What differences did you observe in landforms when the slope changed?

When we sloped the plateau I noticed that the water moved much faster which made the soil move a lot more and make the canyons much deeper then the original version.

Name Date

Science – Landform Kit

Investigation # 3

1) Fill out the T-table below with input and outputs of the stream table.

Input	Output
1) Flood	1) makes alot more depisition happen
2) land slide	2) it makes a bigger beach

2) What differences did you observe in landforms when the slope changed?

There was alot more depposition and erosion. Also it made a bigger canyon and formed a lake.

LANDFORMS

Big Idea: **Systems:** A system can be analyzed by the study of its subsystems and larger more inclusive systems.

Learning Target #3, Assessment Task	
Assessment Task Details	Teacher Background
Brief Description of the Assessment Task: Kids are asked to pinpoint the best location for a house.	Administration Tips: Investigation 3 Part 3
Learning Target : Erosion can affect ecosystems	
Success Criteria: I can... predict how erosion may affect an ecosystem.	
Student Task Sheet Included: yes Student Work Samples Included: no	

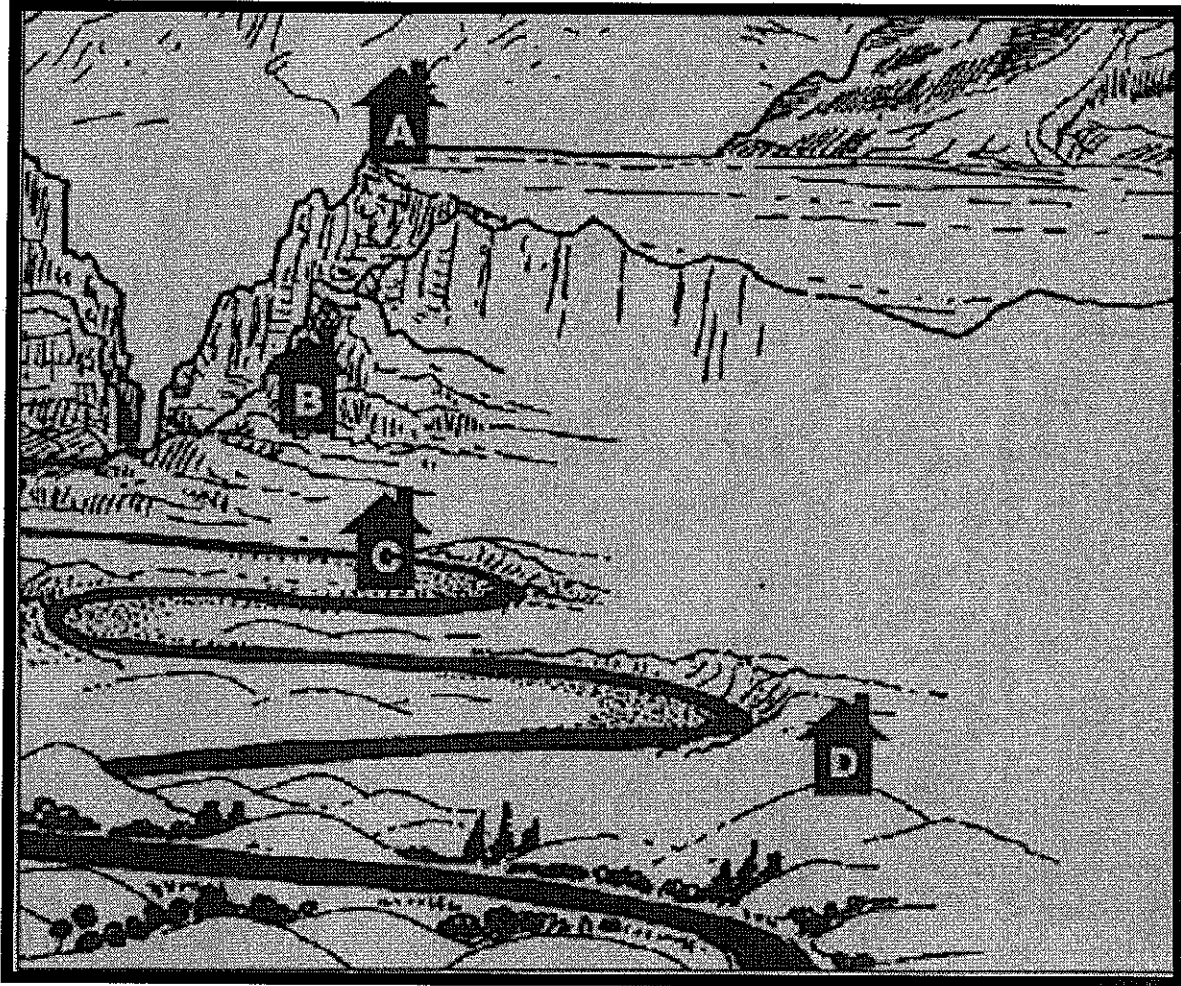
Name _____

Date _____

Science – Landform Kit

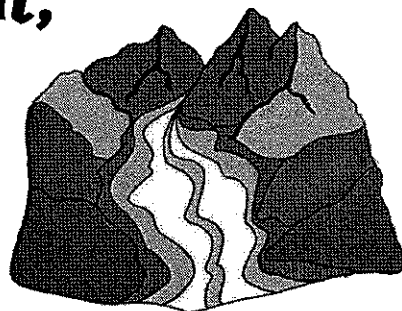
Investigation # 3

A geologist was shown four locations to build a house. She recommended site D.



Explain why the geologist recommended site D as the safest location for the house.

Weathering, Erosion, or Deposition?



Group Size: Pairs or Teams

Materials:

Weathering, Erosion, and Deposition definitions
Weathering, Erosion, and Deposition cards
Heading Cards and Answer Key

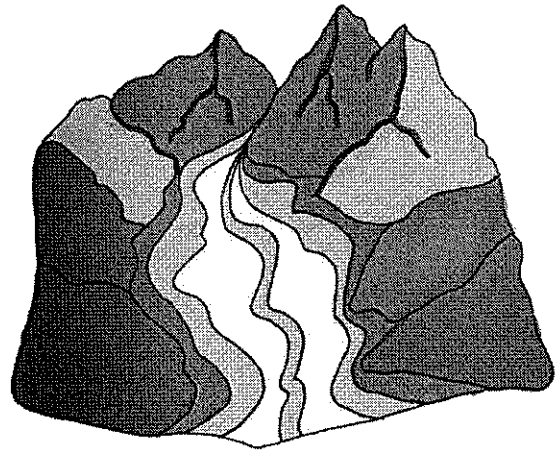
Directions

1. Review and discuss the meanings of weathering, erosion, and deposition. How are they alike and different?
2. Cut apart the 3 Weathering, Erosion, and Deposition heading cards with the arrows and the Answer Key. Turn the Answer Key face down and spread the heading cards out on a table in the middle of the team.
3. Cut apart the 16 the example cards. Shuffle the cards and place them face down in a pile.
4. One person flips over an example card and reads it aloud. He or she identifies the card as an example of weathering, erosion, or deposition. If everyone agrees, the card is placed face up on the appropriate heading card, right under the arrow. If some team members don't agree, review the meanings of these three terms and think about which term best describes the example on the card.
5. The next person flips over another example card and follows the directions in Step 3. Continue taking turns until all example cards are placed below a heading card.
6. Turn over the answer key and check your answers.

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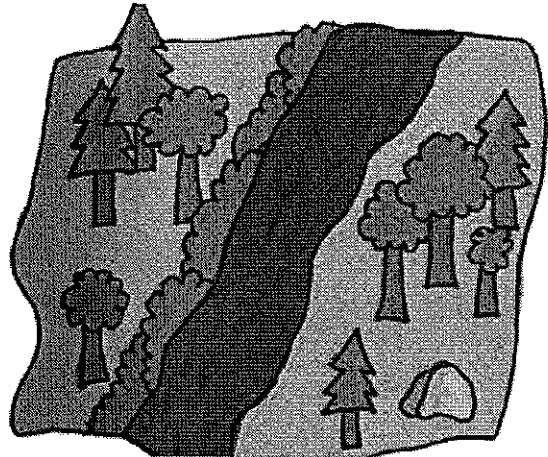
Weathering

The breaking down or disintegration of substances such as rocks and minerals by physical, chemical, or biological processes



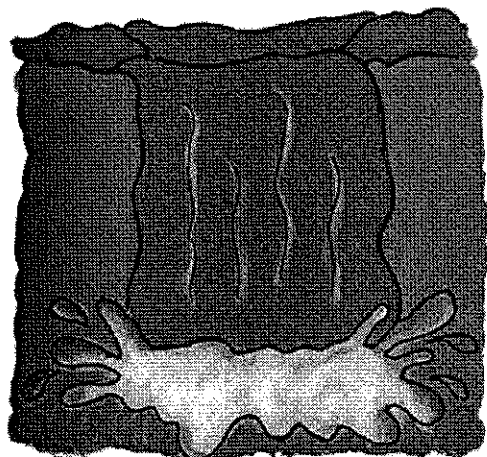
Erosion

The movement of sediment or soil from one location to another by means of water, ice, or wind

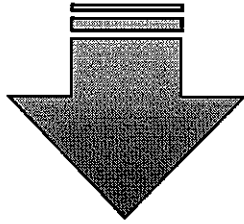


Deposition

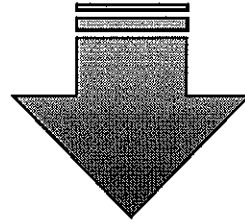
When particles carried by water, ice, or wind are deposited (dropped) in another location



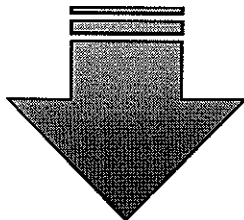
Weathering



Erosion



Deposition



Answer Key

Weathering

1, 7, 9, 11, 12, 14

Erosion

2, 4, 10, 13, 16

Deposition

3, 5, 6, 8, 15

Weathering, Erosion, or Deposition?

<p>1</p> <p>Flood water pounding against a canyon wall and wearing it down</p>	<p>2</p> <p>Rain washing away soil from a hillside</p>
<p>3</p> <p>Layers of sediment forming at the bottom of the ocean</p>	<p>4</p> <p>A mudslide flowing down a steep hill</p>
<p>5</p> <p>Glaciers dropping rock and sand to form terminal moraines</p>	<p>6</p> <p>Waves dropping sand on the beach</p>
<p>7</p> <p>Caves being formed by acid rain dissolving underground limestone</p>	<p>8</p> <p>Deltas forming at the mouths of rivers</p>

Weathering, Erosion, or Deposition?

9

Water getting into cracks, freezing, and breaking the rocks or pavement apart

10

Wind blowing sand from one location to another

11

Wind blasting sand at rock and carving out arches

12

Glaciers scraping rocks across the earth's surface

13

Muddy water being carried away by a fast-moving river

14

Rocks being made smooth by tumbling across a streambed

15

Ponds filling up with sediment and becoming marshes

16

Flood waters moving soil from one location to another



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Student Growth Reflection

Teacher:

Heather Lee

Kit:

Landforms

Big Idea/learning targets assessed:

Student #1:

Jaynie

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

Grew from knowing nothing about landforms to being specific about what a landform was

Student #2:

Pearce

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

made huge growth in his landform knowledge from knowing nothing to knowing alot and naming alot more landforms

Student #1:

Joshua

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

made growth from the beginning and was able to name the more talked about landforms at the end.

Student Growth Reflection

Teacher:

Andrea Hackler

Kit:

Landforms

Big Idea/learning targets assessed:

Student #1:

Emma

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

To begin, didn't have an understanding of what a landform was. As the unit progressed was able to identify many landforms as well as if the landform was formed by erosion or deposition. Overall, she made growth.

Student #2:

Olivia K

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

Olivia also had very little knowledge of what a landform was to begin. She had some growth but not a great amount.

Student #1:

Emerson

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

On the initial assessment Emerson had no knowledge of landforms. He had excellent growth by the end of the unit being able to identify 6 different landforms.

Student Growth Reflection

Teacher: ~~Matthew~~

Kit: Landforms

Big Idea/learning targets assessed:

Student #1:

Jaynie

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

Grew from knowing nothing about landforms to being specific about what a landform was

Student #2:

Pearce

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

made huge growth in his landform knowledge from knowing nothing to knowing alot and naming alot more landforms

Student #1:

Joshua

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

made growth from the beginning and was able to name the more talked about landforms at the end.



Student Growth Reflection

Teacher: [Signature]

Kit: Landforms

Big Idea/learning targets assessed:

Student #1: Kyna Neal

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

Kyna showed no growth over the course of the kit in the identification of the actual landforms.

However, what I did notice about her growth was from the first assessment to the 2nd she identified specific landform areas used in her learning of the kit. Such as instead of "delta" as a label she used "alluvial fan" which is what was discussed at length during the teaching.

Student #2: Mason Bishop

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

Mason showed a growth of approximately 40% from the first assessment to the 2nd. He was able to better identify the landform names later in the kit.

Student #1: Nathaniel Rodriguez

Describe how the student's learning changed over the course of the kit, site evidence from their assessment tasks.

Nathaniel showed a growth of 60% on this assessment. He was able to label more accurately the locations shown on the map.

* This assessment does not really show

LANDFORMS

Additional Information

*Puppy training pads (available at most pet stores and large department stores) are helpful for protecting tables and preventing unwanted spills onto the floor. They are more effective than newspaper. These can be used year after year until soiled.

*Having students bring in maps of different places to share during this unit is helpful.

*Before you begin, start surveying resources for videos about weathering, erosion, and deposition.

*Formative Assessment LF_earthmaterials3

Student responses:

1. Dirt is displaced soil. Dirt is the stuff under your fingernails and the mud on your jeans. Soil is on the ground.
2. Soil is a mixture of mineral and organic materials. It is made up of rocks, pebbles, sand, clay, and humus (decomposed plant and animal matter).
3. Salt is a naturally occurring mineral element in soil. Oil contaminates soil.
4. Animal waste, when decomposed, is a part of soil.

Landforms

Bibliography

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Keeley, Page. *Science Formative Assessment: 75 Practical Strategies for Linking Assessment, Instruction, and Learning*. Thousand Oaks, CA: Corwin, 2008. Print.

Popham, W. James. *Transformative Assessment*. Alexandria, VA: Association for Supervision and Curriculum Development, 2008. Print.



LANDFORMS

Big Idea: A system can be analyzed by the study of its subsystems and larger more inclusive systems.

Target #2 Assessment: Input/Output Analysis

Formative Assessment Student Work Cover Sheet

Student Work Description

Sample 1: Student is able to identify the input and output systems in a stream table and they are able to give an explanation about the effects of the slope of the table.

Sample 2: Student is able to identify the input and output systems in a stream table and they are able to give an explanation about the effects of the slope of the table.

Sample 3: Student is able to identify the input and output systems in a stream table and they are able to give an explanation about the effects of the slope of the table.

