UNIT 8

D–1: Concepts of Earth Science

KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

EARTHQUAKES

Place-Based Perspective

Place a tray of soil in front of the students. Arrange the soil to create a town, using models of houses (for example, from a Monopoly game). As the students watch, shake the tray. The students should note the results. Relate this to the earth's plates and their movement. Mount a map of North America on the wall. Direct the students' attention to the earthquake-prone areas in the map.

Heritage Cultural Perspective

Earthquakes have always been a natural phenomenon in Southeast Alaska. They are reflected in Native music and song.

TSUNAMIS

Place-Based Perspective

Place a clear container of water in front of the students. Have the students watch as you hit (gently) the bottom of the container. They should note the tsunami created by the underwater earthquake.

Heritage Cultural Perspective

The old Native village in Lituya Bay was wiped out by a tsunami in the late 1950s. As a result of the 1964 Alaska earthquake, many coastal communities felt the impact of tsunamis.

VOLCANOES

Place-Based Perspective

Before the lesson begins, obtain a turkey baster (the type with a rubber bulb). Fill the baster with water; hold the baster vertically and direct the students' attention to the rubber ball—have them imagine that it is the core of the earth. Squeeze the bulb and have the students notice the liquid that is emitted from the top of the volcano. The students should understand that the water represents lava or molten rock.

Heritage Cultural Perspective

Mt. Edgecumbe near Sitka is a well-known volcano. In the story, "How Raven Brought Fire to The People," the hawk is directed to go to a volcano to get the fire to bring it to the people. As a result, the hawk's long beak burned off. Raven gave the hawk a short, stubby beak as a replacement.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

FLOOD

Place-Based Perspective

Place a tray of soil in front of the students. Make a lake or river in the soil, using water. Keep adding water, and have the students observe the resulting flood.

Heritage Cultural Perspective

Like most cultures in the world, the Native people of Southeast Alaska have a "big flood" story. The story tells that the great flood unified the people of Southeast Alaska and that they survived by waiting out the flood in the Wrangell Mountains.

AVALANCHE

Place-Based Perspective

Use the tray of soil mentioned above to create an avalanche. Make a mound to represent a hill. Shake the pan to cause an avalanche on the hill.

Heritage Cultural Perspective

Many years ago, most of the traditional village of Klukwan was wiped out by a huge avalanche of mud and snow. This happened at what is now Mile 19 of the Haines Highway. Both big and small avalanches are common in Southeast Alaska, particularly during spring.

REFLECT

Place-Based Perspective

Place a ball and a beanbag on a table in front of the students. Have a student toss the beanbag at the wall. The students should observe what happens to the beanbag (it drops from the wall). Then, contrast this with a rubber ball—the ball comes back. Use this as an analogy for reflect. Show a mirror and a piece of wood to reinforce the property of reflection.

Heritage Cultural Perspective

Traditionally, silver was used to reflect the sun's light to get the attention of another community or person. Calm waters were used as mirrors.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

EMIT

Place-Based Perspective

Show the students a model of a car, an airplane, and a flashlight. Have them determine how the three are the same. Lead them to understand that all three emit something—the plane and the car emit fumes, and the flashlight emits light. Have the students suggest other things that emit something (for example, sound and odor). Relate this to science (for example, a vocano emitting gases and lava).

Heritage Cultural Perspective

In parts of Southeast Alaska, at low tide the black mud emits a strong odor. After spawning, the thousands of dead salmon that fill the rivers and streams emit a strong odor of decomposition. Winter-cured salmon, cured stink eggs, and aged fish heads also emit strong odors.

ORBIT

Place-Based Perspective

Show the students a remote control for a television. Have the students describe its use. Lead them into a discussion about how many people get their television reception from satellites. Relate this to the orbiting of the satellites around the earth. Demonstrate the orbiting of the planets—they all orbit in the same direction.

Heritage Cultural Perspective

In the song, "The Raven Love Song for the Wolf," the raven orbits around his wolf to woo the wolf. Traditionally, Native people of Southeast Alaska knew about the earth's orbit around the sun and the moon's orbit around the earth.

LESSONS

Science Language for Success—Lesson 1

Introduce the key science vocabulary, using concrete materials and/or pictures.

LISTENING

Use the Mini Pictures activity page from the Student Support Materials. Have the students cut out the pictures. Say the key words and the students show the pictures.

Stretch

Place the vocabulary pictures on the floor, in a scattered form. The pictures should be quite close together. Have a student stand beside the pictures. Say a vocabulary word for one of the pictures. The student should place his/her left foot on that picture. Then, say other vocabulary words and the student must identify the correct pictures with different parts of his/her body. You may wish to have two students participate in this process at the same time for added motivation.

Student Support Materials

Have the students work on the activity pages from the Student Support Materials from this unit. Afterward, review their work.

SPEAKING

Right or Wrong?

Mount the vocabulary pictures on the board. Point to one of the pictures and say its vocabulary word. The students should repeat the vocabulary word for that picture. However, when you point to a picture and say an incorrect vocabulary word for it, the students should remain silent. Repeat this process until the students have responded a number of times to the different vocabulary pictures.

Change Time

Group the students into pairs. One student should be without a partner to be "it" for the first round of the activity. Have the pairs of students stand, back to back, with elbows interlocked. Say a vocabulary word. Tell the students to listen for that word repeated once again. Say a number of vocabulary words—eventually repeating the vocabulary word you said at the beginning of the round. The students should drop arms and find new partners. However, "it" must also find a partner, thus producing a new "it" for the next round of the game. The student who is left without a partner must then use the vocabulary word you said (at the beginning of the round) in a complete sentence of his/her own. Repeat this process until all students have responded.

Science Language for Success—Lesson 2

READING

Introduce the science sight words to the students—match the sight words with the vocabulary pictures. The sight words are included in the Student Support Materials, attached to these lesson plans.

Note: After each unit, mount a set of the unit's words on the walls around the room. Use the "word walls" for review and reinforcement activities.

The Disappearing Word

Mount all of the sight words on the board. For added motivation, you may wish to prepare an extra set of sight word cards to add to those on the board. Have the students look carefully at the sight words. Then, the students should close their eyes. When the students' eyes are closed, remove one of the sight words from the board. Have the students open their eyes and identify the missing word. Repeat this process until all of the sight words have been removed from the board and identified in this way.

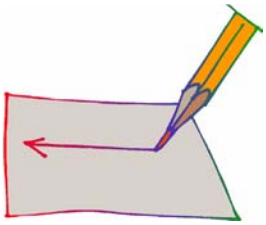
Letter Encode

Give each student his/her envelope that contains the alphabet letters. Mount one of the science pictures on the board. The students must use the cut-out letters to spell the word. Review the students' work. Repeat, until all of the words have been spelled in this way.

Student Support Materials

Have the students complete the sight recognition and encoding activities in the Student Support Materials. When finished, review their work.

WRITING

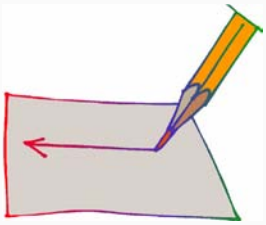


Flashlight Writing

If possible, darken the classroom. Give a student a flashlight. Say one of the vocabulary words and the student should write that word with the light of the flashlight on a wall or on the board. Repeat until many students have had a chance to participate. An alternative is to provide each student with writing paper and a pen. Darken the classroom, if possible. Use the light of a flashlight to write one of the sight words on the wall or board. When you have completed the writing of the word, each student should then write the same word on his/her sheet of paper. Repeat until all sight words have been written in this way.

This activity may also be done in team form. In this case, group the students into two teams. Darken the classroom. Use the light of a flashlight to write one of the sight words on the board. When you say "Go," the first player in each team should rush to the board and use chalk to write the same word on the board. The first player to do this correctly wins the round. Repeat until all players have played.

WRITING (CONTINUED)



Student Support Materials

Provide the students with a copy of the writing pages from the Student Support Materials. When finished, review the students' work.

VOCABULARY PICTURES

AVALANCHE

EARTHQUAKE

EMIT

FLOOD

ORBIT

REFLECT

TSUNAMI

VOLCANO

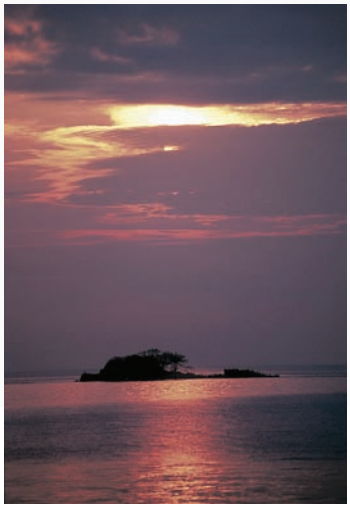
STUDENT SUPPORT MATERIALS

Listening • Mini Pictures

Listening: Mini Pictures

Prepare a copy of these pages for each student. The students should cut out the pictures and lay them on the floor or desk. Say the key words and the students should show you the pictures. Repeat a number of times. This activity can also be done with pairs of students to determine who is the fastest player.

Listening: Mini Pictures



STUDENT SUPPORT MATERIALS

Listening Comprehension

Listening Comprehension

Read the following sentences to the students. The students should circle "true" or "false" for each of the sentences. Review the students' work.

1. An earthquake is caused by gases that adapt to their environment. **True** **False**
2. An earthquake under the oceans can cause tsunamis. **True** **False**
3. A volcano emits gases and liquids from the earth's crust. **True** **False**
4. Floods can happen after long periods of rain. **True** **False**
5. An avalanche happens when gases reflect from an orbiting plate. **True** **False**
6. A rock will reflect things, like a mirror. **True** **False**
7. A volcano can emit liquids, solids, and gases from the core of the earth. **True** **False**
8. All planets orbit around the moon. **True** **False**

STUDENT SUPPORT MATERIALS

Sight Words

volcano

tsunami

earthquake

reflect

avalanche

flood

orbit

emit

STUDENT SUPPORT MATERIALS

Basic Reading • Sight Recognition

Sight Words Activity Page

Have the students highlight or circle the words in this word find. Words appear horizontally.

orbit
volcano
avalanche
tsunami
emit
reflect
earthquake
flood

e u i v r b h n a v a l a n c h a a
h c i a a i f l o o d c l l r a u n
f r e f l e c t q i l a c v n l c k
o c e f l o n a o n b r n o l o a a
n o t s t i a v a u m v c e e m t m
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o n m t e i k t a e r o v o l b o v
a f k q e a h l v o l c k o t e t n
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v a e r e a o v t o i r q c v a q n
e v i k e o r b i t i i e e e o d k
a v q t r r b e o e a m q c o o m t
e c r u h o r e c o a o l s r b c c
l v o l c a n o c f f m v v a l a i
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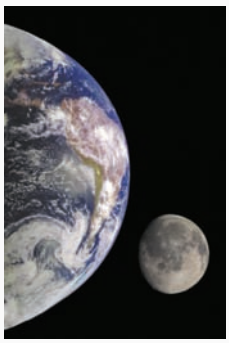
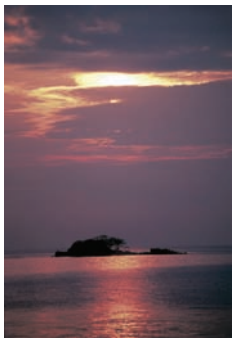
t s u n a m t s u n a m i v o e r u
a v a l a n c h e a o r t n n r t o
e a r t h q u a k s a t c e c o c o
e h q m q t l u o n d e a n a a c o

Sight Words Activity Page

Have the students cut out the key words and glue them at the bottom of their pictures.





earthquake	tsunami	volcano	flood
avalanche	reflect	emit	orbit

Sight Words Activity Page

Have the students print the key words from this unit horizonally in the boxes (each word may be written more than once). They should then fill in all other boxes with any letters. Have the students exchange pages. The students should then circle the words on the page.

STUDENT SUPPORT MATERIALS

Basic Reading • Encoding

Encoding Activity Page

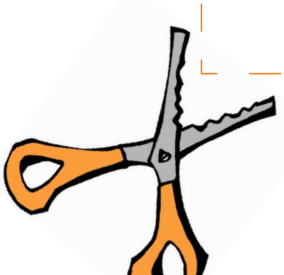
Have the students cut out and encode the syllables of the words, OR number the syllables in their correct sequence.

mi	**na**	**tsu**
_____	_____	_____
ca	**vol**	**no**
_____	_____	_____
lanche	**a**	**va**
_____	_____	_____

Encoding Activity Page

Have the students cut out the word halves and glue them together to create the key words for this unit.

earthq	cano
tsu	ood
vol	anche
fl	mit
aval	bit
re	uake
e	flect
or	nami



STUDENT SUPPORT MATERIALS

Reading Comprehension

Reading Comprehension Activity Page

Have the students read the text and then select the correct answer for it. They should fill in the appropriate bullet beside the answer of their choice.

1. Which of these has to do with earthquakes?
   - ❍ the earth's organisms
   - ❍ photosynthesis of plants
   - ❍ the earth's plates
   - ❍ the earth's chemicals

2. What makes a tsunami?
   - ❍ a gas exerted by photosynthesis
   - ❍ a flood
   - ❍ adapting to a new environment
   - ❍ an earthquake

3. What do volcanoes emit?
   - ❍ gravity
   - ❍ dichotomous key
   - ❍ gases
   - ❍ transfers

4. A flood can happen when
   - ❍ there is no rain.
   - ❍ there is a tsunami.
   - ❍ there is a gas in the environment.
   - ❍ a mechanical thing makes photosynthesis.

5. An avalanche is
   - ❍ when water runs uphill.
   - ❍ when earth or snow go downhill.
   - ❍ when earth turns into a gas.
   - ❍ when snow adapts to the environment.

Reading Comprehension Activity Page

6 Which of these can reflect things?

- ❍ a rough rock
- ❍ water
- ❍ black paper
- ❍ a gas

7 Which of these emits something?

- ❍ an igneous rock
- ❍ data
- ❍ a car
- ❍ a metamorphic rock

8 When something orbits, it

- ❍ goes up.
- ❍ goes down.
- ❍ goes through.
- ❍ goes around.

Reading Comprehension Activity Page

Have the students write the letters for sentence halves that match.

1	Earthquakes can	A	is made by an earthquake.
2	A tsunami	B	a tsunami.
3	A volcano	C	by earthquakes.
4	Floods can be caused by	D	make tsunamis.
5	Avalanches can be caused	E	emits liquids, solids, and gases.
6	Calm water can	F	gases.
7	A car emits	G	around the earth.
8	Satellites orbit	H	reflect things.

1→_____ 2→ _____ 3→ _____ 4→ _____

5→ _____ 6→ _____ 7→ _____ 8→ _____

Reading Comprehension Activity Page

Have the students cut out the words and glue them under their definitions.

A volcano does this with solids, liquids, and gases.	It is caused by the earth's plates.	It can emit liquids, solids, and gases.
a big wave	something that happens when we look in mirrors	high water
snow or earth that moves downhill	to move around something	

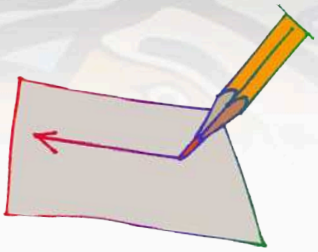
earthquake tsunami volcano flood

avalanche reflect emit orbit

STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page



Have the students write in the missing letters.

ea_____e

ts_____i

vol_____o

fl_____

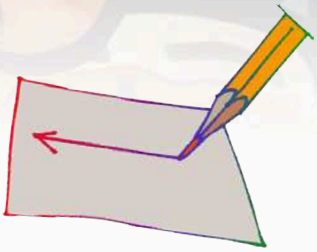
av_____e

re_____t

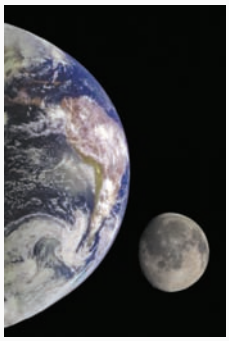
e_____t

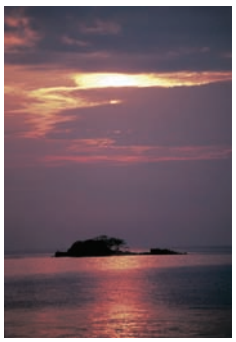
or_____

Basic Writing Activity Page



Have the students write the word for each picture.

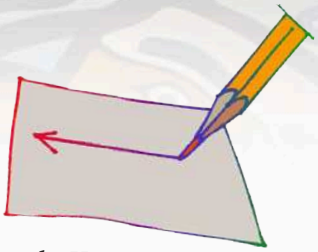




STUDENT SUPPORT MATERIALS

Creative Writing

Creative Writing Activity Page



Have the students write sentences of their own, using the key words from this unit. When the students' sentences are finished, have them take turns reading their sentences orally. The students should say "Blank" for the key words; the other students must name the "missing" words. You may wish to have the students write the "definitions" for the key words.

EARTHQUAKE

_____

TSUNAMI

_____

VOLCANO

_____

FLOOD

_____

AVALANCHE

_____

REFLECT

_____

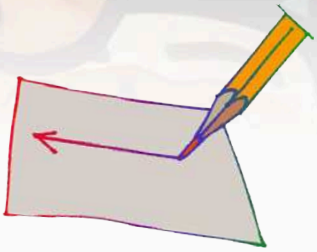
EMIT

_____

ORBIT

_____

Creative Writing Activity Page



Have the students write sentences of their own, based on the picture below. When finished, have each student read his/her sentences to the others.

UNIT ASSESSMENT

D–1: Concepts of Earth Science

SCIENCE PROGRAM

Unit Assessment Teacher's Notes
Grade 6 • Unit 8 (D–1)
Theme: Concepts of Earth Science

Date:_____

Unit Assessment

Provide each student with a copy of the students' pages. Read the following instructions aloud. The students should answer the questions on their copies of the assessment.

BASIC LISTENING

Turn to pages 1–2 in your test. Look at the pictures in the boxes.

1. Write the number 1 on top of the picture for **EARTHQUAKES**.
2. Write the number 2 on top of the picture for **TSUNAMIS**.
3. Write the number 3 on top of the picture for **VOLCANOES**.
4. Write the number 4 on top of the picture for **FLOODS**.
5. Write the number 5 on top of the picture for **AVALANCHES**.
6. Write the number 6 on top of the picture for **REFLECTS**.
7. Write the number 7 on top of the picture for **EMIT**.
8. Write the number 8 on top of the picture for **ORBITING**.

LISTENING COMPREHENSION

Turn to page 3 in your test. Listen to the sentences I say. Circle "T" for true and "F" for false sentences."

1. When the earth's plates move, they can cause earthquakes.
2. A tsunami is made when an earthquake happens under the ocean.
3. A volcano is made of sedimentary rocks.
4. Floods happen when there are too many igneous rocks on the top of the earth.
5. An avalanche can be caused by weather.
6. The earth's core reflects the sun's light.
7. Volcanoes can emit gases.
8. Satellites orbit around the earth.

Unit Assessment

Provide each student with a copy of the students' pages. Read the following instructions aloud. The students should answer the questions on their copies of the assessment.

SIGHT RECOGNITION

Turn to page 4 in your test. Look at the pictures in the boxes. Circle the word for each picture.

DECODING/ENCODING

Turn to page 5 in your test. Look at the word parts in the boxes. Circle the other half or part of each word.

READING COMPREHENSION

Turn to page 6 in your test. Read the sentence part and fill in the bullet for the correct sentence ending.

BASIC WRITING

Turn to page 7 in your test. Look at the pictures in the boxes. Write the word for each picture.

CREATIVE WRITING

Turn to page 8 in your test. Write a sentence of your own, using each word.

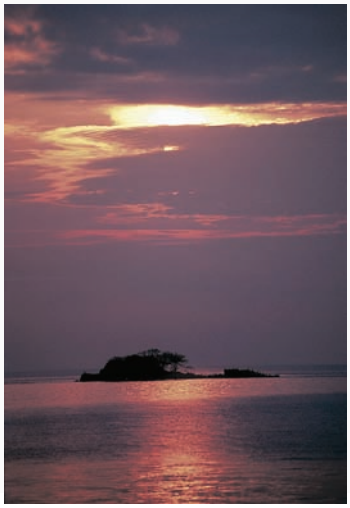
Teacher: To get a percentage for this student's assessment, divide the total number of questions correct by the total number of questions, then multiply this answer by 100 to determine the percentage of questions answered correctly.

SCIENCE PROGRAM

Unit Assessment Student Pages
Grade 6 • Unit 8 (D–1)
Theme: Concepts of Earth Science

Date:_____ Student's Name:_____

Number Correct:_____ Percent Correct:_____



1. T F

2. T F

3. T F

4. T F

5. T F

6. T F

7. T F

8. T F

earthquakes
tsunamis
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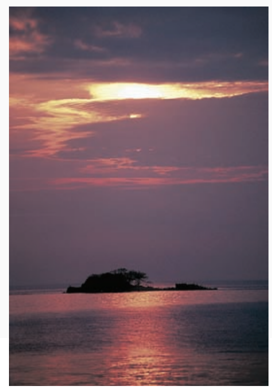

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1. When the earth's plates move, they can make
   - ❍ gases.
   - ❍ earthquakes.
   - ❍ substances.

2. A tsunami is made from
   - ❍ a flood on the land.
   - ❍ sedimentary rocks under the ocean.
   - ❍ an earthquake under the ocean.

3. Volcanoes can emit
   - ❍ data.
   - ❍ organisms.
   - ❍ gases.

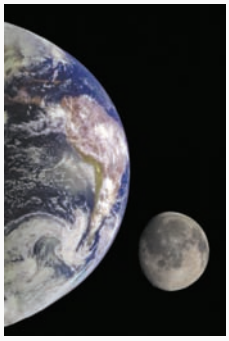
4. Floods happen when there is too much
   - ❍ water.
   - ❍ gas.
   - ❍ growth.

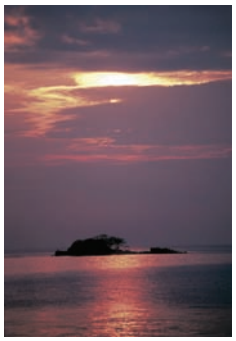
5. An avalanche is when land or snow falls down because of
   - ❍ reproduction.
   - ❍ gravity.
   - ❍ respiration.

6. Water can
   - ❍ orbit.
   - ❍ reflect.
   - ❍ infer.

7. What can a volcano emit?
   - ❍ rocks
   - ❍ migration
   - ❍ dichotomous key

8. When something orbits, it
   - ❍ falls from gravity.
   - ❍ goes up with gases.
   - ❍ goes around.





EARTHQUAKES

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