

SCIENCE


FOR LANGUAGE DEVELOPMENT

GRADE 6 • BOOK 1

BASED ON
ALASKA
SCIENCE
STANDARDS



Sealaska Heritage Institute



*Integrating culturally
responsive place-based content
with language skills development
for curriculum enrichment*

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Introduction to the Developmental Language Process in Science

OVER THE YEARS, much has been written about the successes and failures of students in schools. There is no end to the solutions offered, particularly for those students who are struggling with academics. For example, there have been efforts to bring local cultures into the classroom, thus providing the students with familiar points of departure for learning.

While the inclusion of Native concepts, values, and traditions into a curriculum provide a valuable foundation for self-identity and cultural pride, they may not, on their own, fully address improved academic achievement.

Through science lessons, students are exposed to new information and to the key vocabulary that represents that information. While the students may acquire, through various processes, the scientific information, the vocabulary is often left at an exposure level and not internalized by the students. Over time, this leads to language delay that impacts negatively on a student's ongoing achievement.

Due to weak language bases, many Native Alaskan high school students struggle with texts that

are beyond their comprehension levels and writing assignments that call for language they do not have.

This program is designed to meet the academic realities faced by high school students every day, using a developmental process that integrates culture with skills development.

To this end, each key vocabulary word, in science, is viewed as a concept. The words are introduced concretely, using place-based information and contexts. Whenever possible, the concept is viewed through the Native heritage cultural perspectives. Using this approach, the students have the opportunity to acquire new information in manageable chunks, the sum total of which represent the body of information to be learned in the science program.

When the key vocabulary/concepts have been introduced, the students are then taken through a sequence of listening, speaking, reading, and writing activities designed to instill the vocabulary into their long-term memories.

This is the schema for the Developmental Language Process:

The Developmental Language Process

<p>1</p> <p>VOCABULARY</p> <hr/> <p>ACTIVITIES</p> <p><i>As much as possible, use concrete materials to introduce the new words to the students. Match the materials with the vocabulary pictures.</i></p>	<p>2</p> <p>BASIC LISTENING</p> <p><i>Whole Group</i></p> <p><i>Individual</i></p>	<p>3</p> <p>BASIC SPEAKING</p> <p><i>Whole Group</i></p> <p><i>Individual</i></p>	<p>6</p> <p>BASIC READING</p> <p><u>Sight Recognition</u></p> <p><i>Whole Group</i></p> <p><i>Individual</i></p> <p><u>Decoding & Encoding</u></p>	<p>8</p> <p>BASIC WRITING</p>	<p>10</p> <p>EXTENSION</p>
	<p>4</p> <p>LISTENING COMPREHENSION</p> <p><i>Whole Group</i></p> <p><i>Individual</i></p>	<p>5</p> <p>CREATIVE SPEAKING</p>	<p>7</p> <p>READING COMPREHENSION</p>	<p>9</p> <p>CREATIVE WRITING</p>	



Finally, at the end of each unit, the students will participate in enrichment activities based on recognized and research-based best practices. By this time, the science information and vocabulary will be familiar, adding to the students' feelings of confidence and success. These activities will include place-based and heritage culture perspectives of the information learned.

This approach is radically different from current practices in most science classes. Historically, little or no formal vocabulary development

takes place. It is assumed that the vocabulary is being internalized during the learning process, which is most often an erroneous assumption.

Increasing the language bases of the students will lead to improved comprehension in listening and reading, and higher levels of production in creative speaking and writing.

This, coupled with the place-based and culturally-responsive content, will provide the students with the foundations necessary for ongoing confidence and achievement.

The Integration of Place-Based, Culturally Responsive Science Content and Language Development

Introduction of Key Science Vocabulary



Science Vocabulary Development
Listening, Speaking, Reading, & Writing



Science Application
Teacher-Directed, Group, & Individual Activities



UNIT 1

A-1: Science as Inquiry Process



KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

PREDICT

Place-Based Perspective

Show the students the picture of the fortune cookies from page 63.* Have them describe the purpose of the cookies (i.e., to tell one's fortune). Use this to introduce "predict" to the students. Have the students cite other common predictions, such as weather, sports, and so on.

* Use a real fortune cookie, if available.

Heritage Cultural Perspective

Native people of Southeast Alaska used many natural phenomena to predict the future. For example, if thunder occurred in the middle of the winter, Native people would predict a mild winter. They would predict rain or snow, if a ring appeared around the moon.

OBSERVE

Place-Based Perspective

Show the students a pair of binoculars and a magnifying glass. Have them tell the use of each—lead this into observing different things. Have the students suggest other methods of observing, such as telescopes and microscopes.

Heritage Cultural Perspective

Native people made observations of the natural world that played vital roles in everyday life in Southeast Alaska. For example, Natives observed the migratory habits of fish and birds, the cycle of tides, and weather. Also, it was common for people to observe the habits of animals and the body language of other people.

DESCRIBE

Place-Based Perspective

Mount the picture from page 65 on the board. Use words to describe the picture (e.i., sour, heavy, light, etc.). The students must identify each picture by its descriptor. Continue until all of the pictures have been described and identified.

Heritage Cultural Perspective

Traditional stories describe in detail historical accounts of clan history. This includes names of people, places, things, and belongings. Personal introductions include names, clans, houses, and descriptions of lineage—from fathers, to grandfathers, to great grandfathers, to great great grandfathers.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

CLASSIFY

Place-Based Perspective

Mix colored clothes and white clothes together. Tell the students that you are going to do your laundry and have them suggest what you need to do first. Lead the students to suggest that the clothes have to be sorted or classified. Cite examples of how things can be classified by type, color, size, taste, feel, and so on.

Heritage Cultural Perspective

The clan system in Southeast Alaska is a process of classification. People are grouped by their moieties, clans, communities, and houses.

Salmon are classified by their species and habitats.

GENERALIZE

Place-Based Perspective

Present the students with chocolate bars, pop, sugar, and other sweet items. Have the students suggest what might happen to a person who eats too many sweets. Have them generalize that the sweets might cause bad teeth, excess weight, and complexion problems.

Heritage Cultural Perspective

Native people would generalize that a poor berry season would lead to more aggressive behavior in bears. They would also generalize that if the winter were cold and the snowfall did not insulate the spawning waters, many salmon fry and fingerlings would perish.

INFER

Place-Based Perspective

Show the students the picture depicting “sad” from page 67. Have the students suggest why the fireman might be sad. Lead the students to realize that they are guessing as to the causes of his sadness. Introduce this as inferring based on some information provided. Cite other examples that may cause one to infer.

Heritage Cultural Perspective

*Native people used stories to cause people to infer a variety of information. For example, in *Raven and the Salmon Box*, it is implied that the Raven brought the salmon to the streams to spawn. This provides the reader with the opportunity to infer that Raven provided food for the people.*

Culturally Responsive & Place-Based Introduction of Science Vocabulary

COMMUNICATE

Place-Based Perspective

Show the students the picture from page 69 and a cell phone. Have the students tell how the two are the same—they both represent forms of communication. You may wish to introduce the SOS signal in Morse Code as ...---... Have the students name other forms of communication used today.

Heritage Cultural Perspective

Native people use totem poles, crests, house posts and screens, ceremonial hats, and other regalia to communicate family histories and origins. When Native people communicate through traditional oratory, recognition and acknowledgement of the opposite moiety is customary.

INQUIRE

Place-Based Perspective

Show the students the picture from page 71 that represents a house for sale. Have the students suggest what information people should have before they buy a house. Use this to introduce “inquire”. Have the students tell of other situations that may cause people to inquire about some form of information.

Heritage Cultural Perspective

Historically, when visitors approached a Native village by boat or canoe, the clan leader stood on the shore and inquired who they were and where they came from.



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.



Let's Move

Identify an appropriate body movement for each vocabulary word. This may involve movements of hands, arms, legs, etc. Practice the body movements with the students. When the students are able to perform the body movements well, say a vocabulary word. The students should respond with the appropriate body movement. You may wish to say the vocabulary words in a running story. When a vocabulary word is heard, the students should perform the appropriate body movement. Repeat, until the students have responded to each word a number of times.

What's the Answer?

Before the activity begins, develop questions related to the concept being studied. For each question, prepare three answers—only one of which in each set is correct for the question asked. Ask the students the question and then read the three answers to them. The students should show you (using their fingers or prepared number cards) which answer is correct for the question asked. Repeat this process with other questions and answers.

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.

Hand Tag

Group the students in a circle on the floor. Have the students place their hands on the floor, palms down. Stand in the center of the circle with the vocabulary picture and a flashlight. The object of the activity is to attempt to tag a student's hand or hands with the light of the flashlight. The students must pull their hands from the circle when they think they are about to be tagged. When you eventually tag a student's hand or hands, he/she must then say a complete sentence using the word for a vocabulary picture that you show. Repeat this process until many 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.



Sight Word Bingo

Before the activity begins, prepare a page that contains the sight words. Provide each student with a copy of the page. The students should cut out the sight words. When the students have cut out their sight words, each student should lay all of the sight words, but one, face down on his/her desk. Show a vocabulary picture. Any student or students who have the sight word for that picture face-up on their desks should show the sight word to you. Then, those sight words should be placed to the side and other sight words turned over in their place. Continue in this way until a student or students have no sight words left on their desks.

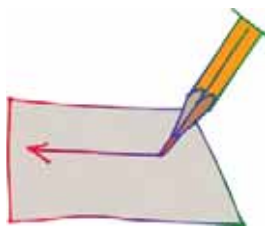
Letter Encode

Give each student five copies of a page that contains the letters of the alphabet. The students should cut all of the letters out. 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. The students should keep their letters in individual envelopes for use in other units.

Student Support Materials

Have the students work on the activity pages from the Student Support Materials for this Unit.

WRITING

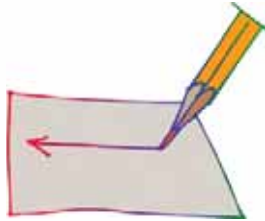


Watch Your Half

Prepare a photocopy of each of the vocabulary pictures. Cut the photocopied pictures in half. Keep the picture halves in separate piles. Group the students into two teams. Give all of the picture halves from one pile to the players in Team One. Give the picture halves from the other pile to the players in Team Two. Say a vocabulary word. When you say “Go,” the student from each team who has the picture half for the vocabulary word you said should rush to the board and write the word on the board. The first player to do this correctly wins the round. Repeat until all players have participated. This activity may be played more than once by collecting, mixing, and redistributing the picture halves to the two teams.

Science Language for Success—Lesson 2

WRITING (CONTINUED)



Sentence Completion

Write a number of sentence halves on individual sentence strips. These should include both the beginning and ending halves of sentences. Mount the sentence halves on the board and number each one. Provide the students with writing paper and pencils/pens. Each student should then complete ONE of the sentence halves in his/her own words, writing his/her part of the sentence on the sheet of paper. When the students have completed their sentence halves, have a student read ONLY the sentence half he/she wrote. The other students must then attempt to identify the “other half” of the sentence on the board (by its number). Repeat until all of the students have shared their sentence halves in this way.

Student Support Materials

Have the students work on the activity pages from the Student Support Materials for this Unit.

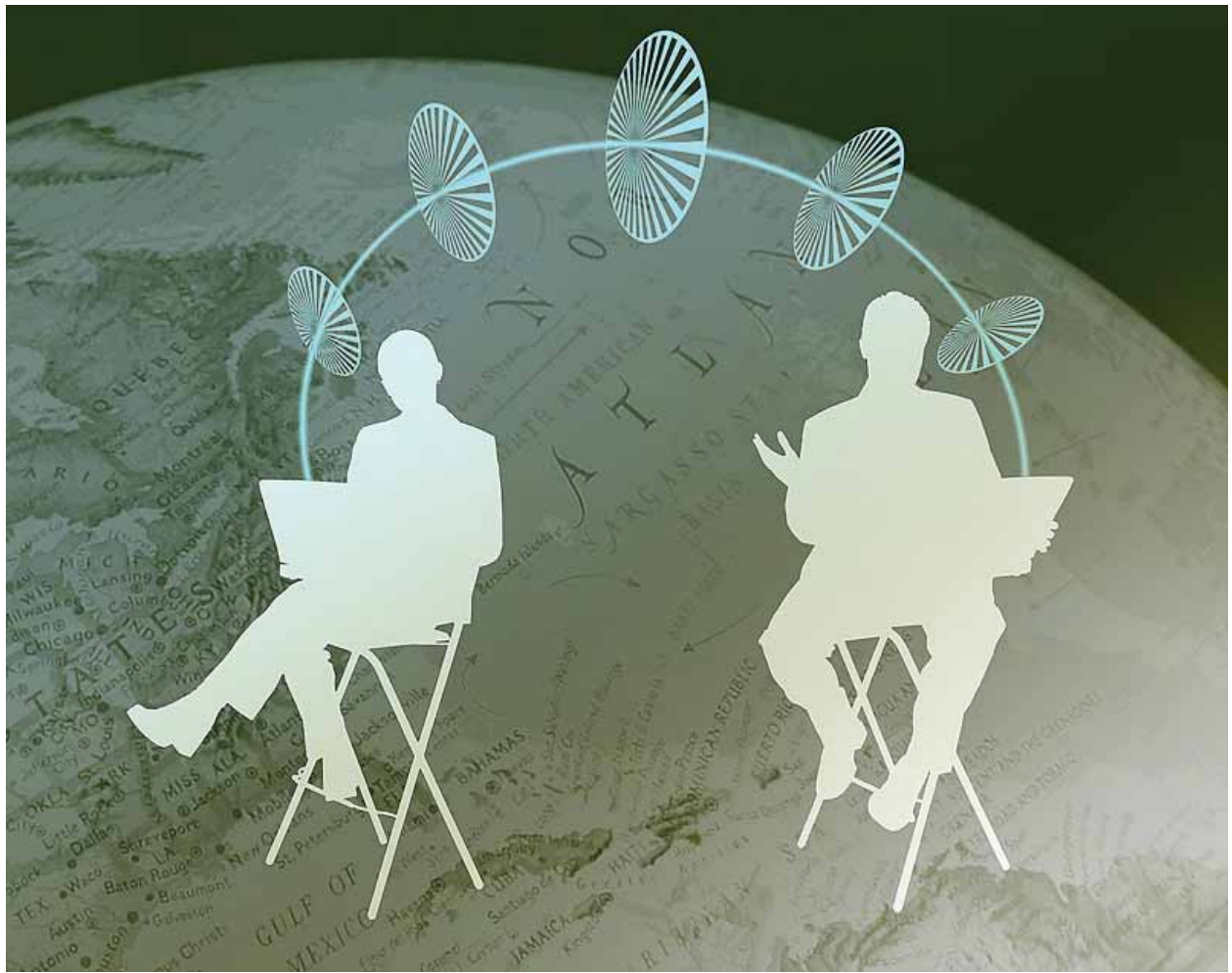


VOCABULARY PICTURES





CLASSIFY





COMMUNICATE





DESCRIBE





GENERALIZE





INFER





INQUIRE





OBSERVE





PREDICT

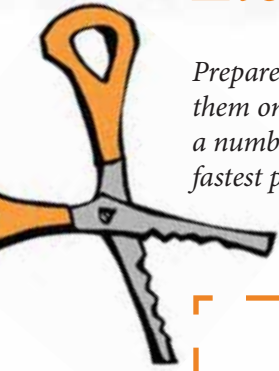


STUDENT SUPPORT MATERIALS

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 The weatherman predicts how much gasoline will cost during a rain storm. **True**
False
- 2 Binoculars can be used by a hunter to observe the animals that are being hunted. **True**
False
- 3 Phone books describe the steps necessary to make different food items from different restaurants. **True**
False
- 4 Things can be classified only by their color and size. **True**
False
- 5 We can generalize things based on information that we hear. **True**
False
- 6 When we infer, we are measuring the things we need to make a cake. **True**
False
- 7 E-mails are one way we can communicate with other people. **True**
False
- 8 To inquire about something means to ask questions to get information. **True**
False



STUDENT SUPPORT MATERIALS

Sight Words




describe

observe

predict





infer

generalize

classify



inquire

communicate



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.



describe
generalize
classify

observe
inquire
communicate

infer
predict

e e o e i p i m g e n e r a l i i n
s s s r i c o m m u n i c a t e q f
e e i r e m i n q u i u r r b v a n
s n c l a s s i f y c n e c n e f i
e u e i a e b e z c i l e t q u i p
f m c o m m u n i c m e e m n s e e
l a d e s c r i a s i i a o d n d i
i c e g e n e r a l i z e o s n e c
c e u d e s c r i b e d c e n i c n
r i m r e l i d t g s s i r r e n d
r i e t d r n e i i d i n f e r s q
b e z a e i n q u i r e o i u m a c
c m a c p r e d i c t l i c n l l t
i r e e c q r i e i i n f p i v e e
i t u f i s m i b o b s e r v e o q
e e e t g i p r e d i e i s i i i s
e a i f b r m o b s e r v e i y e e
n c a v c l a s s i f i c o g n c e
l l s e m m r y m r e e i t e d e s
r v i e e r d e c e f a e n e r s e

Sight Words Activity Page

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



communicate	observe	describe	classify
predict	generalize	inquire	infer



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.



er ize gen al

si clas fy

mu cate com ni





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 What is it called when we try to think what will happen at the end of a movie?
 - classifying
 - predicting
 - multiplying
 - inquiring

- ② When we inquire, what are we doing?
 - We are cooking.
 - We are looking for information.
 - We are grouping things by color.
 - We are watching a movie.

- ③ When we observe something, what are we doing?
 - We are sleeping.
 - We are cooking with brown sugar.
 - We are watching something.
 - We are eating a food from another country.

- ④ Which of these would go with communicate?
 - a rock
 - a black belt
 - sleeping during the day
 - a cell phone

- ⑤ When we infer, we are
 - using information to catch big fish.
 - using information to send an e-mail.
 - using information to cook a meal.
 - using information to decide something.

Reading Comprehension Activity Page



- ⑥ When we describe something, we
- tell something about it.
 - tell someone to have a big supper.
 - tell a person to go home.
 - tell someone to go to bed.
- ⑦ When we decide that too much sugar is bad for us, we are
- reading.
 - classifying.
 - inquiring.
 - generalizing.
- ⑧ When we put the knives, forks, and spoons in their own trays, we are
- inferring.
 - classifying.
 - communicating.
 - predicting.

Reading Comprehension Activity Page

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



- | | |
|--|---------------------------------------|
| ① We can try to predict | ① how something looks. |
| ② We can observe | ② we are generalizing. |
| ③ We can describe | ③ we are guessing information. |
| ④ When we sort things by how they taste, | ④ we inquire about how much it costs. |
| ⑤ When we make a decision from what we know, | ⑤ in many different ways. |
| ⑥ When we infer something, | ⑥ the weather. |
| ⑦ People can communicate | ⑦ we are classifying. |
| ⑧ When we buy a new house, | ⑧ plants and animals around us. |

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.



to come to a conclusion

to think what will happen next

to tell how something looks, feels, tastes, and so on

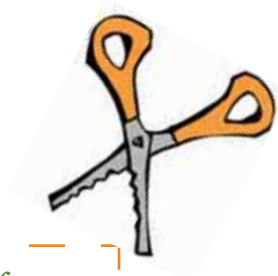
to contact other people

to group things

to imagine some information

to watch something

to ask about something



communicate	observe	describe	classify
predict	generalize	inquire	infer

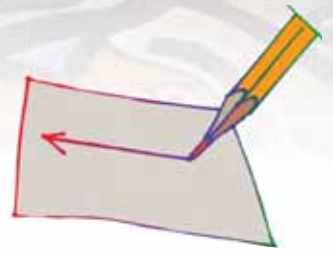


STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page

Have the students write in the missing letters.



pre_____

ob_____e

des_____e

cl_____y

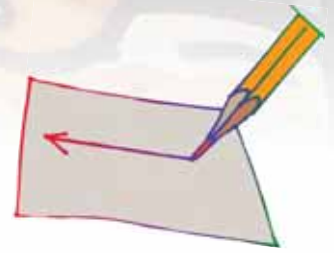
gen_____e

in_____

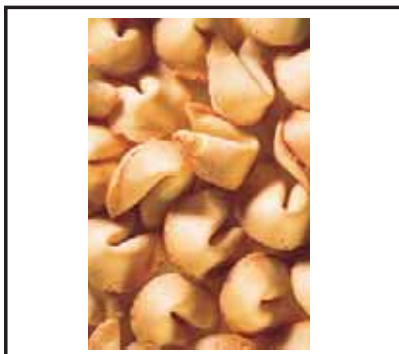
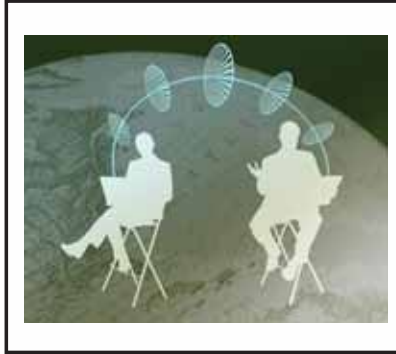
com_____te

inq_____

Basic Writing Activity Page



Have the students write the word for each picture.

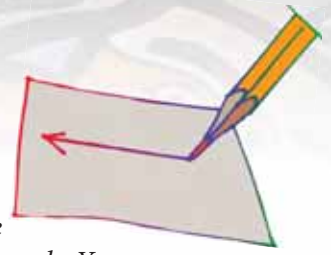




STUDENT SUPPORT MATERIALS

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.

PREDICT

OBSERVE

DESCRIBE

CLASSIFY

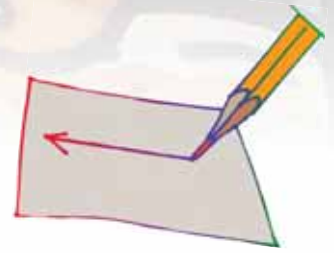
GENERALIZE

INFER

COMMUNICATE

INQUIRE

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

A-1: Science as Inquiry Process



SCIENCE PROGRAM

Unit Assessment Teacher's Notes
Grade 6 • Unit 1 (A-1)
Theme: Science as Inquiry Process

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 **PREDICT**.
2. Write the number 2 on top of the picture for **OBSERVE**.
3. Write the number 3 on top of the picture for **DESCRIBE**.
4. Write the number 4 on top of the picture for **CLASSIFY**.
5. Write the number 5 on top of the picture for **GENERALIZE**.
6. Write the number 6 on top of the picture for **INFER**.
7. Write the number 7 on top of the picture for **COMMUNICATE**.
8. Write the number 8 on top of the picture for **INQUIRE**.

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 we predict, we are inferring.
2. We observe during the night when we are asleep.
3. We can describe things by how they feel.
4. We usually classify the clothes before we wash them.
5. We generalize when we have no information.
6. We can infer things from information we get.
7. We can use language to communicate with other people.
8. A person might inquire about something to get information.



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 1 (A-1)
Theme: Science as Inquiry Process

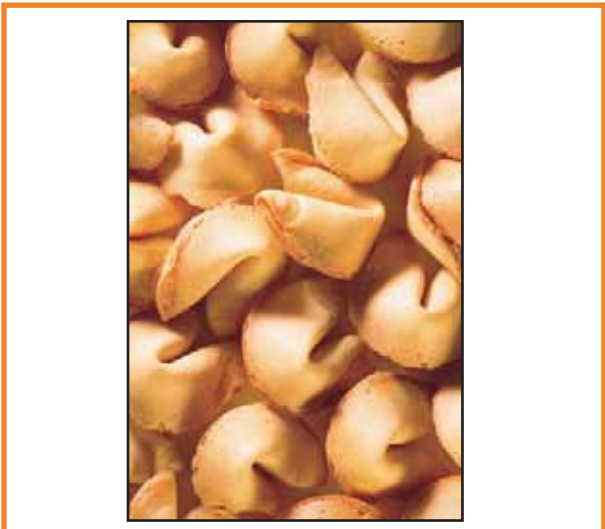
Date: _____ Student's Name: _____

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 |



predict
observe
describe
classify
generalize
infer
communicate
inquire



predict
observe
describe
classify
generalize
infer
communicate
inquire



predict
observe
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predict
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dact
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crabe
cripe
cribe
kribe
krube
crip
crebe

clas

ssifyt
ify
afy
sufy
savy
safy
suovy
sify
ity

gener

ilize
ulize
ralize
rulize
lize
luze
aize
al
alizer

in


fir
for
fur
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cute
cate
ate
kete
cete
dat
cat

in

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quire
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quiere
quiere

- 
- 1 We can predict
- the end of a story.
 - how old we are.
 - our names
- 2 We observe when
- we close our eyes.
 - we watch something.
 - we go to sleep.
- 3 We can describe a thing
- only by its weight.
 - only by what we see.
 - in many different ways.
- 4 We classify things when we
- throw them out.
 - buy them.
 - group them.
- 5 We can generalize
- only what we see.
 - many different things.
 - when we sleep.
- 6 When we infer, we are
- imagining.
 - eating.
 - running.
- 7 Which of these is used to communicate?
- a chair.
 - a computer.
 - knives, forks, and spoons.
- 8 When we inquire about something, we are
- asking about it.
 - eating it.
 - giving it away.





PREDICT

OBSERVE

DESCRIBE

CLASSIFY

GENERALIZE

INFER

COMMUNICATE

INQUIRE



UNIT 2

A-1: Science as Inquiry Process



KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

DIFFERENTIATE

Place-Based Perspective

Show the students three types of salsa—mild, medium, and hot. You may wish to show other food items that can be categorized. Direct the students' attention to the logos that indicate levels of heat. Use this as a means to differentiate the salsas. Cite other food items that can be differentiated, such as breads, meats, etc.

Heritage Cultural Perspective

Traditionally, Native peoples of Southeast Alaska could differentiate where people came from by their crests, dialects, clothing, trade items, art, and customs.

FACT

Place-Based Perspective

Show the students a variety of items such as a chocolate bar, a plastic bag, a match, etc. Have the students identify facts associated with each of the items. Have the students provide facts based on other items or situations.

Heritage Cultural Perspective

Since Native peoples lived in tune with their environment, they established many facts related to natural phenomena. For example, after a dry summer, they knew there would be fewer salmon to harvest. Consequently, there would be fewer salmon returning to the spawning grounds. This in turn would cause the bears to seek food in other locations, such as berry patches and smoke houses.

OPINION

Place-Based Perspective

Show the students a DVD case that has opinions related to the quality of the film. Use this to introduce the concept of expressing an opinion. Have the students suggest other movies that were, in their opinions, excellent (hopefully, not all students will agree and opinions will vary).

Heritage Cultural Perspective

In cases where opposite clan members or members within a clan have severe differences of opinion, a mediator is brought out at a public gathering. He/She acts as the peace maker between the two parties.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

DATA

Place-Based Perspective

Give each student two beans from a can of cut green beans. Have the students count the number of seeds in their beans. Record the data on the board; determine which students have the least number of seeds, the most number, and the same. Cite other examples of data that can be collected (e.g., days missed from school, how often one eats fish, etc.).

Heritage Cultural Perspective

Survival in Southeast Alaska involved the recording of data relating to natural resources. For example, people would collect data related to a season's fishing, hunting, and harvesting statistics. This would tell if there were enough resources to survive the winter.

ENVIRONMENT

Place-Based Perspective

Place a tray of soil in front of the students. Divide the soil into two areas. In one area, add water to create a wet environment; leave the other side dry to represent an arid environment. Have the students compare and contrast the two environments in terms of plants, animals, uses, and so on.

Heritage Cultural Perspective

Native peoples have always lived in harmony with their environments. Respect for all aspects of the environment, both animate and inanimate, allowed for a balanced way of life.

MEASURE

Place-Based Perspective

Show the students a slice of bread. Have the students suggest the steps necessary to make bread—lead them to suggest that many people measure their ingredients. Have the students name other things that are measured for size, length, duration, and area. Relate measurements to sports contexts such as basketball courts, baseball, and football fields, etc.

Heritage Cultural Perspective

Traditionally, Native people had to know how to measure to build clan houses, form dug-out canoes, and create regalia.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

HYPOTHESIZE

Place-Based Perspective

Show the students a box of cake mix. Read the ingredients and directions to the students. Then, have them imagine what would happen if, for example, you replaced the liquid with juice, used twice as many eggs, added food color, and so on. Lead the students to hypothesize the outcomes.

Heritage Cultural Perspective

Traditionally, Tlingit, Haida, and Tsimshian peoples would have hypothesized about various aspects of the environment. This might have included hypotheses such as, “a landslide caused the large rock to move” and “lightening broke the large tree” and so on.

IDENTIFY

Place-Based Perspective

Before the lesson begins, prepare an audio tape that contains the sound effects of common things such as running water, frying food, walking, etc. Play the tape, calling upon the students to identify each sound. Locate a large picture, and mount it on the board. Have the students identify details in the picture. Have the students suggest how things can be identified.

Heritage Cultural Perspective

During traditional Native introductions, people identify who they are by their names, their clans, their houses, and their relations in the opposite moiety.



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.



Locomotive

Have the students stand in a straight line in the center of the room. Each student should place his hands on the shoulders of the student in front of him/her. Mount a picture on each of the four walls in the classroom. Tell the students that when they hear one of the four vocabulary words (for the four pictures on the walls), they should step in that direction while still holding onto the shoulders of the players in front of them. Say the four words a number of times; the students should step toward the pictures as they are named.

Funnel Vision

Before the activity begins, collect a large funnel. Have a student stand at the front of the classroom with his/her back to the other students. Give the student the funnel. Give the vocabulary pictures to the other students in the class. The students should hold their pictures up, facing the front of the classroom. Say a vocabulary word. When you say “Go,” the student with the funnel should place the funnel over his/her eyes and turn to face the other students. The student must then look through the funnel to find the picture for the vocabulary word you said. This activity may be conducted with two players (each player having a funnel). The winner of each round is the student who locates the correct picture first. Have the students in the class exchange pictures for each new round of the activity. Repeat.

Student Support Materials

Have the students work on the activity pages from the Student Support Materials from this unit.

SPEAKING



Flip of the Coin

Provide each student with a penny. Keep one penny for yourself. Mount the vocabulary pictures on the board. Have the students (gently) toss their pennies into the air. Each student should look to see which side of his/her penny is face-up. Toss your penny into the air in the same way. Call the side of your penny that is face-up. The students who have the same side of coin face up must then identify (orally) a vocabulary picture you point to. For example, if the heads side of your coin is face up, the students who have heads showing on their coins must then orally identify the vocabulary picture you point to. Repeat this process a number of times.

Science Language for Success—Lesson 2

SPEAKING (CONTINUED)



High Roller

Give a die to each of two students. When you say “Go,” the students should roll their dice. The student who rolls the highest number on his/her die must then say a complete sentence about a vocabulary picture that you show. Repeat this process until many students have responded with sentences of their own.

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.



Word Length

Before the activity begins, cut a number of sight word cards into different lengths (e.g., 5 in., 15 cm., etc.). Place the sight word cards on the floor at one end of the classroom. Group the students into two teams at the other end of the classroom. Place two rulers on the floor beside the sight words. Say a different measurement to the first player in each team. When you say “Go,” the first player in each team must rush to the sight word cards. Each player must then use the ruler to locate a sight word card that is the same length as the measurement you said. When a player has done this successfully, he/she should read the sight word on that card. Repeat until all players in each team have participated.

What’s Your Sequence?

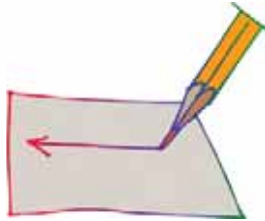
Provide each student with four blank flashcards. Write four sight words on the board. Each student should write the same sight words on each of his cards (one word per card). When the students’ cards are ready, have them arrange their sight word cards in a specific sequence on their desks (each student should determine his/her own sequence of words). Then, say a sequence of the four words. Any student or students who have their sight words in the same sequence as you said win the round. The winner or winners of this activity are those students who collect the greatest number of wins. The students may change the sequence of their sight word cards after each round of the activity.

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 for the picture. Review the students’ work. Repeat, until all of the words have been spelled in this way.

Science Language for Success—Lesson 2

WRITING



Back Writing

Group the students into two teams. Have the first player from each team stand in front of the board. Use the index finger of your writing hand to “write” the first letter of a sight word on the two players’ backs. When you have done this, say “Go.” Each of the players should then write a sight word on the board that begins with that letter. Repeat with other pairs of players until all players in each team have played and until all sight words have been written a number of times.

Word Completion

Before the activity begins, prepare clozure cards for the sight words; omit letters and syllables. Provide each student with a clozure card. Call upon the students to complete their words on the clozure cards by writing in the missing parts. Afterward, review the students’ responses.

Student Support Materials

Have the students work on the activity pages from the Student Support Materials for this unit.



VOCABULARY PICTURES





DATA





DIFFERENTIATE



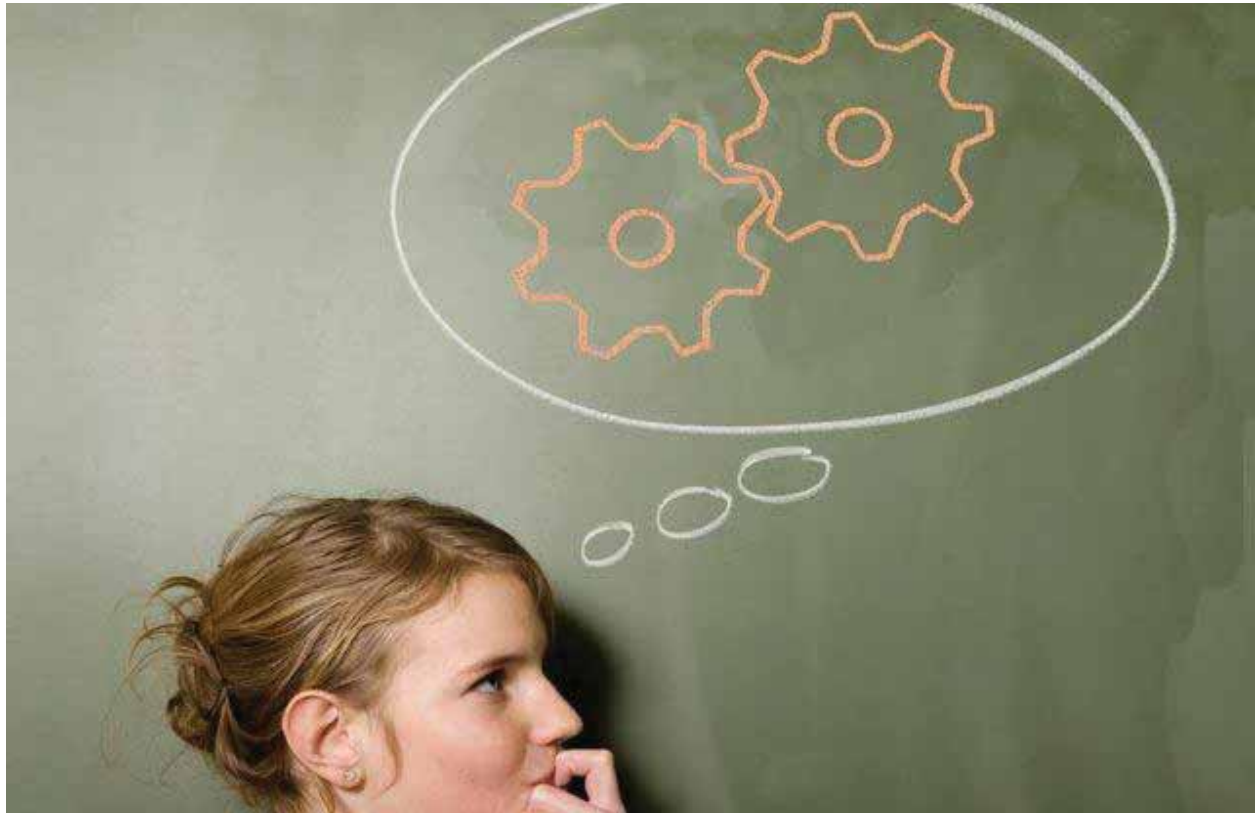


ENVIRONMENT





FACT



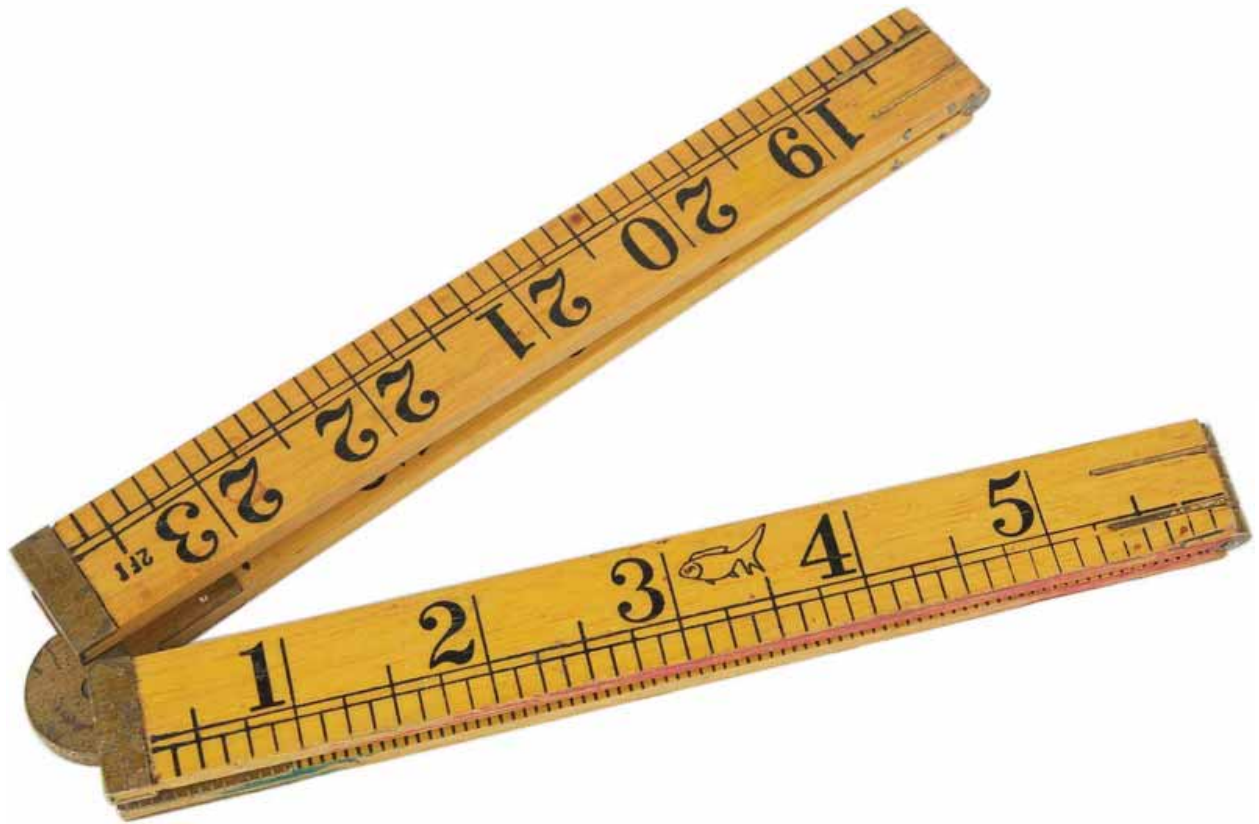


HYPOTHESIZE





IDENTIFY





MEASURING





OPINION

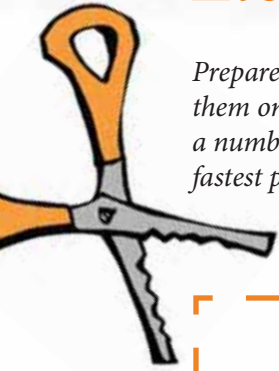


STUDENT SUPPORT MATERIALS

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 We can differentiate tastes among different types of doughnuts. **True**
False
- 2 A fact is something we make up based on information someone gives us. **True**
False
- 3 A person can develop an opinion based on information that he/she has. **True**
False
- 4 Data are always collected at the same time of day to be sure they are accurate. **True**
False
- 5 It is difficult to build a house with a basement in a wet environment. **True**
False
- 6 Measuring is an important part of buying a new pair of shoes. **True**
False
- 7 We can hypothesize about something only after we soak it for twenty-four hours. **True**
False
- 8 We can identify different types of fruit by the sounds they make. **True**
False



STUDENT SUPPORT MATERIALS

Sight Words



measure

hypothesize

identify





opinion

data

environment



differentiate

fact



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.



data
differentiate
fact

environment
hypothesize
opinion

measure

u t m i n f i r c z s p i n e a f f
r d i f f e r e n t i a t e t n i n
a f i r n e f i o h n t n s a o d e
p f a n o r r m a u n n p s n e m n
s i m e a s u o h y p o t h e s i t
z v a e t f t t p n a o m e n r a o
e a o e y n o i a a e t p i t e i t
e f n p n u n e o n n f r d a e t e
i a t a p p y o a m e a s u r e o f
y i i o n o t o p i e a o a c p t e
t o p i n h z u e e n f a c t e o n
t s r f z o e n v i r o n m e n t t
e e y e n v i r o n m e n v n e z r
t d e s n o a d a t a r n e d e e d
i d i o f e d i f f e r e n t i a i
h y p o t h e s i z e o p i n i o n
p d z h a i o p o d n y t c u e d p
t o o t i t e n v i a y z a v t p t
i a e f t i i c r i e e d e h f f a
p s e i i e i n t n o o y d a m a s

Sight Words Activity Page

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



identify	hypothesize	measure	environment
fact	opinion	data	differentiate



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.

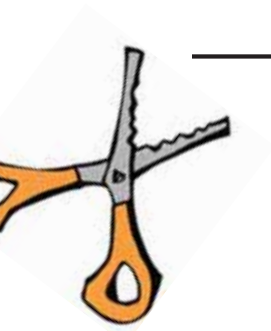


ate || dif || en || ti || fer

vi || ment || ron || ti

the || hy || size || po

den || i || fy || ti



Encoding Activity Page

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



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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 We can only differentiate things based on how they look.
 - yes
 - no
 - always
 - never

- ② The following is a fact:
 - We can differentiate the tastes between mild and spicy foods.
 - How much we eat determines the color of our hair.
 - Fries are made from large fruit that grow in wet environments.
 - Data are only served after weddings, before the dance.

- ③ An opinion about who will win the basketball game can be
 - based on data collected ten years before.
 - based on the colors of the players' shirts.
 - based on information we learn about the players.
 - based on no information.

- ④ Data can
 - help people to sleep better at night.
 - give information about something.
 - be based on no information.
 - be eaten if measured carefully.

- ⑤ An example of an environment would be
 - the type of food eaten in Southeast Alaska.
 - Southeast Alaska.
 - kitchen furniture.
 - rooms of a house.

Reading Comprehension Activity Page



- ⑥ We measure things
- to make jokes.
 - in different ways.
 - only when we are asleep.
 - using a hammer and nail.
- ⑦ We can hypothesize
- based on facts we have.
 - based on no facts.
 - based on no information.
 - based on information we don't have.
- ⑧ We can identify something
- we have never seen.
 - based on data we get.
 - based on no data.
 - without information.

Reading Comprehension Activity Page

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



- | | |
|---------------------------------|---------------------------------------|
| ① I identified the information | ① of an environment. |
| ② He hypothesized that too much | ② collected over time. |
| ③ He used a ruler | ③ after reading the data. |
| ④ The desert is an example | ④ based on information he/she has. |
| ⑤ Data can be | ⑤ differentiate two experiments. |
| ⑥ A person develops an opinion | ⑥ sugar can affect our vision. |
| ⑦ A fact is something that | ⑦ to measure the length of an object. |
| ⑧ We can use data to | ⑧ has been proven. |

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.



**something that
has been proven**

a person's belief

where things live

information

**to tell how things
are the same
or different**

**a way of getting
some information
about something**

**to make a
statement that we
hope to prove**

**recognize
something**



differentiate	fact	opinion	data
environment	measure	hypothesize	identify

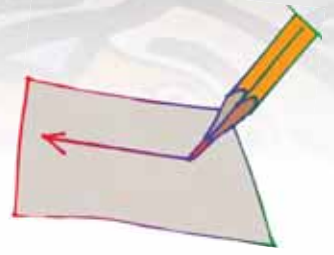


STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page

Have the students write in the missing letters.



iden_____y

hy_____ze

mea_____e

env_____t

d_____a

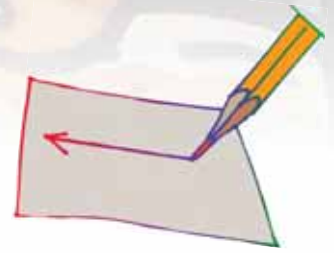
op_____n

f_____t

differ_____e

Basic Writing Activity Page

Have the students write the word for each picture.

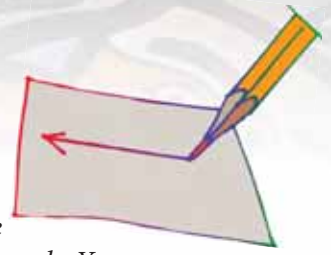




STUDENT SUPPORT MATERIALS

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.

DIFFERENTIATE

FACT

OPINION

DATA

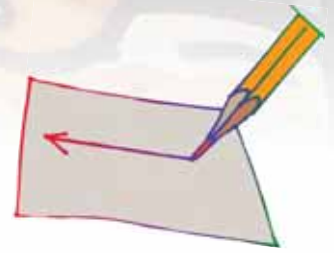
ENVIRONMENT

MEASURE

HYPOTHESIZE

IDENTIFY

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

A-1: Science as Inquiry Process



SCIENCE PROGRAM

Unit Assessment Teacher's Notes
Grade 6 • Unit 2 (A-1)
Theme: Science as Inquiry Process

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 **DIFFERENTIATE**.
2. Write the number 2 on top of the picture for **FACT**.
3. Write the number 3 on top of the picture for **OPINION**.
4. Write the number 4 on top of the picture for **DATA**.
5. Write the number 5 on top of the picture for **ENVIRONMENT**.
6. Write the number 6 on top of the picture for **MEASURING**.
7. Write the number 7 on top of the picture for **HYPOTHESIZE**.
8. Write the number 8 on top of the picture for **IDENTIFYING**.

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 we differentiate we look for how things are the same.
2. A fact is something that is true.
3. People can have different opinions about something.
4. Data is what we can get from observing something.
5. An environment is where things live.
6. We measure when we sing a new song.
7. We can hypothesize about something to prove it.
8. We can identify something that is described to us.



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 2 (A-1)
Theme: Science as Inquiry Process

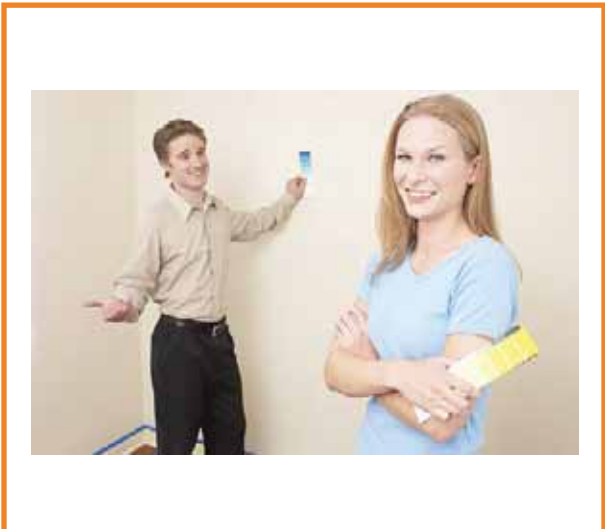
Date: _____ Student's Name: _____

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



differentiate
fact
opinion
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environment
measuring
hypothesize
identifying



differentiate
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esize
eze

iden

tufy
taffying
tuffing
tiffying
tifying
tfinf
tifyeing
tifiuf
tiffey

- 
- 1 When we differentiate we
- predict outcomes.
 - notice differences.
 - give up.
- 2 A fact is
- something we infer.
 - something we classify.
 - something true.
- 3 An opinion is
- something a person observes.
 - something a person believes.
 - something that is a fact.
- 4 Data can be
- information.
 - a food.
 - a form of water.
- 5 All people live in the same environment.
- true.
 - false.
- 6 Measuring is something we do when we
- need to know how something tastes.
 - need to know the size of something.
 - communicate by phone.
- 7 We hypothesize to
- get information.
 - travel far.
 - make a big meal.
- 8 We can identify something by
- sleeping.
 - running.
 - observing.





DIFFERENTIATE

FACT

OPINION

DATA

ENVIRONMENT

MEASURING

HYPOTHESIZE

IDENTIFYING



UNIT 3

B-1: Concepts of Physical Science



KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

MODEL

Place-Based Perspective

Show the students a toy car or other item that is a model of a real item. Discuss scale with the students—if the scale is available for the model, share it with the students. Have the students suggest other models that can be found. In addition, have the students tell the practical uses of models, particularly in the field of construction.

Heritage Cultural Perspective

Traditionally, the Native people of Southeast Alaska created models of clan houses, which were used to construct the actual houses. Dolls were made to represent children and their clothing. In addition, some jewelry forms were models based on actual items, such as ceremonial shields. Models of canoes were created to provide guidance in the making of actual canoes.

MATTER

Place-Based Perspective

Before the lesson begins, locate a jigsaw puzzle. Present the puzzle to the students. Put a few of the pieces together. Use this as an analogy for matter—matter not only relates to mass and volume but to the building blocks within matter (the Particulate Theory of Matter). Have the students identify samples of matter in the classroom.

Heritage Cultural Perspective

Traditionally, Native people viewed all matter as living forms. This included land, water, plants, and wildlife.

STATE

Place-Based Perspective

Place a rock, a container of water, and an inflated balloon in front of the students. Use these to introduce the “state” of matter to the students. The rock—a solid—has a fixed volume and shape; water—a liquid—maintains its volume but adjusts to the shape of its container; air in the balloon is a gas—gas expands to fit whatever volume is available. Have the students cite other samples of solids, liquids, and gases.

Heritage Cultural Perspective

Native people of Southeast Alaska render solid fats, such as seal fat, into oils. When they do this, they are changing the state of the fats from solids to liquids.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

ENERGY

Place-Based Perspective

Place a car model, picture of a cake, a boat model, and a piece of ice in front of the students. Encourage the students to tell what is the same about all of the items. Lead them to understand that all of the items relate to energy—the ability to make changes. Use this to introduce potential and kinetic energy to the students.

Heritage Cultural Perspective

Native people recognized wind and air as forms of energy. The wind was used to propel their sailing canoes. Air and the sun were used to dry meats, fish, plants, and skins. Steam energy was used to create bentwood boxes and canoes.

HEAT

Place-Based Perspective

Show the students unpopped popcorn. Have them suggest how to pop the corn—through the use of heat. Use this to introduce the concept of heat as the transfer of energy through thermal contact. Lead the students to understand that when things are hot, their molecules are moving quickly. Have the students rub their hands together to demonstrate this.

Heritage Cultural Perspective

Traditionally, one way to cook foods involved the digging of a pit. Food would be wrapped in skunk cabbage and covered with a layer of soil. Then, hot rocks would be placed over the soil. The heat from the rocks would cook the food quickly. This method was used to cook fish and meats.

LIGHT

Place-Based Perspective

Before the lesson begins, use a digital camera to take a picture in a dark room (do not use the flash). Show the picture to the students and have them suggest why it didn't turn out well. Lead the students to understand that the earth's light comes from the sun—but man-made light forms also exist. The students should understand that light flows in waves at 669,600,000 miles per hour.

Heritage Cultural Perspective

The traditional story of “The Box of Daylight” explains how daylight came to the world. For details of this story, refer to the grade 6 social studies program, unit 1.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

CHEMICAL

Place-Based Perspective

Place a glass of warm water in front of the students. Show them a teaspoon of salt. Have them predict what will happen to the salt in the warm water—the salt will dissolve. Use this to introduce chemicals and the changes that can occur. Show other examples of substances, such as soap, that can undergo chemical changes.

Heritage Cultural Perspective

Traditionally, moose and seal hides were tanned in the winter when the weather was extremely cold and windy. The skin side was scraped and the whole hide was soaked in water. It was then hung outdoors. When it froze, the ice expanded in the hide, stretching it naturally. The hides were then beaten to soften them. This led to very pliable and odorless skins, which were used to make clothing.

ELECTRICAL

Place-Based Perspective

Show the picture of the fire from page 183, and an electrical appliance, such as a toaster. Have the students suggest the connection between the two. Lead them to understand that both involve electrical energy—the forest fire may be caused by lightning (natural electricity), and the toaster uses man-made electrical energy (hydro or thermal energy).

Heritage Cultural Perspective

Native people have always been aware of the power of lightning. Some traditional stories feature lightning as a central theme. Thunder and lightning in the winter would forecast a mild winter.



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.



Let's Move

Identify an appropriate body movement for each vocabulary word. This may involve movements of hands, arms, legs, etc. Practice the body movements with the students. When the students are able to perform the body movements well, say a vocabulary word. The students should respond with the appropriate body movement. You may wish to say the vocabulary words in a running story. When a vocabulary word is heard, the students should perform the appropriate body movement.

Student Support Materials

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

SPEAKING



Actions!

Group the students together in front of you. Perform an action which represents one of the key vocabulary words. The students should say the vocabulary word for the action you perform. Repeat, using a different action for each vocabulary word.

One to Six

Provide each student with two blank flashcards. Each student should then write a number between one and six on each of his flashcards (one number per card). When the students' number cards are ready, toss two dice and call the numbers showing. Any student or students who have those two numbers must then identify a vocabulary picture you show. The students may exchange number cards periodically during this activity.

Picture Bingo

Give the students the mini pictures used earlier. Each student should place them face down on his/her desk. Then, have each student turn one picture face up. Say a vocabulary word. Any student or students who have the picture for that word face up must say a complete sentence using that vocabulary word. Those pictures should then be put to the side and other pictures turned over. Continue in this way until a student or students have no pictures left on their desks.

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.

Face

Mount the sight words around the classroom on the walls, board, and windows. Group the students into two teams. Give the first player in each team a flashlight. Darken the classroom, if possible. Say one of the sight words. When you say "Go," the students should turn their flashlights on and attempt to locate the sight word you said. The first player to do this correctly wins the round. Repeat until all players in each team have participated.

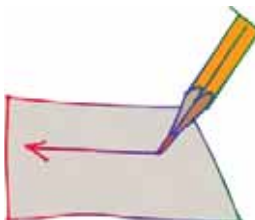
String Along

Join all of the students together with string (the students do not need to move from their seats). Before tying the ends of the string together, insert a roll of tape over one of the ends of the string. Tie the ends of the string together. Turn your back to the students. The students should pass the roll of tape along the string as quickly as possible. When you clap your hands, the student left holding the tape must then identify a sight word you show him. Repeat this process until many students have responded and until all of the sight words have been correctly identified a number of times.

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.

WRITING

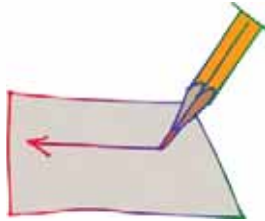


Let's Write

Provide the students with a copy of the creative writing page from the Student Support Materials. The students should write as much as they can about the graphic. Later, have each student read his/her writing to the class.

Science Language for Success—Lesson 2

WRITING (CONTINUED)



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.



VOCABULARY PICTURES





CHEMICAL





ELECTRICAL





ENERGY





HEAT





LIGHT





MATTER





MODEL





STATE

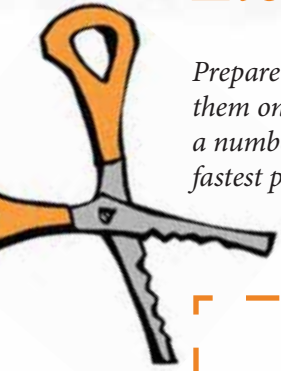


STUDENT SUPPORT MATERIALS

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 A model can be made using data from the real object. True
False
- ② Matter can be identified only by using other people’s opinions. True
False
- ③ The state of matter refers to solid, liquid, or gas. True
False
- ④ Energy is what we get when we hypothesize about our environment. True
False
- ⑤ Heat causes the parts of matter to slow down. True
False
- ⑥ Light travels in waves that can be measured. True
False
- ⑦ Chemicals are measurements that are based on identifying the states of matter. True
False
- ⑧ Electrical energy can be natural or man made. True
False



STUDENT SUPPORT MATERIALS

Sight Words




state

matter

model





light

heat

energy



electrical

chemical



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.



electrical
state

light
energy

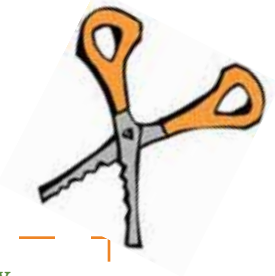
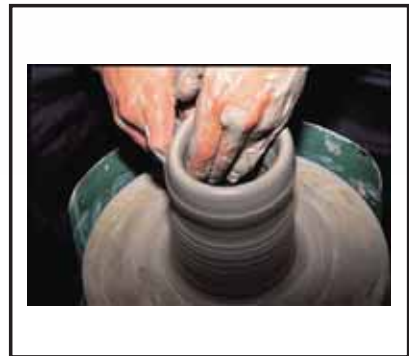
heat
model

matter
chemical

t e l m a t t e c t e n e r g y o m
e g m e l e l e c t r i c a l a c g
e l e c t r i c r l e s d s g e e e
t t d l t i l s t a t e a i a t a t
i e t s i m o d e d l g i a m l i l
e e g r t a m m l l s h e a t e m i
t l r e l e r l m t e i r t i n g a
t e o t r t e h h o r l i e t h e e
h e m a t t e r c e l c e e c c i i
e r e e e l i g h t r r t y h t m h
c m c e g i h l c a t i a e l c g r
l h e m o d e l g a n a e r h c r l
e a a t l t e s h e s c h e m i l c
e e r l a t h m c e e n e r g y a r
h i e m e e l i g i e a a e t a e t
m o t t l i n i a s t e m h l t e c
g e i r m g e e c m c c n t g a a h
m e m e t e l h l e c e l m a c g l
e m e s o y y m c h e m i c a l e a
c a c l e c e c e i r a t r a y t r

Sight Words Activity Page

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



model	matter	state	energy
heat	light	chemical	electrical



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.



i chem cal

lec cal tri e

gy ner e



Encoding Activity Page

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



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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 What do models show?
 - They show what chemicals are in our environment.
 - They show the measurements of heat.
 - They show state of matter.
 - They show the shapes of objects.

- ② What is matter?
 - It is the hypothesis that measures the state of an object.
 - It is everything around us.
 - It is the things that we classify based on our opinions.
 - It is what we predict about our environment.

- ③ What is the state of matter?
 - It is the level of heat that is identified.
 - It is the electrical energy that is measured.
 - It is the classification of matter around us.
 - It is the state of energy in a wet environment.

- ④ What is energy?
 - It is the state of matter, measured over time.
 - It is a part of everything that we do.
 - It is the chemical state of an object.
 - It is a model based on a hypothesis.

- ⑤ What does heat do to the parts of matter?
 - It makes the parts move slowly.
 - It measures the state of matter.
 - It identifies the electrical form.
 - It makes the parts move quickly.

Reading Comprehension Activity Page



- ⑥ What is true about light?
- Light is a state of matter that can be measured.
 - Light is matter found in the environment.
 - Light travels in waves.
 - Light communicates facts in our environment.
- ⑦ How would you describe a chemical?
- All chemicals are solids.
 - A chemical is the state of matter in a dry environment.
 - A chemical is a solid, liquid, or gas.
 - A chemical is light waves that can be measured.
- ⑧ What is electrical energy?
- It is the flow of electrical power or charge.
 - It is the matter that is measured by light.
 - It is the state of energy related to chemical changes in matter.
 - It is the matter found only in wet environments.

Reading Comprehension Activity Page

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



- | | |
|-----------------------------|---|
| ① A toy car is | ① that travels fast. |
| ② Matter is | ② are three states of matter. |
| ③ Liquid, solid, or gas | ③ that makes the parts of matter move faster. |
| ④ Electricity is a | ④ of a chemical. |
| ⑤ Heat is a type of energy | ⑤ a model. |
| ⑥ Light is a type of energy | ⑥ be natural or man made. |
| ⑦ Water is one example | ⑦ everything around us. |
| ⑧ Electrical energy can | ⑧ form of energy. |

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.



**everything
around us**

**This can cause the
parts of matter to
move faster.**

**This travels fast
in waves.**

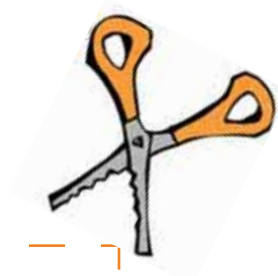
**This allows us to
do the things
we do—it has
two types.**

**something made
to show a
real thing**

**energy that can
be natural or
man-made**

**There are
many of these.**

**a liquid, solid,
or gas**



model	matter	state	energy
heat	light	chemical	electrical

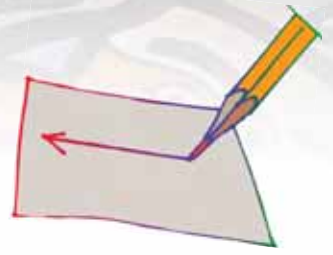


STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page

Have the students write in the missing letters.



mo _____

ma _____ **r**

st _____

en _____ **y**

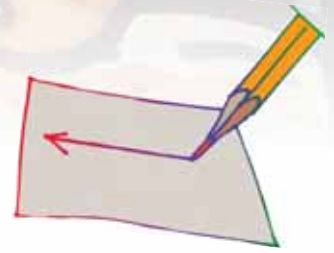
h _____ **t**

l _____ **t**

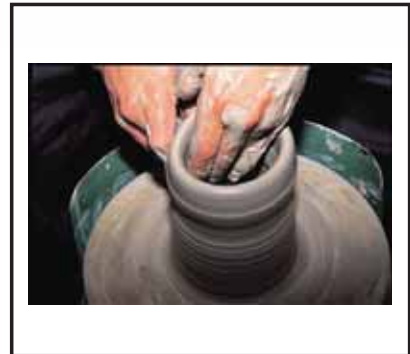
ch _____ **l**

el _____ **l**

Basic Writing Activity Page



Have the students write the word for each picture.

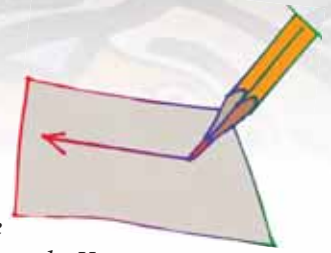




STUDENT SUPPORT MATERIALS

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.

MODEL

MATTER

STATE

ENERGY

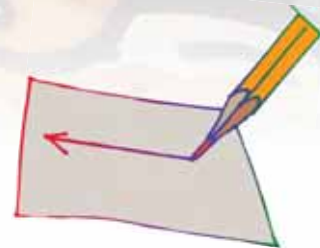
HEAT

LIGHT

CHEMICAL

ELECTRICAL

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

B-1: Concepts of Physical Science



SCIENCE PROGRAM

Unit Assessment Teacher's Notes
Grade 6 • Unit 3 (B-1)
Theme: Concepts of Physical 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 **MODEL**.
2. Write the number 2 on top of the picture for **MATTER**.
3. Write the number 3 on top of the picture for **STATE**.
4. Write the number 4 on top of the picture for **ENERGY**.
5. Write the number 5 on top of the picture for **HEAT**.
6. Write the number 6 on top of the picture for **LIGHT**.
7. Write the number 7 on top of the picture for **CHEMICAL**.
8. Write the number 8 on top of the picture for **ELECTRICAL**.

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. A model is bigger than the real thing.
2. Matter is a type of water found in Southeast Alaska.
3. Gas is one state of matter.
4. Energy can change from one form to another.
5. Heat is a form of energy.
6. Chemicals never change.
7. Light travels quickly.
8. Electrical energy makes things work.



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 3 (B-1)

Theme: Concepts of Physical 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



model
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state
energy
heat
light
chemical
electrical



model
matter
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- 
- 1 Models show
- how to classify objects.
 - how the real things will look.
 - how to make an opinion.
- 2 Matter is
- what things are made of.
 - a way of measuring things.
 - a way to differentiate data.
- 3 The state of matter can
- infer.
 - classify.
 - change.
- 4 Which of these is a form of energy?
- data.
 - heat.
 - fact.
- 5 Heat is a form of energy that can make things go
- from cold to hot.
 - from dry to wet.
 - from hot to cold.
- 6 We can see things because of
- heat.
 - light.
 - data.
- 7 Chemicals can
- hypothesize.
 - change.
 - make an opinion.
- 8 Electrical energy
- measures models.
 - is an opinion.
 - makes things work for us.





MODEL

MATTER

STATE

ENERGY

HEAT

LIGHT

CHEMICAL

ELECTRICAL



UNIT 4

B-1: Concepts of Physical Science



KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

MECHANICAL

Place-Based Perspective

Before the lesson begins, collect common items that were made by machines, such as clothing, tools, and dishes. Present the materials, calling upon the students to tell what is the same about all of the items. Lead them to suggest that all were made by machine; use this to introduce “mechanical”. Have the students cite other mechanically-produced items.

Heritage Cultural Perspective

Traditionally, the Native people of Southeast Alaska used mechanical inventions for survival. This included the use of snares to trap bears and special hooks with moveable parts to catch salmon. The bow and arrow was another mechanical device used.

SUBSTANCES

Place-Based Perspective

Show the students a sample of table salt. Have them identify its characteristics—it’s white, it’s solid, and it dissolves in liquid. Lead the students to understand that substances, like salt, are forms of matter that have constant properties. For example, salt that is dissolved in liquid still has the chemical properties of salt. Have the students name other substances in their environment.

Heritage Cultural Perspective

Traditionally, Native people rendered substances such as seal fat and hooligan into oil. While this changed the state of the fat from solid to liquid, the oil still had all the elements of the fat.

SOLIDS

Place-Based Perspective

Place a rock and a glass of water in front of the students. Have them contrast the two—lead the students to suggest that solids have a definite shape and size while water (as a liquid) takes the shape of what it is in. Have the students identify how solids can change (for example, solids melt, dissolve, and burn).

Heritage Cultural Perspective

Traditionally, Native people of Southeast Alaska would press salmon eggs until they became a solid block. The people would eat the solid egg mixture for energy. Hoonah people pressed black seaweed into solid blocks. Solids, such as speckled black and white granite rocks, were used for cooking. They would heat the rocks and put them in a cooking container, such as a bentwood box or carved bowl.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

LIQUIDS

Place-Based Perspective

Show the students a large bottle of water and a picture of an airplane. Have them suggest the relationship between the two—the water would not be allowed on a plane if purchased before the security checkpoint. Have the students explain why this is so. Use this to introduce liquids—have the students name other liquids.

Heritage Cultural Perspective

The Native people of Southeast Alaska prepared many liquids. For example, they made fruit juice from berries and oils from hooligan and seal fat, and they brewed tea from Devil's Club.

GASES

Place-Based Perspective

Write the following numbers on the board: 78.09%, 20.95%, .93%, and .02%. Have the students suggest what the numbers might represent. Lead them to understand that they show the percentages of the major gases in the air: nitrogen—78.09%; oxygen—20.95%; argon—.93%; carbon dioxide—.02%. Use this to introduce the word “gases” to the students.

Heritage Cultural Perspective

Cottonwood or alderwood were and are still used by many Native people to smoke fish and meat. These woods emit a gas that protects the drying fish and a variety of game meats from flies. Fish heads would be buried in a pit until they fermented. In this process, they would emit a gas that would indicate their readiness for consumption. Steam, another form of gas, is used in the creation of bentwood boxes and the forming of canoes.

EXERT

Place-Based Perspective

Show a baseball and bat, a golf club and golf ball, a hammer and nail, or other similar materials. Have the students determine what is the same about all of the items. Lead them to understand that the items represent force that can be exerted on an item—the bat to the ball, hammer to the nail, etc. Have the students name other items that exert forces, including the force of the moon exerting force on the tides.

Heritage Cultural Perspective

Traditionally, daily life required exertion in a variety of ways. For example, the use of an adze, bow and arrow, a wedge, spears, knives and daggers, and clubs required exertion. The raising of a totem pole and the building of clan houses required great exertion. Creating dug-out canoes and paddling them also required exertion.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

FORCE

Place-Based Perspective

Collect a variety of items that can be used to represent different types of forces (for example, a whisk, a badminton racket, and a basketball). Have the students identify the forces that are used with the items. Identify other items that use normal force, friction, and circular forces. This might include sand paper, stir spoons, a pool cue, etc.

Heritage Cultural Perspective

When making a dug-out canoe, the log is steamed and then a spreader is used to provide the force necessary to widen the canoe. A mallet is used to force the spreader into place. Historically, daily life called for the use of force in a variety of ways. This would have included the grinding of cottonwood bark and ash, as well as seaweed. Rock scrapers were used to force the flesh from hides.

GRAVITY

Place-Based Perspective

Locate an item that is broken (for example, a cup or plate). Have the students suggest how the item was broken. Lead them to understand that it may have fallen—use this to introduce gravity to the students. Have the students identify ways in which gravity affects our daily lives.

Heritage Cultural Perspective

Gravity played varied roles in traditional Southeast Alaska life. For example, halibut hooks were weighted and lowered deep into the ocean. Weavers who made Chilkat robes used weights attached to the strands in the weaving process.



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.



Change

Group the students in pairs. There should be one student without a partner to be “it” for the first round of the activity. Have the students in each pair stand back to back, with elbows interlocked. Tell the students to listen for a specific word, sequence of words, or sentence. When the students hear the word, sequence, or sentence you said at the beginning of the round, they should drop arms and quickly find new partners. However, “it” must also find a partner—thus producing a new “it” for the next round of the activity.

Wild Cars

Make two “roads” on the floor using masking tape. Be certain that there are a number of curves and circles in the roads. The roads should stretch for at least ten feet. If you have a floor rug, chalk may be used to fashion the roads. Place a toy car at the beginning of each road. Lay the vocabulary pictures at the end of the roads. Have a student sit beside each car. Name one of the vocabulary pictures and say “Go.” The two students should “drive” their cars along the roads as quickly as they can. The winner is the player who first parks his car on the picture for the vocabulary word you said.

Student Support Materials

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

SPEAKING



Cat’s Cradle

Group the students in a circle, sitting on the floor. Provide each student with a vocabulary picture (prepare extra pictures if necessary). The students should stand their vocabulary pictures on the floor, leaning against their legs. Give a student in the circle a ball of string. The student should hold the end of the ball of string and then say the name of a vocabulary picture that another student has. After identifying the picture, he/she should then toss the ball of string to the student who has that picture (being careful to hold tightly to his/her end of the string). The student who receives the ball of string must then repeat this process—tossing the ball of string to another student in the circle. The students should continue in this way until a “cat’s cradle” has been created with the string in the center of the circle. This activity may be repeated more than once by collecting and redistributing the pictures for each new round.

Science Language for Success—Lesson 2

SPEAKING (CONTINUED)



Roll ‘Em Again!

Mount the vocabulary pictures on the board. Number each picture using the numbers one to six (repeat a number as often as necessary). Then, group the students into two teams. Give the first player in each team a die. When you say “Go,” the first player in each team must roll his/her die. He/She should call the number showing on it and then say a complete sentence about a vocabulary picture on the board that has the same number. Repeat this process until all students have participated.

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.

Configurations

Before the activity begins, print the sight words on an overhead transparency sheet (fill the transparency with words). Place the transparency on an overhead projector and project the sight words onto the board. Review the sight words with the students. Then, outline each of the sight words on the board with chalk. When a configuration has been created for each sight word, turn the overhead projector off. Then, point to one of the configurations and call upon a student to identify the sight word for the configuration. Continue in this way until all of the sight words have been correctly identified. You may wish to turn the projector on momentarily to verify a student’s response.

Letter Encode

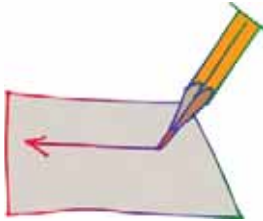
Give each student his/her envelope that contains the alphabet letters. Mount one of the science pictures on the board. The students must use the cut-out letters to spell the word. Review the students’ work. Repeat, until all of the words have been spelled in this way.

Student Support Materials

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

Science Language for Success—Lesson 2

WRITING



Watch Your Half

Prepare a photocopy of each of the vocabulary pictures. Cut the photocopied pictures in half. Keep the picture halves in separate piles. Group the students into two teams. Give all of the picture halves from one pile to the players in Team One. Give the picture halves from the other pile to the players in Team Two. Say a vocabulary word. When you say “Go,” the student from each team who has the picture half for the vocabulary word you said should rush to the board and write the word on the board. The first player to do this correctly wins the round. Repeat until all players have participated. This activity may be played more than once by collecting, mixing, and redistributing the picture halves to the two teams.

Back Writing

Group the students into two teams. Have the first player from each team stand in front of the board. Use the index finger of your writing hand to “write” the first letter of a sight word on the two players’ backs. When you have done this, say “Go”. Each of the players should then write a sight word on the board that begins with that letter. Repeat with other pairs of players until all players in each team have played and until all sight words have been written a number of times.

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





EXERT





FORCE





GAS





GRAVITY





LIQUID





MECHANICAL





SOLID





SUBSTANCE

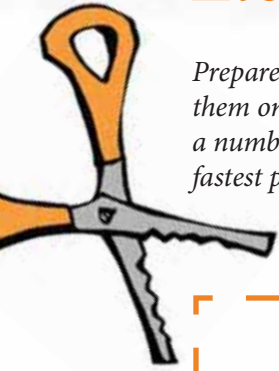


STUDENT SUPPORT MATERIALS

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 Mechanical things never use force. | True
False |
| ② A substance is a form of energy that can be measured. | True
False |
| ③ A solid has a definite shape. | True
False |
| ④ A liquid can change its shape based on the container it is in. | True
False |
| ⑤ Gases fill whatever space is available. | True
False |
| ⑥ When playing baseball, no force is exerted on the baseball during a home run. | True
False |
| ⑦ Gravity exerts force on all things on the earth. | True
False |
| ⑧ Light is a force that exerts pressure on data. | True
False |



STUDENT SUPPORT MATERIALS

Sight Words



solid

substance

mechanical





exert

gas

liquid



force

gravity



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.



gas
liquid

solid
exert

force
mechanical

gravity
substance

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

Sight Words Activity Page

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



mechanical	substance	solid	liquid
exert	gravity	gas	force



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.



chan || cal || i || me

ces || sub || stan

vi || gra || ty



Encoding Activity Page

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



mecha

stance

sub

quid

so

ert

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nical

g

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ex

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as

for

lid





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 is mechanical?
 - an apple
 - data
 - a machine
 - a gas

- ② How is a substance different from a mixture?
 - A substance is found in a state of electrical measurement.
 - A substance is pure and a mixture is not.
 - A substance has data that is not shared with a mixture.
 - A substance is a mix of matter and a mixture is pure.

- ③ What are the things that we know about solids.
 - Solids change their shapes based on the containers they are in.
 - Solids will fill up any space that they are put in.
 - Solids are a form of heat that causes chemical changes in matter.
 - Solids have both shape and size.

- ④ What are the things that we know about liquids?
 - You cannot measure liquids.
 - Liquids change their shapes based on the containers they are in.
 - Liquids are always pure.
 - Liquids always have the same shape and size.

- ⑤ What do we know about gases?
 - Gases are solids that identify data in matter.
 - Gases will fill whatever space they are in.
 - Gases melt in hot environments.
 - Gases create electrical energy that can be observed.

Reading Comprehension Activity Page



- ⑥ What does it mean to exert a force on something?
- It means to study the data from it.
 - It means to hypothesize about the state of the matter.
 - It means to put pressure on it.
 - It means to identify the best opinion for the problem.
- ⑦ Which one is caused by gravity?
- a mudslide
 - a hot-air balloon
 - a hypothesis
 - an environment
- ⑧ Which one of these uses a force?
- cutting an apple in half
 - looking at data
 - describing a communication you had
 - talking about the electrical light in the environment

Reading Comprehension Activity Page

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



- | | |
|-----------------------|--|
| ① Mechanical energy | ① fill whatever space it is in. |
| ② A substance | ② force on the earth. |
| ③ Solids | ③ by the moon. |
| ④ Liquids will | ④ is found in machines. |
| ⑤ A gas will | ⑤ have both shape and size. |
| ⑥ Gravity exerts | ⑥ when you pull a wagon. |
| ⑦ Gravity is affected | ⑦ is not a mixture. |
| ⑧ You use force | ⑧ change their shapes in different containers. |

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.



This relates to machines.

Air is made of these.

This has shape and size that doesn't change on its own.

This keeps us from floating in space.

While their state may change, their properties remain the same.

to put force on something

This will fill any container and change shape.

This is what we exert when we push a car.



mechanical	substance	solid	liquid
exert	gravity	gas	force

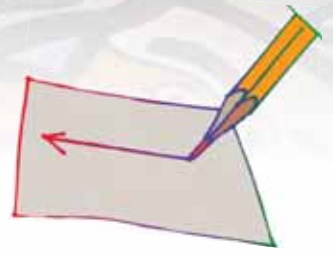


STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page

Have the students write in the missing letters.



me _____ l

sub _____ e

s _____ d

l _____ d

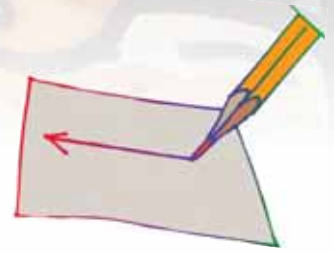
g _____

ex _____

gr _____ y

f _____ e

Basic Writing Activity Page



Have the students write the word for each picture.

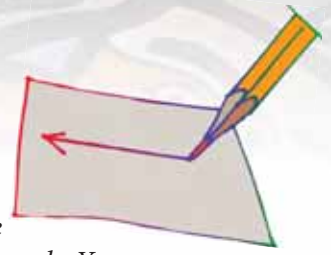




STUDENT SUPPORT MATERIALS

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.

MECHANICAL

SUBSTANCE

SOLID

LIQUID

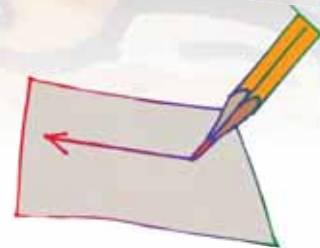
GAS

EXERT

GRAVITY

FORCE

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

B-1: Concepts of Physical Science



SCIENCE PROGRAM

Unit Assessment Teacher's Notes
Grade 6 • Unit 4 (B-1)
Theme: Concepts of Physical 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 **MECHANICAL**.
2. Write the number 2 on top of the picture for **SUBSTANCES**.
3. Write the number 3 on top of the picture for **SOLID**.
4. Write the number 4 on top of the picture for **LIQUID**.
5. Write the number 5 on top of the picture for **GAS**.
6. Write the number 6 on top of the picture for **EXERT**.
7. Write the number 7 on top of the picture for **GRAVITY**.
8. Write the number 8 on top of the picture for **FORCE**.

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. Mechanical things help us to do things.
2. Data is one form of substance.
3. Air is an important solid.
4. Liquids can move from one area to another.
5. A gas is a solid that turns into a liquid.
6. We exert gravity on data when we hypothesize.
7. Gravity is a force that makes things fall to the earth.
8. Gas is a force that helps us to measure data.



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 4 (B-1)

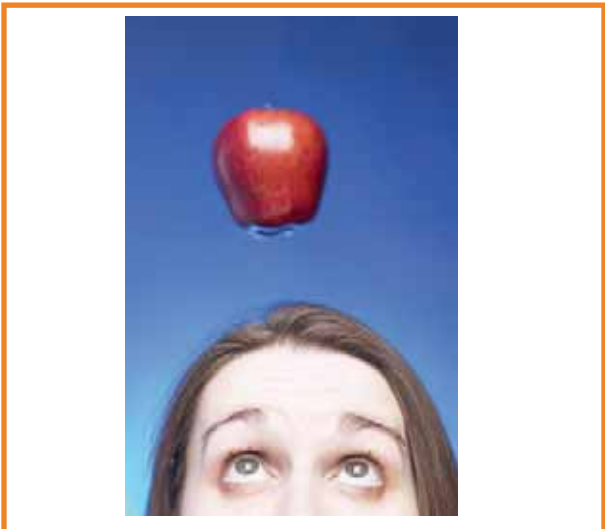
Theme: Concepts of Physical Science

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



mechanical
substances
solid
liquid
gas
exerts
gravity
force



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- 
- 1 Mechanical things
- stop us from working.
 - can help us to work.
 - are gases.

- 2 Substances
- take up space.
 - identify data.
 - measure facts.

- 3 A solid
- is an opinion.
 - has shape.
 - is liquid.

- 4 Liquids
- are solids.
 - are light energy.
 - can move.

- 5 Air is made of
- solids.
 - liquids.
 - gases.

- 6 We can exert energy on
- data.
 - opinions.
 - solids.

- 7 Gravity makes things
- go up.
 - fall down.
 - classify.

- 8 A force can make
- change.
 - no change.
 - infer data.





MECHANICAL

SUBSTANCES

SOLID

LIQUID

GAS

EXERTS

GRAVITY

FORCE



UNIT 5

C-1: Concepts of Life Science



KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

REPRODUCTION

Place-Based Perspective

Before the lesson begins, collect samples of plant seeds. Present the seeds to the students, and have them suggest how to use them to create new plants. Use this to introduce “reproduction” to the students. Lead the students to understand that a woman releases one egg or human seed per month. One sperm can fertilize the egg and the woman is then pregnant.

Heritage Cultural Perspective

Native people of Southeast Alaska have always been aware of the reproductive cycles of wildlife in their environment. For example, they had to be aware of the reproductive cycles in fish to collect fish eggs—an important food source. Throughout Southeast Alaska, herring eggs, salmon eggs, and hooligan eggs are plentiful during the spring, summer, and fall.

ADAPT

Place-Based Perspective

Collect samples of clothing that represent different weather forms. Present the samples to the students, calling upon them to suggest when each clothing item would be worn. Relate this adaptation of clothing to the weather to ways in which plants and animals adapt to their environments. Cite examples, such as camouflage, and the development of thick hair and layers of fat.

Heritage Cultural Perspective

The Native people of Southeast Alaska adapted to life in their environment through the foods they ate, their clothing, their living structures, their tools, and their transportation. In addition, Native people adapted to new ideas, standards, religions, and education after contact with Europeans.

EXTERNAL

Place-Based Perspective

If a part of a vehicle is available, show it to the students. Have the students identify where the item goes on or in a vehicle. If an actual part is not available, use a model. Direct the students’ attention to the external parts of the vehicle.

Heritage Cultural Perspective

Traditionally, some Native people believed that fishing equipment and paraphernalia should never be brought into a clan house. This would cause bad luck in fishing. Therefore, all fishing items were stored externally from the clan house.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

INTERNAL

Place-Based Perspective

Use an actual vehicle part or a model of a vehicle to direct the students' attention to the internal parts of a vehicle. Relate both external and internal to other contexts, such as building structures and the human body.

Heritage Cultural Perspective

A number of Native head pieces are designed with internal components. During a ceremony, the performer opens the external covering of the head piece to expose the internal component of the piece.

DICHOTOMOUS KEY

Place-Based Perspective

A dichotomous key is a tool that allows people to identify things in nature, including plants, rocks, and animals, to name a few. There are two parts, thus the label "dichotomous". Show the containers of two food items; have the students decide whether the foods are sweet, not sweet, hot, cold, etc. Use this as an analogy for the dichotomous key when applied to things in the environment.

Heritage Cultural Perspective

Native people have always identified wildlife—including fish, insects, animals, and plants—by their physical attributes. Native people used features such as appearance, smell, and feel to identify things in nature.

MIGRATION

Place-Based Perspective

Place a tray of soil in front of the students. Use models of houses to create a community on one side of the tray. Create a small river beside the community. On the other side of the tray, create a larger river. Pour water into the large river. Have the students imagine what the people in the community would do if their river dried up—they would most likely migrate to the bigger river. Relate this to migration in nature.

Heritage Cultural Perspective

The Taku River and Inlet are named after the Tlingit name for the Canada Goose. The geese migrated down the river from Canada and up the river to the Interior. Native people of Southeast Alaska have migration songs that relate to their trek into Southeast Alaska.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

COMMUNICATION

Place-Based Perspective

Show the students a set of earphones and a pen. Have them tell what is the same about the two items. Lead the students to understand that both can be used for communication. Have the students cite other forms of communication, such as television, computers, and newspapers.

Heritage Cultural Perspective

Body language has always played a vital role in communication among Native people. In addition, box drums were used to alert people to dangers. Also, there was a system in place in which the brother-in-law of a family was used to communicate with other clans in various communities.

HIBERNATION

Place-Based Perspective

Prepare a mock bag of garbage. Show it to the students, telling them that the bears did not bother the garbage—have them determine why. Lead the students to understand that if the garbage were out in the winter, the bears were hibernating and would not have been around. Cite other examples of wildlife that hibernate.

Heritage Cultural Perspective

In the the story “The Woman Who Married the Bear”—the woman hibernates with the bear.



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.



Turn and Face

Mount the vocabulary pictures on the walls and board. Group the students together in the center of the classroom. Say one of the vocabulary words and the students should turn to face the picture for the word you said. Depending upon the size of your class, this activity may be done in small groups. This activity may also be done in team form. In this case, have a player from each team stand in the center of the classroom. When a player faces the wrong direction (i.e., the wrong picture), he/she is “out” until a later round of the activity. Repeat until all players have had an opportunity to participate.

Student Support Materials

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

SPEAKING



Balloon Volleyball

Group the students into two teams. The two teams should stand, facing one another. Toss a round, inflated balloon to the members of Team One. The members of Team One must then bounce the balloon to the members of Team Two. The players should continue to bounce the balloon back and forth in this way until a team loses the balloon. You may wish to establish the rule that players may not move their feet during the activity. When a team loses the balloon, show them a vocabulary picture and all team members in that team must say the vocabulary word for it. Repeat until players in both teams have responded a number of times.

Slip String

Mount the vocabulary pictures on the board. Join all of the students together with a long length of string. Before tying the ends of the string together, insert a roll of tape over one end of the string (a large washer can also be used). Then, tie the ends of the string together. Face away from the students. The students should then pass the roll of tape as quickly as possible along the string. When you clap your hands, the student who is holding the roll of tape, must identify (orally) a vocabulary picture you point to. For added motivation, you may wish to place more than one roll of tape (or washer) on the line of string. Repeat until many students have responded.

Science Language for Success—Lesson 2

SPEAKING (CONTINUED)



Roll ‘Em Again!

Mount the vocabulary pictures on the board. Number each picture using the numbers 1 to 6 (repeat a number as often as necessary). Then, group the students into two teams. Give the first player in each team a die. When you say “Go,” the first player in each team must roll his/her die. He/She should call the number showing on it and then say a complete sentence about a vocabulary picture on the board that has the same number. Repeat this process until all students have participated.

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.

Deal

Before the activity begins, obtain two decks of playing cards. Give all of the cards from one deck to the students (if possible, arrange it so that all students have the same number of cards). Mount the sight words on the board. Hold a playing card from the other deck of cards against one of the sight words on the board. The student who has the matching playing card must identify the sight word. When the student has done this correctly, he/she should place that playing card to the side. Continue in this way until a student or students have no playing cards left in their hands.

Letter Encode

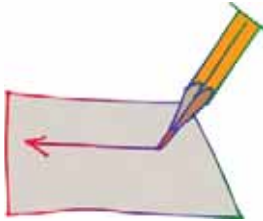
Give each student his/her envelope that contains the alphabet letters. Mount one of the science pictures on the board. The students must use the cut-out letters to spell the word. Review the students’ work. Repeat, until all of the words have been spelled in this way.

Student Support Materials

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

Science Language for Success—Lesson 2

WRITING



Mirror Writing

Group the students into two teams. Have the first player from each team stand in front of the board. Give each of the two players a small, unbreakable mirror. Stand some distance behind the two players with pictures for the sight words. Hold up one of the pictures. When you say “Go,” the players must use the mirrors to look over their shoulders to see the picture you are holding. When a player sees the picture, he/she must write the sight word for that picture on the board. The first player to do this correctly wins the round. Repeat this process until all players in each team have had an opportunity to respond.

Yarn Spell

Group the students into two teams. Give the first player in each team lengths of yarn or string. Say a vocabulary word. When you say “Go,” the first player in each team must then use the yarn or string to “write” the word on the floor. The first player to complete his/her word wins the round. Repeat this process until all players in each team have played. If pipe cleaners are available, they may be used in place of the yarn or string (have both long and short lengths of the pipe cleaners ready for the activity).

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



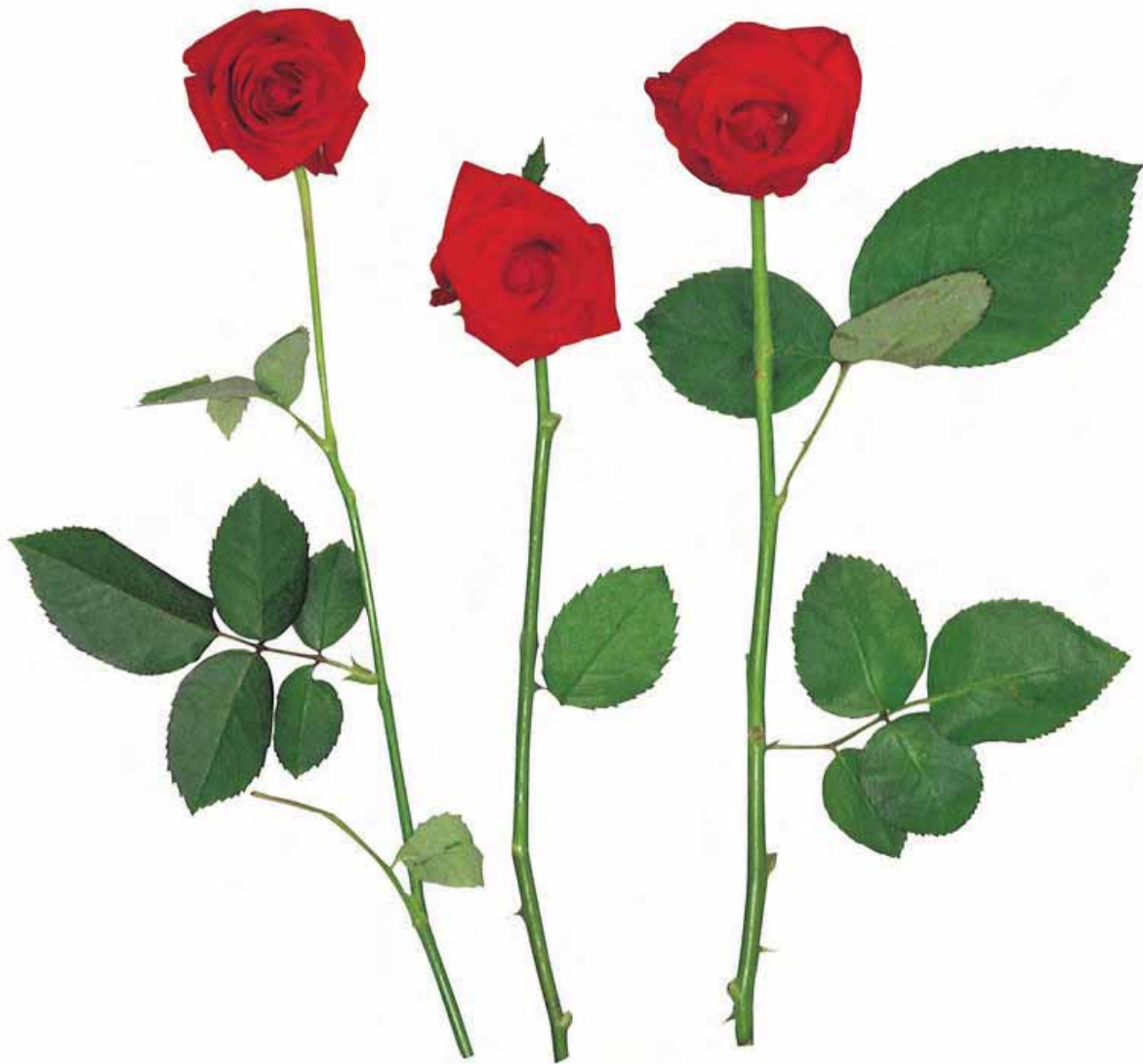


ADAPT





COMMUNICATION





DICHOTOMOUS KEY



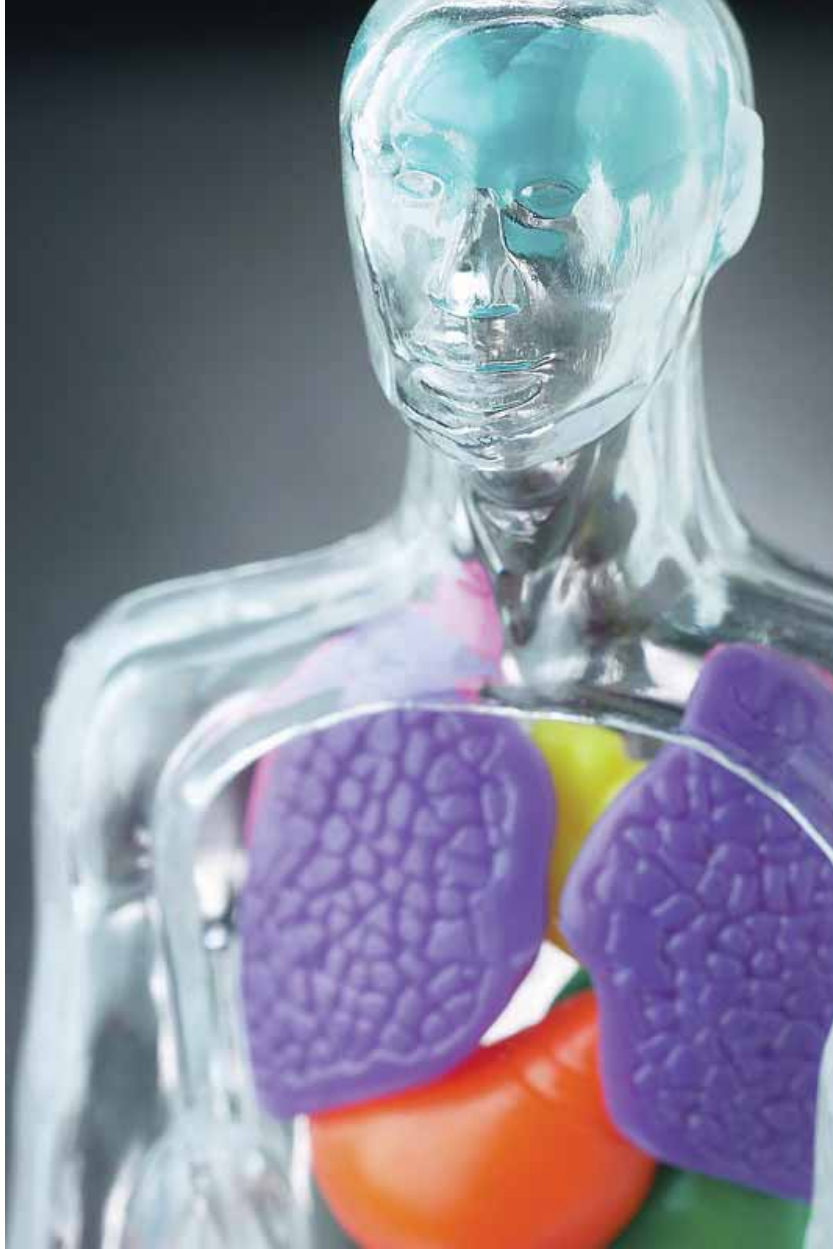


EXTERNAL





HIBERNATION





INTERNAL





MIGRATION





REPRODUCTION

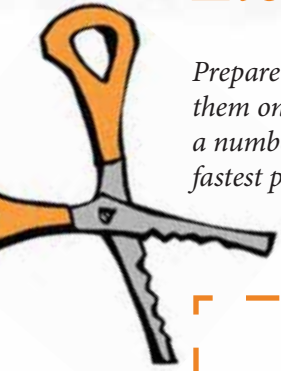


STUDENT SUPPORT MATERIALS

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 Reproduction can happen with humans, plants, and animals. True
False
- ② Adapting to an environment means to classify matter by its heat. True
False
- ③ The fins of a fish are external. True
False
- ④ Internal body parts are located outside of the body and can be identified. True
False
- ⑤ A dichotomous key is a tool to help us collect data. True
False
- ⑥ A migration is when a state of matter changes because of chemical forces. True
False
- ⑦ Sign language is an example of a form of communication. True
False
- ⑧ Hibernation is the time when all matter is in a liquid state. True
False



STUDENT SUPPORT MATERIALS

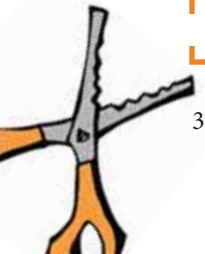
Sight Words



external

adapt

reproduction





dichotomous key

internal

hibernation



communication

migration



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.



migration
adapt
external

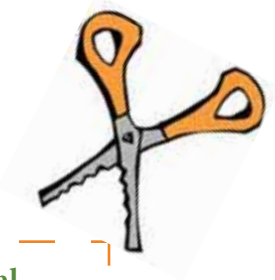
communication
internal
reproduction

hibernation
dichotomous key

e n e a a o o r i b a r r t h r k n
d t c l o a a t i t a a o n a r n u
i d y h d i c h o t o m o u s k e y
c a n t r n t r t e x t e r n a l o
a n r u c o m m u n i c a t i m t o
i o i n t e r n a t o t e n n d c n
d t y a o o r e p r o d u c t i o n
g t i c o m m u n i c a t i o n t t
n a n n t h m o m i g r a t i r i n
i r o n t e l i n t e r n a l i o e
h i b e r n a t i o n a u o o a m a
o e h i b e r n a t r e i b a a t k
o n o a a u i t d n t o l t i r p r
r i n u x i a d a p t o t i t h a d
i o t d o e e x t e r n m i o i y i
k g e n n o c d r e p r o d u c t e
i d i c h o t o m o u s k e t t l o
c a a l t k d h l a d m s c i r n n
c m i g r a t i o n n c c t r y b k
m l n o x s n i m r o n c r d r m e

Sight Words Activity Page

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



reproduction	adapt	external	internal
dichotomous key	migration	hibernation	communication



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.



pro tion re duc

nal ex ter

ter nal in

to di mous cho



Encoding Activity Page

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



tion || mi || gra

com || ni || ca || mu || tion

ber || tion || na || hi



Encoding Activity Page

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



hiber

gration

communi

nal

mi

ternal

dichoto

nation

inter

duction

ex

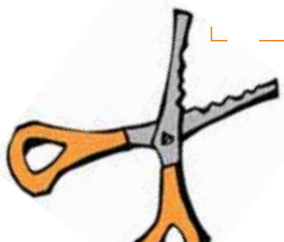
dapt

repro

cation

a

mous key





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 What is reproduction?
 - It is the making of more of the same species.
 - It is the data that is collected about matter.
 - It is the making of a model.
 - It is the use of gravity to change substances.

- ② What is one thing that can cause plants and animals to adapt?
 - gases that are exerted on the environment
 - chemicals that are used for data
 - the environment
 - mechanical reproduction of tools

- ③ How would you describe a person's hair?
 - It is data collected in a chemical environment.
 - It is an external body part.
 - It is an internal body part.
 - It is a force affected by gravity.

- ④ What is an example of an internal thing?
 - a hand
 - a foot
 - a nose
 - a stomach

- ⑤ What is a dichotomous key?
 - a tool to help identify plants, animals, rocks and other things
 - a tool to measure the heat in an environment
 - a tool to predict weather
 - a tool to measure the energy found in a liquid

Reading Comprehension Activity Page



- 6 What is one cause of migration?
- solids
 - gases
 - climate
 - substances
- 7 Which of these is a form of communication?
- writing the data found from measuring substances
 - thinking about what you will say next
 - sleeping in a dry environment because of heat
 - sitting still until the state of matter changes
- 8 Hibernation is
- when a plant or animal changes from liquid to solid.
 - when a plant or animal identifies gases in the environment.
 - when a plant or animal exerts a force in a room.
 - when a plant or animal is in a sleeping state.

Reading Comprehension Activity Page

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



- | | |
|-------------------------------|--------------------------------------|
| ① Reproduction makes | ① an internal body part. |
| ② Animals can adapt | ② used to identify things in nature. |
| ③ The fins of a fish | ③ to share information with others. |
| ④ A person's stomach is | ④ babies. |
| ⑤ A dichotomous key is a tool | ⑤ during the winter. |
| ⑥ Migration can be | ⑥ to their environments. |
| ⑦ Communication is important | ⑦ are external body parts. |
| ⑧ Some wildlife hibernate | ⑧ caused by climate changes. |

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.



This makes more of the same plant or animal.

This is change.

This is on the outside.

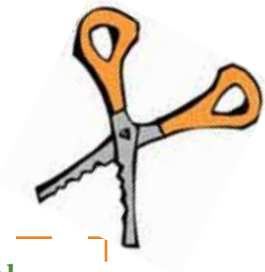
This is on the inside.

This is a tool.

This means that things move from one place to another.

This can be the sharing of information with others.

This is a state that some plants and animals go into in the winter.



hibernation	migration	dichotomous key	internal
external	adapt	reproduction	communication

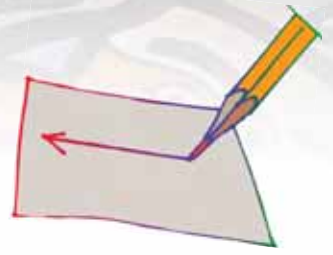


STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page

Have the students write in the missing letters.



hi _____ n

com _____ n

mig _____ n

dich _____ key

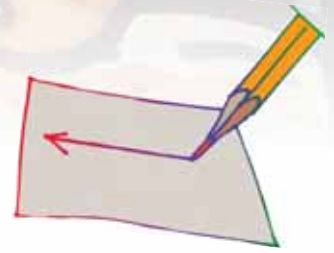
in _____ l

ex _____ l

ad _____

repro _____

Basic Writing Activity Page



Have the students write the word for each picture.

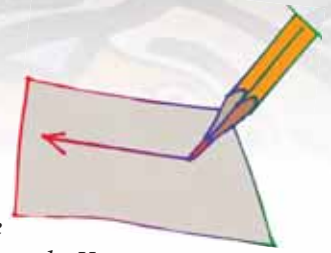




STUDENT SUPPORT MATERIALS

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.

HIBERNATION

COMMUNICATION

MIGRATION

DICHOTOMOUS KEY

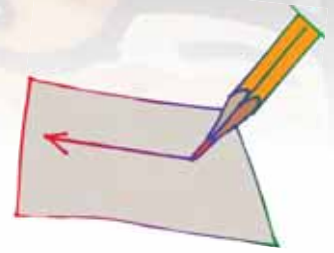
INTERNAL

EXTERNAL

ADAPT

REPRODUCTION

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

C-1: Concepts of Life Science



SCIENCE PROGRAM

Unit Assessment Teacher's Notes
Grade 6 • Unit 5 (C-1)
Theme: Concepts of Life 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 **REPRODUCTION**.
2. Write the number 2 on top of the picture for **ADAPT**.
3. Write the number 3 on top of the picture for **EXTERNAL**.
4. Write the number 4 on top of the picture for **INTERNAL**.
5. Write the number 5 on top of the picture for **DICHOTOMOUS KEY**.
6. Write the number 6 on top of the picture for **MIGRATION**.
7. Write the number 7 on top of the picture for **COMMUNICATION**.
8. Write the number 8 on top of the picture for **HIBERNATION**.

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. Reproduction is a gas exerted by solids.
2. Animals and plants adapt to their environments.
3. External things are on the outside.
4. Our stomachs are internal organs.
5. The dichotomous key helps us to collect data.
6. Migration is when liquids move from one place to another.
7. Reading is a form of communication.
8. Hibernation is when data measures a solid.



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

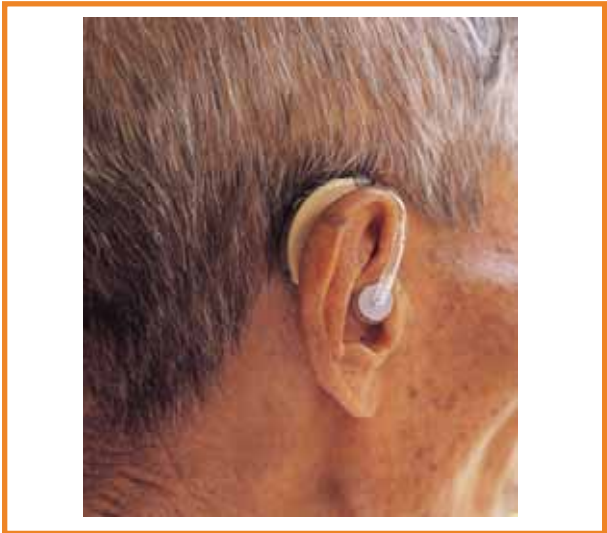
Unit Assessment Student Pages
Grade 6 • Unit 5 (C-1)
Theme: Concepts of Life Science

Date: _____ Student's Name: _____

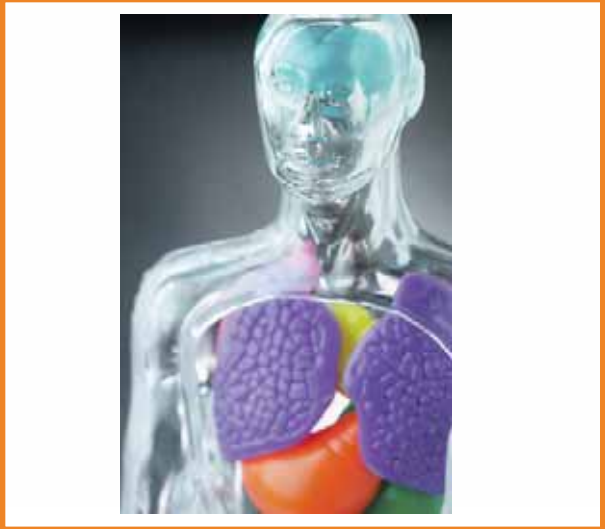
Number Correct: _____ Percent Correct: _____

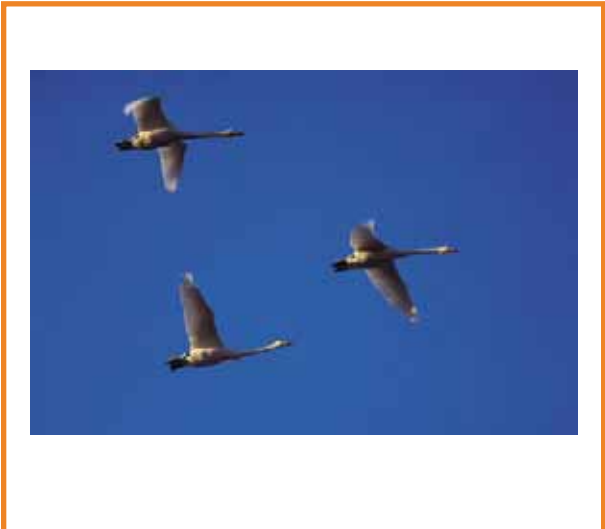














1. T F
2. T F
3. T F
4. T F
5. T F
6. T F
7. T F
8. T F



reproduction
adapt
external
internal
dichotomous key
migration
communication
hibernation



reproduction
adapt
external
internal
dichotomous key
migration
communication
hibernation



reproduction
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- 
- 1 Reproduction is when
- new living things are made.
 - data measures matter.
 - liquids are found in an environment.

- 2 Animals can adapt to
- data.
 - their environment.
 - gravity.

- 3 External things are
- on the inside.
 - on the outside.
 - on both the inside and the outside.

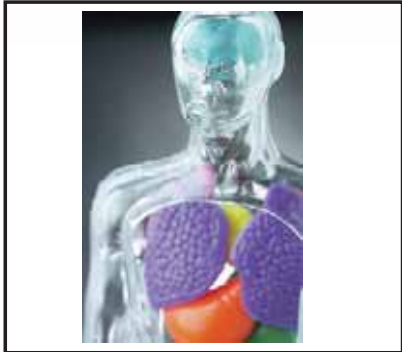
- 4 Our livers are
- internal.
 - external.
 - mechanical.

- 5 The dichotomous key helps us to
- adapt to new data.
 - identify things in the environment.
 - communicate with electrical energy.

- 6 Migration is when living things
- use the Dichotomous Key.
 - exert gravity on matter.
 - move from one place to another.

- 7 A computer can be one form of
- chemical energy.
 - gravity.
 - communication.

- 8 Hibernation happens during the
- winter.
 - summer.
 - migration.





REPRODUCTION

ADAPT

EXTERNAL

INTERNAL

DICHOTOMOUS KEY

MIGRATION

COMMUNICATION

HIBERNATION
