SCIENCE

FOR LANGUAGE DEVELOPMENT

GRADE 8 • 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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2009

Contents

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.

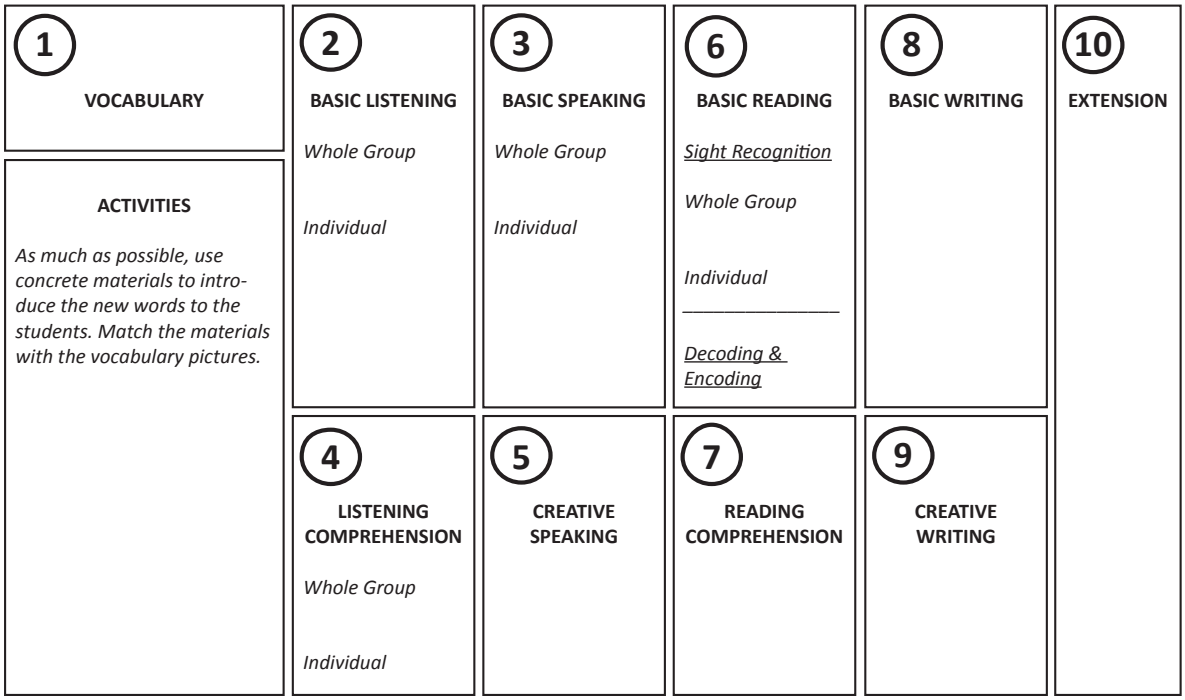
This program is designed to meet the academic realities faced by high school students every day, using a developmental process that integrates culture with skills development.

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

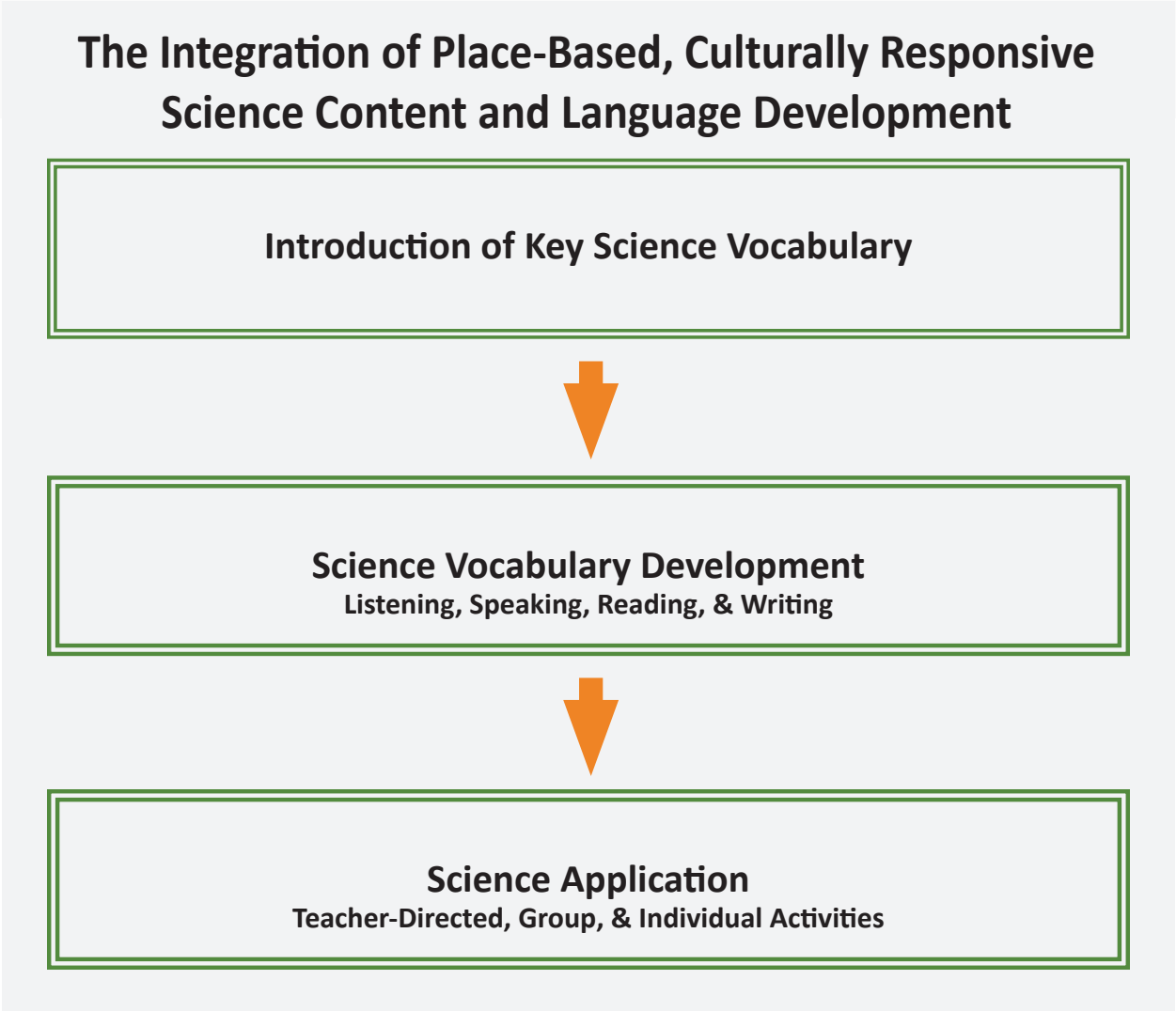


Finally, at the end of each unit, the students will participate in enrichment activities based on recognized and research-based best practices. By this time, the science information and vocabulary will be familiar, adding to the students' feelings of confidence and success. These activities will include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



UNIT 1

A–1: Science as Inquiry Process

KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

INTEGRITY

Place-Based Perspective

Show the students the picture of the Tlingit clan leader on page 17. Explain that he was a leader of his people and that leaders are expected to have integrity. If leaders are moral and honest, the people are more likely to support them. Ask the students who in their lives they see as having integrity.

Heritage Cultural Perspective

Behaving with dignity and integrity at all times is deeply entrenched in Tlingit and Haida culture and their customary laws. In fact, the Teslin Tlingit Nation of Canada included these principles as laws within their governing documents.

LOGICAL REASONING

Place-Based Perspective

Bring in the ingredients to make a peanut butter and jelly sandwich. Before showing the ingredients, ask the students what they are. Then ask the students to tell you the steps in making a peanut butter and jelly sandwich and do it as they tell you. Ask what would have happened if you put the jelly on the opposite side of the bread from the peanut butter. Explain that they came up with the steps using logical reasoning.

Heritage Cultural Perspective

Alaska Native peoples had to use logical reasoning to survive the harsh climatic conditions of the north. Rational decisions related to the weather, wildfires, hunting and fishing, sea travel, and almost every aspect of a traditional lifestyle were a necessity.

SKEPTICISM

Place-Based Perspective

Show the students a piece of paper that has been crumpled and torn. Tell them that it was a very important piece of paper and that your dog ate it. Have the students who believe you raise their hands. Explain that many of them probably had "doubts" that the paper was eaten by a dog — they had skepticism. Tell them that it's good to have at least a little skepticism because what appears to be truth is sometimes not.

Heritage Cultural Perspective

Alaska's Tlingit and Haida people had good reason to have skepticism regarding European intentions post-contact. Previously unknown peoples were coming to Alaska to take its land and resources, often without Native consent. Would you question someone's intentions if they raided your home and property?

Culturally Responsive & Place-Based Introduction of Science Vocabulary

OPENNESS

Place-Based Perspective

Show the students a globe and ask them to raise their hands if they believe that the Earth is round. Explain that at one time, people believed the earth was flat and that this was absolute. Some people who had "openness" to alternative explanations were able to consider other arguments. This openness eventually lead to the finding that the Earth is in fact round.

Heritage Cultural Perspective

The Native peoples of the Northwest coast had a level of openness to new ideas and ways of viewing the world around them. When they interacted with unfamiliar cultures, they often adopted some of the customs that would benefit themselves at home. They understood that lifelong learning was an important part of the human experience.

CONDUCT

Place-Based Perspective

Show the students the picture on page 25 of Haida people conducting a totem raising ceremony in Hydaburg. Ask the students what types of things they have been asked to conduct. Explain that conducting experiments in science is necessary in order to understand the world around us.

Heritage Cultural Perspective

Totem raisings continue to be conducted across Southeast Alaska. These ceremonies are often held in conjunction with a feast or ku.éex' (potlatch). The significance of the pole and stories of the crests are told including the right of clans to claim the crests.

RECOGNIZE

Place-Based Perspective

Ask students if they recognize the pictures of red baneberries on page 27. Explain that these are extremely poisonous and that it is important to recognize that they are not food items.

*Ask students to identify the recognizable characteristics of these species.

Heritage Cultural Perspective

There are many plants, berries, and mushrooms that Alaska Native peoples use as important parts of their diet and subsistence lifestyle. Over time, they have learned to recognize which items can cause severe sickness and even death. Recognition is VERY important!

Culturally Responsive & Place-Based Introduction of Science Vocabulary

PRESENT

Place-Based Perspective

Show the students the pictures of people hunting and fishing on page 29. Tell them that you are presenting them with two choices for which activity they prefer most. Keep a tally of each student's response to their preferred activity. "Present" the results of the tally to the students.

Heritage Cultural Perspective

The Chookaneidí Clan of the Tlingit was once presented with a dangerous situation. A glacier near their village began to advance rapidly, threatening their homes and lives. What decision would you make if presented with this same situation?

EXPLANATION

Place-Based Perspective

Show students the picture of a rough-skinned newt on page 31. Ask them to offer an explanation as to why it has a bright orange/red stomach. "Explain" to them that many animals that are brightly colored are poisonous or toxic if consumed.

*Ask students if they have seen these animals in Alaska and to "explain" where they were found.

Heritage Cultural Perspective

Rough-skinned newts are present throughout Southeast Alaska, typically living in bogs and muskegs. While they rarely if ever appear in Alaska Native art or stories, indigenous peoples undoubtedly found them frequently.

MODELS

Place-Based Perspective

Show the students the picture of a mammal metabolism on page 33. Explain that the way that the body works is complicated and that models can help us to make concepts a bit easier to understand. Explain that models are used to predict weather by incorporating many smaller concepts. Ask the students to list things that contribute to weather (i.e. temperature, mountains, oceans, winds etc.)

Heritage Cultural Perspective

In northern environments the weather can often change very quickly. Alaska Natives were able to model weather, in their own heads, to predict storms and other events. By recognizing many different signs from nature, people could prepare for extreme weather conditions.

LESSONS

Science Language for Success

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

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.

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.

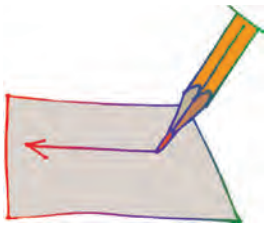
Letter Encode

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.

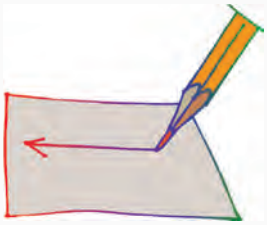
WRITING



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.

WRITING (CONTINUED)



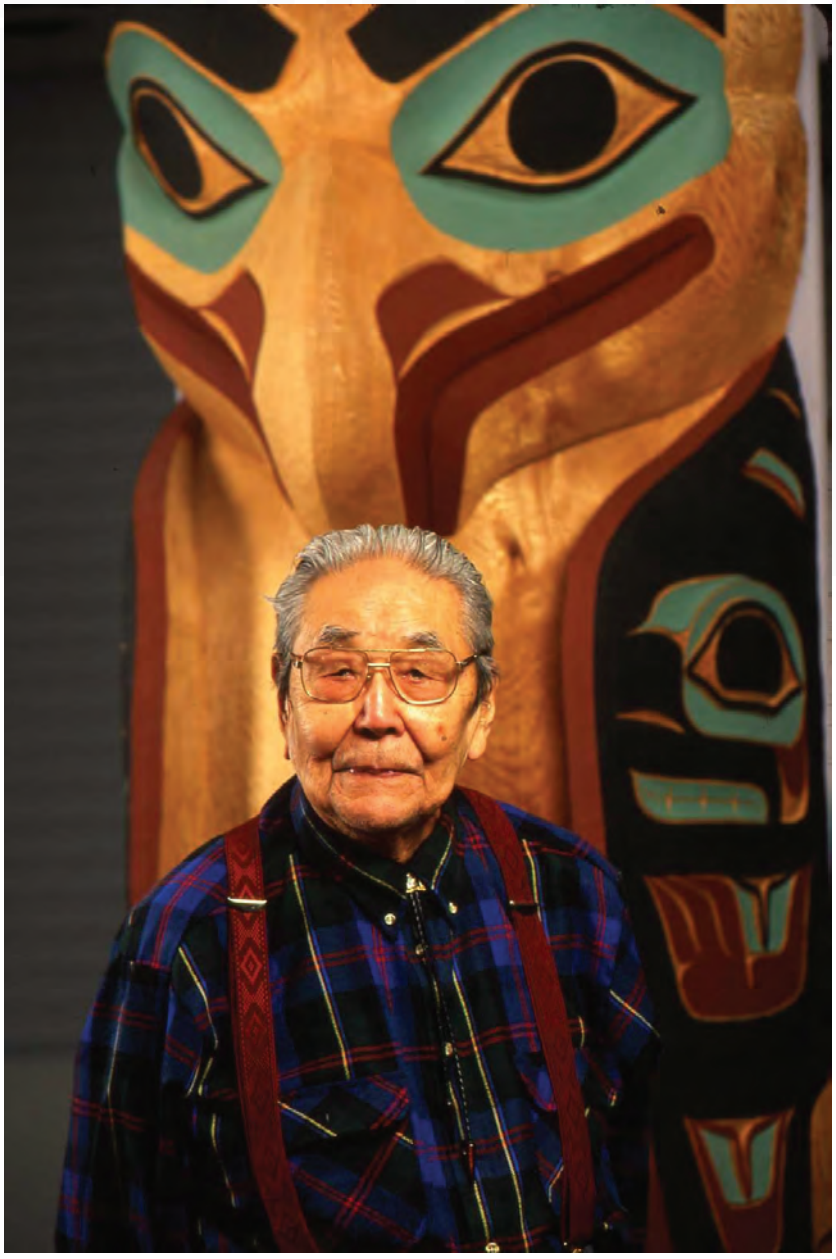
Sentence Completion

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.

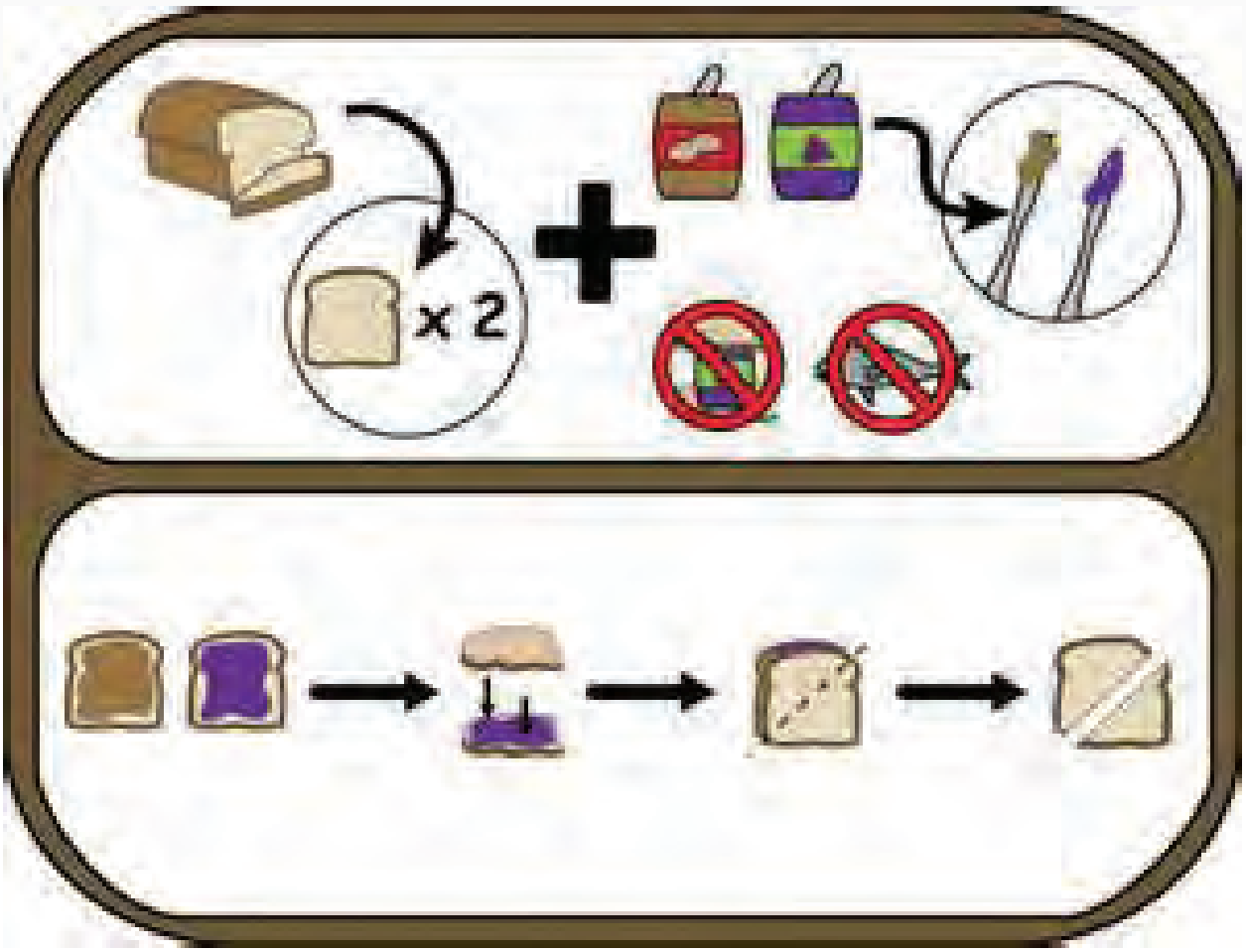
Student Support Materials

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

VOCABULARY PICTURES



INTEGRITY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LOGICAL REASONING

SKEPTICISM


New
Ideas

OPENNESS


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CONDUCT

RECOGNIZE

PRESENT

EXPLANATION

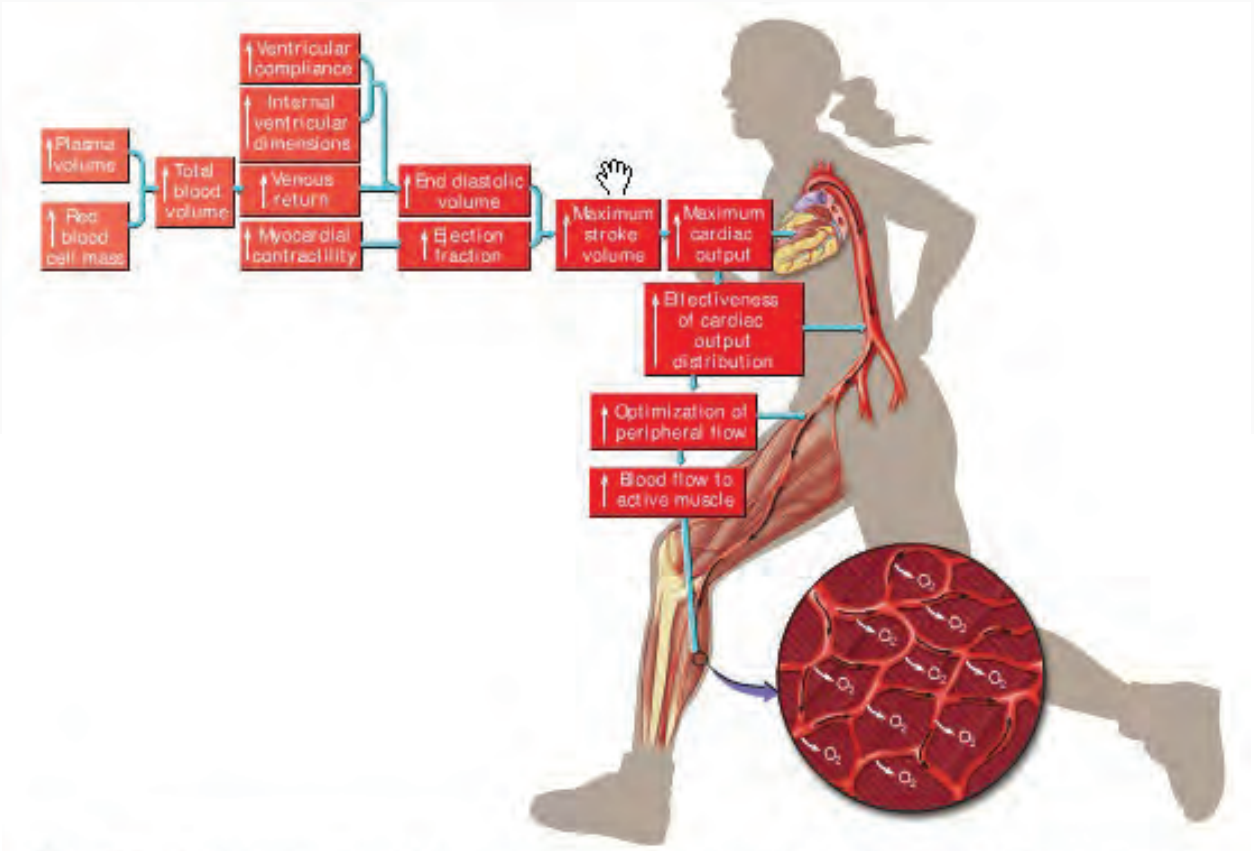


Figure 21.5 • Adaptations in cardiovascular function with aerobic exercise training that increase oxygen delivery to active muscles.

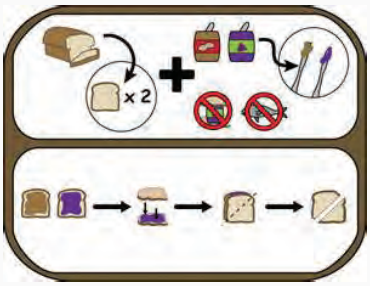
MODELS

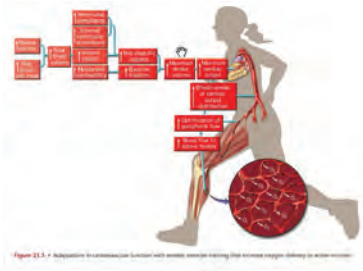
STUDENT SUPPORT MATERIALS

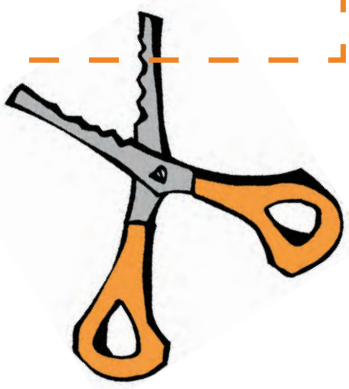
Listening • Mini Pictures

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.







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 scientist must have integrity and report true and accurate results.	**True** **False**
2	Logical reasoning is typically done by guessing and not by considering facts.	**True** **False**
3	A degree of skepticism is good when reviewing the results of experiments.	**True** **False**
4	Openness to alternative explanations is important in science.	**True** **False**
5	Scientists often conduct experiments to help understand the world around us.	**True** **False**
6	It is <u>not</u> very important to recognize poisonous and toxic foods.	**True** **False**
7	Scientists should present their findings so that others can use the information.	**True** **False**
8	There may be several explanations for the outcome of an experiment.	**True** **False**
9	Models are not useful for understanding complex concepts.	**True** **False**

Listening Comprehension: Answer Key

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 scientist must have integrity and report true and accurate results.	**True** / False
2	Logical reasoning is typically done by guessing and not by considering facts.	True / **False**
3	A degree of skepticism is good when reviewing the results of experiments.	**True** / False
4	Openness to alternative explanations is important in science.	**True** / False
5	Scientists often conduct experiments to help understand the world around us.	**True** / False
6	It is <u>not</u> very important to recognize poisonous and toxic foods.	True / **False**
7	Scientists should present their findings so that others can use the information.	**True** / False
8	There may be several explanations for the outcome of an experiment.	**True** / False
9	Models are not useful for understanding complex concepts.	True / **False**

STUDENT SUPPORT MATERIALS

Sight Words

integrity

logical reasoning

skepticism

openness

conduct

recognize

present

explanations

models

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.

explanations
integrity
present
skepticism
conduct
logical reasoning
recognize
openness
models

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

Sight Words Activity Page

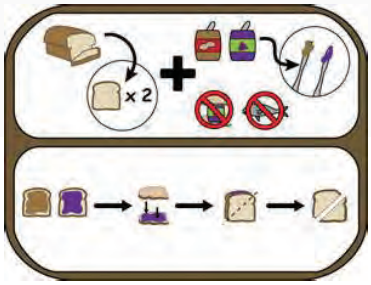
Answer Key

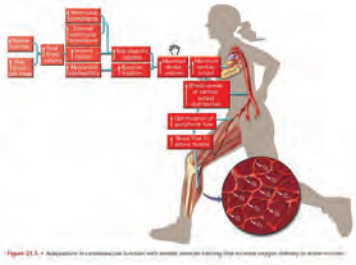
explanations
integrity
present
skepticism
conduct
logical reasoning
recognize
openness
models

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

Sight Words Activity Page

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





integrity | logical reasoning | skepticism | openness

conduct | recognize | present | explanations

models

Sight Words Activity Page

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

STUDENT SUPPORT MATERIALS

Basic Reading • Encoding

Encoding Activity Page

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

teg	in	ri	ty
_____	_____	_____	_____

i	log	cal
_____	_____	_____

rea	ing	son
_____	_____	_____

skep	cism	ti
_____	_____	_____

Encoding Activity Page

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

ness	pen	o
_____	_____	_____

duct	con
_____	_____

og	nize	rec
_____	_____	_____

Encoding Activity Page

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

ent	pres
_____	_____

ex	tion	pla	na
_____	_____	_____	_____

els	mod
_____	_____

Encoding Activity Page

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

integ	soning
logical rea	duct
skep	els
ope	nness
con	nize

Encoding Activity Page

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

recog	ation
pres	ticism
explan	ent
mod	rity

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. A scientist's integrity refers to his or her:
   - ❍ laboratory equipment
   - ❍ honesty
   - ❍ grant funding
   - ❍ math skills

2. What type of reasoning uses a rational systematic series of steps based on sound mathematical procedures to arrive at a conclusion?
   - ❍ educated guess
   - ❍ haphazard
   - ❍ intuitive
   - ❍ logical

3. Skepticism is doubting the _____ of something.
   - ❍ truth
   - ❍ size
   - ❍ extent
   - ❍ none of the above

4. One's openness to experimental findings suggests that he/she:
   - ❍ does not enjoy the subject matter
   - ❍ is uninterested
   - ❍ is completely convinced
   - ❍ is not completely convinced

5. What do scientists conduct?
   - ❍ orchestras
   - ❍ electricity
   - ❍ experiments
   - ❍ all of the above

Reading Comprehension Activity Page

6 It is important to recognize the difference between:

- ❍ edible and toxic foods
- ❍ Chinook and Sockeye salmon
- ❍ rough and calm seas
- ❍ all of the above

7 What do scientists do with the results of experiments?

- ❍ present them to others
- ❍ throw them in the trash
- ❍ flush them down the toilet
- ❍ make paper airplanes

8 When we put the knives, forks, and spoons in their own trays, we are

- ❍ making foods spicier
- ❍ measuring the amount of liquid in a beaker
- ❍ better understanding a concept or question
- ❍ polluting the environment

9 Models are useful tools for

- ❍ understanding complicated subjects
- ❍ looking at larger projects on a smaller scale
- ❍ teaching about large or dangerous concepts
- ❍ all of the above

Reading Comprehension Activity Page

ANSWER KEY

1. A scientist's integrity refers to his or her:
   - ❍ laboratory equipment
   - ● honesty
   - ❍ grant funding
   - ❍ math skills

2. What type of reasoning uses a rational systematic series of steps based on sound mathematical procedures to arrive at a conclusion?
   - ❍ educated guess
   - ❍ haphazard
   - ❍ intuitive
   - ● logical

3. Skepticism is doubting the _____ of something.
   - ● truth
   - ❍ size
   - ❍ extent
   - ❍ none of the above

4. One's openness to experimental findings suggests that he/she:
   - ❍ does not enjoy the subject matter
   - ❍ is uninterested
   - ❍ is completely convinced
   - ● is not completely convinced

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   - ❍ orchestras
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Reading Comprehension Activity Page

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- ❍ making foods spicier
- ❍ measuring the amount of liquid in a beaker
- ● better understanding a concept or question
- ❍ polluting the environment

9 Models are useful tools for

- ❍ understanding complicated subjects
- ❍ looking at larger projects on a smaller scale
- ❍ teaching about large or dangerous concepts
- ● all of the above

Reading Comprehension Activity Page

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

1	A scientist without integrity	A	skepticism when analyzing data.
2	When possible, it's better to use logical	B	is an important quality for scientists.
3	One should have a certain degree of	C	his findings to other scientists.
4	Openness to alternative explanations	D	reasoning rather than a mere guess.
5	The Haida people conducted a	E	is that it serves as a warning to predators.
6	The woman recognized that	F	the berries were toxic.
7	The scientist wanted to present	G	totem-raising ceremony.
8	An explanation for the newt's red stomach	H	the weather.
9	Models can help to predict	I	cannot be believed.

1→_____ 2→ _____ 3→ _____ 4→ _____

5→ _____ 6→ _____ 7→ _____ 8→ _____

9→ _____

Reading Comprehension Activity Page

ANSWER KEY

1	A scientist without integrity	A	skepticism when analyzing data.
2	When possible, it's better to use logical	B	is an important quality for scientists.
3	One should have a certain degree of	C	his findings to other scientists.
4	Openness to alternative explanations	D	reasoning rather than a mere guess.
5	The Haida people conducted a	E	is that it serves as a warning to predators.
6	The woman recognized that	F	the berries were toxic.
7	The scientist wanted to present	G	totem-raising ceremony.
8	An explanation for the newt's red stomach	H	the weather.
9	Models can help to predict	I	cannot be believed.

1→ I 2→ D 3→ A 4→ B

5→ G 6→ F 7→ C 8→ E

9→ H

Reading Comprehension Activity Page

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

Soundness of character	**Not fully decided**	**A meaning or interpretation**
Doubting the truth of something	**Example for imitation or comparison**	**To perceive as existing or true**
To bring, offer, or give	**Using a rational systematic series of steps to reach a conclusion**	**To direct an action or course**

integrity

logical reasoning

skepticism

openness

conduct

recognize

present

models

explanations

Reading Comprehension Activity Page

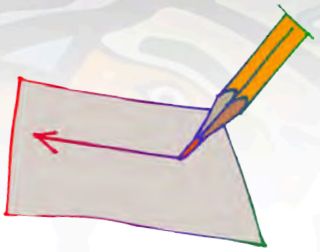
ANSWER KEY

Soundness of character integrity	**Not fully decided** openness	**A meaning or interpretation** explanation
Doubting the truth of something skepticism	**Example for imitation or comparison** models	**To perceive as existing or true** recognize
To bring, offer, or give present	**Using a rational systematic series of steps to reach a conclusion** logical reasoning	**To direct an action or course** conduct

STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page



Have the students write in the missing letters.

int_____y

log_____l reasoning

s_____icism

o_____ess

co_____ct

rec_____ze

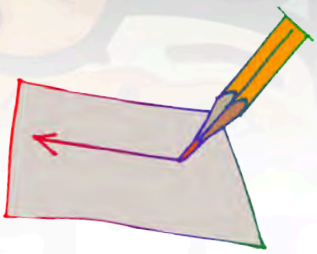
pr_____nt

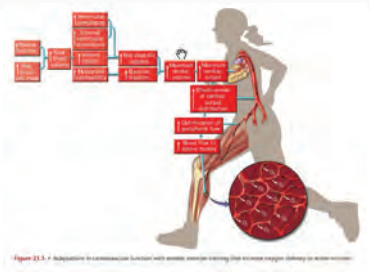
ex_____tion

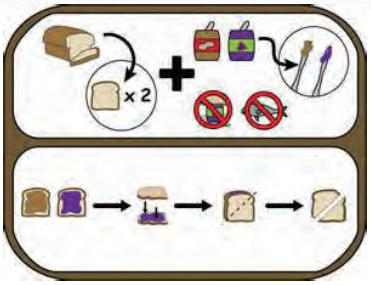
m_____ls

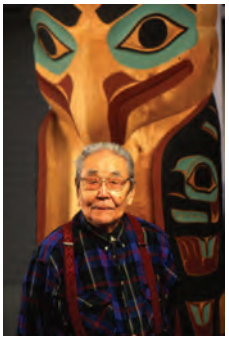
Basic Writing Activity Page

Have the students write the word for each picture.

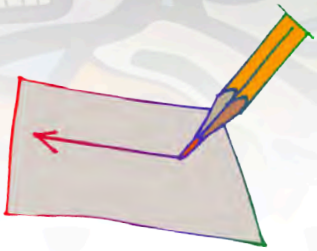








Basic Writing Activity Page

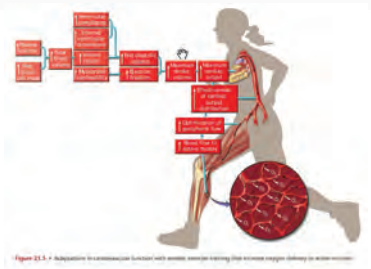


ANSWER KEY

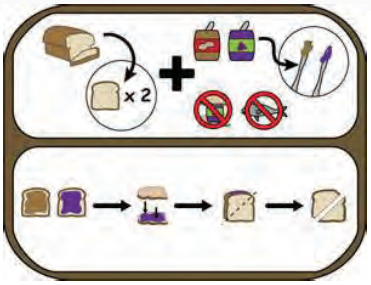
conduct

recognize

openness

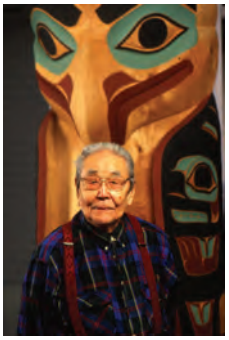


models



logical reasoning

present



integrity

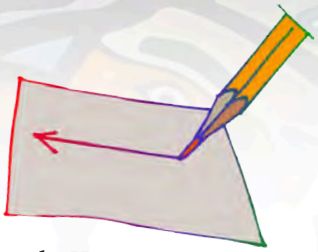
explanation

skepticism

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.

INTEGRITY

_____

LOGICAL REASONING

_____

SKEPTICISM

_____

OPENNESS

_____

CONDUCT

_____

RECOGNIZE

_____

PRESENT

_____

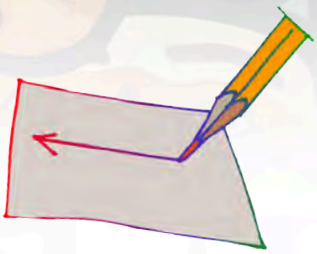
EXPLANATION

_____

MODELS

_____

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 8 • 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 page 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 by the picture for **INTEGRITY**.
2. Write the number 2 by the picture for **LOGICAL REASONING**.
3. Write the number 3 by he picture for **SKEPTICISM**.
4. Write the number 4 by the picture for **OPENNESS**.
5. Write the number 5 by the picture for **CONDUCT**.
6. Write the number 6 by the picture for **RECOGNIZE**.
7. Write the number 7 by the picture for **PRESENT**.
8. Write the number 8 by the picture for **EXPLANATION**.
9. Write the number 9 by the picture for **MODEL**.

LISTENING COMPREHENSION

Turn to page 2 in your test. Listen to the sentences I say. Circle "T" for true and "F" for false sentences."

1. One must have integrity if he/she is to be believed.
2. Guessing is always better than logical reasoning.
3. Skepticism is always unhealthy and should be avoided in science.
4. Openness allows for alternative explanations to be explored.
5. Scientists conduct experiments.
6. There is no reason to recognize toxic plants and mushrooms.
7. It is good to present the results of experiments to others.
8. There is an explanation for why newts have red stomachs.
9. Models are useful tools for understanding more complicated things.

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 pages 3 and 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.

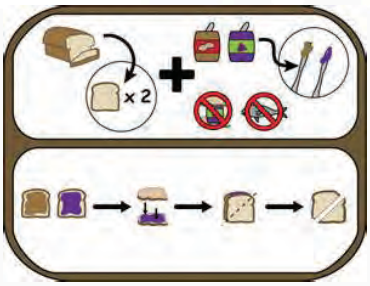
Teacher: To get a percentage for this student's assessment, divide the total number of questions correct by the total number of questions, then multiply this answer by 100 to determine the percentage of questions answered correctly.

SCIENCE PROGRAM

Unit Assessment Student Pages
Grade 8 • Unit 1 (A–1)
Theme: Science as Inquiry Process

Date:_____ Student's Name:_____

Number Correct:_____ Percent Correct:_____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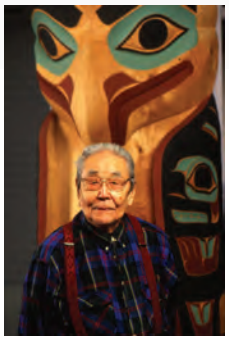
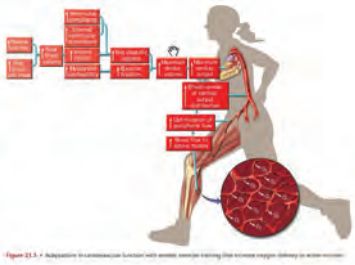



New Ideas



1. T F

2. T F

3. T F

4. T F

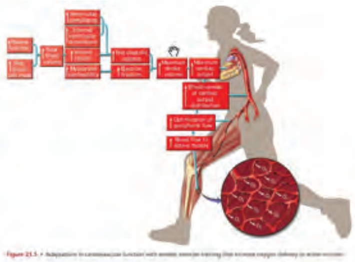
5. T F

6. T F

7. T F

8. T F

9. T F



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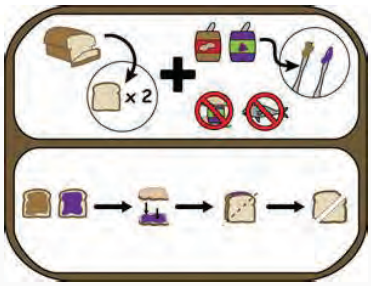

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1. If someone has integrity, he or she is NOT:
   - ❍ trustworthy
   - ❍ loyal
   - ❍ a habitual liar

2. When logical reasoning is used to reach a conclusion, a person:
   - ❍ makes a random guess
   - ❍ makes an educated guess
   - ❍ follows a series of rational steps

3. If one has skepticism about a conclusion, he/she _____ it.
   - ❍ accepts
   - ❍ doubts
   - ❍ denies

4. Scientists should maintain openness toward:
   - ❍ alternative explanations
   - ❍ errors in their data
   - ❍ illogical methods

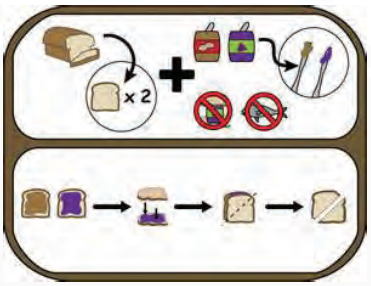
5. To conduct an experiment means that you are:
   - ❍ doing the experiment
   - ❍ learning the experiment
   - ❍ destroying the experiment

6. If you recognize a toxic berry, you:
   - ❍ have no clue if you should eat it
   - ❍ have made a friend
   - ❍ know not to eat it

7. To present the results of an experiment is to:
   - ❍ tell others about it
   - ❍ give a gift
   - ❍ do it now

8. An explanation for a newt's red stomach is:
   - ❍ a denial that it is red
   - ❍ a reason that it is red
   - ❍ an unfortunate encounter with it

9. A model of the solar system would:
   - ❍ help to understand a larger idea
   - ❍ walk a catwalk
   - ❍ help to understand a smaller idea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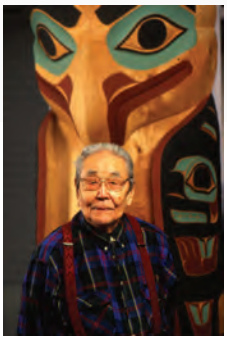
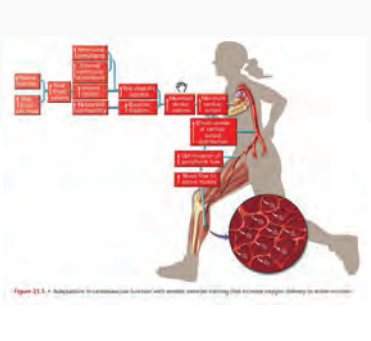



New Ideas



INTEGRITY

LOGICAL REASONING

SKEPTICISM

OPENNESS

CONDUCT

RECOGNIZE

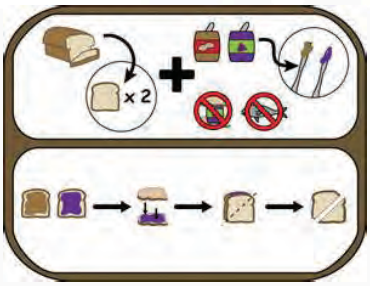
PRESENT

EXPLANATION

MODELS

SCIENCE PROGRAM

Unit Assessment ANSWER KEY
Grade 8 • Unit 1 (A–1)
Theme: Science as Inquiry Process



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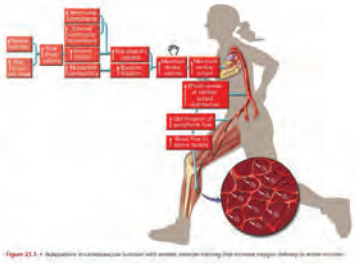

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1. (T) F
2. T (F)
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6. T (F)
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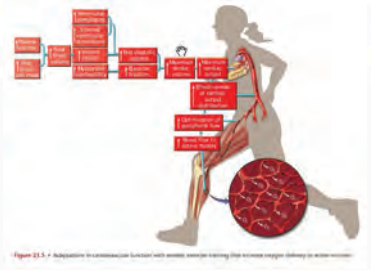
8. (T) F
9. (T) F



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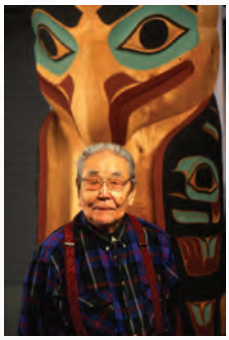

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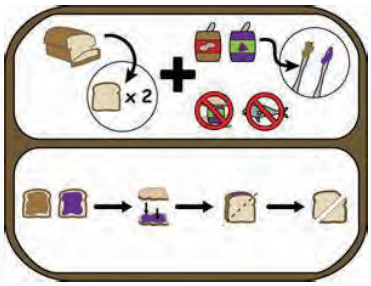

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   - ❍ trustworthy
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   - ● Help to understand a larger idea
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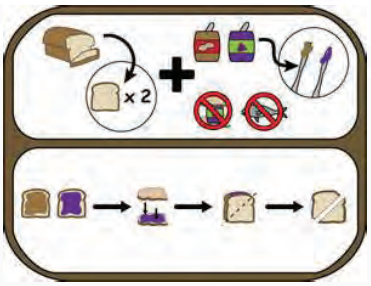
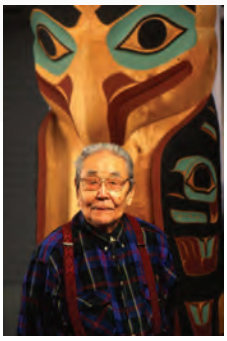
explanation

present

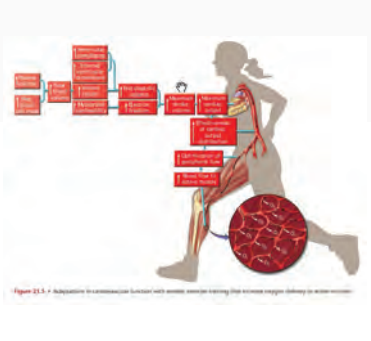


logical reasoning



integrity

openness



models

skepticism

conduct

recognize

UNIT 2

A–1: Science as Inquiry Process

KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

COMPETITION

Place-Based Perspective

Put a small prize item on a table at the front of the room. Ask for two volunteers to come to the front and participate in a "rock, paper, scissors" competition. The winner gets the prize. Explain that though it would have been nice to give the prize to both people, it was a limited resource. Tell the students that plants and animals are often in competition for limited resources.

Heritage Cultural Perspective

Competition for resources has occurred throughout human history. Control of a rich resource could mean survival, wealth, and prosperity. The Stikine Tribe, for example, once controlled the biologically rich Stikine River and all trade along the river to the interior Tahltan peoples. Competition for the resource quickly ensued following the arrival of Europeans and their descendants in Alaska.

PEER-REVIEW

Place-Based Perspective

Show the students a science textbook. Explain to them that the content of the textbook has been reviewed by other scientists to make sure that the information is true and presented in an orderly fashion. Tell them that as a teacher of science, you too are a peer of the authors, and that you constantly review their work to make sure it is appropriate for students. Explain that the peer-review process is very important in science and other disciplines.

Heritage Cultural Perspective

Similar to western science, Traditional Ecological Knowledge (TEK) also seeks to validate hypotheses, processes, and facts in a peer-review process. Questions of cultural importance in Southeast Alaska, for example, are often brought before the Council of Traditional Scholars, a panel of clan leaders and Elders with extensive knowledge of Southeast Native languages and cultures.

HABITAT

Place-Based Perspective

Draw a large island with a palm tree on the board. Ask volunteers to come up to the board and draw animals that might live in this area. Explain that because it's an island, it's probably a marine area and because there is a palm tree, it's probably warm and tropical. Tell the students that this island provides "habitat" for the animals. If they are able to live there, the habitat is providing food, water, and shelter.

Heritage Cultural Perspective

Humans, like other animals, require habitat that meets their basic needs for survival. The indigenous peoples of Southeast Alaska lived (and continue to live) in a bountiful habitat that is rich in natural resources. From the abundant harvests of the ocean to the flora and fauna of the rainforest, food items are plentiful. There was certainly an abundant supply of fresh water too!

Culturally Responsive & Place-Based Introduction of Science Vocabulary

RESOURCES

Place-Based Perspective

Show the students a bunch of wooden pencils. Next, show them a windowsill or other wooden structure in the room. Finally show them books and paper. Explain that wood is a natural resource that humans use in their everyday lives. Tell them that there are many resources that we utilize and depend on.

Heritage Cultural Perspective

The resources provided by the bountiful land of Southeast Alaska have provided for mankind since time immemorial. The indigenous peoples that inhabited this land long ago depended on all aspects of their surroundings and incorporated these into their cultural and spiritual lives. Today, the forests and oceans of the region continue to benefit the Tlingit, Haida and Tsimshian peoples.

TOURISM

Place-Based Perspective

Show the students the picture of a cruise ship in Ketchikan on page 119. Ask the students who might be on the ship and why. Why would they want to come to Alaska? Explain that tourism is a major industry in Alaska and that many people dream of coming here. Ask the students where they dream of visiting.

Heritage Cultural Perspective

Like most people, the indigenous peoples of Southeast Alaska probably had an interest in exploring places from time to time for the sole purpose of enjoyment rather than pure utility. Today tourism is a major aspect of the region's economy and travelers from distant lands enjoy learning about Native culture and purchasing Native art.

OIL

Place-Based Perspective

Put a drop of vegetable oil on a piece of paper and allow the students to smear it with their fingers. Ask them how it feels. Explain that most oils are slippery and can be used to lubricate moving parts like engines. They are also high in energy. Tell them that oil taken from the ground is used for many different purposes, including the production of gasoline and plastics.

Heritage Cultural Perspective

Oil comes from many sources and has a variety of uses. The Tlingit for example, used Hooligan (Eulachon) oil not only as a food, but also to light their homes in oil lamps and in candles. Seal oil was also used for this purpose. Alaska's petroleum reserves benefit the indigenous peoples of Alaska today through various components of the Alaska Native Claims Settlement Act (ANCSA).

Culturally Responsive & Place-Based Introduction of Science Vocabulary

MINING

Place-Based Perspective

Ask the students to make a list on the board of all of the items in the room that they can think of that are made of metal. Then ask them where metals come from. Explain that metals and other materials are often found deep underground. In order to access the materials and bring them to the surface, people engage in mining. Mining allows for buried resources to be retrieved for human use.

Heritage Cultural Perspective

The mining of copper and iron was important for the Tlingit of long ago. Copper was highly valued and used to produce jewelry, arrows, and other objects. The copper was procured through trade with Athabascans and originated mainly along the Copper River and White River to the north of Tlingit territory. It was typically found as nuggets near the headwaters of these water bodies.

HUNTING

Place-Based Perspective

Show the students an animal part that was gotten through hunting (antlers, hooves, hides, furs). Ask the students what activity was undertaken to get this item. What other parts of the animal are useful to humans? (meat, bones, etc). Explain that hunting has provided mankind with nourishment since the beginning of time. Ask how many of the students are hunters.

Heritage Cultural Perspective

All Alaska Native groups engaged in hunting to obtain fresh meats, skins, bones, hair, and other items. Almost every part of an animal would be used in some fashion and not wasted. Wasting an animal that gives itself to you for nourishment would be disrespectful. An act of disrespect against an animal's spirit was believed to cause bad luck, especially in future hunting pursuits.

INTERESTS

Place-Based Perspective

Show the students a piece of sports equipment. Ask how many of them enjoy either playing or watching sports activities. Explain that this is an interest they have. Interests can be more than just something you enjoy; they can be things that you care about, need or profit from. Tell the students that Alaska's fisheries are an interest for many people, as are other activities, such as timber harvest and mining.

Heritage Cultural Perspective

Alaska Natives have a great interest in the land and resources within their ancestral homelands. Sometimes conflicts related to these interests arise. In the Pebble Mine initiative, for example, some people are interested in extracting resources from the ground and others fear that valuable fisheries will be impacted. One's interest in a resource often depends on his/her perspective.

LESSONS

Science Language for Success

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

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?

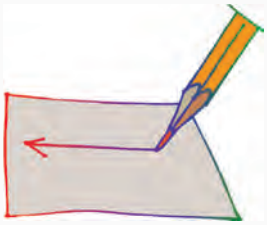
Provide each student with four blank flashcards. Write four sight words on the board. Each student should write the same sight words on each of his cards (one word per card). When the students' cards are ready, have them arrange their sight word cards in a specific sequence on their desks (each student 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

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

COMPETITION


5
2
4
4
3

PEER-REVIEW

HABITAT

RESOURCES


land America Line

TOURISM

OIL

MINING

HUNTING

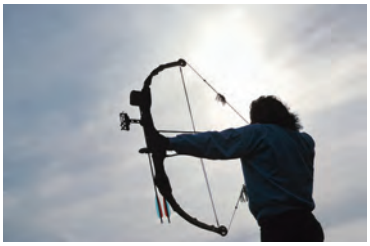
INTERESTS

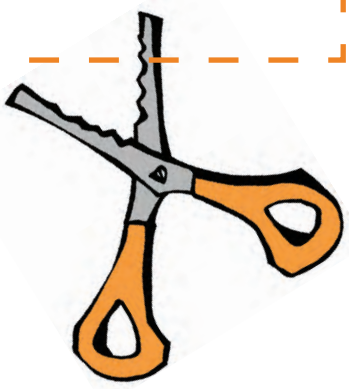
STUDENT SUPPORT MATERIALS

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.





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	Animals sometimes compete for the same resources.	**True** **False**
2	Peer-review is review by one's parents.	**True** **False**
3	Water is not part of a turtle's habitat.	**True** **False**
4	Southeast Alaska has many valuable natural resources.	**True** **False**
5	Cruise ships bring tourism to Southeast Alaska.	**True** **False**
6	It is good to have a glass of oil with breakfast.	**True** **False**
7	Mining is sometimes undertaken to get gold from the ground.	**True** **False**
8	Hunting was never very popular with Alaska Native people.	**True** **False**
9	Native peoples have interests in both fishing and hunting on the land.	**True** **False**

Listening Comprehension: Answer Key

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

1. Animals sometimes compete for the same resources. — **True** / False
2. Peer-review is review by one's parents. — True / **False**
3. Water is not part of a turtle's habitat. — True / **False**
4. Southeast Alaska has many valuable natural resources. — **True** / False
5. Cruise ships bring tourism to Southeast Alaska. — **True** / False
6. It is good to have a glass of oil with breakfast. — True / **False**
7. Mining is sometimes undertaken to get gold from the ground. — **True** / False
8. Hunting was never very popular with Alaska Native people. — True / **False**
9. Native peoples have interests in both fishing and hunting on the land. — **True** / False

STUDENT SUPPORT MATERIALS

Sight Words

competition

peer-review

habitat

resources

tourism

oil

mining

hunting

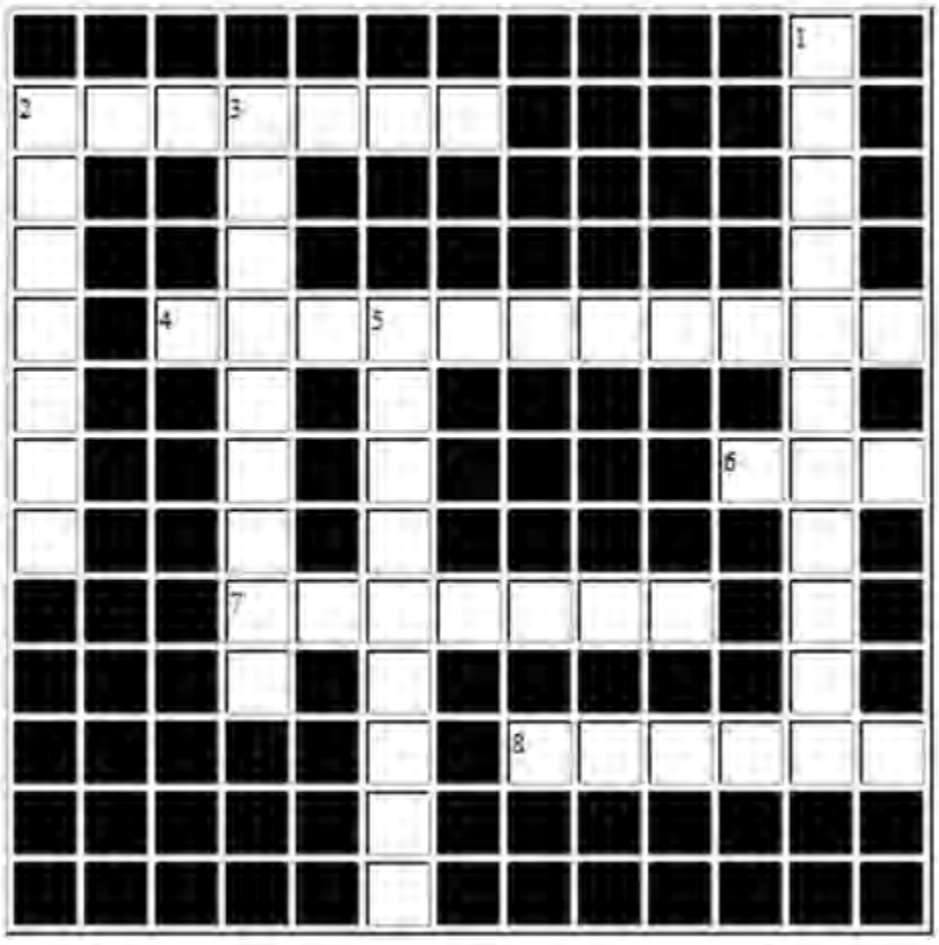
interests

STUDENT SUPPORT MATERIALS

Basic Reading • Sight Recognition

Sight Words Activity Page

Have the students complete the crossword puzzle below.



Across

2. area that provides an organism with food, water, and shelter
4. evaluation of scientific work by others working in the same field
6. a liquid derived from petroleum and used as a fuel or lubricant
7. vacations and visits to places of interest
8. extraction of minerals and other materials from the earth

Down

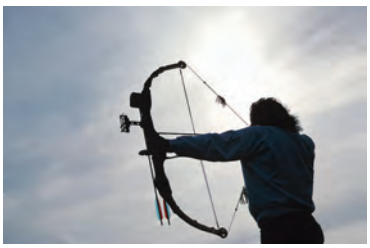
1. interaction or conflict to secure a limited resource
2. practice of pursuing wildlife for food, recreation or trade
3. a stake, share, or involvement in an undertaking
5. aspects of the environment that species depend on for survival

Sight Words Activity Page

Answer Key

Sight Words Activity Page

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



competition peer-review habitat resources

tourism oil mining hunting

interests

Sight Words Activity Page

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

STUDENT SUPPORT MATERIALS

Basic Reading • Encoding

Encoding Activity Page

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

com	ti	pe	tion
_____	_____	_____	_____

-	peer	view	re
_____	_____	_____	_____

tat	hab	i
_____	_____	_____

Encoding Activity Page

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

ces	sour	re
_____	_____	_____

ism	tour
_____	_____

oil
_____

Encoding Activity Page

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

ing	min
_____	_____

ing	hunt
_____	_____

ests	in	ter
_____	_____	_____

Encoding Activity Page

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

compe	view
peer-re	urism
hab	nting
res	l
to	erests

Encoding Activity Page

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

oi	tition
min	ources
hu	itat
int	ing

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. Competition between two male adult moose may be caused by:
   - ❍ a nearby person yelling "fight!"
   - ❍ both moose wanting the same female
   - ❍ rainy weather
   - ❍ moose do not ever fight

2. Peer-review is completed by:
   - ❍ others working in the same field
   - ❍ parents of the author
   - ❍ government committees
   - ❍ marine biologists only

3. Salmon habitat includes all of these EXCEPT:
   - ❍ ocean
   - ❍ rivers
   - ❍ deserts
   - ❍ streams

4. A resource can be **defined** as:
   - ❍ an animal that is walking strangely
   - ❍ a source of a stream or other waterway
   - ❍ a body of knowledge
   - ❍ any aspect of the environment that species depend on

5. Tourism may include which of the following:
   - ❍ cruise ships
   - ❍ dog mushing
   - ❍ halibut charters
   - ❍ all of the above

Reading Comprehension Activity Page

6 Oil is a resource that:

- ❍ can be found in Alaska
- ❍ is valuable to humans
- ❍ is necessary for automobiles
- ❍ all of the above

7 Which of the following can be gotten through mining?

- ❍ gold
- ❍ oranges
- ❍ lizards
- ❍ rock bands

8 Hunting is an activity that:

- ❍ wakes you up at night
- ❍ provides food for people and their families
- ❍ causes your computer to crash
- ❍ is used to harvest corn

9 Which of the following are natural resource interests in Alaska?

- ❍ trees
- ❍ oil
- ❍ gold
- ❍ all of the above

Reading Comprehension Activity Page

ANSWER KEY

1. Competition between two male adult moose may be caused by:
   - ❍ a nearby person yelling "fight!"
   - ● both moose wanting the same female
   - ❍ rainy weather
   - ❍ moose do not ever fight

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   - ❍ rivers
   - ● deserts
   - ❍ streams

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   - ● any aspect of the environment that species depend on

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Reading Comprehension Activity Page

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   - ❍ is necessary for automobiles
   - ● all of the above

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   - ● gold
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   - ❍ rock bands

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   - ❍ wakes you up at night
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   - ❍ causes your computer to crash
   - ❍ is used to harvest corn

9. Which of the following are natural resource interests in Alaska?
   - ❍ trees
   - ❍ oil
   - ❍ gold
   - ● all of the above

Reading Comprehension Activity Page

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

1	Competition for the female	A	including oil, gas, and timber
2	Scientific journal articles typically	B	the tourism industry in Alaska
3	Salmon habitat is critical	C	are sometimes gotten through hunting.
4	Alaska has a number of natural resources	D	run without oil.
5	Cruise ships are part of	E	different interests in a resource.
6	Cars would not be able to	F	for their survival.
7	Gold, copper and coal are gotten through	G	resulted in the moose locking horns.
8	Moose, deer and mountain goats	H	undergo peer-review
9	Different groups of people may have	I	mining.

1→_____ 2→ _____ 3→ _____ 4→ _____

5→ _____ 6→ _____ 7→ _____ 8→ _____

9→ _____

Reading Comprehension Activity Page

ANSWER KEY

1	Competition for the female	A	including oil, gas, and timber
2	Scientific journal articles typically	B	the tourism industry in Alaska
3	Salmon habitat is critical	C	are sometimes gotten through hunting.
4	Alaska has a number of natural resources	D	run without oil.
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7	Gold, copper and coal are gotten through	G	resulted in the moose locking horns.
8	Moose, deer and mountain goats	H	undergo peer-review
9	Different groups of people may have	I	mining.

1→ G 2→ H 3→ F 4→ A

5→ B 6→ D 7→ I 8→ C

9→ E

Reading Comprehension Activity Page

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

Vacations and visits to places of interest	**Interaction or conflict to secure a limited resource for survival**	**A stake, share or involvement in an undertaking**
Aspects of the environment that species depend on for survival	**Practice of pursuing wildlife for food, recreation or trade**	**Evaluation by others in the same field**
Area that provides an organism with food, water, and shelter	**Extraction of minerals and other materials from the earth**	**A liquid derived from petroleum and used as a fuel or lubricant**

competition peer-review habitat resources

tourism oil mining

hunting interests

Reading Comprehension Activity Page

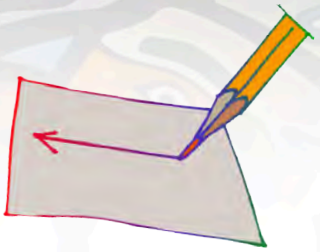
ANSWER KEY

Vacations and visits to places of interest tourism	**Interaction or conflict to secure a limited resource for survival** competition	**A stake, share or involvement in an undertaking** interests
Aspects of the environment that species depend on for survival resources	**Practice of pursuing wildlife for food, recreation or trade** hunting	**Evaluation by others in the same field** peer-review
Area that provides an organism with food, water, and shelter habitat	**Extraction of minerals and other materials from the earth** mining	**A liquid derived from petroleum and used as a fuel or lubricant** oil

STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page



Have the students write in the missing letters.

com_____ion

peer-r_____w

ha_____at

r_____ces

to_____sm

o_____l

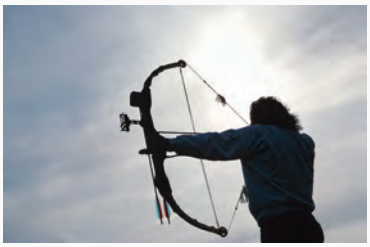
m_____ing

h_____ing

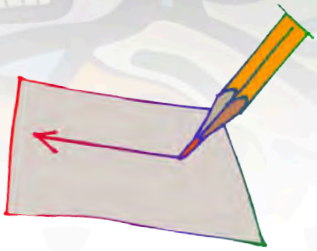
in_____ts

Basic Writing Activity Page

Have the students write the word for each picture.



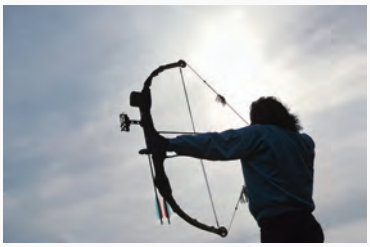
Basic Writing Activity Page



ANSWER KEY

interests

oil



hunting

tourism

peer-review

habitat

mining

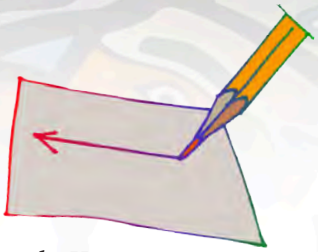
resources

competition

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.

COMPETITION

_____

PEER-REVIEW

_____

HABITAT

_____

RESOURCES

_____

TOURISM

_____

OIL

_____

MINING

_____

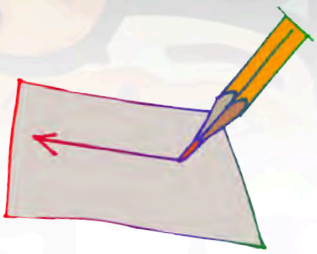
HUNTING

_____

INTERESTS

_____

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 8 • 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 page 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 by the picture for **COMPETITION**.
2. Write the number 2 by the picture for **PEER-REVIEW**.
3. Write the number 3 by he picture for **HABITAT**.
4. Write the number 4 by the picture for **RESOURCES**.
5. Write the number 5 by the picture for **TOURISM**.
6. Write the number 6 by the picture for **OIL**.
7. Write the number 7 by the picture for **MINING**.
8. Write the number 8 by the picture for **HUNTING**.
9. Write the number 9 by the picture for **INTERESTS**.

LISTENING COMPREHENSION

Turn to page 2 in your test. Listen to the sentences I say. Circle "T" for true and "F" for false sentences."

1. Competition often exists between organisms with the same needs.
2. Scientific journal articles are typically peer-reviewed.
3. Rivers and streams are part of salmon habitat.
4. Humans have no interest in natural resources.
5. Tourism is not at all important to the state of Alaska.
6. Oil is a solid substance used for making cheese.
7. Mining is one method for getting gold from the ground.
8. Hunting provides little or no food for people and their families in Alaska.
9. People have a number of interests in Alaska's resources.

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 pages 3 and 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 8 • Unit 2 (A–1)
Theme: Science as Inquiry Process

Date:_____ Student's Name:_____

Number Correct:_____ Percent Correct:_____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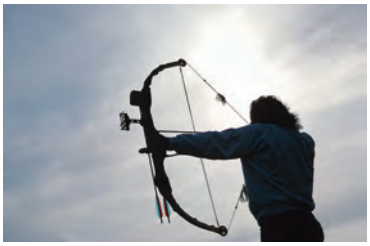

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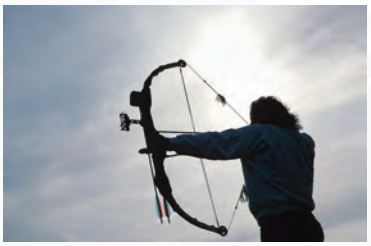

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1. Animals trying to get the same resource are in _____ with one another.
   - ❍ harmony
   - ❍ competition
   - ❍ trouble

2. Peer-review is done by:
   - ❍ others working in the same field
   - ❍ parents
   - ❍ organisms other than people

3. The habitat of a salmon includes:
   - ❍ rivers and streams
   - ❍ tropical rainforests
   - ❍ deserts

4. Which one of the following is not a resource of Southeast Alaska?
   - ❍ timber
   - ❍ salmon
   - ❍ grapes

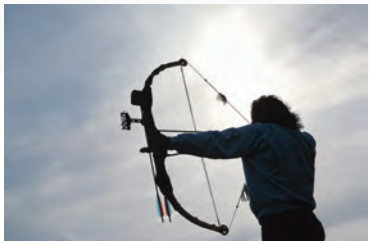
5. Tourism includes people:
   - ❍ visiting places of interest
   - ❍ researching at the library
   - ❍ fighting a war

6. Oil is usually:
   - ❍ a liquid
   - ❍ a solid
   - ❍ a gas

7. Mining is a way to get which of the following from the earth?
   - ❍ Salmon
   - ❍ Timber
   - ❍ Gold

8. The term used for the activity of taking wild game for humans to eat is:
   - ❍ hunting
   - ❍ exploring
   - ❍ pioneering

9. Which of the following is not an "interest" within Alaska?
   - ❍ Timber
   - ❍ Gold
   - ❍ Salmon
   - ❍ Oranges

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COMPETITION

PEER-REVIEW

HABITAT

RESOURCES

TOURISM

OIL

MINING

HUNTING

INTERESTS

SCIENCE PROGRAM

Unit Assessment ANSWER KEY
Grade 8 • Unit 2 (A–1)
Theme: Science as Inquiry Process

6

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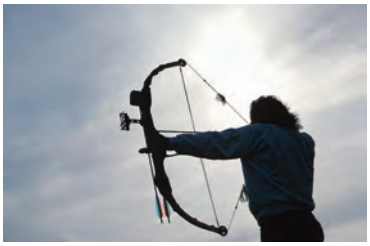

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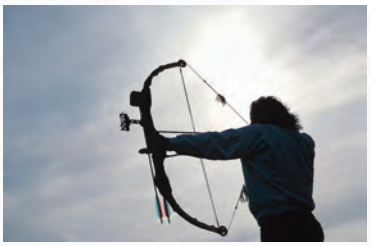

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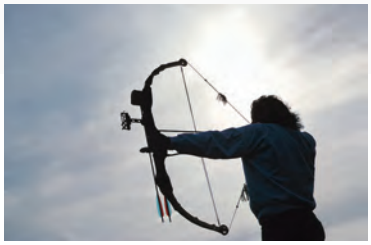
resources

interests

mining

tourism



hunting

oil

competition

habitat

peer-review

UNIT 3

B-1: Concepts of Physical Science

KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

CHEMICAL PROPERTY

Place-Based Perspective

Show the students a piece of metal that has rusted. Ask them if the metal is the same now as it had been before the rust. Explain that the iron is no longer just iron but iron oxide. This change took place as part of a chemical reaction and is known as a chemical property of iron. The property is iron's ability to react with oxygen in the presence of water, over time.

Heritage Cultural Perspective

The chemical properties of elements found in Southeast Alaska have long been recognized by Tlingit, Haida and Tsimshian peoples. Copper, for example, will eventually react with other elements to form copper carbonate — a blue-green substance on the surface of the metal. Given that copper was used in a variety of ways, the people undoubtedly observed these color changes!

UNIVERSAL

Place-Based Perspective

Show students the end of a power cord and point out the two metal prongs. Ask the students if the cord is universal in that it can be plugged into any outlet. Explain then that though it is universal in the US, it is not universal around the world. Chemicals have properties that are universal too and remain the same no matter where you are.

Heritage Cultural Perspective

There are many things that are universal to the human experience. Humans have shared same experiences and needs throughout the world and throughout time. Food, water, and shelter are universal needs. Love and companionship are common universal aspirations. Alaska Native peoples share these universal components of human life on Earth with all other people.

CHARACTERISTIC

Place-Based Perspective

Ask for student volunteers to draw funny faces on the board. Then ask students to point out some of the details of those faces. Explain that such details are characteristics of the face. Tell the students that characteristics can also apply to chemicals, behavior, personality and any number of details used to describe an object or substance. Ask them what characteristics orange juice has.

Heritage Cultural Perspective

In Southeast Alaska, the indigenous peoples have been familiar with the characteristics of local landscapes for thousands of years. Familiarity with these characteristics allowed them to navigate, recognize landmarks, and identify environmental changes. A deep understanding of one's immediate surroundings influences one's sense of place in self-identity, a key aspect of Tlingit culture.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

BEHAVIOR

Place-Based Perspective

Show students the picture of a kittiwake chick on p. 211. Ask the students what the chick seems to be doing. What does it want? Explain that this behavior of begging is normal; the chick is hungry and is asking its parent to feed it. Explain that non-living materials can have behaviors too. Ask the students what the behavior of soda in a glass is immediately after pouring it (demonstrate if possible).

Heritage Cultural Perspective

Respectable behavior was paramount in Tlingit culture. Those of high social class especially were expected to control their behavior, emotions and words at all times. They were to be modest, gentle, and generous. Furthermore, they were expected not to brag about their status, wealth, or family lineage.

NUCLEAR

Place-Based Perspective

Show the students a peach and ask them to imagine the peach is an atom but much, much larger. Cut the peach in half and show them the cross section. Explain that the center of the atom is called the nucleus. In this case the seed is representing the nucleus. Tell the students that it is reactions involving this nucleus that produce mass amounts of electricity, such as that produced by nuclear power plants and nuclear bombs.

Heritage Cultural Perspective

While the nucleus of atoms was traditionally an unknown concept in Alaska Native culture, the term is also used to refer to the "core" of other objects. A "nuclear family" for example, includes parents and their children. Traditionally, Tlingit and Haida people would live with their extended families. Today however, many people live with only their nuclear families — the standard western household.

FLAMMABILITY

Place-Based Perspective

Place a stick in a waterless cup and another in a cup full of water. Ask the students which ones they would use in a campfire and why. Explain that the characteristics of an object or substance determine its "flammability." Ask the students which is more flammable, water or gasoline. Dry wood or wet wood?

Heritage Cultural Perspective

The flammability of substances found in their environment was important for Alaska Native people. Fire was needed for cooking as well as for a light source. Brittle dry and dead wood would burn more readily and faster than wet, recently cut live wood. In other parts of Alaska, people often need to use caution with flammable materials since wildfires can quickly ignite in drier climates!

Culturally Responsive & Place-Based Introduction of Science Vocabulary

INITIAL

Place-Based Perspective

Have several students come up to the board and give them markers. Tell them to listen carefully to a long string of numbers that you say aloud: 42, 36, 115, 93, 10, 2, 78. Now have the volunteers try to write the "initial" number that you said. Explain that it can be hard to remember strings of numbers but that initial refers to that which came at the beginning. Processes also have initial events, followed by those that come later.

Heritage Cultural Perspective

Tlingit memorial ceremonies involve a three stage process. After someone has "Walked into the Forest" or has died, the INITIAL ceremony is the funeral with community members comforting and assisting the mourning family. The second ceremony is held by the family of the deceased. The final ceremony, which is called the ku.éex', is held a year after a person's death to repay those who comforted and assisted the mourning family.

ENERGY

Place-Based Perspective

Turn off all of the lights in the room and shut down any computers. Ask the students what it is that they are now lacking in the room. Energy in the form of electricity! Explain that energy is the capacity to do work. Just as the lights need energy so do our bodies. Energy is needed too for a chemical reaction to take place. Tell the students that there are many ways of harnessing energy and that we use a lot of it in the modern world.

Heritage Cultural Perspective

The sun's energy and its effects on Tlingit culture have forever been present and recognized. Not only does this energy permit the growth of forests, it provides daylight for all of mankind. A prominent Tlingit legend titled "How Raven Stole the Sun", explains the origins of this celestial body and exemplifies its importance to people.

PHENOMENA

Place-Based Perspective

Show the students a picture of the aurora borealis on p. 221. Ask how many of the students have seen this common event in the north. Explain that any event that is observable is a phenomenon. Some phenomena are natural while others are forced to take place in a laboratory. What other natural phenomena can the students think of?

Heritage Cultural Perspective

There were many natural phenomena that occurred throughout Southeast Alaska prior to western contact. The indigenous peoples of the region often tried to explain these events through stories and song. They would integrate knowledge of natural phenomena into their culture and were able to recognize changes in the time and occurrence of these!

LESSONS

Science Language for Success

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

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.

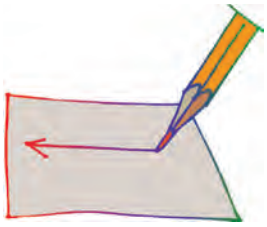
String Along

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.

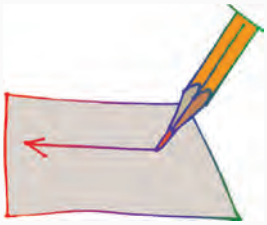
WRITING



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.

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.

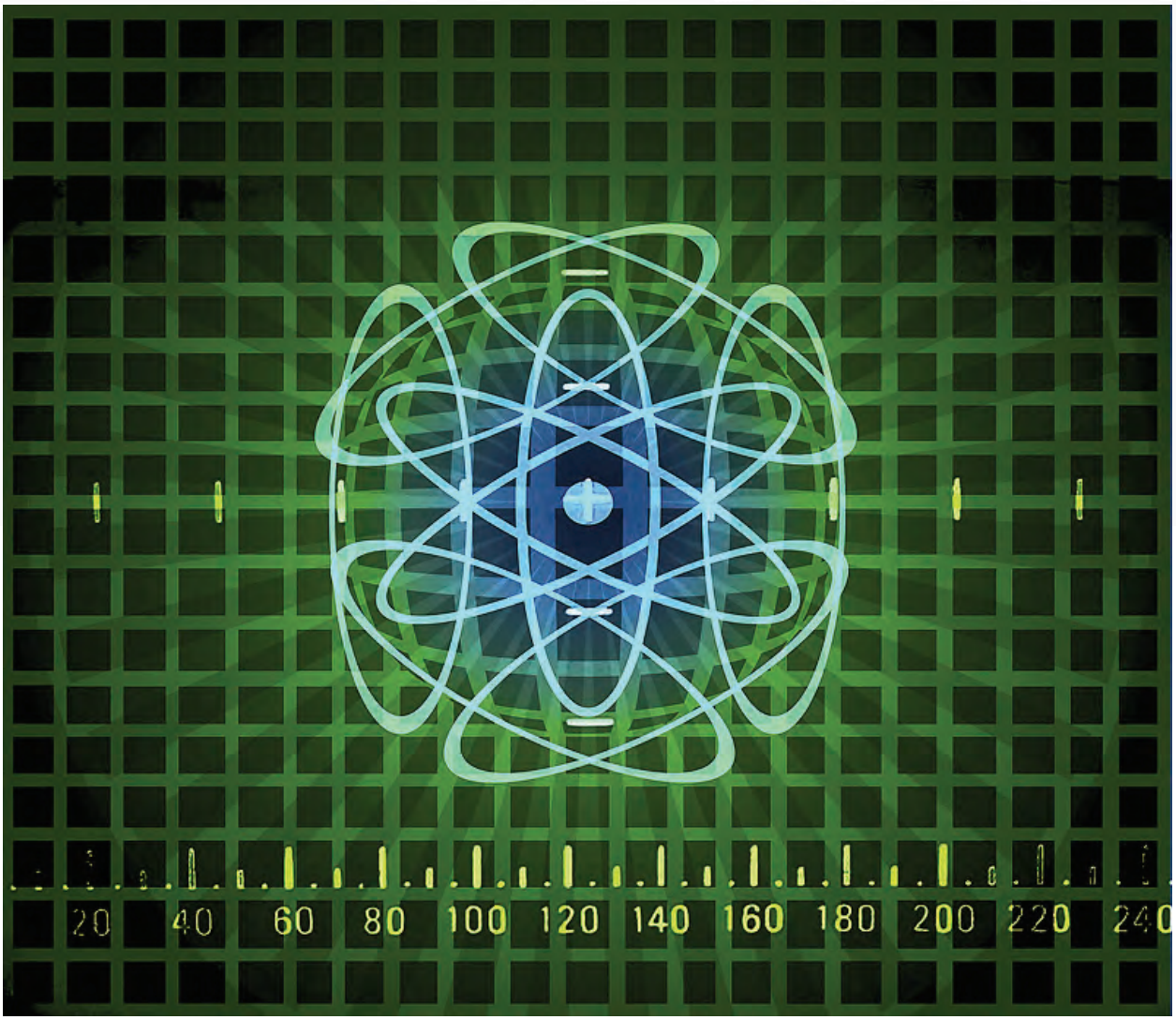
VOCABULARY PICTURES

CHEMICAL PROPERTY

UNIVERSAL

CHARACTERISTIC

BEHAVIOR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NUCLEAR

FLAMMABILITY

INITIAL

ENERGY

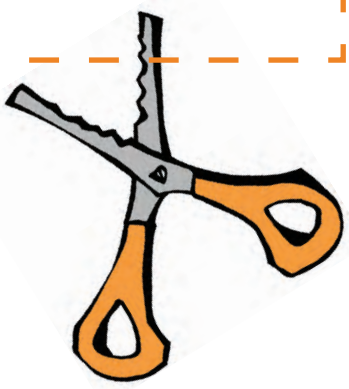
PHENOMENA

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.



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. Chemical properties can often be seen during experiments. **True** **False**

2. Most car parts are universal and can be used in any other car. **True** **False**

3. A characteristic of orange juice is its green color. **True** **False**

4. The behavior of soda when poured is a bubbling action. **True** **False**

5. The outside of a molecule is its nucleus. **True** **False**

6. The flammability of gasoline is never a concern. **True** **False**

7. The initial energy of a runner is usually very low. **True** **False**

8. Muscles do not need energy in order to do work. **True** **False**

9. The northern lights are considered spectacular natural phenomena. **True** **False**

Listening Comprehension: Answer Key

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

1	Chemical properties can often be seen during experiments.	**True** / False
2	Most car parts are universal and can be used in any other car.	True / **False**
3	A characteristic of orange juice is its green color.	True / **False**
4	The behavior of soda when poured is a bubbling action.	**True** / False
5	The outside of a molecule is its nucleus.	True / **False**
6	The flammability of gasoline is never a concern.	True / **False**
7	The initial energy of a runner is usually very low.	True / **False**
8	Muscles do not need energy in order to do work.	True / **False**
9	The northern lights are considered spectacular natural phenomena.	**True** / False

STUDENT SUPPORT MATERIALS

Sight Words

chemical property

universal

characteristic

behavior

nuclear

flammability

initial

energy

phenomena

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.

characteristic
nuclear
phenomena
chemical property
universal
flammability
energy
behavior
initial

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

Sight Words Activity Page

Answer Key

characteristic
nuclear
phenomena
chemical property
universal
flammability
energy
behavior
initial

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

Sight Words Activity Page

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

chemical property | initial | nuclear | energy

flammability | behavior | universal | phenomena

characteristic

Sight Words Activity Page

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

STUDENT SUPPORT MATERIALS

Basic Reading • Encoding

Encoding Activity Page

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

chem	er	i	cal
_____	_____	_____	_____

ty	prop
_____	_____

ver	uni	sal
_____	_____	_____

it	in	ial
_____	_____	_____

Encoding Activity Page

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

ter	ac	tic	is	char

ior	be	hav

cle	ar	nu

Encoding Activity Page

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

i	ty	ma	bil	flam

en	gy	er

nom	na	e	phe

Encoding Activity Page

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

chem	eristic
univ	vior
charact	ability
beha	gy
nuc	ial

Encoding Activity Page

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

flamm	**ersal**
init	**ena**
ener	**ical**
phenom	**lear**

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 the following is an example of a chemical property?
   - ❍ a steel garbage can rusting
   - ❍ a dog that has been punished
   - ❍ salt water sitting in a dish
   - ❍ cutting down a tree

2. Objects that are universal can be used:
   - ❍ only in one location
   - ❍ in all locations
   - ❍ only one time
   - ❍ many times

3. A characteristic of orange juice is its:
   - ❍ color
   - ❍ taste
   - ❍ acidity
   - ❍ all of the above

4. What is the behavior of soda, a carbonated beverage, when poured?
   - ❍ turning color
   - ❍ becoming a solid
   - ❍ bubbling
   - ❍ evaporating

5. The nucleus of an atom refers to its:
   - ❍ center
   - ❍ color
   - ❍ taste
   - ❍ all of the above

Reading Comprehension Activity Page

6 Flammability refers to:

- ❍ the height of wildfire flames
- ❍ the ease that a substance will ignite
- ❍ the amount of water in soup
- ❍ none of the above

7 Another word for initial is:

- ❍ money
- ❍ end
- ❍ beginning
- ❍ rotten

8 Energy is defined as:

- ❍ the capacity to roll your tongue
- ❍ the capacity to eat
- ❍ the capacity to do work
- ❍ the capacity to multi-task

9 Which of the following are examples of natural phenomena:

- ❍ tornadoes
- ❍ lightning
- ❍ northern lights
- ❍ all of the above

Reading Comprehension Activity Page

ANSWER KEY

1. Which of the following is an example of a chemical property?
   - ● a steel garbage can rusting
   - ❍ a dog that has been punished
   - ❍ salt water sitting in a dish
   - ❍ cutting down a tree

2. Objects that are universal can be used:
   - ❍ only in one location
   - ● in all locations
   - ❍ only one time
   - ❍ many times

3. A characteristic of orange juice is its:
   - ❍ color
   - ❍ taste
   - ❍ acidity
   - ● all of the above

4. What is the behavior of soda, a carbonated beverage, when poured?
   - ❍ turning color
   - ❍ becoming a solid
   - ● bubbling
   - ❍ evaporating

5. The nucleus of an atom refers to its:
   - ● center
   - ❍ color
   - ❍ taste
   - ❍ all of the above

Reading Comprehension Activity Page

6. Flammability refers to:
   - ❍ the height of wildfire flames
   - ● the ease that a substance will ignite
   - ❍ the amount of water in soup
   - ❍ none of the above

7. Another word for initial is:
   - ❍ money
   - ❍ end
   - ● beginning
   - ❍ rotten

8. Energy is defined as:
   - ❍ the capacity to roll your tongue
   - ❍ the capacity to eat
   - ● the capacity to do work
   - ❍ the capacity to multi-task

9. Which of the following are examples of natural phenomena:
   - ❍ tornadoes
   - ❍ lightning
   - ❍ northern lights
   - ● all of the above

Reading Comprehension Activity Page

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

1	A chemical property is one that becomes	A	its nucleus.
2	Objects that are universal can be used	B	high and thus requires caution.
3	A distinctive characteristic of a brown bear	C	the energy he/she has BEFORE the race.
4	A child who doesn't listen is	D	natural phenomenon.
5	The center of an atom is considered	E	that gives it the ability to do work.
6	The flammability of gasoline is quite	F	evident during a chemical reaction.
7	The initial energy of a runner is	G	considered to be poorly behaved.
8	Energy is the property of matter	H	practically anywhere.
9	The northern lights are a	I	is the large hump on its shoulder.

1→_____ 2→ _____ 3→ _____ 4→ _____

5→ _____ 6→ _____ 7→ _____ 8→ _____

9→ _____

Reading Comprehension Activity Page

ANSWER KEY

1	A chemical property is one that becomes	A	its nucleus.
2	Objects that are universal can be used	B	high and thus requires caution.
3	A distinctive characteristic of a brown bear	C	the energy he/she has BEFORE the race.
4	A child who doesn't listen is	D	natural phenomenon.
5	The center of an atom is considered	E	that gives it the ability to do work.
6	The flammability of gasoline is quite	F	evident during a chemical reaction.
7	The initial energy of a runner is	G	considered to be poorly behaved.
8	Energy is the property of matter	H	practically anywhere.
9	The northern lights are a	I	is the large hump on its shoulder.

1→ F 2→ H 3→ I 4→ G

5→ A 6→ B 7→ C 8→ E

9→ D

Reading Comprehension Activity Page

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

A property that becomes evident during a chemical reaction	**A feature or quality of something**	**Ease with which a material ignites**
Any observable event	**Of or relating to the center of an atom**	**The capacity to do work**
Applicable everywhere or in all cases	**Occurring at the beginning**	**Action or reaction of something under specific circumstances**

chemical property **initial** **nuclear** **energy**

flammability **behavior** **universal**

characteristic **phenomena**

Reading Comprehension Activity Page

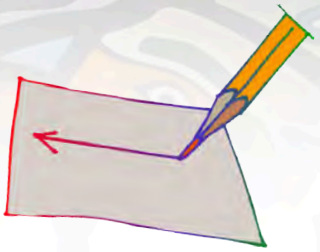
ANSWER KEY

A property that becomes evident during a chemical reaction chemical property	**A feature or quality of something** characteristic	**Ease with which a material ignites** flammability
Any observable event phenomena	**Of or relating to the center of an atom** nuclear	**The capacity to do work** energy
Applicable everywhere or in all cases universal	**Occurring at the beginning** initial	**Action or reaction of something under specific circumstances** behavior

STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page



Have the students write in the missing letters.

ch_____al pr_____ty

uni_____l

chara_____stic

b_____ior

nu_____ar

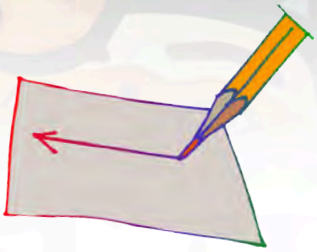
flam_____ty

in_____l

e_____gy

ph_____ena

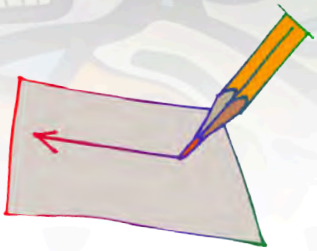
Basic Writing Activity Page



Have the students write the word for each picture.

Basic Writing Activity Page

ANSWER KEY



flammability

phenomena

initial

chemical property

behavior

nuclear

characteristic

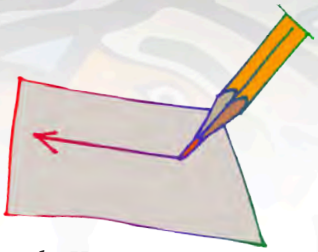
energy

universal

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.

CHEMICAL PROPERTY

_____

UNIVERSAL

_____

CHARACTERISTIC

_____

BEHAVIOR

_____

NUCLEAR

_____

FLAMMABILITY

_____

INITIAL

_____

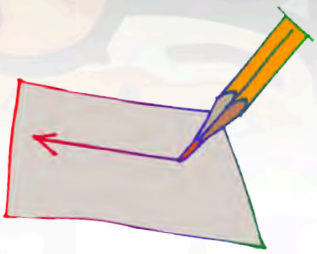
ENERGY

_____

PHENOMENA

_____

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: Concept of Physical Science

SCIENCE PROGRAM

Unit Assessment Teacher's Notes
Grade 8 • 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 page 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 by the picture for **CHEMICAL PROPERTY**.
2. Write the number 2 by the picture for **UNIVERSAL**.
3. Write the number 3 by he picture for **CHARACTERISTIC**.
4. Write the number 4 by the picture for **BEHAVIOR**.
5. Write the number 5 by the picture for **NUCLEAR**.
6. Write the number 6 by the picture for **FLAMMABILITY**.
7. Write the number 7 by the picture for **INITIAL**.
8. Write the number 8 by the picture for **ENERGY**.
9. Write the number 9 by the picture for **PHENOMENA**.

LISTENING COMPREHENSION

Turn to page 2 in your test. Listen to the sentences I say. Circle "T" for true and "F" for false sentences."

1. The ability of metal to rust is an example of its chemical properties.
2. Some properties of chemicals are universal.
3. A characteristic of orange juice is its yellow/orange color.
4. The behavior of soda immediately after being poured is complete evaporation.
5. Nuclear is of or related to the outer edge of an atom.
6. Flammability refers to a substance's ability to float.
7. A runner's initial energy tends to be greater before a race than his/her energy is afterward.
8. Energy is a substance's ability to be lazy. Energy is a substance's ability to be lazy.
9. An example of natural phenomena is the northern lights.

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 pages 3 and 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 8 • 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

9. T F

chemical property
universal
characteristic
behavior
nuclear
flammability
initial
energy
phenomena

chemical property
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characteristic
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flammability
initial
energy
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initial
energy
phenomena

chem property	icle ickle ickal ichal icle ical ecle eckle acle
univer	sal sel sil sol sul cal cel cil col
character	astic estic istic ostic ustic astac astec astic astoc
beha	viar vier viir vior viur vare vere vire vore
nuc	lar ler lir lor lur lear leer leir leor
flammab	aty ety ity oty uty yty ilaty ilety ility
init	al el il ol ul yl ial iel iol
ener	jie jy gy gee jay gey die dy dee
pheno	nana nena nina nona nuna mana mena mina mona

1. Which of the following is a chemical property of some metals?
   - ❍ ability to sink
   - ❍ ability to rust
   - ❍ ability to be found

2. A universal property is one that is applicable:
   - ❍ in all cases
   - ❍ in few cases
   - ❍ never

3. A characteristic of brown bears, but not of black bears is:
   - ❍ teeth
   - ❍ a shoulder hump
   - ❍ hair

4. The action or reaction of something under specified conditions is a:
   - ❍ cost
   - ❍ ceremony
   - ❍ behavior

5. Nuclear refers to which part of an atom?
   - ❍ outer edge
   - ❍ inner edge
   - ❍ center

6. Flammability measures a material's ability to:
   - ❍ harvest a moose
   - ❍ melt a glacier
   - ❍ ignite

7. The initial energy of a runner refers to his/her energy:
   - ❍ before the race
   - ❍ during the race
   - ❍ after the race

8. A muscle's energy gives it the capacity to:
   - ❍ speak a foreign language.
   - ❍ deteriorate.
   - ❍ do work.

9. Phenomena are events that can be:
   - ❍ Tasted
   - ❍ Smelled
   - ❍ Salmon
   - ❍ Observed

CHEMICAL PROPERTY

_____

UNIVERSAL

_____

CHARACTERISTIC

_____

BEHAVIOR

_____

NUCLEAR

_____

FLAMMABILITY

_____

INITIAL

_____

ENERGY

_____

PHENOMENA

_____

SCIENCE PROGRAM

Unit Assessment ANSWER KEY
Grade 8 • Unit 3 (B–1)
Theme: Concepts of Physical Science

1

7

9

5

3

4

8

2

6

1. **T** **F**

2. **T** **F**

3. **T** **F**

4. **T** **F**

5. **T** **F**

6. **T** **F**

7. **T** **F**

8. **T** **F**

9. **T** **F**

chemical property
universal
characteristic
behavior
nuclear
flammability
initial
energy
phenomena

chemical property
universal
characteristic
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nuclear
flammability
initial
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chemical property
universal
characteristic
behavior
nuclear
flammability
initial
energy
phenomena

chem property	icle ickle ickal ichal icle ical ecle eckle acle
univer	sal sel sil sol sul cal cel cil col
character	astic estic istic ostic ustic astac astec astic astoc
beha	viar vier viir vior viur vare vere vire vore
nuc	lar ler lir lor lur lear leer leir leor
flammab	aty ety ity oty uty yty ilaty ilety ility
init	al el il ol ul yl ial iel iol
ener	jie jy gy gee jay gey die dy dee
pheno	nana nena nina nona nuna mana mena mina mona

1. Which of the following is a chemical property of some metals?
   - ❍ ability to sink
   - ● ability to rust
   - ❍ ability to be found

2. A universal property is one that is applicable:
   - ● in all cases
   - ❍ in few cases
   - ❍ never

3. A characteristic of brown bears, but not of black bears is:
   - ❍ teeth
   - ● a shoulder hump
   - ❍ hair

4. The action or reaction of something under specified conditions is a:
   - ❍ cost
   - ❍ ceremony
   - ● behavior

5. Nuclear refers to which part of an atom?
   - ❍ outer edge
   - ❍ inner edge
   - ● center

6. Flammability measures a material's ability to:
   - ❍ harvest a moose
   - ❍ melt a glacier
   - ● ignite

7. The initial energy of a runner refers to his/her energy:
   - ● before the race
   - ❍ during the race
   - ❍ after the race

8. A muscle's energy gives it the capacity to:
   - ❍ speak a foreign language.
   - ❍ deteriorate.
   - ● do work.

9. Phenomena are events that can be:
   - ❍ Tasted
   - ❍ Smelled
   - ❍ Salmon
   - ● Observed

initial

universal

behavior

chemical property

energy

phenomena

flammability

nuclear

characteristic

UNIT 4

B-1: Concepts of Physical Science

KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

STATE CHANGE

Place-Based Perspective

Put an ice cube on a napkin in front of each student. Allow the ice cubes a minute or two to begin to melt. Ask the students what is happening (most will probably say that it is melting). Explain that it is undergoing a state change. Water is water no matter its state (ice, liquid, steam). A state change occurs when a substance changes its "state" but remains the same substance. Ask the students to identify another example of a state change.

Heritage Cultural Perspective

Alaska Native peoples in Southeast were constantly aware of state changes, especially for water. Throughout Southeast Alaska, water can be found in many forms: glaciers, lake and river ice, rain, snow, fog, mist, hail, etc. Though it took different forms, the indigenous people knew that ultimately, water was water — an ever present and ever changing component of the temperate rainforest.

PARTICLE SPEED

Place-Based Perspective

Show the students the picture of the Large Hadron Collider on page 301. Ask how many of them have heard of it. Do they know what it does? Explain that it collides atomic particles at very high speeds to answer complex questions about physics. Tell them that particles travel at different speeds depending on the conditions. Particles in solids travel at much slower speeds than those in gases!

Heritage Cultural Perspective

The idea of atomic structures and the velocity at which they move is relatively new. Though atomic and subatomic particle speeds were not traditionally known to Alaska's indigenous peoples, particle speed is also defined as a measure of ground vibration during seismic activity. Native peoples definitely recognized earthquakes and experienced them from time to time throughout Alaska.

HEAT TRANSFER

Place-Based Perspective

Tell the students to cup their hands over their mouth and to blow on them. Ask them how their breath felt, warm? Explain that the breath was warmer than the skin on their hands and that the heat was being transferred. Tell the students that this happens all of the time in nature, as heat passes from one object to another. What are some other common examples of heat transfer?

Heritage Cultural Perspective

Body heat is extremely important to maintain in the harsh climactic conditions of the North. Tlingit, Haida, and Tsimshian peoples had to take great care when navigating through the frigid ocean waters of the region as it would not take long for hypothermia to set in after becoming wet. When someone enters cold water, heat transfer occurs from the body to the surrounding liquid.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

BONDS

Place-Based Perspective

Show the students a very hard object, such as a metal pipe, and try to pull it apart at the ends. No matter how hard you try, you are unable to. Ask the students why it may be so difficult to pull apart. Explain that the molecules that make up the object are bound tightly together by strong chemical bonds that resist being pulled apart. Ask them to list some items with weaker bonds.

Heritage Cultural Perspective

Bonds are a force of attraction but the term does not always have to be applied to chemical properties. Human beings establish bonds between each other and these are especially strong among family members. The Tlingit, Haida, and Tsimshian peoples maintained strong bonds with their immediate and extended families. The bonds between people are central to culture, self-identity, survival, and peace.

MOLECULES

Place-Based Perspective

Show the students the picture of a molecule on page 307. Though they can see this representation of the molecule on the paper, ask them how small they think the molecule actually is. Explain that these are the smallest fundamental units of chemical compounds and they are made up of atoms that are bound together. See who can draw the best molecule on the board!

Heritage Cultural Perspective

Individual molecules could not be perceived by the human eye before the invention of high-powered microscopes. Many molecules make up the objects that we see and use in the world around us. From red cedar canoes to shaman rattles to clan houses and oil lamps, the molecular make-up of our world is critical to their existence!

ARRAYS

Place-Based Perspective

Write two sets of numbers on the board:

3 5 9 12 16 90 114

114 9 12 16 5 90 3

Ask the students which set appears to be the most orderly. Explain that the first set is listed in order of magnitude and that this is called an array.

Heritage Cultural Perspective

An array can also mean an impressive display or range of a particular object. The Native people of Alaska were constantly in the presence of magnificent arrays in the natural world. Mountain ranges, lakes and rivers, spawning salmon, vast open ocean, pods of whales, massive herds of caribou. People are still mesmerized by the great beauty of Alaska!

Culturally Responsive & Place-Based Introduction of Science Vocabulary

CIRCULAR MOTION

Place-Based Perspective

Show the students an analog clock. Though the hands move very slowly, ask them to describe their movement. What other objects move in this way? Explain that this is circular motion — rotation along a circle. What objects in nature tend to move in a circular motion? Is it important that they do?

Heritage Cultural Perspective

Celestial bodies such as the sun and the moon exhibit circular motion as they move across the sky each day and night. These movements were recognized by Alaska Native people. The movements impacted daylight, seasons, climate, tides, and other aspects of daily life in the north.

INTERACTIONS

Place-Based Perspective

Try to write a sentence on the board with your finger. Ask the students what you wrote. They should have no idea because your finger did not leave a mark. Now write the sentence with a marker. They can read it now because the "interaction" between the marker and the board resulted in ink being left behind. Both times the sentence was written there was an interaction, but the results were different. Explain that interactions are simply objects having an effect on one another.

Heritage Cultural Perspective

The various Tlingit tribes, though some lived quite far from one another, traditionally had significant interaction. People would frequently traverse the inside passage to visit relatives, trade, make peace, and sometimes, make war. Interactions with other tribes were important to share information and goods.

CHARGES

Place-Based Perspective

Show the students the picture of the person with their hair standing on end on page 315. Ask the students how this person's hair might have gotten like this. Then ask the students if they have ever been shocked. Ask them if they prefer their phone's battery to have a full charge. Explain that charges are a property of matter that allows them to experience electrical forces.

Heritage Cultural Perspective

Charges are involved in the creation of lightning, which was not unknown to the Tlingit and Haida peoples of long ago. The Tlingit word for lightning is "xeitl l'úkx̲u." Lightning is said to occur when the Thunderbird blinks his eyes, and thunder, when he flaps his wings. When a mill burned to the ground in Sitka long ago after a lightning strike, the Tlingit told the Russians that Thunderbird was to blame.

LESSONS

Science Language for Success

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

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

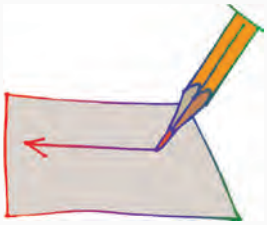
Give each student his/her envelope that contains the alphabet letters. Mount one of the science pictures on the board. The students must use the cut-out letters to spell the word. Review the students' work. Repeat, until all of the words have been spelled in this way.

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

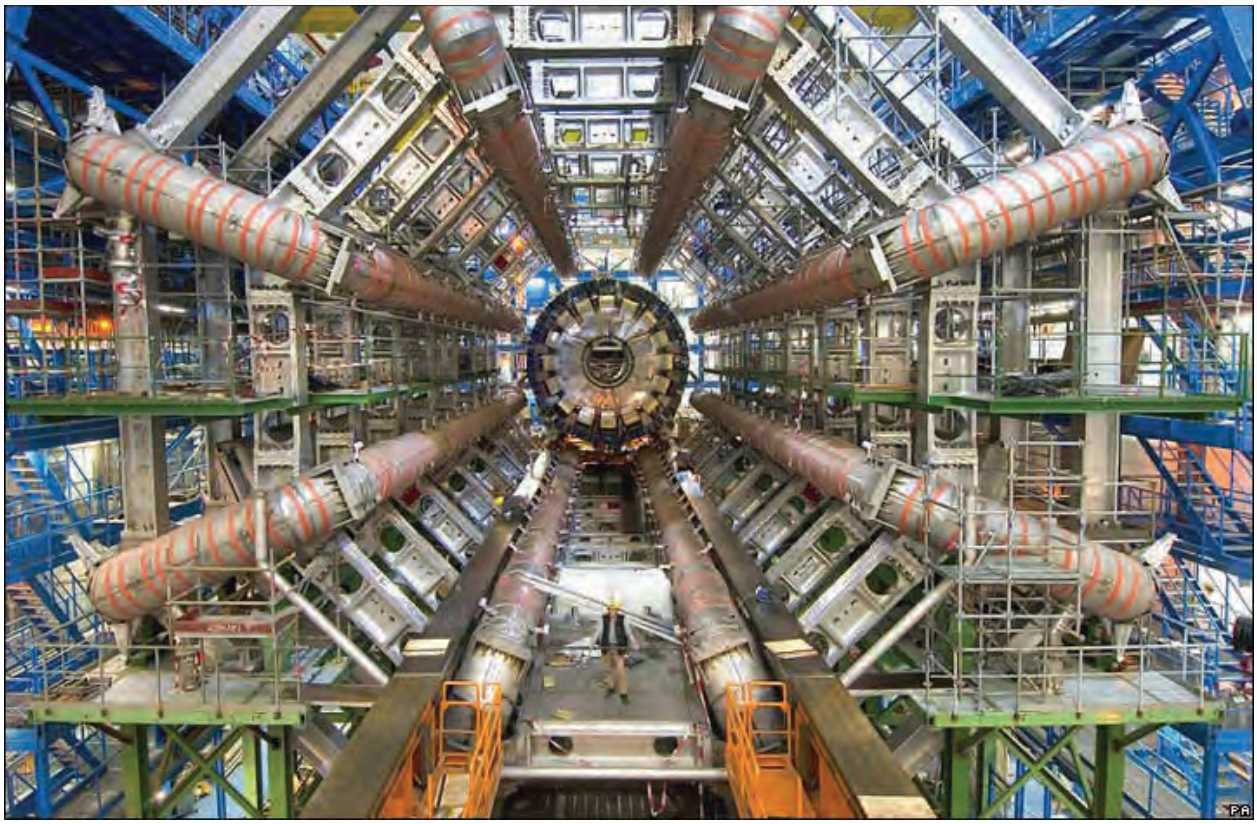
Group the students into two teams. Have the first player from each team stand in front of the board. Use the index finger of your writing hand to "write" the first letter of a sight word on the two players' backs. When you have done this, say "Go". Each of the players should then write a sight word on 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.

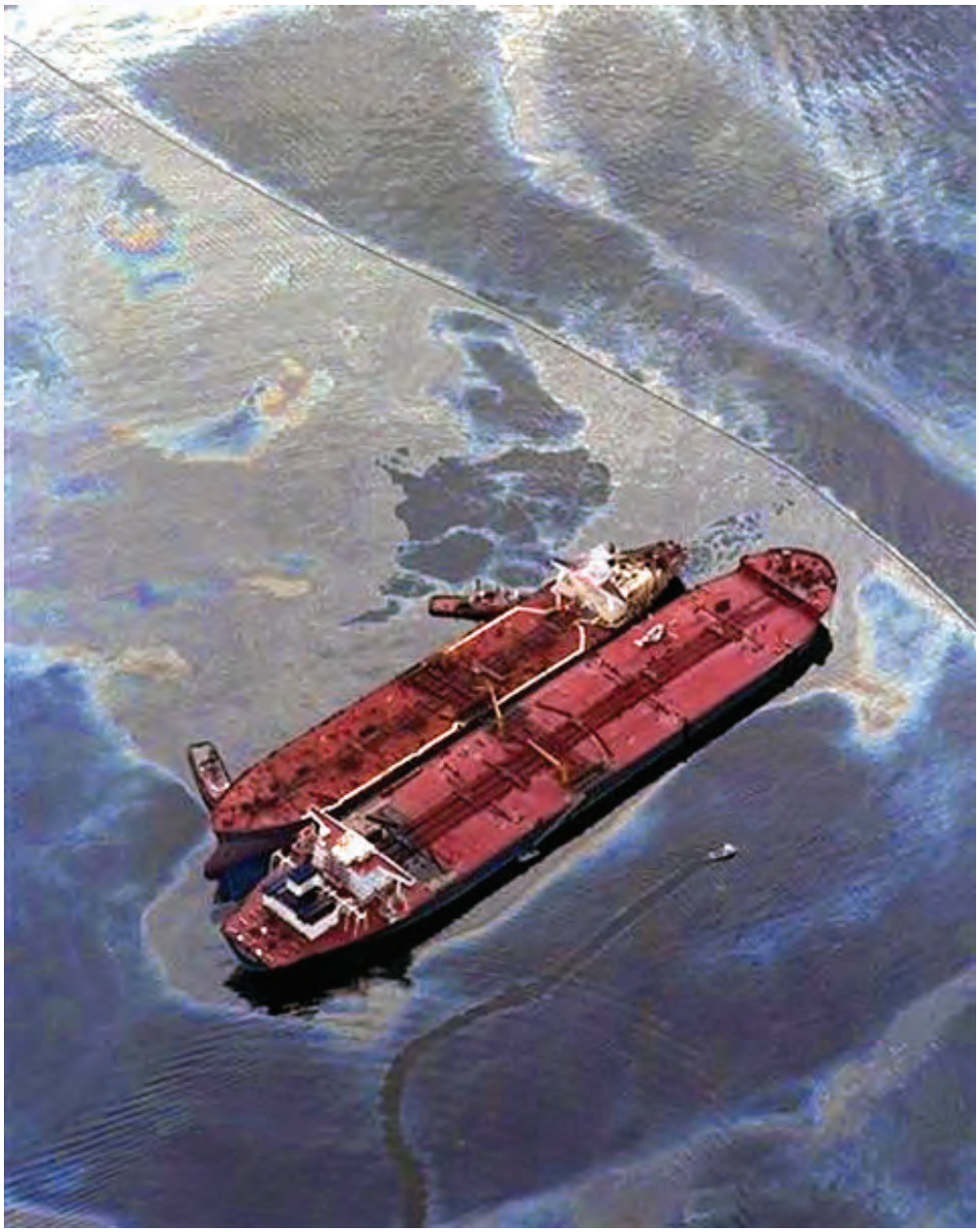
VOCABULARY PICTURES

STATE CHANGE

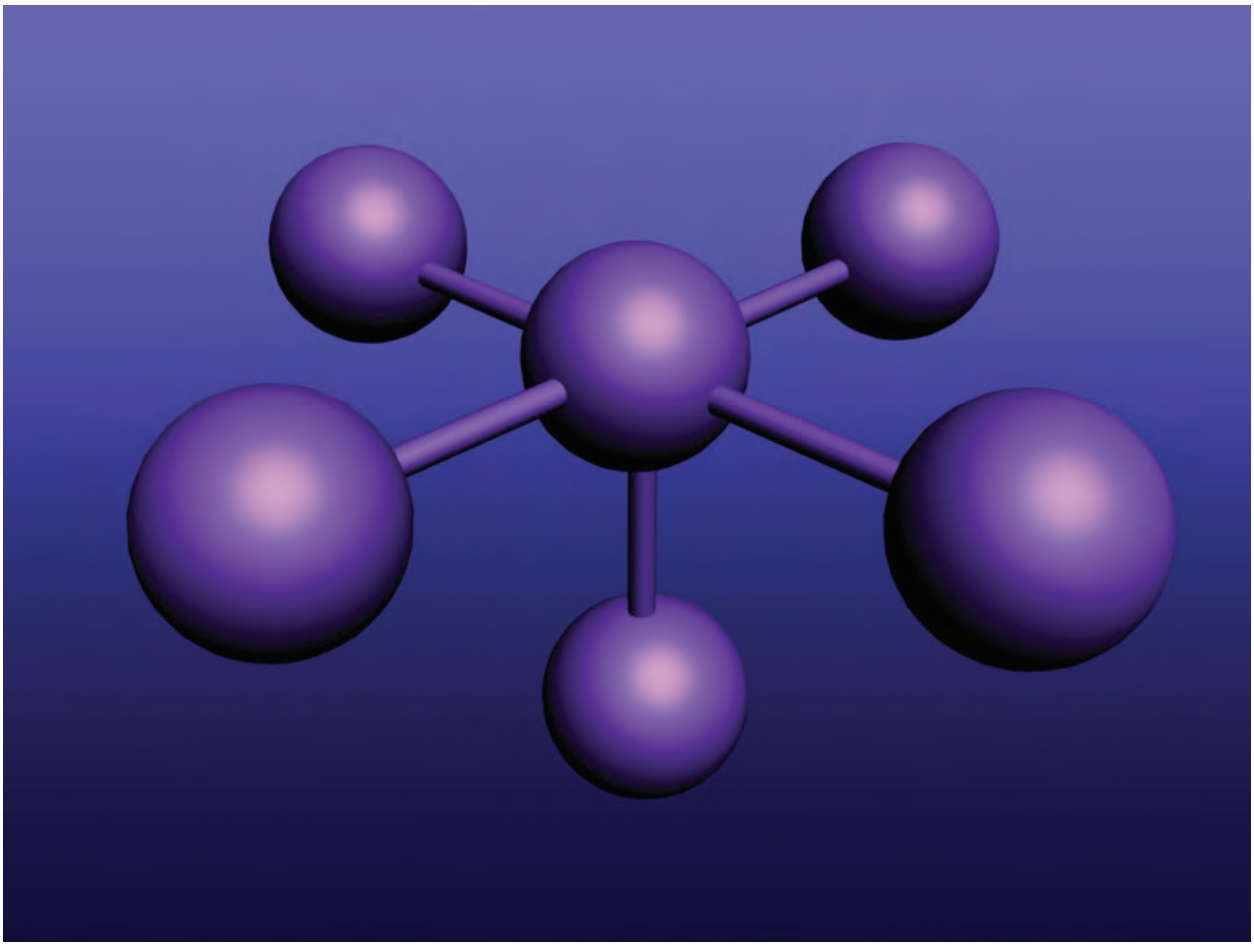


PARTICLE SPEED

HEAT TRANSFER

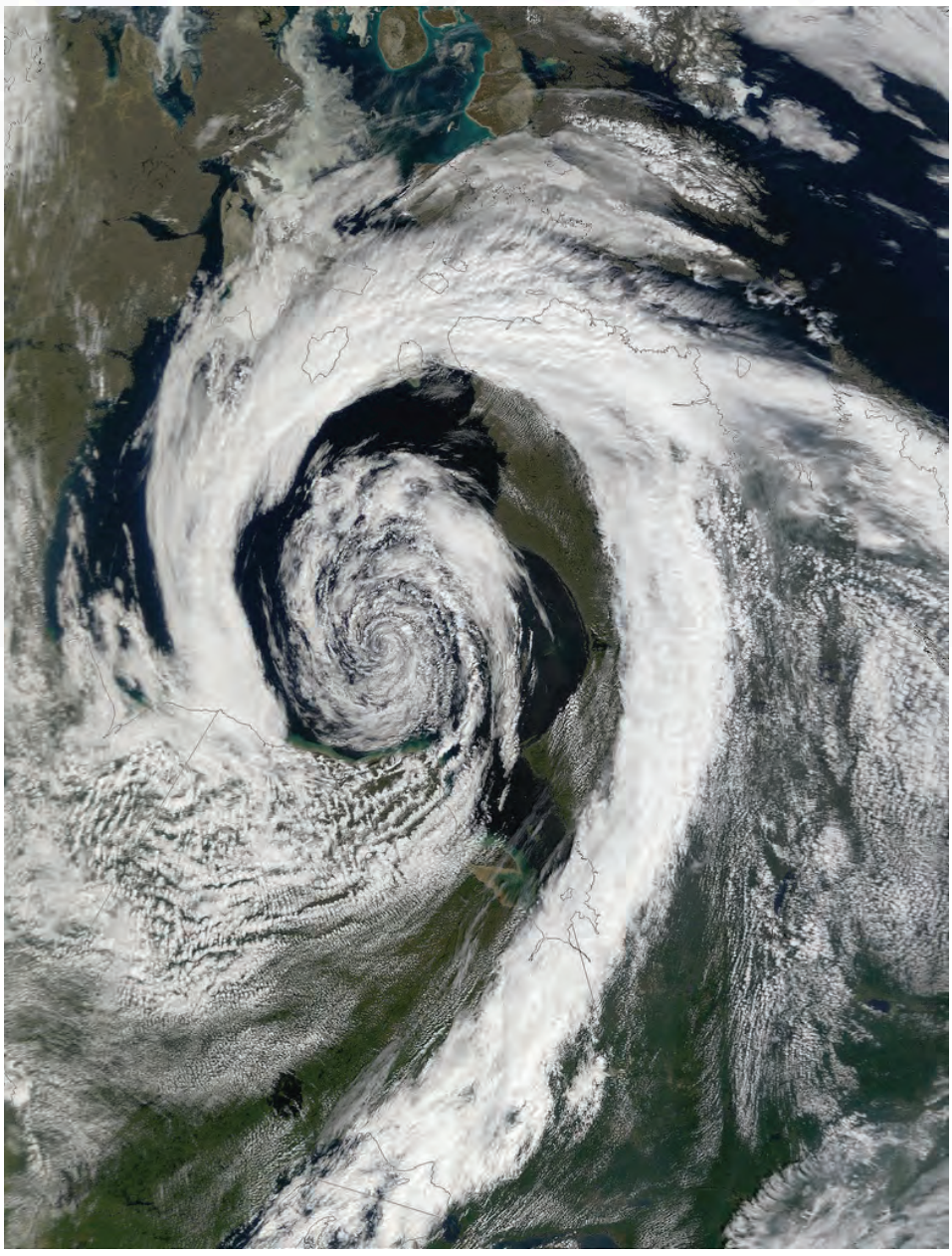


BONDS



MOLECULES

ARRAYS



CIRCULAR MOTION

INTERACTIONS

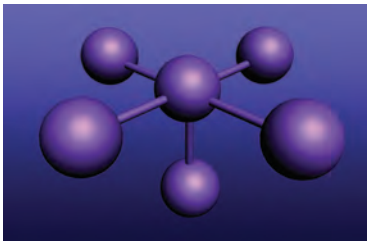
CHARGES

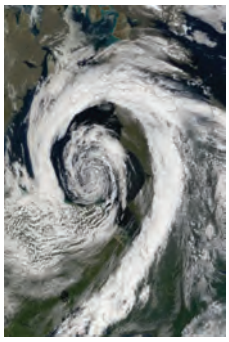
STUDENT SUPPORT MATERIALS

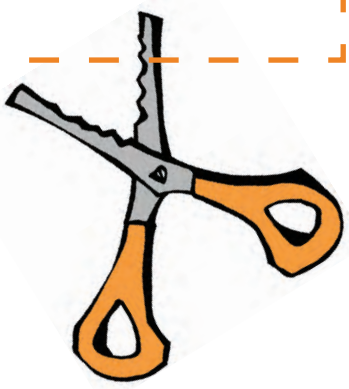
Listening • Mini Pictures

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.







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 melting of a glacier is an example of a state change in water. **True** **False**

2. The state of a substance is related to its particle speed. **True** **False**

3. Heat cannot be transferred between one object and another. **True** **False**

4. Bonds push two objects apart rather than attract them to one another. **True** **False**

5. A molecule is a group of atoms bonded together. **True** **False**

6. A disorderly and random set of numbers represents an array. **True** **False**

7. The spinning of storm systems is an example of circular motion. **True** **False**

8. Just as there are interactions between people, so too do molecules interact. **True** **False**

9. An electrical charge is always caused by an angry bull moose. **True** **False**

Listening Comprehension: Answer Key

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 melting of a glacier is an example of a state change in water. **True** / **False**

2. The state of a substance is related to its particle speed. **True** / **False**

3. Heat cannot be transferred between one object and another. **True** / **False**

4. Bonds push two objects apart rather than attract them to one another. **True** / **False**

5. A molecule is a group of atoms bonded together. **True** / **False**

6. A disorderly and random set of numbers represents an array. **True** / **False**

7. The spinning of storm systems is an example of circular motion. **True** / **False**

8. Just as there are interactions between people, so too do molecules interact. **True** / **False**

9. An electrical charge is always caused by an angry bull moose. **True** / **False**

STUDENT SUPPORT MATERIALS

Sight Words

state change

particle speed

heat transfer

bonds

molecules

arrays

circular motion

interactions

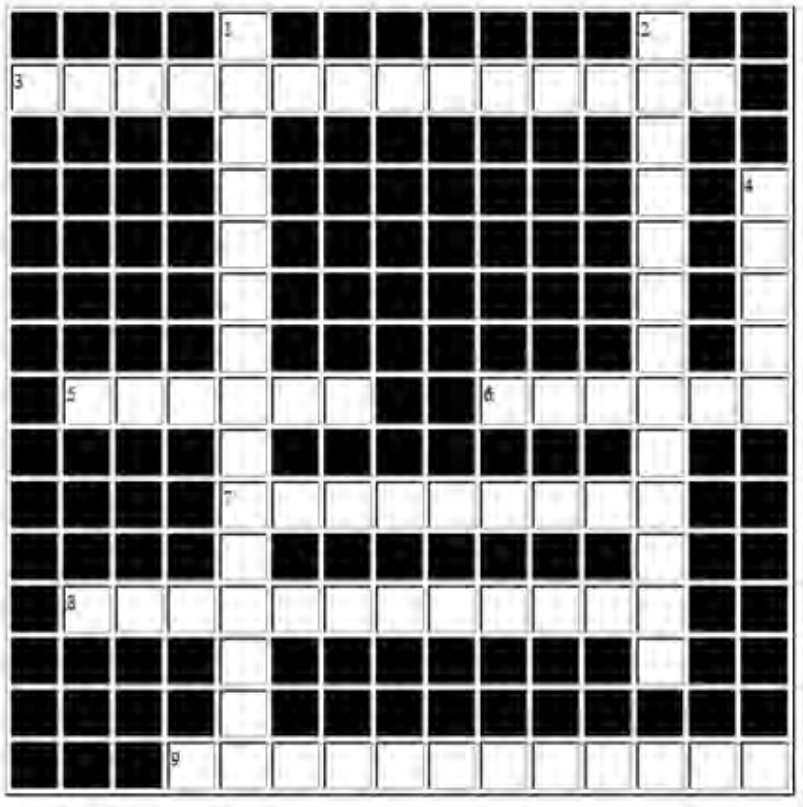
charges

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.



Across

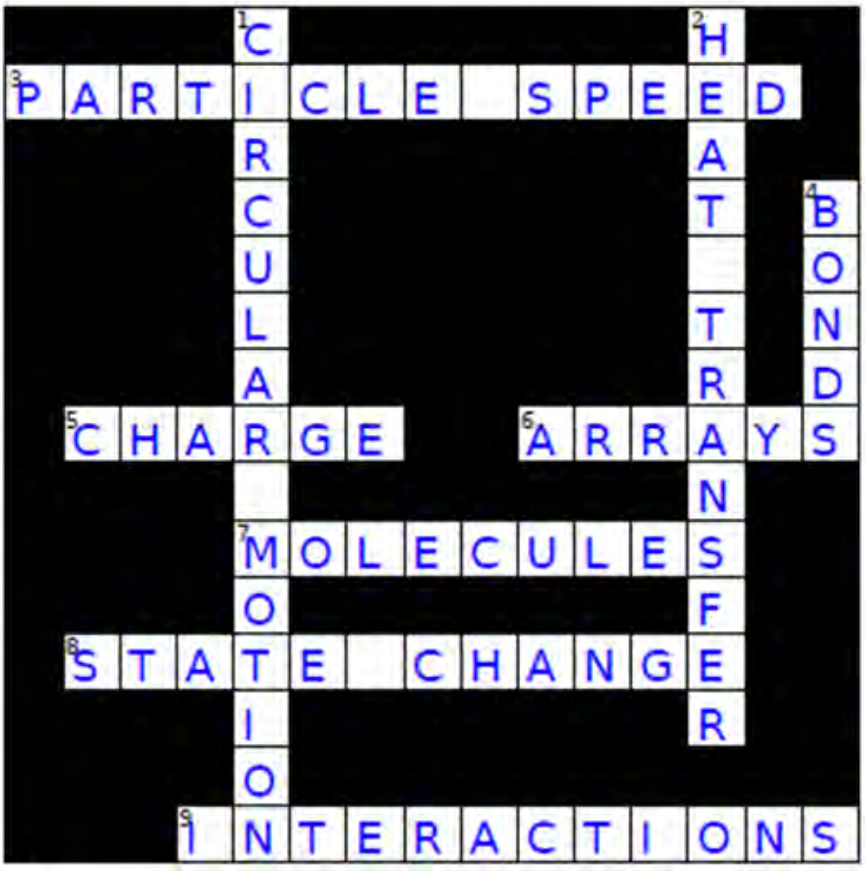
3. the velocity of a particle through a medium
5. a property of matter that causes electrical forces
6. orderly arrangements
7. a group of atoms bonded together
8. a change from one state to another without a change in chemical composition
9. an action that occurs as two or more objects have an effect upon one another

Down

1. rotation along a circle; a circular path or orbit
2. the movement of heat from one place to another
4. a force of attraction, especially between atoms in a molecule

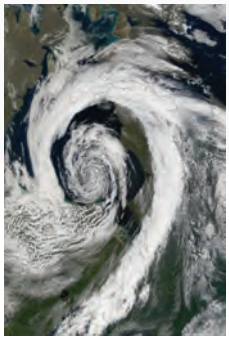
Sight Words Activity Page

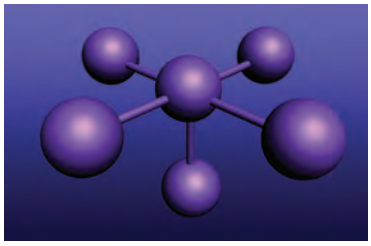
Answer Key

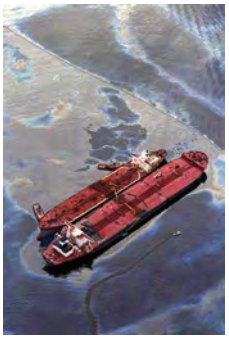


Sight Words Activity Page

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







state change | particle speed | heat transfer | bonds

molecules | arrays | circular motion | interactions

charges

Sight Words Activity Page

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

STUDENT SUPPORT MATERIALS

Basic Reading • Encoding

Encoding Activity Page

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

change **state**

_____ _____

par **cle** **ti** **speed**

_____ _____ _____ _____

fer **heat** **trans**

_____ _____ _____

Encoding Activity Page

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

bonds

_____

e **mol** **cules**

_____ _____ _____

rays **ar**

_____ _____

Encoding Activity Page

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

tion	cir	mo	lar	cu
_____	_____	_____	_____	_____

ac	ter	in	tions
_____	_____	_____	_____

ges	char
_____	_____

Encoding Activity Page

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

state ch	nsfer
part	nds
heat tra	ange
bo	ays
mole	lar motion

Encoding Activity Page

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

arr	icle speed
circu	rges
int	eractions
cha	cules

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. A state change has occurred when:
   - ❍ an ice cube melts becoming liquid water
   - ❍ Alaska was granted statehood
   - ❍ bears awaken from hibernation
   - ❍ bears hibernate

2. Particle speed refers to a particle's:
   - ❍ height
   - ❍ velocity
   - ❍ color
   - ❍ volume

3. Heat transfer occurs when:
   - ❍ the seasons change
   - ❍ heat passes from one source to another
   - ❍ plants grow in the spring
   - ❍ money is given to another person

4. Chemical bonds hold _____ together.
   - ❍ hands
   - ❍ dust
   - ❍ light
   - ❍ atoms

5. A molecule is the smallest fundamental unit of:
   - ❍ matter
   - ❍ atmosphere
   - ❍ a chemical compound
   - ❍ culture

Reading Comprehension Activity Page

6 Items in an array are in:

- ❍ an orderly arrangement
- ❍ a disorderly arrangement
- ❍ conflict with other things
- ❍ none of the above

7 Circular motion is rotation along a:

- ❍ cylinder
- ❍ rectangle
- ❍ square
- ❍ circle

8 Interactions occur when:

- ❍ a single object has no effect on another
- ❍ two or more objects have an effect on one another
- ❍ many objects stay separate from one another
- ❍ none of the above

9 The term charge refers to:

- ❍ a property of matter
- ❍ electricity
- ❍ experiencing a force
- ❍ all of the above

Reading Comprehension Activity Page

ANSWER KEY

1. A state change has occurred when:
   - ● an ice cube melts becoming liquid water
   - ❍ Alaska was granted statehood
   - ❍ bears awaken from hibernation
   - ❍ bears hibernate

2. Particle speed refers to a particle's:
   - ❍ height
   - ● velocity
   - ❍ color
   - ❍ volume

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   - ❍ hands
   - ❍ dust
   - ❍ light
   - ● atoms

5. A molecule is the smallest fundamental unit of:
   - ❍ matter
   - ❍ atmosphere
   - ● a chemical compound
   - ❍ culture

Reading Comprehension Activity Page

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- ❍ rectangle
- ❍ square
- ● circle

8 Interactions occur when:

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- ● two or more objects have an effect on one another
- ❍ many objects stay separate from one another
- ❍ none of the above

9 The term charge refers to:

- ❍ a property of matter
- ❍ electricity
- ❍ experiencing a force
- ● all of the above

Reading Comprehension Activity Page

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

1	A state change does NOT involve	A	forms a molecule.
2	Particle speed is the	B	that hold atoms together.
3	Heat transfer occurs when heat	C	can be said to be in an array.
4	Bonds are a force of attraction	D	same as particle velocity.
5	A group of atoms bonded together	E	an electrical force to charge its battery.
6	Objects in an orderly arrangement	F	circular motion.
7	The Earth's rotation in an example of	G	a change in chemical composition.
8	An interaction has occurred when	H	two molecules have affected each other.
9	Plugging in a cell phone causes	I	is exchanged between two objects.

1→_____ 2→ _____ 3→ _____ 4→ _____

5→ _____ 6→ _____ 7→ _____ 8→ _____

9→ _____

Reading Comprehension Activity Page

ANSWER KEY

1	A state change does NOT involve	A	forms a molecule.
2	Particle speed is the	B	that hold atoms together.
3	Heat transfer occurs when heat	C	can be said to be in an array.
4	Bonds are a force of attraction	D	same as particle velocity.
5	A group of atoms bonded together	E	an electrical force to charge its battery.
6	Objects in an orderly arrangement	F	circular motion.
7	The Earth's rotation in an example of	G	a change in chemical composition.
8	An interaction has occurred when	H	two molecules have affected each other.
9	Plugging in a cell phone causes	I	is exchanged between two objects.

1→ G 2→ D 3→ I 4→ B

5→ A 6→ C 7→ F 8→ H

9→ E

Reading Comprehension Activity Page

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

Rotation along a circle	**Force of attraction holding atoms together**	**Action that occurs when objects effect one another**
Smallest unit of a chemical compound	**A change from one state to another**	**Movement of heat from one place to another**
An orderly arrangement	**Property of matter that causes electrical forces**	**Particle velocity in a given medium**

state change **particle speed** **heat transfer** **bonds**

molecules **arrays** **circular motion**

charges **interactions**

Reading Comprehension Activity Page

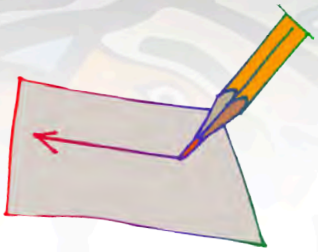
ANSWER KEY

Rotation along a circle circular motion	**Force of attraction holding atoms together** bonds	**Action that occurs when objects effect one another** interaction
Smallest unit of a chemical compound molecules	**A change from one state to another** state change	**Movement of heat from one place to another** heat transfer
An orderly arrangement arrays	**Property of matter that causes electrical forces** charge	**Particle velocity in a given medium** particle speed

STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page



Have the students write in the missing letters.

st_____e c_____nge

pa_____e sp____d

h_____t t_____fer

b_____ds

mol_____es

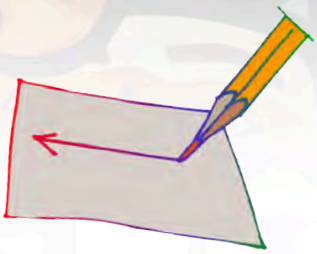
a_____ys

cir_____r m_____n

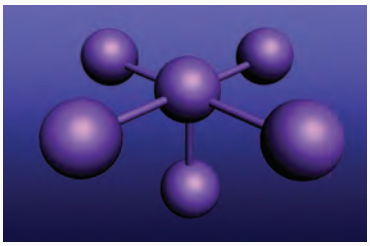
inter_____ns

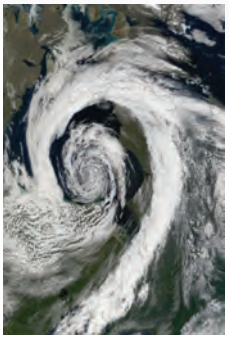
c_____ges

Basic Writing Activity Page



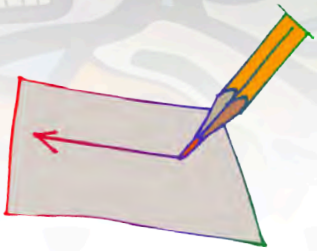
Have the students write the word for each picture.

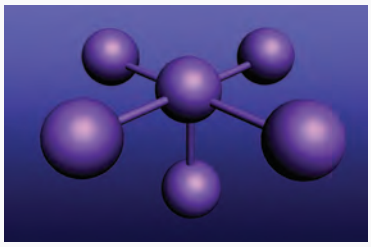




Basic Writing Activity Page

ANSWER KEY





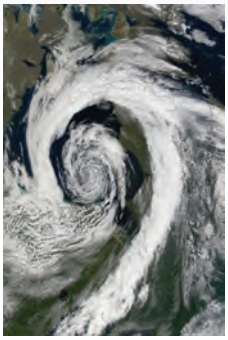
molecules

heat transfer

arrays

particle speed

bonds



circular motion

charges

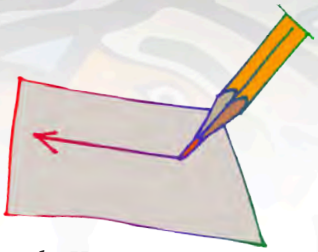
interactions

state change

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.

STATE CHANGE

_____

PARTICLE SPEED

_____

HEAT TRANSFER

_____

BONDS

_____

MOLECULES

_____

ARRAYS

_____

CIRCULAR MOTION

_____

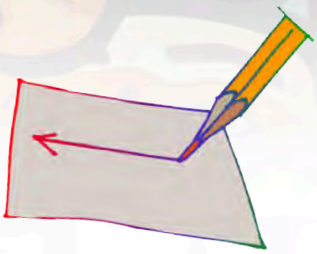
INTERACTIONS

_____

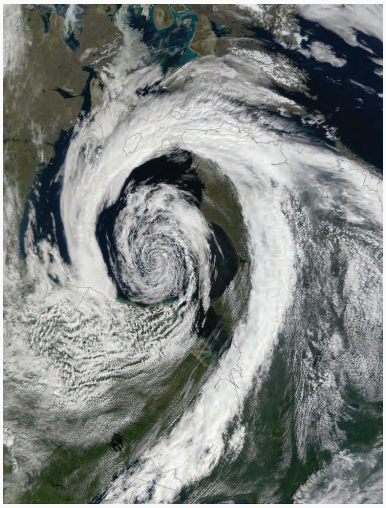
CHARGES

_____

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: Concept of Physical Science

SCIENCE PROGRAM

Unit Assessment Teacher's Notes
Grade 8 • 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 page 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 by the picture for **STATE CHANGE.** .
2. Write the number 2 by the picture for **PARTICLE SPEED**.
3. Write the number 3 by he picture for **HEAT TRANSFER**.
4. Write the number 4 by the picture for **BONDS**.
5. Write the number 5 by the picture for **MOLECULES**.
6. Write the number 6 by the picture for **ARRAYS**.
7. Write the number 7 by the picture for **CIRCULAR MOTION**.
8. Write the number 8 by the picture for **INTERACTIONS**.
9. Write the number 9 by the picture for **CHARGES**.

LISTENING COMPREHENSION

Turn to page 2 in your test. Listen to the sentences I say. Circle "T" for true and "F" for false sentences."

1. A state change has occurred when ice melts becoming liquid water.
2. Particle speed is measured as its height above sea level.
3. Heat transfer refers to trading basketball players living in Miami.
4. Atoms are held together in a molecule or crystal by bonds.
5. Molecules represent the largest fundamental unit of a chemical compound.
6. A disorderly and random arrangement of numbers is an array.
7. Circular motion is rotation along a circle.
8. Interactions occur when two or more molecules have an effect on one another.
9. Charge is an electrical property of matter.

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 pages 3 and 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.

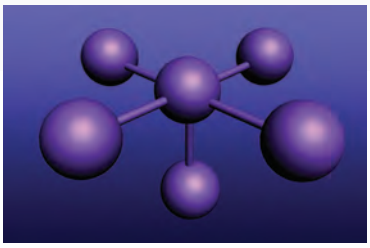
Teacher: To get a percentage for this student's assessment, divide the total number of questions correct by the total number of questions, then multiply this answer by 100 to determine the percentage of questions answered correctly.

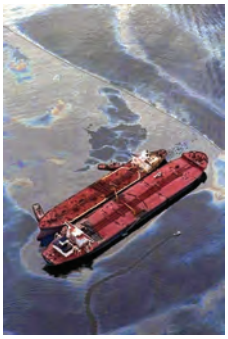
SCIENCE PROGRAM

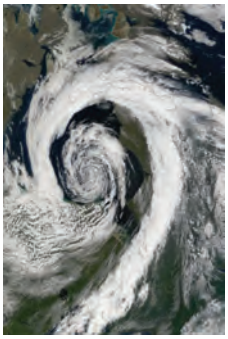
Unit Assessment Student Pages
Grade 8 • Unit 4 (B–1)
Theme: Concepts of Physical Science

Date:_____ Student's Name:_____

Number Correct:_____ Percent Correct:_____







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circular motion
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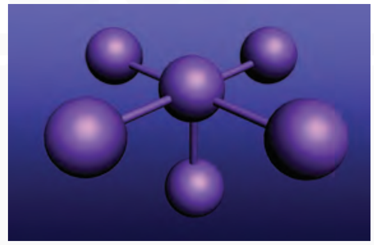

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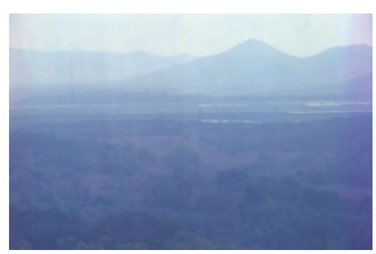

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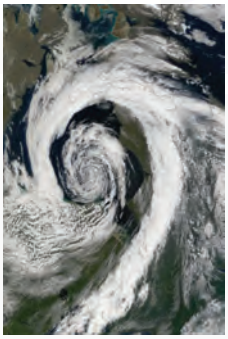

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1. Which of the following is NOT an example of a state change?
   - ❍ ice melting, becoming liquid water
   - ❍ liquid water freezing, becoming ice
   - ❍ the addition of sugar to liquid water

2. Particle speed is a measurement of particle:
   - ❍ height
   - ❍ velocity
   - ❍ change

3. Which of the following is NOT an example of heat transfer?
   - ❍ water and air of equal temperatures
   - ❍ a doe warming a fawn by lying next to it
   - ❍ a stove heating a pot of water

4. Bonds:
   - ❍ attract things to one another
   - ❍ repel things from one another
   - ❍ make things seem larger than they actually are

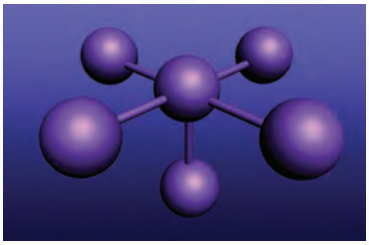
5. Molecules are the _____ fundamental unit of a chemical compound.
   - ❍ fastest
   - ❍ largest
   - ❍ smallest

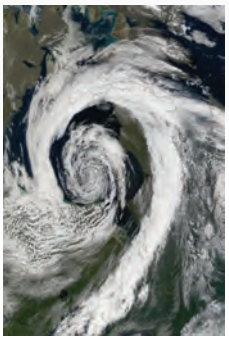
6. Numbers arranged in an organized manner are in an:
   - ❍ estimate
   - ❍ array
   - ❍ allocation

7. Rotation around a circle is the definition of:
   - ❍ circular motion
   - ❍ triangular motion
   - ❍ rectangular motion

8. Interactions occur when:
   - ❍ objects are placed far apart
   - ❍ objects fall apart
   - ❍ objects have an effect on one another

9. A charge in chemistry refers to:
   - ❍ electrical energy
   - ❍ an attacking bull moose
   - ❍ using a credit card





STATE CHANGE

PARTICLE SPEED

HEAT TRANSFER

BONDS

MOLECULES

ARRAYS

CIRCULAR MOTION

INTERACTIONS

CHARGES

SCIENCE PROGRAM

Unit Assessment ANSWER KEY
Grade 8 • Unit 4 (B–1)
Theme: Concepts of Physical Science

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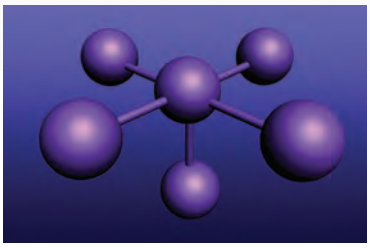

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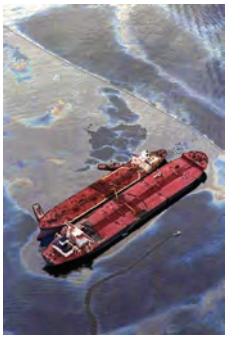

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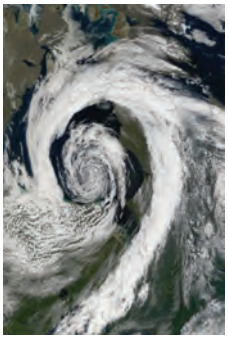

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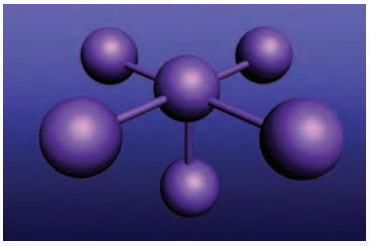

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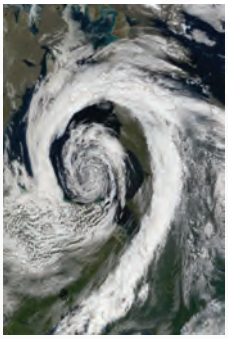

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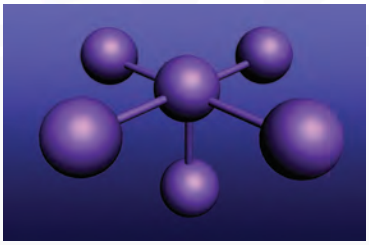
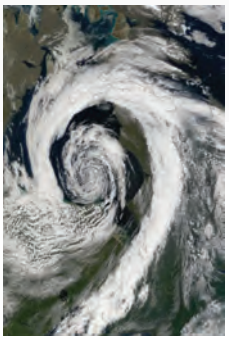


molecules

state change



circular motion

bonds

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charges

heat transfer

interactions

UNIT 5

C-1: Concepts of Life Science

KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

ENERGY TRANSFORMATION

Place-Based Perspective

Take a bite of an apple or another piece of food in front of the students. Explain that the energy contained in the apple will be transferred to your body through the process of digestion. Energy transformation occurs frequently as energy can take many forms. Walk around the classroom. Explain that the energy that allows your muscles to move was once contained in the food that you had eaten.

Heritage Cultural Perspective

In a fire, the energy that is contained in the chemical bonds of the material being burned is transformed into heat energy. This energy transformation was important to the indigenous peoples of Alaska in order to cook food and heat their homes. In another example, solar energy from the sun is transformed into chemical energy by plants. Later, animals that consume the plants again transform the energy!

GENES

Place-Based Perspective

Do a tally on the board of how many students have blond hair and how many do not. Next do tallies of how many have blue eyes and how many do not. Explain that these traits are based on the students' genes, which they inherited from their biological parents. It is a length of DNA in each of their cells which provides the information necessary to create different parts of their bodies.

Heritage Cultural Perspective

Genes are important parts of DNA that help define what each of us will look like. Genes distinguish fish species from one another and produce the differences in salmon that we see in Alaska's waters. The Tlingit and Haida people's genes traditionally coded for darker hair, darker eyes, and a slightly shorter stature than European genes. Genes are responsible for the awesome diversity that is life on Earth!

OFFSPRING

Place-Based Perspective

Show the students the photo of the brown bear sow with her cubs on page 397. Ask the students to tell you how the smaller bears are likely related to the larger mother. Explain that the smaller bears are the sow's offspring (children) just as the students are the offspring of their parents. Who were the students' parents the offspring of?

Heritage Cultural Perspective

The birth of young animals during the spring and summer in Alaska signifies a new birth, a new generation of species to survive their parents. Producing offspring is important for the persistence of all species on Earth, including humans. Tlingit, Haida, and Tsimshian peoples loved their children dearly and raised them to know and love their culture and the natural world around them.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

VERTEBRATE

Place-Based Perspective

Explain to the students that vertebrates are animals containing backbones or spinal columns. Ask the students to draw one animal with a backbone and one without. What types of animals did they put in each category? If there is a window in the classroom, give the students 5 minutes to try to identify a vertebrate on the outside of the school.

Heritage Cultural Perspective

Indigenous peoples depended on a variety of vertebrates for food in Southeast Alaska. Deer, wolves, bears, seals, salmon, halibut, whales, porpoises, eagles, ravens, sea gulls, porcupines, squirrels, wolverines, humans…. We all have backbones! That is not to say however that invertebrates (animals lacking a backbone) are not abundant and important parts of our ecosystems!

TAXONOMY

Place-Based Perspective

Place several stuffed animals / animal toys in the front of the classroom. Ask students to list on the board similarities and differences between each of the animals. Group the animals with the most similarities together or construct a taxonomic tree on the board. Explain that taxonomy is a systematic way of classifying plants and animals. How might humans fit into the classification system that the students suggested?

Heritage Cultural Perspective

It is natural for human beings to try to lump organisms into similar groups for the purpose of remembering what they are and how they may be related to one another. The indigenous peoples of Alaska recognized that there were differences between mammals, birds, and fish. They recognized differences between black bears and brown bears, red cedar and yellow cedar, and so on.

OBSERVABLE

Place-Based Perspective

Have the students record observations about what you are doing in the classroom. Do a number of small activities, such as walk, jump, smile, writing on the board, and opening the window. Somewhere in the activities stop and think about something. When the students suggest that you were thinking, ask them what you were thinking about. Explain that most of the things you did were observable, but the thought was not.

Heritage Cultural Perspective

Many of the observable events that we take for granted in Southeast Alaska are marvels for people in other parts of the world. Seeing a killer whale breach or salmon jump up a raging waterfall are amazing natural wonders that we sometimes take for granted. Observable events are not just those that we can see, but also those that we can smell, hear, touch, and even taste!

Culturally Responsive & Place-Based Introduction of Science Vocabulary

FEATURES

Place-Based Perspective

Draw a rough outline of the state of Alaska on the board. Have the students point out distinctive "features" of the state that should be drawn within its borders. Examples may include the Alaska Range, the Brooks Range, Mount McKinley, volcanoes, cities, and the oil pipeline. Explain that just as landscapes have features, so do plants and animals. What are some features of the Sitka Spruce, Alaska's state tree?

Heritage Cultural Perspective

A prominent landscape marker or "feature" that is well known in Southeast Alaska is Devil's Thumb, a mountain along the Alaska–Canada border near Petersburg. Its Tlingit name is Taalkunaxk'u Shaa, meaning "Mountain at the Back of Taalkú." Its high peak is easily seen from various points in the region. Easily recognizable features like this help to define boundaries and aid in navigation!

INHERITED BEHAVIOR

Place-Based Perspective

Explain to the students that dog breeds have been bred since their domestication to perform a variety of specific tasks. What dog breeds and their tasks can the students think of? Tell the students that some dogs, such as collies, were bred for herding other animals. This herding instinct is often present, even if the dog has never been trained to herd. Explain that this is an inherited behavior. What are some other inherited behaviors of animals?

Heritage Cultural Perspective

It is natural for mothers to protect their young in many species, sometimes ferociously. In Southeast Alaska, bears can become aggressive if they feel that their young are threatened. This is an inherited behavior. Alaska's indigenous peoples respected the power of bears and used caution in their presence.

LEARNED BEHAVIOR

Place-Based Perspective

Ask the students who at home has a dog. What tricks can they do? Were they born knowing how to do these tricks or did they have to learn them? Tricks that had to be learned are called learned behaviors. What learned behaviors do we have as humans? What would happen if we weren't able to learn behaviors after being born?

Heritage Cultural Perspective

Just as bears have inherited behaviors, they also have learned behaviors. Cubs learn from their mothers how to catch fish in the river or to kill other prey on land. Similarly, human beings learn many things from their parents. The knowledge of how to act properly at the dinner table or at a ceremonial event is not inherited, it is learned. Learning is a lifelong experience!

LESSONS

Science Language for Success

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

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

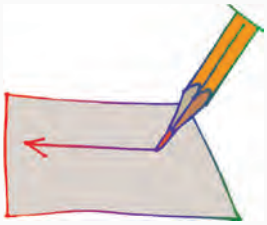
Give each student his/her envelope that contains the alphabet letters. Mount one of the science pictures on the board. The students must use the cut-out letters to spell the word. Review the students' work. Repeat, until all of the words have been spelled in this way.

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

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.

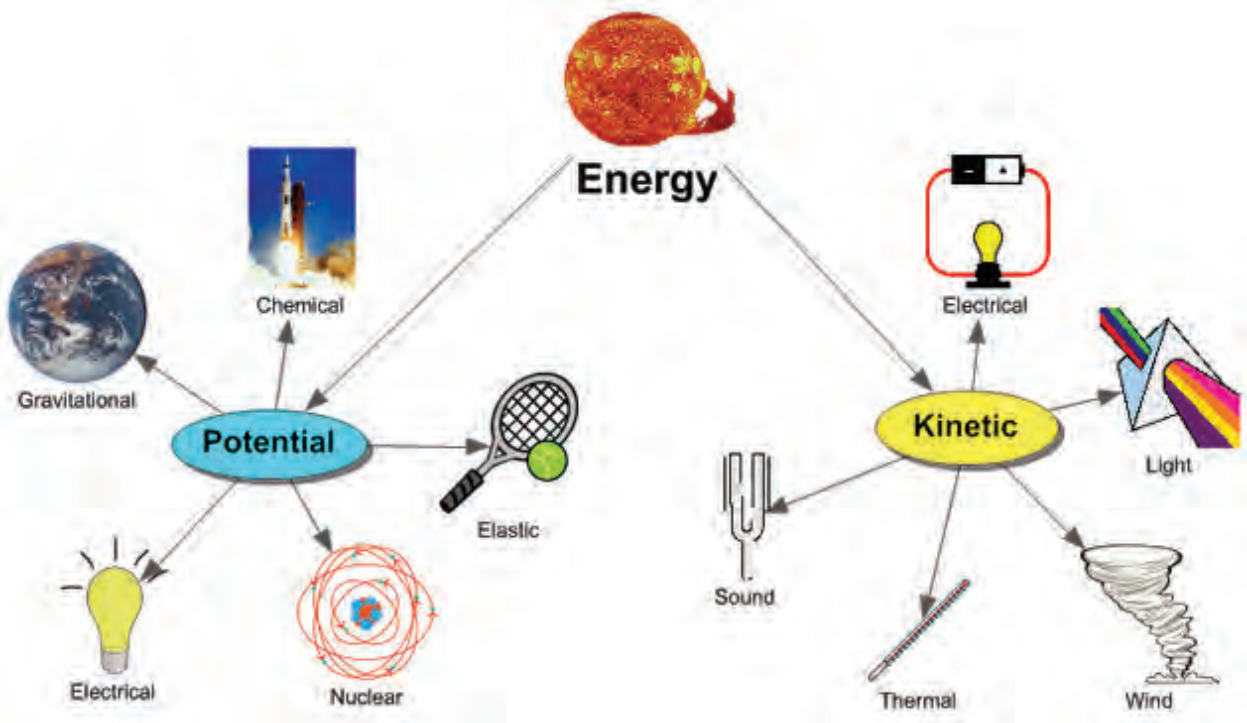
Yarn Spell

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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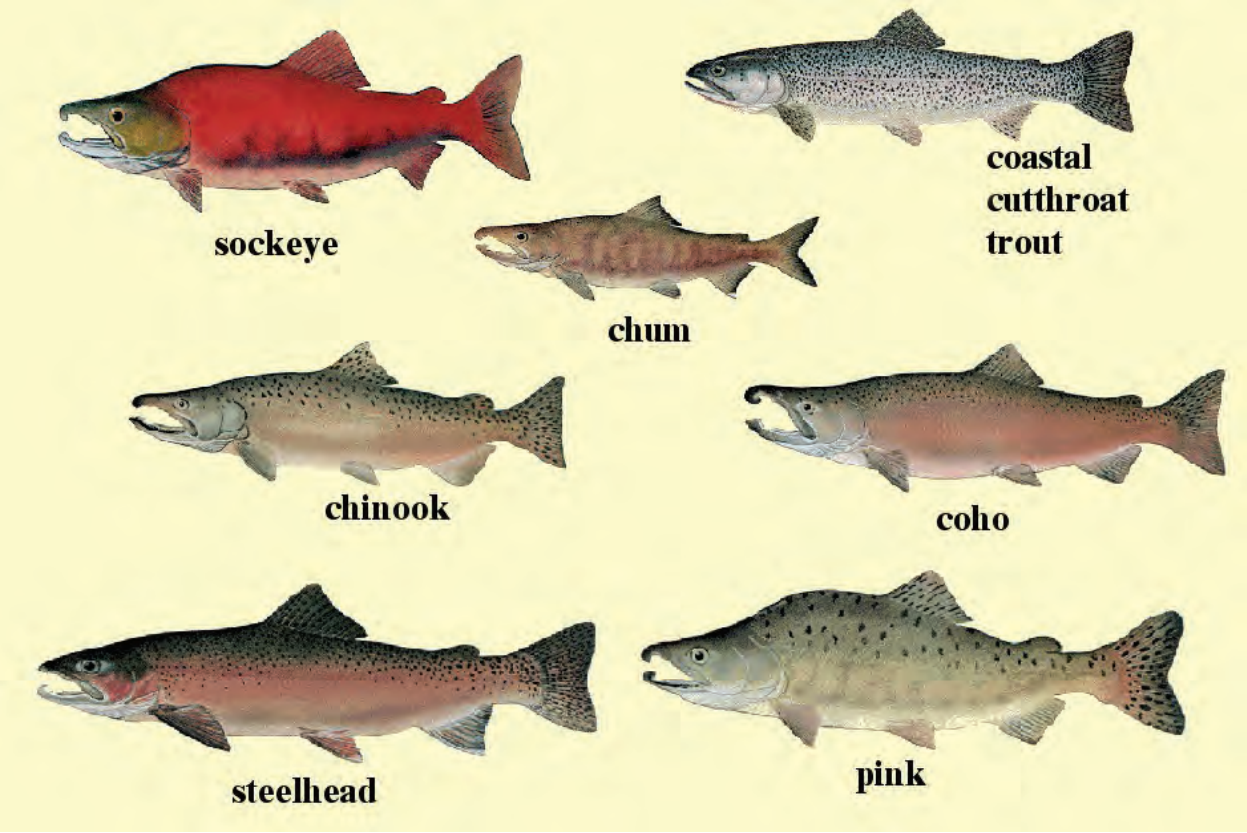
Wind

ENERGY TRANSFORMATION

GENES

OFFSPRING

VERTEBRATE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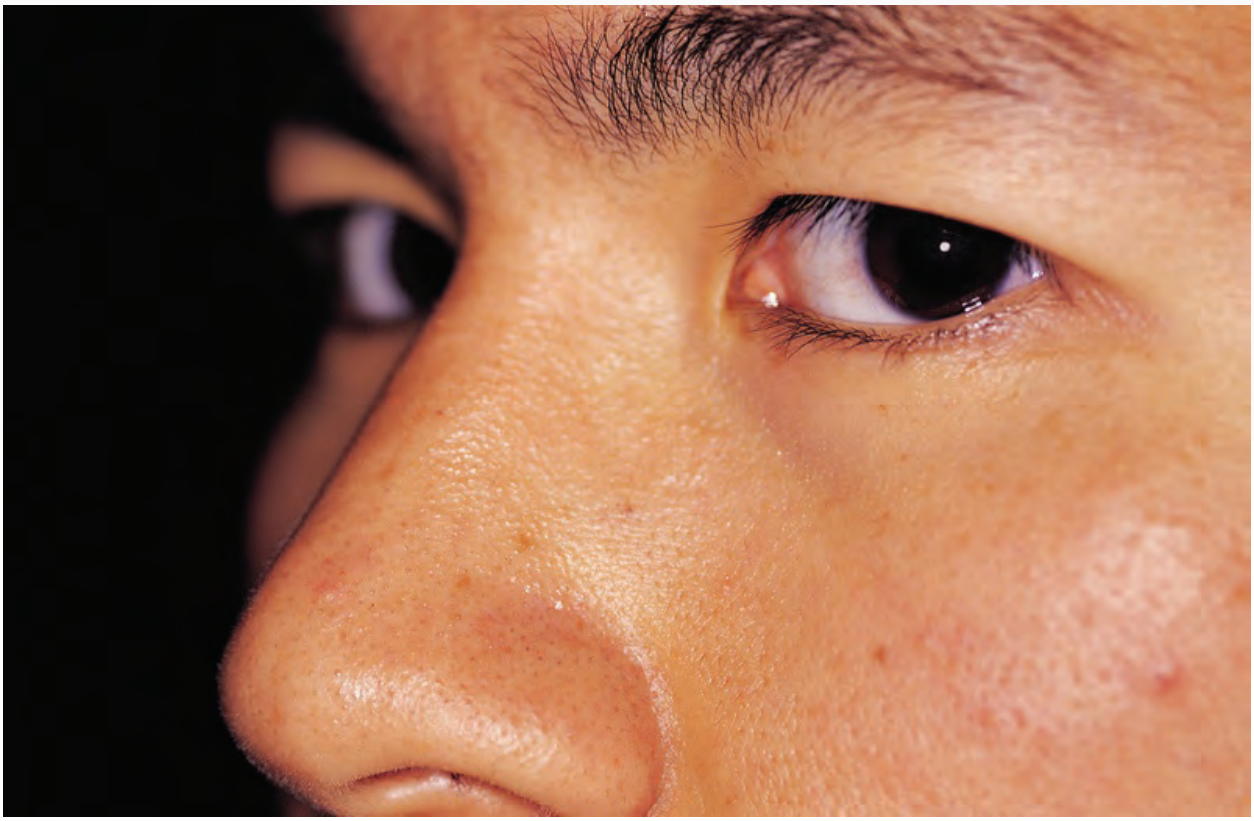
TAXONOMY



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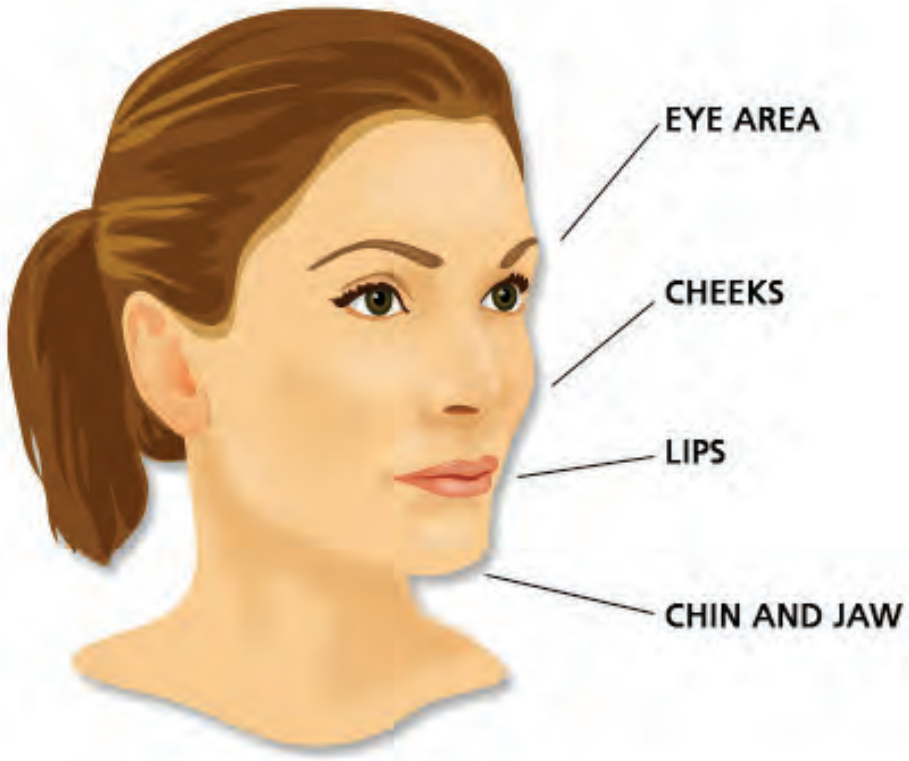

EYE AREA
CHEEKS
LIPS
CHIN AND JAW

FEATURES

INHERITED BEHAVIOR

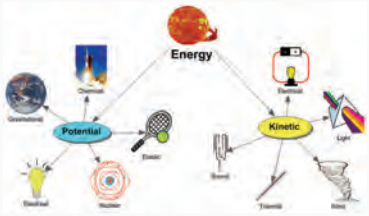
LEARNED BEHAVIOR

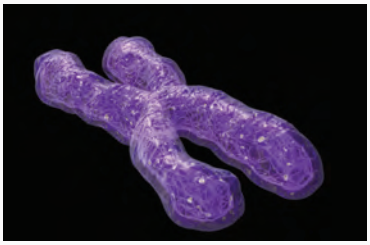
STUDENT SUPPORT MATERIALS

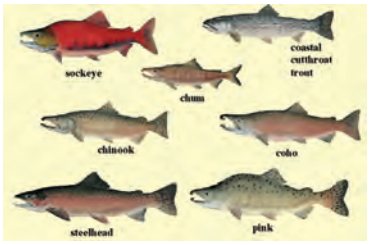
Listening • Mini Pictures

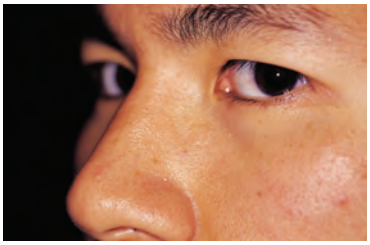
Listening: Mini Pictures

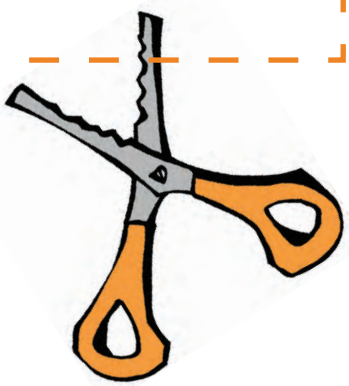
Prepare a copy of these pages for each student. The students should cut out the pictures and lay them on the floor or desk. Say the key words and the students should show you the pictures. Repeat a number of times. This activity can also be done with pairs of students to determine who is the fastest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











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	Energy transformation occurs when wind energy is converted to electrical energy.	**True** **False**
2	Genes help to define who we are and what we look like.	**True** **False**
3	Offspring is a term that means any season except spring.	**True** **False**
4	Vertebrates are animals with backbones.	**True** **False**
5	Taxonomy is the study of taxes by accountants.	**True** **False**
6	Individual human cells are observable without a microscope	**True** **False**
7	Hills and lakes are not features typically included on maps.	**True** **False**
8	A child raising a hand when asked a question is an inherited behavior.	**True** **False**
9	A dog lifting his paw when someone says "shake" is a learned behavior.	**True** **False**

Listening Comprehension: Answer Key

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

1	Energy transformation occurs when wind energy is converted to electrical energy.	**True** False
2	Genes help to define who we are and what we look like.	**True** False
3	Offspring is a term that means any season except spring.	True **False**
4	Vertebrates are animals with backbones.	**True** False
5	Taxonomy is the study of taxes by accountants.	True **False**
6	Individual human cells are observable without a microscope	True **False**
7	Hills and lakes are not features typically included on maps.	True **False**
8	A child raising a hand when asked a question is an inherited behavior.	True **False**
9	A dog lifting his paw when someone says "shake" is a learned behavior.	**True** False

STUDENT SUPPORT MATERIALS

Sight Words

energy transformation

genes

offspring

vertebrate

taxonomy

observable

features

inherited behavior

learned behavior

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.

features
taxonomy
genes
learned behavior
offspring
observable

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

Sight Words Activity Page

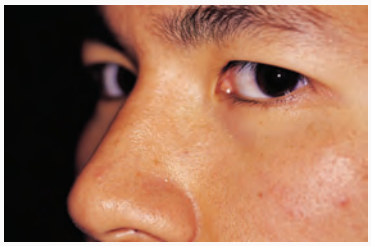
Answer Key

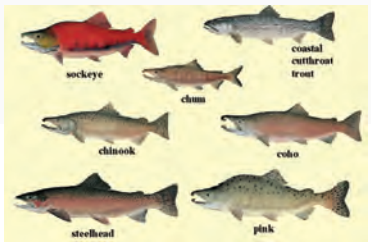
features
taxonomy
genes
learned behavior
offspring
observable

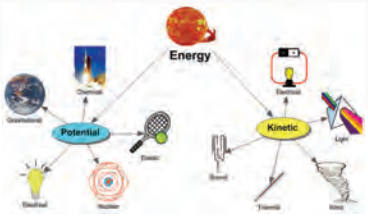
g b e e l e a r n e d b e h a v o u
d r e n a a r h t a x o n o m y d a
t b o b s e r v a b l e s m i e t e
v n i b g f e a t u r a t g e n e s
y s f a s f r t o e v b e n g e i a
e h e a o f f s p r i n g e n a v o
r a i s g s n e g r a h n o p r m n
g f s t a x o n o s s f e r b p n f
y r o e h s o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

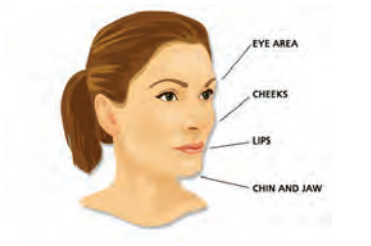
Sight Words Activity Page

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









energy transformation

genes

offspring

vertebrate

taxonomy

observable

features

inherited behavior

learned behavior

Sight Words Activity Page

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

STUDENT SUPPORT MATERIALS

Basic Reading • Encoding

Encoding Activity Page

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

gy	en	er
_____	_____	_____

trans	ma	for	tion
_____	_____	_____	_____

genes
_____

Encoding Activity Page

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

spring **off**

_____ _____

my **o** **no** **tax**

_____ _____ _____ _____

tures **fea**

_____ _____

Encoding Activity Page

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

her | in | it | ed

_____ _____ _____ _____

learned

_____

hav | be | ior

_____ _____ _____

Encoding Activity Page

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

energy trans	nes
ge	rate
offs	formation
verteb	tures
taxo	ted behavior

Encoding Activity Page

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

obser	havior
fea	vable
inheri	pring
learned be	nomy

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 the following is an example of energy transformation?
   - ❍ mechanical to thermal
   - ❍ wind to electrical
   - ❍ potential to kinetic
   - ❍ all of the above

2. Our genes come from:
   - ❍ the local mall.
   - ❍ the food that we eat.
   - ❍ our parents' DNA.
   - ❍ the air that we breathe.

3. One's offspring are his/her:
   - ❍ parents
   - ❍ children
   - ❍ cousins
   - ❍ pets

4. Which of the following is not a vertebrate?
   - ❍ frog
   - ❍ bear
   - ❍ mushroom
   - ❍ eagle

5. Taxonomy is a _____ method of classifying organisms.
   - ❍ systematic
   - ❍ random
   - ❍ unimportant
   - ❍ tedious

Reading Comprehension Activity Page

6 Which of the following is not observable with the naked eye?

- ❍ spawning salmon
- ❍ northern lights
- ❍ viruses
- ❍ none of the above

7 Which of the following is a feature of a deer?

- ❍ fins
- ❍ hooves
- ❍ wings
- ❍ scales

8 Which of the following is an inherited behavior?

- ❍ a raven getting garbage out of a dumpster
- ❍ a cat using a litter box
- ❍ a dog shaking the hand of its owner
- ❍ salmon returning to rivers to spawn

9 Which of the following is NOT a learned behavior?

- ❍ stopping at traffic lights
- ❍ keeping your elbows off of the table at dinner
- ❍ putting ketchup on hot dogs
- ❍ none of the above

Reading Comprehension Activity Page

ANSWER KEY

1. Which of the following is an example of energy transformation?
   - ❍ mechanical to thermal
   - ❍ wind to electrical
   - ❍ potential to kinetic
   - ● all of the above

2. Our genes come from:
   - ❍ the local mall.
   - ❍ the food that we eat.
   - ● our parents' DNA.
   - ❍ the air that we breathe.

3. One's offspring are his/her:
   - ❍ parents
   - ● children
   - ❍ cousins
   - ❍ pets

4. Which of the following is not a vertebrate?
   - ❍ frog
   - ❍ bear
   - ● mushroom
   - ❍ eagle

5. Taxonomy is a _____ method of classifying organisms.
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   - ❍ random
   - ❍ unimportant
   - ❍ tedious

Reading Comprehension Activity Page

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   - ❍ spawning salmon
   - ❍ northern lights
   - ● viruses
   - ❍ none of the above

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   - ❍ fins
   - ● hooves
   - ❍ wings
   - ❍ scales

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   - ❍ a dog shaking the hand of its owner
   - ● salmon returning to rivers to spawn

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   - ❍ stopping at traffic lights
   - ❍ keeping your elbows off of the table at dinner
   - ❍ putting ketchup on hot dogs
   - ● none of the above

Reading Comprehension Activity Page

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

1	Energy transformation is necessary in order	A	offspring of their parents.
2	A gene is a unit of	B	classification of organisms.
3	Wolf pups are the	C	about facial features.
4	Animals with a backbone are	D	is a collie herding sheep or cattle.
5	Taxonomy is the systematic	E	heredity in a living organism.
6	The northern lights are an	F	a bear that steals fish from people.
7	Sketch artists use information	G	observable phenomenon.
8	An example of an inherited behavior	H	considered vertebrates.
9	An example of a learned behavior is	I	to supply power to our homes.

1→_____ 2→ _____ 3→ _____ 4→ _____

5→ _____ 6→ _____ 7→ _____ 8→ _____

9→ _____

Reading Comprehension Activity Page

ANSWER KEY

1	Energy transformation is necessary in order	A	offspring of their parents.
2	A gene is a unit of	B	classification of organisms.
3	Wolf pups are the	C	about facial features.
4	Animals with a backbone are	D	is a collie herding sheep or cattle.
5	Taxonomy is the systematic	E	heredity in a living organism.
6	The northern lights are an	F	a bear that steals fish from people.
7	Sketch artists use information	G	observable phenomenon.
8	An example of an inherited behavior	H	considered vertebrates.
9	An example of a learned behavior is	I	to supply power to our homes.

1→ I 2→ E 3→ A 4→ H

5→ B 6→ G 7→ C 8→ D

9→ F

Reading Comprehension Activity Page

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

Able to be noticed or perceived	**Actions that do not need to be learned**	**Actions that need to be learned**
A transition from one form of energy to another	**Organisms with backbones**	**An animal's young**
Distinctive attribute or aspect	**Units of heredity**	**Systematic classification**

energy transformation

genes

offspring

vertebrate

taxonomy

observable

features

learned behavior

inherited behavior

Reading Comprehension Activity Page

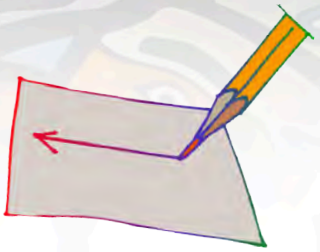
ANSWER KEY

Able to be noticed or perceived observable	**Actions that do not need to be learned** inherited behavior	**Actions that need to be learned** learned behavior
A transition from one form of energy to another energy transformation	**Organisms with backbones** vertebrate	**An animal's young** offspring
Distinctive attribute or aspect features	**Units of heredity** genes	**Systematic classification** taxonomy

STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page



Have the students write in the missing letters.

en_____gy t_____ation

g_____es

o_____ring

ve_____rate

tax_____y

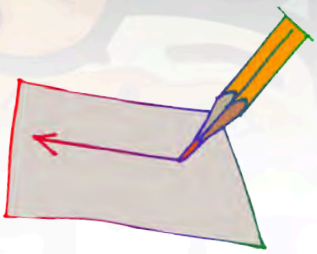
obser_____e

f_____es

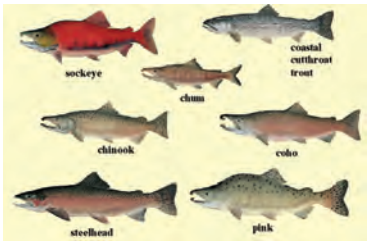
in_____ited be_____ior

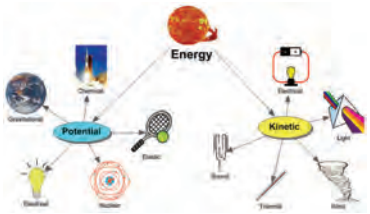
lea_____ b_____vior

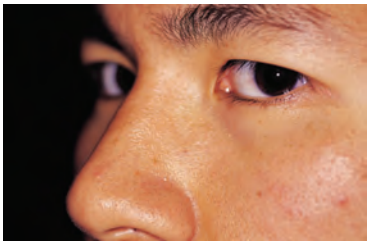
Basic Writing Activity Page

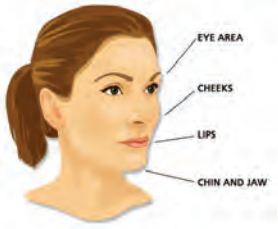


Have the students write the word for each picture.



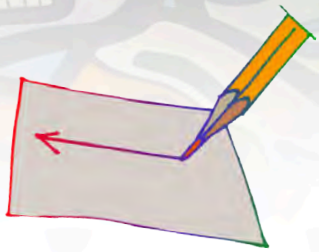






Basic Writing Activity Page

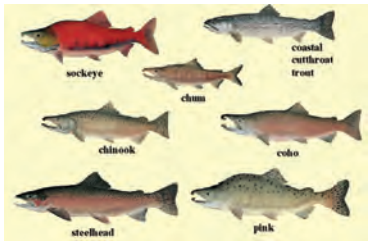
ANSWER KEY



genes

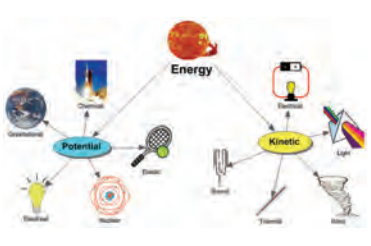
learned behavior

inherited behavior

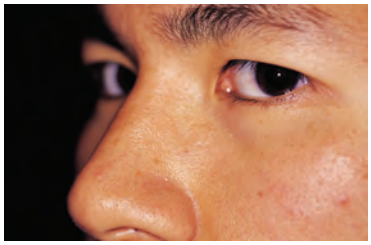


taxonomy

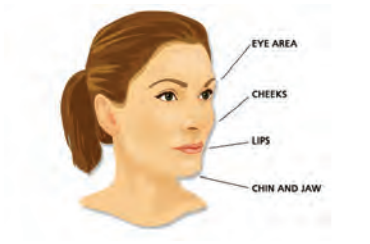
vertebrate



energy transformation



observable



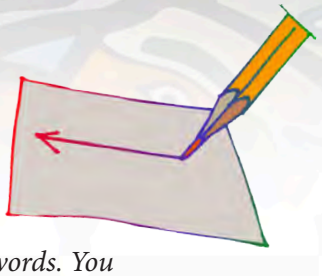
features

offspring

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.

ENERGY TRANSFORMATION

_____

GENES

_____

OFFSPRING

_____

VERTEBRATE

_____

TAXONOMY

_____

OBSERVABLE

_____

FEATURES

_____

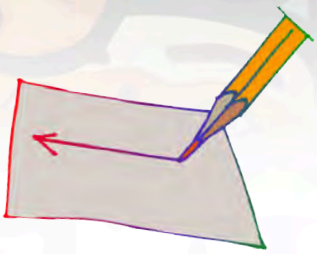
INHERITED BEHAVIOR

_____

LEARNED BEHAVIOR

_____

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 8 • 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 page 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 by the picture for **ENERGY TRANSFORMATION**.
2. Write the number 2 by the picture for **GENES**.
3. Write the number 3 by he picture for **OFFSPRING**.
4. Write the number 4 by the picture for **VERTEBRATE**.
5. Write the number 5 by the picture for **TAXONOMY**.
6. Write the number 6 by the picture for **OBSERVABLE**.
7. Write the number 7 by the picture for **FEATURES**.
8. Write the number 8 by the picture for **INHERITED BEHAVIOR**.
9. Write the number 9 by the picture for **LEARNED BEHAVIOR**.

LISTENING COMPREHENSION

Turn to page 2 in your test. Listen to the sentences I say. Circle "T" for true and "F" for false sentences."

1. The conversion of wind energy to electrical energy is an example of energy transformation.
2. Genes have no influence on the way we look.
3. An animal's young are its offspring.
4. Vertebrates do not have backbones.
5. Taxonomy is the systematic classification of organisms.
6. Thanks to our eyes, many events are observable.
7. The human face is absent of noticeable features.
8. A dog that has been trained to "shake hands" is acting on an inherited behavior.
9. A horse that allows a saddle and a rider to be placed on its back is acting on a learned behavior.

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 pages 3 and 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.

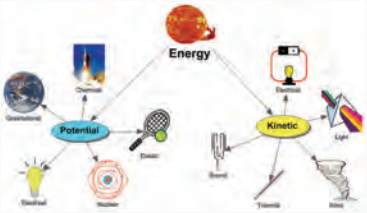
Teacher: To get a percentage for this student's assessment, divide the total number of questions correct by the total number of questions, then multiply this answer by 100 to determine the percentage of questions answered correctly.

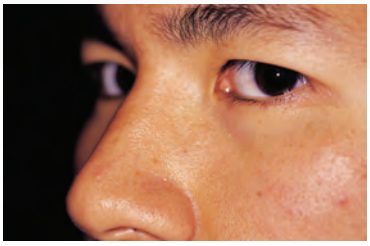
SCIENCE PROGRAM

Unit Assessment Student Pages
Grade 8 • Unit 5 (C–1)
Theme: Concepts of Life Science

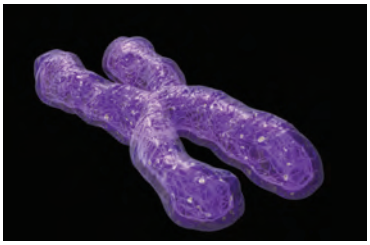
Date:_____ Student's Name:_____

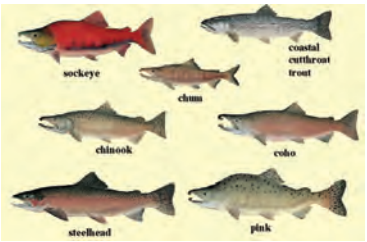
Number Correct:_____ Percent Correct:_____


Energy
Potential
Kinetic




EYE AREA
CHEEKS
LIPS
CHIN AND JAW




sockeye
chum
coastal cutthroat trout
chinook
coho
steelhead
pink

1. T F

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3. T F

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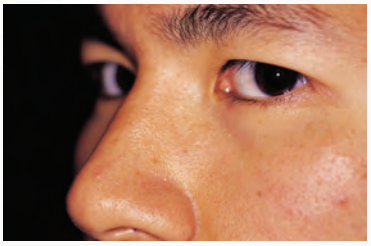
8. T F

9. T F



energy transformation
genes
offspring
vertebrate
taxonomy
observable
features
inherited behavior
learned behavior

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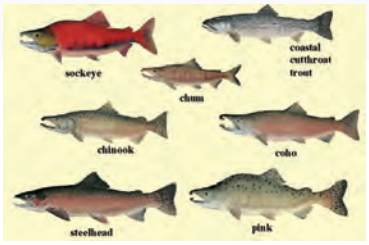

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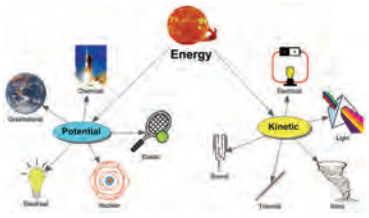

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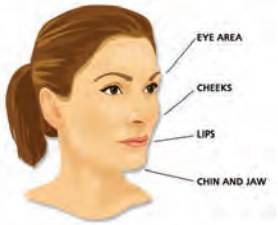

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energy transforma	shan shen shin shon shun tian tien tion tiun
ge	anas anes anis anos anus nas nes nis nos
feat	ares eres ires ores ures arse erse irse ors
inher behavior	ated eted ited oted uted atid etid itid otid
verteb	rate rete rite rote rute ate ete ite ote
offsp	rang reng ring rong rung ang eng ing ong
lear behavior	nad ned nid nod nud ad ed id od
observ	abel ebel ibel obel ubel able eble ible oble
taxon	namy nemy nimy nomy numy amy emy imy omy

1. Energy transformation is the:
   - ❍ transition of energy from one form to another
   - ❍ the power needed for transformer robots to change form
   - ❍ the release of lava from deep sea vents

2. Genes are a unit of:
   - ❍ heredity
   - ❍ height
   - ❍ success

3. Offspring are an organism's:
   - ❍ children
   - ❍ parents
   - ❍ distant relatives

4. Vertebrates are organisms that have:
   - ❍ paws
   - ❍ backbones
   - ❍ fur

5. Which of the following is a term for the systematic classification of organisms?
   - ❍ taxidermy
   - ❍ taxonomy
   - ❍ terminology

6. Which of the following is NOT observable with the naked eye?
   - ❍ rats
   - ❍ light
   - ❍ viruses

7. Which of the following is a feature of the human face?
   - ❍ feet
   - ❍ fir
   - ❍ nose

8. Inherited behaviors are:
   - ❍ purchased in magazines.
   - ❍ present at birth.
   - ❍ taught by parents.

9. Learned behaviors are:
   - ❍ present at birth.
   - ❍ acquired through observation.
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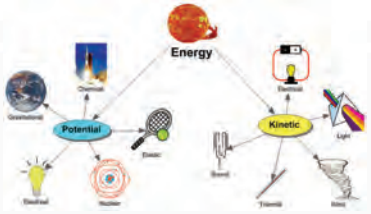
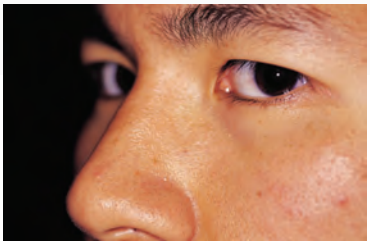
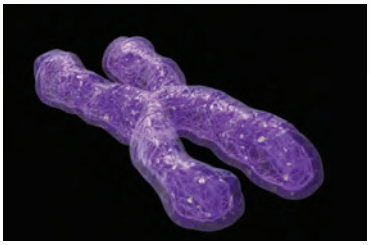
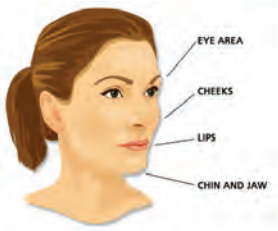
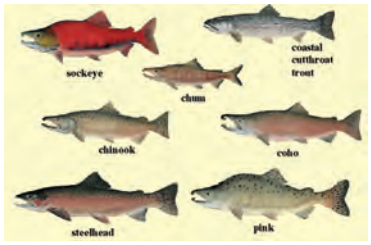

Energy
Potential
Kinetic






EYE AREA
CHEEKS
LIPS
CHIN AND JAW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ENERGY TRANSFORMATION

GENES

OFFSPRING

VERTEBRATE

TAXONOMY

OBSERVABLE

FEATURES

INHERITED BEHAVIOR

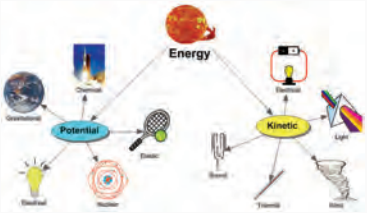
LEARNED BEHAVIOR

SCIENCE PROGRAM

Unit Assessment ANSWER KEY
Grade 8 • Unit 5 (C–1)
Theme: Concepts of Life Science

3

4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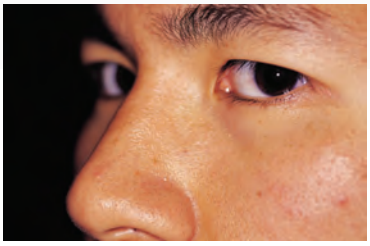
1



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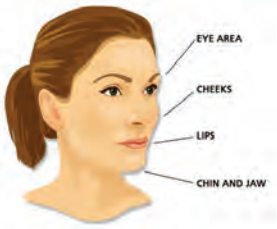
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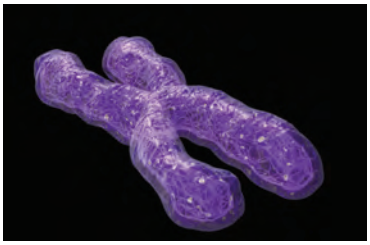

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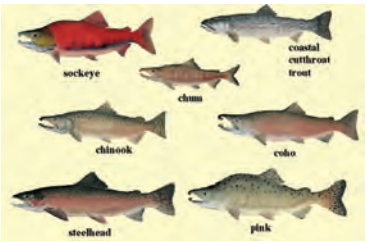
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6. (T) F
7. T (F)
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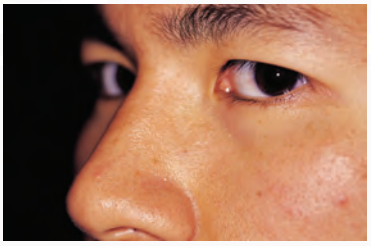
9. (T) F



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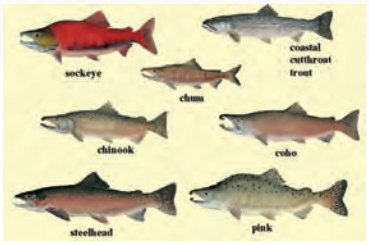

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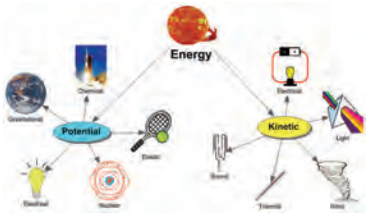

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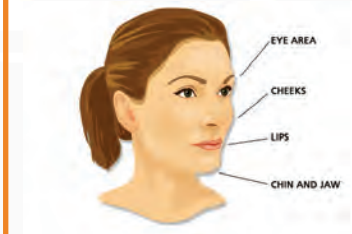

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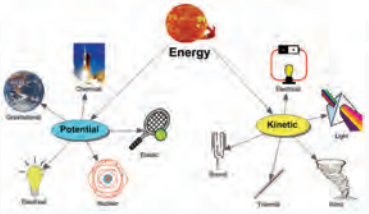
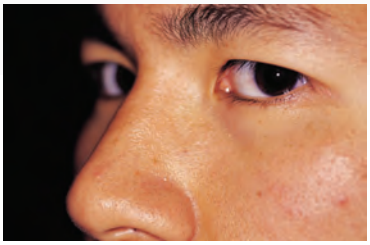
vertebrate

offspring



energy transformation

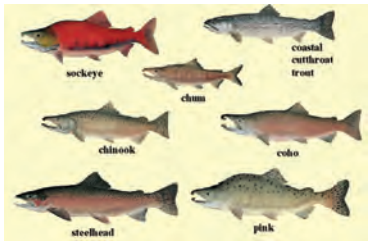


observable

learned behavior

genes

features



taxonomy

inherited behavior