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

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The contents of this program were developed by Sealaska Heritage Institute through the support of a $1,690,100 federal grant from the Alaska Native Education Program.

2012
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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

1. **VOCABULARY**
   - **ACTIVITIES**
     - As much as possible, use concrete materials to introduce the new words to the students. Match the materials with the vocabulary pictures.

2. **BASIC LISTENING**
   - Whole Group
   - Individual

3. **BASIC SPEAKING**
   - Whole Group
   - Individual

4. **LISTENING COMPREHENSION**
   - Whole Group
   - Individual

5. **CREATIVE SPEAKING**

6. **BASIC READING**
   - Sight Recognition
   - Whole Group
   - Individual
   - Decoding & Encoding

7. **READING COMPREHENSION**

8. **BASIC WRITING**

9. **CREATIVE WRITING**

10. **EXTENSION**
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
Key Vocabulary

**EVALUATE**

to determine the value or worth by careful study

**COMMUNICATE**

to share information, data, or findings with others through written or spoken words

**MEASURE**

to find the size, volume, mass, weight, or temperature of an object or how long an event occurs
**Key Vocabulary**

**GENERALIZE**

*to draw a general conclusion from*

**CLASSIFY**

*to sort into groups according to their properties or patterns*

**PREDICT**

*to state possible results of an event or experiment based on past experiences or observations*
Key Vocabulary

IDENTIFY

to establish the identity of

DESCRIBE

to use words or pictures to show what is observed

OBSERVE

pay attention to behaviors or details and come to a conclusion
Key Vocabulary

**INFER**

to make conclusions from facts
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.*

**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.
PREDICT
OBSERVE
DESCRIBE
MEASURE
CLASSIFY
GENERALIZE
INFER
COMMUNICATE
EVALUATE
IDENTIFY
STUDENT SUPPORT MATERIALS

Listening • Mini Pictures
Listening: Mini Pictures

Have the students cut out the pictures. Say the key math words from this unit, and the students should hold up the pictures for them.
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. To evaluate is to determine the value or worth of something by careful study.  True False

2. Communicate is to share information, data, or findings with others through written or spoken words.  True False

3. Measure is to find the size, volume, mass, weight, or temperature of an object.  True False

4. Generalize is to sort into groups according to their properties.  True False

5. Classify is to use words or pictures to show what is observed.  True False

6. Predict is to state possible results of an event or experiment based on past experiences or observations.  True False

7. Identify is to establish the identity of.  True False

8. Describe is to pay attention to behaviors or details and come to a conclusion.  True False

9. Observe is to draw a general conclusion from.  True False

10. Infer is to make conclusions from facts.  True False
STUDENT SUPPORT MATERIALS

Sight Words
evaluate
communicate
measure
identify
describe
observe
infer
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.

classify communicate describe evaluate

generalize identify infer

measure observe predict

classify communicate describe evaluate

generalize identify infer

measure observe predict

E G E N E R A L I Z E A B S C T
T O R C L A P C B V T Y M O M E
S R V B N O I U C D E H Q I A O
D S T Y U I M D P M H T Y G Y X
N E W Q Z A S V E B N F G H T Y
P R C O C O M M U N I C A T E B
R V J H B G T N R S T Y U I V O
E E Q B S V D C S B O I I L A U
D E R B S C X A P K N R F Y L W
I U C D C I L L T Z T U I Y U O
C P K A B C R N H U K P L Z A A
T E B N G T Y I N F E R O P T E
O F X R P Q S N R E C B D U E M
M C L P Y D S Q O A O R E Q L B
R S X W M E A S U R E D N Z V R
D E S C R I B E E H M P W I Q B
Have the students highlight or circle the words in this word find. Words appear horizontally.
Sight Words Activity Page

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

Have the students print the key words from this unit horizontally 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.

- ti
- i
- den
- fy

- sure
- mea

- pre
- dict
Encoding Activity Page

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

ate e val u

ob serve

fer in
# Word Scramble Activity Page

Rearrange or unscramble the following letters to form one of the listed unit words. As you use a word, cross it off.

<table>
<thead>
<tr>
<th>classify</th>
<th>predict</th>
<th>communicate</th>
<th>infer</th>
<th>identify</th>
<th>generalize</th>
</tr>
</thead>
<tbody>
<tr>
<td>describe</td>
<td>measure</td>
<td>observe</td>
<td>evaluate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

classify  predict  communicate  infer  identify  generalize
STUDENT SUPPORT MATERIALS

Reading Comprehension
<table>
<thead>
<tr>
<th>to determine the value or worth by careful study</th>
<th>to determine the value or worth by careful study</th>
<th>to tell how something looks, feels, tastes, and so on</th>
</tr>
</thead>
<tbody>
<tr>
<td>to draw a general conclusion from</td>
<td>to sort into groups according to their properties or patterns</td>
<td>to state possible results of an event or experiment based on past experiences or observations</td>
</tr>
<tr>
<td>to establish the identity of</td>
<td>to use words or pictures to show what is observed</td>
<td>pay attention to behaviors or details and come to a conclusion</td>
</tr>
<tr>
<td>to make conclusions from facts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **communicate**
- **observe**
- **describe**
- **classify**
- **predict**
- **generalize**
Write the word or words that best complete each sentence in the space below. Words may be used only once.

<table>
<thead>
<tr>
<th>classify</th>
<th>predict</th>
<th>communicate</th>
<th>infer</th>
<th>identify</th>
<th>describe</th>
<th>measure</th>
<th>observe</th>
<th>evaluate</th>
<th>generalize</th>
</tr>
</thead>
</table>

1. Students take yearly assessments to ____________ their skills in reading, writing, and math.
2. Were the tourists able to ____________ the humpback whale breaching off the starboard of the ferry.
3. The students in Life Science will learn how scientists ____________ animals.
4. My mother, the “local weather reporter” ____________ rain for the week end.
5. She tends to ____________, instead of stating the specifics.
6. It will be difficult to ____________ how the new dress code will effect student attitude.
7. We ____________ a lot of information through our body language.
8. The ounce is a ____________ of weight.
9. The police officer asked the witness to ____________ the robber.
10. Many young readers can ____________ with the main character of the story.
STUDENT SUPPORT MATERIALS

Basic Writing
Basic Writing Activity Page

Have the students write the word for each picture.
Have the students write in the missing letters.

cla_____________y
co_____________icate
de_____________be
e_____________uate
ge_____________alize
iden_____________y
in_______________
m_____________ure
obs_____________e
p_____________ict
Graphic Organizer

Model the process for students using the following unit words.

<table>
<thead>
<tr>
<th>WHAT IT IS</th>
<th>WHAT IT IS NOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>classify</td>
<td></td>
</tr>
<tr>
<td>Communicate</td>
<td></td>
</tr>
<tr>
<td>Describe</td>
<td></td>
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<tr>
<td>Evaluate</td>
<td></td>
</tr>
<tr>
<td>Generalize</td>
<td></td>
</tr>
</tbody>
</table>
Graphic Organizer

<table>
<thead>
<tr>
<th>WHAT IT IS</th>
<th>WHAT IT IS NOT</th>
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</thead>
<tbody>
<tr>
<td>identify</td>
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<tr>
<td>infer</td>
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<tr>
<td>measure</td>
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<tr>
<td>observe</td>
<td></td>
</tr>
<tr>
<td>predict</td>
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</tbody>
</table>
STUDENT SUPPORT MATERIALS

Creative Writing
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.

CLASSIFY

COMMUNICATE

DESCRIBE

EVALUATE

GENERALIZE

INFER

IDENTIFY

MEASURE

OBSERVE

PREDICT
Creative Writing Activity Page

On the lines below, write a paragraph based on the picture. Before you begin writing, reflect on the unit words – describe, generalize, infer, observe, and predict

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UNIT ASSESSMENT

A–1: Science as Inquiry Process
BASIC LISTENING

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

1. Write the number 1 on top of the picture for PREDICT.
2. Write the number 2 on top of the picture for OBSERVE.
3. Write the number 3 on top of the picture for DESCRIBE.
4. Write the number 4 on top of the picture for CLASSIFY.
5. Write the number 5 on top of the picture for GENERALIZE.
6. Write the number 6 on top of the picture for INFERENCE.
7. Write the number 7 on top of the picture for COMMUNICATE.
8. Write the number 8 on top of the picture for EVALUATE.
9. Write the number 7 on top of the picture for IDENTIFY.
10. Write the number 8 on top of the picture for MEASURE.

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. To evaluate is to determine the value or worth of something by careful study.
2. Communicate is to share information, data, or findings with others through written or spoken words.
3. Measure is to find the size, volume, mass, weight, or temperature of an object.
4. Generalize is to sort into groups according to their properties.
5. Classify is to use words or pictures to show what is observed.
6. Predict is to state possible results of an event or experiment based on past experiences or observations.
7. Identify is to establish the identity of.
8. Describe is to pay attention to behaviors or details and come to a conclusion.
9. Observe is to draw a general conclusion from.
10. Infer is to make conclusions from facts.

**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 scrambled letters on the left. Rearrange or unscramble the letters to form each of the unit words.

**READING COMPREHENSION**
Turn to page 6 in your test. Write the word or words that best complete each sentence in the space below. Words may be used only once.

**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.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>T</td>
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<td>3</td>
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<td>F</td>
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<td>5</td>
<td>T</td>
<td>F</td>
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<td>6</td>
<td>T</td>
<td>F</td>
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<td>7</td>
<td>T</td>
<td>F</td>
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<tr>
<td>8</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>9</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>10</td>
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<td>F</td>
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Students take yearly assessments to _____________ their skills in reading, writing, and math.

Were the tourists able to _____________ the humpback whale breaching off the starboard of the ferry.

The students in Life Science will learn how scientists _____________ animals.

My mother, the “local weather reporter” _____________ rain for the weekend.

She tends to _____________, instead of stating the specifics.

It will be difficult to _____________ how the new dress code will affect student attitude.

We _____________ a lot of information through our body language.

The ounce is a _____________ of weight.

The police officer asked the witness to _____________ the robber.

Many young readers can _____________ with the main character of the story.
CLASSIFY

COMMUNICATE

DESCRIBE

EVALUATE

GENERALIZE

INFER

IDENTIFY

MEASURE

OBSERVE

PREDICT
KEY VOCABULARY
Key Vocabulary

CONDUCT
- skillful guidance

PROCESS
- a series of actions or operations that lead to an end

HISTORY
- chronological record of significant events
Key Vocabulary

**ANALYZE**

to carefully examine

**RECORD**

to keep facts, information, and data in written form

**ENVIRONMENT**

all external factors, living and non-living, that affect an organism
Key Vocabulary

INVESTIGATE

a series of carefully controlled steps designed to discover or support a hypothesis and can be replicated or repeated

DATA

recorded observations from an experiment

INQUIRY

the examination of facts or assumptions
Key Vocabulary

INTERACTION

to act upon on another
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.
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
ANALYZE
CONDUCT
DATA
ENVIRONMENT
HISTORY
INQUIRY
INTERACTION
PROCESS
RECORD
STUDENT SUPPORT MATERIALS

Listening • Mini Pictures
Listening: Mini Pictures

Have the students cut out the pictures. Say the key math words from this unit, and the students should hold up the pictures for them.
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. Conduct means skillful guidance. True False

2. Process is the chronological record of significant events. True False

3. History is a series of actions or operations that lead to an end. True False

4. To analyze is to keep facts, information, and data in written form. True False

5. Record is to carefully examine. True False

6. The environment is all external factors, living and non-living, that affect an organism. True False

7. Investigate is a series of carefully controlled steps designed to discover or support a hypothesis and can be replicated or repeated. True False

8. Data is to act upon one another. True False

9. Inquiry is the examination of facts or assumptions. True False

10. Interaction is the recorded observations from an experiment. True False
STUDENT SUPPORT MATERIALS

Sight Words
analyze conduct data
environment
history
inquiry
interaction
investigate
process
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.

<table>
<thead>
<tr>
<th>analyze</th>
<th>conduct</th>
<th>data</th>
<th>environment</th>
<th>history</th>
<th>inquiry</th>
<th>interaction</th>
<th>investigate</th>
<th>process</th>
<th>record</th>
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INFORMATION
# Sight Words Activity Page

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

<table>
<thead>
<tr>
<th>analyze</th>
<th>history</th>
<th>investigate</th>
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</thead>
<tbody>
<tr>
<td>conduct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>data</td>
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<tr>
<td>environment</td>
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<th>conduct</th>
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<tbody>
<tr>
<td>data</td>
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<tr>
<td>environment</td>
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</tbody>
</table>

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<tr>
<th>history</th>
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</thead>
<tbody>
<tr>
<td>inquiry</td>
</tr>
<tr>
<td>interaction</td>
</tr>
</tbody>
</table>

| investigate |
| process |
| record |

<table>
<thead>
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</table>

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<tr>
<th>A N A L Y Z E</th>
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<th>T</th>
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</table>

<table>
<thead>
<tr>
<th>I N V E S T I G A T E</th>
</tr>
</thead>
</table>

**Answer Key**

- analyze
- conduct
- data
- environment
- history
- inquiry
- interaction
- investigate
- process
- record
Sight Words Activity Page

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

analyze  conduct  data  environment

history  inquiry  interaction  investigate

process  record
Sight Words Activity Page
Have the students print the key words from this unit horizontally 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.

- gate
- in
- vest
- i

---

- re
- cord

---

- ta
- da
Encoding Activity Page

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

- analyze
  - a
  - an
  - lyze

- conduct
  - con
  - duct

- cess
  - pro
Word Scramble Activity Page

Rearrange or unscramble the following letters to form one of the listed unit words. As you use a word, cross it off.

<table>
<thead>
<tr>
<th>history</th>
<th>data</th>
<th>process</th>
<th>analyze</th>
<th>environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>inquiry</td>
<td>conduct</td>
<td>investigate</td>
<td>record</td>
<td>interaction</td>
</tr>
</tbody>
</table>

- p s c s e o r __________________ce____
- u i y n i r q __________________ny
- i c n t o t e r n i a __________t________on
- t n v n i n e o r m e __________i r __________n__
- s t t n g a e i e i v i_________t__g______
- o e c r d r r__c_____
- a e l n z y a a__a_________
- d a a t ______t__
- c c o u n t d c____d_______
- s y t o h r i __i____o____
STUDENT SUPPORT MATERIALS

Reading Comprehension
### Reading Comprehension Activity Page

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

<table>
<thead>
<tr>
<th>skillful guidance</th>
<th>a series of actions or operations that lead to an end</th>
<th>chronological record of significant events</th>
</tr>
</thead>
<tbody>
<tr>
<td>to carefully examine</td>
<td>to keep facts, information, and data in written form</td>
<td>all external factors, living and non-living that affect an organism</td>
</tr>
<tr>
<td>a series of carefully controlled steps designed to discover or support a hypothesis and can be replicated or repeated</td>
<td>recorded observations from an experiment</td>
<td>the examination into facts or assumptions</td>
</tr>
<tr>
<td>to act upon one another</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- analyze
- conduct
- data
- environment
- history
- inquiry
- interaction
- investigate
- process
- record
Write the word or words that best complete each sentence in the space below. Words may be used only once.

<table>
<thead>
<tr>
<th>history</th>
<th>data</th>
<th>process</th>
<th>analyze</th>
<th>environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>inquiry</td>
<td>conduct</td>
<td>investigate</td>
<td>record</td>
<td>interaction</td>
</tr>
</tbody>
</table>

1. Sir Isaac Newton is a scientist recorded in _______________ as the founder of the three laws of motion.
2. The students had to _______________ their experiment using the scientific method.
3. The scientific method is a _______________ that scientists use to investigate and find answers to questions.
4. The science experiment required students to _______________ data and to make graphs.
5. The biology students are scheduled to _______________ the bacteria under a powerful microscope.
6. The students wanted to make an _______________ about the new lab schedule.
7. The students went on a field trip to explore the _______________ of the nearby wetlands.
8. The students were excited to learn that the interaction of magnesium and other _______________ created a magnificent display of fireworks.
9. Scientists _______________ organisms by looking at their cells under a microscope.
10. The chemistry students spent hours reviewing the _______________ from the experiment.
STUDENT SUPPORT MATERIALS

Basic Writing
Basic Writing Activity Page

Have the students write the word for each picture.
Have the students write in the missing letters.

a_____________yze
con_____________t
d_______________a
environ_____________t
hi_______________y
in_______________y
in_______________action
in_______________igate
p_______________ess
re______________d
Model the process for students using the following unit words.

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>analyze</strong></td>
<td><strong>NOT EXAMPLES:</strong></td>
</tr>
<tr>
<td><strong>conduct</strong></td>
<td><strong>NOT EXAMPLES:</strong></td>
</tr>
<tr>
<td><strong>data</strong></td>
<td><strong>NOT EXAMPLES:</strong></td>
</tr>
<tr>
<td><strong>environment</strong></td>
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<tr>
<td><strong>history</strong></td>
<td><strong>NOT EXAMPLES:</strong></td>
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</tbody>
</table>
## Graphic Organizer

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>inquiry</td>
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<tr>
<td>interaction</td>
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<td>process</td>
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<td>record</td>
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</tbody>
</table>
STUDENT SUPPORT MATERIALS

Creative Writing
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.

**ANALYZE**

__________________________________________________________

**CONDUCT**

__________________________________________________________

**DATA**

__________________________________________________________

**ENVIRONMENT**

__________________________________________________________

**HISTORY**

__________________________________________________________

**INQUIRY**

__________________________________________________________

**INTERACTION**

__________________________________________________________

**INVESTIGATE**

__________________________________________________________

**PROCESS**

__________________________________________________________

**RECORD**

__________________________________________________________
On the lines below, write a paragraph based on the picture. Before you begin writing, reflect on the unit words – analyze, environment, process, and history.
UNIT ASSESSMENT

A–1: Science as Inquiry Process
Unit Assessment

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

**BASIC LISTENING**

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

1. Write the number 1 on top of the picture for **ANALYZE**.
2. Write the number 2 on top of the picture for **CONDUCT**.
3. Write the number 3 on top of the picture for **DATA**.
4. Write the number 4 on top of the picture for **ENVIRONMENT**.
5. Write the number 5 on top of the picture for **HISTORY**.
6. Write the number 6 on top of the picture for **INQUIRY**.
7. Write the number 7 on top of the picture for **INTERACTION**.
8. Write the number 8 on top of the picture for **INVESTIGATE**.
9. Write the number 7 on top of the picture for **PROCESS**.
10. Write the number 8 on top of the picture for **RECORD**.

**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. Conduct means skillful guidance.
2. Process is the chronological record of significant events.
3. History is a series of actions or operations that lead to an end.
4. To analyze is to keep facts, information, and data in written form.
5. Record is to carefully examine.
6. The environment is all external factors, living and non-living that affect an organism.
7. Investigate is a series of carefully controlled steps designed to discover or support a hypothesis and can be replicated or repeated.
8. Data is to act upon one another.
9. Inquiry is the examination into facts or assumptions.
10. Interaction is the recorded observations from an experiment.

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 scrambled letters on the left. Rearrange or unscramble the letters to form each of the unit words.

READING COMPREHENSION
Turn to page 6 in your test. Write the word or words that best complete each sentence in the space below. Words may be used only once.

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 7 • Unit 2 (A–1)
Theme: Science as Inquiry Process

Date:___________      Student’s Name:____________________

Number Correct:__________       Percent Correct:__________
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<td>10</td>
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<td>F</td>
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</tbody>
</table>
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tvnineorme
stngaeieiv
oecea
aelnzya
daat
ccountd
sytohri

26
Sir Isaac Newton is a scientist recorded in _______________ as the founder of the three laws of motion.

The students had to _______________ their experiment using the scientific method.

The scientific method is a _______________ that scientists use to investigate and find answers to questions.

The science experiment required students to _______________ data and to make graphs.

The biology students are scheduled to _______________ the bacteria under a powerful microscope.

The students wanted to make an _______________ about the new lab schedule.

The students went on a field trip to explore the _______________ of the nearby wetlands.

The students were excited to learn that the interaction of magnesium and other _______________ created a magnificent display of fireworks.

Scientists _______________ organisms by looking at their cells under a microscope.

The chemistry students spent hours reviewing the _______________ from the experiment.
UNIT 3

B–1: Concepts of Physical Science
KEY VOCABULARY
**Key Vocabulary**

**BOILING POINT**
the temperature at which a liquid becomes a gas

**COMPOUNDS**
a substance formed by the chemical combination of two or more compounds

**CONDUCTIVITY**
the ability of a material to conduct heat or electricity
**Key Vocabulary**

**DENSITY**  
_mass per unit of volume_

**ELEMENTS**  
one of the known chemical substances that cannot be broken down further without changing its chemical property

**FREEZING POINT**  
_the temperature at which a substance changes state from a liquid to a solid_
Key Vocabulary

**HEAT**
the kinetic movement of molecules in an object that causes an increase in temperature

**LIGHT**
a form of electromagnetic energy that travels in waves through space and can be seen when it interacts with matter

**MATTER**
anything that has mass and takes up space
Key Vocabulary

MIXTURES

a physical combination of two or more substances that are blended together without forming a new substance
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.

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.
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
BOILING POINT
COMPOUNDS
CONDUCTIVITY
DENSITY
ELEMENTS
FREEZING POINT
HEAT
LIGHT
MATTER
MIXTURES
STUDENT SUPPORT MATERIALS

Listening • Mini Pictures
Listening: Mini Pictures

Have the students cut out the pictures. Say the key math words from this unit, and the students should hold up the pictures for them.
STUDENT SUPPORT MATERNALS

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. Density is the mass per unit of volume.  
   - True  
   - False

2. A compound is the physical combination of two or more substances that are blended together without forming a new substance.  
   - True  
   - False

3. Light is a form of electromagnetic energy that travels in waves through space and can be seen when it interacts with matter.  
   - True  
   - False

4. Freezing point is the temperature at which a liquid becomes a gas.  
   - True  
   - False

5. The boiling point is the temperature at which a substance changes state from a liquid to a solid.  
   - True  
   - False

6. Mixture is a substance formed by the chemical combination of two or more elements.  
   - True  
   - False

7. Conductivity is the ability of a material to conduct heat or electricity.  
   - True  
   - False

8. An element is anything that has mass and takes up space.  
   - True  
   - False

9. Heat is the kinetic movement of molecules in an object that causes an increase in temperature.  
   - True  
   - False

10. Matter is one of the known chemical substances that cannot be broken down further without changing its chemical properties.  
    - True  
    - False
STUDENT SUPPORT MATERIALS

Sight Words
density

elements

freezing point
mixtures
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.

<table>
<thead>
<tr>
<th>boiling point</th>
<th>elements</th>
<th>light matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>compounds</td>
<td>freezing point</td>
<td>mixtures</td>
</tr>
<tr>
<td>conductivity</td>
<td>heat</td>
<td></td>
</tr>
<tr>
<td>density</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| C X A H D R W O M U T F B X E M |
| E F R E E Z I N G P O I N T P I |
| C D K A N R B N T R E M O P I X |
| O N B T S X J Y T C V B M I C T |
| N N P U I J U F N R T T I L O U |
| D U F N T Q I O T P N C E K M R |
| U B I Y Y N P U C I E K S V P E |
| C S L T L R F A O W Q B Z X O S |
| T U R J E I A P O I E M I X U R |
| I B N R T Y G A S T R A U I N A |
| V E N M W N I H C X N T I O D Q |
| I A Z X I Q R U T E C T I B S N |
| T I A L E M E N T S C E V B W N |
| Y O I X V N Q R S T M R P M Y U |
| Q O I O T E L E M E N T S S L T |
| B S G Q I O T S Q A F F K H G E |
## Sight Words Activity Page

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

<table>
<thead>
<tr>
<th>boiling point</th>
<th>compounds</th>
<th>conductivity</th>
<th>density</th>
<th>elements</th>
<th>freezing point</th>
<th>heat</th>
<th>light</th>
<th>matter</th>
<th>mixtures</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>H</th>
<th>D</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>R</td>
<td>E</td>
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<tr>
<td>C</td>
<td>A</td>
<td>N</td>
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<td>O</td>
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<td>S</td>
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<td>N</td>
<td>I</td>
<td>T</td>
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<td>D</td>
<td>Y</td>
<td>I</td>
</tr>
<tr>
<td>C</td>
<td>L</td>
<td>O</td>
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<tr>
<td>T</td>
<td>I</td>
<td>P</td>
</tr>
<tr>
<td>I</td>
<td>G</td>
<td>A</td>
</tr>
<tr>
<td>V</td>
<td>N</td>
<td>H</td>
</tr>
<tr>
<td>I</td>
<td>I</td>
<td>T</td>
</tr>
<tr>
<td>T</td>
<td>L</td>
<td>E</td>
</tr>
<tr>
<td>Y</td>
<td>I</td>
<td>R</td>
</tr>
<tr>
<td>O</td>
<td>E</td>
<td>L</td>
</tr>
</tbody>
</table>
Sight Words Activity Page

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

Have the students print the key words from this unit horizontally 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.

pounds || com

it || tiv || con || duct || y

ter || mat
Encoding Activity Page

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

- elements
  - e
  - el
  - ments

- heat
  - h
  - e
  - at

- tures mix
  - tures
  - mix
## Word Scramble Activity Page

Rearrange or unscramble the following letters to form one of the listed unit words. As you use a word, cross it off.

<table>
<thead>
<tr>
<th>heat mixtures</th>
<th>light density</th>
<th>elements matter</th>
<th>compounds freezing point</th>
<th>conductivity boiling point</th>
</tr>
</thead>
</table>

| e r t t a m     | __ a __ e __  |
| i s y e t d n   | __ n __ y     |
| o b i i p o l n n t g | ___ l ___ o ___ |
| p z t e o f g n n i i e r | f ___ i ___ p ___ t |
| d i t i u o y c v t n c | ___ c ___ t y |
| t s e m n e e l | ___ e t ___ |
| o n u s o c m p d | ___ u n ___ |
| m u t s r x e i | __ x u ___ |
| h t a e         | __ e __ |
| l t h i g       | ___ h ___ |
STUDENT SUPPORT MATERIALS

Reading Comprehension
<table>
<thead>
<tr>
<th>mass per unit of volume</th>
<th>a substance formed by the chemical combination of two or more compounds</th>
<th>a form of electromagnetic energy that travels in waves through space and can be seen when it interacts with matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>the temperature at which a substance changes state from a liquid to a solid</td>
<td>the temperature at which a liquid becomes a gas</td>
<td>a physical combination of two or more substances that are blended together without forming a new substance</td>
</tr>
<tr>
<td>the ability of a material to conduct heat or electricity</td>
<td>one of the known chemical substances that cannot be broken down further without changing its chemical property</td>
<td>the kinetic movement of molecules in an object that causes an increase in temperature</td>
</tr>
<tr>
<td>anything that has mass and takes up space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>heat</td>
<td>light</td>
<td>elements</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
<td>----------</td>
</tr>
</tbody>
</table>

1. Salt is a combination of sodium and chloride, its ____________ have properties different from their separate elements.

2. The periodic table shows material known as ____________, which cannot be broken down into anything simpler.

3. ____________ from the Sun travels over 90 million miles to Earth.

4. The temperature at which a substance boils is called its ____________.

5. The temperature at which a substance freezes is called its ____________.

6. ____________ like trail mix and mixed nuts are combinations of different substances.

7. The ability for material to conduct heat or light is called ____________.

8. ____________ is thermal energy and is measured in joules.

9. Anything that has volume and mass is made up of ____________.

10. The amount of mass for each millimeter of a substance is known as the ____________ of the substance.
STUDENT SUPPORT MATERIALS

Basic Writing
Basic Writing Activity Page

Have the students write the word for each picture.

![Fish in a bowl](image1)

![Light bulb](image2)

![Flame](image3)

![Abalone](image4)

![Teapot](image5)

![Salt shaker](image6)

![Mixed nuts](image7)

![Sun](image8)

![Fireworks](image9)

![Icicles](image10)
Basic Writing Activity Page

Have the students write in the missing letters.

b______________ing point
com______________ds
con_____________ivity
d______________ity
ele______________ts
freezing p______________t
h______________t
li______________t
m______________er
mix______________es
Graphic Organizer

Model the process for students using the following unit words.

<table>
<thead>
<tr>
<th>WHAT IT IS</th>
<th>WHAT IT IS NOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>boiling point</td>
<td>NOT EXAMPLES:</td>
</tr>
<tr>
<td>compounds</td>
<td>NOT EXAMPLES:</td>
</tr>
<tr>
<td>conductivity</td>
<td>NOT EXAMPLES:</td>
</tr>
<tr>
<td>density</td>
<td>NOT EXAMPLES:</td>
</tr>
<tr>
<td>elements</td>
<td>NOT EXAMPLES:</td>
</tr>
</tbody>
</table>
# Graphic Organizer

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>freezing point</td>
<td>NOT EXAMPLES:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>heat</td>
<td>NOT EXAMPLES:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>light</td>
<td>NOT EXAMPLES:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>matter</td>
<td>NOT EXAMPLES:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>mixtures</td>
<td>NOT EXAMPLES:</td>
</tr>
</tbody>
</table>
STUDENT SUPPORT MATERIALS

Creative Writing
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.

**BOILING POINT**

____________________________________________________________________

**COMPOUNDS**

____________________________________________________________________

**CONDUCTIVITY**

____________________________________________________________________

**DENSITY**

____________________________________________________________________

**ELEMENTS**

____________________________________________________________________

**FREEZING POINT**

____________________________________________________________________

**HEAT**

____________________________________________________________________

**LIGHT**

____________________________________________________________________

**MATTER**

____________________________________________________________________

**MIXTURES**

____________________________________________________________________
On the lines below, write a paragraph based on the picture. Before you begin writing, reflect on the unit words – freezing point, elements, heat, and light.
UNIT ASSESSMENT

B–1: Concepts of Physical Science
Unit Assessment

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

BASIC LISTENING

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

1. Write the number 1 on top of the picture for BOILING POINT.
2. Write the number 2 on top of the picture for COMPOUNDS.
3. Write the number 3 on top of the picture for CONDUCTIVITY.
4. Write the number 4 on top of the picture for DENSITY.
5. Write the number 5 on top of the picture for ELEMENTS.
6. Write the number 6 on top of the picture for FREEZING POINT.
7. Write the number 7 on top of the picture for HEAT.
8. Write the number 8 on top of the picture for LIGHT.
9. Write the number 7 on top of the picture for MATTER.
10. Write the number 8 on top of the picture for MIXTURES.

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. Density is the mass per unit of volume.
2. A compound is the physical combination of two or more substances that are blended together without forming a new substance.
3. Light is a form of electromagnetic energy that travels in waves through space and can be seen when it interacts with matter.
4. Freezing point is the temperature at which a liquid becomes a gas.
5. The boiling point is the temperature at which a substance changes state from a liquid to a solid.
6. Mixture is a substance formed by the chemical combination of two or more elements.
7. Conductivity is the ability of a material to conduct heat or electricity.

8. An element is anything that has mass and takes up space.

9. Heat is the kinetic movement of molecules in an object that causes an increase in temperature.

10. Matter is one of the known chemical substances that cannot be broken down further without changing its chemical properties.
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 7 • Unit 3 (B-1)
Theme: Concepts of Physical Science

Date:___________      Student’s Name:____________________

Number Correct:__________       Percent Correct:__________
Sealaska Heritage Institute

[Images of various objects: a fish, the sun, a plasma ball, a light bulb, a glass, a branch with icicles, a bowl of colorful candies, a group of shells, a teapot, and fireworks.]
1. True False
2. True False
3. True False
4. True False
5. True False
6. True False
7. True False
8. True False
9. True False
10. True False
boiling point compounds conductivity density elements freezing point heat light matter mixtures
erttam  ____a____e__
isyetdn  ____n_____y
obiipoilntg  ____l_____  ____o____
ptfeofgnniier  f_______i____  p____t
ditiuoycvtnc  __________c________ty
tsemneel  __________e_t__
onusocmpd  __________u_n____
mutsrexei  ___x__u______
htae  __e___
lthig  _____h__
Salt is a combination of sodium and chloride, its _______________ have properties different from their separate elements.

The periodic table shows material known as _______________, which cannot be broken down into anything simpler.

_______________ from the Sun travels over 90 million miles to Earth.

The temperature at which a substance boils is called its _______________.

The temperature at which a substance freezes is called its _______________.

_______________ like trail mix and mixed nuts are combinations of different substances.

The ability for material to conduct heat or light is called _______________.

_______________ is thermal energy and is measured in joules.

Anything that has volume and mass is made up of _________________.

The amount of mass for each millimeter of a substance is known as the ________________ of the substance.
<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BOILING POINT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>COMPONENTS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CONDUCTIVITY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>DENSITY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ELEMENTS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>FREEZING POINT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>HEAT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>LIGHT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>MATTER</strong></td>
<td></td>
</tr>
<tr>
<td><strong>MIXTURES</strong></td>
<td></td>
</tr>
</tbody>
</table>
UNIT 4

B–1: Concepts of Physical Science
KEY VOCABULARY
Key Vocabulary

**ACCELERATION**

to change the speed of a moving object with respect to time

**AMPLITUDE**

the height of a sound wave, which determines its volume

**FORCES**

the push or pull exerted on an object
**Key Vocabulary**

**Frequencies**
- the number of wave cycles per unit time or cycles per second or hertz

**Gas**
- a state of matter that has no definite shape or volume

**Liquid**
- a state of matter that has a definite volume, but no definite shape
Key Vocabulary

**MOTION**
an object’s change in position relative to a reference point

**SOLID**
a state of matter that has definite shape and volume

**UNBALANCED FORCES**
forces that do not cancel each other out which changes an object’s motion
Key Vocabulary

WAVE LENGTH

the distance from one peak to the next on a wave
LESSONS
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.

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.

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.

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.
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.
ACCELERATION
AMPLITUDE
FORCES
FREQUENCIES
GAS
LIQUID
MOTION
SOLID
UNBALANCED FORCES
WAVE LENGTH
STUDENT SUPPORT MATERIALS

Listening • Mini Pictures
Listening: Mini Pictures

Have the students cut out the pictures. Say the key math words from this unit, and the students should hold up the pictures for them.
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. Amplitude is the distance from one peak to the next on a wave. True False

2. Acceleration is the number of wave cycles per unit time or cycles per second or hertz. True False

3. Frequency is to change the speed of a moving object with respect to time. True False

4. Force is the push or pull exerted on an object. True False

5. Liquid is the state of matter that has no definite shape or volume. True False

6. Gas is a state of matter that has a definite volume, but no definite shape. True False

7. Unbalanced forces do not cancel each other out which changes an object’s motion. True False

8. Motion is an object’s change in position relative to a reference point. True False

9. A wavelength is the height of a sound wave, which determines its volume. True False

10. A solid is a state of matter that has definite shape and volume. True False
STUDENT SUPPORT MATERIALS

Sight Words
frequencies

gas

liquid
motion

solid

unbalanced forces
wave length
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.*

<table>
<thead>
<tr>
<th>acceleration</th>
<th>gas</th>
<th>solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>amplitude</td>
<td>liquid</td>
<td>unbalanced forces</td>
</tr>
<tr>
<td>forces</td>
<td>motion</td>
<td>wave length</td>
</tr>
<tr>
<td>frequencies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| G P D T L R Z B U S Y N Q C L W |
| V A M P L I T U D E J U M B J A |
| M T C A R Q T V Z U F U O L N V |
| C N B C E N G T H R R A T I D E |
| O L N M E S R Y A J E Z I Q P L |
| U R I F N L T R Z I Q A O Y Z E |
| B R E Q U H E T B R U V N I K N |
| J F A R U I Y R H N E B T V C G |
| O O T B Y I N G A S N D F J K T |
| G R A S D Q D W E T C B N G H H |
| K C B E F G H T Y V I B N M C X |
| L E X W R N U Z M I E O V C W X |
| Q S O L I D B E R A S Q N Z V X |
| G X Z Q R E W N Y T U M P I Y U |
| C J O A W Q N V B R E S D K L P |
| U N B A L A N C E D F O R C E S |
# Sight Words Activity Page

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

<table>
<thead>
<tr>
<th>acceleration</th>
<th>gas</th>
<th>solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>amplitude</td>
<td>liquid</td>
<td>unbalanced forces</td>
</tr>
<tr>
<td>forces</td>
<td>motion</td>
<td>wave length</td>
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<tr>
<td>frequencies</td>
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</tbody>
</table>

| U | N | B | A | L | A | N | C | E | D | F | O | R | C | E | S |
Have the students cut out the key words and glue them at the bottom of their pictures.

acceleration  amplitude  forces  frequencies

gas  liquid  motion  solid

unbalanced forces  wave length
Sight Words Activity Page

Have the students print the key words from this unit horizontally 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.

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</tbody>
</table>
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.

- tion  mo
- li  amp  tude
- sol  id
Encoding Activity Page

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

cies  fre  quen

_________  _________  ________

gas

_________

wave  length

_________  _________
Rearrange or unscramble the following letters to form one of the listed unit words. As you use a word, cross it off.

<table>
<thead>
<tr>
<th>solid</th>
<th>motion</th>
<th>unbalanced forces</th>
<th>frequencies</th>
<th>wave length</th>
</tr>
</thead>
<tbody>
<tr>
<td>liquid</td>
<td>forces</td>
<td>amplitude</td>
<td>acceleration</td>
<td>gas</td>
</tr>
</tbody>
</table>

- isldo
  
- qliudi
  
- asg
  
- onmoti
  
- crfoes
  
- tlamdeupi
  
- wvtagneehl
  
- eefceqsnuri
  
- ctcaeirolan
  
- dlfobnrcacaseue

solid
liquid
motion
forces
unbalanced forces
amplitude
frequencies
acceleration
wave length
gas
STUDENT SUPPORT MATERIALS

Reading Comprehension
<table>
<thead>
<tr>
<th>Definition</th>
<th>Definition</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>the height of a sound wave, which determines its volume</td>
<td>to change the speed of a moving object with respect to time</td>
<td>the number of wave cycles per unit time or cycles per second or hertz</td>
</tr>
<tr>
<td>the push or pull exerted on an object</td>
<td>a state of matter that has a definite volume, but no definite shape</td>
<td>a state of matter that has no definite shape or volume</td>
</tr>
<tr>
<td>forces that do not cancel each other out which changes an object’s motion</td>
<td>an object’s change in position relative to a reference point</td>
<td>the distance from one peak to the next on a wave</td>
</tr>
<tr>
<td>a state of matter that has definite shape and volume</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Definitions:**

- **Acceleration**
- **Amplitude**
- **Frequencies**
- **Gas**
- **Liquid**
- **Motion**
- **Solid**
- **Unbalanced Forces**
- **Wave Length**
**Reading Comprehension Activity Page**

Write the word or words that best complete each sentence in the space below. Words may be used only once.

<table>
<thead>
<tr>
<th>solid</th>
<th>motion</th>
<th>unbalanced forces</th>
<th>frequencies</th>
<th>wave length</th>
</tr>
</thead>
<tbody>
<tr>
<td>liquid</td>
<td>forces</td>
<td>amplitude</td>
<td>acceleration</td>
<td>gas</td>
</tr>
</tbody>
</table>

1. A radio is an example of something that has many _____________.

2. In an amplifier, the volume of the sound depends on the height of the sound wave or its ________________.

3. In an amplifier, the loudness of a sound depends on the sound's ________________

4. A ________________ has a definite volume and a definite shape.

5. ________________ has a definite volume but not a definite shape.

6. An airplane is an example of an object that has two or more ________________ acting in a way that changes its motion.

7. Forces that cause an object, like a canoe, to change its motion is called ________________.

8. ________________ has no definite volume or shape.

9. Sir Isaac Newton studied balanced and unbalanced forces then wrote his first law of ________________.

10. ________________ is the change in velocity over time and includes the measure of distance.
STUDENT SUPPORT MATERIALS

Basic Writing
Basic Writing Activity Page

Have the students write the word for each picture.
Basic Writing Activity Page

Have the students write in the missing letters.

acce________________ation

amp________________ude

f________________es

fre________________cies

g_______________

l________________uid

m________________ion

s_______________id

un________________anced forces

wave l________________th
### Graphic Organizer

Model the process for students using the following unit words.

<table>
<thead>
<tr>
<th>WHAT IT IS</th>
<th>WHAT IT IS NOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>acceleration</td>
<td></td>
</tr>
<tr>
<td>amplitude</td>
<td></td>
</tr>
<tr>
<td>forces</td>
<td></td>
</tr>
<tr>
<td>frequencies</td>
<td></td>
</tr>
<tr>
<td>gas</td>
<td></td>
</tr>
</tbody>
</table>
Graphic Organizer

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>liquid</td>
<td></td>
</tr>
<tr>
<td>motion</td>
<td></td>
</tr>
<tr>
<td>solid</td>
<td></td>
</tr>
<tr>
<td>unbalanced forces</td>
<td></td>
</tr>
<tr>
<td>wave length</td>
<td></td>
</tr>
</tbody>
</table>
STUDENT SUPPORT MATERIALS

Creative Writing
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.

ACCELERATION

AMPLITUDE

FORCES

FREQUENCIES

GAS

LIQUID

MOTION

SOLID

UNBALANCED FORCES

WAVE LENGTH
On the lines below, write a paragraph based on the picture above. Before you begin writing, reflect on the unit words – density, elements, heat, light, and matter.
UNIT ASSESSMENT

B–1: Concepts of Physical Science
SCIENCE PROGRAM

Unit Assessment Teacher’s Notes
Grade 7 • Unit 4 (B–1)
Theme: Concepts of Physical Science

Date:_________________
Unit Assessment

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

BASIC LISTENING
Turn to pages 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 on top of the picture for ACCELERATION.
2. Write the number 2 on top of the picture for AMPLITUDE.
3. Write the number 3 on top of the picture for FORCES.
4. Write the number 4 on top of the picture for FREQUENCIES.
5. Write the number 5 on top of the picture for GAS.
6. Write the number 6 on top of the picture for LIQUID.
7. Write the number 7 on top of the picture for MOTION.
8. Write the number 8 on top of the picture for SOLID.
9. Write the number 7 on top of the picture for UNBALANCED FORCES.
10. Write the number 8 on top of the picture for WAVE LENGTH.

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. Amplitude is the distance from one peak to the next on a wave.
2. Acceleration is the number of wave cycles per unit time or cycles per second or hertz.
3. Frequency is to change the speed of a moving object with respect to time.
4. Force is the push or pull exerted on an object.
5. Liquid is the state of matter that has no definite shape or volume.
6. Gas is a state of matter that has a definite volume, but no definite shape.
7. Unbalanced forces do not cancel each other out which changes an object’s motion.
Unit Assessment

8. Motion is an object’s change in position relative to a reference point.
9. A wavelength is the height of a sound wave, which determines its volume.
10. A solid is a state of matter that has definite shape and volume.

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 scrambled letters on the left. Rearrange or unscramble the letters to form each of the unit words.

READING COMPREHENSION
Turn to page 6 in your test. Write the word or words that best complete each sentence in the space below. Words may be used only once.

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.
<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>F</th>
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<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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<td>5.</td>
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<td>6.</td>
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<td>7.</td>
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<td>8.</td>
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<tr>
<td>9.</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>10.</td>
<td>T</td>
<td>F</td>
</tr>
</tbody>
</table>
acceleration
amplitude
forces
frequencies
gas
liquid
motion
solid
unbalanced forces
wave length
acceleration  
amplitude  
forces  
frequencies  
gas  
liquid  
motion  
solid  
unbalanced forces  
wave length  

acceleration  
amplitude  
forces  
frequencies  
gas  
liquid  
motion  
solid  
unbalanced forces  
wave length  

acceleration  
amplitude  
forces  
frequencies  
gas  
liquid  
motion  
solid  
unbalanced forces  
wave length  

acceleration  
amplitude  
forces  
frequencies  
gas  
liquid  
motion  
solid  
unbalanced forces  
wave length
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qliudi  ___qu___
ags  ___a___
onmoti  mo_______
crfoes  ___o____s
lamdeupi  ___m___i_____
wvtagneehl  _____e   ___n____
eefceqsnuri  _____q_______i_e__
ctcaerielan  ___c__le____________
dlfobnnrcacaseue  _____a______c___
   ___o_______s
A radio is an example of something that has many ________________.

In an amplifier, the volume of the sound depends on the height of the sound wave or its ________________.

In an amplifier, the loudness of a sound depends on the sound’s ________________

A ________________ has a definite volume and a definite shape.

_______________ has a definite volume but not a definite shape.

An airplane is an example of an object that has two or more ________________ acting in a way that changes its motion.

Forces that cause an object, like a canoe, to change its motion is called ________________.

_______________ has no definite volume or shape.

Sir Isaac Newton studied balanced and unbalanced forces then wrote his first law of ________________.

_______________ is the change in velocity over time and includes the measure of distance.
<table>
<thead>
<tr>
<th>Term</th>
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<tbody>
<tr>
<td>ACCELERATION</td>
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<td>AMPLITUDE</td>
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<td>FORCES</td>
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<td>FREQUENCIES</td>
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<td>GAS</td>
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<td>LIQUID</td>
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<tr>
<td>SOLID</td>
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<tr>
<td>UNBALANCED FORCES</td>
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<tr>
<td>WAVE LENGTH</td>
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</tbody>
</table>
UNIT 5

C–1: Concepts of Life Science
KEY VOCABULARY
**Key Vocabulary**

**ASEXUAL REPRODUCTION**
when an organism reproduces one or more copies of itself

**BIOLOGICAL EVOLUTION**
the process by which the genetic structure of populations change over time

**CLASSIFICATION**
a system by which objects are put in order so that they can be referred to again and identified
Key Vocabulary

GENETICS
the study of how traits are inherited

HEREDITY
the passing down of inherited traits from one generation to another

LIFE CYCLE
a series of stages that occur during the lifetime of all organisms
Key Vocabulary

**MUTATION**

*any permanent change in a gene or chromosome of a cell*

**NATURAL SELECTION**

*the process by which the organisms that are best suited for their environment survive and pass on their traits*

**ORGANISM**

*any living thing that can carry out its life processes on its own*
**Key Vocabulary**

**SEXUAL REPRODUCTION**

the form of reproduction by the joining of a male reproductive cell with a female reproductive cell
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.
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.

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.
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
ASEXUAL REPRODUCTION
BIOLOGICAL EVOLUTION
CLASSIFICATION
GENETICS
HEREDITY
LIFE CYCLE
MUTATION
NATURAL SELECTION
ORGANISM
SEXUAL REPRODUCTION
STUDENT SUPPORT MATERIALS

Listening • Mini Pictures
Listening: Mini Pictures

Have the students cut out the pictures. Say the key math words from this unit, and the students should hold up the pictures for them.
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. Heredity is the study of how traits are inherited. True
2. Asexual reproduction is the form of reproduction by the joining of a male reproductive cell with a female reproductive cell. True
3. Genetics is the passing down of inherited traits from one generation to another. True
4. Natural selection is the process by which the genetic structure of populations change over time. True
5. Sexual reproduction is when an organism reproduces one or more copies of itself. True
6. Biological evolution is the process by which the organisms that are best suited for their environment survive and pass on their traits. True
7. A life cycle is a series of stages that occur during the lifetime of all organisms. True
8. Classification is a system by which objects are put in order so that they can be referred to again and identified. True
9. A mutation is any permanent change in a gene or chromosome of a cell. True
10. An organism is any living thing that can carry out its life processes on its own. True
STUDENT SUPPORT MATERIALS

Sight Words
asexual reproduction

biological evolution

classification
mutation

natural selection

organism
sexual reproduction
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.*

<table>
<thead>
<tr>
<th>asexual</th>
<th>sexual</th>
<th>reproduction</th>
<th>classification</th>
<th>biological</th>
<th>evolution</th>
<th>genetics</th>
<th>mutation</th>
<th>heredity</th>
<th>life cycle</th>
<th>natural selection</th>
<th>organism</th>
</tr>
</thead>
</table>

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N A T U R A L S E L E C T I O N
P M M U T A T I O N H F B T P O
C E T W Y H Q A Y C B E R N Y B
L E O G E N E T I C S Z W S H I
A W T A R B I T Y U H J O E L O
S X C D S D F H T Y S N R X O L
S Q X E E E N G N Y I O G U L O
I X W R E T X Q B E R Y A A R G
F R E P R O D U C T I O N L O I
I H R M S N A T A E W N I P K C
C M J I O L K M T L C E S D C A
A V F R T G B N H T M Y M I O L
T Z S E X D R C F T V G Y B H U
I N J L I F E C Y C L E I M K O
O M K O P L Q A Z W S X E D C R
N F E V O L U T I O N V R G B N
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Have the students highlight or circle the words in this word find. Words appear horizontally.

<table>
<thead>
<tr>
<th>asexual reproduction classification</th>
<th>biological evolution genetics mutation</th>
<th>heredity life cycle natural selection organism</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>N A T U R A L S E L E C T I O N</th>
<th>M U T A T I O N</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Y</td>
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<tr>
<td>L</td>
<td>G E N E T I C S</td>
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<td>T</td>
<td>L I F E C Y C L E</td>
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<tr>
<td>O</td>
<td>N E V O L U T I O N</td>
</tr>
</tbody>
</table>
Sight Words Activity Page

Have the students cut out the key words and glue them at the bottom of their pictures.
Have the students print the key words from this unit horizontally 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.

- gen ics  et

- it  her  ed  y

- mut  tion  a
Encoding Activity Page

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

org | m | an | is

i | class | if | cat | ion

life | cle | cy
Word Scramble Activity Page

Rearrange or unscramble the following letters to form one of the listed unit words. As you use a word, cross it off.

<table>
<thead>
<tr>
<th>asexual reproduction</th>
<th>classification</th>
<th>evolution</th>
<th>life cycle</th>
<th>heredity</th>
</tr>
</thead>
<tbody>
<tr>
<td>sexual reproduction</td>
<td>natural selection</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>biological evolution</td>
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<td>__ p _ _ _ _ c _ i _ _</td>
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</tbody>
</table>
STUDENT SUPPORT MATERIALS

Reading Comprehension
### Reading Comprehension Activity Page

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

<table>
<thead>
<tr>
<th>the passing down of inherited traits from one generation to another</th>
<th>when an organism reproduces one or more copies of itself</th>
<th>the study of how traits are inherited</th>
</tr>
</thead>
<tbody>
<tr>
<td>the process by which the organism that are best suited for their environment survive and pass on their traits</td>
<td>the form of reproduction by the joining of a male reproductive cell with a female reproductive cell</td>
<td>the process by which the genetic structure of populations changes over time</td>
</tr>
<tr>
<td>a series of stages that occur during the life time of all organisms</td>
<td>a system by which objects are put in order so that they can be referred to again and identified</td>
<td>any permanent change in a gene or chromosome of a cell</td>
</tr>
<tr>
<td>any living thing that can carry out its life processes on its own</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- asexual reproduction
- biological evolution
- classification
- genetics
- heredity
- life cycle
- mutation
- natural selection
- organism
- sexual reproduction
**Reading Comprehension Activity Page**

Write the word or words that best complete each sentence in the space below. Words may be used only once.

<table>
<thead>
<tr>
<th>asexual reproduction</th>
<th>classification</th>
<th>evolution</th>
<th>life cycle</th>
<th>heredity</th>
</tr>
</thead>
<tbody>
<tr>
<td>sexual reproduction</td>
<td>natural selection</td>
<td>organism</td>
<td>mutation</td>
<td></td>
</tr>
<tr>
<td>biological evolution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. ________________ is the process by which the genetic structures of populations change over time.

2. All living things have a ________________.

3. ________________ is the production of a new organism from a single parent, such as a spider plant or a jellyfish.

4. ________________ can be a theory to explain evolution or how an organism survives and passes on traits.

5. ________________ is the passing down of traits from one generation to another.

6. The study of how traits are inherited is called ________________.

7. A ________________ is any permanent change in a gene or chromosome of a cell.

8. A system of ________________ is used to group living things.

9. An ________________ is any living thing.

10. ________________ is the production of a new organism from two parents, such as deer or beaver.
STUDENT SUPPORT MATERIALS

Basic Writing
Basic Writing Activity Page

Have the students write the word for each picture.
Basic Writing Activity Page

Have the students write in the missing letters.

asexual re____________tion
bio____________ical evolution
classi____________ation
g____________tics
he____________ity
life c____________e
m____________ion
na____________al selection
or____________ism
sexual repro____________ion
Graphic Organizer

Model the process for students using the following unit words.

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>asexual reproduction</td>
<td></td>
</tr>
<tr>
<td>biological evolution</td>
<td></td>
</tr>
<tr>
<td>classification</td>
<td></td>
</tr>
<tr>
<td>genetics</td>
<td></td>
</tr>
<tr>
<td>heredity</td>
<td></td>
</tr>
</tbody>
</table>
Graphic Organizer

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>life cycle</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXAMPLES:</th>
<th>NOT EXAMPLES:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>mutation</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>EXAMPLES:</th>
<th>NOT EXAMPLES:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
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<tbody>
<tr>
<td>natural selection</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>EXAMPLES:</th>
<th>NOT EXAMPLES:</th>
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<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
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<tbody>
<tr>
<td>organism</td>
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<table>
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<tr>
<th>EXAMPLES:</th>
<th>NOT EXAMPLES:</th>
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<table>
<thead>
<tr>
<th>WHAT IT IS:</th>
<th>WHAT IT IS NOT:</th>
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</thead>
<tbody>
<tr>
<td>sexual reproduction</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>EXAMPLES:</th>
<th>NOT EXAMPLES:</th>
</tr>
</thead>
</table>
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.

ASEXUAL REPRODUCTION

BIOLOGICAL EVOLUTION

CLASSIFICATION

GENETICS

HEREDITY

LIFE CYCLE

MUTATION

NATURAL SELECTION

ORGANISM

SEXUAL REPRODUCTION
Creative Writing Activity Page

On the lines below, write a paragraph based on the picture above. Before you begin writing, reflect on the unit words – genetics, heredity, and life cycle.
UNIT ASSESSMENT

C–1: Concepts of Life Science
Unit Assessment

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

BASIC LISTENING

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

1. Write the number 1 on top of the picture for ASEXUAL REPRODUCTION.
2. Write the number 2 on top of the picture for BIOLOGICAL EVOLUTION.
3. Write the number 3 on top of the picture for CLASSIFICATION.
4. Write the number 4 on top of the picture for GENETICS.
5. Write the number 5 on top of the picture for HEREDITY.
6. Write the number 6 on top of the picture for LIFE CYCLE.
7. Write the number 7 on top of the picture for MUTATION.
8. Write the number 8 on top of the picture for NATURAL SELECTION.
9. Write the number 7 on top of the picture for ORGANISM.
10. Write the number 8 on top of the picture for SEXUAL REPRODUCTION.

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. Heredity is the study of how traits are inherited.
2. Asexual reproduction is the form of reproduction by the joining of a male reproductive cell with a female reproductive cell.
3. Genetics is the passing down of inherited traits from one generation to another.
4. Natural selection is the process by which the genetic structure of populations changes over time.
5. Sexual reproduction is when an organism reproduces one or more copies of itself.
6. Biological evolution is the process by which the organism that are best suited for their environment survive and pass on their traits.
7. A life cycle is a series of stages that occur during the life time of all organisms.

8. Classification is a system by which objects are put in order so that they can be referred to again and identified.

9. A mutation is any permanent change in a gene or chromosome of a cell.

10. An organism is any living thing that can carry out its life processes on its own.

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 scrambled letters on the left. Rearrange or unscramble the letters to form each of the unit words.

READING COMPREHENSION
Turn to page 6 in your test. Write the word or words that best complete each sentence in the space below. Words may be used only once.

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.
<p>| | | |</p>
<table>
<thead>
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<tbody>
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<td>1</td>
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<td>3</td>
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<td>6</td>
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<td>F</td>
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<td>T</td>
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<td>8</td>
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<td>F</td>
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<td>9</td>
<td>T</td>
<td>F</td>
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<tr>
<td>10</td>
<td>T</td>
<td>F</td>
</tr>
</tbody>
</table>
asexual reproduction
biological evolution
classification
genetics
heredity
life cycle
mutation
natural selection
organism
sexual reproduction

asexual reproduction
biological evolution
classification
genetics
heredity
life cycle
mutation
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organism
sexual reproduction

asexual reproduction
biological evolution
classification
genetics
heredity
life cycle
mutation
natural selection
organism
sexual reproduction

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organism
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asexual reproduction
biological evolution
classification
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natural selection
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1. ____________ is the process by which the genetic structures of populations change over time.

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3. ____________ is the production of a new organism from a single parent, such as a spider plant or a jellyfish.

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