



UNIT 9

E-1: Science and Technology

F-1: Cultural, Social, Personal Perspectives of Science

G-1: History of Science



KEY VOCABULARY

Culturally Responsive & Place-Based Introduction of Science Vocabulary

TECHNOLOGY

Place-Based Perspective

Place a pencil and a cell phone in front of the students. Have them determine how the two items are the same. Lead the students to understand that both the pencil and the cell phone represent developments in technology. Have the students cite other examples of technological development.

Heritage Cultural Perspective

Southeast Alaska Native people developed a variety of technological tools. For example, they developed the adze, halibut hooks, knives (made of meteorite materials and iron from shipwrecks), bows and arrows, snares, fish traps, box drums, and wedges. They also used steam to bend wood.

SOLUTION

Place-Based Perspective

Place a tray of soil in front of the students. Make a river in the soil. Tell the students that people want to cross the river, but there are no bridges. Have the students suggest solutions to the problem (for example, boating across and using logs to make a bridge).

Heritage Cultural Perspective

Southeast Native people developed a wide variety of solutions for various applications. For example, cedar bark was used to make ropes that in turn were used to raise large logs in the making of clan houses. The sun's energy was used to prepare dehydrated foods. A variety of medicines were developed using available resources.

MULTIPLE

Place-Based Perspective

Before the lesson begins, collect a variety of different types of cookies. Present the cookies to the students and use them to introduce the concept of multiple items. Have the students suggest other multiples.

Heritage Cultural Perspective

Native people of Southeast Alaska had multiple uses for trees. For example, they used trees to build things, such as canoes and clan houses. They also used trees to make cultural objects—such as totem poles—and as a source for heat.

Culturally Responsive & Place-Based Introduction of Science Vocabulary

INVESTIGATE

Place-Based Perspective

Place a tray of soil in front of the students. Place a model home on the soil. Surround the home with tape (to represent police tape). Have the students tell why the police would surround a house with tape. Lead them to understand that the police put the tape up so they can investigate something; the tape stops others from entering the house.

Heritage Cultural Perspective

In traditional oral literature of the Native people of Southeast Alaska, Raven is the principal investigator of all things. For example, he investigated why the people were starving on the beach when there was an abundance of food in the water (from “Raven Who Went Down Along the Bull Kelp”—a story that belongs to Raven clans).

INNOVATION

Place-Based Perspective

Show the students an unopened can of food. Have them suggest a variety of methods for opening the can. Show them a can opener—use this as an example of an innovation based on a need. Have the students cite other innovations (for example, cell phones, computers, and Velcro).

Heritage Cultural Perspective

While many innovations were developed by Native people in Southeast Alaska, the halibut hook and Chilkat robes were two of the most famous. In the northern parts of Southeast Alaska, snowshoes were another innovation.

GLOBAL

Place-Based Perspective

Show a globe of the world. Have the students suggest issues that face the entire world today. Use this to introduce global, as in global warming.

Heritage Cultural Perspective

The Tlingit people of Southeast Alaska had a global perspective of the world, as reflected by their language. For example, they said “Lingít aani” when referring to the land of the Tlingit. They said “Lingít’ aani” when referring to the world of the Tlingit (the apostrophe at the end of “Lingít’ ” communicated the concept of “world”).

Culturally Responsive & Place-Based Introduction of Science Vocabulary

ADAPTATION

Place-Based Perspective

Show clothing items that might be used to represent different weather forms (for example, a parka, shorts, and rain coat). Have the students identify the weather form or forms associated with each clothing item. Use this as an example of how people adapt their clothing to the weather. Have the students cite other ways in which people adapt to their environment.

Heritage Cultural Perspective

For Native people, life in Southeast Alaska has always involved a variety of adaptations. This included adapting to the weather, natural resources, and—later—to other societies.

DIFFERENCES

Place-Based Perspective

Place a number of fruit samples in front of the students. This might include an orange, lemon, apple, grapes, and so on. Have the students contrast the differences among the fruit samples. They should also cite differences in other items in their environment (for example, buildings and clothing items).

Heritage Cultural Perspective

Tlingit, Haida, and Tsimshian art forms vary in formline. The differences are noticeable in designs, colors, and details. In addition, the three languages are totally different, and there are dialectic differences within each language group.



LESSONS

Science Language for Success—Lesson 1

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

LISTENING

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



Whisper

Mount the vocabulary pictures on the board. Group the students into two teams. Whisper a vocabulary word to the first player in each team. When you say “Go,” the first player in each team must then whisper the same word to the next player in his/her team. The players should continue whispering the vocabulary word in this way until the last player in a team hears the word. When the last player in a team hears the word, he/she must rush to the board and point to the picture for the word. The first player to do this correctly wins the round. Repeat until all players have had an opportunity to identify a vocabulary picture. When a player has identified a vocabulary picture, he/she should rejoin the front of his/her team.

Student Support Materials

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

SPEAKING



Half Match

Before the lesson begins, prepare a photocopy of each of the vocabulary pictures. Cut each of the photocopied pictures in half. Give the picture halves to the students (a student may have more than one picture half). Say one of the vocabulary words. The two students who have the halves of the picture for that word must show their halves and repeat the word orally. Continue in this way until all of the vocabulary words have been reviewed. This activity may be repeated more than once by collecting, mixing, and redistributing the picture halves to the students. This activity may also be adapted for team form. To do this, cut each of the vocabulary pictures in half. Place half of the pictures in one pile and the other halves in another pile (one pile for each team). Say a vocabulary word. When you say “Go,” the first player from each team must rush to his/her pile of picture halves. Each player must find the half of the picture for the vocabulary word you said. The first player to correctly identify the picture half and to repeat the vocabulary word for it wins the round. Repeat until all players have played.

Numbered Boxes

Before the activity begins, prepare a page that contains twenty (or more) boxes. Number each of the boxes. Provide each student with a copy of the numbered boxes. Each student should then shade in half of the boxes with a pencil (any ten

Science Language for Success—Lesson 2

SPEAKING (CONTINUED)



boxes). When the students are ready, mount the vocabulary pictures on the board and say the number of a box (between one and twenty) to one of the students. The student should look on his/her form to see if that box number is shaded in. If that box is shaded in, the student may “pass” to another player. However, if the box is not shaded in, he/she should say a complete sentence about a vocabulary picture you point to. The students may exchange pages periodically during this activity. Repeat until many students have responded in this way.

High Card Draw

Give each student in the class a card from a deck of playing cards. Mount the vocabulary pictures on the board and number each one. Call two students’ names. Those two students should show their cards. The student who has the highest card (aces can be high or low) should then say a complete sentence about a vocabulary picture you point to. The students may exchange playing cards periodically during the activity. Repeat until many students have responded.

READING

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



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

Circle of Words

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 the sight words from their pages. When a student has cut out the sight words, he/she should lay them on his/her desk in a circle. Then, each student should place a pen or pencil in the center of the circle of sight word cards. Each student should spin the pen/pencil. Say a sight word. Any student or students whose pens/pencils are pointing to the sight word you said, should call “Bingo.” The student or students should then remove those sight words from their desks. Continue in this way until a student or students have no sight words left on their desks.

Letter Encode

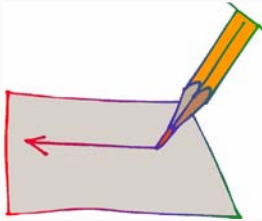
Give each student his/her envelope that contains the alphabet letters. Mount one of the science pictures on the board. The students must use the cut-out letters to spell the word. Review the students’ work. Repeat, until all of the words have been spelled in this way.

Student Support Materials

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

Science Language for Success—Lesson 2

WRITING



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).

Overhead Configurations

Before the activity begins, write the sight words on an overhead transparency sheet. Place an overhead projector on the floor, facing the board. Lay the overhead transparency sheet on the screen of the projector and turn the projector on. The sight words should be projected onto the board. Then, use chalk to draw configurations around each of the sight words. When a configuration has been drawn for each sight word, turn the overhead projector off. Call upon a student to use chalk to fill in one of the configurations with its sight word. You may wish to have more than one student participating in this process at the same time.

This activity may also be conducted in team form. In this case, when you say “Go,” the first player in each team must rush to the configurations. Each player must attempt to fill in one of the configurations with its correct sight word. The first player to do this correctly wins the round. Repeat until all configurations have been filled in in this way.

Student Support Materials

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



VOCABULARY PICTURES





ADAPTATION





DIFFERENCES





GLOBAL





INNOVATION



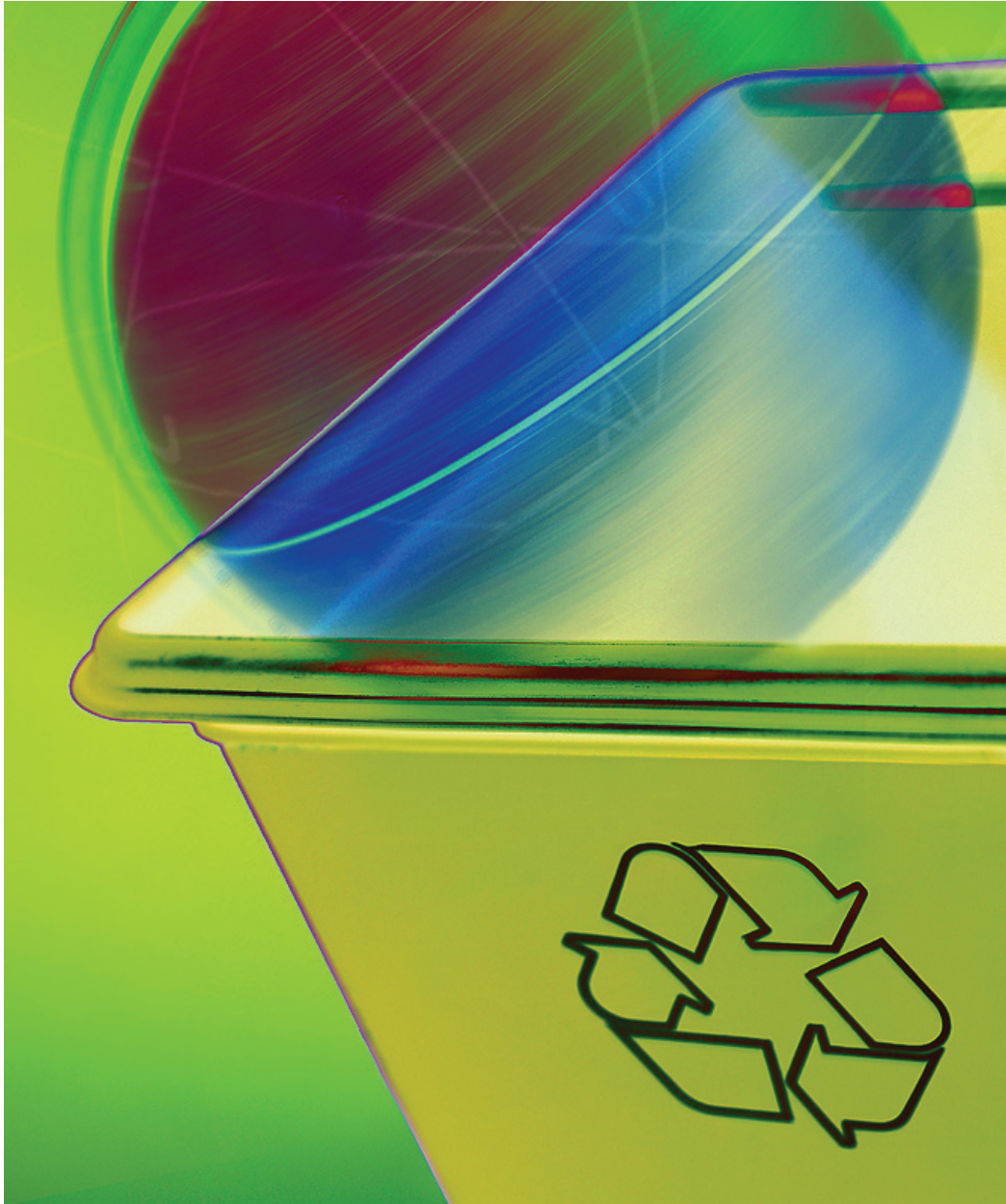


INVESTIGATE



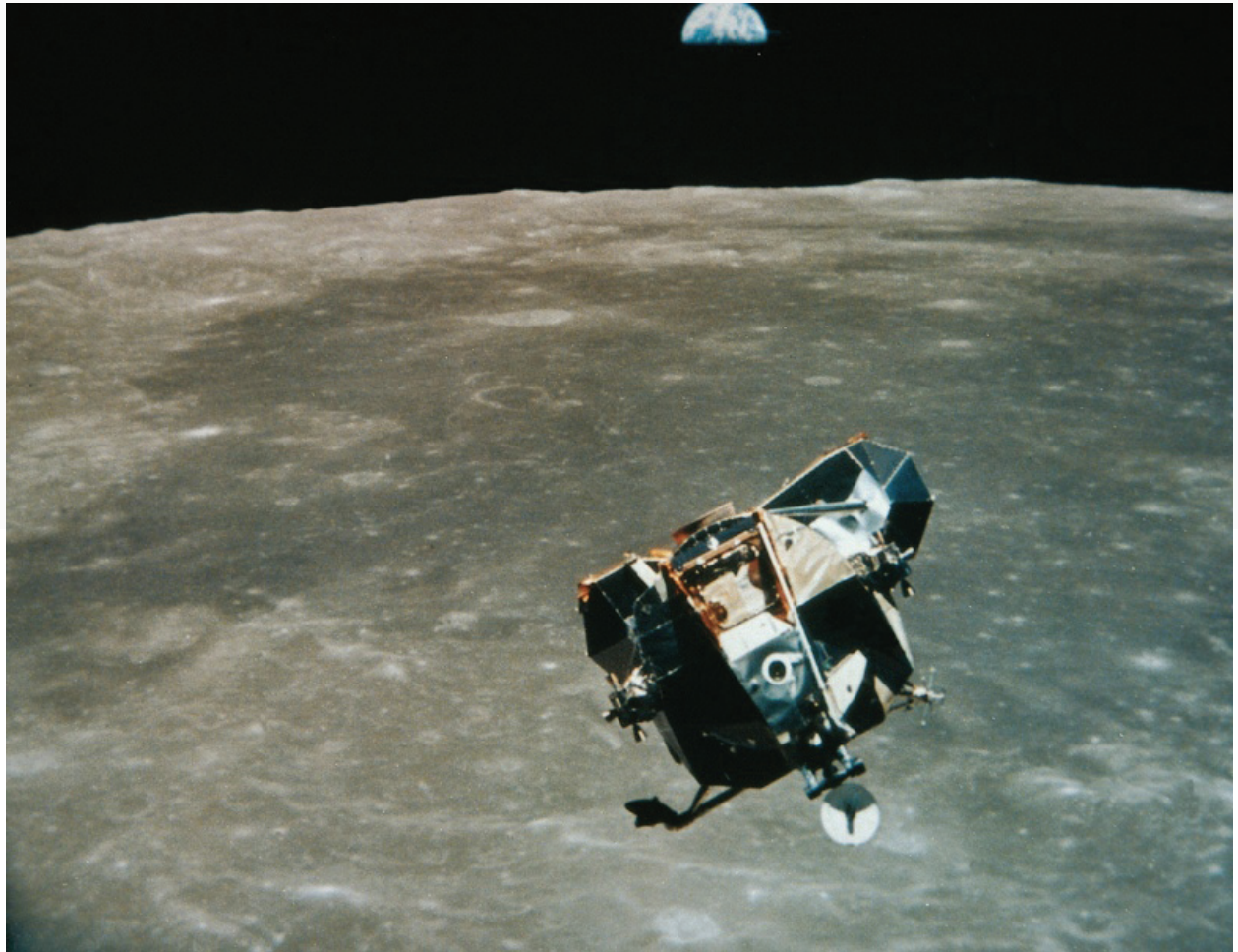


MULTIPLE





SOLUTION





TECHNOLOGY

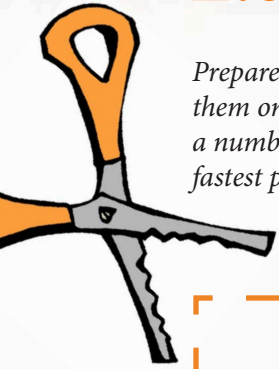


STUDENT SUPPORT MATERIALS

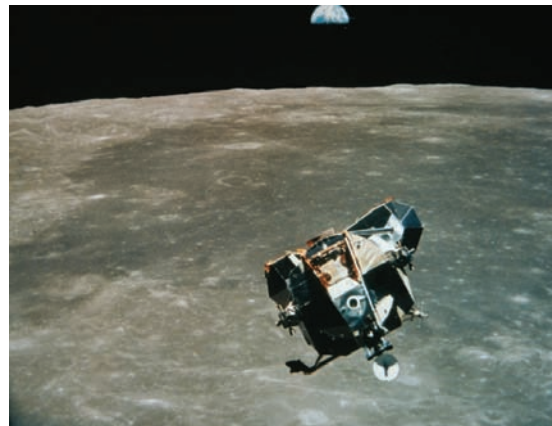
Listening • Mini Pictures

Listening: Mini Pictures

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



Listening: Mini Pictures







STUDENT SUPPORT MATERIALS

Listening Comprehension

Listening Comprehension




Read the following sentences to the students. The students should circle “true” or “false” for each of the sentences. Review the students’ work.

- | | | |
|---|---|---------------|
| ① | An avalanche is an example of new technology. | True
False |
| ② | A solution to a problem reflects a physical chemical. | True
False |
| ③ | There are multiple banks in the United States. | True
False |
| ④ | The police will investigate something if it orbits around an igneous rock. | True
False |
| ⑤ | A tsunami is an innovation made by studying photosynthesis. | True
False |
| ⑥ | Global things relate to the whole world. | True
False |
| ⑦ | Plants and animals often adapt to their environments. | True
False |
| ⑧ | When we look for differences in things, we try to find out how they are the same. | True
False |



STUDENT SUPPORT MATERIALS

Sight Words




global

adaptation

difference





multiple

investigate

innovation



technology

solution



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.



innovation
investigate

technology
differences

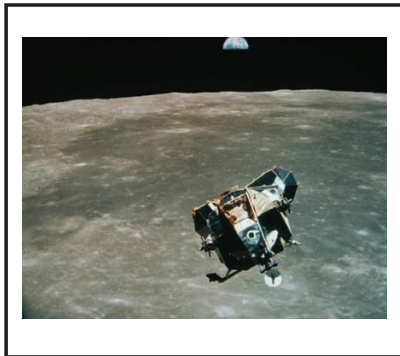
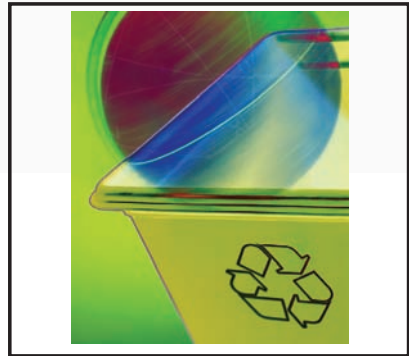
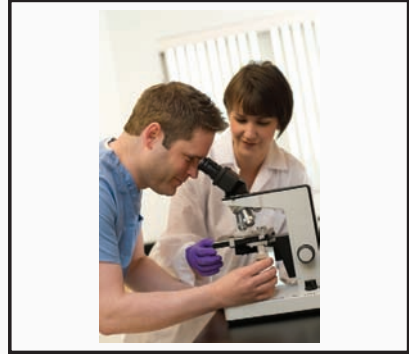
global
adaptation

solution
multiple

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

Sight Words Activity Page

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



innovation	technology	global	solution
investigate	differences	adaptation	multiple



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.



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Encoding Activity Page



tion in va no

ta a tion dap

fer en ces dif

Encoding Activity Page

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



adap

vation

dif

gate

glo

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inno

ferences

investi

tion

multi

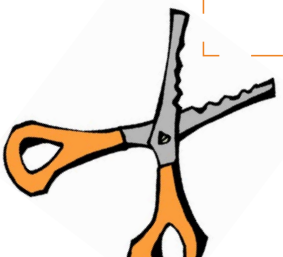
tation

solu

logy

techno

bal





STUDENT SUPPORT MATERIALS

Reading Comprehension

Reading Comprehension Activity Page

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



- ① Which of these reflects technology?
 - photosynthesis
 - tsunami
 - igneous rock
 - electrical things

- ② Which of these is a solution?
 - floods
 - earthquakes
 - snowshoes
 - gravity

- ③ When there are multiple things, there are
 - one thing.
 - no things.
 - more than one thing.
 - two things.

- ④ Someone who likes plants might investigate
 - photosynthesis.
 - orbits.
 - volcanoes.
 - mechanical things.

- ⑤ Which of these is an innovation?
 - the earth's crust
 - volcanoes
 - hibernation
 - computers

Reading Comprehension Activity Page



- 6 When we look for differences in things, we
- want to know how they are different.
 - want to know how they are the same.
 - don't want to know how they are the same.
 - don't want to know how they are different.
- 7 When something is global, it is
- only in our environment.
 - around the world.
 - in the center of the earth.
 - on the earth's crust.
- 8 Which of these might reflect an adaptation to the environment?
- an avalanche
 - clothing
 - gravity
 - sedimentary rocks

Reading Comprehension Activity Page

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



- | | | |
|---------------------------------------|---|---|
| ① Technology has helped people create | ① | ② of computer games. |
| ② For every problem | ② | ③ something new. |
| ③ There are multiple types | ③ | ④ there should be a solution. |
| ④ We can investigate things | ④ | ⑤ many things we use every day. |
| ⑤ An innovation is | ⑤ | ⑥ in our environment. |
| ⑥ Global things | ⑥ | ⑦ can mean that something changes. |
| ⑦ Adaptations to an environment | ⑦ | ⑧ in the foods people eat around the world. |
| ⑧ There are many differences | ⑧ | ⑨ are about the whole world. |

1 → _____ 2 → _____ 3 → _____ 4 → _____

5 → _____ 6 → _____ 7 → _____ 8 → _____

Reading Comprehension Activity Page

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



to look into or ask about something

around the world

an answer

something new

something that can make our lives easier or more fun

many

change

not the same



innovation	technology	global	solution
investigate	differences	adaptation	multiple

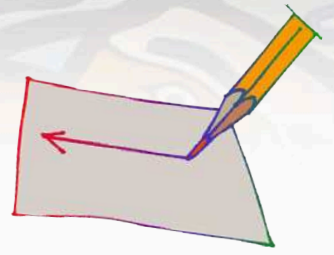


STUDENT SUPPORT MATERIALS

Basic Writing

Basic Writing Activity Page

Have the students write in the missing letters.



tech_____y

sol_____n

mu_____le

in_____e

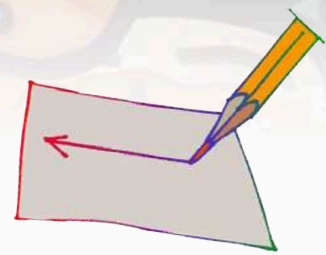
inn_____n

gl_____

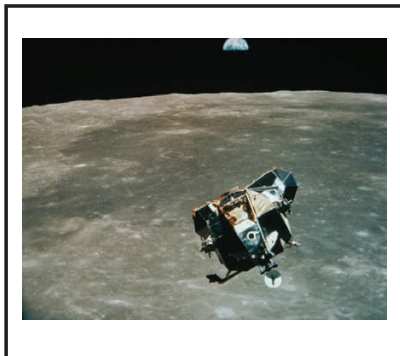
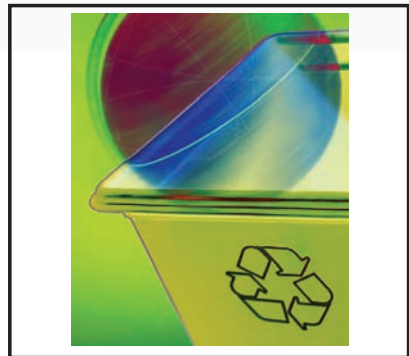
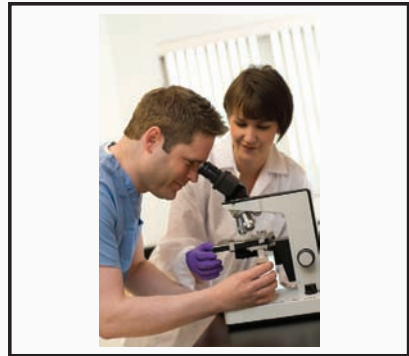
ada_____n

dif_____s

Basic Writing Activity Page



Have the students write the word for each picture.

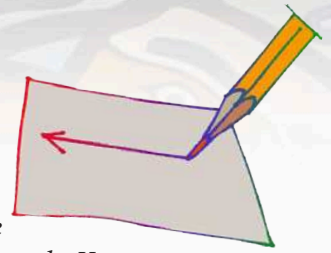




STUDENT SUPPORT MATERIALS

Creative Writing

Creative Writing Activity Page



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

TECHNOLOGY

SOLUTION

MULTIPLE

INVESTIGATE

INNOVATION

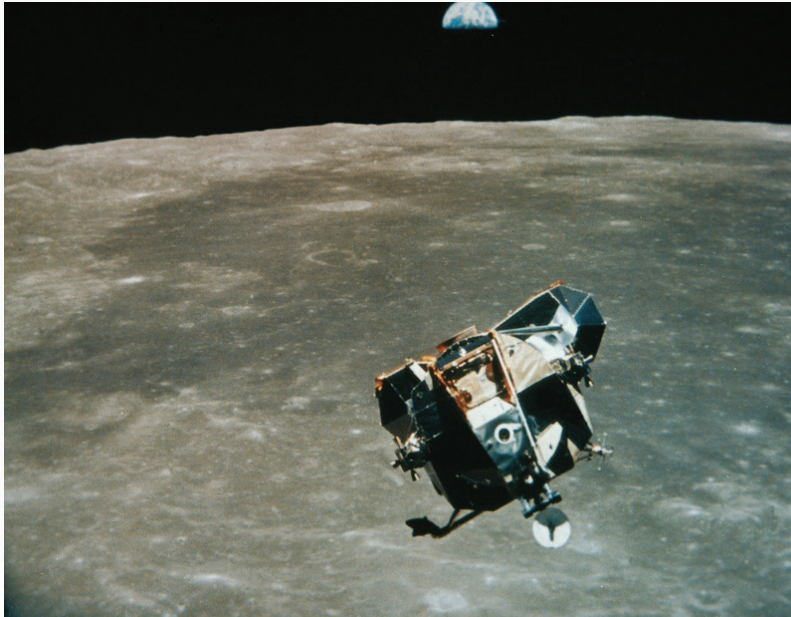
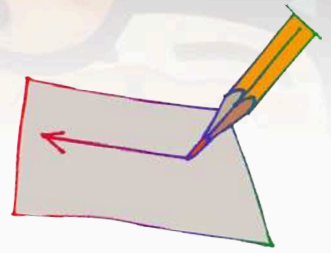
GLOBAL

ADAPTATION

DIFFERENCES

Creative Writing Activity Page

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





UNIT ASSESSMENT

E-1: Science and Technology
F-1: Cultural, Social, and Personal Perspectives of Science
G-1: History of Science



SCIENCE PROGRAM

Unit Assessment Teacher's Notes

Grade 6 • Unit 9 (E-1, F-1, G-1)

Themes: Science and Technology; Cultural, Social, Personal
Perspectives and Science; History of Science

Date: _____



Unit Assessment

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

BASIC LISTENING

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

1. Write the number 1 on top of the picture for **TECHNOLOGY**.
2. Write the number 2 on top of the picture for **SOLUTIONS**.
3. Write the number 3 on top of the picture for **MULTIPLE**.
4. Write the number 4 on top of the picture for **INVESTIGATE**.
5. Write the number 5 on top of the picture for **INNOVATION**.
6. Write the number 6 on top of the picture for **GLOBAL**.
7. Write the number 7 on top of the picture for **ADAPTATION**.
8. Write the number 8 on top of the picture for **DIFFERENCES**.

LISTENING COMPREHENSION

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

1. New technology has made better forms of communication.
2. Technology can help with solutions to problems.
3. There are multiple types of technologies.
4. A scientist can investigate data that he/she has.
5. An innovation is an organism with multiple physical properties.
6. Global data would be data from one country.
7. Adaptation to the environment is when an organism exerts gravity.
8. Differences among organisms are because of heat transfer.



Unit Assessment

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

SIGHT RECOGNITION

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

DECODING/ENCODING

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

READING COMPREHENSION

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

BASIC WRITING

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

CREATIVE WRITING

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

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





SCIENCE PROGRAM

Unit Assessment Student Pages

Grade 6 • Unit 9 (E-1, F-1, G-1)

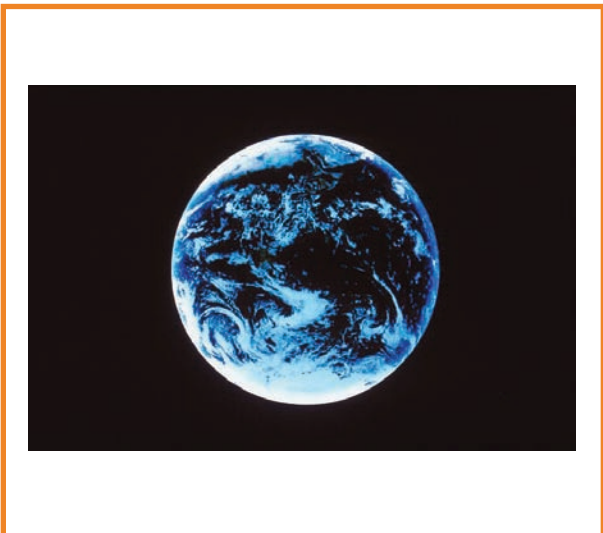
Themes: Science and Technology; Cultural, Social, Personal Perspectives and Science; History of Science

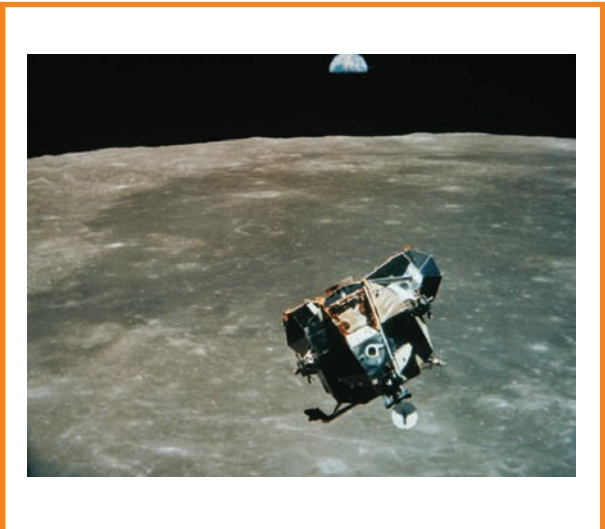
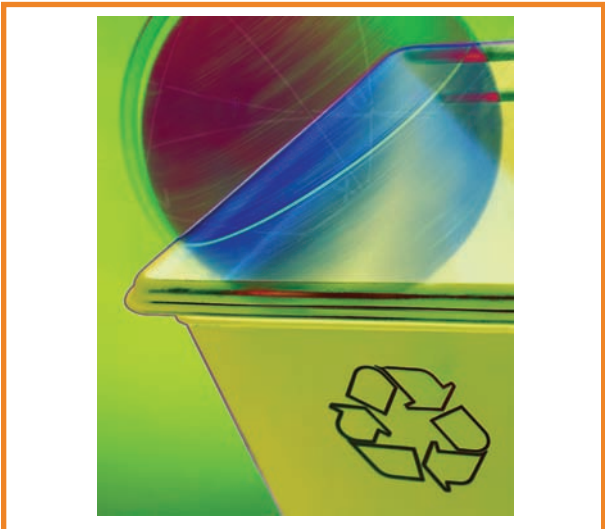
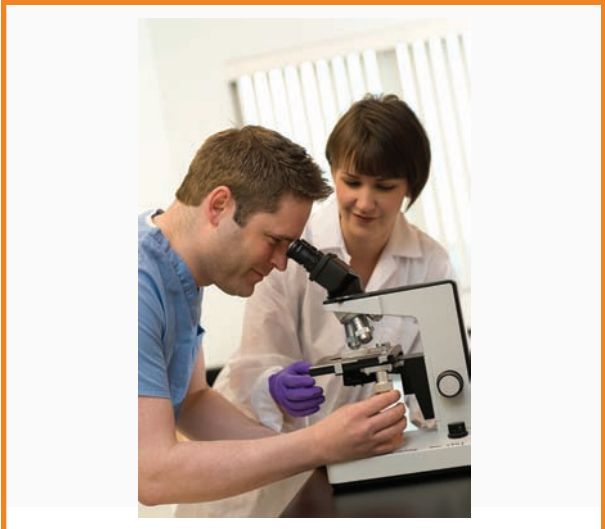
Date: _____ Student's Name: _____

Number Correct: _____ Percent Correct: _____



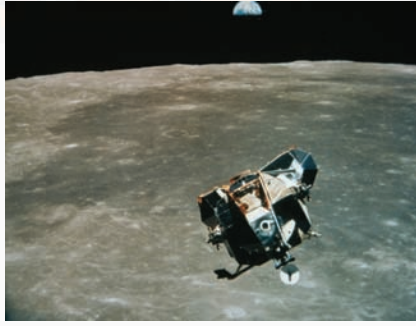




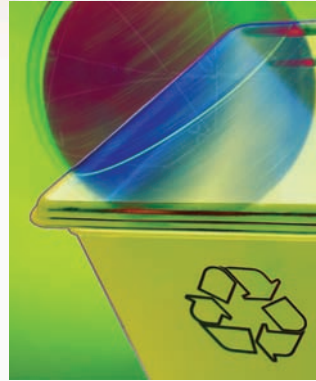




1. **T** **F**
2. **T** **F**
3. **T** **F**
4. **T** **F**
5. **T** **F**
6. **T** **F**
7. **T** **F**
8. **T** **F**



technology
solutions
multiple
investigate
innovation
global
adaptation
differences



technology
solutions
multiple
investigate
innovation
global
adaptation
differences



technology
solutions
multiple
investigate
innovation
global
adaptation
differences



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gabe
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tigate

inno

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ovation
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glo


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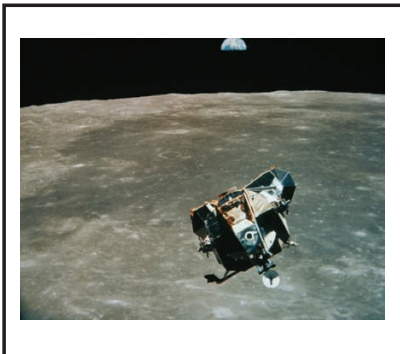
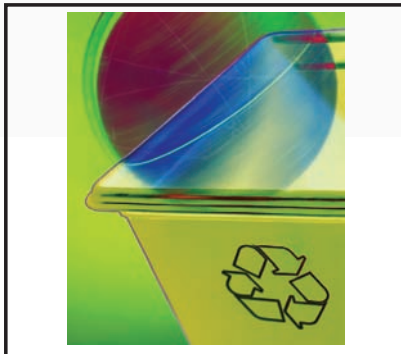
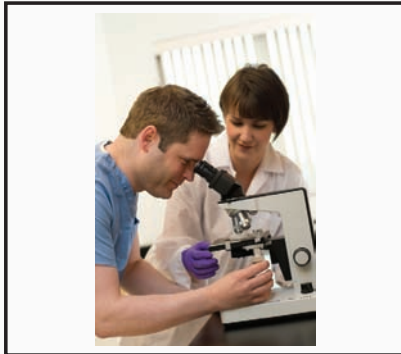
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- 1 Electricity is an example of
- gravity.
 - innovation.
 - differences.
- 2 Technology is the same today as it was a long time ago. True or false?
- true
 - false
- 3 When we look for a solution, we are trying to find
- an answer.
 - gravity.
 - an orbit.
- 4 There are multiple
- gravity.
 - cores.
 - innovations.
- 5 We can investigate something in the environment using
- a song.
 - the dichotomous key.
 - hibernation.
- 6 Something global is about
- part of the earth.
 - the whole earth.
 - the core of the earth.
- 7 Adaptation is when something
- stays the same.
 - falls from gravity.
 - changes.
- 8 Differences among organisms can be
- photosynthesis.
 - gravity.
 - multiple.





TECHNOLOGY

SOLUTIONS

MULTIPLE

INVESTIGATE

INNOVATION

GLOBAL

ADAPTATION

DIFFERENCES
