Grade 9

CULTURAL, SOCIAL, PERSONAL PERSPECTIVES & SCIENCE HISTORY & NATURE OF SCIENCE

Units for F-1 & G-1, 2

Based on the Alaska Science Standards

SF 1.1 SF 1.2 SF 3.1 SG 1.1 SG 2.1 SG 3.1




FOR THE

Juneau-Douglas High School

Sealaska Heritage Institute

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Integrating Culturally Responsive, Place-Based Content with Language Skills Development for Curriculum Enrichment

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INTRODUCTION

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. There have been efforts to bring local cultures into the classroom, thus providing the students with familiar points of departure for learning. However, most often such instruction has been limited to segregated activities such as arts and crafts or Native dancing rather than integrating Native culture into the overall learning process. Two core cultural values, *Haa Aaní,* the reference for and usage of the land, and *Haa Shagóon,* the tying of the present with the past and future, are known by both students and parents, and can be included in a curriculum that simultaneously provides a basis for self-identity and cultural pride, within the educational setting. This will provide a valuable foundation for improved academic achievement.

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

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. The values of *Haa Aaní* and *Haa Shagóon* are reinforced through the various activities in the program.

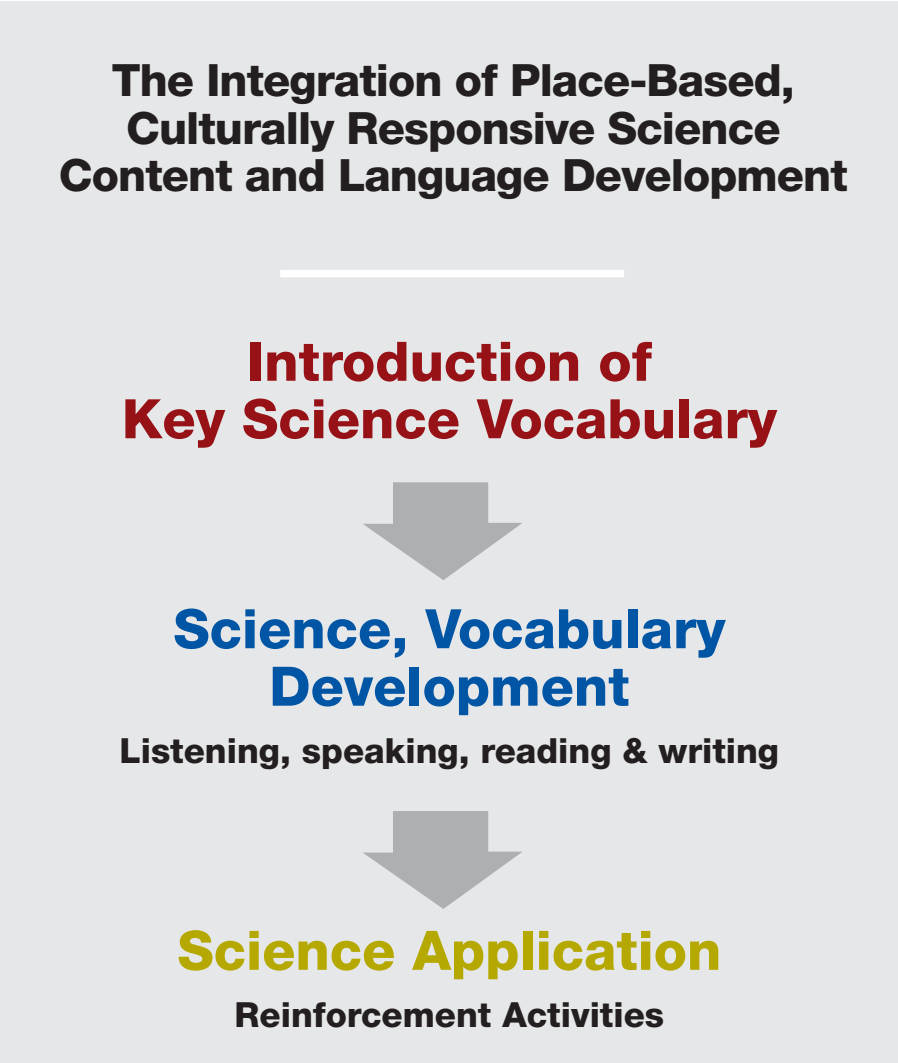
During science lessons, the students are exposed to new information and to key vocabulary that represent that information. While the students may acquire, through various processes, the scientific information, the vocabulary is often left at an exposure level and not internalized by them. Over time,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

Due to *language delay*, 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.

To this end, in this resource program, 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 concepts are viewed through the Native heritage cultural perspectives, thus reinforcing the value of *Haa Shagóon* and *Haa Aaní.* 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.

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.



The Developmental Language Process

The Developmental Language Process is designed to instill language into long term memory. The origin of the Process is rooted in the struggles faced by language-delayed students, particularly when they first enter school.

The Process takes the students/children through developmental steps that reflect the natural acquisition of language in the home and community. Initially, once key language items have been introduced concretely to the students, the vocabulary are used in the first of the language skills, Basic Listening. This stage in the process represents *input* and is a critical venue for language acquisition and retention. A baby hears many different things in the home, gradually the baby begins to *listen* to what he/she hears. As a result of the *input* provided through Basic Listening, the baby tries to repeat some of the language heard – this is represented by the second phase of the Process, Basic Speaking - the oral *output* stage of language acquisition.

As more language goes into a child's long-term memory, he/she begins to understand simple commands and phrases. This is a higher level of listening represented by the stage, Listening Comprehension. With the increase in vocabulary and sentence development, the child begins to explore the use of language through the next stage in the Process, Creative Speaking. All of these steps in the Process reflect the natural sequence of language development.

The listening and speaking skill areas represent *true* language skills; most cultures, including Alaska Native cultures, never went beyond them to develop written forms. Oral traditions are inherent in the listening and speaking skills.

However, English does have abstract forms of language in reading and writing. Many Native children entering kindergarten come from homes where language is used differently than in classic Western homes. This is not a value judgment of child rearing practices but a definite cross-cultural reality. Therefore, it is critical that the Native child be introduced to the concepts of reading and writing before ever dealing with them as skills areas. It is vital for the children to understand that reading and writing are *talk in print*.

The Developmental Language Process integrates the *real* language skills of listening and speaking with the related skills of reading and writing. At this stage in the Process, the students are introduced to the printed words for the first time. These abstract representations are now familiar, through the listening and speaking activities, and the relationship is formed between the words and language, beginning with Basic Reading.

As more language goes into the children's long-term memories, they begin to comprehend more of what they read, in Reading Comprehension.

Many Alaskan school attics are filled with reading programs that didn't work – in reality, any of the programs would have worked had they been implemented through a language development process. For many Native children, the printed word creates angst, particularly if they are struggling with the reading process. Often, children are asked to read language they have never heard.

Next in the Process is Basic Writing, where the students are asked to write the key words. Finally, the most difficult of all the language skills, Creative Writing, asks the students to write sentences of their own, using the key words and language from their long-term memories. This high level skill area calls upon the students to not only retrieve language, but to put the words in their correct order within the sentences, to spell the words correctly and to sequence their thoughts in the narrative.

A student's ability to comprehend well in listening and reading, and to be creatively expressive in speaking and writing, is dependent upon how much language he/she has in long-term memory.

The Developmental Language Process is represented in this chart:

It should be understood that these materials are not a *curriculum* - rather, they are resource materials designed to encourage academic achievement through intensive language development in the content areas.

These resource materials are *culturally responsive* in that they utilize teaching and learning styles effective with Native students. As the students progress through the steps of the Process, they move from a concrete introduction of the key vocabulary, to a symbolic representation of the vocabulary, and finally, to their abstract forms - reading and writing. This provides a format for the students to develop language and skills that ultimately lead to improved academic performance.

Alaska Content Standards for Science

A. Science as Inquiry and Process

A student should understand and be able to apply the processes and applications of scientific inquiry. A student who meets the content standard should:

1. develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments;
2. develop an understanding that the processes of science require integrity, logical reasoning, skepticism, openness, communication, and peer review; and
3. develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and local applications provide opportunity for understanding scientific concepts and global issues.

B. Concepts of Physical Science

A student should understand and be able to apply the concepts, models, theories, universal principals, and facts that explain the physical world. A student who meets the content standard should:

1. develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior;
2. develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved;
3. develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems; and
4. develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.

C. Concepts of Life Science

A student should understand and be able to apply the concepts, models, theories, facts, evidence, systems, and processes of life science. A student who meets the content standard should:

1. develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution;
2. develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms; and
3. develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy.

D. Concepts of Earth Science
A student should understand and be able to apply the concepts, processes, theories, models, evidence, and systems of earth and space sciences. A student who meets the content standard should:

1. develop an understanding of Earth's geochemical cycles;
2. develop an understanding of the origins, ongoing processes, and forces that shape the structure, composition, and physical history of the Earth;
3. develop an understanding of the cyclical changes controlled by energy from the sun and by Earth's position and motion in our solar system; and
4. develop an understanding of the theories regarding the origin and evolution of the universe.

E. Science and Technology
A student should understand the relationships among science, technology, and society. A student who meets the content standard should:

1. develop an understanding of how scientific knowledge and technology are used in making decisions about issues, innovations, and responses to problems and everyday events;
2. develop an understanding that solving problems involves different ways of thinking, perspectives, and curiosity that lead to the exploration of multiple paths that are analyzed using scientific, technological, and social merits; and
3. develop an understanding of how scientific discoveries and technological innovations affect and are affected by our lives and cultures.

F. Cultural, Social, Personal Perspectives and Sciences
A student should understand the dynamic relationships among scientific, cultural, social, and personal perspectives. A student who meets the content standard should:

1. develop an understanding of the interrelationships among individuals, cultures, societies, science, and technology;
2. develop an understanding that some individuals, cultures, and societies use other beliefs and methods in addition to scientific methods to describe and understand the world; and
3. develop an understanding of the importance of recording and validating cultural knowledge.

G. History and Nature of Science
A student should understand the history and nature of science. A student who meets the content standard should:

1. develop an understanding that historical perspectives of scientific explanations demonstrate that scientific knowledge changes over time, building on prior knowledge;
2. develop an understanding that the advancement of scientific knowledge embraces innovation and requires empirical evidence, repeatable investigations, logical arguments, and critical review in striving for the best possible explanations of the natural world;
3. develop an understanding that scientific knowledge is ongoing and subject to change as new evidence becomes available through experimental and/or observational confirmation(s); and
4. develop an understanding that advancements in science depend on curiosity, creativity, imagination, and a broad knowledge base.

http://www.educ.state.ak.us/ContentStandards/Science.html

F-1 & G1

Cultural, Social, Personal Perspectives History & Science

History and Nature of Science

UNIT 1

Sealaska Heritage Institute

INTRODUCTION OF

Key Vocabulary

Culturally Responsive & Place-based Perspective
Introduction of Science Vocabulary

Principles (scientific)

PLACE-BASED PERSPECTIVE

Show the students a screw driver or other tool that has a "shock resistant" handle. Direct their attention to the handle and have them suggest its function. Lead the students to understand that the handle does not conduct electricity - relate this to the *principles of conductivity* in science. Cite other scientific *principles*.

HERITAGE CULTURAL PERSPECTIVE

Native peoples knew that the phases of the moon affected the tides. This *principle* guided their food gathering and travel.

Subsistence

PLACE-BASED PERSPECTIVE

Refer to the information in the Heritage Cultural Perspective, to the right of this box. Have the students discuss why Native peoples do not relate the term *subsistence* merely to food - there is also a cultural component.

HERITAGE CULTURAL PERSPECTIVE

Native peoples generally prefer not to use the word *subsistence* to describe their way of life. Rather, expressions such as, "Our food, our way of life," are used.

Dynamic

PLACE-BASED PERSPECTIVE

Show a picture of an old car, e.g. the Model T Ford, and a new car from *today*. Have the students contrast the two vehicles. Use this to point out the *dynamic* changes in the designs, shapes, etc. that have occurred in the production of cars. Cite other examples of *dynamic* change, e.g. in clothing, transportation, etc.

HERITAGE CULTURAL PERSPECTIVE

Traditional art has undergone some *dynamic* changes in recent years. For example, glass is now used with traditional designs. Even the music industry reflects *dynamic* changes as, for example, some people are developing Native language rap music.

Culturally Responsive & Place-based Perspective Introduction of Science Vocabulary

Beliefs

PLACE-BASED PERSPECTIVE

Draw an illustration of a *pork chop* on the board. Lead the students to understand that Jewish people do not eat pork. Have the students suggest how this practice may have evolved (e.g., for health reasons). The students should understand that many *beliefs* evolved from practical origins while others may be tied to different sources. Cite other *beliefs* including those from other cultures.

HERITAGE CULTURAL PERSPECTIVE

Many Native peoples believe that when someone passes away, it is bad luck for the family to eat seaweed as this might bring misfortune to the family.

Societies

PLACE-BASED PERSPECTIVE

Draw three large circles on the board; in one write "American Cancer *Society*," in another, "Western *Society*" in another. "*Society* for the Prevention of Cruelty to Animals." Have the students determine what all three have in common - i.e., they are made up of individuals with a common purpose, background, beliefs, etc. Cite other societies, such as the "Humane Society, Audubon Society," and so on.

HERITAGE CULTURAL PERSPECTIVE

While the Native *societies* of Southeast Alaska are divergent in some ways, they all represent complex social structures that include moieties, clans, and ceremonies.

Perspectives

PLACE-BASED PERSPECTIVE

Display a map of Asia on the board. Direct the students' attention to Iwo Jima. They may know of Iwo Jima from the Clint Eastwood WW2 movies. Have the students look at the battles for Iwo Jima from the American and Japanese *perspectives*. Cite examples of other issues that may have differing *perspectives*, such as "bail outs, daylight savings time," etc.

HERITAGE CULTURAL PERSPECTIVE

When Alaska was purchased from Russia, the Alaskan Native people's *perspective* was that the land did not belong to Russia and was not theirs to sell.

Culturally Responsive & Place-based Perspective
Introduction of Science Vocabulary

Cultural

PLACE-BASED PERSPECTIVE

Mount a map of the world on the board. Direct the students' attention to different parts of the world representative of various *cultural* groups - areas of North America, Africa, Asia, etc. Cite some cultural practices, e.g. China (no mirrors in the home), India (reincarnation), and so on. List some common *cultural* aspects of life today in Southeast Alaska.

HERITAGE CULTURAL PERSPECTIVE

There are many more *cultural* groups in Southeast Alaska today than prior to first contact. This is due to the migration of different cultural groups to the area.

Religious

PLACE-BASED PERSPECTIVE

Using the world map, from the previous term, locate areas of the world that represent different religious beliefs; the students should understand that different *cultures* often have different *religious* beliefs. In all cases, however, religion involves the recognition and acceptance of a *higher power*. Cite some of the major religions of the world, e.g. Catholicism, Buddhism, etc.

HERITAGE CULTURAL PERSPECTIVE

Native peoples have always believed in a higher power. They also believed that everything in their environment had a spirit.

Philosophical

PLACE-BASED PERSPECTIVE

The word *philosophy* comes from ancient Greek, meaning *love of wisdom*. There are literally hundreds of *philosophical* positions; cite *philosophical* examples such as *political philosophies, educational philosophies,*" and so on. The students should understand that philosophies can be related to all aspects of the human experience.

HERITAGE CULTURAL PERSPECTIVE

Native *philosophies* are interwoven with the stories and speeches of the great orators.

Culturally Responsive & Place-based Perspective
Introduction of Science Vocabulary

To Impact

PLACE-BASED PERSPECTIVE

Show the students a picture of a fish finder. Have them indicate how the fish finder has *impacted* sport fishing and commercial fishing.

Cite examples of other things that have *impacted* our lives, such as "TV, plastics, DNA," etc.

HERITAGE CULTURAL PERSPECTIVE

There have been both positive and negative impacts on life in Southeast Alaska. The negative impacts would include limited entry, alcohol, drugs, and unemployment. Positive impacts would include technology and the resurgence of Native languages and cultures in Southeast Alaska.

Advancement

PLACE-BASED PERSPECTIVE

Show a picture of an old radio and an actual iPod (or other modern radio). Have the students contrast the features of the two radios. Use this to introduce the *advancement* that has occurred in the audio visual field. Cite other *advancements* in technology, transportation, etc.

HERITAGE CULTURAL PERSPECTIVE

Tools and technology are both major advancements for people living and working in Southeast Alaska. This includes communication systems, navigational systems, and transportation.

Historical

PLACE-BASED PERSPECTIVE

Show a picture of Barack Obama and discuss his becoming President of the United States. Use this as an example of a *historical* moment in U.S. politics - have the students identify other *historical* events in U.S. or world history.

HERITAGE CULTURAL PERSPECTIVE

Southeast Alaska has a rich historical past. Many of the community names in Southeast Alaska reflect this historical richness.

Culturally Responsive & Place-based Perspective
Introduction of Science Vocabulary

To Demonstrate

PLACE-BASED PERSPECTIVE

Locate an item that requires simple assembly - e.g., a blender. *Demonstrate* taking the item apart and putting it back together. Following the *demonstration*, have individual students break it down and reassemble it. Stress that they know how to do this from your *demonstration*.

HERITAGE CULTURAL PERSPECTIVE

Traditionally, *demonstration* was the main vehicle for teaching and learning. This covered virtually all aspects of life.

Prior

PLACE-BASED PERSPECTIVE

Tape a picture of a loaf of bread (or cookie, cake etc.) on the board and draw the students' attention to it. Work *backwards* to determine what must occur *prior* to baking the food item - *putting it on a tray or in a pan, mixing the ingredients, collecting the ingredients*, etc. Cite other situations that involve something happening or appearing *prior* to something.

HERITAGE CULTURAL PERSPECTIVE

Prior to the smoking of fish, the smoke house had to be prepared, and skewers had to be cleaned.

To Strive

PLACE-BASED PERSPECTIVE

Show a picture of a lush forest environment and another of a harsh desert location. Have the students contrast the two environments; direct their attention to survival in the two environments; lead them to understand that people would have to *strive* to survive in the desert environment, whereas more food and water should be readily available in the forest environment.

HERITAGE CULTURAL PERSPECTIVE

Uncles *strived* to help their maternal nephews to develop into good men.

Aunts also *strived* to help their maternal nieces in their development.

Native peoples *strived* for perfection in art, music, storytelling, and oratory.

Culturally Responsive & Place-based Perspective Introduction of Science Vocabulary

To Embrace

PLACE-BASED PERSPECTIVE

Show the container from a popular action game. Have the students suggest how people reacted to such games when they first hit the market. Lead the students to realize that people *embraced* the new system and its games. Cite other ideas, technological ideas, etc. that people have *embraced*.

HERITAGE CULTURAL PERSPECTIVE

Native peoples have embraced many aspects of Western life. This includes sports (especially basketball and baseball), music, religions, and technology.

Empirical Evidence

PLACE-BASED PERSPECTIVE

If available, show the students the cover of the film “Gorillas In The Mist” (look on-line for a copy). Have the students suggest what Diane Fossey was doing, living among the gorillas. Use this as an example of *empirical evidence*. Bring this type of data collecting closer to Southeast Alaska by citing other studies that involved *empirical evidence*, e.g., fish counting, bear surveys, etc.

HERITAGE CULTURAL PERSPECTIVE

Traditionally, Native peoples relied on empirical evidence from their environment to make decisions about food harvesting and other types of activities.

Language Skills

Language & Skills Development

LISTENING

Use the activity pages from the Student Support Materials.

Major League

Group the students into two teams. Have the first player from team one stand in the center of the classroom. Give the student a ruler or other item which can be used as a "baseball bat." You may wish to have another player stand at a safe distance behind the "batter" to retrieve the ball. Say a vocabulary word or a sentence which contains a key vocabulary word. Then, toss a nerf ball towards the batter, saying a vocabulary or sentence at the same time. If the vocabulary word/sentence is the same as the one you said before pitching, the student should swing at the nerf ball. However, if the vocabulary word/sentence is not the same, the student should not swing. Play the game along the lines of a regular baseball game - i.e., three strikes and the batter is out. After three outs, the other team is "in."

SPEAKING

Your Number Is Up!

Provide each student with ten blank flashcards. Each student should then write one number on each of his/her cards, using the numbers zero to nine - one number per card. When the students' number cards are ready, they should turn their cards over on their desks (face down). Then, each student should turn one card face up. Call a number between zero and nine. Any student or students who have that number face up on their desks must identify a vocabulary illustration you point to. Then, those number cards should be placed to the side and other number cards turned over. The winner or winners of this activity are those students who have no number cards left on their desks.

READING

Use the activity pages from the Student Support Materials.

Half Time

Before the activity begins, cut each of the sight words in half. Keep one half of each sight word and give the remaining halves to the students. Hold up one of your halves and the student who has the other half of that word must show his half an say the sight word. Repeat in this way until all students have responded. An alternative to this approach is to give all of the word halves to the students. Say one of the sight words and the two students who have the halves that make up the sight word must show their halves. Depending upon the number of students in your class, you may wish to prepare extra sight word cards for this activity.

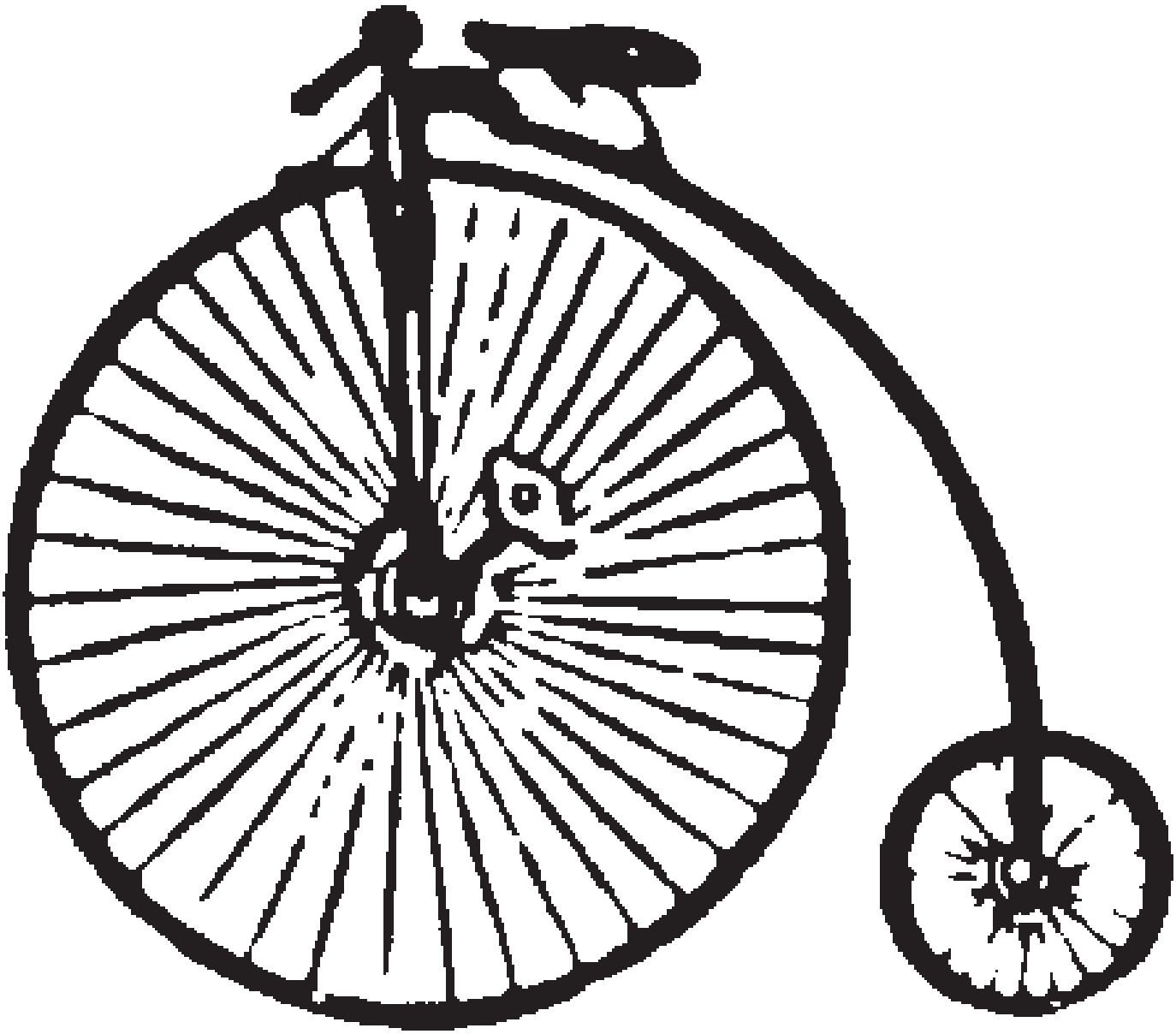
WRITING

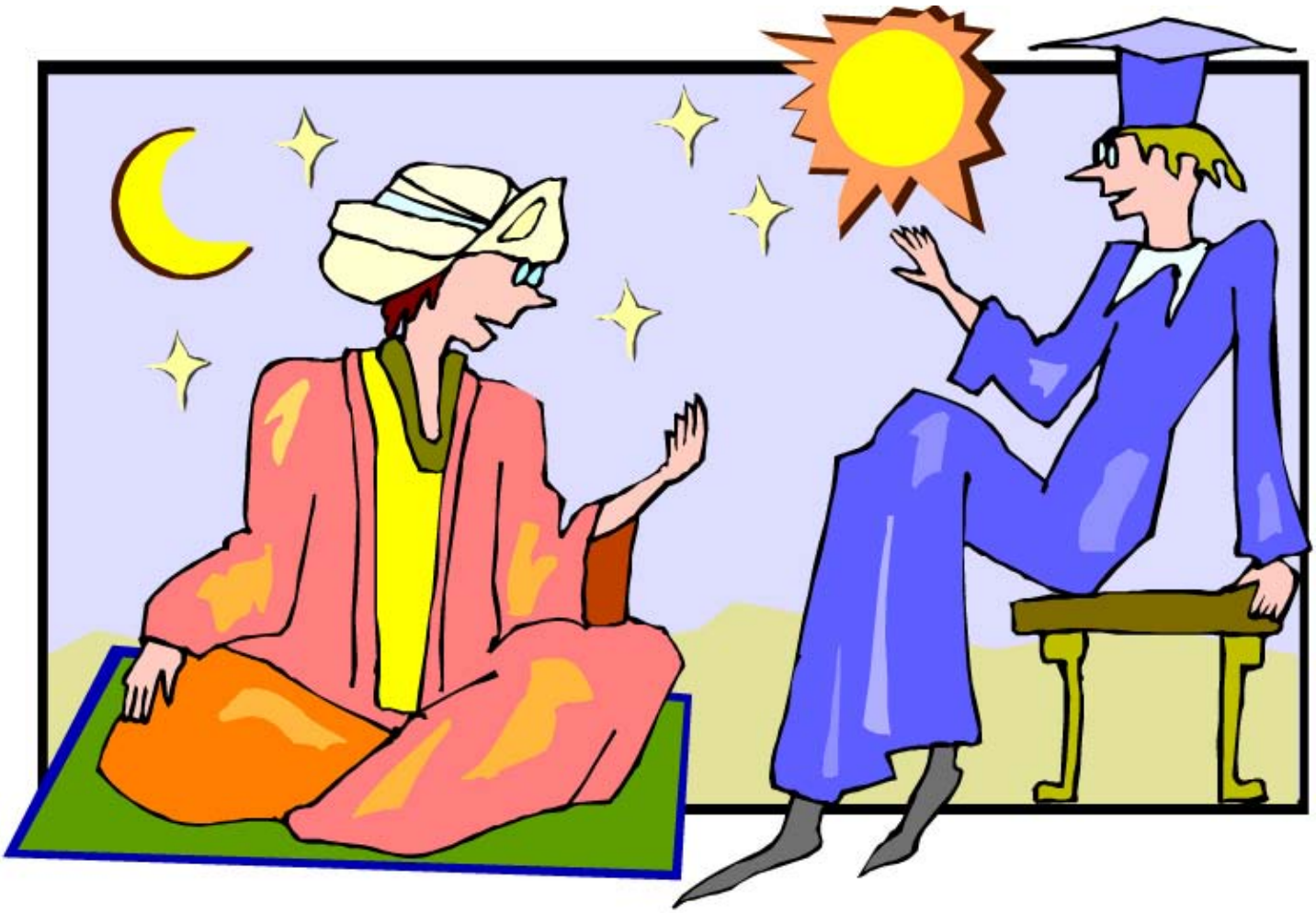
Use the activity pages from the Student Support Materials.

Mirror Writing

Group the students into two teams. Have the first player from each team stand in front of the chalkboard. Give each of the two players a small, unbreakable mirror. Stand some distance behind the two players with illustrations for the sight words. Hold up one of the illustrations. When you say "Go," the players with the mirrors must look over their shoulders to see the illustration you are holding. When a player sees the illustration, he/she must write the sight word for that illustration on the chalkboard. 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.

Vocabulary Images



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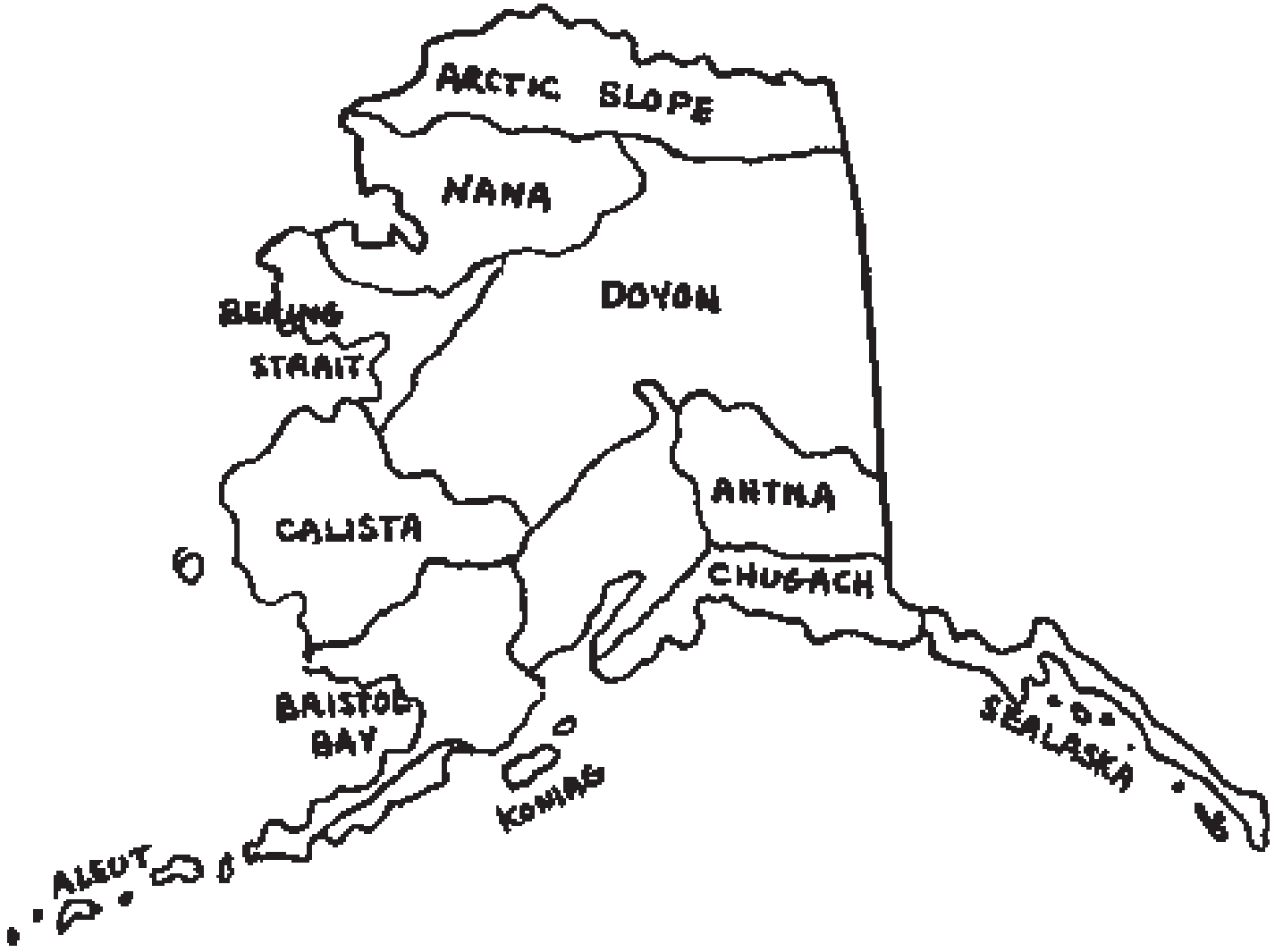
ARCTIC SLOPE
NANA
DOYON
BERING STRAIT
CALISTA
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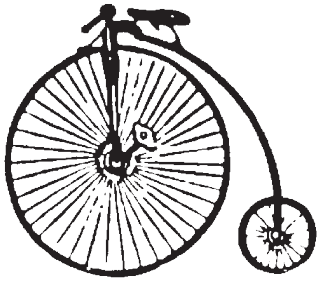
CHUGACH
BRISTOL BAY
KODIAK
SEALASKA
ALEUT

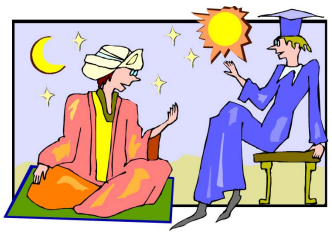

10

STUDENT SUPPORT MATERIALS

Listening

Say these words to the students - they write the numbers of the words under the pictures.
(1)principles (2)impact (3)strive (4)societies (5)philosophical (6)historical (7)cultural (8)embrace (9)subsistence (10)beliefs (11)advancement (12)prior (13)dynamic (14)religious (15)perspective (16)empirical evidence (17)demonstrate





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True Or False?

Read the following sentences to the students. The students should write "true" or "false" for each of the sentences.

1. A kindergarten run on modern principles would include nap time, healthy snacks, harsh corporal punishment, and branding.
2. Subsistence fishing has never been important to the coastal people of Alaska.
3. Regardless of one's beliefs, facts are facts.
4. Some societies are fairly homogenous, like Finnish society, or extremely diverse, like American society.
5. Understanding your cultural heritage can help you understand how your parents, grandparents, and great grandparents think.
6. Religious views can sometimes affect how a scientist approaches a problem, whether she is aware of it or not.
7. Philosophy is the pursuit of wisdom by intellectual means.
8. If you want your advertising to have the biggest impact possible, you should place your ads in inconspicuous locations that are seldom visited by your target audience.
9. The advancement of science is dependent on the human mind.
10. One of the most famous historical uses of the telescope was when Socrates asked the Pope to look at the moon to see the moon's imperfections.
11. If you want a chance at making the basketball team you have to demonstrate your abilities to the coach during tryouts.
12. One's prior knowledge can influence one's approach to a problem in good ways and bad.
13. If you strive for good grades you tend to stay up late watching television, arrive late to school regularly, and seldom do the work in class or at home.
14. If you embrace the principles of science you will have more luck solving problems and making discoveries in the natural world.
15. Most science is not based on empirical evidence but is instead based on opinions of very well appointed people.

Answers

1. F, 2. F, 3. T, 4. T, 5. T, 6. T, 7. T, 8. F, 9. T, 10. F, 11. T, 12, T, 13. F, 14. T, 15. F

STUDENT SUPPORT MATERIALS

Sight Words

advancement

beliefs

cultural

dynamic

embrace

historical

empirical evidence

impact

perspective

philosophical

principles

prior societies subsistence

demonstrate

strive

religious

STUDENT SUPPORT MATERIALS

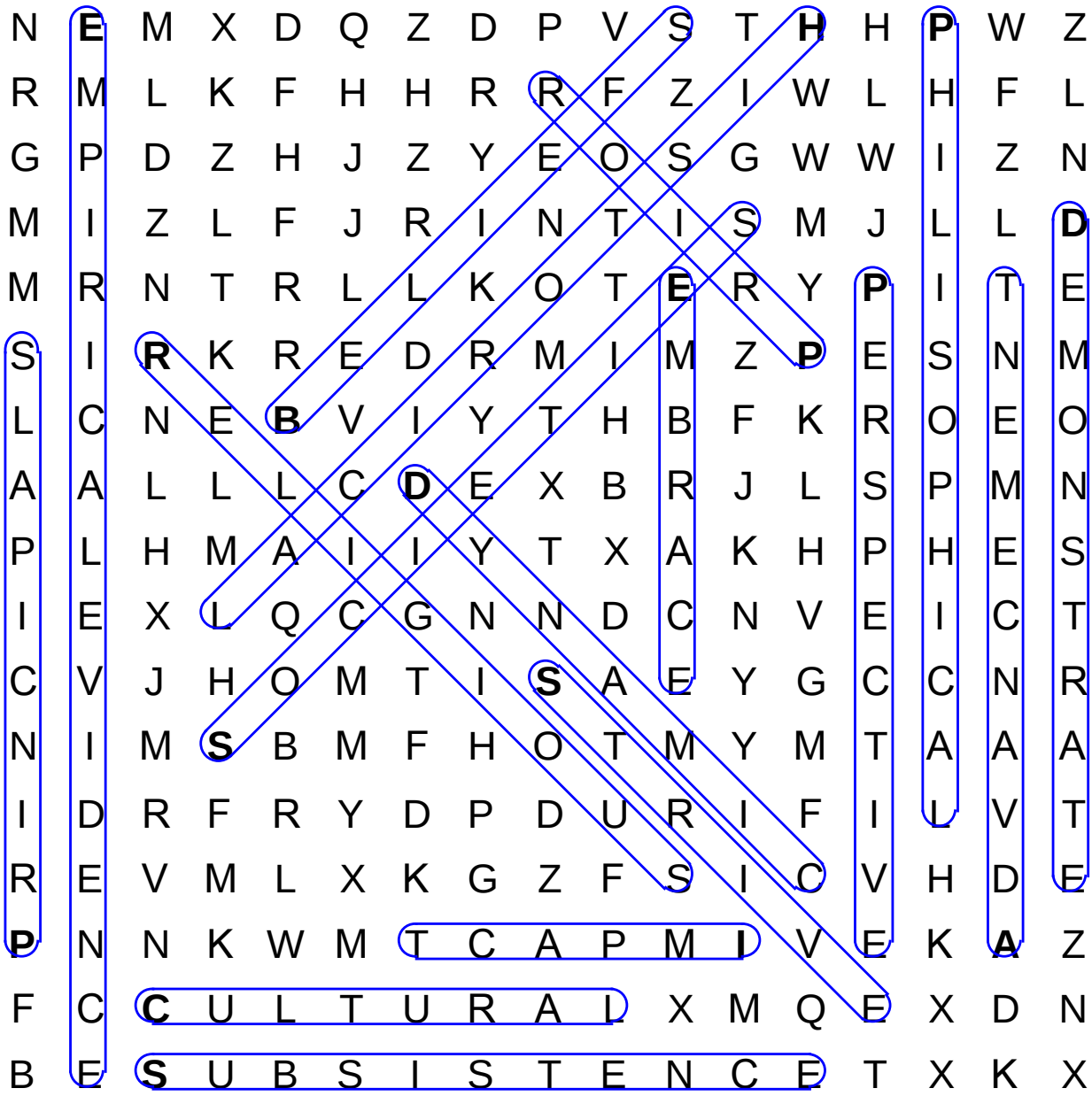
Reading

Word Find

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

advancement
beliefs
cultural
demonstrate
dynamic
embrace
empirical evidence
historical
impact
perspective
philisophical
principals
prior
religious
societies
strive
subsistence

Word Find Solution



Find the Word

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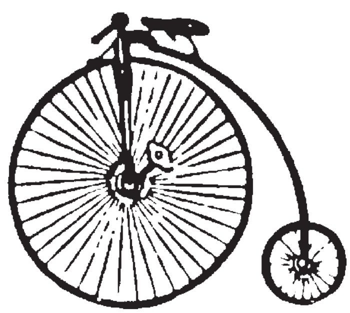

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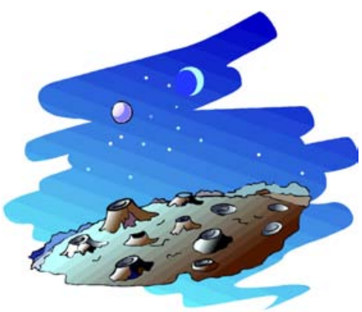

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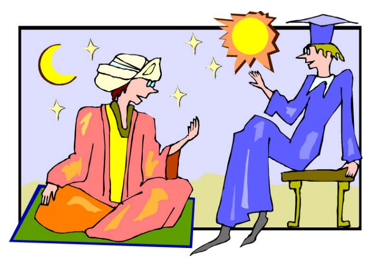

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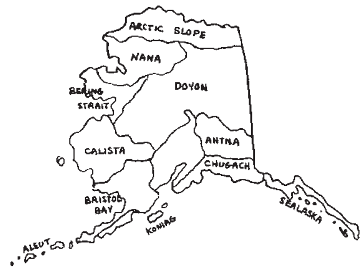

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Sentence Halves

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

1. It is said that our country was founded on the principles of
2. Subsistence berry gathering
3. Sometimes our observations and reasoning can challenge our
4. Humans have formed very diverse
5. Most think that learning one's cultural
6. Religious beliefs and ceremonies are
7. Charles Darwin, while a man of science, also has many
8. The damage was greatest at the
9. Doing a solid project, communicating clearly, and showing up on time
10. Historical letters are often the best primary source material
11. Demonstrate your interest in learning a subject,
12. It is important to tie your shoes
13. Striving to do one's best in school
14. Einstein once said, "Our task must be to free ourselves from this prison by widening our circles of compassion
15. Science is based on reasoning and

A. Heritage is important to learning about oneself and ones family.
B. To embrace all living creatures and the whole of nature in its beauty.
C. Occurs in the fall.
D. When studying our history.
E. equality, liberty, and private property.
F. Societies around the globe.
G. Empirical evidence.
H. Prior beliefs.
I. Similar in important ways, but also different in significant ways.
J. Site of the meteor's impact.
K. Can secure your advancement to the next round of the science fair.
L. And often times a teacher will appear.
M. Philosophical quotes to his name.
N. Prior to the start of the race.
O. Will pay off when grades are turned in and when applying to college or trade school.

Answers
1/E 2/C 3/H 4/F 5/A 6/I 7/M 8/J 9/K 10/D 11/L 12/N 13/O 14/B 15/G

Word & Definition Match

Have the students write the word numbers on their matching definitions.

pertaining to what happened in the past	*coming before*	*the farther away they are, the smaller the object looks to the human eye*	*the continuing tradition of art, literature, etc*	*to display a method*
livelihood	*to affect something*	*to accelerate the growth of progress*	*things associated with belief in a god or the supernatural*	*the rules or laws of nature*
mental acceptance of a claim of truth	*continuously changing*	*the study of general problems*	*a large group of animals or humans who live together in an organized way*	*evidence that originates on observation or experience*
to enfold	*to try to achieve a result*			

1. advancement	2. beliefs	3. cultural	4. dynamic	5. embrace
6. empirical evidence	7. historical	8. impact	9. perspective	10. philosophical
11. principles	12. prior	13. societies	14. subsistence	15. demonstrate
16. strive	17. religious			

Which Belongs?

Have the students circle/identify the word that is correct for each sentence.

1. One of the basic principles/societies of science is its reliance on the senses to understand the world around us.
2. Subsistence/cultural hunting is necessary in many parts of Alaska.
3. Some individuals use other methods and subsistence/beliefs, in addition to the scientific method, to describe and understand the world.
4. Societies/Religious from around the world appreciate the spectacle of the Olympic Games.
5. Cultural/philosophical differences are not limited to food, religion, and art—the manner in which people treat each other or merely walk down the street could be dependent on their background.
6. Typically, science does not address religious/historical views, although some scientists think that it should.
7. Philosophical/Advancement quotes are easy to find but, at times, difficult to understand.
8. Turning in late assignments has a devastating impact/advancement on your grade for most classes.
9. One cannot expect advancement/religious in their field if they are trying their best while at work.
10. Historical/Impact writings are non-existent in some cultures, so we must depend on oral traditions for information.
11. Demonstrate/Subsistence your ability to fly an airplane and you are on your way to getting a pilot's license.
12. After/prior to leaving the aircraft I donned my parachute.
13. If you strive/embrace to reach your goals, you just might make it!
14. If you are allergic to cats you should not confirm/embrace them.
15. Empirical evidence is evidence that is gathered through reason/the senses.

Answers

1. principles, 2. subsistence, 3. beliefs, 4. societies, 5. cultural, 6. religious
7. philosophical, 8, impact, 9. advancement, 10. historical, 11. demonstrate
12.prior to, 13. strive, 14. embrace, 15. the senses

What's The Answer?

Have the students read the questions and then select the correct answer for them. They should fill-in the appropriate circles, beside the answers of their choice.

1. Science is based on many principles, including

(a) One should be able to repeat an experiment and get similar (if not the same) results each time
(b) Subsistence is the key to understanding our natural world
(c) Religion should play a major part in directing lines of scientific inquiry

2. Subsistence hunting, fishing, and gathering is

(a) An important part of many Alaskan's lifestyle
(b) Just like sport hunting and fishing
(c) Not something that most subsistence users take very seriously.

3. One of the beliefs that scientists have, which cannot be supported with facts or data, is that

(a) The universe operates with the same rules everywhere
(b) Evolution occurred
(c) Continental drift happens

4. Societies have a variety of differences, including

(a) Language
(b) How the laws of nature operate.
(c) Solar systems.

5. The culture and customs in which one is raised

(a) Does not affect a person's social skills.
(b) Contributes to one's outlook and view of the world
(c) Will not change who that person is or how they act.

6. Four of the world's main religions are

(a) Hinduism, Christianity, Judaism, and Islam
(b) Animism, Paganism, Christianity, Judaism
(c) Islam, Christianity, Judaism, Jainism

7. During philosophical discussions one is likely to talk about

(a) Socrates and David Hume
(b) Nicole Kidman and Gary Sinise
(c) Hammer toes and bunions

8. Presidential candidates hope that their advertisements will have the biggest impact

(a) In states where they are already way ahead in the polls.
(b) In states where they have no hope to win.
(c) In states where they are running neck and neck with their opponent.

What's The Answer?

Have the students read the questions and then select the correct answer for them. They should fill-in the appropriate circles, beside the answers of their choice.

9. If you are concerned about your advancement to the next grade, you should do all of the following except

(a) See the school counselor and organize a plan
(b) Attend class every day and do all the required and extra credit work
(c) Give up

10. Reading historical books from colonial South Carolina is a good way to

(a) Learn about the Spanish inquisition
(b) Learn about American slavery
(c) Learn about coffee farming in Brazil

11. It is important to prepare to respond to a natural disaster

(a) Prior to the natural disaster occurring
(b) During the natural disaster
(c) After the natural disaster

12. Which of the following words are not a synonym for "strive"?

(a) Endeavor
(b) Attempt
(c) Strike

13. Which of the following people are least likely to embrace increased taxes on the people making over $1,000 per year?

(a) A rural Alaskan
(b) An inner city youth
(c) Someone who makes more than $1,000 per year

14 Which of the following "senses" do you not use when gathering empirical evidence?

(a) Sight
(b) Smell
(c) Intuitive

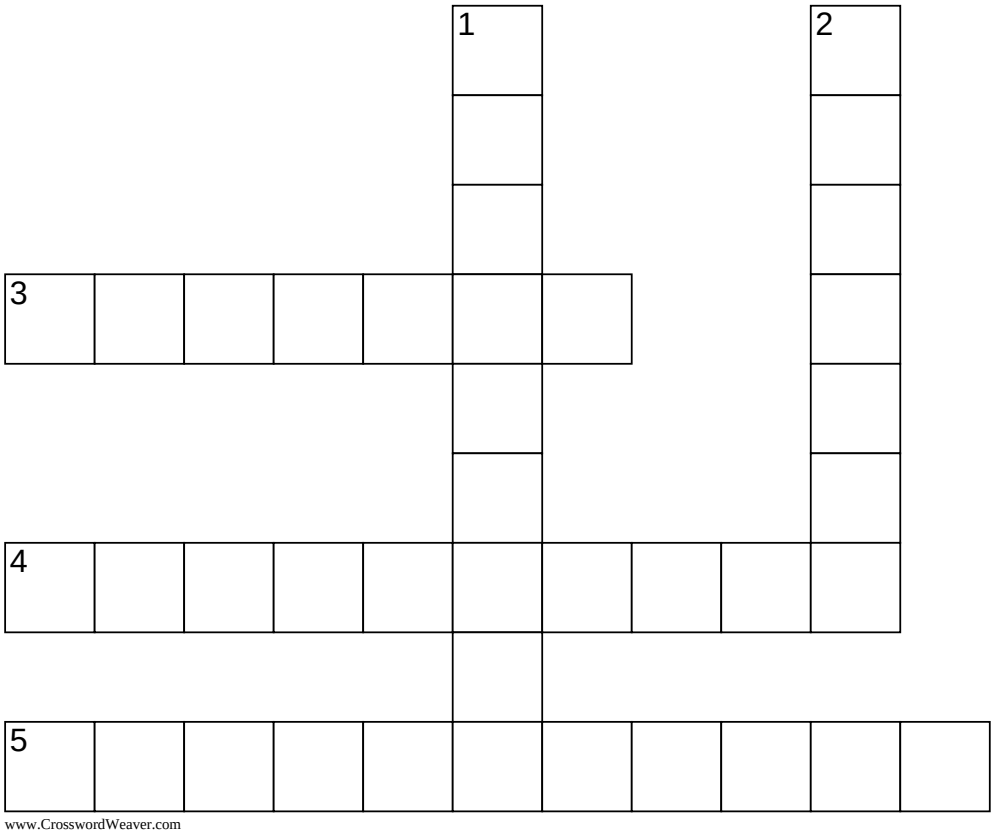
Answers
1. A, 2. A. 3, A, 4. A. 5. B, 6. A, 7. A, 8. C, 9. C, 10. B, 11. A, 12. C, 13. C, 14. C

STUDENT SUPPORT MATERIALS

Writing

9th F-1 Cultural/Social/Personal Perspectives of Science

Unit 1



ACROSS

3 something continuously changing.
4 rules or laws of nature, or the basic idea on how the laws of nature are applied.
5 the providing of sustenance or support.

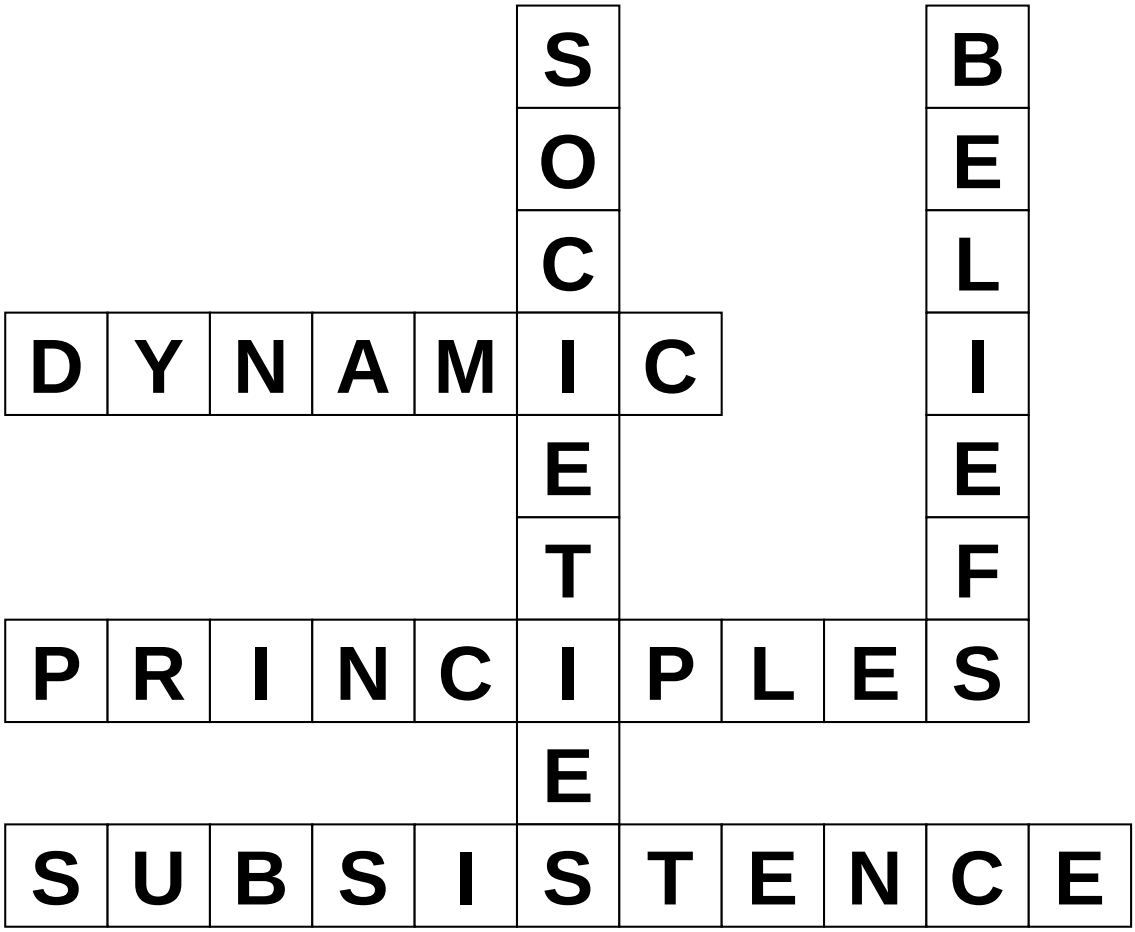
DOWN

1 a large group of people or animals who live together in an organized way.
2 mental acceptance of a claim as truth.

9th F-1 Cultural/Social/Personal Perspectives of Science

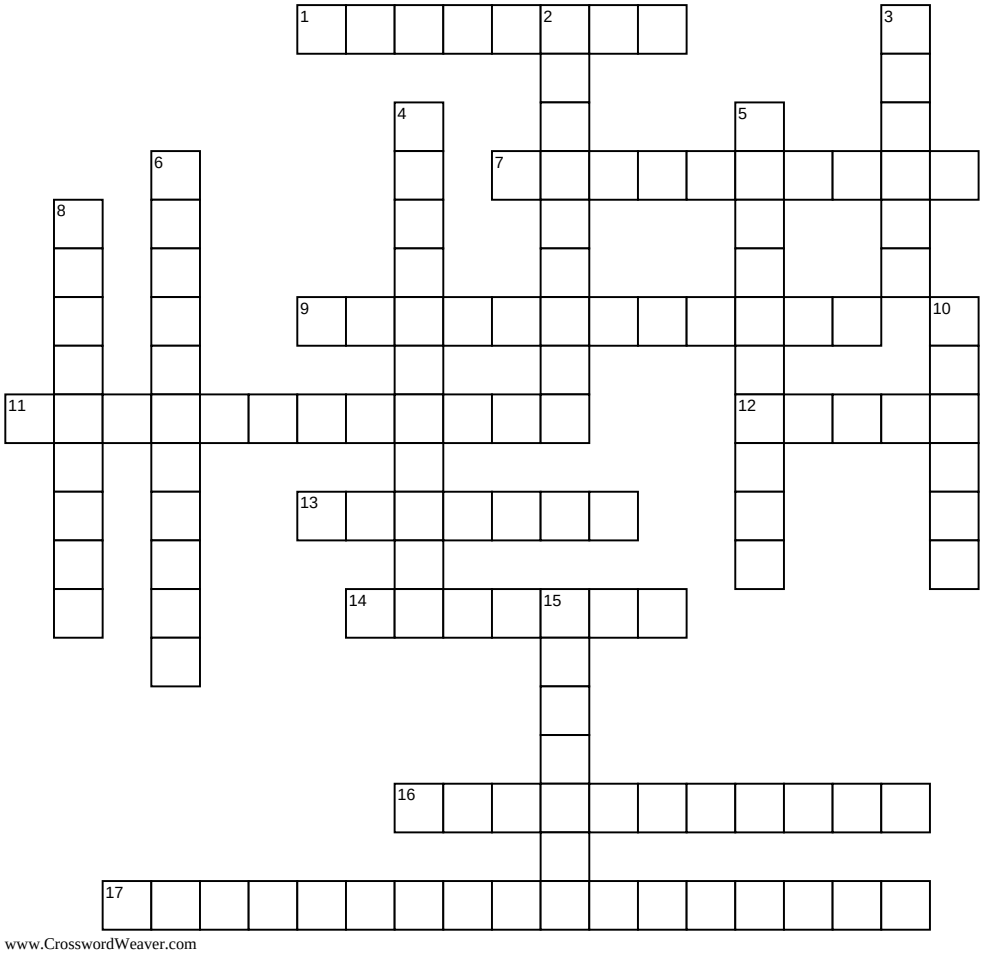
Unit 1

Solution:



F-1 & G-1

Unit 1



ACROSS

1 the continuing tradition of art, literature, language, etc. of a particular society or group within a society
7 pertaining to the history, to what happened in the past.
9 the study of general problems concerning matters such as existence, knowledge, truth, beauty, justice, validity, mind, and language.
11 The farther away they are, the smaller objects look to the human eye. This phenomenon is called perspective. An Architect uses perspective when he or she draws (or renders) pictures of buildings to give people an idea of how the finished building will look in relation to its surroundings
12 coming before, in advance
13 If something is dynamic, it means that it is continuously changing.
14 mental acceptance of a claim as truth
16 to accelerate the growth of progress; to further; to forward; to help on; to aid; to heighten
17 evidence that originates (or is based on) observation or experience

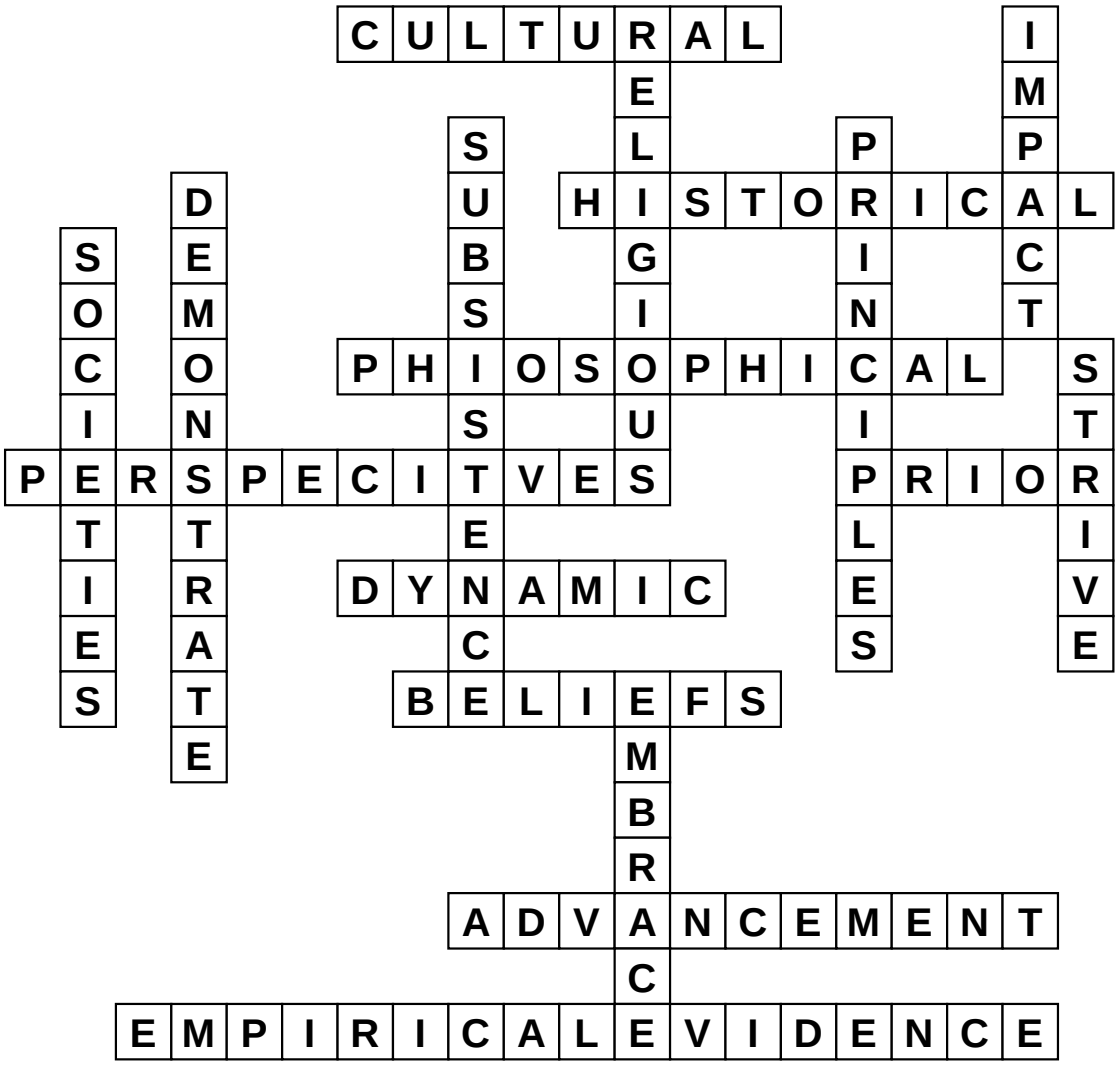
DOWN

2 things associated with belief in a god, gods, and/or the supernatural
3 to affect something
4 the providing of sustenance or support; livelihood
5 rules or laws of nature, or the basic idea on how the laws of nature are applied
6 to display a method
8 a large group of people or animals who live together in an organized way.
10 to try ot achieve a result
15 enfold, include (ideas, principles, etc).

F-1 & G-1

Unit 1

Solution:

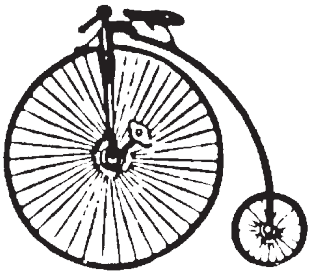


Write The Words!

_____

_____

_____



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Write the Words!

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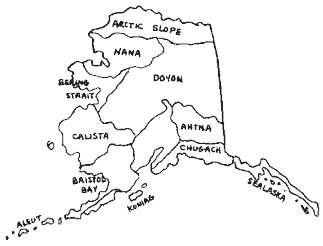

_____

_____

_____

_____

Complete The Sentence

Have the students write the key words in the blanks.

1. Our country was founded on a set of _____, one of which is every person's right to the pursuit of happiness.
2. Sport hunting is very different than _____ hunting.
3. One's personal _____ are not necessarily grounded in science.
4. A _____ is a population of humans who share an economic, social, and industrial infrastructure and may be multi-cultural or isolated from other cultures.
5. Your _____ is the continuing tradition of art, literature, language, and customs of your society.
6. Some philosophers reason that _____ beliefs have no place in science because these beliefs refer to "unnatural" or "supernatural" ideas and so are not a part of the natural world of science.
7. _____ is the study of general problems concerning matters such as existence, knowledge, truth, beauty, justice, and language.
8. Teachers, parents, and students are hoping that the availability of laptop computers will have a positive _____ on graduation rates.
9. My grandfather always said, "If you are looking for _____ in your career, try dressing the part."
10. The word "historic" refers to what is important in history (the Anti-Discriminatory Act in Alaska, guided by Tlingit Elizabeth Peratrovich), while the word _____ refers to whatever existed in the past, whether it was impor tant or not.
11. If you are not sure of how to administer the medication to your dog, it would be wise to ask the veterinarian to _____ how it is done before you leave her office.
12. You will have a more favorable result if you put on your underwear _____ to putting on your pants.
13. According to Albert Einstein, one should "_____ not to be a success, but to be of value."
14. The newlyweds _____ each other as they kissed for the very first time at the alter.
15. _____ _____ is evidence that you can observe (see, taste, smell, or (feel), and it is the evidence upon which science is based.
16. A person's _____of the world can be affected by his or her culture.
17. People with _____personalities can make great speakers.

Answers

1. principles, 2. subsistence, 3. beliefs, 4. society, 5. culture, 6. religious, 7. philosophy
8. impact, 9. advancement, 10. historical, 11. demonstrate, 12. prior, 13. strive
14. embraced, 15. empirical evidence 16. perspective 17. dynamic

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.

advancement

beliefs

cultural

dynamic

embrace

empirical evidence

historical

impact

perspective

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.

philosophical

principles

prior

societies

subsistence

to demonstrate

to strive

religious

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.

STUDENT SUPPORT MATERIALS

Reinforcement Activities

Activity 1
Have the students break into pairs. Have each write something that they feel strongly about. Then have students ask each other why they believe that way and then keep asking why until they answer the philosophical WHY of the core beliefs. Remind students to be non-judgmental and respectful of their partner's answers.

Activity 2
Give each student a rubber band. Have them pull it back just slightly and release it from one hand. Have them record the empirical evidence of what happens. Have the students repeat the experiment by pulling it farther apart each consecutive time.

Activity 3
Have students pick a subject that they want to study and pick one word to look up. Take them to the computer lab to look up the word on Wikipedia, which is an online knowledge base.

Fruit and Crab Salad

By S. Marino

4 cups of mixed greens
1 cup Alaskan blueberries
½ cup of your favorite nuts toasted
1 cup of crab meat

Layer the above ingredients. Top with the vinaigrette below.

Vinaigrette:
½ cup Salmonberries crushed
¼ cup vegetable oil
3 tablespoons red wine vinegar

Combine all ingredients and mix thoroughly.

SALMON SPECIAL

Recipe by Alaska Fisherman Bob Hites
Port Protection, Alaska

- 1/4 cup *each* soy sauce and sherry
- 1 tsp. *each* minced garlic and fresh grated ginger
- 1/4 cup butter, softened
- 1 tbsp. (about 1 medium) minced shallot
- 1 tsp. fresh chopped parsley
- 4 (4 to 6 oz. each) Alaska salmon steaks or fillets

Combine soy sauce, sherry, garlic and ginger in flat dish or gallon size zip-lock plastic bag. Place salmon in marinade; turn several times to coat. Cover, if needed, and refrigerate for 1 hour, turning salmon over after 30 minutes. Cream butter with shallot and parsley; cover and set aside. Grill salmon on oiled hot grill, turning once during cooking, about 6 to 12 minutes per inch of thickness. Do not overcook. Serve each salmon portion with dollop of seasoned butter.

Makes 4 servings.

http://www.salmongram.org/wild_salmon_recipes_22.htm

Purposes: Students will understand how many factors often contribute to the decline of an organism, and the need for effective policy to protect rapidly declining organisms.

From the work of S. Marino

Decline of the Salmon

☐ **Activities**

- Assign students one of the following topics to research on the internet:
  - Logging
  - Commercial Fishing
  - Dams
  - Hatchery Salmon
  - Global Temperature Increases
  - Add others as you see fit
- Each student should spend about ½ hour researching the topic and taking notes.
- Students with the same topic should come together and compare notes, creating a comprehensive list of facts.
- As a team, they should create a poster informing the rest of the class on the important reasons for salmon decline related to their topic.
- Give students an opportunity to present to the class.

☐ Materials
- Computers with internet access
- Poster paper and markers

☐ Extension- have students research and report on the population fluctuations with the Caribou populations in the north

Purposes: Students will understand the cultural value of the local wildlife and the importance of managing it for future generations.

From the work of S. Marino

Harvesting a Seal

☐ **Activities**

- Invite a hunter to make a presentation to the class on seal harvesting.
- Ideally the hunter will have pictures of the hunt and be able to talk about how hunting is culturally important.
- Elders should also be invited to come in and speak about the cultural importance of subsistence hunting and our local foods.
- Students should spend a few minutes at the end to journal about a few of the most important things they learned from the speakers.

☐ Materials
☐ Writing materials

Unit Assessment

Unit Quiz & Test for Units 1 & 2

F1, Unit 1, Cultural/Social/Personal Perspectives of Science Quiz

Name: _____
Date: _____

1) Scientific Principles: This is an important term in the world of science. Draw a picture in the space below that illustrates the concept.

2) In rural Alaska, the term subsistence generally refers to gathering food from the land to provide for one's family. Write a synonym/another word for subsistence _____.

3) With technological advances, climate change, war and political issues occurring around the world, life and circumstances are d_____ and continually changing.

4) Beliefs are an acceptance acceptance that certain things are true or real.

   a) True

   b) False

5) S_____ are formed when a large group of people or animals live together in an organized way.

F1, Unit 1, Cultural/Social/Personal Perspectives of Science Quiz

Name: _____
Date: _____

1) Scientific Principles: This is an important term in the world of science. Draw a picture in the space below that illustrates the concept.

Correct answer not entered.

2) In rural Alaska, the term subsistence generally refers to gathering food from the land to provide for one's family. Write a synonym/another word for subsistence _____.

sustenance; livelihood; food; provisions

3) With technological advances, climate change, war and political issues occurring around the world, life and circumstances are d**ynamic** and continually changing.

4) Beliefs are an acceptance acceptance that certain things are true or real.

a) True

b) False

5) S**ocities** are formed when a large group of people or animals live together in an organized way.

G1, Unit 1, History and Nature of Science Quiz

Name: _____
Date: _____

1) which of the following definitions fits the term PERSPECTIVE?

a) a way of regarding situations or topics or point of view

b) the size and dimension of an object depending on distance and angle

c) All of the above

d) None of the above

2) The study of what science is and how science works approaches topics in ways that do not have cut-and-dried explanations, but is open to active debate and investigation. It may deal with more general problems concerning matters such as existence, knowledge, truth, beauty, and justice. This study is called _____.

a) philosophical.

b) dogmatic.

c) democratic.

d) historical.

Look at the terms in the column on the left below. Match them with the correct definition from the column on the right.

3) _____ cultural
4) _____ philosophical
5) _____ historical
6) _____ religious

a. the study of general problems concerning matters of existence
b. pertaining to what happened in the past
c. associated with belief in a god, gods and/or the supernatural
d. the continuing of traditions of art, literature, language

Match the verbs on the left with the correct definition on the right.

7) _____ to impact
8) _____ to demonstrate
9) _____ to embrace
10) _____ to strive

a. to display a method
b. to include or enfold
c. to affect something
d. to try to achieve a result

11) If you are doing scientific research, and you base your findings on evidence that originates from observation or experience, the evidence is called _____.

12) Which of the following words means "to happen before"?

a) advancement

b) prior

G1, Unit 1, History and Nature of Science Quiz

Name: _____
Date: _____

1) which of the following definitions fits the term PERSPECTIVE?

a) a way of regarding situations or topics or point of view

b) the size and dimension of an object depending on distance and angle

c) All of the above

d) None of the above

2) The study of what science is and how science works approaches topics in ways that do not have cut-and-dried explanations, but is open to active debate and investigation. It may deal with more general problems concerning matters such as existence, knowledge, truth, beauty, and justice. This study is called _____.

a) philosophical.

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c) democratic.

d) historical.

Look at the terms in the column on the left below. Match them with the correct definition from the column on the right.

3) **d** cultural
4) **a** philosophical
5) **b** historical
6) **c** religious

a. the study of general problems concerning matters of existence

b. pertaining to what happened in the past

c. associated with belief in a god, gods and/or the supernatural

d. the continuing of traditions of art, literature, language

Match the verbs on the left with the correct definition on the right.

7)	**c**	to impact	a. to display a method
8)	**a**	to demonstrate	b. to include or enfold
9)	**b**	to embrace	c. to affect something
10)	**d**	to strive	d. to try to achieve a result

11) If you are doing scientific research, and you base your findings on evidence that originates from observation or experience, the evidence is called **empirical** .

12) Which of the following words means "to happen before"?

a) advancement

b) prior

F1, Cultural/Social/Personal Perspectives of Science
G1, Units 1-2, History and Nature of Science
Test

Name: _____
Date: _____

Match the key vocabulary on the left with the correct definition on the right.

1) _____ dynamic
2) _____ beliefs
3) _____ prior
4) _____ discoveries
5) _____ novel
6) _____ disprove
7) _____ serendipity
8) _____ debate

a. mental acceptance of a claim as truth
b. to prove to be false
c. vigorously discuss opposing opinions
d. something is continuously changing
e. new or different
f. coming before or in advance
g. something found
h. accidentally discovering something wonderful while looking for something else

On the left are key vocabulary. On the right are illustrations. Select the illustration that matches the word by placing the correct letter in front of the word.

9) _____ historical
10) _____ philosophical
11) _____ religious
12) _____ cultural

a. illus for philosophical
b. illus for historical
c. illus for cultural
d. illus for religious
e. Add extra illus (societies?)

Fill in the blank with the word that fits best. Choose from the words provided below.
advancement, perspectives, principles, subsistence, societies, cultural, historical

13) When an architect draws a building to give people an idea of how the finished building will look in relation to its surroundings, the drawing will show the phenomenon of making objects that appear farther away and smaller than those closer up. This phenomenon is called _____.

14) Another word for livelihood, food or sustenance is _____.

15) _____ are made up of large groups of people or animals who live together in an organized way.

16) To aid, to heighten, to further, to accelerate the growth of are all terms that mean the same thing as _____.

17) The basic idea of how the laws of nature are applied, the rules or laws of nature are scientific _____.

Unscramble the letters and write the vocabulary word for the definition in the blank on the right.

18) nteglineh(to inform, give educational or spiritual light to) _____

19) ysrverotnco (a debate, discussion of opposing opinions) _____

20) alnoisvirop (serving for the time being) _____

21) natoiamimuni(the process of acquiring defenses against something, like a disease). _____

Match the verb on the left to definition on the right

22) _____ to impact
23) _____ to demonstrate
24) _____ to strive
25) _____ to confirm
26) _____ to embrace

a. to enfold, to include
b. to try to achieve a result
c. to affect something
d. to display a method
e. to establish accuracy; to make valid

27) Write a definition for OR illustrate the term EMPIRICAL EVIDENCE.

F1, Cultural/Social/Personal Perspectives of Science
G1, Units 1-2, History and Nature of Science
Test

Name: _____
Date: _____

Match the key vocabulary on the left with the correct definition on the right.

1) __d__ dynamic
2) __a__ beliefs
3) __f__ prior
4) __g__ discoveries
5) __e__ novel
6) __b__ disprove
7) __h__ serendipity
8) __c__ debate

a. mental acceptance of a claim as truth
b. to prove to be false
c. vigorously discuss opposing opinions
d. something is continuously changing
e. new or different
f. coming before or in advance
g. something found
h. accidentally discovering something wonderful while looking for something else

On the left are key vocabulary. On the right are illustrations. Select the illustration that matches the word by placing the correct letter in front of the word.

9) __b__ historical
10) __a__ philosophical
11) __d__ religious
12) __c__ cultural

a. illus for philosophical
b. illus for historical
c. illus for cultural
d. illus for religious
e. Add extra illus (societies?)

Fill in the blank with the word that fits best. Choose from the words provided below.
advancement, perspectives, principles, subsistence, societies, cultural, historical

13) When an architect draws a building to give people an idea of how the finished building will look in relation to its surroundings, the drawing will show the phenomenon of making objects that appear farther away and smaller than those closer up. This phenomenon is called _ **perspective** .

14) Another word for livelihood, food or sustenance is **subsistence**.

15) **Societies** are made up of large groups of people or animals who live together in an organized way.

16) To aid, to heighten, to further, to accelerate the growth of are all terms that mean the same thing as **advancement**.

17) The basic idea of how the laws of nature are applied, the rules or laws of nature are scientific **principles**.

Unscramble the letters and write the vocabulary word for the definition in the blank on the right.

18) nteglineh(to inform, give educational or spiritual light to) **enlighten**

19) ysrverotnco (a debate, discussion of opposing opinions) **controversy**

20) alnoisvirop (serving for the time being) **provisional**

21) natoiamimuni(the process of acquiring defenses against something, like a disease). **immunization**

Match the verb on the left to definition on the right

22)	**c**	to impact	a. to enfold, to include
23)	**d**	to demonstrate	b. to try to achieve a result
24)	**b**	to strive	c. to affect something
25)	**e**	to confirm	d. to display a method
26)	**a**	to embrace	e. to establish accuracy; to make valid

27) Write a definition for OR illustrate the term EMPIRICAL EVIDENCE.

Space for definition: evidence that originate from observation or experience Illustration

G1
History & Nature of Science
UNIT 2

Sealaska Heritage Institute

INTRODUCTION OF

Key Vocabulary

Culturally Responsive & Place-based Perspective Introduction of Science Vocabulary

Immunization

PLACE-BASED PERSPECTIVE

Show a picture of someone with smallpox. Discuss how smallpox was once so rampant that it was known to kill entire populations in some villages. However, the last smallpox outbreak was recorded in the 1970s after a world wide *immunization* program that virtually wiped out the disease.

HERITAGE CULTURAL PERSPECTIVE

Traditionally eulachen and seal oils were used to *immunize* Native peoples against sickness. Other plants and roots, such as Devil's Club, were also used to immunize against illnesses.

Serendipity

PLACE-BASED PERSPECTIVE

During World War II, James Wright was attempting to find a rubber substitute. Instead, he *serendipitiously* discorved Silly Putty (originally called "nutty putty."

HERITAGE CULTURAL PERSPECTIVE

In the course of harvesting and eating Native foods, the people discovered *serendipitously* that many of them also served as medicines.

Discoveries

PLACE-BASED PERSPECTIVE

Show a picture of Benjamin Franklin. Discuss how Benjamin Franklin used observations to *discover* electricity from lightning.

HERITAGE CULTURAL PERSPECTIVE

Native people *discovered* the best location to harvest their natural resources.

Culturally Responsive & Place-based Perspective
Introduction of Science Vocabulary

To Confirm

PLACE-BASED PERSPECTIVE

Show a picture of a high school diploma. Discuss how school counselors *confirm* class credits prior to graduation as indicators that things have or will happen as planned.

HERITAGE CULTURAL PERSPECTIVE

Native peoples in Southeast Alaska *confirmed* their tribal, clan, and family lineage and stories before traditional ceremonies.

Guests who attended traditional ceremonial banquets were also confirmed by the clan brothers-in-law.

Knowledge Base

PLACE-BASED PERSPECTIVE

Show the students a picture of the United States Capitol building and explain how this is the *knowledge base* for the laws of the United States of America.

HERITAGE CULTURAL PERSPECTIVE

Native people's *knowledge bases* are in their songs and stories and are transmitted orally. The knowledge base is also recorded in their art forms.

Enlighten

PLACE-BASED PERSPECTIVE

Show the picture from this unit for *enlighten*. Have the students suggest what the person is doing and *why* he is doing it. Lead them to understand that learning is *enlightenment*. Cite other examples of people being *enlightened.*

HERITAGE CULTURAL PERSPECTIVE

Young people were and are *enlightened* about their own culture, history, traditions, and customs by teachers, relatives, and elders.

Culturally Responsive & Place-based Perspective
Introduction of Science Vocabulary

Provisional

PLACE-BASED PERSPECTIVE

Show students a picture of the Presidential Seal of the United States of America. Discuss with the students how the Vice-President of the United States becomes the provisional President of the United States if the actual President dies or can no longer perform his/her duties.

HERITAGE CULTURAL PERSPECTIVE

Native peoples have made *provisional* use of Robert's Rules of Order to guide their deliberations in government, ANB and ANS sessions.

Controversy

PLACE-BASED PERSPECTIVE

Show a picture of a handgun and discuss the controversy of handguns.

HERITAGE CULTURAL PERSPECTIVE

The many decisions regarding the harvesting of natural resources have caused *controversies* in Southeast Alaska. This includes the over-harvesting of the natural resources such as salmon, herring, timber, etc.

Debate

PLACE-BASED PERSPECTIVE

Show the students the picture from this unit for *debate*. Encourage the students to suggest what the two people in the picture are doing. Lead this into the concept of *debate*. Have the students name other *debates* that they know of.

HERITAGE CULTURAL PERSPECTIVE

At one time, the issue of Native civil rights was a topic of *debate* in the legislature. Elizabeth Peratrovich gave her now famous speech during the debate which helped pass the state's Anti-Discrimination Act of 1945, the first anti-discrimination law in the United States.

Culturally Responsive & Place-based Perspective Introduction of Science Vocabulary

Novel

PLACE-BASED PERSPECTIVE

Show the students the picture, from this unit, for *novel*. Lead them to realize that the picture depicts a *novel* building style.

Cite other examples of *novel* things, ideas, etc.

HERITAGE CULTURAL PERSPECTIVE

When Native peoples first obtained outboard motors, it was *novel* to mount them on a dugout canoe. Catching salmon with seine and gill nets, catching halibut on skates, and harvesting crabs with crab pots were all novel ways of harvesting the natural resources.

Disprove

PLACE-BASED PERSPECTIVE

Show the picture for *disprove* from this unit. Discuss the contents of the picture, leading them to imagine why people would not eat tomatoes at one time (they thought they were poisonous). Relate that a man (in Holland) ate a bushel of tomatoes to *disprove* the myth that they were poisonous. Cite other things that have been *disproved*.

HERITAGE CULTURAL PERSPECTIVE

Many Native peoples *disapprove* of the commercial use of fish traps to harvest salmon. The Alaska Native Brotherhood lobbied the Territorial Government to ban the use of fish traps.

Language Skills

Language & Skills Development

LISTENING

Use the activity pages from the Student Support Materials.

Remote Find

Lay the vocabulary pictures on the floor, in a scattered form. Group the students around the pictures. Place a remote controlled car on the floor (2 cars can be used with separate controls). Give the controls to individuals. Say a word from this unit and the student must drive the car to the picture for that word.

Later, say a clozure sentence (leave out the key word from this unit). The students must determine the word that completes the sentence and then drive the car(s) to the picture for it. Repeat, until all students have participated.

SPEAKING

Sheet Golf

Before the activity begins, obtain an old sheet. Cut a hole (approximately two inches in diameter) in each end of the sheet. Group the students into two teams. Have the first player from each team hold opposite ends of the sheet. Place a marble or small ball in the center of the sheet. When you say "Go," the players must then lift their ends of the sheet and attempt to cause the marble /ball to fall through the hole in the other player's side of the sheet. When the ball/marble falls through one of the holes, the player on that side of the sheet must then identify a vocabulary illustration you show or he/she should repeat a sentence you said at the beginning of the round. Repeat with other pairs of students until all students have participated. If the sheet is large enough, all students can play - divide the students into four groups (one group for each side). Cut a hole in the sheet near each side. When the marble/ball falls through, all the players on that side must say the name of a vocabulary illustration that you show. Repeat.

READING

Use the activity pages from the Student Support Materials.

Sight Word Bingo

Before the activity begins, prepare a stencil which contains the sight words. Provide each student with a copy of the stencil. The students should cut the sight words from their copies of the stencil. 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. Say a sight word. Any student or students who have that sight word 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. This activity may be repeated more than once by collecting, mixing, and redistributing the sight words to the students.

WRITING

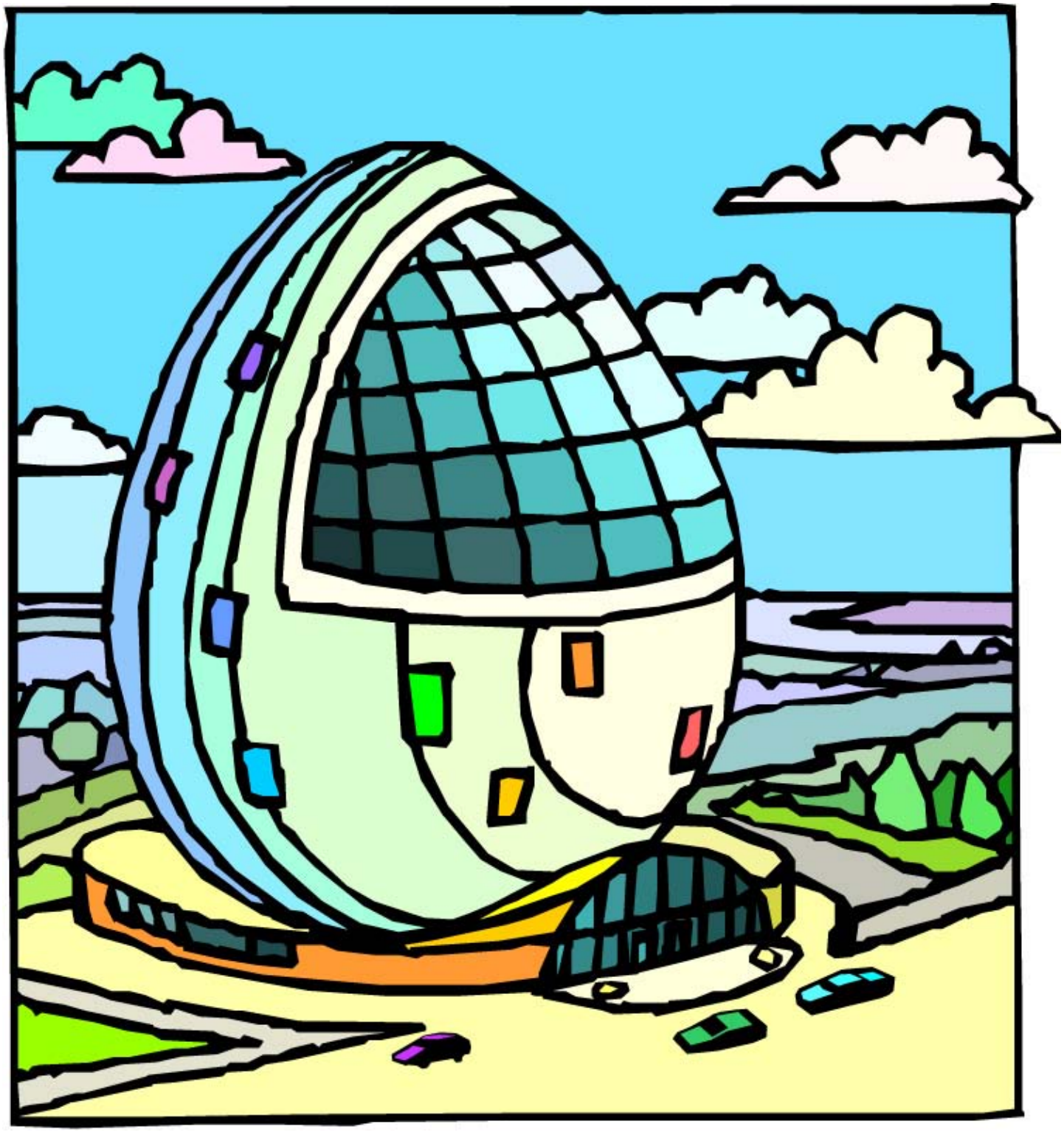
Use the activity pages from the Student Support Materials.

The Other Half

Cut each of the sight words in half. Give each student a sheet of writing paper, a pen and one of the word-halves. Each student should glue the word-half on his/her writing paper and then complete the spelling of the word. You may wish to have enough word-halves prepared so that each student completes more than one word. Afterwards, review the students' responses.

Vocabulary Images

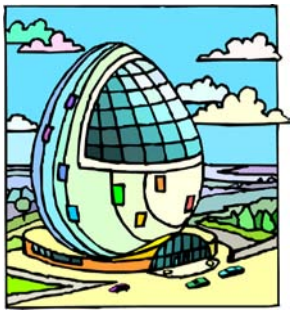

VOTE
VOOT
VOTE
BOOT



STUDENT SUPPORT MATERIALS

Listening

Say these words to the students - they write the numbers of the words under the pictures.
(1)controversial (2)debate (3)discoveries (4)enlighten (5)immunization (6)knowledge base (7)novel (8)provisional (9)serendipity (10)confirm (11)disprove



True Or False?

Read the following sentences to the students. The students should write "true" or "false" for each of the sentences.

1. Immunization is often achieved by merely contracting (and recovering from) a disease.

2. Most scientific advances are due to serendipity.

3. Discoveries are unimportant in science—it is what is already known that fascinates the majority of researchers.

4. Lawyers will, when possible, call upon a second witness in order to confirm what another witness has said.

5. If your knowledge base is broad enough you can apply your knowledge from your field of expertise to other fields of study as well.

6. The sun enlightens the earth.

7. Scientific findings are absolute and permanent, not provisional.

8. The shooting of wolves from airplanes has been the source of controversy in Alaska.

9. Some politicians are skilled at debate while others merely repeat irrelevant talking points.

10. Novel means improved.

11. Observations can disprove a hypothesis.

Answers
1. T, 2. F, 3. F, 4. T, 5. T, 6. F, 7. F, 8. T, 9. T, 10. F, 11. T

STUDENT SUPPORT MATERIALS

Sight Words

enlighten

immunization

novel

controversial

debate

discoveries

knowledge base

provisional

serendipity

confirm

disprove

STUDENT SUPPORT MATERIALS

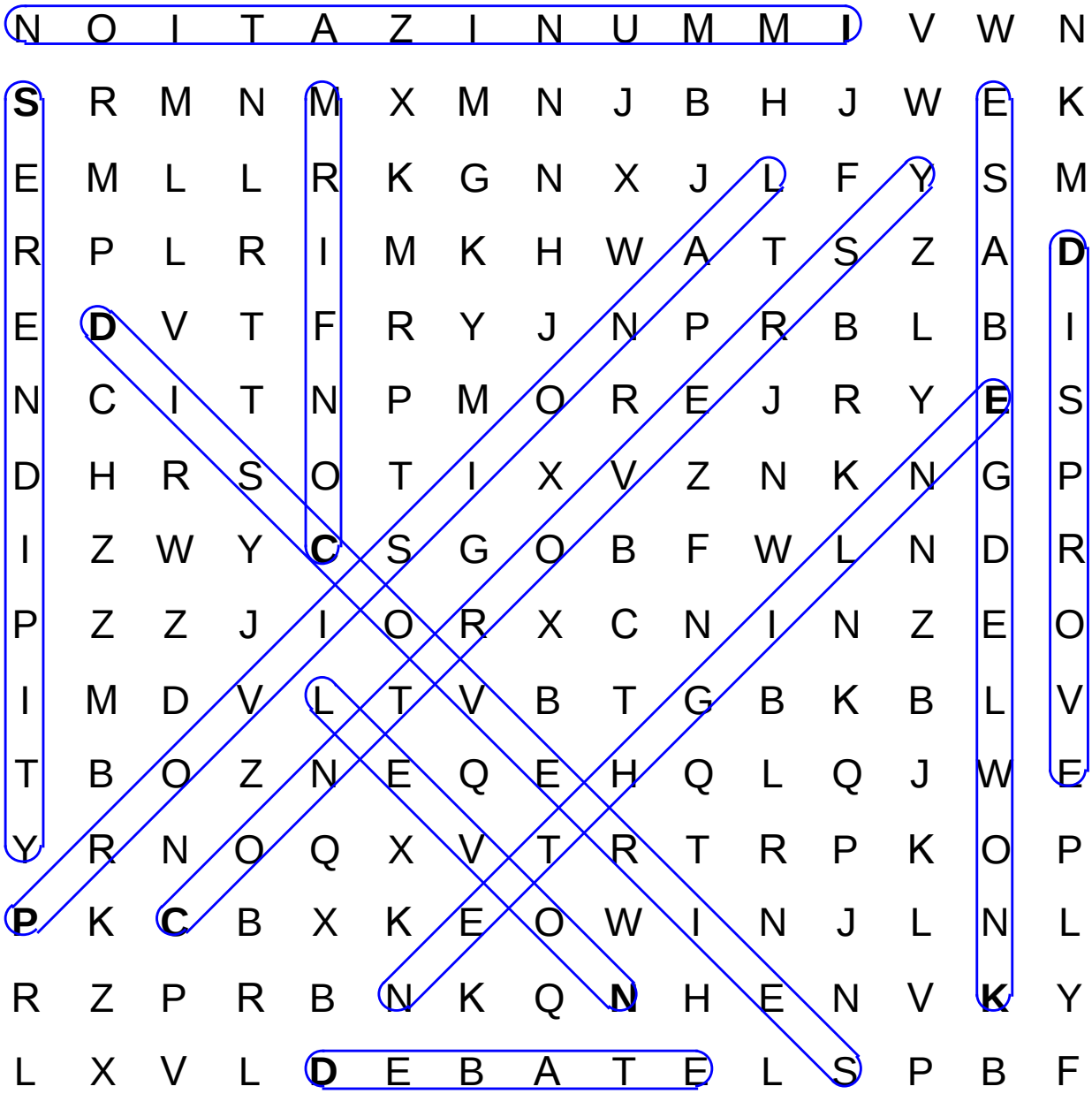
Reading

Word Find

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

confirm
controversy
debate
discoveries
disprove
enlighten
immunization
knowledge base
novel
provisional
serendipity

Word Find Solution



Find the Word

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discoveries
enlighten
immunization
knowledge base
novel
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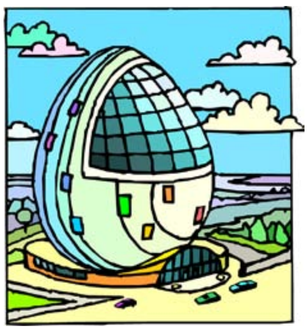
Find The Word



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Sentence Halves

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

1. The few children who did not receive their immunization for that disease
2. A good scientist knows what she is looking for, but is
3. According to Frank Tyger, “Discoveries are often made by
4. According to William Osler, “Advice is sought
5. Universal education is meant to assure that all citizens, rich and poor,
6. “Enlighten me please”,
7. A provisional agreement between nations
8. The Theory of Evolution, while a source of controversy for some groups,
9. Scientists design experiments to test
10. There is no debate as to
11. Companies on the forefront of electronic development

A. Also open to serendipity, the unexpected events and discoveries.

B. Have a similar knowledge base.

C. hypothesis by disproving them

D. the student said to the teacher.

E. is not a source of controversy among scientists.

F. incorporate novel ideas in new technologies.

G. Were kept from getting the disease due to what scientists call “herd immunity.”

H. To confirm a position already taken.”

I. Is something they agree to in preparation for a treaty.

J. whether gravity exists.

K. Not following instructions, by going off the main road, by trying the untried.

Answers
1/G 2/A 3/K 4/H 5/B 6/D 7/I 8/E 9/C 10/J 11/F

Word & Definition Match

Have the students write the numbers associated with the words below in the box with their matching definitions.

a debate	*to establish accuracy*	*to inform*	*the accidental discovery of something fortunate*	*new or different*
something discovered	*serving for the time being*	*the process to becoming immune against disease*	*a collection of facts or rules*	*to discuss opposing views or opinions*
		to prove to be false		

1. controversial	2. debate	3. discovery	4. enlighten	5. immunization
6. knowledge base	7. novel	8. provisional	9. serendipity	10. confirm
11. disprove				

Which Belongs?

Have the students circle/identify the word that is correct for each sentence.

Note: The first three sentences are included for review.

1. If you strive/embrace to reach your goals, you just might make it!
2. If you are allergic to cats you should not confirm/embrace them.
3. Empirical Evidence is evidence that is gathered through reason/the senses.
4. Mass immunization/serendipity is responsible for the eradication of polio and small pox.
5. Serendipity is when you, by accident/intentionally, discover something good.
6. Discoveries/immunization in science are constantly occurring, which keeps science dynamic and interesting.
7. Scientists often redo experiments to confirm/confuse results.
8. Advancing science depends on curiosity, creativity, imagination, and a broad immunization/knowledge base.
9. Louis Pasteur's discovery enlightened/disproved the scientific community as to fungal defense mechanisms.
10. The acceptance of a hypothesis is debated/provisional until it has been tested.
11. Whenever scientific research challenges previously held convictions, enlighten/controversy ensues.
12. There was no disprove/debate, the evidence that the accused was guilty was emphatic.
13. The use of marine organisms in medicine is considered provisional/novel.
14. Stephen rejected his hypothesis when it was debated/disproven.

Answers

1. strive, 2. embrace, 3. the senses, 4. immunization, 5. by accident,
6. discoveries 7. confirm, 8. knowledge base, 9. enlightened, 10. provisional,
11. controversy 12. debate, 13. novel, 14. disproven

What's The Answer?

Have the students read the questions and then select the correct answer for them. They should fill-in the appropriate circles, beside the answers of their choice.

Note: The first three sentences are included for review.

1. Which of the following words is not a synonym for "strive"?

(a) Endeavor
(b) Attempt
(c) Strike

2. Which of the following people are least likely to embrace increased taxes on the people making over $1,000 per year?

(a) A rural Alaskan
(b) An inner city youth
(c) Someone who makes more than $1,000 per year

3. Which of the following "senses" do you not use when gathering empirical evidence?

(a) Sight
(b) Smell
(c) Intuition

4. If you are 5 years old and have never been sick or received an immunization

(a) You are an average Alaskan.
(b) You are more at risk for disease than others
(c) You are not more at risk for disease than others

5. Scientists do not rely on _____ when doing scientific studies.

(a) Serendipity
(b) Controlled experiments
(c) Careful observation

6. Scientific discoveries and developments have hatched every _____ in history.

(a) Technological revolution
(b) Philosophical discussion
(c) Religious development

7. Which of the following words is an antonym of confirm?

(a) Settle
(b) Prove
(c) Cancel

What's The Answer?

Have the students read the questions and then select the correct answer for them. They should fill-in the appropriate circles, beside the answers of their choice.

8. What is a good reason for a scientist to have a broad knowledge base, even a scientist who has specialized?

(a) Scientists may need to branch out into other fields in order to delve deeper into their research.
(b) Scientists will need to take standardized tests while doing their advanced degrees, and for this a broad knowledge base is key.
(c) Scientists may need to understand how their research will affect society, and adjust their findings based on that impact.

9. Which of the following will not help enlighten an individual:

(a) Reading extensively
(b) Traveling the world
(c) Staying at home and playing video games

10. Provisional knowledge is not

(a) Worthless
(b) Temporary
(c) In need of improvement

11. Which of the following would not merit a controversy in Alaska

(a) Vast Education reform
(b) Strict Gun laws
(c) Plowing streets regularly

12. It is difficult to debate a topic if you have

(a) Agreed on ground rules
(b) Not understood you opponents position
(c) No intent of sharing what you feel

13. A novel approach is

(a) New
(b) Unfortunate
(c) Expected

14. Which of the following is not true?

(a) A scientist works to prove a hypothesis
(b) A hypothesis is a testable tentative statement
(c) A hypothesis is rejected when it is disproved

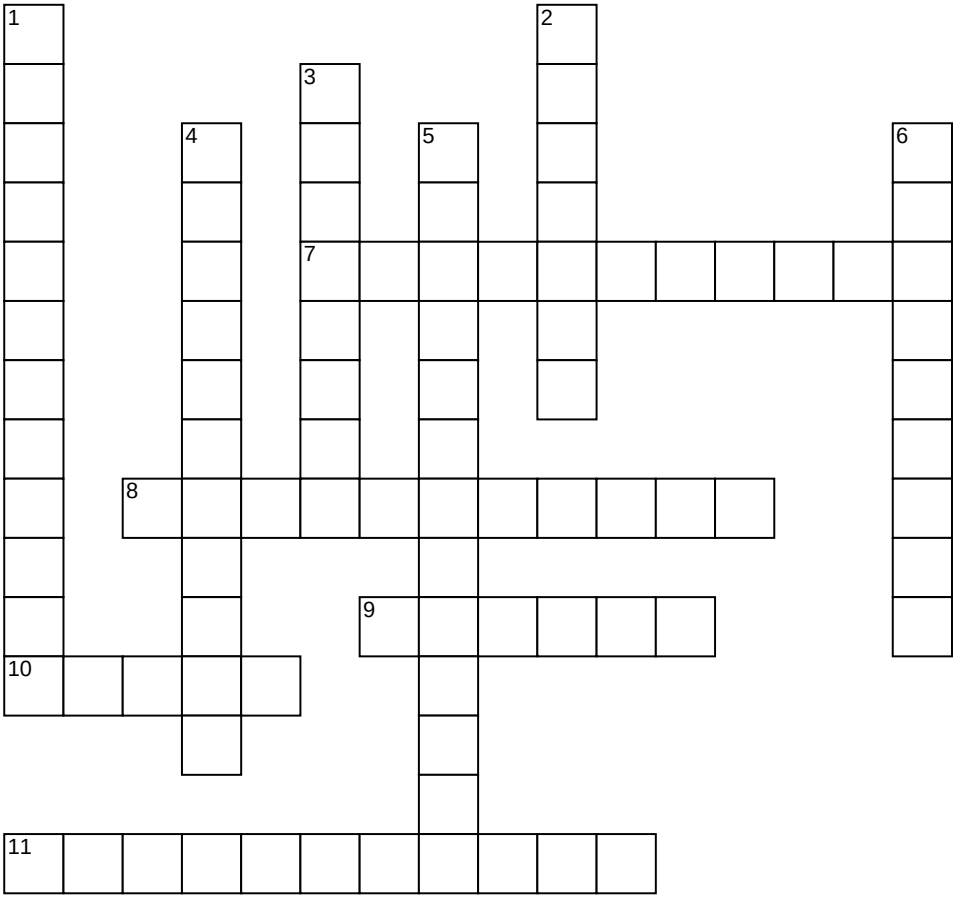
Answers
1. C, 2. C, 3. C, 4. B, 5. a, 6. a, 7. c, 8. a, 9. c, 10. a, 11. c, 12. b, 13. a, 14. a

STUDENT SUPPORT MATERIALS

Writing

9th G-1 History and Nature of Science

Unit 1



www.CrosswordWeaver.com

ACROSS

7 Serving for the time being.
8 the effect by which one accidentally discovers something fortunate, especially while looking for something else entirely.
9 to vigorously discuss opposing views or opinions
10 new or diffrent.
11 a debate, dicussion of opposing opinions.

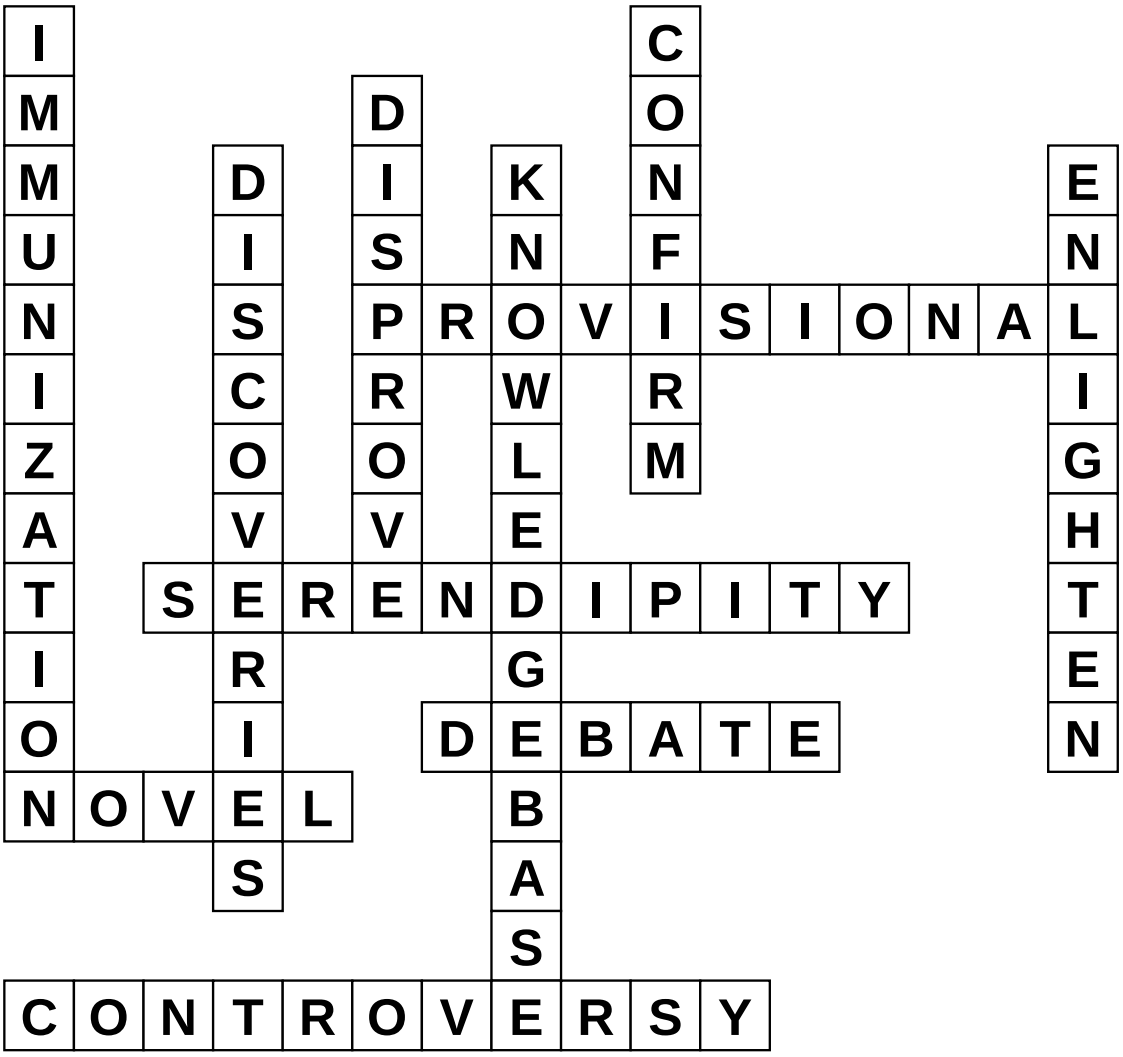
DOWN

1 the process of becoming immune.
2 to establish accuracy, validity, or genuiness, to make valid.
3 to prove to be false.
4 something discovered.
5 a collection of facts or rules.
6 to inform, give educational or spiritual light to.

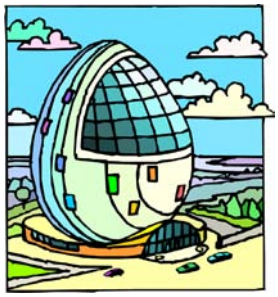
9th G-1 History and Nature of Science

Unit 1

Solution:



Write The Words!



Write the Words!

_____

Complete The Sentence

Have the students write the key words in the blanks.

1. It is important that one is up to date with one's _____ before traveling abroad, especially if one is traveling to places where novel diseases might be present.

2. There is a certain amount of _____ in science, such as when Alexander Fleming accidentally discovered penicillin because of his messy lab techniques.

3. Typically, in order to make new _____ a scientist must intentionally looking for them.

4. The simplest way to _____ your findings is to do the experiment over.

5. The advancement of science depends on curiosity, creativity, imagination, and a broad _____.

6. Facts can often _____ one's opinions and make ones viewpoints more reasonable.

7. Conclusions in science are _____, that is, they are temporary and subject to growth and correction.

8. Slavery was a _____ in the United States for many years before it was outlawed.

9. Formal _____ is an important aspect of politics as well as science.

10. A _____ approach to the problem is needed in order to actually solve it.

11. A long time ago a man _____ the idea that tomatoes were poisonous.

Answers
1. immunizations, 2. serendipity, 3. discoveries, 4. confirm, 5. knowledge base,
6. enlighten 7. provisional, 8. controversy, 9. debate, 10. novel, 11. disproved

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.

controversial

debate

discoveries

enlighten

immunization

knowledge base

novel

provisional

serendipity

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.

to confirm

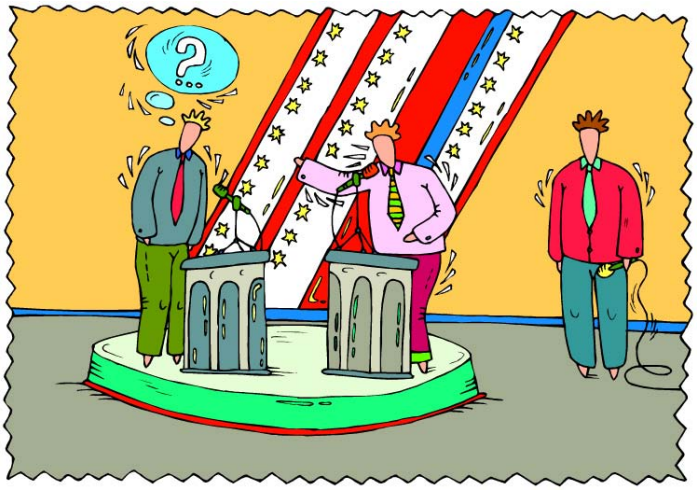
_____

disprove

_____

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.



STUDENT SUPPORT MATERIALS

Reinforcement Activities

Have the students break into pairs. Have each write something that they feel strongly about. Then have students ask each other why they believe that way and then keep asking why until they answer the philosophical WHY of the core beliefs. Remind students to be non-judgmental and respectful of their partner's answers.

Give the students a list of instructions to do (like write their name on a piece of paper), say I'm very smart out loud, etc., but preface it with the instructions that prior to doing anything else they need to read all the instructions. As the last instruction, write "Do not do any of the instructions above. Sit quietly and watch everyone else."

Give each student a rubber band. Have them pull it back just slightly and release it from one hand. Have them record the empirical evidence of what happens. Have the students repeat the experiment by pulling it farther apart each consecutive time.

Have students pick a subject that they want to study and pick one word to look up. Take them to the computer lab to look up the word on Wikipedia, which is an online knowledge base.

Unit Assessment

Unit Quiz & Test for Units 1 & 2

Name: _____
Date: _____

1) When you receive an inoculation or shot against a disease such as influenza, measles or whooping cough, you are receiving an i_____.

2) When scientists do their work and collect the facts needed for research, they are establishing their k_____ b_____.

3) In the space provided below, illustrate OR write a definition for the term DISCOVERIES.

Illustrations: The following questions refer to illustrations for key vocabulary words.

Match the definition on left with the illustration on the right.

4) _____ a debate, discussion of opposing opinions

5) _____ vigorously discuss opposing views or opinions

a.

b.

Match the verb on the left with the illustration on the right.

6) _____ to prove to be false

7) _____ to establish accuracy

8) _____ to be new or different

9) _____ to enlighten

a. 

b. 

c. 

d. 

10) In the space provided below, draw a picture illustrating the concept for the word SERENDIPITY.

Grade 9 G1, Unit 2, History and Nature of Science Quiz

Name: _____
Date: _____

1) When you receive an inoculation or shot against a disease such as influenza, measles or whooping cough, you are receiving an i **mmunization** .

2) When scientists do their work and collect the facts needed for research, they are establishing their k **nowledge** b **ase** .

3) In the space provided below, illustrate OR write a definition for the term DISCOVERIES.

Correct answer not entered.

Illustrations: The following questions refer to illustrations for key vocabulary words.

Match the definition on left with the illustration on the right.

4) **b** a debate, discussion of opposing opinions

5) **a** vigorously discuss opposing views or opinions

a.

b.

Match the verb on the left with the illustration on the right.

6) **d** to prove to be false

7) **c** to establish accuracy

8) **a** to be new or different

9) **b** to enlighten

a.

b.

c. 

d. 

10) In the space provided below, draw a picture illustrating the concept for the word SERENDIPITY.