

Answer Key

: Part 1

Step 1

Warm Up

1. people move to urban areas ← education
due to, cause
2. Taiga → boreal forest is called, definition
3. Seeing the overall structure:
 - a. Find the signal words
 - b. Notice the idea pattern
the first/secondly, sequence
4. Mores: expected behavior, folkways: convention
divided into, classification
5. Reducing stress:
 - a. Talk about the problem
 - b. Control your self
in the first place, and then, sequence

Drill 1

2. Cause: the force of gravity Result: round shape
Result: various shapes
3. b

Drill 2

2. Similarities:
 - a. Social creatures
 - b. Organization of groups
3. a

Drill 3

2. a. Restoration
b. Development for children
c. Retaining
3. c

Drill 4

2. Disappearance of plants → soil not protected →
loose soil carried away → evaporation increases
caused by no plants → evaporation brings salts
to surface → plants cannot return; desertification
3. a

Drill 5

2. a. Largest bird b. Eats dead animals
c. No feathers on its head and neck
d. Change the color of its head and neck
e. Mate for life
3. b

Drill 6

2. composition, texture, how rocks are formed

Types of rock	Characteristics of each type
Igneous	Coarse or fine-grained, contain crystals
Sedimentary	Made up of particles of other rocks, easily broken
Metamorphic	From transformation of other rocks, hard, fine or coarse-grained, show layering

3. a

Master 1

2. cause and effect

The seasons change because the Earth's axis is tilted. The axis is the imaginary line that the Earth turns around. Because the axis is not straight in relation to the sun, light does not reach all parts of the Earth equally. Consequently, different areas receive more sunlight at different times. That is, when one part of the Earth is being warmed by sunlight, the other part will be getting less light, and will therefore be cooler. When the northern hemisphere is pointed at the sun, it will be summer there. At the same time, the southern hemisphere will be pointing away from the sun, and therefore receiving reduced sunlight. This is why summer in the northern hemisphere corresponds to winter in southern regions. If the Earth's axis were not at an angle, sunlight would strike all parts of the Earth equally, and there would therefore be no seasons.

3. Seasons change: tilted axis → different amount of sunlight
4. c

Master 2

2. chronology

Meteorology developed rapidly in the 20th Century. This was because of new technology. One of the first such developments was the telegraph. Introduced in 1837, the telegraph allowed weather information to be quickly transmitted, and sent over long distances. In 1922 numerical weather prediction was proposed. This was a method for using mathematical calculation to predict weather. However, at the time there was no technology to perform the necessary number of calculations. Then, in the 1950s new computers were introduced. These were powerful enough to make basic numerical weather prediction possible. Over the next decade computers continued to improve. This had the effect of making weather prediction more accurate. Also, in 1960 the first weather satellite, TIROS-1, was launched. It greatly contributed to understanding global weather patterns. At present, modern computers and weather satellites have made weather prediction more accurate than ever before.

3. Meteorology ← new technology

1837: telegraph; transmission of weather information

1922: predicting using math

1950: computer · numerical weather prediction

1960: weather satellite · global weather patterns

4. a

Master 3

2. cause and effect

Amnesia is usually caused by brain damage. People suffering from amnesia forget most or all of their personal information, even forgetting who they are. However, it does not affect general knowledge. Such memory loss is caused by damage to the forebrain or hippocampus. The forebrain controls long term memory as well as spatial navigation in the past. In an experiment, researchers asked subjects, each of whom had a damaged hippocampus, to recall being on a beach in the past. The scientists also asked them how they felt. The subjects described the features of a beach, but were unable to describe them as connected parts of a single, coherent scene. Based on this observation, scientists theorize that the hippocampus provides fundamental support for spatial context as well as memory of the past. It does this by a process of reassembling the images of people, objects, and scenes from the past.

3. Amnesia: does not affect general knowledge
Causes of amnesia: brain damage (hippocampus)
Roles of hippocampus: Controls spatial context and memory of the past

4. b

Master 4

2. classification

Botany is divided into many distinct types. Some of these types serve practical purposes, while others are purely for knowledge. A major practical kind of botany is agronomy, which is concerned with growing crops. Agronomists try to find ways to increase crop yields and develop disease-resistant varieties. Forestry is another type of botany which is the study of forests, in order to manage and preserve them. There is also phytopathology, which is the study of plant diseases. Among the more academic divisions of botany there is paleobotany, the subject of which is fossil plants. Then there is ethnobotany which studies the relationship between plants and humans. It is concerned with the meanings plants have in human cultures. For example, a certain kind of plant may be sacred in a culture. Hence, it may be used for special purposes, like weddings or funerals. A final school of botany is plant systematics, which is concerned with the names of plants and how to classify them.

3. Types of botany

a. Agronomy: growing crops

b. Forestry: study of forests

c. Phytopathology: study of plant diseases

d. Paleobotany: fossil plants

e. Ethnobotany: relationship between plants and humans

f. Plant systematics: naming and classification of plants

4. d

Master 5

2. classification

A bird's feathers serve a number of functions. First, feathers have effective insulating properties, keeping birds warm and protecting them from water and cold. Second, birds use their feathers to control their flight. The feathers on a bird's wings and tail are different and play specific roles in flying. In addition, feathers help protect birds from predators by helping them to blend in with their surroundings, so that they cannot be seen easily. However, because feathers have so many varied and attractive

colors and patterns, for most of their history humans have hunted birds in order to use their feathers as decorations. A final role of feathers is to indicate the difference between male and female birds. In some bird species the male and female look almost the same except for small differences in coloration. The difference may not be obvious to humans, but it is clear to the birds.

3. **Functions of feathers**
 - a. insulating properties
 - b. control flight
 - c. protect from predators: blend in
 - d. indicate gender differences
4. d

Master 6

2. process/sequence

The process of evolution occurs in very small stages over extremely long periods of time. The first part of this process is a genetic change that gives a living thing a survival advantage in its environment. This can be true even if the change is extremely small, such as a bird born with slightly darker feathers than others of its species. Though this change is minor, it may give the bird an advantage in hiding from predators. Therefore, the bird is more likely to survive than others. It is the same for any kind of organism. Such an organism will be more likely to reproduce and pass on its genetic characteristics. That is, the bird's descendants will have the same darker feathers that it had. Over time, the distinctive difference of the original species is refined. Finally, there will be a separate species, different from the original one, and better adapted to its environment.

3. Process of evolution: by genetic change
 - e.g) birds born with slightly darker feathers
 - over time, a separate species: better adapted
4. a

Master 7

2. process/sequence

Geological strata are produced by a process called sedimentation, in which layers of rock are laid down one on top of another. The process has several parts, beginning with flowing water, wind, or ice. For example, flowing river water picks up mineral particles such as river silt. Then it deposits the minerals in other places, usually over a wide territory. Over a very long time, the sediment builds up, forming a

layer of similar material. Then this layer is covered over by another layer of different material. The layer of river silt may be covered by a layer of sand, for example. Gradually, many layers build up on top of each other, creating a great deal of pressure on lower layers, which causes any water they contain to be pushed out. This water leaves behind minerals, which act as cement for the sediments. Finally, the sediments become layers of solid rock.

3. Sedimentation of geological strata
 - Flowing river picks up mineral particles → deposits them → sediments build up → covered by another layer → pressure on lower layers → water is pushed out → layers of solid rock
4. a

Master 8

2. compare and contrast

Both camels and cacti have special qualities which help them to retain water in extremely dry conditions. Camels are able to drink very large amounts of water when it is available. Similarly, cacti can absorb water very fast, up to thousands of liters in several days. A camel's coat reflects sunlight, which helps keep the camel cool, reducing its need to sweat and therefore helping it retain water. Likewise, the stem of a cactus is covered with a waxy substance, which helps to seal water inside, preventing it from being lost through evaporation. Camels also have special nostrils. They are shaped in such a way that they prevent much moisture from escaping when they breathe. A similar adaptation is found in many kinds of cacti, which have either small leaves or none at all. This makes the surface area of the cactus smaller, which helps to reduce the amount of water vapor that escapes from the plant.

3.

	Camels	Cacti
Similarity	Drink a lot of water	Absorb a lot of water
	coat reflects sunlight	Wax coating prevents water evaporation
	Nostrils prevent loss of moisture	Small or no leaves limit escape of water vapor

4. b

Master 9

2. cause and effect + classification

Animal species are endangered for many reasons, almost entirely because of human activity. One of the main reasons is habitat loss. As a result of farming and development, formerly wild land is converted to human use. Because many species are adapted to very specific habitats, they are unable to survive if those habitats are lost or changed to make farmland. Animals are also disappearing because of pollution, which can poison them or interfere with their reproduction. In particular, many frog species have declined because of pollution. Hunting and fishing are two other threats to animals. There is a strong demand for special kinds of meat and exotic products, such as ivory and unusual medicines. As a result, people can make a great deal of money by hunting animals that provide these things. Consequently, rare animals are often hunted without concern for their numbers. Many animals have already become extinct because of hunting. Some, like elephants, remain endangered.

3. Causes of endangered species: human activity

- Farming and development for human use
- Pollution
- Hunting
- Fishing

4. b

Master 10

2. classification

Astronomers classify stars according to where they fit in a scale called the "main sequence." The first classification is O, which stands for stars that are very hot and luminous, have a bluish color, and are the largest on the main sequence. B stars are smaller, less bright and bluish white. Next are A stars, which are much smaller and less bright than O or B stars, and which can be white or bluish white also. F represents still smaller stars, which are also white with a small amount of yellow, followed by G stars, somewhat less luminous and smaller, with our sun being the closest example. Such stars are 2,000,000 times less bright than O stars and around 15 times smaller. The last two categories are K and M, which are both smaller than the sun and range from orange to red to brown in color.

3. Kinds of stars

- O; hot, luminous, bluish, largest
- B; smaller, less bright, bluish white

- A; much smaller, less bright than O/B, white/bluish white
- F: smaller, white with yellow
- G; less luminous, smaller
- K and M; both smaller than the sun, orange, red, brown

4. d

Master 11

2. compare and contrast

There are various kinds of carnivorous plants, but they all use similar means to catch insects. First, they attract insects by releasing certain kinds of scents, having special colors, or producing nectar that insects might want to eat. Then, when an insect lands or crawls on the plant, it is caught in one of several ways. The wellknown Venus Flytrap captures insects with a specially adapted leaf that closes around an insect like a mouth, while others, like the pitcher plant, trap insects in a funnel-shaped structure which has a pool of digestive fluid at the bottom. The insect cannot climb up the slick walls of the plant, eventually becoming tired and falling into the fluid, where it drowns. The Sundew has a sticky, honey-like fluid on its leaves which acts like glue to prevent insects from escaping. There are other methods, but the final result is always the same.

3. Means of attracting and catching insects: scents, colors, nectar

- Venus Flytrap using leaf
Pitcher Plant with funnel shaped structure
Sundew with fluid on the leaf

4. c

Master 12

2. compare and contrast

Earth and Mars are sometimes seen as "sister" planets, but they are actually very different. One of the primary differences is the amount of water on each planet. About 75% of the Earth's surface is covered by water, in contrast to Mars, which seems to have no liquid water at all. Also unlike Earth, Mars has a thin atmosphere with little oxygen and no water vapor, as well as large amount of dust. There are also significant geological differences. The main difference is that the Earth has an active core which produces the planet's powerful magnetic field, which is its main defense against certain kinds of harmful radiation from the sun. In contrast, Mars' core is inactive, leaving the planet with no magnetic field at all and making Mars vulnerable to solar

radiation, which strips Mars of its atmosphere. This is the reason Mars' atmosphere is so thin.

3. Differences between Mars and Earth

Primary differences

- Water amount: 75 % vs none
- Thickness of atmosphere, no water vapor

Geological differences:

active: produce magnetic field = no solar radiation

inactive core: no magnetic field = solar radiation

4. a

Master 13

2. cause and effect

The Earth was formed over an immensely long period of time. It began beginning to take shape 4.6 billion years ago along with the rest of the solar system. At that time there was only a nebula of gas, dust, and rocks. Gravity caused material to collect in various places, forming larger and large bodies. At one point the matter in the center became dense enough to ignite into a star, while the accumulation of fragments further out began to resemble the planets. 4.5 billion years ago, the solar system, the Earth included, had taken basic shape. At this time the Earth was still too hot to be solid and was constantly impacted by meteors and other objects, causing gases to be released which began to form the early atmosphere. The process of cooling continued, and by 3.8 billion years ago the Earth had a solid surface. This period of cooling also caused liquid water to form, resulting in rain and then oceans.

3. Formation of earth

Gas, dust, rock → gravity to collect → became dense → cooling process → solid surface, rain, oceans

4. c

Master 14

2. sequence/ cause and effect

Acid rain can be caused by both humans and natural processes. However, in modern times humans are responsible for the majority of it. The chemicals that cause acid rain are sulfur dioxide (SO₂) and nitrogen oxide (NO₂). They first react with other gases in the atmosphere such as oxygen and ozone, and are then chemically transformed into sulfuric acid. Next, this acid is absorbed by water droplets in clouds. When the water droplets turn to rain, they

carry the acid to the ground. Some natural sources of the chemicals that cause this are volcanoes and wildfires. However, the burning of fossil fuels by humans, especially coal, puts far more acid into the atmosphere. Therefore, preventing acid rain means burning fossil fuels more cleanly. Fossil fuelburning power plants can install scrubbers, which trap the harmful gases. This is expensive, however, so many governments have set economic incentives to encourage companies to invest in such technology.

3. Causes and prevention of acid rain

Causes

- human activity: burning of fossil fuels
- natural processes: volcanoes, wildfires

Prevention: installing scrubbers

4. d

Step 2

Warm Up

- b
- b
- b
- a
- a

Drill 1

- a
- b
4. **Role of note taking:** Helps students concentrate and remember better when note taking
 - Previewing
 - Understanding the organizational pattern
 - Identifying the main point
- c

Drill 2

- a
- b
4. **Effects of snake bites**
 - Heart and lungs - heartbeat slows
 - Nervous system - convulsions/muscle spasms
 - Local effect - swelling/irritation
- c

Drill 3

- b, Camouflage and Disguise
- b
4. **Camouflage** - taking a similar shape to something
Disguise - looking the same as something
- c

Drill 4

1. b, Snowflakes and Diamond Dust 3. b
4. Snowflakes - 6 sided, complex design, large, build up quickly
Diamond dust - 6 sided, in very cold areas, small/light, not build up, straight shape
5. b

Master 1

1. What are the four main components of blood?
2. Approximately eight percent of our body is composed of blood, a vital substance that can be divided into four main components. The first major component of blood is red blood cells, which carry oxygen to all of the body's vital organs and remove carbon dioxide from them. Secondly, white blood cells, although not abundant in blood, also play a very specialized role. These cells adhere to toxins and dead blood cells, removing them from our bodies. The third component of blood is called platelets, small cells which build the walls of the blood vessels. Platelets help the body recover from an injury if we cut ourselves and bleed. Finally, plasma is a component in blood which helps transport the other three components throughout our body. Plasma is important for ensuring the proper functioning of blood in our systems.
3. **Components of blood**
Four main components of blood
 - a. Red blood cells - carry oxygen and remove CO₂
 - b. White blood cells - remove toxin/dead blood cells
 - c. Platelets - help recover from injury
 - d. Plasma - helps transport the other three
4. Red blood cells, white blood cells, platelets, plasma
5. All four components of blood allow our bodies to stay alive. Red blood cells transport oxygen throughout our bodies and remove carbon dioxide. White blood cells help the immune system by removing dead blood cells as well as toxic substances from the body. Platelets are the third component, and help to build up strong blood vessels as well as recover from cuts or wounds. The fourth component is plasma, which carries the other three components (red cells, white cells, and platelets) throughout our system to ensure proper functioning of our organs.

Master 2

1. Why were prehistoric insects bigger?
2. Scientists have wondered why insects millions of years ago were so much bigger than insects found in modern times. There are many theories about why they were so big. Some think that the composition of the atmosphere might have been an influence. For example, insects were very large during the Carboniferous period, when the oxygen level was around 31 to 35 percent higher than today. Some scientists have hypothesized that the higher level of oxygen caused the insects to be bigger. In an experiment, examining beetles using X-rays allowed scientists to see what proportion the respiratory system comprised of the beetles' internal structure. The study revealed that, in the larger beetles, the respiratory organs took up 20 percent more space than in smaller ones. It can be concluded that the size of a beetle's respiratory system prevents its other organs from growing further. The most likely conclusion is that, if there was more oxygen in the air, the respiratory system could take up less of a beetle's body, allowing the overall body to be bigger.
3. **Prehistoric insects**
Reason for gigantic insects - higher oxygen level
4. The higher oxygen level affected the size of insects' respiratory systems.
5. There was more oxygen in the atmosphere when giant insects were common.

Master 3

1. How are clouds formed?
The Formation of Clouds
2. Clouds may look like a big balls of cotton in the sky, but they are actually made mainly of water. Clouds form through a specific process. Air close to the ground contains water, which we feel as humidity. When air becomes warm, it rises. Once it is high enough, it expands and cools down. Soon this cooler air high in the sky comes into contact with the rising warm air. The cool air cannot tolerate much humidity, so the water particles in the warm air condense and attach themselves to small particles of dust in the air. As humid air continues to rise, more and more water and dust particles combine with each other. When billions of these particles form and stick together, they result in a cloud.
3. **Formation of clouds**
warm air rises → expands/cool down →
condenses → more and more water particles form
→ cloud

4. Refer to your notes above
5. Clouds are formed as warm air low to the ground comes into contact with cool air high in the sky. The water in the warm air contacts the cool air and condenses, attaching itself to dust particles which are floating in the sky. As more and more particles of dust adhere to tiny drops of water, a cloud begins to form. The process is finished when billions of water particles become attached to dust and form the large structure we call a cloud.

Master 4

1. How does the climate observation system acquire information?
2. The field of meteorology uses various systems to acquire information about the Earth's atmosphere. One example is the climate observation system. A climate observation system has many uses. In recent years, it has been used widely to study the relationship between air temperature and the amount of carbon dioxide in the atmosphere. Since carbon dioxide is a greenhouse gas, the system can provide information about the severity of the greenhouse effect. The climate observation system first measures the temperature in the atmosphere. It then checks how much carbon dioxide is present. From this information, the system can make predictions regarding the state of the greenhouse effect. For example, the system can help predict if the greenhouse effect will continue to increase in the near future. The system can also help us to understand how severe the damage to the atmosphere will be due to increasing amounts of carbon dioxide.
3. **Climate observation system: study of the relationship between temperature and carbon dioxide**
 - a. Measure the temperature in the air
 - b. Check how much carbon dioxide
 - c. Make predictions about greenhouse effect
4. To study the relationship between temperature and CO₂
5. The system mentioned in the paragraph is called the climate observation system. This system measures the amount of carbon dioxide in the air as well as the air temperature. It can then make predictions about the damage that carbon dioxide causes to the atmosphere, and can predict if the greenhouse effect will continue to get worse in the near future.

Step 3

Warm Up 1

1. **Graphic organizer:** Signs of global warming, tree rings, pollen in sediments, thermometer records
3. a 4. d

Warm Up 2

1. **Graphic organizer:** Causes and treatments of tiredness, overeating: right amount of snacks at the right time, emotional stress: good rest, lack of sleep: sleep enough
3. a 4. b

Drill 1

1. What are the effects of traffic problems?
Effects of Traffic Problems

3.

	Effect
High population	increase of cars: parking difficulties, heavy traffic jams, longer driving time
Longer driving time	energy waste, air pollution, respiratory system problems

4. c

Drill 2

1. What are the differences between tundra and taiga?
Tundra and Taiga

3.

Differences	
Taiga	Tundra
a. Coniferous forest b. Diverse animals	a. Colder and drier b. No trees c. Few kinds of animals

4. b

Drill 3

1. What are the uses of biomass?

Kinds of Biomass Energy

3.

Kinds of Biomass	Reason to Use
a. wood b. garbage c. methane gas from landfills d. ethanol	To decrease the use of fossil fuels

4. d

Drill 4

1. What are the negative aspects of dust?

Dust

3.

Origin of dust	Soil, volcanic eruptions, dead skin of human and animals
Effects of dust	Allergies and breathing problems

4. c

Drill 5

1. What are verbal and non-verbal methods of communication?

Ways of Communication

3.

	Non-verbal communication
Humans	a. Tone of voice b. Body position c. Facial expressions
Animals	a. Display of body parts b. Distinctive body movements c. Scents d. Vocal communication

4. b

Drill 6

1. What causes soil acidity?

Soil Acidity

3.

Factors Which Make Soil Acidic	a. Excessive rainfall b. Light sandy soil c. effects of crop production
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4. a

Master 1

1. What are the features of a camel's face that are adapted to the desert?

Adaptive Features of a Camel's Face

2. There are three important features of a camel's face that allow it to adapt to the typical desert environment. First, a camel has long eyelashes that serve two purposes. They provide shade that protects the camel's eyes from the strong desert sunlight. A camel's long eyelashes also help keep sand out of its eyes. This is convenient, since the desert environment often has strong winds which blow sand that can irritate the camel's eyes. Secondly, camels have nostrils which can open and close. A camel opens its nostrils when sand is not blowing so it can breathe clean air, but closes its nostrils if there is strong wind so it does not inhale sand. Finally, camels have thick lips. A camel's thick lips allow it to eat plants with sharp leaves which are common in the desert. The thick lips make eating these plants less painful.

3. Three features of a camel's face
Long eyelashes: a. shading b. keeping sand out
Nostrils
open: when wind is not blowing
closed: when wind is blowing
Thick lips: make eating sharp leaves less painful

4. c 5. d 6. b

7. c 8. a

Master 2

1. What are the characteristics of seismic waves?

Types of Seismic Waves

2. Seismic waves are waves that are felt when the earth moves in a particular direction after a sudden shock. After an earthquake, for example, seismic waves travel through the earth and their vibrations can be felt by people and animals in the area. There are two main types of seismic waves, namely body waves and surface waves. Body waves are those which move through the inner layers of the earth, that is, within the ground of the earth. These waves can cause rocks inside the earth to shift from one place to another. They can also cause the ground underneath a building to move, creating instability for the building. The second main type of seismic wave, the surface wave, is one that occurs above the ground. Surface waves are those that move up through a building during an earthquake and can cause the building to collapse, making them both very dangerous and destructive.

3. Types of seismic waves

Body waves: inner layers of the earth

effect: rocks and ground shift

Surface waves: move up through buildings

effect: buildings collapse

4. b 5. a 6. c
7. d 8. a

Master 3

1. What was the writing system of the Mayans?
The Writing System of the Mayans
2. The Mayan civilization was home to the first complete writing system in the Americas before the arrival of Christopher Columbus. The writing style of the Mayans can be described as having two elements, a logographic system and a syllabic system. In a logographic system, a single character or symbol is used to represent an entire word. This is similar to the writing system used in Chinese. The Mayans also used a syllabic system. In a syllabic system, each written symbol represented a syllable in a word, as in modern Japanese writing. Mayans used brushes made with animal hair for the purpose of writing. Evidence of the use of brushes comes from the investigation of early writings in which the brush strokes are apparent. They may have used pigment from plants as ink. These two aspects of Mayan writing make it stand out as an excellent example of an early writing system.
3. Writing system of Mayan civilization
 - a. Style: - logographic; represent an entire word
- syllabic; represent syllable
 - a. Method to write; animal hair brush and ink
4. d 5. b 6. a
7. c 8. a

Master 4

1. What are the characteristics of sugar ants?
Sugar Ants
2. The largest kind of ant found in Australia is the sugar ant. Contrary to their name, the primary food of sugar ants is not sweet. In fact, they are omnivores and scavenge dead animals or waste to look for any kind of food. Due to their big appetite, they can live in many different places. One of their habitats is urban areas. Within cities, sugar ants can be found around homes, apartments or other buildings. The sugar ant can also be found in rural areas such as woodlands and forests. Depending on the its habitat, the sugar ant can make its nest almost anywhere. For example, sugar ants in a city can build a nest within the roots of a plant or bush. Similarly, sugar ants in a forest can build their nest in the trunk of a tree or in a fallen tree branch. They can also build

their nests in the ground. For example, they may nest underneath the soil or in between small rocks.

3. Sugar ants: omnivores
Habitat: urban: homes, apartments, buildings
Rural: woodlands, forests
Nest: roots of plants and bushes, in the trunk of a tree, fallen tree branch, In/around the ground
4. b 5. a 6. c
7. b 8. d

Master 5

1. How do insects breathe?
How Insects Breathe
2. As humans, we breathe by inhaling air into our lungs. The air from our lungs is then sent out to the organs of our body via small ducts called bronchioles and distributed into the blood stream. Insects, however, do not have lungs, and therefore breathe differently. Insects have what are called tracheal tubes. Tracheal tubes are tiny tubes that run throughout the body of the insect, connecting all of their organs. The tracheal tubes are connected to other tubes called spiracles. The spiracles are connected to the insect's abdomen and it is here that they come into contact with the outside air. The spiracles absorb the outside air and then distribute the oxygen through the insect's body via the tracheal tubes. The tracheal tubes carry the oxygen to all of the cells in the insect's body, eliminating the need to carry oxygen in the blood, as is the case in humans.
3. How insects breathe
By tracheal tubes connected with spiracles
Spiracles absorb the outside air and distribute it via the tracheal tubes
4. c 5. b 6. d
7. b 8. a

Master 6

1. What are some confusing literary terms?
Irony and Paradox
2. For many literary terms, it is difficult to understand their meanings and relationships simply by looking at the words themselves. One such literary word is "irony." Irony explains a situation in which one statement is expected, yet another statement is said. Curiously, the hearer in this situation understands the unexpected remark perfectly. A case of irony can be seen in the following example: "After practicing four hours a day, seven days a week to

improve his tennis game, Richard finally began to win some matches. After his last win his coach said to him, "You need to get out and practice more!" Another literary word is "paradox." Paradox refers to a statement which initially appears to be true. However, it is actually self-contradictory. An example of paradox is "Not having a fashion style is a fashion style." To be sure, irony and paradox mean different things.

3. Irony: the opposite of what is expected
Paradox: self-contradictory statement
4. c 5. a 6. b
7. d 8. c

Master 7

1. What are similarities between three kinds of resources?
Resources
2. A comparison of three different kinds of resources reveals some similarities between each. Perhaps the most well known kind is natural resources. Natural resources include those things which we find in our environment, such as lakes and forests. We must be sure to take care of our natural resources since they are precious to our lives as humans. Having mentioned the human species, we can also note the inclusion of human resources in our society. Human resources generally correspond to the labor done by people. In fact, humans work with natural resources everyday in their communities. These resources also relate to the third kind of resource, namely cultural resources. Cultural resources are those that have to do with how we interact in society. Through culture, we can see how humans interact with each other and with the natural resources in their environment.
3. Resources:
Natural - lakes/forests; take care because they are precious
Human - labor; humans work with natural resources
Cultural - how we interact in our society; how humans interact with each other and natural resources
4. c 5. a 6. d
7. d 8. c

Master 8

1. What are the interesting facts about the two places?
The Two North Poles
2. People interested in geography and travel have probably wondered what it would be like to travel to one of the Earth's poles. To be certain, an adventurous person might like to take a trip to the North Pole. In fact, there are two places that one could travel to which are called the Magnetic North Pole and the Geomagnetic North Pole. The Magnetic North Pole is located in Canada, near a place called Ellesmere Island. If one holds a compass, its needle will point toward the direction of the Magnetic North Pole. In addition, the north end of a bar magnetic is attracted in this direction. The Geomagnetic North Pole also attracts the north end of a magnet, but it is not located in the same place as the Magnetic North Pole. Rather than Canada, the Geomagnetic North Pole is located off the coast of Greenland.
3. Interesting fact between Magnetic North Pole and Geomagnetic North pole: different locations but the same direction of the compass needle
4. b 5. a 6. b
7. c 8. a

Master 9

1. What did the two poets do?
Emily Dickenson and Walt Whitman
2. Poetry is one of the major literary forms of the world. Indeed, major poets have emerged from many different countries in each continent. In the United States, two poets of the nineteenth century stand out. These poets are Emily Dickenson and Walt Whitman. Both Dickenson and Whitman lived during the middle part of the nineteenth century and were considered to be excellent poets with great talent. A notable difference between these two poets is that Dickenson published few poems. While she was alive, only about ten of her nearly 2,000 poems were published. Most of her poems, in fact, were published posthumously. That is, they were published after she died. Whitman, on the other hand, published a great deal of poems, and in fact other literary works, while he was still alive. His works were also more widely published, being translated into at least twenty-five different languages.

3. Differences of two poets:
 - a. the amount of literary publication
 - b. Publication whether after death or not
4. c 5. d 6. c
7. b 8. a

Master 10

1. What are the differences between adhesion and cohesion?
Adhesion and Cohesion
2. When working on a building project, it is necessary to keep the differences between adhesion and cohesion in mind. For example, if one wants to make two pieces of pipe stick together when building a sprinkler system, the person will need to use some glue. Glue has the property of adhesion. Adhesion is the property that causes one object to stick to another. As such, the quality of adhesion will allow the builder to connect many pieces of pipe when putting together the sprinklers. Once the tubes have been securely fastened with adhesive glue, the property of cohesion becomes important. Cohesion refers to how well the objects stay together. The quality of cohesion will predict the glue's ability not to break, become cracked, or come loose. Although the idea is simple, it is good practice to remember the differences between the properties of adhesion and cohesion.
3. Differences between adhesion and cohesion
Adhesion: cause objects to stick together
Cohesion: quality of staying together
4. b 5. a 6. b
7. a 8. a

Master 11

1. How does a butterfly begin its life cycle?
The Life of a Butterfly
2. Butterflies prefer a single place to live and grow, a place called their habitat. A butterfly's habitat is often a single plant, perhaps in a person's back yard or in the midst of nature. Butterflies live a short life, which can be called their life cycle. A butterfly begins as an embryo inside an egg. Inside the egg is not an actual butterfly, however, but rather the embryo of a caterpillar. The caterpillar grows inside the egg and then pecks out the inside until it cracks the egg open. Then the young caterpillar exits the egg and starts looking for food, usually leaves and other parts of plants. When the caterpillar is fully grown, it picks a spot on a tree or plant and attaches

itself there. The caterpillar soon begins to cast off layers of skin, in a process called moulting. A caterpillar typically sheds between four and five layers until becoming what is called a pupa. Within weeks the pupa magically transforms into a butterfly. The butterfly grows and then embarks on its single goal in life, to reproduce.

3. Butterfly life cycle:
embryo → young caterpillar → fully grown → moulting → pupa → butterfly
4. d 5. b 6. c
7. d 8. b

Master 12

1. How does a hornworm harm tomatoes?
The Hornworm
2. A common insect which is a great enemy of tomato gardeners is called the hornworm. The hornworm gets its name from the fact that it has two prominent horns on the back end of its body to "scare" gardeners. Hornworms can grow to be very large. They reach up to four inches long. It is not difficult to know that a tomato plant has been infested by hornworms. These insects make large holes into the leaves of the plant and also leave large green droppings on the ground near the base of the plant. However, it is difficult to spot the hornworms, especially during the day. The hornworm protects itself from the sun by shading itself underneath the leaf of the tomato plant. Furthermore, the hornworm's light green color makes it blend in perfectly with tomato leaves. The fact that the hornworm can be difficult to detect while it damages tomato plants makes it a nuisance to gardeners.
3. Characteristics of Hornworms
ways of infecting: makes large holes, leaves green droppings
difficulties of spotting: shading itself under the leaf, blending itself with the leaf
4. b 5. a 6. d
7. d 8. b

Master 13

1. How does an earthquake change the Earth's crust?
Earthquakes and the Earth's Crust
2. The Earth's crust can experience change as the result of an earthquake. In a typical earthquake, pieces of the Earth's crust are pressed tightly together. That is, a piece of crust below another pushes up strongly, and the piece above counters

this movement by pushing down strongly. If the pressure between these two contrary forces is strong enough, the crust begins to crack at that place. When the force of the crack is released, the crust will be pushed upward suddenly. As the crust begins to shift upward, the energy begins to break the earth upward from that point. If this stress forces the ground all the way up to the top to break, we will see a visible rupture there but if not, we will still feel the tremble of the crust below us. Through this sequence, the Earth's crust can change during an earthquake.

- How an earthquake changes the crust
Pressed together (pushed up and down) → released forces push the crust upward → visible rupture or trembling
4. b 5. c 6. c
7. a 8. a

Master 14

- How is sedimentary rock formed?
Sedimentary Rock
- Sedimentary rock is one of the most common types of rock. In fact, almost eighty percent of the rock on Earth is formed by the collection of sediments, or small pieces of debris. Examples of sedimentary rock include chalk and limestone. The formation of sedimentary rock occurs as follows. First, very small pieces of rock are broken or worn off of larger rocks. The small particles are then carried by wind, ice, or water until they are deposited in another location. The newly deposited sediment lays on top of other layers of sediment in a horizontal fashion. This process continues until the layers are covered through a process called superposition. Sometimes sections of the layers are not complete because the lower layers are not covered completely. There can be small holes where not as much sediment has built up, or bumps where sediment has built up more than in other places.
- Sedimentary Rock
Formation : small pieces of rock broken by wind or dropped in layers → carried by wind, water or ice → dropped in layers → formation of sedimentary rock
4. d 5. b 6. d
7. b 8. c

: Part 2

Warm Up 1

- a, a

Why glaciers look blue	
Cause	Accumulated components scatter light
Effect	Look blue

- c 2. a 3. a
- a 5. b
- Before the glacier looks blue: a, d
When the glacier looks blue: b, e, f

Warm Up 2

- a, a

Three types of drama	
Each kind	Its characteristics and examples
Tragedy	<ul style="list-style-type: none"> • difficult situation or trauma • Example: Othello, King Lear
Comedy	<ul style="list-style-type: none"> • Relax and laugh • Example: As You Like It, The Comedy of Errors
Tragic-comedy	<ul style="list-style-type: none"> • Serious message • Humor • Example: All's Well That End's Well, Measure for Measure

- c 2. a 3. d
- b 5. b
- Tragedy: d, e Comedy: c, g Tragic-Comedy: a

Warm Up 3

- a, a

1. Anaconda	reptile, grey snake, enormous weight, eats anything
2. Jaguar	large brown cat, does not roar, land animal, avoids fighting
3. Toucan	colorful bird, hollow bill, different bill colors to identify each other
4. Poison arrow frog	amphibian, bright and colorful skin, bright red skin to alert enemies

1. b 2. c 3. b
4. d 5. a
6. Bright colored species: a, b, g
Dull colored species: e, f

Warm Up 4

1. b, a

	Covalent bond	Ionic bond	Metallic bond
Description of each bond	H ₂ , non-metallic, sugar	NaCl, between metals and non-metals	Copper, Al, transfer energy, shiny quality

1. b 2. d 3. d
4. a 5. a

Warm Up 5

1. a, b

Sunset	Rapid loss of temperature at night, cool air doesn't rise up
Long night	Warm air covers cold air on the surface
No wind	Warm air not pushed downward

1. d 2. d 3. a
4. c 5. b 6. c, e, f

Warm Up 6

1. a, a

Definition	Sharing opinions	Dominant thought pattern
Effect	Popular idea → neutral tone	No alternative idea to consider
Example	None	Child labor

1. d 2. b 3. d
4. a 5. c 6. a, c, f

Drill 1

1. Withdrawal
2. a, b 3. a, a 4. a, b 5. b, b

Causes of withdrawal
<ul style="list-style-type: none"> • Suddenly stopping medication • Suddenly reducing medication
Effects of withdrawal
<ul style="list-style-type: none"> • Mood swings • Depression, sadness or loneliness
Suggestions to avoid withdrawal
<ul style="list-style-type: none"> • Avoid suddenly reducing medication • Avoid suddenly stopping medication

1. d 2. a 3. b
4. c 5. b 6. a, d, e

Drill 2

1. Glass: liquid or solid
2. a, b

Properties of solid
<ul style="list-style-type: none"> • Stable molecules • Regular pattern
Properties of liquid
<ul style="list-style-type: none"> • Unstable molecules • Irregular pattern
Properties of glass
<ul style="list-style-type: none"> • Stable molecules • Irregular pattern

1. b 2. c 3. b
4. a 5. a 6. b, e

Drill 3

1. The Law of Talio
2. b, a 3. b, a 4. a, b

Definition of the Law of Talio	The law of retaliation
The scope of the law	The wrongdoer's punishment has the same quality as the crime
Reaction of the courts toward the law	Did not enforce the law but sent criminals to jail

1. c 2. b 3. c
4. d 5. c 6. b, c, d

Drill 4

1. The Big Bang theory
2. a, a

The big bang theory	
The theory is about	How our universe began
Singularity	The core of a black hole: infinitely dense, small, and hot with extreme gravity
Misconceptions	Explosion of a massive object scattering matter in all directions created universe
Supportive evidence	The position of stars in relation to the Earth

1. c
2. a
3. c
4. c
5. b
6. b, e, f

Drill 5

1. Heat Islands
2. a, a

Definition of Heat Island	
Characteristics of Heat Island	Causes of Heat Island
Typically warmer than nearby towns e.g. winter: heat island > nearby towns summer: heat island ≈ nearby towns	a. Tall buildings & houses ↑ ↺ population ↑ b. Materials (concrete blocks) used in construction

1. c
2. a
3. c
4. c
5. b
6. b, e, f

Drill 6

1. The Symbolism of the Number Seven
2. b, b

Symbolism of Seven		
Meaning in the bible	Negative meaning	Positive meaning
• Perfect number • Fulfillment	• Breaking a mirror → 7 years bad luck in America • Misfortune in Babylonian calendar	• Division of human life in Greece • Survival in China

1. b
2. c
3. b
4. b
5. c
6. b, c, e

Drill 7

1. Rap Music
2. b, b
3. a, a

Rap Music	
Causes of Negative Reputation	Positive Results of Rap Music
Blamed for social problems because of explicit lyrics	Helps break barriers between children and education

1. d
2. c
3. b
4. b
5. c
6. Pros: E, G Cons: a, b, d

Drill 8

1. Boudica
2. b, a

Note taking: invaded, signed, half, ignored, possessions, control, revolt, killed, succumbed or defeated

1. c
2. d
3. d
4. c
5. a
6. a, c, e

Drill 9

1. The UN's Millennium Development Goals
2. b, a
3. b, a
4. a, a
1. a
2. a
3. c
4. c
5. b
6. Specific Goals: c, e, f
Problems with reaching Goals: d, g

Drill 10

1. Cooling Systems
2. b, b

Cooling systems			
	Air conditioner	Swamp cooler	Ice cooling system
How it works	Freon gas is compressed and turned into a hot, liquid, then allowed to expand into a cool gas	Cool air is blown from a water source	Large block of ice melts and cool air is drawn into buildings

1. c 2. a 3. a
4. a 5. d 6. b, c, f

Master 1

A cicada is a large, dark colored insect which lives in warm and tropical climates. Cicadas are very easy to identify because of their large size and wings with many large veins. But perhaps a more unique characteristic of the cicada is related to the sound it makes. The sound which comes from a cicada is often called its song. The cicada's song is extremely loud. It sometimes reaches a level of 100 decibels. This is incredible because the loudness of a person's voice during regular conversation is only about 65 to 70 decibels. The cicada makes this song not by rubbing its wings together, as other insects do. Instead, a cicada's exoskeleton expands as it breathes in air. The expansion of the skeleton makes the "creaky" sound of the song.

Cicadas primarily sing for mating purposes, but there are other reasons and meanings behind their songs. It is the male cicada which makes the most distinctive song. He does this to attract a female during mating season. Both male and female cicadas also have songs which signal danger. Because it is so distinctive, there are stories about the cicada's song from many different countries. One myth related to cicadas' songs is that the ancient Greeks and Chinese kept cicadas in cages to hear their songs. This may seem hard to believe. The cicada's song is not beautiful but instead sounds quite harsh. Furthermore, the cicada's song also symbolized a chief being exempt from war according to ancient Greek mythology. When a war chief heard the cicada's song, it meant that the chief would not have to go to war. And if the chief did go to war, he would not be killed.

Unique characteristics of the cicada

How to make the song: by expanding the exoskeleton

Reasons for song: attract a female, signal danger

1. d 2. b 3. b
4. c 5. d
6. Reality of song: b, e, f Myths about song: a, c

Master 2

The Nicene Creed is a statement of faith which is commonly recited in churches around the world every Sunday. In particular, this Creed is used by Roman Catholics as well as Eastern and Oriental Orthodox religions. The Nicene Creed is also used in other branches of Christianity. Neither the Nicene Creed nor its revisions are part of the Bible. However, it has

served the church by providing a symbol of faith for Christians. The Creed lays out some of the main beliefs which Christians share.

There have been many revisions to the Nicene Creed since the first version was made. The original creed was written in the year 325 AD. It was written in Nicaea, which now lies in modern-day Turkey. The first version of the Nicene Creed was commissioned by the Roman Emperor Constantine the First. The second version of the creed, called the Nicene Constantinople Creed, was written in year 381 AD in the city of Constantinople, which is also now in Turkey. This revision of the Creed was written by the First Council of Constantinople. Both of the original Creeds were written in Greek.

There are several differences worth noting between the first version of the Nicene Creed and the Nicene Constantinople creed, the first being a difference in the first line of both versions of the creed. In the original Nicene Creed, the first line read as follows: "We believe in one God, the Father Almighty, Maker of all things visible and invisible." In the Nicene Constantinople Creed, the first line reads: We believe in one God, the Father Almighty, Maker of heaven and earth, and of all things visible and invisible." The revision of the Creed makes explicit that God is the "Maker of heaven and earth." Consequently, a person can understand that God created not only the place where we live today, but also the place where Christians go when they die.

Another difference between the two versions of the Creed has to do with the reference to the "Holy Ghost," in which the second version states that one who recites the creed believes "in the Holy Ghost, the Lord and Giver of life, who proceedeth (comes) from the Father." In this version, the Holy Ghost is specifically the Lord. He is also the one who gives life to all beings on the Earth and he is one with the Father because he comes from the Father.

From these examples, it can be seen that the Nicene Creed was modified in the second version, called the Nicene Constantinople Creed. The second version mainly aimed to elaborate on the first version, an attempt to make more specific some of the details of the first version. The revision would help Christians understand the exact message of the Creed and to follow the church's doctrine, leading to unity among Christians. Indeed, the hope for unity among Christians was the original goal of the Nicene Creed.

Differences between the Nicene Creed and the Nicene Constantinople Creed

- a. The scope of God's work
- b. Reference to the Holy Ghost

Point: NCC aimed to elaborate, giving more specific details

1. b 2. c 3. b
4. c 5. a
6. Nicene Creed: a, e
Nicene Constantinople Creed: d, g, f

Master 3

All of us have trouble speaking from time to time. We might have difficulty trying to find the right word to say something. Or we might have a hard time getting a particular word out of our mouth. But some people have this problem every day. People who have difficulty speaking are said to have a speech disorder. This can happen even in a person's native language. Speech disorders often share several characteristics. For example, a person may speak very slowly. He or she may also repeat the same bit of a word over and over. Or the person may speak very softly. One very famous speech disorder is called stuttering.

The number of people who stutter is very small. This is true especially when compared to the number of people with other speech disorders. According to statistics, about five percent of all people have had a problem with stuttering at some time in their lives. This is known as the incidence of stuttering. Incidence relates to the number of people who have had a problem at some point. Only about one percent of the entire population in the United States stutters as adults. Stuttering is actually most common in children. More than half of all cases of stuttering occur with children under the age of six years old.

An interesting fact about stuttering is that it does not happen all the time. That is, people stutter in some situations more than others. This indicates immediately that stuttering is not a neurological disorder. Neurological disorders cause problems that are always present. Secondly, stuttering is not genetically inherited. A parent who stutters is unlikely to have a child who stutters. On the other hand, children who stutter rarely have parents who stutter. This information leads researchers to believe that stuttering is actually a learned disorder. According to researchers stuttering becomes a habit from trying to talk in stressful situations and having difficulty expressing their thoughts. These situations typically occur when a young child is teased by other members of his or her family. They make fun of the child's mistakes when he or she speaks. The more mistakes the child makes the more the family members laugh and tease the child. Soon the mistakes turn into the habit of stuttering. Habits can be hard to break. Certainly, the habit of stuttering can be difficult to break. Fortunately, 95% of all cases of children stuttering resolve themselves. That is, no speech therapy is needed to solve the problem.

The stuttering just goes away by itself.

Sometimes stuttering does not resolve itself during childhood. In this case, speech therapy can be used to help improve speech. One common technique to reduce stuttering is to rehearse speech. It has been found that people that stutter can improve their speech if they practice what they say before they say it. Evidence for this can be seen in how routine phrases like "my name is" or "just a minute" come out very fluidly. Another technique is to teach relaxation. Stuttering is caused initially because of a stressful speech setting. Therefore, a speech therapist may try to help the person who stutters to feel more relaxed when speaking. When the person is relaxed, he or she may not stutter as frequently. Interestingly, a new technique for stuttering is to teach the listener to be a better speaking partner. This technique is used for other speech disorders as well. Listeners are taught to be patient. They are also taught not to be too demanding. They are encouraged not to intimidate the speaker. The problem of stuttering typically begins with listeners. Therefore, it makes sense to "treat" the listener as well. Stuttering is a speech disorder that will probably always be present in our society. Although it is fairly uncommon overall, it is well-known. Since the majority of people who stutter are children much research is done on this speech disorder. A person who stutters may never get rid of the disorder entirely. However, practice can improve his or her speech. Feeling relaxed can also help alleviate stuttering. In general, improving the speech of a person who stutters is just a question of time.

Speech disorder

- a. When? - children under 6
 - b. Characteristics:
 - not neurological disorder; doesn't happen all the time
 - not inherited; can be resolved
 - c. Solutions:
 - to rehearse speech
 - relaxation
 - teach listener to be a better speaking partner
1. c 2. b 3. a
 4. d 5. a 6. b, d, f

Master 4

In order to stay healthy, it is important to exercise regularly. The kinds of exercises people can do fall into two general categories, aerobic and anaerobic. Both are good for maintaining fitness. However, they provide different benefits. Aerobic exercise increases cardiovascular endurance, while anaerobic workouts improve short-term muscle strength.

Aerobic exercise involves maintaining an increased heart rate for an extended period of time. It therefore strengthens the respiratory and circulatory systems. This increases overall endurance. Some examples of aerobic exercise are dancing, swimming, and jogging. Research has shown that this kind of exercise helps prevent harmful conditions such as high blood pressure and diabetes. Fitness experts recommend that people should do 20 to 30 minutes of aerobic exercise three times a week. When exercising this way, it is important to maintain a steady pace until the heart rate reaches 70 percent of its maximum level. Aerobic exercise burns 75 percent fat and 25 percent muscle.

In contrast, anaerobic exercises burn more fat than aerobic exercises. They also increase body strength. Such exercises require a very high amount of energy over a very short period of time. A common method is to do 15 seconds to two minutes of intensive exercise, then rest for four to five minutes. Unlike aerobic exercise, this builds muscles, and hence strength. It also increases the body's ability to transport oxygen. Anaerobic exercises are excellent for those who want to lose weight, since they only burn fat. Baseball, volleyball, and weightlifting are representative of anaerobic exercise.

Doctors recommend that aerobic and anaerobic exercises should be combined when working out. This will produce the greatest health benefits. For example, when doing 30 minutes of running, one should jog slowly for a few minutes then sprint for a hundred yards. Next, jog for five minutes, then sprint again.

Aerobic exercise

Characteristics: heart rate ↑ - respiratory and circulatory system

Steady pace exercise

e.g. dancing, swimming, jogging

Anaerobic exercise

Characteristics: burn fat, body strength, intensive exercise

e.g. baseball, volleyball, weightlifting

1. d 2. a 3. a

4. c 5. c

6. Aerobic exercise: a,d,f

Anaerobic exercise: b, c, g

Master 5

Too many American children are too heavy. One of every five weighs more than they should, according to the US Surgeon General. Some of these overweight children are obese, which means 25 percent or more of their body is composed of fat. The causes of this include heredity,

lack of physical exercise, and unhealthy eating patterns. It has many serious health risks.

One cause of overweight children is heredity. Children are more likely to become fat if their parents are overweight. The parents' genes influence how fat their children will be, as well as where the fat will be located on the children's bodies. Besides heredity, parents can model poor eating and exercise habits that make their children fat. Their actions might teach children that it is normal to eat too much, or that exercise is not very valuable. If parents do not eat healthy foods and get enough exercise, it is not likely their children will either.

Another cause is children's sedentary lifestyles. Studies show that almost half of all adolescents watch two or more hours of television each day, and that the fattest children watch the most TV. Only about a third of elementary children take physical education classes every day, and less than 20 percent have after-school sports programs at their schools. Children also play lots of video games and listen to music. These activities require their bodies to use very little energy. Sitting increases fat, which is usually burned off by exercising, and softens muscles. It also lowers mental energy, because exercise stimulates the brain.

Closely related to inactive lifestyles is unhealthy eating patterns. While children sit and watch TV, they too often eat snacks that have too much sugar, fat or salt, and too many empty calories. Such foods include candy, cookies, soda and potato chips. This can lead to several serious health problems. Because the heart must work harder to pump blood, adding fat raises blood pressure and cholesterol levels. This, in turn, increases the chances of heart attacks and heart disease. Extra fat puts lots of pressure on joints, such as knees and ankles. It also leads to high levels of liver disease and asthma. In recent years, there has been a dramatic increase among overweight children of type 2 diabetes, a kind which used to be found only in adults.

In addition to physical problems, overweight and obese children suffer psychologically. They often have low self esteem and self confidence. Their classmates tease them and call them names. It might become difficult to make friends or find dates. When this happens it completes a vicious circle. The overweight child, feeling rejected, goes home and continues the bad habits that made him or her fat to begin with. Many overweight kids suffer from depression. Without help, they probably will not be able to change. Statistics show that children who are overweight as adolescents have a 70 percent chance of becoming overweight adults. Since kids typically become less active as they get older, it's important to try and prevent childhood obesity at an early age.

Causes and physical problems of childhood obesity

- a. Heredity - genes influence how fat children will be
- b. Inactive lifestyle - use very little energy, lowers mental energy
- c. Unhealthy eating patterns - heart attack, heart disease, high levels of liver disease, asthma

Psychological problems: low self esteem and self confidence, depression

1. a 2. c 3. d
4. c 5. c 6. a, b, f

Master 6

There are many things scientists do not know about seahorses. For example, scientists do not know how long they live, or whether or not there are any differences in the diets of males and females. Scientists also do not know much about how seahorses pick their mates, how they grow, or what conditions make it easier for them to survive. They don't even know for sure what their predators are. However, there are many things that are known about seahorses. The seahorse has a huge appetite and can consume up to 3,000 brine shrimp per day. In fact, they spend the majority of their day doing nothing but eating. In addition, seahorses have no teeth, so they swallow their food whole. Seahorses vary in size, from the 1/4-inch-long dwarf seahorse to the foot-long Hippocampus ingens. This variety of the seahorse can be found in most of the world's more temperate water. Seahorses are also very colorful. One species, the Hippocampus reidi, turns fluorescent neon colors when it dances. There are over 35 known species of seahorse. However, as they are hunted and used for medicinal purposes in Asia and other places, their populations are dwindling. In order to understand the seahorse population more clearly, it is important to learn about the reproductive habits of seahorses as well as what happens to the babies after they are born.

Seahorses have one of the most unique reproductive systems on Earth. Seahorses are monogamous. That means that seahorses choose only one partner to mate with for life. It is very rare to find a sea animal that mates for life. It is theorized that seahorses improve their ability to produce viable offspring relative to the length of time that they remain with the same partner. Perhaps that is why it is more shocking to learn that, unlike most female species, female seahorses have very little to do with reproduction. That is because only male seahorses get pregnant and carry the babies. We may find it surprising that male seahorses carry the babies and are the ones to be pregnant, but it is the male who protects the eggs. The male seahorse carries the eggs in his body in a special pouch.

When the female is ready to deposit her eggs into the male, they begin a mating ritual. The mating ritual consists of a dance that can last for as many as nine hours. The male fertilizes the eggs and then carries the fertilized eggs for two to three weeks in his pouch as the babies grow and develop. The eggs are nourished by a capillary system inside the male's pouch. The capillary system connects the male seahorse to the eggs, somewhat like an umbilical cord in mammals. This allows nutrients to pass through from the father to the babies as they develop. The fluid within the pouch that cushions the eggs slowly adjusts as the eggs mature to become more like seawater. This adjustment allows for an easy transition for the baby's transition from the father's pouch to the ocean. Once the male seahorse gives birth, he is capable of becoming pregnant again almost immediately. It's hard to imagine that an animal can have dwindling populations when about 200 seahorses are born from each pair every few weeks. However, the survival rate of the babies is low.

Seahorses are interesting in other ways as well. Once the baby seahorses are born, they are completely on their own. The parent seahorses do not care for the babies after they have left the pouch. The babies are immediately independent. For this reason, it is important that seahorses can protect themselves. Baby seahorses, as well as adult seahorses, protect themselves by blending into their backgrounds to hide from predators. They can change colors like a chameleon and they grow long pieces of skin that look like algae. They even let parasites live on them so that they look more like a piece of the ocean. Hopefully, the scientists who are now studying seahorses will be able to learn more about them. If we learn more about seahorses, we can to help protect their populations. We certainly would not want to lose this interesting and unique species.

Seahorses: huge appetite, various sizes, colorful,

Reproductive habits:

- ✓ Only one partner to mate
- ✓ Male seahorse carries babies in his pouch
- ✓ Can become pregnant immediately after giving birth

Survival means: by changing colors

Baby seahorses: independent after born

1. b 2. c 3. d
4. c 5. a 6. b, e, f

Master 7

Generally speaking, there are two models of education. These are traditional and alternative models. Both models are used in modern schools. High school instruction is one example. In the traditional education

model, high-school students receive instruction in academic subjects such as history and mathematics, which are intended to prepare students for college. This model is often referred to as the “college track,” and consists entirely of classroom experience. Accordingly, the sole purpose of education from this perspective is to give students the necessary academic background that they need to be successful college students. Therefore, the emphasis in instruction is on subjects that students will likely encounter when they enter college.

An alternative to the traditional method is called the “school-to-work” transition model. This method takes a different approach to preparing high school students for success as adults. In contrast to the traditional approach, school-to-work programs give high school students the opportunity to work at local businesses. High school students in a school-to-work program still take traditional classes such as mathematics and languages, of course. However, their education is a combination of academic classes and real-life work experience.

Each method has its critics. Critics of the traditional method say that students do not receive valuable work experience until they finish school. At this point a young man or woman has missed important preparation for entering the labor force. Critics of school-to-work programs, on the other hand, say that these programs do not encourage students to finish their studies. Rather, students are tempted to get a head start on a career. In fact, students may be distracted from completing high school in order to begin working right away.

Two education models

Traditional method: instruction in academic subjects for college preparation

Critics - no work experience before college

Alternative method: instruction in school-to-work for gaining work experience

Critics - not encouraging students to finish their education

1. b
2. a
3. b
4. c
5. c
6. c, d, e

Master 8

Psychology is a science that focuses on human thought and behavior. It tries to explain how people think, and why they act in certain ways in certain situations. Psychologists have several different ideas, which are called schools of thought. These schools change over time. Three of the most famous schools are called behaviorist, psychoanalytic, and humanistic.

The behaviorist school focuses on what people do. It is

interested in actions that can be observed, rather than thoughts and feelings that cannot be seen. Behaviorist psychologists try to predict and control behavior. They believe that people do things either to get rewards or avoid punishments. In a famous experiment, a Russian psychologist rang a bell each time he fed a dog. At first the dog’s mouth watered when it smelled the food. But over time, its mouth watered when it heard the bell. Behaviorists say humans can be trained to behave in similar ways. This type of training is called operant conditioning. Behaviorism assumes that people can be conditioned by controlling their environment.

Members of the psychoanalytic school, by contrast, believe that behavior is mainly the result of inner thoughts and feelings. They feel people repress, or bury deep in their minds, wishes and needs that are not useful to themselves or society. These repressed thoughts and feelings sometimes cause them to act in strange, unpredictable ways. Psychoanalysts try to help people remember their buried thoughts. They believe that if people can remember them, they can understand their buried feelings, and then find an acceptable way to deal with them. For example, if someone is repressing their grief about a pet that died when they were a child, they should find a way to let their grief out. Then they will have a healthier mind.

Like members of the first two schools, humanistic psychologists agree that environment and inner feelings play a role in shaping human behavior. Unlike those schools, however, they believe people are controlled more by their own values than by the other two factors. The humanistic school focuses on the concept of self, the idea that human beings are unique and cannot be treated like dogs in an experiment. There is more to human nature than physical responses to controlled actions. Unlike dogs, human beings have the ability to understand that the person ringing the bell wants them to respond in a particular manner. They can choose not to respond that way. Humans search for meaning and value in their lives. They make choices based on their own beliefs and convictions. Humanistic psychologists try to help people fulfill their potential. They are interested in how an individual collects information about the world, processes it, and plans responses.

There are, of course, many other schools of thought in psychology. Today, most psychologists do not practice only one school. Instead, they choose and utilize ideas from several schools. This is called an eclectic approach. But whichever method they use, their goal remains the same: to help people understand their thoughts and actions.

Three of the most famous schools of thought

Behaviorism Idea:

Interested in actions, try to predict and control behavior, operant conditioning

Psychoanalytic Idea:

Behavior from inner thought and feelings, repressed feelings cause problems, to find people's buried thoughts and their solutions

Humanistic psychologists Idea:

Behavior controlled by own values, choices from beliefs and convictions, interested in how individuals collect, process information and respond to it

1. d
2. b
3. c
4. b
5. c
6. b, d, e

Master 9

Because of the development of very powerful telescopes, we know more about astronomical bodies now than ever before. By far the most common object in the sky is the star. Even though all stars consist of gas, not all the stars you see are the same, even if they look similar from our viewpoint billions of miles away. In fact, there are six different categories of stars: white dwarf, brown dwarf, main-sequence one, main-sequence two, subgiant and giant, and supergiant and hypergiant. One of the largest known stars that has been discovered in the universe is the supergiant W Cephei A.

W Cephei A is not just a big star, it is enormous. If you could compare it side-by-side with the Earth's sun, our sun would seem like a tiny spec of dust compared to this giant gas ball. W Cephei A is 288,194 times larger than Earth. The red supergiant is so large that if it were to be placed in our solar system in place of Earth's sun, it would swallow everything up to and including Jupiter. Another way to think about how big W Cephei A is by considering the sun's circumference of 864,900 miles. W Cephei A has a circumference 1600 to 1900 times larger than the sun! To be classified as a supergiant, the star must be at least 500 times the size of Earth's sun, so W Cephei A more than qualifies.

W Cephei A is part of the W Cephei star system, containing the pair of stars called a binary cluster including W Cephei A, a red supergiant, and W Cephei b, which is a blue dwarf star. These stars are part of the constellation Cepheus. Typically, scientists can take advantage of binary pairs because they ellipse each other and allow for calculations to be made of their size and mass. However, W Cephei A is abnormally shaped into almost a teardrop form. This means that it is wider on top than it is on the bottom. Its odd shape leaves astronomers unable to determine precisely how far away the star is and unable to conclude its size with complete certainty.

It is also so large that, as W Cephei A and W Cephei b complete their 20-year orbit, W Cephei b spends nearly an entire Earth year, or 250 days, completely hidden behind W Cephei A, making comparison studies impossible during that time.

Because it is a supergiant, there are certain aspects about the behavior of this star that astronomers are able to understand. The stars in this stage are at the end of their life cycle and are in the process of dying. Their gases are expanding and contracting as they burn themselves out. In addition, supergiants are known for their solar winds. It is estimated that the solar wind from W Cephei A travels at approximately 25 miles per second. They are also known for having a red hue which stems from the cooling of gases at the outside edge of the star. As W Cephei A is a supergiant that is in the process of dying, it is believed that W Cephei A will become a supernova. A supernova occurs when a star collapses and subsequently explodes. The explosion can be so large that some supernovas can be seen with the naked eye from Earth.

W Cephei A was discovered in 2005 by a group of MIT students, so there is still much more to learn about it. One important thing to note is that just because it is one of the largest stars in size does not mean it is a powerful star. In fact, because it is a dying star, size is really all it has left. It is neither much brighter than the Earth's sun nor much hotter, and there are many smaller-sized stars that burn much hotter and brighter. However, the discovery of such a star will undoubtedly lead to new and better knowledge of the death cycle of stars and will remain a magnificent source of information for a long time to come.

Characteristics of Cephei A

1. Size: 288,194 times larger than Earth, 1600-1900 times larger than the sun's circumference
2. Binary star: W Cephei A with W Cephei b
3. Circumference: teardrop form
long orbit period:
no idea about the distance
4. Dying star → not powerful:
supernova

1. b
2. c
3. b
4. b
5. c
6. b, c, e

Master 10

People often think of heart disease and cancer as leading causes of death. In fact, heart disease and cancer are the two main causes of death in the United States. However, there is a third cause of death which surprises some people. The third main cause of death in the United States is called stroke. Unless a person knows what the word “stroke” means, it probably does not sound very scary. Perhaps for this reason the National Stroke Association is now referring to stroke as a “brain attack” in order to draw a comparison to heart disease. When one hears the word “heart attack,” they definitely pay attention. By calling a stroke a brain attack, the National Stroke Association hopes to get people’s attention. It hopes to impress upon people that a stroke is dangerous and should be taken seriously.

There are different kinds of ischemic stroke. The first type of stroke is called a thrombotic ischemic stroke. In this stroke, the passage of blood to the brain is blocked. It may be due to the formation of a thrombus, or blood clot. A thrombus is the accumulation of plaque, or fat cells, on the walls of an artery. If enough plaque builds up on the cell wall, the opening of the artery is narrowed. When the artery narrows sufficiently, blood can not pass freely. When this happens, blood can not reach the brain and a stroke occurs. The second type of ischemic stroke, embolic ischemic stroke, happens when an embolus, or floating blood clot, is detached from a different part of body. In other words, a piece of plaque from the cell wall comes loose and travels downstream toward the heart for example. When it reaches a narrow passage, it gets stuck. As with a thrombus, the embolus blocks blood from flowing to the brain. Typically it is difficult to know how a stroke occurs, that is, whether it is from a thrombus or an embolus. For that reason, ischemic strokes are typically referred to as thrombo-embolitic strokes.

Once the passage of blood to the brain is blocked, a stroke occurs. When the stroke occurs, the lack of blood to the brain causes brain cells to die. The death of neurons in the brain can cause many effects. The exact effect of a stroke is related directly to where the stroke happened in the brain. The stroke may affect eyesight or bodily movement. Stroke also often affects the person’s ability to use language.

If a stroke occurs in the left hemisphere of the brain, it will likely cause a language problem for the individual. In particular, if the stroke occurs in the frontal lobe of the left hemisphere, a language disorder called Broca’s aphasia occurs. Broca’s aphasia relates to a person’s ability to speak words. If a person has Broca’s aphasia, he or she will not be able to speak fluently. The speech is very slow and halting. It also often lacks function

words. That is to say, a person speaks almost entirely with nouns and verbs but with almost no articles or prepositions.

A stroke that occurs in the left hemisphere but in the temporal lobe may result in Wernicke’s aphasia. The temporal lobe of the brain is responsible for speech comprehension. If this area is damaged, the person may not be able to understand words. Besides having difficulty understanding words, a person with Wernicke’s aphasia may have difficulty making sense when he or she speaks. This is because the speaker with this type of aphasia cannot understand his or her own words. The speech may be fluent, but it may not make any sense to the listener.

Strokes are very dangerous neurological accidents and are common in the United States. In many cases, a person who experiences a stroke will die from complications. Those who survive a stroke may have long lasting brain damage. This brain damage, if occurring in the left hemisphere, may cause a language disorder called aphasia. Both Broca’s and Wernicke’s aphasia affect language, but in different ways. Hopefully people will start thinking of a stroke as a “brain attack” and try to take care of themselves. With a good diet and proper exercise, people can reduce their chance of having a stroke and a subsequent language disorder.

Stroke=brain attack

Kinds of ischemic stroke = thrombo-embolitic stroke

- a. Thrombotic ischemic - blocked by blood clot
- b. Embolic ischemic stroke - blocked by floating blood clot

Effects of stroke:

- a. Eyesight
- b. Bodily movement
- c. Ability to use language because of damage of left brain hemisphere, words, speaking fluency, slow speech, lack function words, cannot understand words
- d. Die from complications

1. d 2. a 3. c
4. d 5. b
6. Broca’s aphasia: a, c, e
Wernicke’s aphasia: b, g

: Part 3

Test 1: a short paragraph 1

Beneath the water in many tropical oceans one can encounter a beautiful living object called coral. Sometimes, coral may be mistaken for either a plant or a rock. This is because, at first, coral may look like a rock because indeed it can feel hard to the touch. It also breaks very easily. Coral may also look like a plant as it has many spectacular colors and shapes. However, coral is actually an animal. Coral is formed through both asexual and sexual reproduction. Asexually, coral polyps reproduce to create other polyps which attach themselves nearby. Sexually, coral reproduces by releasing gametes in a spawning activity. The sexual reproduction process typically occurs over the course of two or three nights when a full moon is present. In either pattern of reproduction, polyps attach to the same or nearby coral. As a result, the coral begin to grow larger. This process continues until coral reach a large size, or until they are disturbed by objects in the water which can easily kill this marine animal.

How coral is formed (reproduction)

Two ways of reproduction:

Asexually - creating other polyps

Sexually - releasing gametes

1. c
2. d
3. d
4. b
5. a

Test 1: a short paragraph 2

Fossilization can be seen as a slow process which can preserve the skeleton of an animal forever. Take for example a dinosaur from many thousands of years ago. When dinosaurs died, their bodies and bones decayed in the ground and nothing remained. Most dinosaurs did not become fossils when they died. Some dead dinosaurs, however, became fossils. To become fossilized, a dinosaur first must have sunken into the ground quickly after death, perhaps being covered by mud or sand. With the passing of time, sediment blown from nearby sands and rocks continued to cover the dinosaur. After many years, the chemicals in the body of the dinosaur became replaced by minerals and sediment from the earth. As this happened, the dinosaur's bones became less bone-like and more rock-like. At the end of the process, the dinosaur basically turned to rock, but with the exact same shape as it had before. Once the process of fossilization is complete the dinosaur's skeleton can be preserved forever.

Fossilization

e.g.

Dinosaur:

Sunken into ground → covered by sediment →
chemicals replaced by minerals/sediment → more
rock like, less bone like → the same shape of rock

1. b
2. a
3. c
4. d
5. a

Test 1: A whole passage 3

The populations of many countries include not only the people who are native inhabitants, but also immigrants from other countries. For example, the United States is often called a "Nation of Immigrants" since so many people have left their home countries and settled there. The United States is not unique, however, as immigration continues to many countries around the world. The immigration process has several steps, the final one being official citizenship. That is, the immigrant becomes a full member of his or her new country, with the same rights as native-born citizens. Though gaining citizenship is often a lengthy process, it is not usually a complicated one.

Take for example a person who marries a U.S. citizen and wishes to become a citizen himself. The person must first live in the United States for three consecutive years. Once the three years have passed, the person may apply for citizenship. To complete the application, the person must give the government personal information such as where he is from and how long he has been in the United States, as well as how many times he has traveled outside the country. Then the person pays a fee and sends all of the materials to the government. When the government receives the documents, it checks to make sure the information is accurate and complete. Next, the government sends a notice to the applicant that it has received the application. The applicant then must go to a government office to have his fingerprints taken. Months later, the government will contact the person to come for a personal interview. The applicant will be asked questions about the history of the United States, and will also take an English exam. When the person has completed the interview he may become a citizen. Finally, an official ceremony is given to celebrate this achievement.

Process of obtaining citizenship

e.g. USA

- a. must live 3 years in the country to apply for it
- b. Give personal information
- c. Pay a fee and send the information
- d. Government checks the information
- e. Have fingerprints taken
- f. Interview about history and English exam
- g. Become a citizen and celebrate

1. a 2. c 3. b
4. c 5. b

Test 1: A whole passage 4

Everything in the world is composed of matter. Matter is anything made of atoms and molecules and having mass. It exists in three chief states: solid, liquid, and gas. All matter has unique characteristics that distinguish it from all other kinds of matter. These are called its intensive properties. Chemists classify matter as either a pure substance or a mixture. There are two major sub-classifications of pure substances, and two major sub-classifications of mixtures.

A pure substance is a kind of matter that has a constant composition. Its intensive properties are uniform in every purified sample of the substance. Salt, for instance, has the same intensive properties whether it comes from the sea or a land mine. Since the intensive properties do not change, chemists can rely on them to group substances in a variety of ways. Substances could be grouped by categories such as color, shape, hardness, or chemical state: solid, liquid or gas. Substances can be sub classified as elements or compounds. An element is a substance with a single type of atom that cannot be broken down further into separate elements. Chemists term elements the “building blocks” of matter. There are 116 known elements, including oxygen, lead, gold, and iron. A compound is a substance with two or more elements and more than one type of atom, such as water (H₂O), sugar and salt. Chemists can break down compounds into separate elements by methods such as electricity, filtration, and heat. A molecule is the smallest unit that still has all the properties of a compound.

A mixture is a combination of at least two types of substances whose intensive properties remain unchanged when they are joined together. Therefore, the different kinds of matter can be separated from the mixture according to their properties. Some mixtures are easy to separate, such as stones and candy. Other mixtures, such as sugar, flavoring, and coloring, are much more difficult to subdivide. Mixtures that have uniform properties and composition are called homogenous mixtures. They have one region, or phase, in which the intensive properties are the same. Homogenous mixtures include combination of two types of gases, as well as gases and solids that are fully dissolved in a liquid—for example, air and salt dissolved in water. Most mixtures in the natural world, however, are heterogeneous. These are composed of non-uniform properties and composition. In other words, they have two or more phases. Some common examples of heterogeneous mixtures are concrete, milk, and wood.

It is useful for chemists to classify matter. This helps them understand how substances behave chemically, and how to compare and contrast different types of elements. As they learn more, they will make more classifications. There are already sub-classifications for compound elements. It is not easy to sort matter into groups, but it is only by doing so that scientists can learn more about the natural world. Most people do not think much about the composition of the things they use every day. But to scientists, matter matters.

Division of Matters

Pure substance:

element - not broken down e.g. oxygen, lead, gold, iron

Compounds - broken down by electricity, filtration and heat e.g. water, sugar, salt

Mixture:

homogenous - combination of two types of gases e.g. air with salt in water

Heterogeneous - non-uniform properties e.g. milk, wood

1. b 2. b 3. c
4. d 5. a 6. a, c, e

Test 2: a short paragraph 1

Tools have been developed to make agricultural work more efficient. Until only about two centuries ago, farmers had to work their land with manual tools such as a hoe. ❶ A typical hoe consists of nothing more than a wooden stick with a wide metal blade on one end. ❷ In order to move soil, farmers had to spend long hours with only their own muscles and this hand tool to achieve their task. ❸ From the late nineteenth century to present day, agriculture tools have become more developed. For instance, a farmer no longer had to manually move land with a hand hoe because advances in mechanization led to the invention of tractors which could do the same job. ❹ Tractors made for moving dirt, often referred to as backhoes, are fueled with gasoline rather than human muscle and can quickly move the ground a farmer needs to prepare. This development saves farmers valuable time and human resources.

Advanced tools for agriculture

Two centuries ago - tools like hoes, used muscles, wasted human resources

Late 19c - Tractors - use gasoline, save valuable time and human resources

1. c 2. a 3. b
4. b 5. b

Test 2: a short paragraph 2

The Marriage of Figaro is one of the most popular operas all over the world. Mozart's opera is consistently ranked in the top twenty most performed operas in the United States alone. ❶ The Marriage of Figaro can be defined as an opera buffa, and the play it was based on was originally banned in Italy. An opera buffa is a comic opera. In this type of opera, the audience is supposed to laugh and enjoy themselves. The goal is not to portray an overly realistic or dramatic story or history. ❷ The Marriage of Figaro was first a stage play that was banned in Italy because it made fun of the Italian upper class. ❸ However, Mozart changed the play into an opera by writing the music. An Italian writer named Lorenzo da Ponte changed original play script and took out all of the historical references which made fun of the Italian nobility. ❹ The opera became an enormous success.

Marriage of Figaro = opera buffa

- Banned in Italy: made fun of Italian upper class
- Comic opera
- Stage play at first
- Huge success: changed to opera by Mozart, Italian writer changed the content

1. b
2. a
3. b
4. c
5. b

Test 2: A whole passage 3

Many otherwise intelligent Americans have a special problem learning to read. They suffer from dyslexia, a neurological learning disability. Dyslexia is characterized by difficulty with word recognition and reading fluency, due to a weakness in the part of the brain that processes language. Dyslexics have the most difficulty with written language, particularly reading and spelling. They also have problems processing and understanding what they hear. As a result, they may have difficulty comprehending oral instructions, especially if they are given rapidly.

The most common problem dyslexics encounter is not being able to tell the difference between similar letters or words. A d, for instance, might look like a b. Also, they sometimes confuse words that look similar, such as house and horse, and have trouble distinguishing fine differences in words like watch and wash. At other times, their brains can see letters correctly but do not process them quickly enough. In addition, dyslexics have trouble recognizing words they have already learned. Because of these problems, dyslexics read slowly, and cannot easily understand what they have read. It is very difficult or them to learn in conventional ways.

Without special help, many dyslexics do poorly in

school. Some drop out, while others manage to get through high school but do not go on to college. It is estimated that 93 million of the total US adult population of about 221 million read at or below the minimum standard for literacy, making them functionally illiterate. Those who read at this level have trouble understanding bus schedules, using cash machines, and filling out job applications. They struggle to make sense of what they read in books and newspapers. As a result, such people are often unable to survive in normal society. It has been estimated that three quarters or more of those in American prisons are functionally illiterate.

Dyslexia: reading disability

Problems:

- a. Not see the differences between similar letters and words e.g. d and b, house and horse, watch and wash
- b. Not process the meaning quickly
- c. Trouble recognizing learned words

Results of dyslexia:

- a. Drop out of school
- b. Not able to survive in society
- c. Highly possible to go to prison

1. a
2. c
3. d
4. c
5. a, b, d

Test 2: A whole passage 4

Is a child born with a particular personality, level of intelligence or the innate ability to speak a particular language? Or is a child's personality, intelligence and spoken language a result of the society with whom he or she interacts? These questions are at the heart of what psychologists call the "nature vs. nurture" debate. Those who argue that a child's personality, intelligence and language are determined at birth adhere to the nature side of the debate. Those who state that a child's personality, intelligence and language are largely affected by their environment conform to the nurture side of the debate.

To take just one example, proponents of the nature model would say that a child is born with a certain level of intelligence that he or she will keep throughout life. This level of intelligence can be measured by the "intelligence quotient" (or, IQ for short). Those who argue for the nurture model would say that a child will become as intelligent as the surroundings he or she is exposed to. That is, if a child is not given intelligent demands, he will be less intelligent than a child who is encouraged and taught to be as intelligent as possible.

In the area of language study as related to psychology, the issue of nature vs. nurture is hotly debated. When a child learns his or her first language from birth, many

scholars debate if a language is acquired by nature, that is, a child is born with it, or is learned through nurture, that is, a child learns the language that he or she is in contact with on a daily basis. Although the two sides of the nature vs. nurture debate have quite different points of view, both sides agree that a child must be exposed to a particular language in order to acquire or learn it. That is, a child exposed to no language will not suddenly begin speaking Italian or English or Korean. The child instead may only make sounds which carry little to no meaning.

Proponents of the nature model state that, once exposed to a language, a child's "language organ" is activated. That is, just as a child is born with a heart, so she or he is born with a language. And, since language is a native element of a child, those who adhere to the nature model state that children seldom make mistakes when speaking a language. Furthermore, this group believes that there is dissociation between language and cognition. That is, a person does not have to think about language in order to use it.

From the nurture side of the debate, a child is born with a blank slate in the brain. This point of view claims that a child is born with little or no innate ability to speak a language. It is only through interaction with the society that a child begins to learn the language that he or she hears. Furthermore, proponents of the nurture side demonstrate that children in fact do make mistakes when speaking. These mistakes may be a product of a child's own generalizations of language patterns or by repeating errors made by other speakers in the community.

Nature and Nurture debate about language ability

Nature:

Born with a certain level of intelligence

Exposed to a certain environment: more intelligent

Nurture:

Born with no innate ability to speak

Only interaction with society: learning language

Children make mistakes from their own generalizations of language patterns

The common point between the two sides:

Children should be exposed to a particular language

1. b 2. c 3. a
4. a 5. b 6. a, c, d

Test 3: A short paragraph 1

Laser is an acronym which stands for "light amplification for stimulated emission of radiation." There are several properties of lasers which make them special devices. For one, the radiation emitted by a laser is coherent.

This means that the light comes out steadily. In addition to coming out steadily, the stream of light is uniform. It maintains its focus. Second, a laser beam maintains a particular direction. The photons emitted from a stimulated laser pass in the same direction as light that passes by it. This direction is typically on a horizontal plane. A third feature of lasers is that they are monochromatic. This means that the light in a laser is very uniform. However, the light emitted operates at closely spaced, but not identical, frequencies. This leads to a popular misconception about lasers. Many people assume that lasers are perfectly monochromatic, when in fact they are not.

Three features of lasers

- a. Radiation - steady light radiation, uniform stream of light, keeps its focus
- b. Laser beam - a particular direction (typically on a plane)
- c. Monochromatic - uniform light, but not identical frequencies

1. a 2. b 3. d
4. b 5. c

Test 3: A short paragraph 2

In the 1800s buildings that were more than six stories tall were almost unheard of. One problem was that it is difficult for people to constantly climb up more than six flights of stairs. Another problem was related to the difficulty in constructing a tall building entirely out of stone. Stone was the most common building material hundreds of years ago. These characteristics of early tall buildings influenced later buildings, particularly when considering building materials. Skyscrapers today are built mainly of metal and are very strong, allowing architects to design buildings which can be over 40 floors high. Another change is that skyscrapers today use elevators to move people up and down the buildings. As a result, people no longer have to climb endless flights of stairs to reach the top. Therefore, elements of early skyscrapers can be seen to have influenced how architects design and build skyscrapers today.

Influence of early skyscrapers

1800s - constructed of stone

- a. Difficult to climb up more than 6 flights of stairs
- b. Difficult to build using stone

Building materials of today -

- a. Metal to construct over 40 floors
- b. Use elevators to move up and down

1. b 2. b 3. c
4. a 5. a

Test 3: A whole passage 3

The platypus is an unusual animal. Its mouth is a long, wide, flat bill, which looks very much like that of a duck. Likewise, the feet of a platypus are webbed like a duck's. In other ways, the platypus resembles a mammal, with a thick, woolly, soft reddish-brown fur coat and a wide, flat tail, both like a beaver's. A full-grown platypus varies from 18 to 24 inches in length, with its tail ranging from four to six inches long, and typically weighs between two and five-and-a-half pounds. The platypus's body is covered by three layers of fur, with the inside layer serving to trap air, keeping the animal warm. The middle layer protects the first from getting wet when the platypus dives underwater searching for food. Finally, the top layer has long, flat protruding hairs, helping the platypus to sense how close it is to other objects, much like the whiskers on a cat.

Since platypuses are aquatic animals, they dig burrows along lakes and rivers. Accordingly, their webbed feet have claws to help them dig, though they only use their front feet for this purpose. A platypus uses its rear claws for cleaning itself, something platypuses are fond of doing. In fact, a platypus has extremely flexible hip joints, enabling its hind feet to reach every portion of its body. Male platypuses have sharp, bony spurs about a half inch long on the inside of each hind ankle. These spurs are hollow, like snake teeth, and connect to glands that contain poison strong enough to kill a dog. Though infants have tiny teeth in the back of their jaws, they lose these by the time they reach adulthood, exchanging them for horny ridges along the edge of the bill, which help the animal grind food into pulp.

Characteristics of the platypus

- a. Long and wide mouth, feet webbed like a duck's, 18 - 24 inches, 2 - 3 and half pounds
 - b. Covered by 3 layers of fur:
 - inside - keep warm
 - middle - protect from wetness
 - top - help it sense predators
 - c. Aquatic animal: digs burrow around lake and river, flexible hip joints, poisonous spurs
1. d 2. c 3. d
4. b 5. d

Test 3: A whole passage 4

Today, most children attend public schools to get an education. It was not always this way. Before the first part of the eighteenth century, most children got their education at home. Schools existed, of course. However, there were not many schools in each town or city. Furthermore, most children did not attend these

schools. Instead, they were taught by their parents. The children received daily lessons in subject areas common today. Those who did not go to school or receive lessons from their parents had a tutor come to their house. Tutors mainly went to homes if the family was well off. That is because having a tutor come to a house to give private lessons, both then and now, is expensive.

By about the middle of the eighteenth century, education became mandatory in the United States. A law was passed that called for "compulsory education." Compulsory education means that children are obligated to go to school and, at the same time, the government is required to offer public schools for children. In this way, families have the resources available for their children to get an education. Furthermore, the government exercised great control over the schools. Public schools were, and still are today, required to meet certain requirements. For example, the school must be accredited, meaning that the school must pass inspections by the government. These inspections ensure that the teachers have proper training and that the facilities are adequate for learning to take place. To be sure, if students do not have a good school, their learning will be compromised.

Today, education is still mandatory in the United States. However, there is a "new" form of education that is getting more popular each day. This type of education, which of course is not new at all, is called "homeschooling." Remember that homeschooling was the main form of education only two and a half centuries ago. So why would parents today decide to take control of their children's education again? There are various reasons that parents choose to homeschool their children today.

The number one reason for homeschooling is that parents feel they can give their children a better education from home. A recent survey yields some interesting statistics regarding homeschooling. Nearly half of all parents, 48.9%, say that they can teach their children better than teachers in schools. Of course parents must train themselves to be homeschool teachers. In fact, many parents are already teachers. Others learn the techniques for teaching their children and feel it works better than typical school education.

The second main reason that parents choose to have their children learn at home is for religious reasons. In the survey mentioned before, 38.4% of all parents say that they want their children to learn in their chosen religious environment. By law, public schools cannot mix religion and education. Private religious schools exist, but they are expensive and most religious schools in the United States are of the Christian religion. For Protestants or Catholics, this is not a problem. But for other religious groups, such as Muslims, these

religious schools are not adequate. Therefore, parents choose to keep their children at home, in such providing their children academic and religious education of their choice from home.

The third reason parents cite for employing home school is a poor learning environment at schools. Just over twenty-five percent of parents believe that a school is not a good place to learn, perhaps because they feel that the teachers are not well prepared. Others believe the teachers are lazy or uncaring. Parents also may think that schools are not safe learning environments. The distractions at schools may cause their children to perform at a poor academic level. For this reason, they prefer to keep their children at home. There are many other reasons that parents cite for homeschooling their children. The three main reasons have been given here. Parents have found it both rewarding and beneficial to have their children at home, realizing that homeschooling give their children a positive and safe learning atmosphere. In addition, children have been successful. Children often learn more quickly at home. This prepares them for the future. Indeed, homeschooling will continue for years to come.

Homeschooling

Early 18C: taught by parents or private tutor

Mid-18C: compulsory education, regulated by the government

Today:

- a. Better education by parents
- b. Combining education with religion
- c. Poor learning environment from the public school
 - Poor quality of teaching
 - Unsafe learning environment

1. a 2. b 3. c
4. c 5. a
6. Homeschools: a, d, e Public School: b, f

