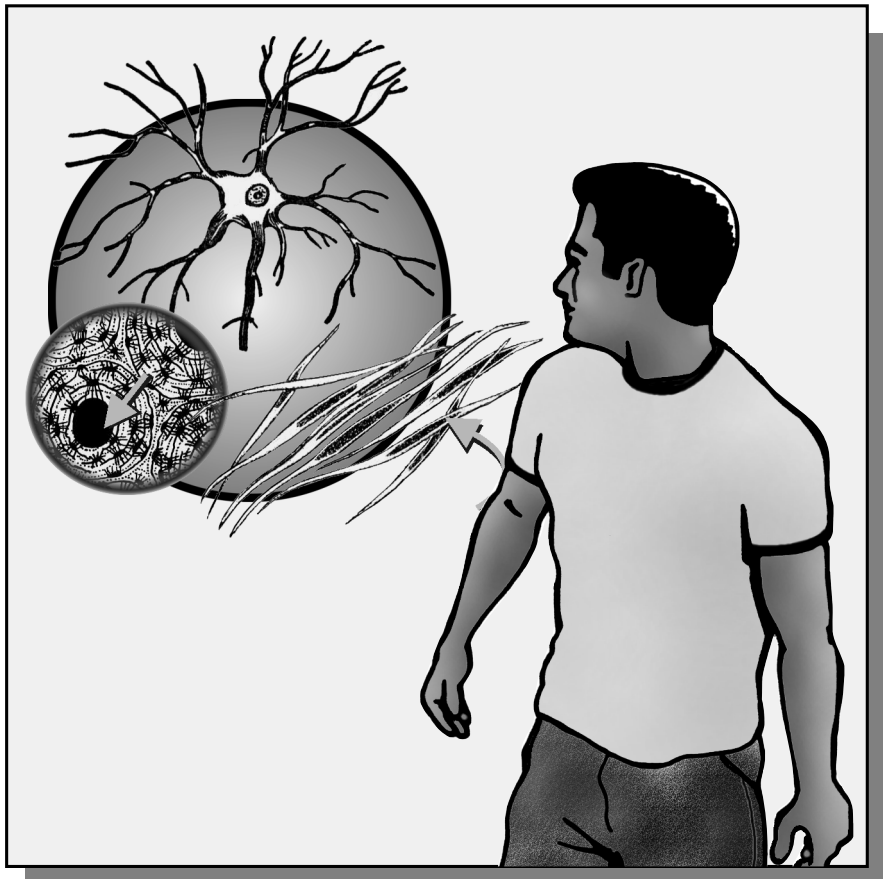
Natural Science Mysteries

Activities



Chapter 4

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Natural Science
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Chapter 4

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ACTIVITIES
Lesson 1:
Biology



Cells

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In the story, which questions continued to perplex the boys? Place an "X" in front of all that apply.
   _____ Why can't we leave this green world?
   _____ How can an entire village disappear?
   _____ What important discovery did Mr. Murphy make before he disappeared 25 years ago?
   _____ Why did Del want to tag along wherever the boys went?
2. _____ contain ***chlorophyll***, which give plants their green color.
3. **Cause:** During fall and winter trees shut down ***photosynthesis***. **(3 part effect:)** Leaves lose their _____, receive _____ and _____.
4. **Contrast** (tell a difference between) atoms of living organisms and non-living matter:
   _____
5. **Compare** (give similarities between) elements of living and non-living portions of the environment: Both contain _____, _____, _____, and _____.
6. _____ are the building blocks of non-living matter.
7. _____ are the building blocks of living organisms.
8. English scientist, _____ discovered and named _____ in the year _____.
9. Hook made the first microscopic study of _____.
10. What did Hooke **conclude** about the fossils he studied?
    _____
11. The scientific world of Hooke's day was enthusiastic about his discoveries. _____
    (a) True or (b) False
12. Life functions of each little hard-working cell include: responding to _____, taking energy from _____, removing _____, _____ and _____.

13. The distance around the Earth at the equator is about 25,000 miles. If a line composed of one's body cells circled the equator 100 times, it would equal the number of miles of cells in the average person's body–a whopping _____ miles!

14. All living things on Earth are composed of a complex living substance known as _____.

15. Place an "X" in front of all correct statements about the ***cell membrane***.
_____ It is the outer covering of the cell.
_____ It controls what enters and leaves the cell.
_____ It needs water and nutrients from outside the cell.
_____ It responds to messengers from other body organs.
_____ It carries messages to body organs.
_____ It protects the cell from outside invaders.

16. _____ are chemical messengers composed of _____.

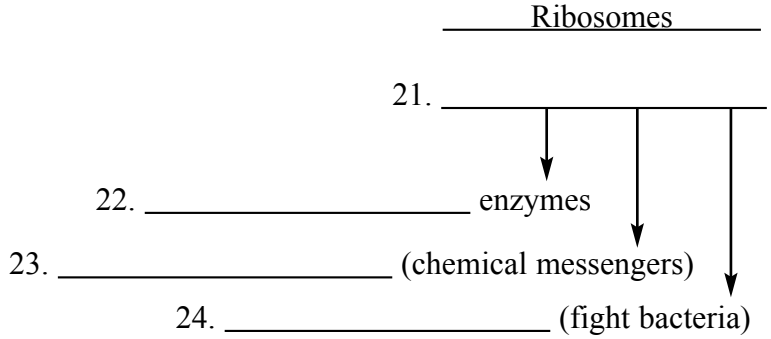
17. **Compare**. How are cell membranes like a nation's armed forces?
_____

18. _____ means some things can pass through, but others cannot.

19. The portions of a cell's ***protoplasm*** that does not include the nucleus is called _____.

20. **Analogy:** ***Vacuoles*** are to a cell what _____ are to a house.
(a) walls (b) ceilings (c) lights (d) closets

Label the following diagram according to information under the paragraph heading of *Ribosomes*. One is done for you.



25. _____ are the cells' power houses which combine oxygen with nutrients to produce energy.

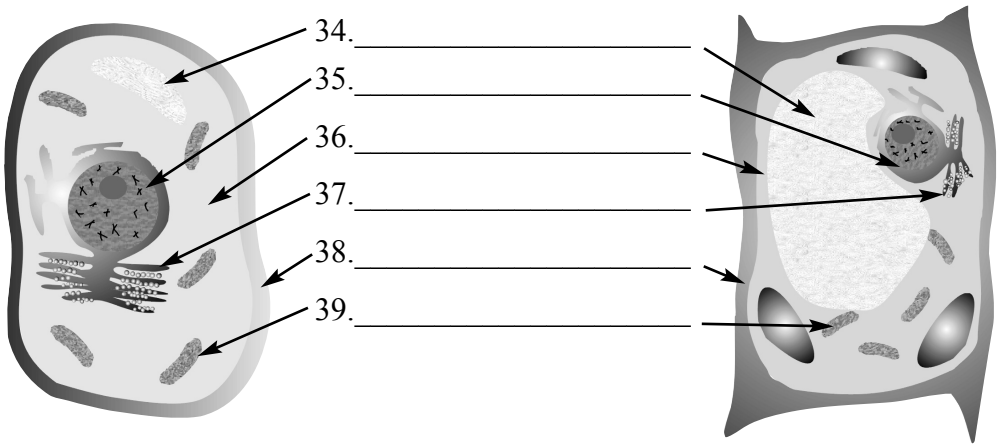
26. The control center of the cell is its _____.

27. _____ is the cell's master chemical which produces _____, the pattern or blueprint by which a cell carries on its functions.

Compare and contrast plant and animal cells by categorizing (listing) their features from your text on the chart below.

	Both Plants and Animals	Plants Only	Animals Only
28.			
29.			
30.			
31.			
32.			
33.			

Label the parts of the cell that are indicated for numbers 34-39.



40. _____ cell 41. _____ cell

42. Since plant and animal cells have the same basic design and composition, but differ in appearance and function, which of the following questions could be considered relevant, interesting and researchable? _____
_____
(a) Did animals evolve from plants or did plants evolve from animals?
(b) Did plants and animals co-evolve?
(c) Were both produced by the same designer?
(d) All of the above

43. Write the **Life Principle:** "_____
_____."


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ACTIVITIES
Lesson 2:
Biology



Fungi Kingdom

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In the story, the boys tried to irritate Del by ordering a "disgusting" ice cream flavor combination she would not like. How did Del turn the situation to her advantage?
   _____
   (a) She cried and pouted. (c) She retaliated with negative words.
   (b) She became angry. (d) She ignored their intent and spoke positively.

2. The reader could **predict** that positive responses and a little humor would be good ways to disarm negative encounters. _____ (a) True or (b) False

3. ***Yeasts*** are one-celled _____, used for thousands of years to make _____ and _____.

4. The process by which yeasts grow is called: _____.
   (a) pasteurization (b) fermentation (c) dehydration (d) syncopation

5. Cell reproduction from a single parent is: _____.
   (a) sexual reproduction (c) asexual reproduction
   (b) bisexual reproduction (d) unisexual reproduction

6. **Cause:** Louis Pasteur heated milk and other foods and (**effect:**) was able to _____.

7. _____named after Pasteur, is the process of heating milk and other products to kill undesirable organisms.

8. Pasteur stood up against _____ from fellow scientists to prove the _____ of disease.

9. "Pasteur . . . maintained a *humble bearing*." In context, the reader can tell that '*humble bearing*' refers to Pasteur's: _____
   (a) angry and threatening words (c) using Humble brand milk in his experiments
   (b) arrogant and proud behavior (d) none of these

10. Place and "X" in front of all correct responses regarding Louis Pasteur:
    _____ He is one of the top ten scientists of all time.
    _____ He is considered the most important person in history of medicine.
    _____ He embraced Darwin's Theory of Evolution.
    _____ He showed spontaneous generation to be a myth.

11. List the **key words** that tell Louis Pasteur's main contributions to science and medicine: _____, _____, _____, and _____.

12. The reader can **conclude** that Pasteur was a man of high character whose honesty and courage in science and medicine continues to impact the world. _____
(a) True or (b) False

13. **Compare** (tell a similarity of) molds with yeasts:
_____.

14. **Contrast** (tell a difference of) the reproduction of ***molds*** with yeasts:
_____.

15. The **context** of the word *airborne* indicates that it means to (be): _____.
(a) born in the air (b) carried by the air (c) die in the air (d) poisoned by the air

16. What two conditions cause mold to thrive? _____ and _____

17. The fungi ***kingdom*** classification was created during the *third quarter* of the 1900s. Which time period does this statement reflect? _____
(a) 1950-1975 (b) 1900-1925 (c) 1925-1950 (d) 1975-2000

18. All living things belong to either the ***animal kingdom*** or the ***plant kingdom***. _____
(a) True or (b) False

19. Fungi are types of _____ that could be described as "moochers" or "takers" which take all they can get from their hosts, but give nothing in return.

20. If people were placed in the ***fungi kingdom***, which of the following groups could be **predicted** to be classified as parasites? _____
(a) those who work hard to support themselves and contribute to society
(b) those who are unable to work due to disabilities and are supported by government or other means, make limited contributions to society
(c) those who are able bodied but refuse to work and are supported by government or other means and contribute nothing to society
(d) none of these

21. **Cause:** Fungi neither make _____ nor have _____ organs, (**effect:**) they cannot be classified as either _____ or _____.

22. Number the following items in **order** of their complexity, beginning with the simplest.
_____ organ
_____ cell
_____ system
_____ tissue

23. In the story, the stranger being discussed by the young people wore white. His occupation was _____.
(a) painter (b) sailor (c) ice cream truck operator (d) unknown

24. Write the **Life Principle**: "_____
_____."

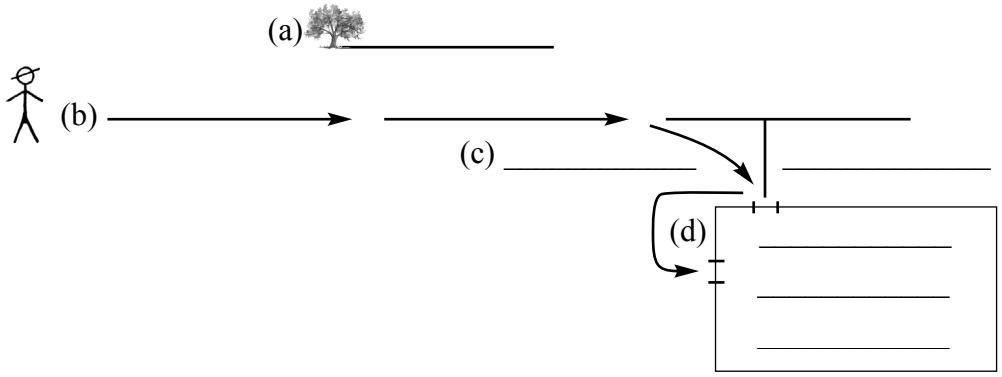


Fungi and Algae

ACTIVITIES
Lesson 3:
Biology

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. From the wording in the story, **label the simple map** of the route taken by the stranger. Include Main Street, City Park, Cadey Historical Museum, and the museum grounds. The arrows show the direction traveled by the stranger.



2. In science which is **NOT** true of a catalyst? _____
   (a) It is a chemical.
   (b) It causes reactions to speed up.
   (c) It changes with the reaction it produces.
   (d) It remains unchanged by the reaction it produces.

3. Enzymes are chemical _____.

4. Fungi can be helpful as: _____.
   (a) producer
   (b) consumers
   (c) decomposers
   (d) catalysts

5. **Compare** paragraph 11 of this lesson with Lesson 2 vocabulary entries of *Fungi Kingdom* and *Parasites*. Which of the following statements best reconciles the differing explanations? _____
   (a) Fungi are parasites that rob their hosts of nutrients and give nothing in return.
   (b) Fungi are helpful as decomposers to recycle organic chemicals of life.
   (c) Fungi are parasites and decomposers which may be helpful or hurtful, depending on the type of fungus being considered and situation in which it operates.
   (d) These explanations cannot be reconciled because they are opposites.

6. Place an "X" in front of each true statement about ***penicillin***.
   _____ It is a fungus.
   _____ It fights harmful bacteria.
   _____ It was invented by a chemist in World War II.
   _____ It is a chemical produced by bread mold.
   _____ It was not widely used until World War II.
   _____ It is the only helpful mold researchers have discovered.

7. Types of fungi or fungi-containing foods prized in elite dining include: _____, _____, _____, and _____.

8. We can **conclude** that *edible* mushrooms are: _____.
   (a) varieties of fungi one is able to eat
   (b) poisonous because they grow in rotted manure
   (c) the same as "toadstools" and should be avoided
   (d) toxic due to their mycelium content

9. The most accurate descriptive words that **summarize** the design and operation of the ***flagellum*** are: _____.
   (a) single, simple cell
   (b) single, microscopic
   (c) enormously complex
   (d) incredibly uncomplicated

10. The ***protista kingdom*** was created especially for _____, which are plantlike in some ways but have no real _____, _____, or _____.

11. _____ and _____ are examples of single-celled algae.

12. _____ and _____ are types of algae that form colonies.

13. _____ forms a scum in stagnant waters, while _____ forms in fresher waters of ponds and lakes.

14. Plants that live in water are called _____.

15. ***Kelp*** and seaweed are the largest forms of _____.

16. Algae can be colored _____, _____, _____, or _____.

17. What famous body of water was named for the color of its algae? _____.

18. Considering the statistics, algae's role in oxygen production can be classified as: _____.
    (a) major (c) optional
    (b) minor (d) insignificant

19. While most algae grow in water, _____ is a type of green algae that grows on land.

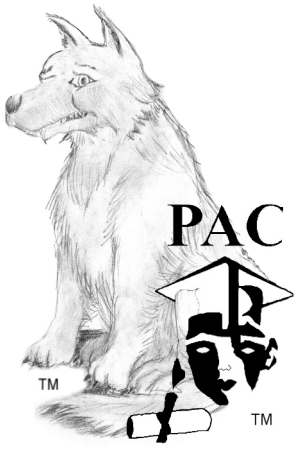
20. **Effect:** People lost in a forest can use moss to regain their direction, be**cause** _____ grows the thickest on the _____.

21. _____ are algae-fungi combinations that grow on _____.

22. _____ release acids that are designed to assist in the _____ process of rocks.

23. In the story, which was **NOT** true of the man in white? _____
    (a) He recognized Del as she walked by him.
    (b) He hurried down a side street.
    (c) He appeared to be late for an appointment.
    (d) He was not carrying the shoebox.

24. Write the **Life Principle:** "_____ _____ _____."


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ACTIVITIES
Lesson 4:
Biology

Protozoa

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In the story, the boys read a sign that stated ***giardiasis*** was a(n): _____.
   (a) display of hiking trails
   (b) analysis of fresh water streams in the back country
   (c) microscopic water parasites
   (d) illness caused by certain water microbes

2. The reader can tell from the **context** of the story that water *microbes* can be defined as: _____.
   (a) swimmers (c) disease causing bacteria
   (b) giardiasis (d) stagnant water pools in the back country

3. The boys observed a man unpacking: _____.
   (a) shoe boxes (c) nameplates
   (b) photographs (d) glasses

4. Jory Barnett's interest in his grandfather's old photographs was: _____.
   (a) monetary (financial) (c) sentimental
   (b) historical (d) none of these

5. Which statement is **NOT** true of ***protozoa***?
   (a) They are single-celled microorganisms that move by themselves.
   (b) They have a well-defined nucleus but no chlorophyll.
   (c) They are found in all but very cold climates.
   (d) Thousands of varieties exist that can hibernate in self-formed cysts during harsh conditions.

6. _____ are blobs of protoplasm that change shape as they move.

7. The "false feet" which ***amoebas*** wrap around their prey are called _____.

8. **Reread** your vocabulary definitions of *pseudopodia*. *Pseudo* means: _____.
   (a) true (b) false (c) undecided (d) unpretentious

9. Which **dictionary** definition of *pod* best describes *podia* in the word *pseudopodia*? _____
   1. A long seed vessel (pod) **2.** An insect egg case **3.** a small herd or school of large water creatures **4.** a combining form meaning "foot"
   (a) definition 1 (c) definition 3
   (b) definition 2 (d) definition 4

10. The suffix *ia* on the end of *pseudopod* best fits which **dictionary** definition?

_____

1. a place (Ethiopia, Russia, Georgia) **2.** a condition (*phobia, insomnia, inertia*) or a state of being **3.** a plant or germ (*petunia, zinnia, bacteria*) **4.** collective nouns (*media, militia, suburbia*)

(a) definition 1 (c) definition 3
(b) definition 2 (d) definition 4

11. The amoeba has a specially designed _____ for holding _____ wastes to be eliminated.

12. The microscopic amoeba carries on all the _____ of a larger organism.

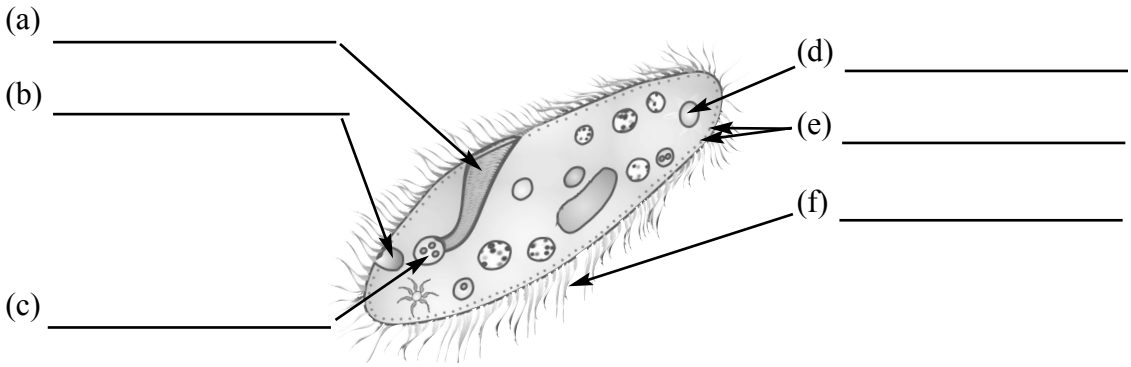
13. Once thought to be a simple, primitive cell, the amoeba shows great _____ and _____.

14. The shape of a _____ is similar to the sole of a shoe.

15. **Review. Classify** 3 features below by placing "Xs" in the proper columns

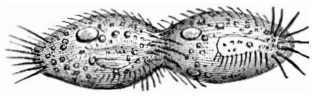
Organism Features	Amoebas	Paramecium
No particular shape		
Keeps changing shape		
Retains original shape		

16. Label the parts of the ***paramecium*** in the illustration below.



17. The diagram to the right best shows:

(a) vacuoles (c) twin paramecium
(b) trichocysts (d) binary fission



18. Some protozoa are _____.

19. Place an "X" before each true statement concerning sleeping sickness.

_____ It is caused by parasitic protozoa.
_____ It is so named because people become sick while they sleep.
_____ It is spread by tsetse flies.
_____ It is difficult to treat, often deadly.

20. Malaria is a tropical disease from parasitic _____, carried by a certain type of _____.

21. Malaria is characterized by recurring bouts of severe _____, _____, and _____.

Review. Categorize the names of parasitic protozoan diseases discussed in the lesson according to their symptoms on the chart below:

	Symptoms	Disease Names
22.	nausea diarrhea cramps	
23.	continually exhausted loss of appetite coma	
24.	fever chills sweats	

25. Are any protozoa beneficial to people?_____ (a) yes or (b) no

26. Support the answer you gave in the previous question with evidence from your text by placing an "X" before each of the following statements that apply:
_____ Protozoa help keep soil fertile.
_____ Protozoa cause disease.
_____ Protozoa are necessary for plant growth.
_____ Protozoa clear out old bacteria.
_____ Protozoa inhabit land and water all over the world.

27. Be**cause** protozoa do not fully fit in either plant, animal or fungi kingdoms, (**effect:**) biologists created a new category for them called the _____.

28. Diatoms are considered a type of _____.

29. What other organisms were classified in the same kingdom? _____

30. Be**cause** _____ did not fit in any of the other four kingdoms, (**effect:**) _____.

31. In the story, what was Mr. Barnett's occupation finally discovered to be?
_____
_____.

32. Write the **Life Principle**: "_____
_____
_____."


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Date: _____ Grade: _____

ACTIVITIES
Lesson 5:
Biology



Bacteria

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. From the **context** of the story, the reader can tell that in this case, a *red herring* is a: _____.
   (a) man (Jory Barnett)
   (b) real fish
   (c) false clue
   (d) mystery

2. Bryan **compared** the boys situation to: _____.
   (a) fugitives
   (b) red herrings
   (c) blood hounds
   (d) none of these

3. _____ cause organic substances to decay and stink.

4. Louis _____ demonstrated in his experiments with _____ that heat kills _____.

5. Certain kinds of bacteria release toxins that can cause _____, the worst of which is _____.

6. Are all bacteria harmful?_____ (a) yes or (b) no

7. Give **evidence** for your answer to #6 by placing an "X" before each supporting statement.
   _____ Foods such as buttermilk, cheese and yogurt are produced by bacterial action.
   _____ Nitrogen fixing-bacteria are needed for healthy plant growth.
   _____ Bacteria produce botulism and food poisoning.
   _____ Bacteria cause worldwide disease.

8. Most plants _____ nitrogen from the soil.

9. Place an "X" beside each example of symbiosis.
   _____ good bacteria
   _____ nitrogen-fixing-bacteria
   _____ lichens
   _____ bad bacteria

10. Without bacteria, dead things would not _____.

11. ***Anaerobic*** means _____ while *aerobic* has to do with the presence of _____.

12. The **prefix** *an*, in reference to *anaerobic* would be which of the following **dictionary** definitions? _____
1. used in place of "a" before a word beginning with a vowel (an apple, an orange) **2.** a suffix showing belonging to a group, place or practice (American, Christian, electrician) **3.** a prefix meaning "not," "without" or "lacking" (anonymous, anorexia) **4.** a suffix used in names of certain chemical compounds (pentosan, xanthan)
(a) definition 1 (c) definition 3
(c) definition 2 (d) definition 4

13. Bacteria were first discovered in the 1600s by _____.

14. Leenwenhock was a: _____.
(a) Dutch microscope maker
(b) Dutch biologist
(c) British scientist
(d) French chemist

15. Be**cause** scientists did not have powerful _____ and because scientists discounted _____ due to their tiny size, (**effect**:) _____for two hundred years.

16. _____ developed the first serum and _____ procedure for the disease of smallpox.

17. Edward Jenner was a British: _____.
(a) biologist
(b) physician
(c) chemist
(d) bacteriologist

18. Although ridiculed and rejected for a time, Jenner's discovery of _____ against disease is one of the most important _____ of all time.

19. _____ was the first scientist to show the world the importance of bacteria.

20. Pasteur's _____ is considered the most important _____ discovery of all time.

21. Scottish physician _____, was the first person credited with putting ***Pasteur's Germ Theory*** into practice.

22. Be**cause** of his pioneering work with _____ and _____ in the operating room, (**effect**:) Lister is considered as one of the _____ of all time.

Use what you already know or look up *antiseptic* in your vocabulary list. Use this information to answer #23-26.

23. *Anti* is a prefix that means _____.

24. *Septic* has to do with: _____.
    (a) medicine (c) disease causing bacteria
    (b) a group of seven persons (d) microscopes

25. From the information in #23 and # 24, the reader can tell that *antiseptic* literally means "_____."

26. The reader can **conclude** that a septic tank contains _____
    _____.

27. What antiseptic mouthwash was named after Joseph Lister? _____

28. **Compare**. What did Jenner, Pasteur and Lister have in common? _____
    _____
    (a) They were all doctors.
    (b) They were all scientists.
    (c) Their discoveries were intensely opposed by their professional peers.
    (d) Their discoveries were welcomed by their professional peers.

29. **Review:** Place an "X" in front of each statement that represents a character lesson the reader can **summarize** from the lives of Edward Jenner, Louis Pasteur and Joseph Lister.
    _____ Standing against your peer group can be a good thing.
    _____ The majority is not always right.
    _____ Stick to what you know is right in spite of opposition.
    _____ When the going gets tough, it's a sign you are on the wrong track.
    _____ Choosing a life work that benefits humanity can earn one a place in history.
    _____ Through perseverance, problems give way to solutions.

30. Disease-producing bacteria are known as _____.

31. What fraction of Europeans died of the Black Death plague? _____

32. **Estimate** how many years passed before antibiotics were commonly used to control many diseases. _____
    (a) 500-600 (b) 550-650 (c) 600-650 (d) 600-700

33. Antibiotics are losing their effectiveness against diseases. _____
    (a) True or (b) False

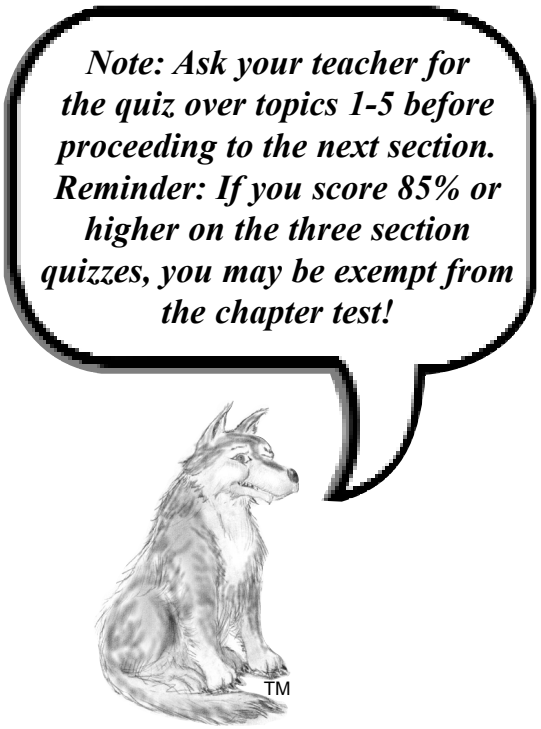
34. The reader can **conclude** from the meaning of the name *Monera Kingdom* that it was so named because it was thought to be: _____
    _____.
    (a) composed of pathogens
    (b) composed of only one type of organism
    (c) named by biologists who noticed that bacteria had no nuclei
    (d) none of these

35. Be**cause** of recent discoveries and the lack of _____, (**effect:**) bacteria are currently classified in two kingdoms of their own, namely _____ _____ ("ancient bacteria") and _____ ("true bacteria").

36. The two functions of bacteria ***pili*** are to: _____ and to _____.

37. In the story, Mr. Harrington was _____ when he came back into the room.
(a) polite and helpful
(b) upset and suspicious
(c) arrogant and uncaring
(d) none of these

38. Write the **Life Principle**: "_____ _____ _____."



Name: _____

Date: _____ Grade: _____



ACTIVITIES
Lesson 6:
Biology

Vascular and Nonvascular Plants

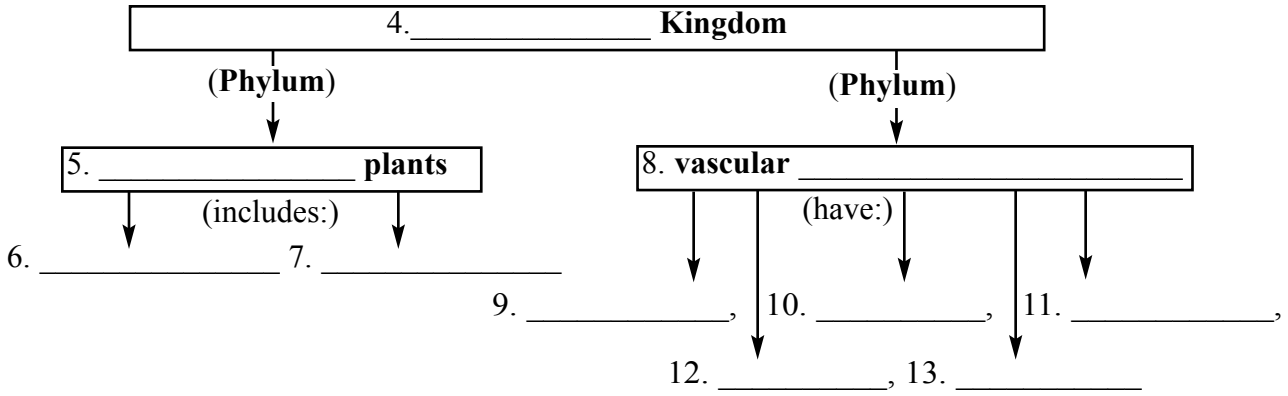
You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In the story, who supplied Ed Barnett with wild herbs? _____
   (a) Bryan and Tom
   (b) Mr. Harrington
   (c) James Olsen
   (d) an unidentified person described as an "old guy"

2. Before the era of modern medicine, many types of _____ were used to combat illnesses.

3. Be**cause** certain plant roots and leaves resembled certain body parts, (**effect:**) those plants were acclaimed to have _____.

Read paragraphs 12 and 13 carefully, then label the parts of the biological classification chart below. Some are done for you.



14. Name two functions of the ***xylem*** cells of plants by placing an "X" in front of appropriate statements. (hint: check your vocabulary list):
   _____ carries water and minerals from roots to rest of plant
   _____ provides support for the plant
   _____ produces vascular tissue in plants
   _____ provides plants with leaves, stems and flowers

15. Which statement is **NOT** true of ***heartwood***? _____
    (a) It includes older tree branches.
    (b) It is the innermost part of a tree.
    (c) It is composed of dead xylem cells.
    (d) It serves to support the tree.

16. The living part of a tree is called _____, which the reader can **conclude** contains the tree's active _____ cells.

17. In _____, molecules always move from an area of higher concentration to one of lower concentration.

18. Each cell has a _____ membrane that restricts passage to some molecules.

19. What do plant and human cells have in common? _____
    (a) blood (c) nonpermeable cell membranes
    (b) chlorophyll (d) semipermeable cell membranes

20. ***Osmosis*** can be defined as: _____.
    (a) water passing through a cell membrane
    (b) sugar being trapped inside a cell
    (c) similar to diffusion
    (d) passage of molecules through a semi-permeable membrane

21. Show how ***phloem*** cells are different than (contrast with) xylem cells by placing an "X" in front of each **contrasting** characteristic:
    _____ Cells transport sugar solution from leaves of plant to other parts.
    _____ Cells are long, hollow tubes.
    _____ Cells change shape to transfer material from one cell to another.
    _____ Cells develop cell sieve plates.

22. What *processes* transport the sugar solution to various plant parts?
    _____ and _____

23. In the story, Mr. Murphy and Mr. Barnett (were): _____.
    (a) friends
    (b) seldom spoke to each other
    (c) became more talkative as they grew older
    (d) enemies

24. Write the **Life Principle**:" _____
    _____."

Name: _____

Date: _____ Grade: _____

ACTIVITIES
Lesson 7:
Biology



Seed and Non-seed

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Which of the following did the Viking Room **NOT** contain? _____
   (a) authentic Viking artifacts
   (b) replicas of supposed Viking artifacts
   (c) drawings of supposed Viking life
   (d) a video enactment of a supposed Viking burial

2. The oldest living plant forms are _____ and _____.

3. The fossil and geologic records show that _____ life before and after the worldwide _____ were very different.

From paragraph 10 of your text, label the two divisions of vascular plants in the diagram below. Give an example.

Vascular Plants

4._____ 5. _____

(example)

6._____

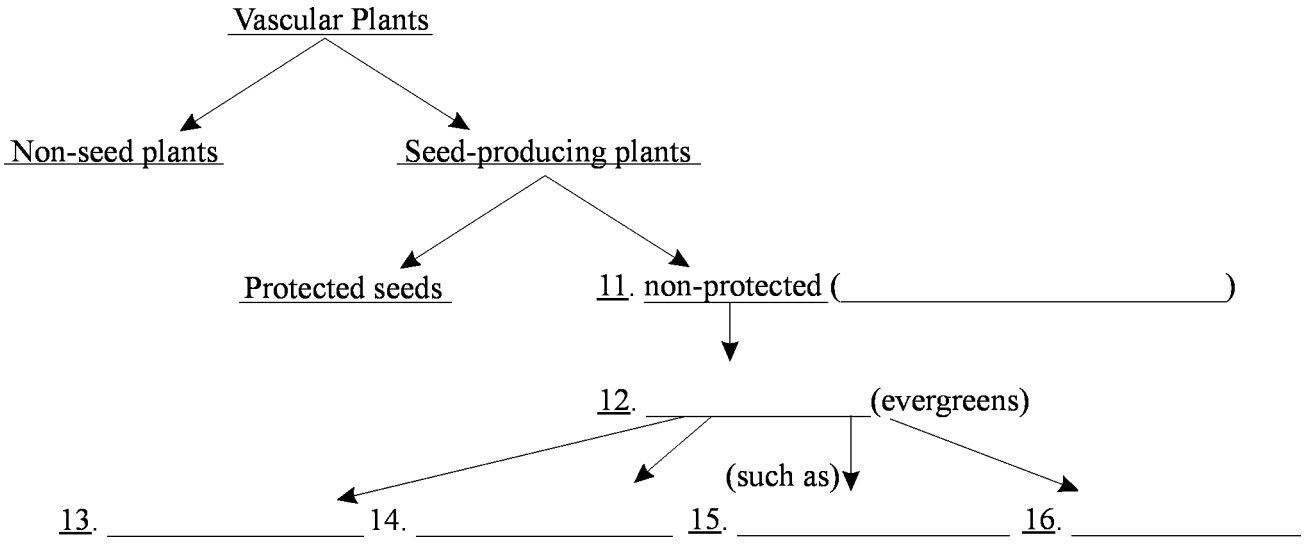
7. ***Ferns*** mainly reproduce by means of: _____.
   (a) seeds
   (b) leaf impressions
   (c) fronds
   (d) rhizomes

8. Underground vegetative reproduction of ferns and many other plants takes place by means of horizontal stems called _____.

9. Ferns also reproduce by _____.

10. Plant _____ are contained in the ***seeds*** of plants.

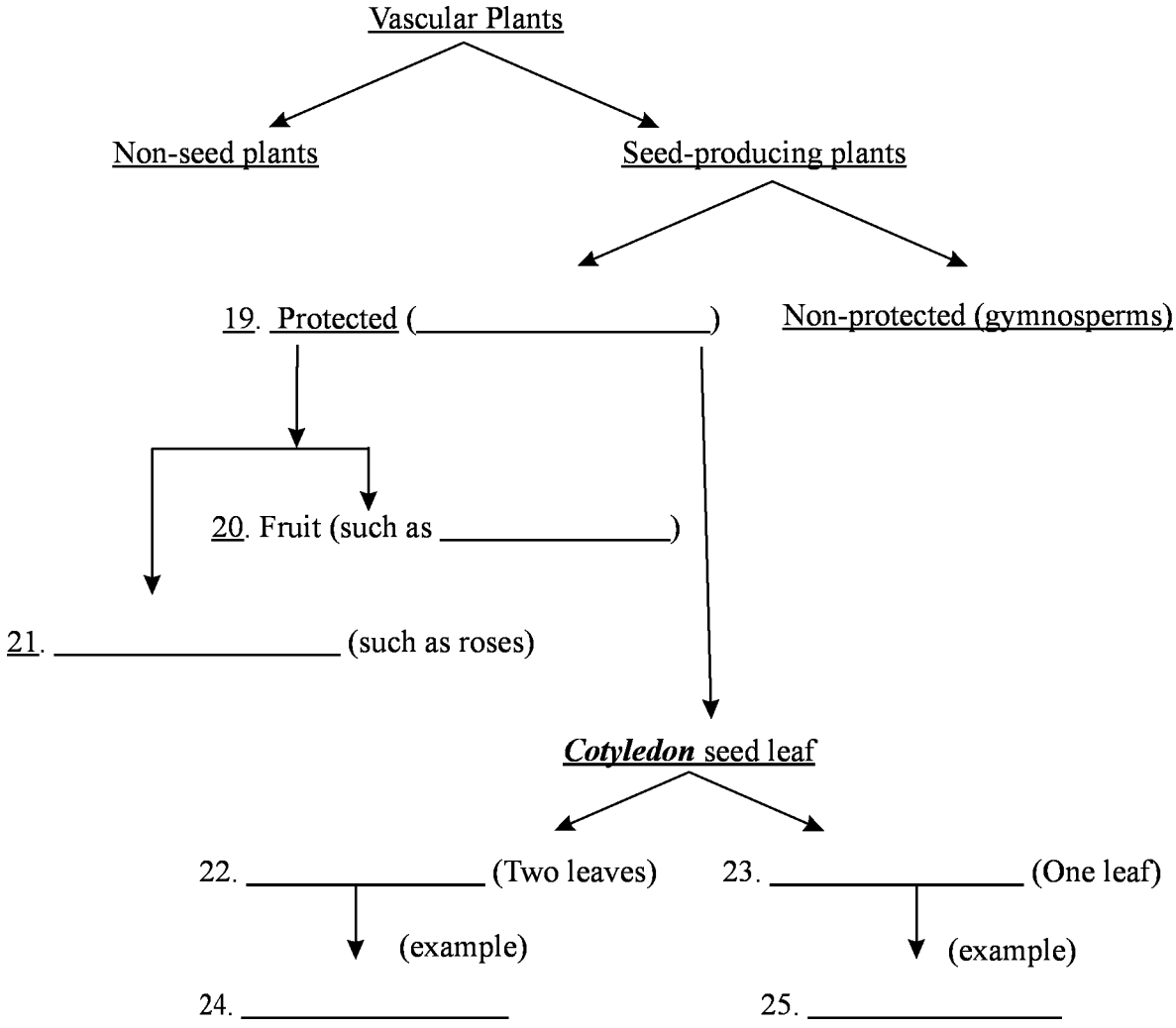
In the diagram below, label the vascular, seed-producing types of plants with examples from paragraph 17.



17. Place an "X" in front of all uses of pine, spruce, and fir trees.
    - ____ building materials
    - ____ electric poles
    - ____ railroad ties
    - ____ cedar chests

18. _____ vapors repel moths that eat wool.

In the diagram below, label the types of seed-producing plants with examples from paragraphs 20-22. Some are done for you.



26. Another way to classify plants is by: _____.
    (a) their ages
    (b) climates where they grow
    (c) their growing seasons
    (d) their root structures

27. In front of each of the following statements, place an "A" for ***Annual***, a "B" for ***Biennial***, or a "P" for ***Perennial***.
____ Life cycles are complete in one growing season.
____ Life cycles are complete in two growing seasons.
____ Life cycles keep on going for many years.
____ Examples are sunflowers, peas, beans, corn, wheat.
____ Examples are lettuce, cabbage, carrots, onions, radishes.
____ They are usually harvested for food at end of first growing season.
____ The best examples are trees and shrubs.
____ They are used for building materials.

28. The **main idea** from paragraph 26 is that: _____.
(a) the role of plants in supplying man's needs has been overstated
(b) plants mostly benefit man indirectly
(c) plants are designed to supply mankind's basic needs of food, clothing and shelter
(d) plants have less to do with furnishing man's needs on Earth than do animals

29. Bryan **concluded** that: _____.
(a) the filmmaker was preparing a documentary about the Vikings
(b) the Viking leader died during the expedition
(c) the rock letters could have been made by Vikings
(d) the museum director was not interested in the information the boys had concerning the rock letters

30. Write the **Life Principle**:"_____
_____."

Name: _____

Date: _____ Grade: _____

ACTIVITIES
Lesson 8:
Biology



Roots Stems and Leaves

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In the story, the museum director insisted on seeing the: _____.
   (a) drawings (b) runes (c) ruins (d) Viking alphabet

2. Bryan **concluded** the markings to be: _____.
   (a) a drawing
   (b) a Native American petroglyph
   (c) images of various animals
   (d) letters of an ancient alphabet

3. The _____ of a plant are usually underground.

4. Place an "X" in front of each function of *roots*.
   ____ (a) anchors, support plant
   ____ (b) supplies water, food to plant
   ____ (c) may store food for the plant
   ____ (d) keeps plant from absorbing polluted rainwater

5. ***Dormant*** plants are: _____.
   (a) vibrant and healthy
   (b) resting, similar to hibernating
   (c) diseased
   (d) dead

6. A carrot is an example of a small _____ compared to much larger ones of tall _____.

7. Which diagram below is an accurate portrayal of most full grown trees? _____

(a)



(c)



(b)



(d)



8. _____ trees are an example of ***prop roots*** supporting a heavy tree on marshy ground.

9. ***Knee roots*** are found on _____ trees in _____.
   (a) pine; mountains
   (b) oak; flat lands
   (c) redwoods; California
   (d) cypress; swamps

10. Buds and leaves on plants grow from: _____.
   (a) roots
   (b) stems
   (c) flowers
   (d) both a and b

11. _____ and _____ are examples of ***stems*** that store food, called _____.

12. **Organize** the following sources of sugar by numbering them (1-3) from the most to the least abundant.
   ____ sugar beets
   ____ maple trees
   ____ sugar cane

13. A plant's main transportation system is in its: _____.
   (a) roots
   (b) stem
   (c) leaves
   (d) flowers

14. _____ stem tissues carry water and nutrients from roots to leaves.

15. _____ stem tissues transport food manufactured in the leaves down to the rest of the plant.

16. Underground stems, ***runners*** and rhizomes are all names for the same thing. _____
   (a) True or (b) False

17. Biologists often identify plants by their _____.
   (a) roots
   (b) stems
   (c) leaves
   (d) flowers

18. The _____ in monocot leaves _____ to each other along the length of the leaf.

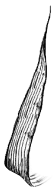
19. In dicot leaves, the veins _____ and _____.

Based on your text's description of leaves, label each leaf diagram below as monocot or dicot for #21-26.

20. _____



21. _____



22. _____



23. _____



24. **Effect:** Most cacti in desert areas have no leaves be**cause:** _____
_____.

(a) cacti are designed to increase water loss
(b) cacti are designed to decrease water loss
(c) cacti stems need no leaves
(d) cacti roots perform the same tasks as leaves do for other plants

25. In the story, Bryan and Tom were sure they could trust the museum director. _____
(a) True or (b) False

26. Write the **Life Principle**: "_____ "
_____


PAC
TM
TM

Name: _____

Date: _____ Grade: _____



Treasures of Biology

ACTIVITIES
Lesson 9:
Biology

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In the story, the museum director interpreted the Viking runes to mean: _____ _____.
   (a) a person's name and a date
   (b) a property marker that read, "Keep Out!"
   (c) both a and b
   (d) neither a nor b

2. Which sentence from your text (given below) gives **evidence** that nature is a teacher and an inspiration for inventions for our benefit? _____ _____
   (a) "Velcro is a discovery that came directly from a useful design found in nature."
   (b) "In Europe, the burdock is another plant that manages to spread it's seeds by clinging to fur or clothing.
   (c) "In 1948, George de Mestral and his dog took a hike in the Alps."
   (d) "Thousands of people have picked cockleburs from clothing."

3. Englishman _____ studied plants from the time he was a boy in the earlier part of the _____.

4. Why did John Ray refuse to sign the document from King Charles? _____ _____
   (a) Ray was a friend of the previous king.
   (b) Ray was a very stubborn man.
   (c) Ray's religious convictions were opposed to the contents of the document.
   (d) none of these

5. Sometimes an action results in more than one effect or consequence. Be**cause** Ray refused to sign the document, (**effects**:) he was fired from his job, which meant he also lost his _____ and _____, he was prohibited from using _____, and he was not allowed access to the college _____ he had spent 10 years developing.

6. John Ray's response to being stripped of everything he had worked to attain was: _____.
   (a) anger and bitterness
   (b) discouragement
   (c) depression
   (d) sadness

7. Calculate how old John Ray was when he published his *Catalogue of British Plants*.
_____
(a) 1627 (born) + 1667 (published) = _____ years old
(b) 1667 (published) - 1627 (born) = _____ years old
(c) 1627 (published) x 1667 (born) = _____ years old
(c) 1667 (published) + 1627 (born) = _____ years old

8. Which statement made to or by John Ray gives **evidence** of him being open-minded to accept new scientific truths as they would be discovered? _____
_____
_____
(a) "Sign or be dismissed from your post at Cambridge!"
(b) "I shall make an effort to extend my plant studies to all of England."
(c) "The bounds of science are not fixed. The treasures of nature are inexhaustible."
(d) none of these

9. John Ray wrote 22 books during his lifetime. Which of the selections mentioned in your text described the orderliness and design he observed in nature? _____
_____
(a) *Catalogue of British Plants*
(b) *History of Plants*
(c) *The Wisdom of God Manifested in the Works of Creation*
(d) none of these

10. Be**cause** John Ray was a pioneering expert in _____ and _____, (**effect**:) he was called the "_____."

11. _____, Robert Boyle ("Father of modern_____"), and others started an organization that came to be known as the _____
_____.

12. An **ideology** is: _____.
(a) a system of government (c) a system of thinking
(b) a system of religion (d) a system of education

13. Place an "X" in front of each true statement about *ideologies*.
____ All true ideologies agree.
____ Prevailing ideologies impact all areas of life.
____ Most "Founding Fathers" of modern science held a different ideology than many scientists today.
____ Opposing ideologies often result in intolerance and persecution of those with opposing view points.

14. In the story, Bryan and Tom were convinced that _____ had something to do with the mystery they were trying to solve.
(a) the cracked souvenir plate (c) Shell Island
(b) the twisted tree (d) Danger Island

15. Write the **Life Principle**: " _____
_____."

Name: _____

Date: _____ Grade: _____

ACTIVITIES
Lesson 10:
Biology



Flowers, Fruits and Seeds

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal***

1. That which Bryan saw through his binoculars fit neither of the boys speculations about the mystery. _____ (a) True or (b) False

2. The _____ is a means by which seeds are _____ over distances.

For numbers 3-8, match the plants with the ways in which each was designed to *disperse* it's seeds. (A response may be used more than once.)

3. _____ dandelion
4. _____ maple tree
5. _____ milkweed
6. _____ poppies
7. _____ tumbleweeds
8. _____ cottonwood trees

(a) flowers shake on stalks to release seeds to the ground
(b) lightweight seeds with fluffy plumes float through air
(c) dead, rounded bush detaches from soil, bounces along ground releasing seeds
(d) helicopter wing–shaped seeds whirl through the air on the wind

9. _____ is another means of seed dispersal, especially for plants that live along rivers, ponds, swamps or _____.

10. The _____ is an example of a water-borne seed.

11. The reader can tell from the **context** that water-borne means: _____.
    (a) born in the water
    (b) died in the water
    (c) drowned by the water
    (d) carried by the water

12. _____ are another means by which seeds are dispersed: seeds may attach to _____ and carried elsewhere, or seeds may be _____, pass through the digestive tract and be deposited on the ground.

13. Some plants are designed not to need the usual means of dispersal—instead, they _____ their seeds several feet away from the mother plant. Three examples are _____, _____, and _____.

14. When a seed ***germinates***, it: _____.
    (a) is expelled from its seed pod
    (b) begins to grow
    (c) becomes unhealthy
    (d) dies

15. Be**cause** certain desert seeds seem to be specially coded, (**effect**:) they remain _____ until enough _____ falls to cause the seed to _____.

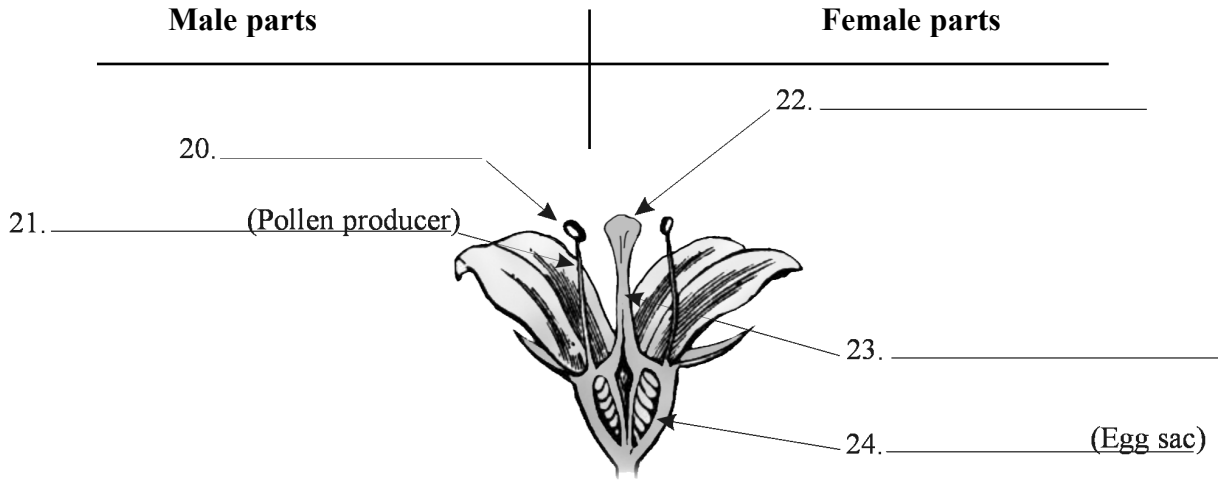
16. Flowering plants are called _____.

17. Seed pods, hard shells, tassel-tops and berries are examples of: _____ _____.
    (a) gymnosperms
    (b) cross-pollination processes
    (c) nature's seed packaging design for angiosperm plants
    (d) parts of a plant's vascular system

18. What is the **main** function of a flower? _____
    (a) to smell good
    (b) to give enjoyment
    (c) to produce seeds to carry on the species
    (d) to serve as food for animals

19. ***Traits*** are features that are inherited from parents and reproduced in offspring. _____
    (a) True or (b) False

Label the Parts of the flower below as indicated for numbers 20-24:



25. Which **dictionary** definition best describes *stigma* as used in your text? _____

_____

1. a bad mark against one's reputation **2.** a mark or trait characteristic of a defect or disease **3.** the part of a pistil that receives pollen **4.** an entrance into the respiratory system of insects

(a) definition 1 (c) definition 3
(b) definition 2 (d) definition 4

Match the following terms about plant reproduction with the correct terms for numbers 26-28.

26. _____ pollination
27. _____ ***self-pollination***
28. _____ ***cross-pollination***

(a) transfer of pollen from male to female part of the same flower or other flowers of the same plant
(b) transfer of pollen from the male part of a plant to the female for fertilization.
(c) transfer of pollen from the stamen of one plant to the pistil of another plant

29. Which of the following agents is **NOT** involved in cross-pollination? _____

(a) wind
(b) water
(c) animals
(d) fertilizer

30. Number the following steps in plant reproduction in **chronological order**.

_____ Egg cells (ovum) in the ovary are fertilized.
_____ Ovary enlarges to protect the seed(s).
_____ Pollen reaches the plant ovary.
_____ Pollen is transferred from stamen to pistil
_____ Fertilized eggs grow into embryos (seed)

31. All natural fruits contain _____.

32. **Classify** the foods below by placing an "X" in front of each fruit name.

_____ nuts
_____ lettuce
_____ melons
_____ tomatoes
_____ potatoes
_____ carrots
_____ pineapple

33. Besides its use as food, the purpose of a fruit is first to _____, then to _____ seeds.

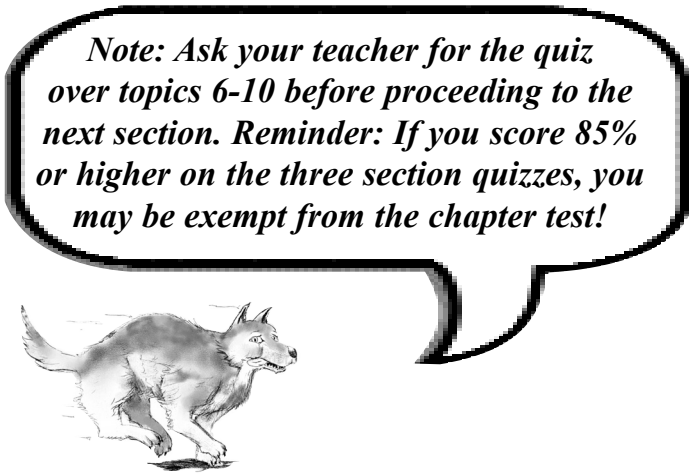
34. **Analogy.** In the last paragraph before the story episode, which human behavior scenario

would **compare** to the purposes of fruits? _____
_____

(a) parents protecting and caring for their children until they are mature enough to be on their own
(b) parents neglecting to meet their children's needs
(c) aborting unwanted children before birth
(d) reporting child abuse to the authorities

35. In the story, the white objects in the meadow were _____ bearing the words, "_____."

36. Write the **Life Principle**:"_____ _____."



Name: _____

Date: _____ Grade: _____

ACTIVITIES
Lesson 11:
Biology



Phyla and Sponges

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Even the worst people usually have a few good points. In the story, what character trait did the boys notice about James Olsen? _____
   (a) honesty (b) compassion (c) punctuality (d) determination

2. According to the story, a "thunder hole" was: _____
   _____.
   (a) a hole where lightening struck and thunder sounded
   (b) a small island between Danger Island and Shell Island
   (c) a sinkhole connected to a cave system
   (d) waves slapping the cliff and echoing down the coastline

3. Biologists have identified hundreds of thousands of _____ species and about two million _____ species.

4. The reader could **conclude** that biologists may have classified: _____
   _____.
   (a) all animals that ever existed
   (b) comparatively few animals that ever existed
   (c) perhaps half of the animals that ever existed
   (d) most of the animals that ever existed

Use the information from the paragraph beginning with the word *Biology*, at the bottom of page 64 of your text for questions #5-10.

5. _____ study living things in general.

6. _____ specialize in the study of plants.

7. _____ specialize in the study of animals.

Categorize the fields of scientific study with the scientific titles of people who study those areas on the chart below.

	Science (fields of study)	Scientists (specialists in fields of study)
8.		
9.		
10.		

11. Biological classifications are: _____.
    (a) subject to change as new data is evaluated
    (b) set and cannot be changed
    (c) extinct
    (d) thoroughly updated every 50 years

12. All biological classifications are ***arbitrary*** except that of _____.

13. Be**cause** all species are programmed to reproduce after their own kind, (**effect:**) members of a species _____ and produce _____ in either the plant or animal world.

14. The plant kingdom is divided into two basic categories, or _____, called _____ and non-vascular systems.

15. Number in chronological order (largest to smallest), the biological divisions for plants.
    _____ phyla
    _____ kingdom
    _____ species

16. The animal kingdom is composed of _____ divisions, or _____.

17. The scientific name for *sponges* is _____.

18. The animal kingdom phyla fit under two basic divisions: _____ which have backbones, and _____ which do not have backbones.

19. From your text and what you already know, place the following animals in their proper **categories**. Write "V" for *vertebrates* or "I" for *invertebrates*.

    _____ sponges

    _____ amphibians

    _____ birds

    _____ clams/oysters

    _____ reptiles

    _____ insects

    _____ spiders

    _____ jellyfish

    _____ mammals

20. Be**cause** sponges attach themselves to hard surface and do not move about, **(effect:)** people _____.

21. Sponges obtain nourishment by: _____
_____.
(a) chewing their food thoroughly
(b) swallowing their prey whole
(c) filtering out tiny food particles from circulating water
(d) using their flagella to grab food from the water

22. Sponges are found: _____
_____.
(a) in the Mediterranean and Caribbean seas
(b) in the Arctic ocean
(c) in the deepest parts of the Pacific Ocean
(d) in oceans all over the world

23. When a sponge loses a piece of its body, it: _____
_____.
(a) dies in agony
(b) re-grows new tissue
(c) remains "crippled" for life
(d) is deformed and harvested as a bath sponge

24. Place an "X" in front of all ways in which sponges are used.
_____ as camouflage for hermit crabs
_____ as food for other sea creatures
_____ for baths
_____ for mops and paint brushes

25. In the story, Ranger Eldridge met the boys with: _____
_____.
(a) information on the formation of thunder holes
(b) a "Viking Quest helmet" from Shell Island
(c) camping gear and a night-vision scope
(d) exciting information about the capture of James Olsen

26. Write the **Life Principle**: "_____
_____."


PAC
TM
TM

Name: _____

Date: _____ Grade: _____



Mollusks and Anthropods

ACTIVITIES
Lesson 12:
Biology

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In the story, the "high traffic area" where the boys camped was: _____
   _____.
   (a) near a water hole and salt lick
   (b) in a tight clump of trees
   (c) on a hill above the lake and salt lick
   (d) near the ridge trail

2. ***Poaching*** is an illegal activity._____ (a) True or (B) False

3. The smooth, pearly lining of a clam shell is called _____.

4. ***Mollusks*** (clams, oysters, scallops, mussels) with two-part shells are called _____.

5. Oysters make _____ out of irritating grains of _____ that invade their shells.

6. **Analogy:** Problems are to people as sand grains are to oysters. How would irritations and negative situations in our lives sometimes be like offending, irritating particles in an oyster? _____
   _____
   (a) If we respond the right way, something good can result.
   (b) If we work hard at it, we can get rid of the irritation.
   (c) If we get angry enough at the problem, it will go away.
   (d) none of these

7. **Effect:** Snails are ***gastropods*** be**cause** they move about on _____.

8. Be**cause** snails have a one-piece shell, (**effect:**) they are also called _____.

9. The reader can easily remember the three kinds of mollusks without shells by associating them with the international distress signal, S.O.S. In this case, the letters stand for S_____, O_____, and S_____.

Fill in the chart below from text information about squid and octopuses. Then, if the data represents likenesses, place an "X" in the comparison column. If the data represents differences, place the "X" in the contrast column. One is done for you:

	Features	Squid	Octopus	Comparison	Contrast
	outer shell	**none**	**none**	**X**	
10.	backbone				
11.	number of arms				
12.	suckers on arms				
13.	directions of movement				
14.	mouths				
15.	defense mechanisms				

Outline the last six paragraphs of this lesson (excluding story episode), beginning with the paragraph headed *arthropods* for #16-18. Remember, the purpose of outlining is to organize the text, which may or may not follow the author's chronology:

Arthropods

16. General information

(a) Are found everywhere (_____, _____, _____)

(b) Some are _____ (meat eaters)

(c) Some are _____ eaters

(d) Some filter particles from _____

17. General Physical characteristics

(a) All are _____ (no backbone).

(b) All have _____ legs.

(c) All have _____ (hard outer coverings).

(d) Classification depends on

[1] number of body _____

[2] number of _____ (legs/arms)

18. Specific Examples

(a) _____ (live in drainage ditches)

(b) _____ (live on larger animals)

Complete the outline *continued*

(c) _____ (devour green plants)

(d) _____ (literally means "100 feet")

[1] one pair of legs per _____

[2] move _____

[3] jaw-like claws contain _____

[a] kills _____

[b] painful to _____

[4] _____ (operate mostly at night)

[5] prefer _____, _____ locations

[6] 2,500 _____

[a] most are one to four _____ long

[b] giant _____ can be 18 inches long

(e) _____ (literally means "1000 feet")

[1] two pairs of legs per _____

[2] are _____ eaters

[3] are _____ to humans

[4] leg movement forms _____-like motion

[5] _____ moving

[6] method of _____ is to roll into a tight _____

[7] most varieties no longer than _____

[8] giant _____ can be 10 inches long

19. In the story, the two ghostly figures the boys spotted turned out to be a pair of bears.
_____ (a) True or (b) False

20. Write the **Life Principle**: "_____
_____
_____."

.


PAC
TM
TM

Name: _____

Date: _____ Grade: _____

ACTIVITIES
Lesson 13:
Biology



Crustaceans and Arachnids

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In the story, which wording shows the greatest degree of factual documentation by the museum expert? _____
   _____
   (a) " . . . confirmed that the markings . . . are runes."
   (b) " . . . dating from around 1000 A.D."
   (c) " . . . almost certainly written by Vikings."
   (d) " . . . may mark an entrance to something."

2. From your answer to the above question, which **key words** give the best **evidence** of factual information? _____, _____

3. From the three other possible responses to the first question, which **key words** give **evidence** of theories rather than facts? _____, _____, _____

4. The most unusual feature of ***hermit crabs***' habitations is that: _____
   _____.
   (a) they live in a series of borrowed shells
   (b) they are able to protect themselves
   (c) they stay near the beach and water
   (d) some are used as pets

5. Lobsters, crabs, shrimps and crayfish are all classed as: _____.
   (a) arthropods (c) aquatic
   (b) crustaceans (d) all of these

6. _____ allow aquatic animals to "breathe" oxygen in water.

7. The reader can **conclude** that the crabs could not escape their negative circumstances because their fellow crabs kept pulling them down. _____
   (a) True or (b) False

8. Suppose crabs were people (your peers). Place an "X" in front of the strategies you could **predict** your peers might use to pull you down to their level.
   _____ encourage your best efforts
   _____ ridicule any behavior different from their own
   _____ call names, start fights
   _____ lie about you, gang-up on you

9. A ***soft-shelled crab*** is: _____
_____.
(a) a type of hermit crab
(b) named for it's special soft shell
(c) a name given to any crab in the process of molting
(d) also known as a crayfish or "crawdad"

10. Place an "X" in front of the negative health concerns about eating seafood (shellfish).
_____ mercury contamination
_____ absorption of various toxins
_____ Hepatitis A possibilities
_____ cost involved in trapping sea foods

11. Barnacles, like other ***crustaceans*** are prized as food. _____
(a) True or (b) False

12. _____ each have eight legs and two segment bodies.

13. Spiders, scorpions, ticks, and mites all fall into the category of _____.

14. Number in **chronological order** the steps involved in a ***scorpion*** obtaining it's dinner.
_____ stings and kills prey
_____ detects prey by vibrations
_____ injects digestive fluids into prey
_____ grasps prey with front pinchers
_____ discards exoskeleton
_____ sucks insides out of prey

15. Place an "X" in front of each caution that should be exercised when a person is in an area inhabited by scorpions (and poisonous spiders).
_____ Sleep under mosquito netting
_____ Shake out shoes and clothing before wearing.
_____ Keep bedding and clothing off the floor
_____ Do not place hands into or under objects where you can not see.

16. Which statement is **NOT** true for mites? _____
_____
(a) Mites are similar to scorpions, but larger.
(b) Mites damage plants, grain, animals worldwide.
(c) Mites inject tissue dissolving digestive juices into victim.
(d) Mites are popularly called chiggers or red bugs.

17. Members of the arthropod phylum (division) are composed of insects, crustaceans (shellfish) and ***Arachnids***. How do these animals compare (what do they have in common)? _____, _____,
_____

18. Biologists determine whether animals fit into the insect, crustacean or arachnid subdivisions based on _____ and _____ of the animals.

Fill in the chart below with the names and numbers of legs and segments for animals in each arthropod phylum (division).

	Phylum	Legs	Segments
19.	Crustaceans		
20.		8	
21.			3

22. All Arthropods have exoskeletons made of chitin. _____
(a) True or (b) False

23. Which characteristic of exoskeletons appears to be the **LEAST** beneficial to the creature inside? _____
(a) protects the animal
(b) gives support, freedom of movement
(c) provides necessary moisture
(d) does not grow with the animal

24. **Effect:** An arthropod must shed its exoskeleton in order to produce a new one be**cause:** _____.

25. The process of shedding old exoskeletons and growing new ones is called: _____ _____.
(a) chitin processing (c) molting
(b) a complete cycle of ranging (d) camouflage

26. Be**cause** the chemicals for an arthropod's new exoskeleton come from it's surrounding environment, (**effect**:) the new shell often is _____ _____.

27. In the story, what was the biggest surprise Del had for the boys? _____ _____
(a) She arranged for a boat ride in a real water taxi.
(b) She volunteered them to help deliver cargo.
(c) She arranged for a tour of Kitchener Island.
(d) She said she had solved the mystery of the missing village.

28. Write the **Life Principle**: "_____ _____ _____."


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Name: _____

Date: _____ Grade: _____



Ticks and Spiders

ACTIVITIES
Lesson 14:
Biology

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Be**cause** the film director learned about Shell Island's unexploded shells, (**effect**:) he _____ on Kitchener Island.

2. The assistant director "barked" at the boys. From the **context** of the story, this wording means he: _____.
   (a) looked like an animal to the boys
   (b) acted like an animal to the boys
   (c) sounded like an animal to the boys
   (d) spoke gruffly to the boys

3. Which statement is **NOT** true of ticks? _____
   _____
   (a) They are parasitic, blood sucking arachnids.
   (b) They live on reptiles, birds, mammals, and humans.
   (c) They inject butyric acid into their hosts to numb the area around the bite.
   (d) They transmit bacteria which causes Lyme disease in humans.

4. The two most prevalent tick-caused diseases are _____ and _____.

5. The purpose of ***spider*** webs is to: _____
   _____.
   (a) give the spider a sort of ladder on which to climb
   (b) trap insects for the spider to eat
   (c) protect the spider from enemies
   (d) none of these

6. Some spiders have two means of air-borne travel, called _____ and _____.

7. _____ can carry spiders a half-mile high for hundreds of _____.

Match the spiders with their webs for numbers 8-10:

8. _____ "house" spiders — (a) tough unorganized patterns
9. _____ black widow spiders — (b) smooth, paper-like tunnel lining
10. _____ trap door spiders — (c) shapeless, loosely woven jumbles of threads (cobwebs)

11. Which spider constructs a little hinged door in it's web? _____

12. Spiders manufacture ***spinnerets*** on the under side of their abdomens. _____
    (a) True or (b) False

13. Spider web ***filaments*** are composed of the same protein in the human body that:_____
    _____.
    (a) builds muscles
    (b) repairs tissues
    (c) clots blood
    (d) grows healthy hair

14. Spider silk is a (weak/strong) substance. _____

15. Support your answer to the preceding question with a sentence from your text:
    _____
    _____

16. Be**cause** draglines are so _____ and _____, (**effect:**) they are used as _____
    _____.

17. **Contrast**: How are most spiders different from other members of the Arachnid phylum?
    _____

18. **Support your answer** to the preceding question from your text:
    _____
    _____

19. A bite from a _____ spider can cause paralysis or death.
    (a) tarantula or black widow
    (b) black widow or trap door
    (c) brown recluse or tarantula
    (d) black widow or brown recluse

20. In the story, Martin was: _____.
    (a) the captain of Sequoia II
    (b) the assistant film director
    (c) in charge of "Viking Quest"
    (d) in charge of the movie set's wardrobe

21. Write the **Life Principle:** *"*_____
    _____
    _____.*"*

Name: _____

Date: _____ Grade: _____

ACTIVITIES
Lesson 15:
Biology



Spiders and Insects

You are making progress! ***Answer the following questions. Fill in the blanks with the correct answers with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. **Effect:** The script writer was upset be**cause:** _____
_____.

2. In the blanks below, place an "R" for (brown) Recluse, a "W" for (black) Widow spider or a "B" for traits common to Both types.
_____ poisonous to humans
_____ dark brown violin-shaped mark on underside of abdomen
_____ red hourglass-shaped mark on upper back
_____ shiny, jet black color
_____ lives in dark places
_____ lives in out-of-the-way places
_____ venom kills body tissue of victim (around bite area)
_____ venom attacks nervous system of victim

Write in the contrasting feature differences between spiders and insects on the chart below (#3-6):

	Features	Spiders	Insects
3.	number of legs		
4.	antennae		
5	type of eyes		
6.	body segments		

7. The three divisions of an insect's body form the acronym "hat" making the divisions easier to remember. They are: H _____
A _____
T _____

8. What three organs are found on an insect's head? _____,
_____, and _____.

Match the following terms for numbers 9-13 below.

9. _____ ***antennae*** (a) opening for breathing in an insect's abdomen
10. _____ ***mandibles*** (b) an insect's organs of touch
11. _____ ***proboscis*** (c) a worm-like baby insect
12. _____ ***spiracles*** (d) strong, sharp jaws
13. _____ ***larva*** (e) a tube like mouth part used for piercing and sucking liquids

14. Number in **chronological order** (1-4) the steps of a grasshopper's metamorphosis.
    _____ larva/nymph
    _____ eggs
    _____ adult
    _____ winged nymph

15. As a larva grows it *molts*, which means it: _____.
    (a) becomes moldy
    (b) becomes a pupa
    (c) becomes a butterfly
    (d) sheds its outer covering

16. A ***chrysalis*** is a hard _____ that contains a _____.

17. An insect such as a butterfly that undergoes a dramatic metamorphosis is changed _____ (in appearance) and _____(in behavior).

18. By learning from the butterfly, the reader could **predict** that major changes in appearance and behavior can equip a person to "fly above" many of life's lesser circumstances.
    _____ (a) True or (b) False

19. Be**cause** nature has _____ and _____, (**effect**:) man's tampering often produces _____.

20. Which is **NOT** true of insects? _____
    (a) They are found worldwide in all climates
    (b) They are the subject of entomology
    (c) They outnumber all other animals combined
    (d) Ants, bees, locusts and spiders are the least-studied insects

21. Two highly destructive insects are _____, which eat vegetation, and _____ that eat cellulose.

22. The reader can **infer** that (**effect:**) termites eat wood, be**cause** it is largely composed of _____.

23. Two kinds of wood not eaten by termites are _____ and _____.

24. _____ insects live in colonies, each having a highly organized division of _____.

25. The reader can **conclude** that "a highly organized division of labor" means each member of the colony has a job to do and does it. _____
(a) True or (b) False

26. _____, _____ and _____ are all described as social insects.

27. Ants have always been symbolic of the character qualities of _____ and _____.

28. Ants and bees are organized in a three-level _____ system.

Match the following terms for numbers 29 through 31 below.

29. _____ queen bee — (a) smallest bees (females), gather nectar for honey)

30. _____ drones — (b) largest bee, lays all eggs for the hive

31. _____ worker bees — (c) large male bees provide air conditioning for hive, mate with the queen

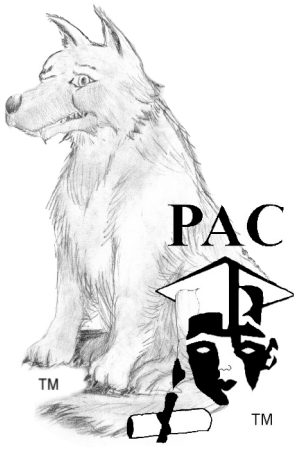
Review. Compare social insects by placing "Xs" in the appropriate sections of the chart below for insect characteristics either stated or inferred.

	Characteristics	Termites	Ants	Bees
32.	industrious/perseverant			
33.	divisions of labor/purposeful			
34.	caste system: queen, workers, males			
35.	good communication/teamwork			
36.	queen designed for reproduction			
37.	soldiers/police patrols			
38.	welfare program for lazy insects			

39. The reader can **conclude** that if social insects had a motto it would be: _____ _____.
(a) "Every man for himself!"
(b) "Who is to blame?"
(c) "Teamwork makes the dream work!"
(d) "What's in it for me?"

40. Write the **Life Principle**: " _____ _____ _____."

Note: Ask your teacher for the quiz over topics 11 - 15 before proceeding to the next section. Reminder: If you score 85% or higher on the three section quizzes, you may be exempt from the chapter test!


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