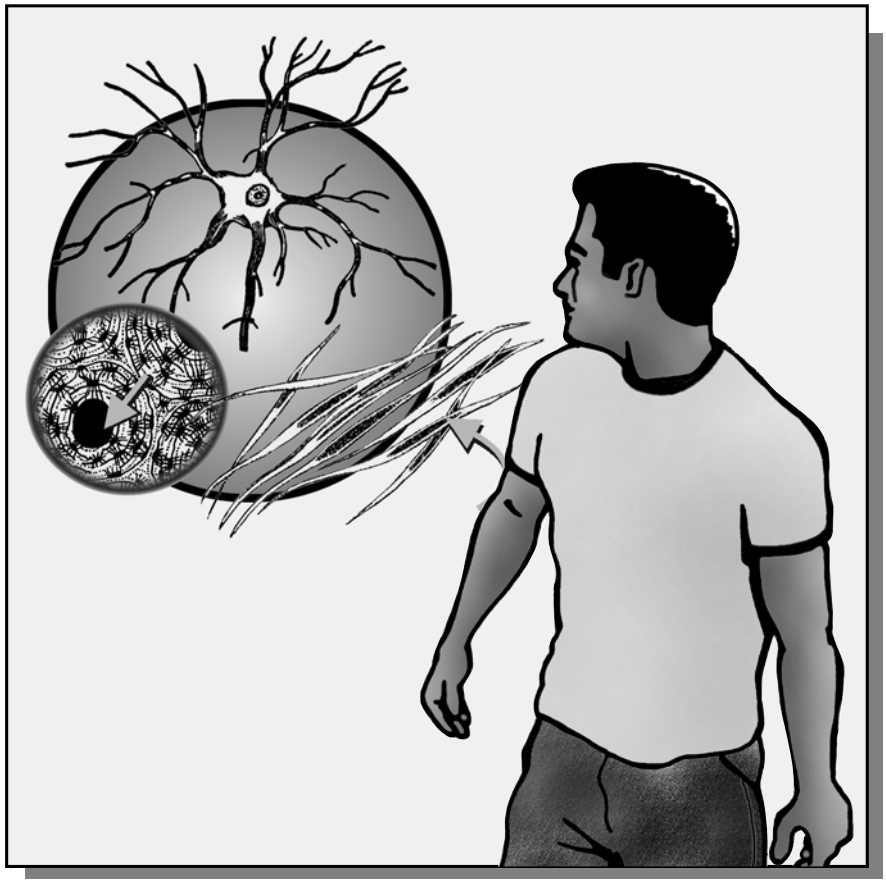
Basic Science Mysteries

Activities



Chapter 3

BSM 62939 Revision: 020905-1

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ACTIVITIES
Lesson 1:
Biology

Resources

You are making progress! ***Answer the following questions. Fill in the blanks 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 story, you can **conclude** that the students wanted to find jobs in order to: _____
_____.
(a) be more responsible
(b) earn money for a ski trip
(c) help their families financially to meet monthly bills
(d) please their grandparents

2. Which of the following best **summarizes** George Washington Carver's early life? ____
_____
(a) He was the son of a plantation owner who was strung from a tree for treating his slaves too kindly; he rescued a slave woman and her son; he later invented peanut butter.
(b) He was a bushwhacker who raided farms; he kidnapped a woman and her child.
(c) He was the son of a slave woman who was kidnapped, then rescued; he was physically weakened; he helped his foster mother in her garden; he became skilled with plants; he supported himself through high school.
(d) He was a physically healthy farmer who taught Southerners how to improve their plant production; he sent his foster son, Jim, to college because Jim was very intelligent; he married a slave woman named Mary.

3. As an adult, George Washington Carver made what contributions to his community? ____
_____
(a) He taught his grandchildren to support themselves and to help their families.
(b) He graduated from college, became an expert in plants, improved farming methods, invented new products from the peanut and sweet potato.
(c) He founded Tuskegee Institute for poor farmers and educated them for no charge.
(d) He started a church for farmers and called it "God's Little Workshop."

4. Dr. Carver specialized in ***botany***. What is botany? _____
(a) the study of animals
(b) the study of plants
(c) the study of medicine
(d) the study of weather

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5. Some of Dr. Carver's improvements included teaching farmers to: _____
_____.
   (a) understand plant diseases; find better ways of producing crops; develop new uses for peanuts and sweet potatoes
   (b) attend college, love plants and conserve soil
   (c) be humble, make a decent living, be resourceful and nourish plants
   (d) rotate crops, replace depleted minerals in soil and plow under some of the crops to put nutrients back into the soil

6. Why should crops be ***rotated*** and some of them plowed under? _____
_____
   (a) Plants will absorb more water.
   (b) Depleted minerals will be replaced in the soil.
   (c) Plants will need less sunlight.
   (d) The plants will produce more leaves.

7. What crops did Dr. Carver encourage farmers to plant? _____
   (a) peanuts and sweet potatoes
   (b) cotton and sugarcane
   (c) cotton and rice
   (d) beets and peas

8. Dr. Carver called his laboratory "_____."

9. Dr. Carver's teaching and research improved farming methods, which yielded better crops and established processes for soil ***conservation***.
   _____ (a) True or (b) False

10. Dr. George Washington Carver was remembered by his friends and associates as being a _____ man who wanted to _____ others.

11. A _____ is a means of supplying what is needed.

12. The main resource for farmers is the _____.

13. Be**cause** soil is used year after year, (**effect:**) it becomes _____ of the minerals needed to _____ plants.

14. _____ helps ***replenish*** the soil with ***vital nutrients*** needed for plant _____.

15. What alternate crops replenish minerals in soil that has been used for planting cotton year after year? _____ and _____

16. A renewable resource can never be replaced. _____ (a) True or (b) False

17. What benefit do farmers reap by replenishing ***depleted*** minerals in soil? _____
_____

18. Polluted _____ gradually decreases the process of renewal.

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19. A nonrenewable resource is used by people faster than nature can replace the resource.
_____ (a) True or (b) False

20. Fossil fuels are natural resources. _____ (a) True or (b) False

21. Natural resources are called "natural" because they: _____.
(a) are made by people
(b) are mined by people
(c) occur in nature
(d) are nonrenewable

Match #22-24:

22. _____ Fossil fuels — (a) energy from the Sun

23. _____ Solar energy — (b) oil, gas and coal

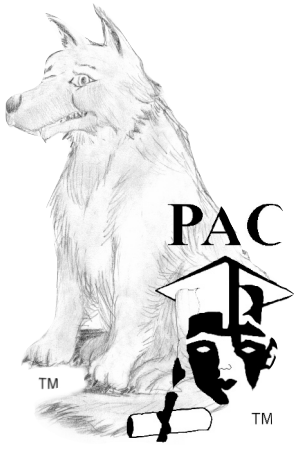
24. _____ Fish and Game Laws — (c) establishes hunting and bagging limits

25. Limited resources include trees, _____, time, _____ or money.

26. In the text and story, you and George Washington Carver had somethings in common. Place an "X" beside areas in which you could **conclude** that you favorably **compared**.
_____ Both had few finances.
_____ Both liked to work with plants.
_____ Both had helped grandparents.
_____ Both were good workers.

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

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ACTIVITIES
Lesson 2:
Biology

Variety Everywhere

You are making progress! ***Answer the following questions. Fill in the blanks 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, you and your grandfather made arrangements to: _____
   _____.
   (a) grow and sell giant sequoias
   (b) learn a computer program that designed flyers
   (c) start a landscaping service
   (d) repair elderly folks' porches

2. Name the four types of plants (in order of location) that are mentioned as growing in California, Texas to Georgia, Arizona and Washington, D.C. _____, _____, _____, _____

3. Plant cells have cell _____ while animal cells have cell _____.
   (a) nucleus; skeletons
   (b) walls; membranes
   (c) chloroplasts; nucleus
   (d) balloons; cardboard boxes

4. Which gives more support? _____
   (a) cell membrane
   (b) cell wall
   (c) cell skeletons
   (d) insides of a cell

5. Place an "X" beside each function of a ***chloroplast***.
   _____ manufacture food
   _____ contain chlorophyll
   _____ manufacture photosynthesis
   _____ absorb sunlight

6. ***Chlorophyll***: _____.
   (a) is a greenish matter that helps make food
   (b) absorbs sunlight
   (c) absorbs energy from sunlight
   (d) only a and b
   (e) only a and c

7. The process by which plants make food is called: _____.
   (a) chlorophyllm
   (b) chloroplastics
   (c) photosynthesis
   (d) all of these

8. ***Photosynthesis*** takes place in the _____ of most plants.
   (a) leaves
   (b) stems
   (c) carbon dioxide
   (d) water

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9. Which of the following is an accurate **summary** of the process of photosynthesis? _____
_____
(a) Sugar water flows through the stem and leaves, combining with sunlight and carbon dioxide from the air, producing food.
(b) Water and carbon dioxide combine with chlorophyll and sunlight, causing a chemical change that produces food.
(c) Energy from the Sun is absorbed through the leaves. The energy combines with carbon dioxide and chlorophyll, producing water that feeds the plant and creates food.
(d) Water and sunlight combine to form sugar which reacts chemically with leaves and produces food.

10. Plants usually have roots or root-like structures that _____ into the ground.

11. Some _____ systems are larger than the plant itself.

12. Water and materials enter the _____ through its root system.

13. Some roots store _____ for the plant.

14. Stems _____ the plant, store food and help transport materials.

15. The function of ***xylem*** and ***phloem*** is to: _____
_____.
(a) carry water, minerals and food throughout the plant
(b) help you understand the pipe system in your community
(c) carry sewage from your home
(d) help root hairs absorb minerals and water

16. Leaves come in a variety of shapes and sizes. _____ (a) True or (b) False

17. Leaves are the plant's organs for trapping sunlight and making food. _____
(a) True or (b) False

18. ***Stomata*** are small openings that store water in the root system. _____
(a) True or (b) False

19. A cactus survives in the desert because the stems are swollen and fleshy, designed for water storage. _____ (a) True or (b) False

20. All plants need water to survive. _____ (a) True or (b) False

Review. Tell if the following plant and animal traits compare or contrast by placing an "X" in each appropriate box.

	Plants	Animals	Compare	Contrast
21.	Have rigid cell membranes	Cell membranes are soft, pliable		
22.	Produce own food	Dependent on outside food sources		
23.	Most are not mobile	Most are mobile		
24.	Nutrients enter through roots	Nutrients enter through mouth		
25.	Need water to survive	Need water to survive		

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

Use the table below to answer questions #27-33.

Sequoia Trees	
History of name	named for the Cherokee leader, Sequoya
Meaning of name	big tree
Species	(1) Giant Sequoia are found on the western slopes of the Sierra Nevada mountain range (2) Coast Redwood are found along the Pacific Coast from Oregon to Central California (3) Dawn Redwood are found in Southwestern China
Trunk color	reddish-brown
Leaves	needle-like
Height	30 meters or more
Largest specimen	a giant sequoia named "General Sherman" is 84 m tall, with a diameter of 25.3 m and is estimated to weigh about 2,500 metric tons

27. How did the sequoia tree get its name? _____
(a) from the area in which it grows (c) from its size
(b) from its color (d) from a Cherokee leader

28. What does the name *sequoia* mean? _____
(a) brave leader (b) needle-like (c) General Sherman (d) big tree

29. How many species of sequoia exist? _____
(a) one (b) two (c) three (d) four

30. Where are Coast Redwoods found? _____
(a) in the Sierra Nevada mountains (c) in Southwestern China
(b) along the Pacific Coast (d) on an island in the Pacific Ocean

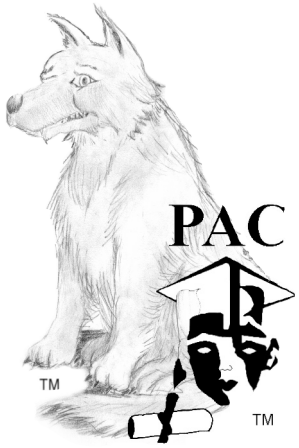
31. What species of Redwood is found in China? _____
(a) Giant Sequoia (c) Dawn Redwood
(b) Coast Redwood (d) Cherokee Redwood

32. Which term best describes the leaves? _____
(a) broad (b) flat (c) needle-like (d) reddish brown

33. How tall is "General Sherman"? _____
(a) 84 m (b) 25.3 m (c) 2,500 m (d) 250 m

You have finished Lesson 2 Activities. Score them now to ensure accuracy.

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Cycles

You are making progress! ***Answer the following questions. Fill in the blanks 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, you and your grandfather accomplished what goal? _____
   _____
   (a) You began your business and gained a few customers.
   (b) You finished handing out the flyers.
   (c) You learned how to treat different types of soil.
   (d) You responded kindly to an unkind, demanding customer.

2. Grass receives most of its nutrients from: _____.
   (a) mulch (b) other plants (c) the soil (d) dead animals

3. What three components make up the ecosystem of soil? _____ things, _____ things, and _____ things

4. Approximately _____ types of soil have been classified in the United States.

5. Soil requires _____ to _____ years to form per centimeter.

6. _____ or _____ erosion may deplete soil and nutrients.

7. _____ can occur when wind blows the soil, scattering it in different directions.

8. Water draining downhill often washes away _____.

9. _____ is formed from rotten remains of plants and helps keep soil soft and loose, enabling _____ of new plants to grow.

10. What is the function of worms and other invertebrates in the soil? _____
    _____
    (a) They decompose dead animals and plants.
    (b) They provide nitrogen and circulate carbon dioxide.
    (c) They loosen the soil; when they die, their bodies provide nutrients.
    (d) They keep plant roots anchored in the ground.

11. Decomposers break down dead _____ and _____ into nutrients.

12. The nutrients are recycled back into the _____.

13. Three examples of decomposers are _____, _____ and _____.

14. Four nonliving components that naturally recycle back to the environment are _____, _____, _____ and _____.

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15. Air is mostly oxygen. _____ (a) True or (b) False

16. By studying the illustration of the nitrogen cycle in the text, the reader can define the nitrogen cycle as: _____.
    (a) the movement of nitrogen through an ecosystem
    (b) the decomposition of dead plants and animals
    (c) the release of energy through photosynthesis
    (d) the mulching of leaves

17. Which answer best **summarizes** the nitrogen cycle? _____
    _____
    (a) Nitrogen passes from the air to dead animals and plants, then into the soil.
    (b) Plants create nitrogen then pass it into the air.
    (c) Nitrates are created in dead plants, are released into the ground, then are eaten by animals
    (d) Nitrogen passes from the air to living things, then back into the air.

18. Which answer best describes the *details* of the nitrogen cycle? _____
    (a) Plant roots extract nitrogen from the soil. → The nitrogen is changed into nitrates. → Nitrates are released into the soil when decomposers break down dead plants and animals. → Some nitrates are used by plants; some are absorbed by the soil. → Nitrates that are absorbed by the soil are converted to nitrogen gas by bacteria in the soil. → Nitrogen gas is released into the air. → Nitrogen gas in the air is changed by means of lightning into nitrates that combine with rainwater that plants can use. → The cycle repeats.

    (b) Soil extracts nitrogen from plant roots. → The nitrogen is changed into nitrogen gas. → Nitrogen gas is released into the soil when decomposers break down dead plants and animals. → Some nitrogen is used by plants; some is absorbed by lightning. → The cycle repeats.

    (c) Decomposers extract nitrogen from the soil. → The soil is changed into bacteria. → Bacteria is released into the air. → Some bacteria are used by plants; some are absorbed by animals. → Animals convert the bacteria into nitrates. → Nitrates are released into the air. → Nitrates in the air are changed by lightning into nitrogen gas that plants can use. → The cycle repeats.

    (d) Animals extract nitrogen from plants. → The nitrogen is changed into nitrates. → Nitrates are released into the air when decomposers break down dead plants and animals. → Some nitrates are used by plants; some are absorbed by the soil. → Nitrates that are released into the air are converted to nitrogen gas by lightning. → The cycle repeats.

19. Nitrates are substances that contain: _____.
    (a) plants and soil (b) nitrogen and oxygen (c) animals and plants (d) only a and b

20. Plants use nitrates to make: _____.
    (a) nitrogen gas (b) lightning (c) protein (d) soil

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21. When an animal or plant decomposes, which of the following happens to the nitrates?

_____

(a) They are released into the soil; some are absorbed by the soil, some are used by plants.
(b) They are all absorbed by the soil.
(c) They are all used by plants.
(d) They are released into the air; some dissolve in the air, some are eaten by animals.

22. What role does lightning play in the nitrogen cycle? _____

_____

(a) Lightning separates nitrogen and oxygen, creating nitrates. The nitrates fall to the ground as rainwater that plants can use.
(b) Lightning forces nitrogen and oxygen to fuse, forming nitrates. The nitrates combine with rainwater, making the nitrate fall to the ground to be used by plants.

23. Place an "X" beside each part of the nitrogen cycle in which nitrates are *formed*.

_____ in the decomposed remains of plants and animals
_____ in the air when lightning passes by
_____ in the roots of plants that contain certain bacteria that extract N_2 from the soil
_____ in raindrops

Use the Nitrogen Cycle illustration in the text to answer questions #24 & 25.

24. Nitrogen gas (N_2) is formed by: _____.

(a) nitrogen released into the air from decaying animals and plants
(b) lightning forming with rainwater
(c) nitrates combining with rainwater
(d) animals eating plants that contain organic proteins

25. Plants produce proteins by using: _____.

(a) nitrogen gas (b) lightning (c) raindrops (d) nitrates

26. Another cycle necessary for plant and animal growth and development is the _____ cycle.

27. Plants absorb _____ from the air to use during photosynthesis.

28. Carbon compounds such as _____ and _____ (carbohydrates) are produced during photosynthesis.

29. Animals and humans ingest _____ compounds when they eat plant foods.

30. Oxygen is released as a waste product during _____.

31. ***Respiration*** occurs when plants and animals absorb oxygen and release carbon dioxide into the air. _____ (a) True or (b) False

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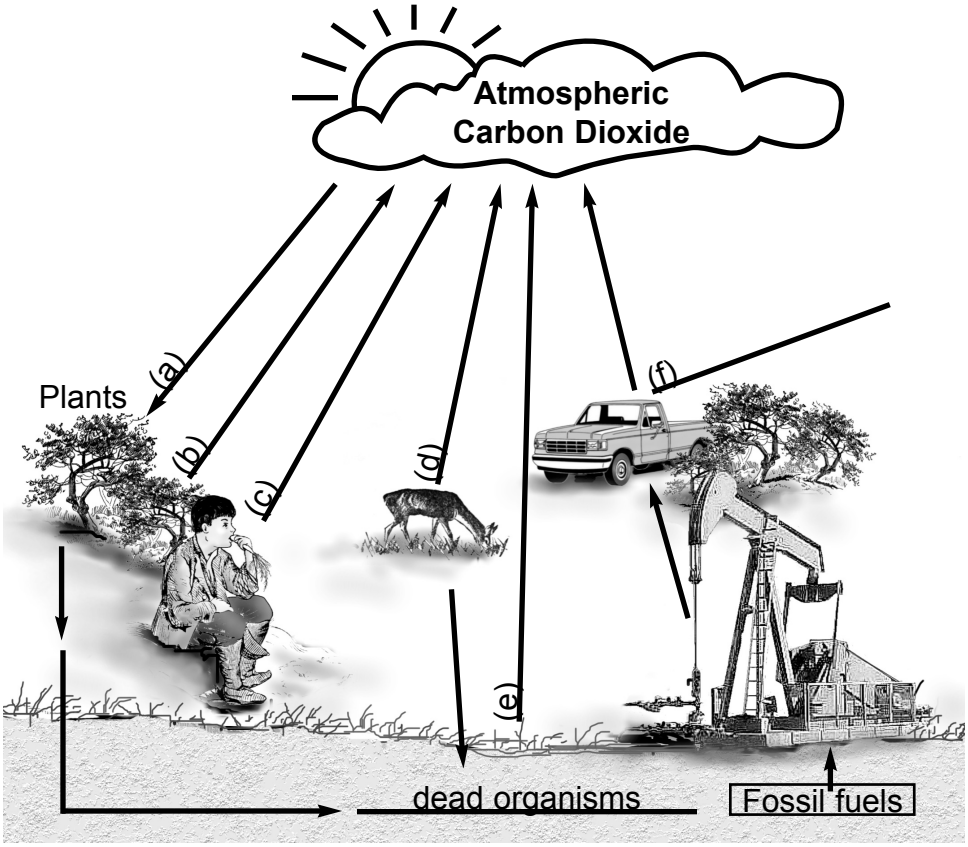
32. The reader can **conclude** that the complimentary processes of _____ and _____ are designed to recycle oxygen and carbon dioxide in a way that is beneficial to both _____ and _____.

33. What other factors release carbon dioxide into the air? _____, _____

34. **Review**. Use the words in the word bank to **label the diagram** of the Carbon Cycle below. One word is used more than once.

WORD BANK

condensation	decomposition
combustion	respiration
photosynthesis	



35. The carbon cycle is balanced when: _____ _____.

(a) nitrogen is released into the air
(b) compounds are formed
(c) the amount of carbon dioxide used equals the amount of carbon dioxide produced
(d) the process of respiration is complete

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36. Humans offset the balance of the carbon cycle **mainly** by: _____
_____.
(a) using gasoline and burning fossil fuels
(b) polluting the air
(c) releasing more carbon dioxide into the air than is being used
(d) using machines

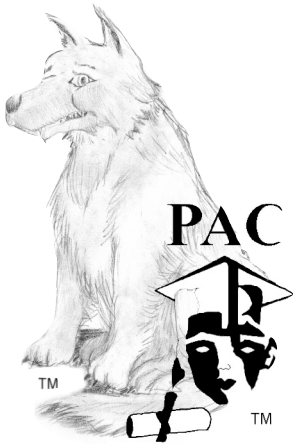
37. Ways to reduce air ***pollution*** are to use more efficient combustion _____ and _____ and to develop _____ transportation.

38. _____ invented a "clean air machine" to combat factory ***emissions***.

39. In the story, which cycle did your grandfather help promote? _____

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

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ACTIVITIES
Lesson 4:
Meteorology

Limiting Factors

You are making progress! ***Answer the following questions. Fill in the blanks 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. At Mr. Allen's place, you and your grandfather completed what task as part of the new business? _____
   (a) trimming hedges (b) cutting grass (c) mulching leaves (d) watering the lawn
2. You discovered that Mr. Allen's bushes and lawn needed: _____.
   (a) mulching (b) more fertilizer (c) more trimming (d) more water
3. All living things need _____ to survive.
4. Water covers _____ of the Earth's surface.
5. _____ percent of the water on Earth is fresh. The rest of the water is either _____ or is _____.
6. Most of the water received by plants is in the form of _____.
7. The amount of rainfall influences the types of plants that can _____ in an area.
8. Other factors influencing the survival rate of plants include _____ and sunlight.
9. A _____ is any condition that influences the growth or survival of a species.
10. ***Limiting factors*** include: _____.
    (a) flowers, shade, organisms, energy and nutrients
    (b) evaporation, transpiration, precipitation and absorption
    (c) environment, pollution, living things, saltwater and freshwater
    (d) temperature, wind, chemicals, light, water and pollution
11. Plants receive energy from: _____.
    (a) glucose and carbon dioxide (c) sunlight and nutrients
    (b) water and other organisms (d) rainfall and decay
12. Through the process of photosynthesis: _____.
    (a) glucose is converted into energy
    (b) sunlight converts nutrients into food
    (c) energy is grown and developed
    (d) plants learn to survive

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13. How do people and animals benefit from glucose? _____
_____
(a) Glucose boosts the immune system.
(b) Glucose produces energy that can be used for survival.
(c) Glucose produces protein that helps organisms grow.
(d) Glucose balances carbon dioxide in the lungs.

14. The movement of water through an ecosystem is called the _____.

15. How does the temperature of the atmosphere affect the form of water? _____
_____
(a) The temperature is cooled by more water in the atmosphere.
(b) The temperature does not usually affect the form of water.
(c) The temperature of the atmosphere will determine whether water is in the form of a gas, a liquid or solid.
(d) The atmosphere keeps water from flooding the Earth.

16. Water in a lake is: _____.
(a) gas (b) liquid (c) solid (d) none of these

17. Water vapor that ***evaporates*** from a lake is: _____.
(a) gas (b) liquid (c) solid (d) none of these

18. Evaporation is water in the form of: _____.
(a) solid (b) liquid (c) gas (d) only a and b (e) only b and c

19. Water that rises from lakes, rivers or oceans is called: _____.
(a) evaporation (b) condensation (c) precipitation (d) transpiration

20. Water that changes from gas to droplets is called: _____.
(a) evaporation (b) condensation (c) precipitation (d) transpiration

21. Condensation is water in the form of: _____.
(a) solid (b) liquid (c) gas (d) only a and b (e) only b and c

22. Precipitation is water in the form of: _____.
(a) solid (b) liquid (c) gas (d) only a and b (e) only b and c

23. Hail, sleet or snow that falls from the sky is: _____.
(a) gas (b) liquid (c) solid (d) all of these

24. Water that falls as rain from the sky is: _____.
(a) gas (b) liquid (c) solid (d) none of these

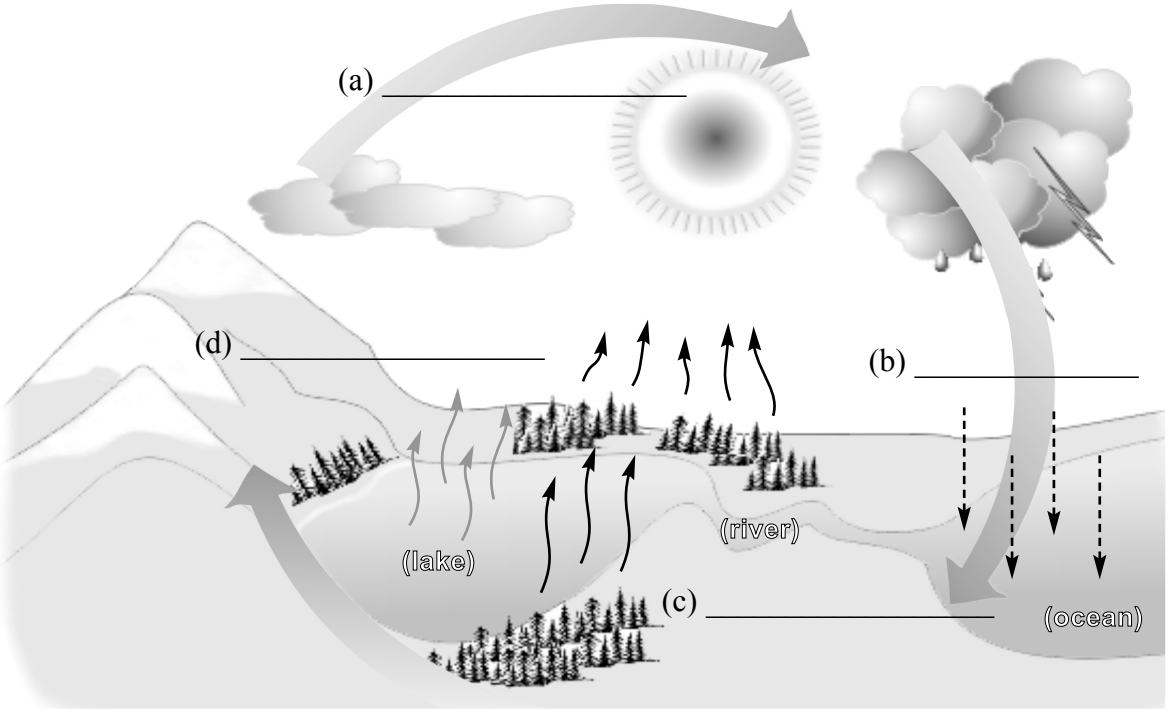
25. Water that falls as rain, sleet, snow or hail is called: _____.
(a) evaporation (b) condensation (c) precipitation (d) transpiration

26. Water that rises from trees and plants is called: _____.
(a) evaporation (b) condensation (c) precipitation (d) transpiration

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27. Transpiration is water in the form of: _____.
(a) solid (b) liquid (c) gas (d) only a and b (e) only b and c

28. Refer to the Water Cycle illustration in the text. **Label** each blank in the diagram below as "evaporation," "condensation," "precipitation" or "transpiration."



29. Dams and ***levees*** _____ and _____ water and affect the _____ rate of water and the _____ of water into the ground.

30. Mr. Allen would not allow you to go into the _____.

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

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Use the following table to answer questions #32-35. Write the corresponding letter(s) on the blanks provided.

Sunlight Conditions	Plant
needs shady area	Impatiens
sunny to partly sunny area	Petunias
full sunlight	Zinnias
full sunlight	Geraniums

32. Which plant(s) need to receive full sunlight? _____
(a) Impatiens (b) Petunias (c) Zinnias (d) Geraniums

33. What plant(s) need to be planted in shady areas?_____
(a) Impatiens (b) Petunias (c) Zinnias (d) Geraniums

34. What plant(s) need to be planted in sunny to partly sunny areas? _____
(a) Impatiens (b) Petunias (c) Zinnias (d) Geraniums

35. Which plant(s) require the same amount of sunlight? _____
(a) Petunias (b) Impatiens (c) Zinnias (d) Geraniums

Use the following table to answer questions #36-39.

FLOWER	SUNLIGHT	BLOOMS	HEIGHT
Silver Mum	sunny	Oct. - Nov.	10 - 12 inches
Larkspur	sunny	June - July	3 - 6 feet
Plantain Lily	semi-shade or sunny	June - Sept.	12 - 32 inches
Summer Phlox	sunny	July - Sept.	24 - 36 inches
Pincushion	semi-sunny to sunny	May - Oct.	12 - 18 inches

36. Which flower needs some shade? _____
(a) Silver Mum (b) Larkspur (c) Plantain Lily (d) Summer Phlox

37. Which flower can grow the tallest? _____
(a) Silver Mum (b) Larkspur (c) Plantain Lily (d) Summer Phlox

38. If you want a flower that would bloom in the fall, which should you choose? _____
(a) Silver Mum (b) Larkspur (c) Plantain Lily (d) Summer Phlox

39. Which flower is the shortest? _____
(a) Silver Mum (b) Larkspur (c) Plantain Lily (d) Summer Phlox

Congratulations! You have finished Lesson 4 Activities. Score your work.

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ACTIVITIES
Lesson 5:
Geology

Erosion

You are making progress! ***Answer the following questions. Fill in the blanks 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. You observed _____ taking place in Mr. Allen's yard.
   (a) a secret meeting (b) worms destroying the plants (c) erosion (d) drought

2. _____, _____, _____ and _____ are agents of erosion.

3. Heavy rain in a dry area with exposed soil can cause masses of wet, heavy material to slide downhill. This is called a: _____.
   (a) tornado (b) delta (c) mud slide (d) flood

4. _____ gradually reshapes valleys and hills as soil is moved around.
   (a) Deltas (b) Erosion (c) Gravity (d) Mud slides

5. _____ is the force that causes rocks and mud to move downhill.
   (a) Gravity (b) Electricity (c) Magnetic attraction (d) Sediment

6. What is ***sediment***? _____
   (a) a large rainfall (b) a glacier (c) deposits of loose material (d) large rocks

7. If you observed a dry, V-shaped valley, you might **conclude** that a _____ was once present there.
   (a) glacier (b) mud slide (c) river (d) meander

8. What are ***meanders***? _____
   (a) curves in glaciers (c) curves and bends in a river
   (b) large rocks (d) deposits from mud slides

9. ***Sediment*** is usually deposited: _____.
   (a) where the river slows (c) where meanders occur
   (b) where the river gains speed (d) around the outer edge of the slope

10. Mineral rich sediment is deposited in: _____.
    (a) a delta (b) fertile farmland (c) a bay or lake (d) a glacier

11. Large masses of slow-moving ice and snow are called _____.

12. ***Glaciers*** are found near the Earth's _____ regions and in some _____ regions.

13. Glaciers contain up to 85 percent of the world's fresh _____.

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14. As glaciers _____, rivers and lakes form.

15. As glaciers move, they displace tons of sediment, leaving behind valleys and _____ _____.

16. _____ occurs when rapidly moving air displaces clay, ***silt***, sand and other loose sediments.

17. Erosion occurs easily in areas without _____ to hold the soil in place.

18. Erosion occurs easily during ***drought*** because: _____ _____.
    (a) too much rain falls and washes away the soil
    (b) wild deer and other animals eat all the plants, leaving the soil exposed
    (c) humans cut down trees and erect buildings on good soil
    (d) when soil becomes very dry, plants dry up and die; then, the wind can erode the soil

19. ***Dunes*** usually do not change shape with the wind. _____ (a) True or (b) False

Match #20-23:

20. _____ silt	(a) lack of rain
21. _____ drought	(b) a mound of dry shifting sand
22. _____ dune	(c) mud
23. _____ sandblasting	(d) particles grinding away what they hit

24. The Dust Bowl occurred because of which elements? Circle all letters below that apply.
    (a) Continuous farming depleted nutrients and minerals in the soil.
    (b) Farmers made pottery from dust.
    (c) The crops that the farmers grew did not replace nitrogen in the soil.
    (d) The soil became infertile and could not sustain any crops.
    (e) The soil became too thick and suffocated plants.
    (f) When the plants died, no roots remained to hold the soil in place.
    (g) Severe drought turned the exposed soil to dust that blew away.
    (h) Too many wagon trains cut ruts in the fields.
    (i) When rain fell, the dusty topsoil washed away.

25. Erosion occurs naturally and with the help of humans. _____ (a) True or (b) False

26. Which statement explains the **cause and effect** of erosion and lack of vegetation in an area that receives rainfall? _____ _____
    (a) In an area that receives rainfall, the vegetation may drown and decay, in which case, the soil would rot and erode.
    (b) Much rainfall causes vegetation to grow; however, too many plants can erode soil.
    (c) An area that has little or no vegetation cannot absorb water or rainfall. Instead of absorbing into the ground, the water runs downhill and erodes the soil.
    (d) Erosion will occur, regardless or rainfall and the amount of vegetation.

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27. Which statement explains the **cause and effect** of erosion and planting vegetation? _____

_____

(a) By digging in the soil to plant vegetation, you produce pores in the soil that connect to allow water to pass, thus reducing the possibility of erosion.
(b) By planting vegetation, a person may reduce erosion, because the roots hold soil together and absorb water.
(c) Vegetation absorbs all of the rainfall, thus protecting the ground from becoming wet.
(d) Planting vegetation around your home prevents your home from becoming too warm in the summer, because the plants absorb the excess sunlight.

28. Building a _____ or _____ will help slow the effects of erosion.

29. A _____ is a broad, step-like cut made into the side of a slope and often hedged with wood or rocks.

30. Which statement explains the benefits of building terraces in your garden or yard? _____

_____

(a) When water flows onto a terrace, the stream is slowed down and is less likely to erode the soil.
(b) Building terraces provides the physical exercise that you may not otherwise receive.
(c) Terraces are excellent landscaping techniques that increase the monetary value of your property.
(d) Terraces enable vegetation to receive direct sunlight and moisture.

31. Retaining walls are often built of _____, _____, _____ or _____ and slow down the natural process of _____.

32. _____ and _____ are part of a cycle that reshapes the Earth.

33. Humans can prevent erosion through _____ projects.

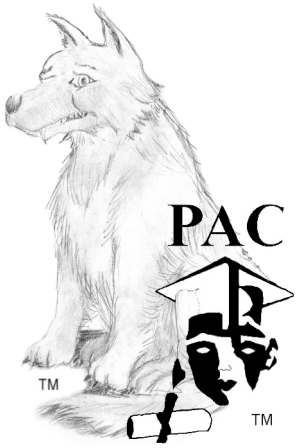
34. In the story, Mr. Allen gave permission for you to: _____.
(a) terrace the yard
(b) allow natural erosion to wash away the soil
(c) listen to the conversation
(d) plant a flower bed

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

Note: Ask your teacher for the quiz over topics 1-5 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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ACTIVITIES
Lesson 6:
Health

Fuel for the Body

You are making progress! ***Answer the following questions. Fill in the blanks 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. After talking with Mr. Allen about terracing his yard, you: _____
   _____.
   (a) started the project immediately
   (b) were dismissed until the next day
   (c) spent some time with Rondarius
   (d) applied for a job at a grocery store

2. **Effect:** Food impacts the _____ of life, be**cause** _____ food supplies necessary nutrients.

3. ***Nutrients*** are substances in food that the body needs to _____ properly.

4. Your body needs nutrients to help it _____, _____ itself and supply its _____.

5. **Compare.** How is food for your body like gasoline for a lawn mower? Place an "X" beside all that apply.
   _____ Both supply energy to perform.
   _____ Both recycle specific fuel to function properly.
   _____ Both use the same kind of fuel.
   _____ Both require the same maintenance.

6. In paragraph six, in what three ways are nutrients essential for your body? They:
   (a) provide _____;
   (b) _____, _____ and _____ body tissues;
   (c) _____ body processes

7. The six main categories of nutrients are: _____, _____, _____, _____, _____, _____.

8. In paragraph # 7 of your text, carbohydrates are of two basic kinds: _____ and _____.

9. Honey, sugar and fruits are sources of _____ carbohydrates.

10. Unrefined grains, vegetables and legumes are sources of _____ carbohydrates.

11. Some fats such as margarine and shortening are _____ for a person's health.

12. Some fats such as found in butter, olives and nuts are _____ for one's health.

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13. Proteins supply nine _____ amino acids which are those not produced by your body.

14. Proteins can come from both _____ and _____ sources.

15. Some vitamins are _____ (A, D, E, K) and some are _____ (B, C).

16. The reader can **conclude** that the human body needs more of the _____ classification of minerals and less of the _____ classification.

Use the following table to answer questions #17-23.

NUTRIENTS	FUNCTION	FOOD SOURCE
Carbohydrates simple complex	supply energy	fruits, honey, sugar whole grains, vegetables, legumes, nuts, seeds
Fats good bad	provide essential fatty acids, carry fat-soluble vitamins, serve as body insulation, serve as stored energy	butter, avocados, oil (olive, coconut), fish margarine, animal fat, shortening
Proteins animal plant	provide essential amino acids; build and maintain body tissues	fish, meat, poultry, eggs, milk, cheese, yogurt nuts, seeds, legume/grain combination
Vitamins fat-soluble water soluble	regulate many vital body processes; enhance the ***metabolism*** of other nutrients	fruits, vegetables, nuts whole grains
Minerals major trace	build strong bones and teeth	dairy products, fruit, vegetables, herbs

17. Which nutrient builds and maintains body tissues? _____
(a) carbohydrates (b) fats (c) proteins (d) vitamins

18. Which nutrient is the preferred source for supplying energy? _____
(a) carbohydrates (b) fats (c) proteins (d) vitamins

19. Which nutrient builds strong bones and teeth? _____
(a) carbohydrates (b) minerals (c) fats (d) proteins

20. Which nutrient carries fat-soluble vitamins and is in butter, oils, cheese, other dairy products and nuts? _____
(a) simple carbohydrates (b) proteins (c) good fats (d) vitamins

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21. Which nutrient is mainly in fruits, vegetables and nuts and regulates many body processes? _____
(a) minerals (b) proteins (c) fats (d) vitamins

22. Which nutrient is in whole grains, vegetables, legumes and nuts? _____
(a) complex carbohydrates (b) good fats (c) proteins (d) minerals

23. Which nutrient is mainly in fish, meat, poultry, eggs, milk, cheese, yogurt and nuts? _____
(a) carbohydrates (b) fats (c) proteins (d) minerals

Use the following table to answer questions #24-26.

Fat-Soluble Vitamins	Water-Soluble Vitamins
A, D, E, K	C and the B-complex
stored in the body	not stored in the body

24. Which vitamins are stored in the body? _____
(a) Fat-soluble (b) Water-soluble (c) B-complex (d) none of these

25. Why should you eat foods high in vitamin C and the B-complex vitamins each day? _____
(a) They are stored in the body. (c) They are ***inorganic***.
(b) They are not stored in the body. (d) They assist with digestion.

26. What type of solubility does vitamin D have? _____
(a) It is a fat-soluble vitamin. (c) It has the same solubility as vitamin C.
(b) It is a water-soluble vitamin. (d) all of these

Matching (#27-30):

27. _____ part of human body that is water — (a) 6-8 glasses
28. _____ that which water carries to the cells — (b) waste products
29. _____ that which water transports out of the cells — (c) 2/3
30. _____ how much water you should drink daily — (d) nutrients

31. While at the grocery store with Rondarius, you thought you saw: _____.
(a) Mr. Allen (c) an associate of Mr. Allen
(b) Rondarius' mother (d) none of these

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

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ACTIVITIES
Lesson 7:
Health

Food Pyramid

You are making progress! ***Answer the following questions. Fill in the blanks 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, you: _____.
   (a) caught Mr. Allen in a suspicious act
   (b) began terracing the yard
   (c) discussed his ideas with Mr. Allen
   (d) researched plants and designed a plan

2. The food pyramid provides how many main categories of recommended nutrition?
   _____

3. List the contents of the main categories in the Food Guide Pyramid from top to bottom:
   (a) _____,
   (b) _____,
   (c) _____,
   (d) _____,
   (e) _____,
   (f) _____.

Use the Food Pyramid illustration in your text (or in this activity) to answer questions #4-8.

4. How many servings are recommended from the Bread, Cereal, Rice (Grains) Group for each day? _____
   (a) 2-4 (b) 3-5 (c) 2-3 (d) 6-11

5. How many servings are recommended from the Vegetables Group each day? _____
   (a) 2-4 (b) 3-5 (c) 2-3 (d) 6-11

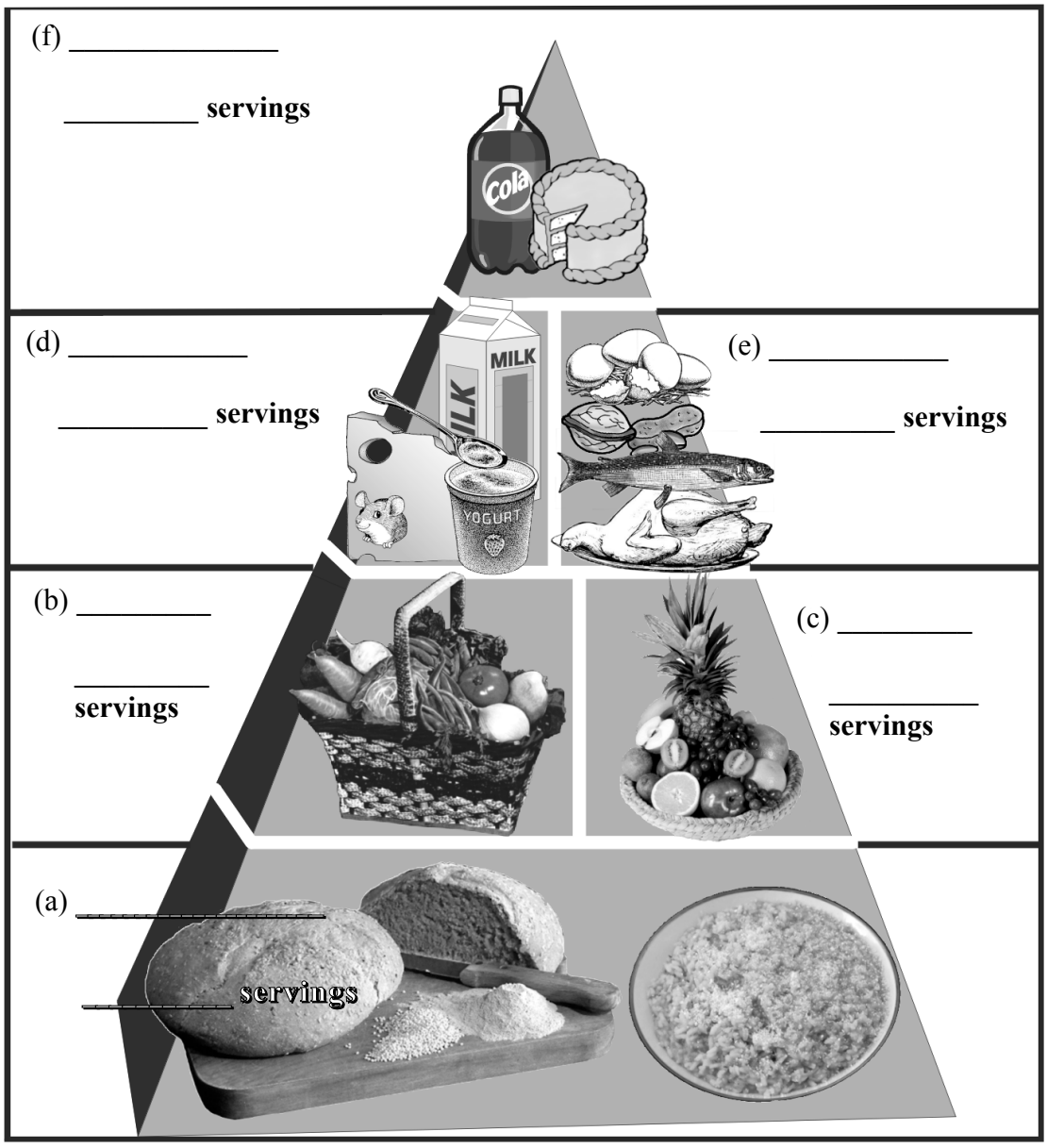
6. What is included within the Meat Group? _____
   (a) bread, cereal, rice, pasta
   (b) vegetables
   (c) cheese
   (d) poultry, fish, dry beans, eggs, nuts

7. What group includes yogurt? _____
   (a) Bread (b) Vegetables (c) Milk (d) Meat

8. How many servings are recommended from the Milk Group each day? _____
   (a) 6-11 (b) 3-5 (c) 2-3 (d) 2-4

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9. Label the Food Guide Pyramid and the amount of servings for each category.



For questions #10-12, calculate the percentages of each food group by adding together the maximum amounts of servings in each category, then divide by each specific maximum serving amount. Your answer in each case will be a decimal. By moving the decimal point 2 places to the right, you will have the percent.

10. Grains account for what percentage of the entire food pyramid? _____

(a) approximately 10%
(b) approximately 20%
(c) approximately 30%
(d) approximately 40%

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11. What percentage of the food pyramid is fruits and vegetables combined? _____
    (a) approximately 15% (c) approximately 35%
    (b) approximately 25% (d) approximately 45%

12. What percentage of the food pyramid is meats and other proteins? _____
    (a) approximately 8% (c) approximately 16%
    (b) approximately 12% (d) approximately 20%

Match #13-15.

13. _____ Citrus fruits (a) good source of carbohydrates
14. _____ Potatoes (b) good source of vitamin C
15. _____ Dark green or yellow vegetables (c) good source of vitamin A

16. Food from the fats, oils and sweets category contain _____ nutrients.
    (a) few (c) calcium
    (b) vitamins A, B, C and D (d) only b and c

17. Sweets provide more _____ than anything else.
    (a) vitamins (b) minerals (c) proteins (d) calories

18. The reader can **conclude** that we should eat most from the bottom layers of the pyramid and least from the top layers. (a) True or (b) False

19. Number the food groups in **chronological order** of recommended eating amounts.
    _____ fruits, vegetables
    _____ fats, sweets
    _____ meat, dairy products
    _____ whole grain products

Finding similarities and differences across texts. Match the food groups of the food pyramid with the nutrient groups found in lesson six, paragraphs 6-12.

20. _____ carbohydrates (a) meat, milk, eggs, nuts, grain/legume mixtures
21. _____ fats (b) butter, cheese, fatty meats, oils
22. _____ proteins (c) fruits, vegetables, whole grains
23. _____ vitamins (d) mostly in plant foods, dairy products
24. _____ minerals (e) mostly in fruits, vegetables
25. _____ water (f) especially high in bright and dark colored fruits and vegetables

26. ***Obesity*** can be promoted by frequently eating: _____.
    (a) green and yellow vegetables (c) fried foods
    (b) potatoes (d) milk products

27. Studies show that most snacks eaten by teenagers are healthy choices. _____
    (a) True or (b) False

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28. Which statement explains the benefits of eating vegetables that contain high amounts of vitamin A? _____
    (a) Vegetables high in vitamin A keep you regular.
    (b) Vegetables high in vitamin A promote healthy, smooth skin and good eyesight.
    (c) Vegetables high in vitamin A promote diabetes.
    (d) Vegetables high in vitamin A build strong bones and teeth.

29. The disadvantages of eating products that contain much sugar and salt are: _____
    _____.
    (a) you will be healthy physically and mentally; you will have a strong immune system
    (b) sugar and salt, in any amount, will cause permanent disability
    (c) too much sugar can promote tooth decay, sugar diabetes and obesity; too much sodium can increase the risk of high blood sugar and heart problems
    (d) sugar decreases the risk of heart problems; salt can decrease the risk of strokes

30. Be**cause** of a _____, (**effect:**) Frederick Jones invented a refrigeration system to insure fresh delivery of perishable foods.
    (a) challenge from other scientists (c) problem that caused food to spoil
    (b) need for money (d) shortage of truck drivers

31. Most people face difficulty in: _____.
    (a) finding healthy foods at grocery stores (c) inventing machines
    (b) developing healthy eating patterns (d) eating breakfast

32. Possibly, the most important meal of the day is: _____.
    (a) breakfast (b) lunch (c) supper (d) midnight snack

33. What did you see through the window of the toolshed? _____
    _____
    (a) a boat with an outboard motor
    (b) Mr. Allen and another man talking
    (c) the van that was at the store earlier
    (d) stacks of boxes and a large machine covered with cloth

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

Congratulations! You have completed another lesson.
Continue working diligently.

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ACTIVITIES
Lesson 8:
Geology

Rock Cycle

You are making progress! ***Answer the following questions. Fill in the blanks 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, you: _____
_____.
   (a) dug up rocks in the flower bed to use in the terracing
   (b) purchased rocks and had them delivered to Mr. Allen's home
   (c) researched the cycle of rocks and what type would best help plants grow
   (d) moved rocks from behind the toolshed and found fragments of ten-dollar bills

2. Rocks are mixtures of one or more elements. _____ (a) True or (b) False

3. Each rock has its own chemical composition and can differ in texture and hardness.
_____ (a) True or (b) False

4. The three classifications of rocks are _____, _____ and _____.

5. The **main contrast** (difference) between *intrusive* and *extrusive* rocks is: _____
_____.
   (a) intrusive rocks are formed above the Earth's surface; extrusive rocks are formed below the Earth's surface
   (b) intrusive rocks are formed below the Earth's surface; extrusive rocks are formed on or above the Earth's surface
   (c) upheavals form intrusive rocks; floods form extrusive rocks
   (d) intrusive rocks are igneous; extrusive rocks are sedimentary

6. Under what circumstances would intrusive rocks be found on the Earth's surface? _____
_____
   (a) Intrusive rocks are never found on the Earth's surface.
   (b) Upheavals due to compression or tension may cause intrusive rocks to come to the surface. Erosion of topsoil can also cause intrusive rocks to be exposed.
   (c) Intrusive rocks under the Earth's surface become so hot, that the rocks work their way through the Earth's layers until the rocks reach the surface.
   (d) Extrusive rocks, under severe pressure may turn into intrusive rocks on the surface.

7. The most abundant type of rock on Earth's surface is _____ rock.

8. ***Metamorphic rock*** is formed far below the surface of the Earth. _____
   (a) True or (b) False

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9. ***Sediment*** is transported by what methods of erosion? _____, _____, _____ and _____

10. _____ is formed from small rock particles being compressed together.

11. The most common ***organic*** sedimentary rock is limestone, rich with _____.

Refer to the rock cycle illustration in the text to answer questions #12-14.

12. According to the rock cycle illustration, intense (a) _____ and _____ are required to change sedimentary rock into metamorphic rock; (b) _____ and _____ are required to change metamorphic rock into igneous rock; (c) _____ and _____ is required to change igneous rock into sedimentary rock.

13. The rock cycle is _____ _____.

14. Each kind of rock can become another kind under the right conditions. _____
(a) True or (b) False

15. The formation of different types of rocks depends on what three elements? _____, _____ and _____

Use the following table to answer questions #16-21.

Rock Types Chart

Rock Types	Igneous	Metamorphic	Sedimentary
How Formed	Formed when ***magma*** or ***lava*** cools on Earth's surface	Formed from rocks that have undergone change as result of intense heat and pressure deep inside the Earth	Formed from weathered tiny rock pieces that are pressed and stuck together
Examples of Rocks	Granite, Basalt Pumice	Slate, Gneiss, Marble	Sandstone, shale, Limestone

16. Which rock type is the result of erosion and weather conditions in which weathered rock particles pressed and stuck together? _____

17. Slate, gneiss and marble are examples of which rock type? _____
(a) igneous (b) metamorphic (c) sedimentary (d) magma

18. Which rock types are formed as a result of intense heat? _____ (on Earth's surface) and _____ (deep inside the Earth)

19. Which is a sample of igneous rock? _____
(a) sandstone (b) limestone (c) pumice (d) marble

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20. Sandstone and limestone are samples of which rock type? _____
(a) igneous (b) metamorphic (c) sedimentary (d) lava

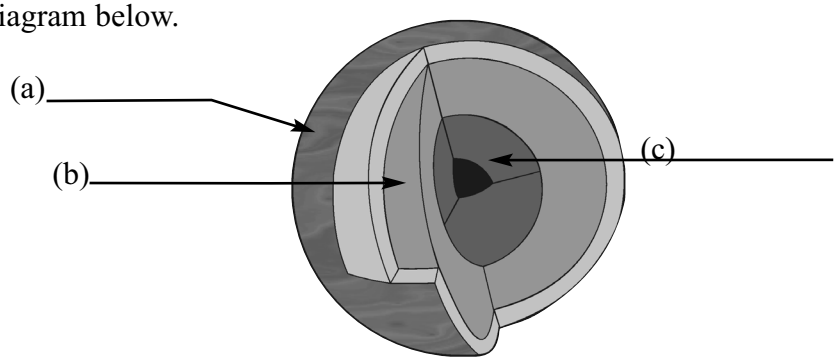
21. Basalt is an example of which rock type? _____
(a) igneous (b) metamorphic (c) sedimentary (d) lava

22. The field of _____ is the area of science in which the materials that form the Earth and the processes that act upon the Earth are studied.

23. _____ are scientists who study rocks and other materials that form the Earth's crust.

24. ***Geologists*** have concluded that Earth is composed of a _____ at its center, a _____ in the middle and the _____ on the surface.

25. Refer to the illustration of the Earth's layers in the text. Label the layers of the Earth on the diagram below.



26. What part do geologists have in drilling, blasting and building? _____
_____
(a) Geologists invented drilling, blasting and building.
(b) Most geologists supplement their incomes by drilling, blasting and building rock.
(c) Geologists have no part in drilling, blasting and building.
(d) Geologists are consulted before drilling to find oil or blasting away sections of rocks and boulders to build highways or tunnels.

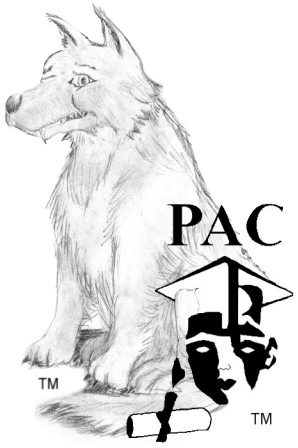
27. R. G. LeTourneau was known for all EXCEPT: _____.
(a) understanding principles of geology
(b) designing and inventing earth-moving equipment
(c) replanting trees after forest fires
(d) giving away most of his income to good causes

28. In the story, you realized that what piece of equipment would enable you to work more efficiently? _____

29. Mr. Allen returned and caught you: _____.
(a) peeking in the window (b) weeding the garden (c) landscaping

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

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ACTIVITIES
Lesson 9:
Biology

Changes

You are making progress! ***Answer the following questions. Fill in the blanks 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, you realized that: _____.
   (a) nothing would ever change at Mr. Allen's house
   (b) changes were occurring at Mr. Allen's house
   (c) changes were occurring in the community
   (d) only a and c
   (e) only b and c
   (f) none of these

2. Soil is a mixture of _____, or rock, and _____, or once-living organisms.

3. Soil is produced by the combined actions of _____, _____ and _____.

4. All soils are the same throughout a world. _____ (a) True or (b) False

5. What four components determine a soil's substance? _____, _____, _____, _____

6. The **main components** of soil are:
   (1) _____,
   (2) _____,
   (3) _____,
   (4) _____.

7. What three natural cycles affect the quality of the soil and its ability to support vegetation? _____, _____, _____

8. In which ways can humans respond positively to natural disasters such as fires, floods, plant over-crowding and animal over-population? Place an "X" next to all that apply.
   _____ (a) Humans can be careful never to contribute to any of these natural disasters.
   _____ (b) Humans can replant pine seedlings after forest fires to help prevent erosion.
   _____ (c) Humans can hunt and fish to decrease over populated animal groups.
   _____ (d) Humans can leave nature alone and not try to improve our environment.
   _____ (e) Humans can remove or thin some plants to help others grow fuller and taller.

9. Every change in the environment affects everything else in the environment in some way.
   (a) True or (b) False

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10. Be**cause** most natural changes are part of _____ cycles (**effect:**) they are connected or _____ in some way.

11. Number the stages of the food chain in **chronological order**.
    _____ animals decomposed by ***fungi*** and ***bacteria***
    _____ ***decomposers*** return nutrients to soil
    _____ plants produce food by means of solar energy
    _____ plants consumed by animals
    _____ energy from the Sun
    _____ plants use nutrients to grow

12. Soils containing a high percentage of sand are best for plant growth. _____
    (a) True or (b) False

13. A person trained in scouting fertile soil would first look for soil _____.

14. Dark soils usually contain high amounts of _____.

15. Humus contributes to the ***fertility*** of soil by all means **EXCEPT**: _____.
    _____
    (a) containing dead organic matter
    (b) making the soil less dense
    (c) making the soil more porous
    (d) making the soil more dense

16. By combining natural events and human activity, _____ can be conserved.

17. In this lesson's story, you had improved Mr. Allen's yard by: _____
    _____.
    (a) watering, mulching and planting
    (b) digging, building and mowing
    (c) trimming, pulling and researching
    (d) planning, designing and using resources

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

Keep working enthusiastically!

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ACTIVITIES
Lesson 10:
Physics

Friction

You are making progress! ***Answer the following questions. Fill in the blanks 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 policeman spoke with you and your grandfather regarding: _____
_____.
(a) a fund raiser for local law enforcement
(b) purchases with counterfeit money
(c) community service options
(d) stealing a wheelbarrow

2. What is ***friction***? _____
(a) an insulator
(b) a lubricant
(c) an electrical charge
(d) a resistant force

3. Which is an example of Newton's First Law of Motion? _____
_____
(a) An apple falling from a tree will travel downward until stopped by a surface.
(b) A student who carries a backpack over time may develop muscle aches.
(c) A bike will slow to a stop unless the rider continues to peddle.
(d) The temperature of a room may change due to sunlight.

4. What three factors determine how much friction will result from the interaction of two surfaces? _____
(a) gravity, weight and speed
(b) force, surface area and surface texture
(c) gravity, motion and surface height
(d) force, direction and work

5. Why is a heavy box harder to push across the floor than a lighter box?
_____
(a) The heavier box creates more friction between the box and the floor.
(b) The lighter box creates more friction between the box and the floor.
(c) Gravity pulls harder on the lighter box.
(d) The angle of force is greater on the lighter box.

6. How does ***surface area*** affect friction? _____
(a) Surface area does not affect friction.
(b) The surface area often changes.
(c) The greater the surface area between the objects, the greater the friction.
(d) The greater the surface area between the objects, the less friction.

7. Suppose you were asked to design a racing bike that would go faster than current models. The best choice of tires for this bike would be: _____.
(a) thin tires (b) wide tires (c) thick tires (d) smaller tires

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8. ***Surface texture*** affects friction. Which statement does **NOT** illustrate that point?
_____
(a) Rubbing a smooth window is easier than rubbing a piece of sandpaper.
(b) Sound and light travel in waves.
(c) Rough surfaces cause greater friction than smooth surfaces.
(d) Rubbing together knotty sticks is harder than rubbing together smooth toothpicks.

9. How can friction be reduced on a rough surface? _____
(a) use a lubricant (c) press harder
(b) accelerate the motion (d) widen the surface

10. How does oil affect an engine part? _____
_____
(a) Oil has no effect on an engine.
(b) Oil speeds up an engine so it will last longer.
(c) Oil slows down the engine so it will last longer.
(d) Oil allows an engine to operate with less effort and helps an engine last longer.

11. Elijah McCoy invented a _____ for steam engines.

12. From McCoy's invention was coined the phrase, "_____."

13. In which industry was McCoy's invention most useful? _____

14. Knowing the factors that control the amount of _____ can be used as an advantage when designing a system to do _____.

15. Much movement requires surface areas to be _____ and _____.

16. An example of a surface that has been reduced and smoothed to accommodate optimum movement is an _____ that has a thin, smooth blade.

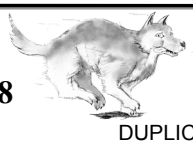
17. **Effect:** Vehicles are able to slow, stop and turn be**cause** of: _____.

18. An example of a textured surface that is wide enough to allow for quick starts, stops and turns is a _____ that has a wide, rubber surface.

19. Which statement best explains the benefits and disadvantages of friction in our daily lives?
_____
(a) Friction is good when it provides the ability to control movement. Friction is bad when it restricts the desired movement or causes systems to depreciate.
(b) Friction does not affect our daily lives.
(c) Friction allows us to move and stop when we want to.
(d) Friction is good when it causes systems to depreciate and bad when it restricts desired movement.

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

Note: Ask your teacher for the quiz over topics 6-10 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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ACTIVITIES
Lesson 11:
Physics

Work

You are making progress! ***Answer the following questions. Fill in the blanks 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, (**effect:**) you were glad the police had probably found the guilty person, be**cause** you did not want to believe Mr. Allen was a criminal. _____
   (a) True or (b) False

2. Scientifically speaking, when an object moves, _____ is being done.

3. _____ is required to move an object.

4. For ***work*** to occur, the three conditions of _____, _____ and _____ must be met.

Use the information in question #4 to answer questions #5-8.

5. Work is being done when you pick up some hedge trimmers and put them on a shelf.
   _____ (a) True or (b) False

6. Work is being done when you stand still and hold a pair of hedge trimmers.
   _____ (a) True or (b) False

7. Work is being done when you rake leaves. _____ (a) True or (b) False

8. Work is being done when you stand still and hold a rake. _____ (a) True or (b) False

9. Write the mathematical formula for Work. _____

10. In the formula for Work, *W*= _____, *F*= _____ and *d*= _____.

11. The amount of work is calculated by multiplying the _____ times the _____.

12. If force is expressed in ***newtons*** (N), and distance is expressed in meters (m), the unit for work is the _____ (_____).

13. Energy includes _____, _____ and _____ energy and _____, _____ and _____.

14. ***Energy*** can be defined as the ability to cause _____.

15. Two basic forms of energy are _____ and _____.

16. _____ energy is the energy of motion.

17. Anything that is moving is demonstrating ***kinetic energy***. _____ (a) True or (b) False

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18. ***Potential energy*** may be thought of as _____ energy—or energy not yet in motion.

19. Potential energy can be transformed into kinetic energy by _____ or _____ changes.

20. An object can have _____ energy because of the object's position above the ground.

21. The force of _____ gives objects above the ground potential energy.

22. Which energy are you demonstrating when you push a lawn mower? _____
(a) kinetic (b) potential (c) both of these (d) neither of these

23. Which energy are you demonstrating when you rake leaves? _____
(a) kinetic (b) potential (c) both of these (d) neither of these

24. What energy is demonstrated by a stretched rubber band? _____
(a) kinetic (b) potential (c) both of these (d) neither of these

25. What energy is demonstrated when a stretched rubber band is released? _____
(a) kinetic (b) potential (c) both of these (d) neither of these

26. If a ball is sitting on the ground, it is demonstrating which kind of energy? _____
(a) kinetic (b) potential (c) both of these (d) neither of these

27. A ball held in your hand, above the ground, is demonstrating which kind of energy? _____
(a) kinetic (b) potential (c) both of these (d) neither of these

28. A ball that is dropped from your hand and travels downward has _____ energy.
(a) kinetic (b) potential (c) both of these (d) neither of these

29. A ball bounced into another ball, causing the second ball to roll. What type of energy was transferred from the first ball to the second ball? _____
(a) kinetic (b) potential (c) both of these (d) neither of these

30. No energy, potential energy and kinetic energy represent: _____.
(a) comparative (similar) conditions (b) contrasting (different) conditions

31. To move an object requires _____.

32. _____ applies force, enabling objects to be moved.

33. In the story, you and your friends, Rondarius and LaKendrick: _____ _____.
(a) finally saved enough money for the ski trip
(b) spent your money and were unable to go on the ski trip
(c) partook in a counterfeiting scheme
(d) none of these

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34. At the store, what action by you may have caused the clerk to make a phone call?

_____

(a) purchasing a cap and gloves
(b) shouting at the clerk
(c) paying with a ten-dollar bill
(d) stealing a pair of skis

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

Use the Work Formula to answer questions #36-39.

Formula to Determine Amount of Work
Work = Force x distance
$W = F \times d$

36. A pair of hedge trimmers weighs 4N. You lift the trimmers 2 meters high. Calculate the amount of work:

$W = F \times d$
W = 4N x 2m
W = _____

37. You lift an object (force) that weighs 5N a distance of 1m. Determine the amount of work you did.

$W = F \times d$
W = 5N x 1m
W = _____

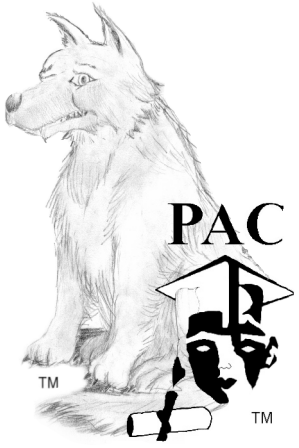
38. You lift an object (force) that weighs 2N a distance of 3m. Determine the amount of work you did.

$W = F \times d$
W = 2N x 3m
W = _____

39. You lift an object (force) that weighs 3N a distance of 4m. Determine the amount of work you did.

$W = F \times d$
W = 3N x 4m
W = _____

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ACTIVITIES
Lesson 12:
Geology



Beneath the Surface

You are making progress! ***Answer the following questions. Fill in the blanks 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. Officer Dedrick Adams met with you to: _____
_____.
(a) arrest you
(b) pay you to spy on Mr. Allen
(c) inform you that you had used counterfeit money
(d) offer you a job of landscaping the officer's yard

2. When water evaporates, it leaves behind: _____.
(a) nutrients (b) droplets (c) impurities (d) clouds

3. When water precipitates, it falls into: _____.
(a) bodies of water (b) the ground (c) both of these (d) none of these

4. Water that does not soak into the ground is called _____.

5. ***Runoff water*** flows downhill joins _____ and _____, and eventually empties into the _____.

6. Dams are built for what two reasons? _____
and _____

7. When pollutants, such as sewer and chemicals, drain into waterways: _____
_____.
(a) the water has been improved (c) the water has been purified
(b) the water has been turned to saltwater (d) the water cannot be used for humans

8. Water that soaks into the ground is called _____.

9. A ***ground water*** system under the ground is similar to a _____ above the ground.

10. _____ are spaces between fragments in the soil.

11. Be**cause** soil or rock has many connecting ***pores*** where water can seep through, (**effect:**) the soil is said to be _____.

12. The reader can **infer** that soil that is less ***permeable*** has fewer pores through which water can flow. _____ (a) True or (b) False

13. Ground water flows through connecting pores in the soil. _____
(a) True or (b) False

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14. Which statement explains the relationship between the permeability of soil and the seepage of water? _____
    (a) Impermeable soil allows water to pass quickly.
    (b) Water does not seep through soil.
    (c) The more acidic water is, the slower it will seep through rock.
    (d) The more permeable soil is, the faster water seeps into the ground.

Matching:

15. _____ light, sandy soil — (a) does not allow water to pass
16. _____ peat — (b) allows water to pass
17. _____ clay — (c) soaks up water

18. Ground water will continue to seep downward, further and further into the ground, until what two events take place? _____
    or _____

19. An ***aquifer*** is created by: _____
    _____.
    (a) ground water seeping through permeable soil
    (b) ground water seeping through impermeable soil
    (c) impermeable soil or rock stopping the ground water seepage, causing the ground water to fill the pores of the soil above the impermeable layer
    (d) a dam blocking the escape of water and creating a large pool, such as a reservoir

20. Cities not located near bodies of water or in dry areas: _____
    _____.
    (a) rely upon wells and aquifers for water
    (b) practice desalination for water
    (c) pollute the ground water and ruin it
    (d) drain water tables

21. Which statement explains the relationship between an aquifer and a water well? _____
    _____
    (a) Water wells have nothing to do with aquifers.
    (b) The deeper the well, the bigger the aquifer.
    (c) Water wells are drilled into aquifers. Water from the aquifer flows into the well and is pumped back to the top.
    (d) Aquifers are created because of water wells that are drilled, then abandoned for decades. The wells expand, creating large aquifers.

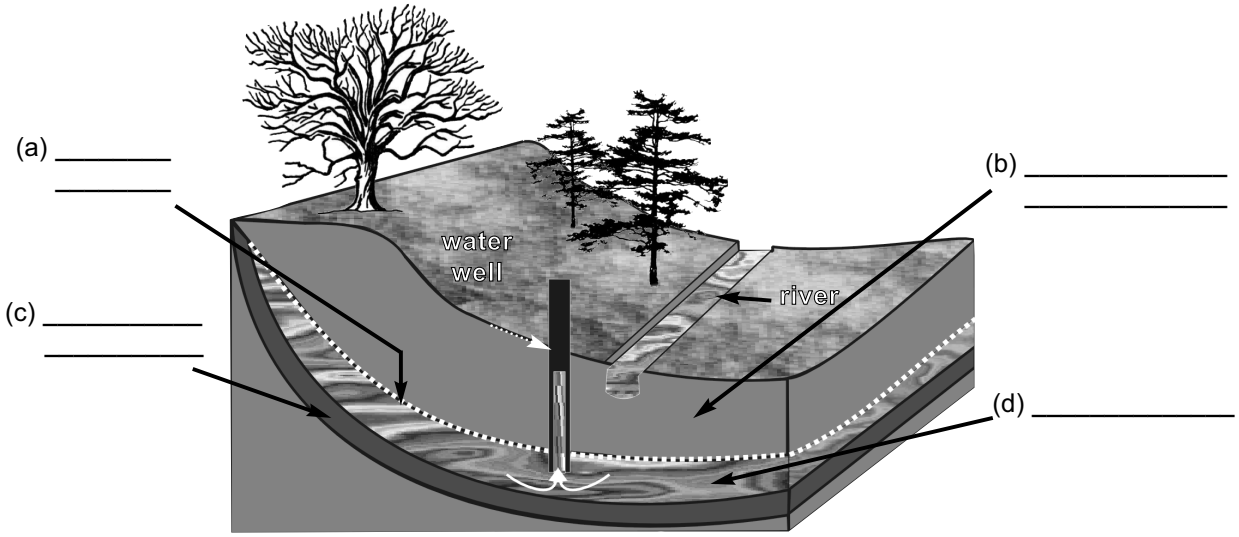
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22. In a ground water system, the water table is measured by the: _____
_____.
(a) top level of ground water in an aquifer
(b) layers of soil the water passed before forming an aquifer
(c) depth of the water in the aquifer
(d) depth of the well compared to the depth of the aquifer

23. In order for a well to be filled properly with water, the well should be drilled: _____
_____.
(a) above the water table (c) below the water table
(b) just at the water table (d) next to the water table

24. During seasons of little or no rainfall, the water table would: _____.
(a) drop (b) get higher (c) stay the same (d) interfere in well drilling

25. Refer to the illustration in your text and label the blanks of the following diagram.



26. _____ that soak into the soil in one area may poison wells miles away because the ground water could carry those contaminants.

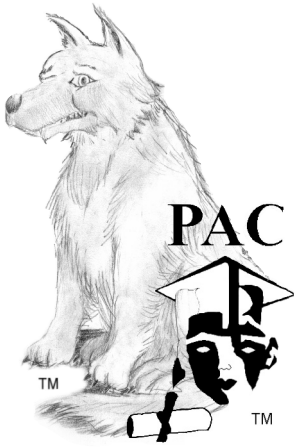
27. The process of ***desalination*** is to purify: _____.
(a) contaminated water in underground aquifers (c) well water
(b) distilled water in the atmosphere (d) saltwater

28. In the story, the reader can **conclude** that Brian was: _____.
(a) a delivery man for the grocery store (c) associated with Mr. Allan
(b) a toolshed salesman (d) none of these

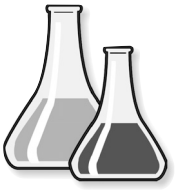
29. Write the **Life Principle:** *"* _____
_____.*"*

You have finished Lesson 12 Activities.
Score them now to ensure accuracy.

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ACTIVITIES
Lesson 13:
Chemistry

Solutions

You are making progress! ***Answer the following questions. Fill in the blanks 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, Rondarius discovered that you had _____ in your possession.
   (a) U.S. currency (c) remains of counterfeit bills
   (b) money making ink (d) ski passes

2. A ***solution*** is made of tiny particles that are evenly mixed and do not separate. _____
   (a) True or (b) False

3. In a solution, one substance seems to disappear inside the other substance._____
   (a) True or (b) False

4. Solutions can be separated by filtering the particles. _____ (a) True or (b) False

5. Inks are classified as: _____.
   (a) counterfeits (b) solutions (c) problems (d) particles

6. In a solution, the substance that dissolves inside the other is called the: _____.
   (a) solution (b) solute (c) solvent (d) ink

7. The substance into which the ***solute*** dissolves is called the: _____.
   (a) solution (b) solute (c) solvent (d) universal solvent

8. In a solution, the substance that is in the largest amount is the: _____.
   (a) solution (b) solute (c) solvent (d) universal solvent

9. _____ is considered a universal ***solvent*** because it can dissolve so many different solutes to form solutions.

10. What primary function does water have in our bodies? _____
    _____
    (a) Our bodies do not contain enough water to be concerned about.
    (b) Water carries dissolved nutrients to our cells; and waste products away from our cells.
    (c) Water intake ensures that our hair and nails grow and that our skin cells multiply.
    (d) Water assists the blood flow through our veins.

11. List at least three bodily fluids that are water solutions. _____, _____ and _____

12. Solutions can be made from _____, _____ and _____.

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13. The process of ***dissolving*** occurs when the parts of a solute _____ _____.

Refer to the chart in your text for questions #14-16.

14. Air is a gas solution made by dissolving _____ in _____.

15. Soft drinks are liquid solutions in which the gas _____ is dissolved in _____.

16. Brass is a solid solution in which _____ is dissolved in _____.

17. What three factors influence the rate at which a substance dissolves is made? _____, _____ and _____

Matching: Refer back and forth between paragraphs #9-11 of your text. Some questions have more than one answer.

18. _____, _____ gas in liquid
19. _____ sugar in hot water
20. _____, _____ spoonful of loose sugar in liquid
21. _____ sugar cube

(a) will dissolve faster by stirring or shaking
(b) will dissolve faster than in cold water
(c) has large surface area and will dissolve faster
(d) has small surface area and will dissolve slower
(e) will dissolve faster if not shaken
(f) will dissolve faster in cool temperature

Match the effects with their causes for #22-24.

22. _____ **diluted** solution
23. _____ **concentrated** solution
24. _____ **saturated** solution

(a) a large amount of solute is dissolved in a small amount of solvent
(b) the solvent cannot dissolve any more solute
(c) a small amount of solute is dissolved in a large amount of solvent

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

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ACTIVITIES
Lesson 14:
Health

Pressure

You are making progress! ***Answer the following questions. Fill in the blanks 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, you and your friends: _____
_____.
   (a) enjoyed the ski trip and returned home safely
   (b) got lost in the woods and nearly froze
   (c) were carjacked at gun point and forced to give your van to the robbers
   (d) were kidnapped and dumped in the woods to die

2. Place an "X" beside what the cells in your brain and body do during trauma.
   _____ shut down and go into shock
   _____ rush to organize and develop a survival plan
   _____ cause a lack of coordination
   _____ adjust automatically to help keep you alive

3. The brain is protected by the _____ and the fluid between them.

4. A _____ is a temporary disturbance of the brain's ability to function.

5. A ***concussion*** can cause a loss of _____ of events just before and after the injury.

6. During an emergency, the first decision should be: _____.
   (a) to determine where the victim lives
   (b) to determine how the victim got hurt
   (c) whether or not to move the victim
   (d) whether or not the victim has a fever

7. The second decision should be to determine if the victim is: _____.
   (a) breathing (b) bleeding (c) safe where he is (d) conscious

8. If the victim is not breathing, what is the best way to open an airway? _____
_____
   (a) Turn the victim on his side.
   (b) Tilt back the victim's head and lift the chin.
   (c) Slap the victim on the back.
   (d) Elevate the victim's legs.

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9. If the victim is bleeding, the most effective way to stop the flow of blood is by: _____
_____.
(a) turning the victim on his side
(b) applying direct pressure to the wound
(c) raising the victim's head
(d) rinsing the wound with warm water

10. If blood soaks through the cloth: _____
_____.
(a) add additional layers of cloth over the first
(b) pull off the original cloth
(c) rinse the wound with water
(d) elevate the victim's feet

Match #11-13:

11. _____ spurting bright red blood — (a) injury to a ***vein***
12. _____ steadily flowing dark red blood — (b) method to stop bleeding
13. _____ pressure-point technique — (c) injury to an ***artery***

14. The femoral artery is found in the: _____.
(a) thigh (b) upper arm (c) head (d) chest

15. The brachial artery is found in the: _____.
(a) thigh (b) upper arm (c) head (d) chest

16. The skin performs several functions to protect the internal tissues and organs of your body. _____ (a) True or (b) False

17. If the internal temperature of the body drops, circulation to the blood vessels in the skin speeds up, sweating increases, and body heat is released.
_____ (a) True or (b) False

18. Nerve endings in the skin are responsive to many things including pain, pressure and changes in temperature. _____ (a) True or (b) False

19. In the story, you and your friends: _____
_____.
(a) recovered from the fall, took stock of your resources and planned a solution
(b) remained incapacitated, panicked and wandered farther away
(c) found footprints leading from the site and followed the prints to safety
(d) were rescued by a friendly neighbor

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

You are becoming a scholar! Continue to the next lesson.

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Temperature

ACTIVITIES
Lesson 15:
Physics

You are making progress! ***Answer the following questions. Fill in the blanks 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, you and your friends took refuge _____ to avoid the wind.
   (a) in a corral for horses (c) deep in the forest
   (b) behind a group of boulders (d) in an abandoned shack

2. What term is used to indicate the measurement of heat? _____
   (a) scale (b) temperature (c) degree (d) motion

Use the following table to answer questions #3-8.

Measure/Scale Chart

	Fahrenheit	**Celsius**	**Kelvin**
Boiling	212°	100°	373°
Freezing	32°	0°	273°
Absolute Zero	-459°	-273°	0°

3. What scale indicates that water boils at 373 degrees? _____
   (a) Fahrenheit (b) Celsius (c) Kelvin

4. What scale indicates that water boils at 212 degrees? _____
   (a) Fahrenheit (b) Celsius (c) Kelvin

5. What scale indicates that water freezes at 0 degrees? _____
   (a) Fahrenheit (b) Celsius (c) Kelvin

6. What scale indicates that water freezes at 32 degrees? _____
   (a) Fahrenheit (b) Celsius (c) Kelvin

7. On the ***Fahrenheit*** scale, at what temperature does water boil? _____
   (a) 212 degrees (b) 100 degrees (c) 373 degrees (d) -459 degrees

8. On the ***Kelvin*** scale, what temperature is absolute zero? _____
   (a) -459 degrees (b) -273 degrees (c) 0 degrees (d) 32 degrees

9. The _____ of an object can affect the temperature of the object.

10. In what direction does heat move? _____
    _____
    (a) from an area of lesser concentration to an area of greater concentration
    (b) from an area of greater concentration to an area of lesser concentration
    (c) from an area with no action to an area with action

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11. Heat is transferred in three basic ways: _____, _____ and _____

12. In the process of ***conduction***, _____ moves heat through a solid.

13. Materials that transfer heat well are called good _____.

14. Materials that do not transfer heat well are called good _____.

15. Which of the following is an example of conduction? _____
_____
(a) A heater in the corner of a room can warm a whole room.
(b) Metal pots and pans are good choices for heating food.
(c) You feel heat when you stand in the sunlight.

16. During ***convection***, heat is transferred by _____ or _____ moving in currents.

17. Which of the following is an example of convection? _____
_____
(a) A heater in the corner of a room can warm a whole room.
(b) Metal pots and pans are good choices for heating food.
(c) You feel heat when you stand in the sunlight.

18. During the process of ***radiation***, _____ transfer heat.

19. Which of the following is an example of radiation? _____
_____
(a) A heater in the corner of a room warms a whole room.
(b) Metal pots and pans are used for heating food.
(c) You feel heat when you stand in sunlight.

20. Living organisms need heat to survive. _____ (a) True or (b) False

21. Cold-blooded creatures are designed to maintain their body heat close to the heat of their environment.
_____ (a) True or (b) False

22. **Effect:** Most cold-blooded animals become sluggish in cold weather, be**cause:**
_____.

23. Humans and warm-blooded animals try to maintain a consistent body heat regardless of the environment. _____ (a) True or (b) False

24. The acceptable body ***temperature*** for humans to keep to be healthy is approximately _____ degrees F.

25. Perspiring helps raise body temperature on very cold days. _____
(a) True or (b) False

26. ***Shivering*** helps lower body temperature on very hot days. _____
(a) True or (b) False

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Matching:

27. _____ shivering
28. _____ perspiring
29. _____ heatstroke
30. _____ heat exhaustion
31. _____ hypothermia
32. _____ victim has good chance of recovering with little or no damage
33. _____ victim will recover with some damage
34. _____ victim will not survive

(a) symptoms include fatigue, dizziness, nausea or cramping due to long exposure to heat
(b) response to extreme heat and is characterized by high body temperature and disruption of perspiration function
(c) body temperature falls as a result of exposure to cold conditions
(d) lowers body temperature with the evaporation of perspiration
(e) response to a frigid environment to produce heat as muscles move involuntarily
(f) below 80 degrees F
(g) between 80-90 degrees F
(h) between 90-98 degrees F

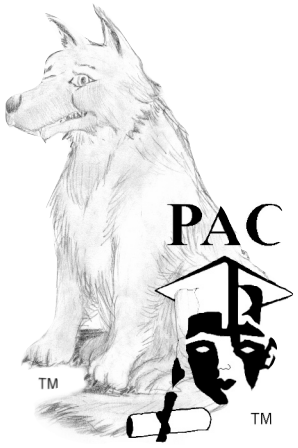
35. In the story, what message was written in the snow that led the rescuers to the right location? _____

36. 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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