End of Course Assessment Study Guide

Date:_____

1. List 3 examples of matter and 3 non-examples of matter.

EXAMPLES	NON-EXAMPLES
A. __desk_____	A. _____sunlight_____
B. __rock_____	B. _____sound_____
C. __air_____	C. ___thoughts_____

2. Fill in the chart about the states of matter of solid, liquid, and gas. Describe the movement of molecules, shape and volume of each state.

	Solid	**Liquid**	**Gas*** **
Movement of molecules	Vibrate in place	Slide past one another	Random movement
Shape	Definite shape	Takes the shape of the container	No definite shape
Volume	Definite volume	Definite volume	No definite volume

3. Identify the process that is occurring when a substances changes from a:
   Liquid to a gas __evaporation/boiling _____
   Liquid to a solid __freezing_____
   Solid to a liquid ___melting_____

4. Place a star in the chart above beside the state of matter with the fastest moving molecules.

5. List 2 examples of a physical change and 2 examples of a chemical change.

Physical Change	Chemical Change
A. folding a piece of paper	B. _striking a match_____
B. _cutting your hair____	C. heating a powder and it turns brown___

List the signs of a chemical change: change in color, release of odor, release of energy, creation of a solid or gas.

6. List 2 examples of a compound, 2 examples of an element, and 2 examples of a mixture.

Compound	Element	Mixture
A. H_2O	A. Oxygen	A. salt water
B. $C_6H_{12}O_6$	B. Hydrogen	B. soil
		Air

AIR IS A MIXTURE!!!!

7. Describe the difference between a homogenous mixture and a heterogeneous mixture.

Homogenous mixture is the same throughout such as milk or air

Heterogeneous mixture is a mixture that you can see the individual parts- taco

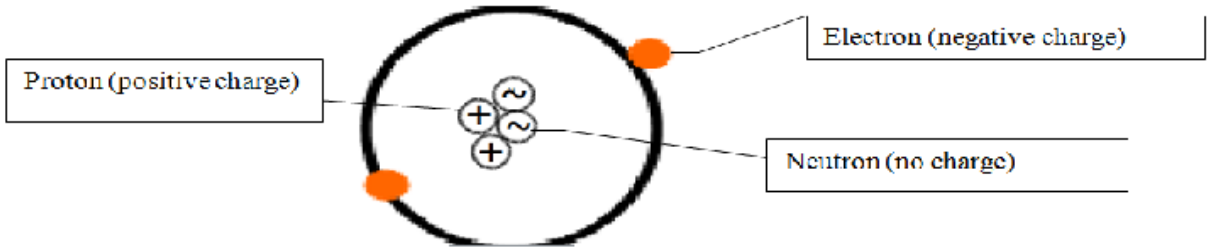
8. List 2 examples of a homogeneous mixture and 2 examples of a heterogeneous mixture.

HOMOGENEOUS	HETEROGENEOUS
A. milk	A. taco
B. lemonade	B. vegetable soup

9. When two elements combine to make a new substance this is called a compound.

10. Draw an atom, labeling the *protons*, *electrons*, *neutrons* and *nucleus*.

Protons and neutrons in the nucleus or center of the atom and electrons floating around the nucleus in the electron cloud



11. Use the block from the periodic table to answer the following questions:

Zinc
30
Zn
65.409

a. Number of neutrons__35_____
b. Number of protons __30_____
c. Number of electrons __30_____

12. Fill in the blanks below with the element name or symbol. Spelling counts!!

a. Hydrogen _H_____
b. K ___Potassium_____
c. Chlorine ___Cl_____
d. S __Sulfur_____
e. O __Oxygen_____
f. Iron __Fe_____
g. Ca ___Calcium_____

13. The formula for water is H_2O, how many atoms of **oxygen** are in one molecule of water?

__1_____

14. Compare a cirrus cloud to a cumulonimbus cloud, identifying its location in the troposphere and the weather associated with it.

_A cirrus cloud is located very high in the atmosphere and is made of ice crystals. It is wispy and white and associated with fair weather.

A cumulonimbus cloud is huge and ranges from low to very high in the sky. It is associated with thunderstorms and severe weather.

15. List the 5 layers of the atmosphere in order starting with the Earth. Star the layer that we live in.

Earth

troposphere_****_____

stratosphere_____

mesosphere_____

thermosphere_____

exosphere_____

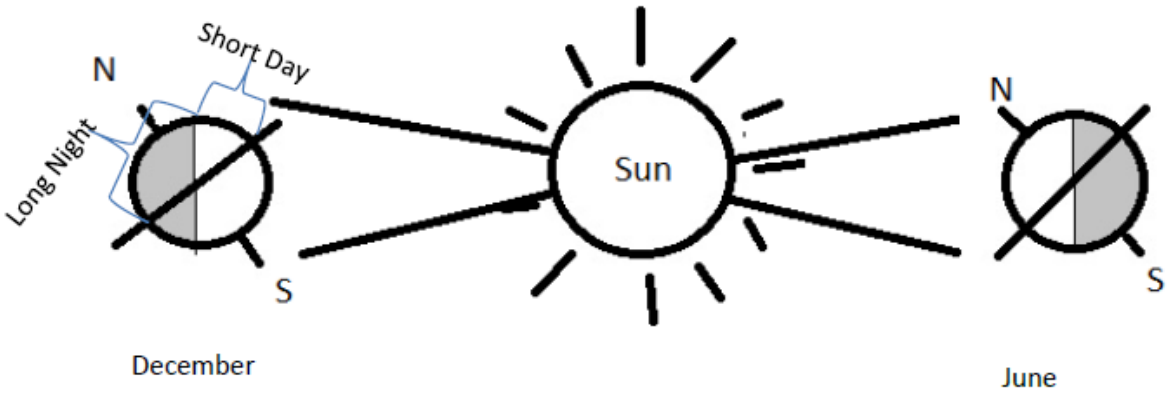
Outer space

Try Studying More Than Everyone

16. List 4 examples of severe weather and two non-examples.

EXAMPLES	NON-EXAMPLES
a. _thunderstorm_____	A. __rain_____
b. _hurricane_____	B. __snow_____
c. _hail_____	Earthquake, Tsunami, Volcanic eruption
d. _blizzard_____	

17. Why do we have seasons? Draw a picture and write an explanation.



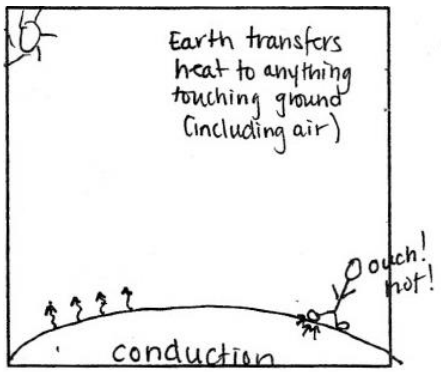
Seasons are caused by the tilt of the Earth as it rotates around the sun. During our winter the northern hemisphere is tilted away from the sun, receiving less sunlight. During our summer, the northern hemisphere is tilted towards the sun receiving more sunlight.

_____

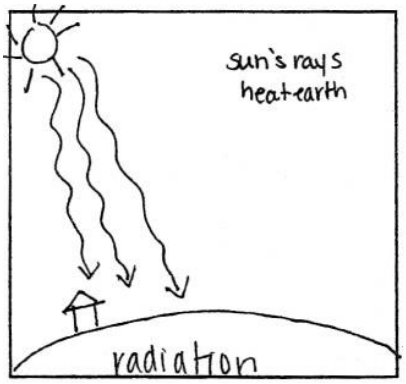
18. Why do sea and land breezes occur?

The land heats and cools more quickly than the water. The air over the water wants to move from an area of higher pressure (cooler air) to an area of lower pressure (warmer air) during the day. At night it is reversed because the land cools faster than water.

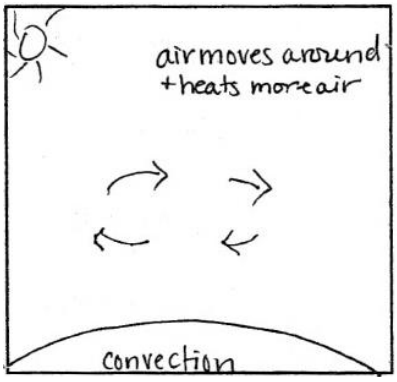
19. Draw 3 diagrams to show radiation, convection, and conduction. Write a sentence below each picture that defines each type of heat transfer.



Feet on sand is conduction
Conduction is the transfer of heat through direct contact.



Sun shining on a car is radiation
Radiation is the sun warming the earth and its surfaces with its waves of energy.



An air popper moves hot air past the kernels of popcorn to heat them up.
Convection is the circulation of heat with warm air rising and cooler air sinking.

20. There is an air conditioner in your bedroom window. Identify where the air would be the coolest (floor or ceiling) and explain your reason._

The air would be the coolest on the floor because cooler air molecules sink, as the molecules move closer together they are denser; warmer air molecules rise because they are less dense as the molecules move apart._

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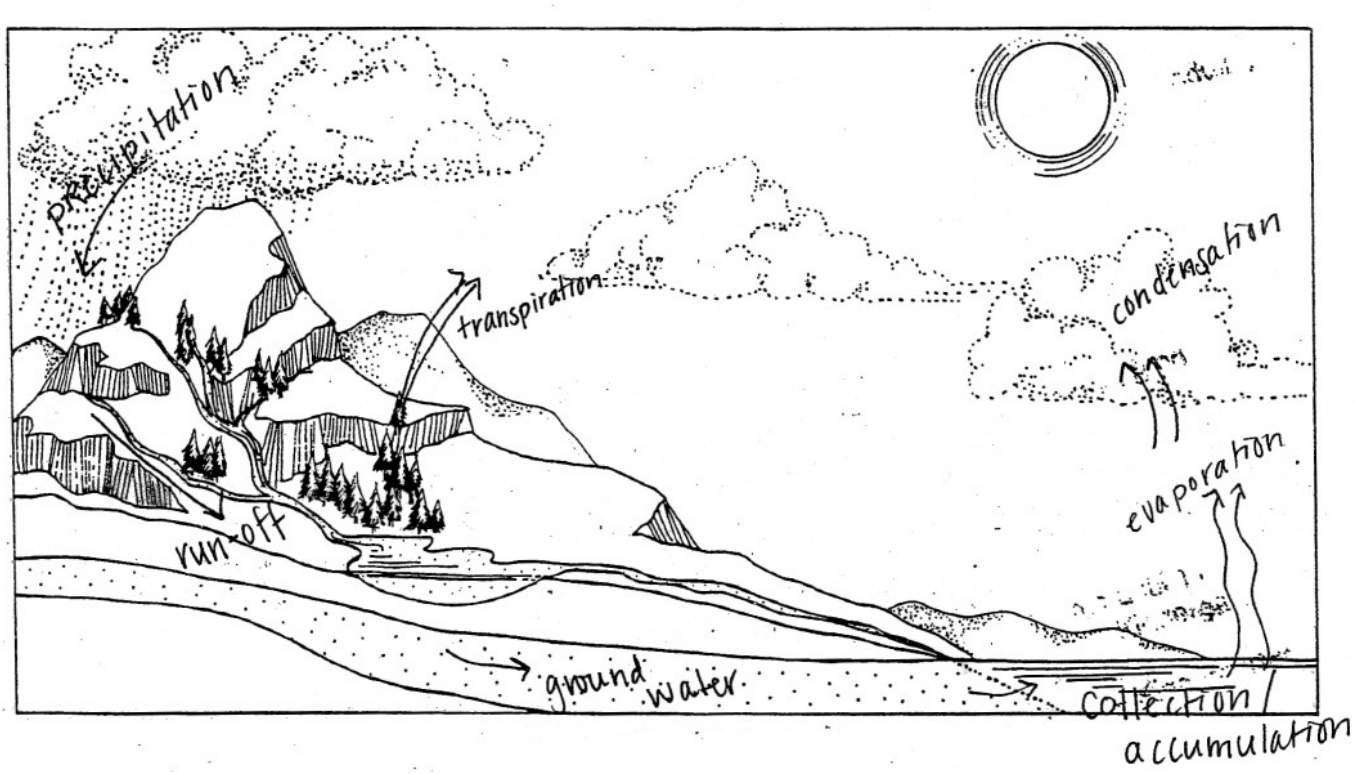
21. Label the following steps of the water cycle diagram.

Transpiration	Precipitation	Evaporation
Condensation	Runoff	Groundwater



22. Describe how…

a. Water in plants returns through the air

Water in plants returns to the air during transpiration through the leaves.

b. Water in oceans becomes ground water.

Water evaporates, condenses and falls to the earth as precipitation and soaks deep into the soil and rock becoming ground water.

23. Identify the following statements as TRUE or FALSE: If the statement is FALSE please change the statement to make it true.

a. The cell is the basic unit of living things. TRUE

b. An organ that can maintain its own homeostasis can be considered a living thing. FALSE; organism, not organ

c. DNA is found in the nucleolus of every cell. FALSE; the nucleus, not the nucleolus.

d. All cells come from other cells. TRUE

e. All cells must have a cell membrane, cytoplasm, and a nucleus to be considered cells. FALSE; cells do not need a nucleus to be a cell. A bacteria does not have a nucleus, but it is considered a cell.

24. How are cells, tissues, organs, and organ systems related?

Tissues are made of a group of cells working together to perform a certain job and organs are made of tissues working together to perform a certain job. Organ systems are made of organs working together to perform a certain job.

25. List 2 differences between prokaryotic and eukaryotic cells. Then give an example of each.

a. Prokaryotic cells do not have a nucleus and eukaryotic cell do have a nucleus.

b. Prokaryotic cells do not have mitochondria or other membrane covered organelles; eukaryotic cells do have organelles, like mitochondria

Prokaryotic example: bacteria_____

Eukaryotic example: any other cell that is not a bacteria (animal, plant cell) _____

26. *Identify the process described in the following examples.* Choose from these words: Choices may be used more than once. **Osmosis, diffusion, active transport, fermentation, photosynthesis, and respiration.**

a. making energy without oxygen

__fermentation_____

b. smelling vanilla through a balloon

diffusion

c. raisins becoming plump in water

_osmosis_____

d. chloroplasts using sunlight to make glucose

photosynthesis_____

e. Using energy to move molecules into a cell

Active transport_____

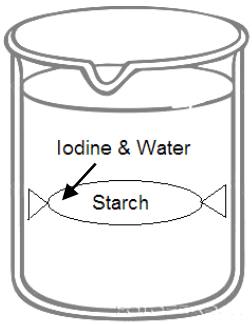
f. mitochondria using glucose and oxygen

cellular respiration_____

g. lactic acid building in your muscles

_fermentation_____

27. **Look at the following diagram. *Draw arrows* to indicate where molecules are moving.** Iodine molecules are small enough to pass through the bag… but starch molecules are too big to pass through the bag.



a. Which molecules are moving?
_iodine_____

b. Which molecule can not move?
_starch_____

c. This is an example of _diffusion_____

Description: Mr. Krabs created a secret ingredient for a breath mint that he thinks will "cure" the bad breath people get from eating krabby patties at the Krusty Krab. He asked 100 customers with a history of bad breath to try his new breath mint. He had fifty customers (Group A) eat a new and improved breath mint after they finished eating a krabby patty. The other fifty (Group B) also received a breath mint after they finished the sandwich; however, it was just a regular breath mint and did not have the secret ingredient. Both groups were told that they were getting the breath mint that would cure their bad breath. Two hours after eating the krabby patties, thirty customers in Group A and ten customers in Group B reported having better breath than they normally had after eating krabby patties.

Questions:

28. Identify the control in the experiment. _Group B
_____

29. What was the independent variable being tested in this experiment? secret ingredient in breath mint _____

30. What was the dependent variable? _customers' breath _

31. Write a hypothesis for this experiment.

If the secret ingredient is added to the breath mint, then breath will improve.

32. Describe the difference between renewable and nonrenewable resources.

The amount of time that it takes to get more of the resource is different. Nonrenewable resources take a LONG time to get replenished, while renewable resources are continuously being replenished._____

33. What is the cleanest burning fossil fuel?

_natural gas_____

34. Determine if the following resources are renewable or nonrenewable. Write R for renewable and N for nonrenewable.

_R___a. water

_N___b. diamonds

_N___c. coal

__R__d. snake skin

_R_____e. seeds

_R_____f. solar energy

_R_____g. grass

__N____h. natural gas

35. List four human activities that contribute to air pollution.

Burning of fossil fuels, using too much gasoline, littering and dumping, not conserving the earth's resources, burning trash, factories_____

36. Why is ozone depletion a serious concern for us today? What causes it?

Ozone depletion is caused by the use of CFC's. We are concerned because the ozone layer protects us from the damaging ultra violet rays of the sun. Skin cancer rates would rise without the ozone layer. _____

37. What is the relationship between global warming and the greenhouse effect? Why is global warming a concern?

The greenhouse effect causes global warming. Because of the increase of carbon dioxide in the air, it acts like a blanket and traps heat, raising the global temperature. It's a concern if the polar ice caps melt and cause massive flooding.

_____

38. How are fossil fuels created?

_ Fossil fuels are created by the dead remains of plant and animal matter buried over millions of years under the right conditions. _____

39. Which type of energy is better? Provide reasons that support both possible answers. For example, list both nuclear energy's advantages over fossil fuels AND fossil fuels' advantages over nuclear energy.

a. Nuclear Energy vs. Fossil Fuel

Nuclear because it does not add carbon dioxide and pollutants in the air; fossil fuel because it cannot produce radioactive waste

b. Solar Energy vs. Wind Energy

_ Solar energy cannot be used on cloudy days or at night, but wind energy requires large areas of land and constant wind (which does not happen as consistently)

40. Munchkin cats have a genetic mutation that causes them to be shorter in height. Two munchkin cats were bred and the resulting litter had 5 munchkin kittens and 1 normal height kitten.

a. Identify which allele is dominant and which allele is recessive.

The munchkin allele is dominant. The normal height allele is recessive.

b. Identify the genotype of the parents.

Both parents are heterozygous, Mm X Mm

Study the illustration of the steps in mitosis and answer the questions that follow.

A B C D

41. In the space below, write the letters that correctly identify the order in which mitosis occurs.

_C B A D_____

42.What is the result of mitosis?

Mitosis creates 2 identical nuclei which after cytokinesis, splits into 2 identical cells.

43.How many pairs of chromosomes does a human skin cell have? _23_____

44. Write the gender associated with the following:

XX _female_____ XY ___male_____

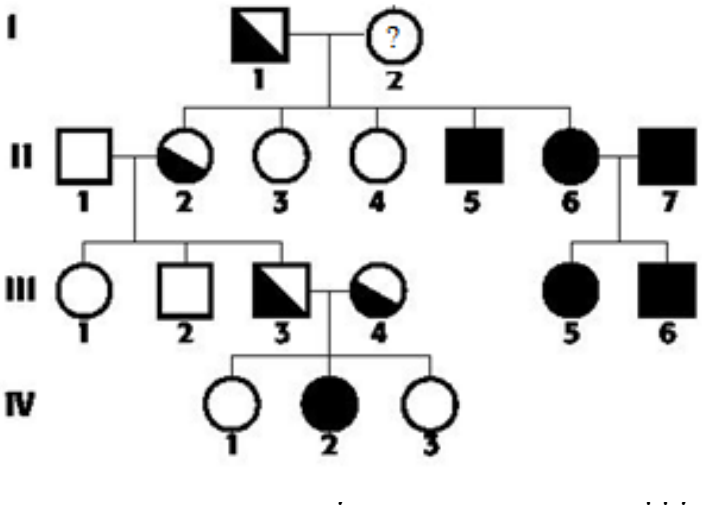
45.How many chromosomes will the human cell have after undergoing mitosis? meiosis?

_46 chromosomes after mitosis and 23 chromosomes after meiosis.

_____

_____

46. The pedigree below show the occurrence of floppy ear syndrome in four generations of a family.



in Generation 1? Ff

r floppy ear syndrome? 4 or 5 if we count I-2

syndrome? 6

47. In asexual reproduction, what percentage of the DNA is like that of the parent?

100% is like that of the parents.

_____

48. Matching:

__C____1. Instructions to make proteins.

Choices:
A. ATP
B. Starch
C. DNA
D. Lipid

__E____2. Made of amino acids

__B____3. Complex Carbohydrate made by plants.

__D____4. Fats and oils

__A____5. THE MAJOR fuel used by the cell.

49. Define homeostasis.

An organism's ability to keep a stable internal environment at all times.

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50. Compare and contrast animal and plant cells. Identify at least three similarities and three differences.

Similarities:

Both plant and animal cells have nuclei (eukaryotic)

Both plant and animal cells do cellular respiration.

Both plant and animal cells have organelles, like mitochondria, Golgi Complex, etc.

Differences:

Plant cells do photosynthesis, animal cells do not.

Plant cells have a cell wall, animal cells do not.

Plant cells have a large vacuole and animal cells have a small vacuole.

Plant cells are more angular in shape, animal cells are round or blobby

51. Determine if a river is alive and give reasons to support your claim.

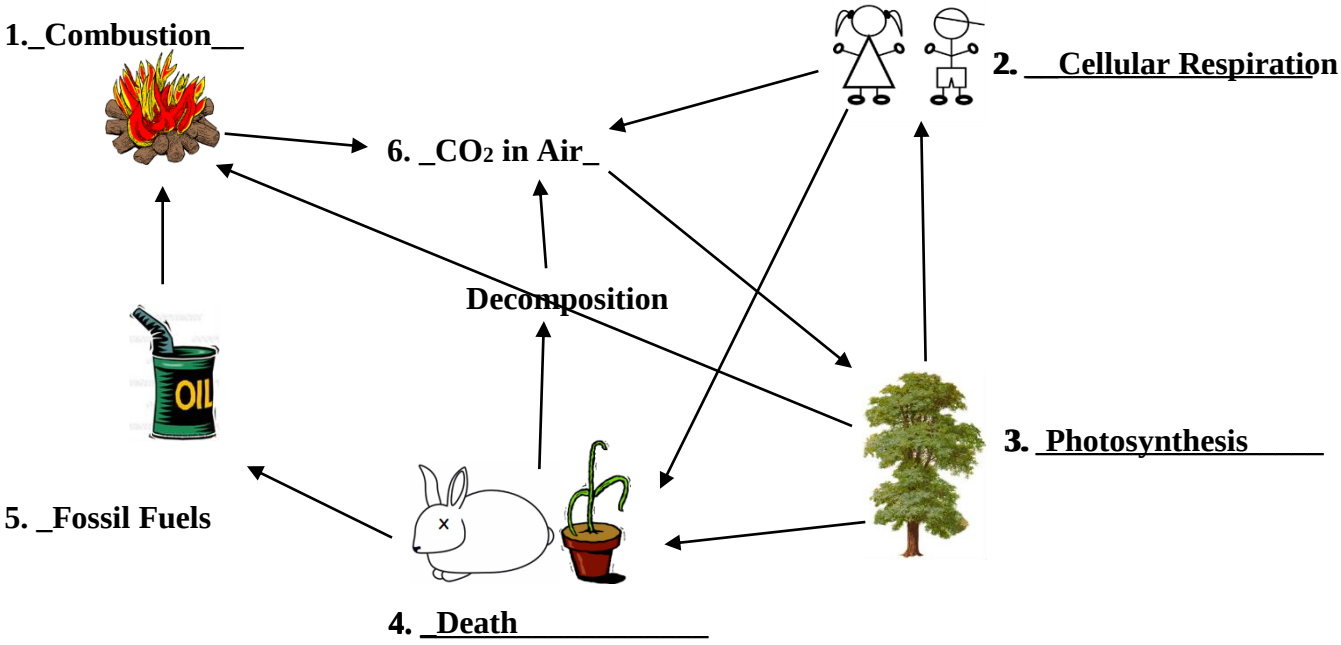
A river is not alive because it does not have:
Cells, DNA, does not sense and respond to change, develop, reproduce, or use energy.

52. What is the difference between acquired and inherited traits? Provide 2 examples of each.____ Inherited traits you get from your DNA. Acquired traits are not DNA related and you typically do yourself. Inherited examples- freckles, eye color Acquired examples- dying hair, ear piercings, braces.____

53. Label each diagram using the following terms:

Death	Combustion
CO2 in air	Photosynthesis
Respiration	Fossil Fuels

Add arrows to show the movement of carbon through the carbon cycle.



In the space below, describe HOW carbon is passed from one part of the cycle to the other.

A. Animals ⟶ Plants

Animals are made of carbon. When animals die and decompose, CO_2 is released into the air. Plants take CO_2 out the air during photosynthesis to make sugar.

B. Plant ⟶ Fossil Fuel

Plants are made of carbon. When plants die and are exposed to heat and pressure over millions of years they can turn into fossil fuels.

C. CO_2 in air ⟶ Combustion

CO_2 in the air is taken in by plants during photosynthesis. Plants can be burned for energy during combustion, releasing CO_2 into the air.

54. Describe the function of each part of a microscope:

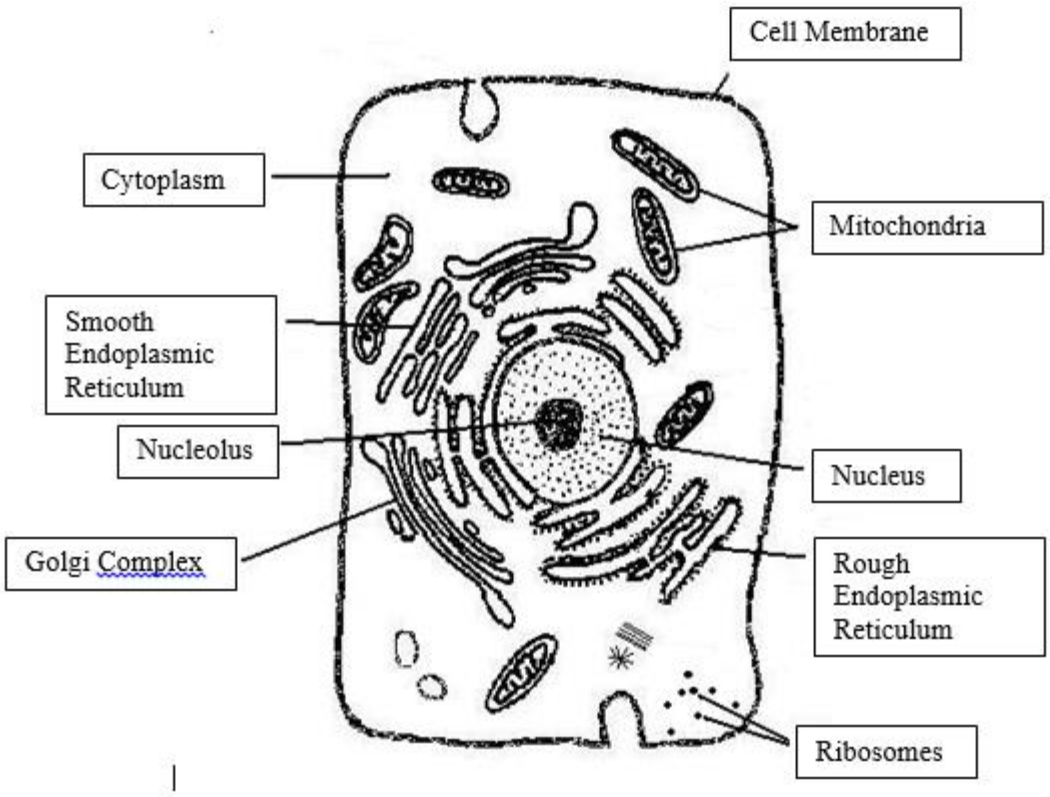
a. **Eyepiece**: Look here. Magnifies an object 10x.

b. **Course Adjustment Knob:** Use first to focus and make the object clearer. Moves the stage a lot.

c. **Scanning Objective Lens:** Use first to find object. Magnifies object 4x (Total magnification 40x)

d. **Light Source:** Lights up the stage so that you can see the slide._____

55. Label the diagram:



56. Describe the RELATIONSHIP between each word pair:

a. fronts/air masses

The boundary between two or more air masses is called a front and brings a change in weather.

_____

_____

b. element/compound

An element is made of only one type of atom and cannot be broken down; a compound is formed when two or more elements chemically combine. A compound can be broken down into its basic elements.

_____

_____

c. chromosome/gene_

A chromosome is a coiled piece of DNA and a gene is section a chromosome that "codes" for a trait, thus providing the directions for a the trait.

_____

_____

Matching

a. Skeletal System
b. Respiratory System
c. Nervous System
d. Digestive System
e. Muscular System
f. Circulatory System

57. Lungs, Trachea B
58. Provides shape and structure. Protects Organs. A
59. Communication from brain to organs. C
60. Stomach, intestines, liver, pancreas D
61. Gives body support; protects organs A
62. Breaks down food so it can be absorbed D

63. What is a mutation? A mutation occurs when there is a mistake in the coding for a DNA sequence. Sometimes a mutation can be an advantage to the organism, but sometimes it harms the organism.

Read the article that follows and use it to answer the following questions:

64. Which statement best describes the main idea of the article?

A. The Human Genome Project requires many steps to develop.
B. The genome is the body's complete set of genes on the chromosomes and they are approximately 50,000 to 100,000 genes.
C. Mutations are inherited tiny changes in a gene which may cause disease.
D. Researchers are close to creating a map of the locations of genes on human chromosomes which may lead to a cure for genetic diseases.

65. What is the Human Genome Project?

A. Scientists trying to get an accurate count of the number of genes on human chromosomes.
B. Scientists developing a complete and accurate sequence of human genes on the chromosomes.
C. Scientists trying to find a cure for cancer.
D. Scientists trying to identify what makes humans unique.

(Find the evidence!!! Underline the part of the article that supports your answer.)

66. What are some of the advantages of discovering the normal order of genes in humans?

A. To help doctors warn people of their risk of stroke.
B. To help warn people they have an increased risk of developing a disease so they can prepare.
C. To help patients use exercise and diet to be healthier.
D. To help people determine the risks of having children with genetic disorders.

(Find the evidence!!! Underline the part(s) of the article that support(s) your answer.)