

Big Picture Problem Set

Directions: Complete the following using your Big Picture Review packet.

1. Water (H₂O) is a/an ____?
 - a. element
 - b. compound
 - c. mixture
 - d. organic substance
2. Carbon is so important to organic compounds because
 - a. it is electronegative
 - b. it can bond to so many different atoms forming many different types of compounds
 - c. it bonds to relatively few atoms
 - d. it cannot bond to other atoms
3. Wooden cabinets contain
 - a. inorganic compounds
 - b. organic compounds
 - c. synthetic compounds
 - d. radioactive compounds
4. What are the six most common elements in biology?
5. Carbohydrates are made of ____ and are used for ____.
 - a. fatty acids; long term energy
 - b. amino acids; construction materials and chemical reactions
 - c. nucleotides; storing genetic information
 - d. monosaccharides; short term energy
6. Lipids are made of ____ and are used for ____.
 - a. fatty acids; long term energy
 - b. amino acids; construction materials and chemical reactions
 - c. nucleotides; storing genetic information
 - d. monosaccharides; short term energy
7. Proteins are made of ____ and are used for ____.
 - a. fatty acids; long term energy
 - b. amino acids; construction materials and chemical reactions
 - c. nucleotides; storing genetic information
 - d. monosaccharides; short term energy
8. Enzymes are a special type of ____ that ____.
 - a. lipid; digests fat
 - b. carbohydrate; speeds up chemical reactions
 - c. protein; speeds up chemical reactions
 - d. nucleic acid; is used to make RNA.

9. Nucleic acids are made of ____ and are used for ____.
- a. fatty acids; long term energy
 - b. amino acids; construction materials and chemical reactions
 - c. nucleotides; storing genetic information
 - d. monosaccharides; short term energy
10. Examples of nucleic acids include
- a. glucose and fructose
 - b. fats and oils
 - c. hair and nails
 - d. DNA and RNA
11. What organism below is unicellular?
- a. frog
 - b. oak tree
 - c. *E. coli* bacterium
 - d. flu virus
12. Which organism below is prokaryotic?
- a. frog
 - b. oak tree
 - c. *E. coli* bacterium
 - d. flu virus
13. Which organelle/cell part is present in eukaryotic organisms but not prokaryotic organisms?
- a. nucleus
 - b. ribosomes
 - c. cell membrane
 - d. cytoplasm
14. Which eukaryotic cell type has a square or rectangular shape?
- a. animal cell
 - b. plant cell
 - c. bacterial cell
 - d. virus particle
15. What is the organelle that controls the flow of water into and out of the cell?
16. What is the organelle that holds the DNA?
17. What is the organelle that makes protein to build muscle?
18. What is the organelle that allows compounds to move through the cell?
19. What is the organelle that processes and stores protein?
20. What is the organelle that produces ATP?
21. What is the organelle that produces spindle fibers in order to help mitosis occur in animal cells?

22. What is the jelly-like substance called that fills the cell?
23. What is the organelle that stores water and food?
24. What is the organelle that would digest waste in the cell?
25. What are the two organelles found in a plant cell that are not found in an animal cell?
26. What organelle helps carry out photosynthesis in plant cells?
- a. cell wall
 - b. mitochondrion
 - c. chloroplast
 - d. vacuole
27. What is the smallest and simplest type of cell?
- a. animal cell
 - b. plant cell
 - c. bacterial cell
28. What extra protective layer do bacterial cells have that animal and plant cells do not have?
- a. capsule
 - b. capsid
 - c. cell wall
 - d. flagella
29. Is a virus particle considered a cell?
30. What helps the virus particle attach to a host cell?
- a. DNA
 - b. capsid
 - c. spikes
 - d. capsule
31. Viruses are different from cells because
- a. they cannot reproduce on their own
 - b. they do not contain nucleic acids
 - c. they cannot harm other organisms
 - d. they do not interact with cells
32. The cell membrane is composed of a
- a. protein coat
 - b. carbohydrate shell
 - c. phospholipid bilayer
 - d. nucleic acid core
33. The cell membrane allows small but not large substances to pass through it so it is
- a. selectively diffusible
 - b. completely permeable
 - c. osmosis resistant
 - d. selectively permeable
34. Osmosis is the diffusion of ____ which is a type of ____ transport

- a. lipids; passive transport
 - b. water; passive transport
 - c. lipids; active transport
 - d. water; active transport
35. Large compounds, such as glucose, would be brought into the cell by
- a. endocytosis
 - b. exocytosis
 - c. diffusion
 - d. osmosis
36. In the process of diffusion, compounds move
- a. with a concentration gradient
 - b. against a concentration gradient
 - c. from low to high concentration
 - d. very quickly
37. If a cell is placed into salt water, the salt water would be considered a ___ solution and the cell would ____.
- a. hypotonic solution; swell
 - b. hypertonic solution; shrivel up
 - c. isotonic solution; remain as is
38. What is the correct chemical equation for photosynthesis?
39. What pigment is used to absorb sunlight during photosynthesis?
- a. nitrogen
 - b. ATP
 - c. lysozyme
 - d. chlorophyll
40. What compound stores energy in an organism?
- a. ATP
 - b. ADP
 - c. AMP
 - d. H₂O
41. Aerobic respiration differs from anaerobic respiration because it requires
- a. carbon
 - b. hydrogen
 - c. oxygen
 - d. nitrogen
42. What is the chemical equation for aerobic respiration?
43. How are photosynthesis and aerobic respiration related?
- a. they are the same process
 - b. they require the same ingredients
 - c. they produce the same products
 - d. they are opposite reactions

44. What type of organisms carry out anaerobic respiration?
- yeast and bacteria
 - plants and bacteria
 - viruses and bacteria
 - viruses only
45. Chromosomes are composed of
- deoxyribonucleic acid
 - ribonucleic acid
 - adenosine triphosphate
 - adenosine diphosphate
46. A diploid cell has ___ of each type of chromosome. A ___ has diploid cells.
- 2; human
 - 1; human
 - 2; bacteria cell
 - 1; bacterial cell
47. A human zygote has ___ chromosomes because ___ are donated by the mother and ___ are donated by the father.
- 46; 40; 6
 - 46; 23; 23
 - 23; 11; 12
 - 50; 25; 25
48. Human gametes combine to produce a zygote in a process called
- transcription
 - respiration
 - fertilization
 - replication
49. X and Y are the two types of
- autosomes
 - sex chromosomes
 - sex cells
 - gametes
50. What are the phases of the cell cycle in order?
- G1-growth, S-DNA synthesis, M-mitosis, G2-growth
 - G1-growth, G2-growth, S-DNA synthesis, M-mitosis
 - G2-growth, S-DNA synthesis, M-mitosis, G1- growth
 - G1-growth, S-DNA synthesis, G2-growth, M-mitosis
51. Why must replication occur prior to mitosis?
- to ensure that spindle fibers are formed at the right time
 - to ensure that the new cells formed receive the same number of chromosomes as the original cell
 - to ensure that the nuclear membrane falls apart
 - to ensure that four new cells are formed

52. What phase of mitosis is responsible for separating sister chromatids to opposite poles of the cell?
- a. prophase
 - b. metaphase
 - c. anaphase
 - d. telophase
53. ___ daughter cells are formed from mitosis that look exactly like the original cell.
- a. 2
 - b. 4
 - c. 6
 - d. 8
54. Sperm and egg cells are formed from a process called ____
- a. mitosis
 - b. meiosis
 - c. respiration
 - d. translation
55. How many cell divisions occur during meiosis?
- a. 1
 - b. 2
 - c. 3
 - d. 4
56. In meiosis, ___ daughter cells are created that contain ___ the chromosomes as the original cell.
- a. 2; all
 - b. 3; half
 - c. 4; half
 - d. 5; all
57. A chromosome is divided into segments that code for a trait. These segments are called
- a. genes
 - b. nucleotides
 - c. proteins
 - d. bases
58. Watson and Crick discovered that DNA
- a. has the shape of a double helix
 - b. is made of nucleotides
 - c. contains sugar
 - d. is single stranded
59. Write the DNA sequence that is complementary to ATG CCA TTG GCT
60. DNA copies itself by a process known as
- a. transcription
 - b. translation
 - c. mitosis
 - d. semiconservative replication

61. A strand of RNA is a copy of
- many hundred of genes found in DNA
 - one gene found in DNA
 - an entire chromosome
 - all your chromosomes
62. Write the RNA sequence that is complementary to the DNA sequence
ATG CCG AAT TTC
63. RNA is made from DNA in ____ prior to being made into a protein in ____.
- translation; replication
 - replication; transcription
 - transcription; translation
 - transcription; replication
64. Codons are a set of ____ bases that code for one ____.
- 2; fatty acid
 - 3; nucleotide
 - 3; amino acid
 - 4; amino acid
65. People with Parkinson's Disease usually have a history of the disease in their family. These people receive the mutation responsible for the disease from
- their environment and lifestyle choices
 - a virus
 - a bacterial infection
 - the egg or sperm that formed them
66. How many alleles for each trait do you have?
- 1
 - 2
 - 3
 - 4
67. The freckles trait is represented by F while having no freckles is represented by f. Which genotype below is homozygous dominant for freckles?
- Ff
 - FF
 - ff
68. The freckles trait is represented by F while having no freckles is represented by f. Which genotype below is heterozygous for freckles?
- Ff
 - FF
 - ff

69. The curly hair trait is represented by C while having straight hair is represented by c. Which genotype below is homozygous recessive for freckles?
- Cc
 - CC
 - cc
70. A female is Ff and Cc. How many combinations of these alleles can be found in her egg cells?
71. The freckles trait is represented by F while having no freckles is represented by f. A female is Ff. Could she have a normal egg cell with both the F and f alleles?
72. A female who is Ff marries a man who is ff. What are the genotype percentages for their children?
73. The curly hair trait is represented by C while having straight hair is represented by c. A female who is CC marries a man who is Cc. What are the phenotype percentages for their children?
74. Blood type is an example of a trait with
- codominance
 - incomplete dominance
 - multiple alleles
 - polygenic inheritance
75. An orange and brown cat exhibits
- codominance
 - incomplete dominance
 - multiple alleles
 - polygenic inheritance
76. A palomino horse has a golden-tan coat resulting from one parent that has a white coat and one parent that has a chestnut (brown) coat. The palomino coat is an example of
- codominance
 - incomplete dominance
 - multiple alleles
 - polygenic inheritance
77. Colorblindness is an example of
- codominance
 - incomplete dominance
 - multiple alleles
 - a sex-linked trait
78. Sex-linked traits affect
- men more than women
 - women more than men
 - men and women equally
 - children more than adults

79. The Amazon rainforest is a ____ for many types of animals and plants.
- a. population
 - b. community
 - c. habitat
 - d. trophic level
80. The Amazon rainforest has greater ____ than the polar ice caps.
- a. biodiversity
 - b. carbohydrates
 - c. evolution
 - d. energy reserves
81. Lions that feed on smaller animals are
- a. herbivores
 - b. carnivores
 - c. omnivores
 - d. producers
82. Humans that feed on plants and animals are
- a. herbivores
 - b. carnivores
 - c. omnivores
 - d. producers
83. Cows that feed on grass are
- a. herbivores
 - b. carnivores
 - c. omnivores
 - d. producers
84. Rocks, soil, air, and water in a habitat would be considered ____ factors.
- a. biotic
 - b. abiotic
 - c. organic
 - d. primary
85. Bacteria that feed on dead plant and animal matter would be considered
- a. producers
 - b. consumers
 - c. decomposers
 - d. scavengers
86. A rose bush would be considered a
- a. producer
 - b. consumer
 - c. decomposer
 - d. scavenger

87. A squirrel that collects acorns all summer for its winter food reserves would be a
- producer
 - consumer
 - decomposer
 - scavenger
88. The bottom of a food chain or web is typically made up of
- producers
 - consumers
 - decomposers
 - scavengers
89. The top of a food chain or web is typically made up of
- producers
 - consumers
 - decomposers
 - scavengers
90. Energy ____ as it moves through a food chain.
- increases
 - decreases
 - does not change
91. The trophic level that contains the most food energy is the
- producers
 - consumers
 - decomposers
 - scavengers
92. Nitrogen in the air is converted to nitrogen compounds by ____ that live in plant root nodules.
- viruses
 - animals
 - bacteria
 - other plants
93. The process of evaporated water forming clouds in the atmosphere is called
- condensation
 - transpiration
 - precipitation
 - runoff
94. The process of water being released from plants to the atmosphere is called
- condensation
 - transpiration
 - precipitation
 - runoff

95. The oxygen-carbon cycle is driven by what two processes?
- photosynthesis and transpiration
 - transcription and respiration
 - transcription and translation
 - photosynthesis and respiration
96. Which type of symbiosis is exhibited by the *E.coli* bacteria that live in your intestines and help you to break down your food?
- commensalism
 - mutualism
 - parasitism
97. Which type of symbiosis is exhibited by ticks that feed off of the blood of their host?
- commensalism
 - mutualism
 - parasitism
98. The ability of the cheetah to run very quickly in order to catch prey is an example of a/an
- homologous structure
 - adaptation
 - homeostasis
 - alveoli
99. If a particular coat color in mice enabled them to blend into their environment better to avoid predators, those mice with this coat color would survive longer to pass the coat color on to more offspring. This is an example of
- comparative anatomy
 - homeostasis
 - natural selection
 - transcription
100. The purpose of evolution is for organisms to
- become better adapted to their environments
 - pass favorable traits onto offspring
 - live longer than previous generations in order to have more offspring
 - all of the above
101. Modern whales have hind leg bones that no longer serve a function although may have had a purpose in ancestors. These bones would be considered
- genetic structures
 - vestigial structures
 - comparative structures
 - vertebral structures
102. What are the seven levels of taxonomy, in order from most broad to most specific?

103. The lion and the lynx are more closely related than the lion and the snowshoe hare. Therefore, the lion and the lynx would have ____ levels of taxonomy in common than the lion and the snowshoe hare.
- less
 - more
 - the same
 - no
104. Halophiles are a type of bacteria that live in extremely salty environments. These bacteria would be classified into what kingdom?
- Archaeobacteria
 - Eubacteria
 - Protista
 - Fungi
105. Common household mold is classified into what kingdom?
- Archaeobacteria
 - Eubacteria
 - Protista
 - Fungi
106. An amoeba is a single-celled eukaryotic organism that resembles a blob. It is classified into what kingdom?
- Archaeobacteria
 - Eubacteria
 - Protista
 - Fungi
107. The scientific name for humans is
- Homo sapiens*
 - Canis familiaris*
 - Pan paniscus*
 - Felis domesticus*
108. Lizards and birds are all classified into what domain?
- Animalia
 - Eukarya
 - Plantae
 - Archaea
109. Which of the following is not a function of the skeletal system?
- protects internal organs
 - makes hormones
 - produces blood cells
 - stores minerals
110. Your leg muscles are attached to your leg bones by
- ligaments
 - tendons
 - other bones
 - other muscles

111. Your shoulder is an example of a ___ joint.
- a. ball and socket
 - b. pivot
 - c. hinge
 - d. gliding
112. Your knee is an example of a ___ joint.
- a. ball and socket
 - b. pivot
 - c. hinge
 - d. gliding
113. The two types of bone tissue are
- a. compact and soft
 - b. compact and spongy
 - c. medullary and soft
 - d. hollow and spongy
114. Involuntary muscles include
- a. smooth and skeletal muscle
 - b. cardiac and skeletal muscle
 - c. smooth and cardiac muscle
 - d. smooth, cardiac, and skeletal muscles
115. The esophagus which squeezes food down into your stomach is made of
- a. smooth muscle
 - b. cardiac muscle
 - c. skeletal muscle
116. The biceps and triceps are examples of ___ that work in pairs.
- a. smooth muscle
 - b. cardiac muscle
 - c. skeletal muscle
117. The cell that is used to conduct impulses through the nervous system is the
- a. osteoblast
 - b. platelet
 - c. neuron
 - d. white blood cell
118. The types of neurons that connect to muscles are called
- a. sensory neurons
 - b. interneurons
 - c. motor neurons
119. What are the three parts of the brain called?
- a. cerebrum, spinal cord, cerebellum
 - b. interneuron, spinal cord, brainstem
 - c. cerebellum, brainstem, spinal cord
 - d. cerebrum, cerebellum, brainstem

120. The central nervous system is composed of
- peripheral nerves and the brain
 - peripheral nerves and the spinal cord
 - the brain and the spinal cord
 - the brain, spinal cord, and peripheral nerves
121. Human growth hormone, responsible for growth, is made and released by the
- nervous system
 - respiratory system
 - endocrine system
 - digestive system
122. Negative feedback control is used to maintain
- evolution
 - homeostasis
 - respiration
 - circulation
123. Digested nutrients exit the digestive system and enter the blood stream through structures called ____ in the ____.
- villi; small intestine
 - villi; large intestine
 - carbohydrates; small intestine
 - neurons; stomach
124. Gas exchange in the respiratory system specifically takes place in the ____ of the lungs.
- bronchi
 - trachea
 - alveoli
 - bronchioles
125. Oxygen is transported by the ____ protein found in ____ cells.
- lysozyme; white blood
 - keratin; neuron
 - hemoglobin; red blood
 - melanin; skin
126. The different blood types are
- A, B, AB
 - AB, A, B, O
 - A, B, O
 - A, B
127. Blood traveling from the legs back to the heart would be found in
- arteries
 - veins
 - capillaries

128. Blood traveling from the heart to the lungs would be found in
- a. arteries
 - b. veins
 - c. capillaries
129. The chambers of the heart are the
- a. atria and valves
 - b. valves and ventricles
 - c. atria and ventricles
 - d. aorta and vena cava
130. Blood is filtered by which organs?
- a. kidneys and heart
 - b. kidneys and liver
 - c. liver and spinal cord
 - d. gall bladder and pancreas