

7th grade notes

1. Living organisms require food, water, shelter, energy, and space to survive.
2. Cells are the smallest units that carry out activities of life.
3. The three components of the cell theory are: 1) all organisms are made up of one or more cells, 2) cells are the basic unit of structure and functions in all organisms, and 3) all cells come from cells that already exist.
4. Zacharias Janssen, in 1590, was the first to put two magnifying glasses together in a tube.
5. Anton van Leeuwenhoek, in the mid 1600's, created a simple microscope, and with a tiny glass bead for a lens.
6. Robert Hooke, in 1665, looked at slices of cork under his microscope, and called the "empty boxes" he saw cells.
7. In 1839, Matthias Schleiden, studied plants and concluded that all plants were made of cells.
8. In 1839, Theodor Schwann, studied animals and concluded that all animals were made of cells.
9. Rudolph Virchow, in 1856, hypothesized that older cells divide to form new cells.
10. The Cell Theory states that all organisms are composed of one or more cells, the cell is the basic unit of life in all living things, and all cells come from existing cells.
11. Cells perform numerous functions and processes including respiration, waste removal, growth, irritability, and reproduction.
12. Cells that have the same goal group together to form tissues, tissues that have the same goal group together to form organs, organs with similar goals group to work in organ systems.
13. The differences between plant cells and animal cells are: plant cells have chloroplasts, cell walls, and larger vacuoles. Animal cells have centrioles during mitosis.
14. The cell membrane forms the outer boundary of the cell and only allows certain things to enter and exit the cell.
15. The nucleus directs all of the activities of the cell and contains all of the genetic blueprints for the operations of the cell.
16. Cytoplasm is the gel-like material inside the cell.

17. The endoplasmic reticulum acts as the highway system of the cell and moves materials around the cell.
18. Golgi bodies of the cell packages materials to be moved to the outside of the cell.
19. The mitochondria of a cell are the powerhouse of the cell that breaks down food molecules and produces energy for the cell.
20. Lysosomes of a cell digest and destroy waste products and worn-out cell parts.
21. Ribosomes make proteins for the cell.
22. Chloroplasts are organelles in plant cells that transform light energy into chemical energy in the form of sugar.
23. The cell wall is located outside of the cell membrane and is used to support and protect the cell.
24. Vacuoles are temporary storage units for the cells that may contain food, water, or waste.
25. Diffusion is the movement of molecules from where there are many to where there are few (high to low concentration).
26. Osmosis is the diffusion of water through a cell membrane.
27. Cells strive to maintain equilibrium.
28. Mitosis is the process in which the nucleus of a cell divides and replicates to form two identical nuclei in a series phases: prophase, metaphase, anaphase, and telophase.
29. Meiosis is the process of division in cells that produces sex cells.
30. Unicellular organisms are made of only one cell.
31. Multi-cellular organisms are made of many cells.
32. Multi-cellular organisms are complex in that there is a division of labor for carrying out the necessary life processes.
33. The life needs of plants are light, energy source, gases, water, and nutrients.
34. In the plant and animal kingdoms organisms are arranged into Kingdom, phylum, class, order, family, genus, and species.
35. Binomial nomenclature is the system used for classifying organisms.
36. Chlorophyll is a chemical in chloroplasts that can absorb or trap energy and transform it into chemical energy called glucose.
37. Producers make their own food by photosynthesis and are the beginning of food chains.
38. Populations interact by competing for basic resources, mates, and territory.

39. Populations cooperate with each other to meet needs.
40. Populations have social order to ensure that labor and resources are shared.
41. Independent behavior and group behavior can influence a population.
42. A predator-prey relationship is an interaction between a consumer that hunts for another consumer for food.
43. Symbiotic relationships include mutualism, commensalism, and parasitism.
44. Mutualism occurs when both organisms benefit.
45. Commensalism occurs when one organism benefits and the other is unaffected.
46. Parasitism occurs when one organism benefits and the other is harmed.
47. Every organism fills a specific niche, or role in its community.
48. Examples of some ecosystems are forests, tidal pools, ponds.
49. Ecosystems, living communities, and their physical environment are functional units with the biomes.
50. Define biome. Each major biome includes climate range, and how well organisms have adapted.
51. Biomes are made up of ecosystems.
52. Organisms have specific structures, functions, and behaviors that enable them to survive the conditions of a particular biome.
53. Organisms adapt to abiotic and biotic factors in their home.
54. Organisms exist as a member of their population.
55. Plants respond to light by growing toward it or away from it (phototropism).
56. Animals respond to cold conditions with a period of lowered metabolism (hibernation).
57. Organisms may respond to adverse conditions with a period of lower or suspended metabolism (dormancy).
58. DNA is a double helix molecule.
59. DNA is a molecule that includes four different components. The arrangement of these four components within the double helix forms a chemical code.
60. Chromosomes are strands of DNA.
61. Genes are sections of a chromosome that carry the code for a particular trait.
62. The basic laws of Mendelian genetics can explain the transmission of some traits that can be inherited from generation to generation.

63. Genetic engineering manipulates the genetic code to obtain a desired product.
64. Genetic engineering has numerous practical applications in medicine, agriculture, and biology.
65. The mechanisms through which evolution takes place are a related set of processes that include mutation, adaptation, natural selection, and extinction.
66. Mutations are inheritable changes because a mutation is a change in the DNA code.
67. Adaptations are structures, functions, or behaviors that enable a species to survive. Adaptations are expressions of the organisms' genetic information.
68. A mutation may result in a favorable change of adaptation in genetic information that improves a species' ability to exist in its environment of a mutation may result in a n unfavorable change that does not improve or impedes a species' ability to exist in its environment.
69. Individuals of a population exhibit a range of variations in a trait as a result of the variations in their genetic codes.
70. The evidence for evolution is drawn from data including the fossil record, radiometric dating, genetic information, the distribution of organisms, and anatomical and developmental similarities across species.
71. Natural selection is the survival and reproduction of the individuals in a population that exhibit the traits that best enable them to survive in their environment.
72. If a species does not include traits that enable them to survive in its environment, or to survive changes in the environment, then the species may become extinct.
73. Every person has dominant and recessive genes that determine the characteristics of their off spring.
74. Each environment has a population that is biodiversified.