

1. Science vs. Pseudoscience
2. Study of
  - a. Ecology
  - b. Astrology
  - c. Toxicology
  - d. Botany
  - e. Mammalogy
  - f. Herpetology
  - g. Ornithology
  - h. Entomology
  - i. Ichthyology
  - j. Arachnology
  - k. Chemistry
3. The Scientific Method
4. SI Units
5. Medical terms
  - a. Hypo
  - b. Hyper
  - c. Auto
  - d. Photo
  - e. Gastro
  - f. Homeo
6. What makes something alive?
  - a. Organized with at least one cell
  - b. Metabolism – the sum of all chemical reactions in the body
  - c. Homeostasis
  - d. Uses energy
  - e. Make waste
  - f. Reproduces
  - g. Evolves
  - h. Dies
7. Cell theory
  - a. All living things are made of cells.
  - b. Cells come from other cells.
  - c. Cells are the basic unit of life.
8. All energy comes from the sun.
9. Energy Pyramids
  - a. Carrying capacity
  - b. J curve vs. S curve
10. Organization of Life
  - a. Atom, molecule, macromolecule, organelle, cells, tissues, organs, organ systems, organism, population, community, ecosystem, biosphere.

11. Biomes

- a. Monroe, Utah
- b. Most life in rainforests (terrestrial)
- c. Most life in coral reefs (aquatic)

12. Biotic vs. Abiotic

13. Succession

- a. Primary
- b. Secondary

14. Hydrologic Cycle

15. Biosphere

16. Habitat vs. Niche

17. Relationships

- a. Mutualism
- b. Commensalism
- c. Parasitism

18. Elements in all living things.

- a. CHONPS

19. Atoms

- a. Protons, neutrons, electrons
- b. Molecules, compounds
- c. Ions
- d. Atomic number
- e. Atomic mass

20. Diffusion vs. Osmosis

- a. Hypotonic
- b. Hypertonic
- c. Isotonic

21. Eukaryotic vs. Prokaryotic

22. Organelles

- a. Nucleus
- b. Mitochondria
- c. Golgi apparatus
- d. Ribosome
- e. Nucleolus
- f. Endoplasmic reticulum
- g. Vacuole
- h. Lysosome
- i. Chloroplast

23. XX vs. XY

- a. The father determines the sex of an unborn child.

24. Parts of a chromosome
  - a. Chromatids
  - b. Centromere
25. Chromosomes
  - a. Humans have 46 in normal body cells (diploid)
  - b. Humans have 23 in sex cells (haploid)
  - c. The number of chromosomes does not determine an organisms intelligence or complexity.
26. Phases of mitosis:
  - a. Prophase, metaphase, anaphase, telophase
27. Cellular respiration
  - a. O<sub>2</sub>, water and Glucose goes in, CO<sub>2</sub>, Energy, and Water go out.
  - b. ATP
  - c. Fermentation
  - d. Lactic acid
  - e. The body uses macromolecules: carbs then lipids, then proteins.
28. Meiosis
  - a. Occurs only in sex cells.
  - b. Chromosome number halved (haploid).
  - c. Crossing over.
  - d. Four new cells not identical.
29. Sexual vs. asexual
30. Genetics
  - a. Homozygous recessive
  - b. Heterozygous
  - c. Homozygous dominant
  - d. Monohybrid crosses
31. Writing scientific names
  - a. Latin
  - b. Binomial nomenclature
  - c. Genus and specific epithet
  - d. DKPCOFGS
32. Domains
  - a. Archaea
  - b. Bacteria
  - c. Eukarya
33. Characteristics of the kingdoms
  - a. Archaeobacteria
  - b. Eubacteria
  - c. Protista
  - d. Fungi
  - e. Plantae
  - f. Animalia

34. Coverings and walls

- a. Keratin
- b. Cellulose
- c. Chitin
- d. Epidermis
- e. Dermis
- f. Subcutaneous
- g. Melanin

35. Bones

- a. Make blood
- b. Stores minerals
- c. Provides support
- d. Flat bones make blood
- e. Round bones store fat
- f. Male and female have the same number of bones (206)
- g. Know the bones of the human skeleton

36. Organs

- a. Pancreas
- b. Kidney
- c. Liver
- d. Gall bladder
- e. Brain
  - i. Cerebrum
  - ii. Cerebellum
  - iii. Pons
  - iv. Medulla oblongata

37. Muscles

- a. Diaphragm
- b. Three types
  - i. Skeletal
  - ii. Cardiac
  - iii. Smooth

38. Reproduction

- a. Testes make sperm and testosterone
- b. Ovaries make eggs and estrogen
- c. Secondary sex characteristics
- d. Menstruation
- e. Fertilization
- f. Clitoris
- g. Ovulation
- h. Vas deferens
- i. Labia majora
- j. Labia minora
- k. Menopause

39. DNA vs. RNA

- a. DNA is A-T and C-G
- b. RNA is A-U and C-G
- c. DNA to mRNA to tRNA

40. Evolution

- a. Natural selection
- b. Artificial selection
- c. Traits of primates
- d. Plants first to invade land
- e. Internal fertilization allowed for animals to leave the water

41. Viruses

- a. Not killed by antibiotics
- b. Non-living, must have a host to reproduce

42. Monocot vs. Dicots

43. Photosynthesis

- a. Equation

44. Coniferous vs. Deciduous

45. Fruits vs. Vegetables

46. Plant reproduction

- a. Parts of a flower
- b. How flowers reproduce

47. Bilateral vs. Radial

48. Organization of animals

- a. Porifera
- b. Cnidaria
- c. Platyhelminthes
- d. Nematoda
- e. Annelida
- f. Mollusca
- g. Arthropoda
- h. Echinodermata
- i. Chordata

49. Odds and ends

- a. Marsupials
- b. Monotremes
- c. Sessile creatures
- d. Vertebrates have a backbone
- e. 95% of all life on Earth are invertebrates

50. Science is Everything, Everything is Science.

- a. Science disproves claims, does not attempt to prove them.