Review Sheet for 1st Semester Exam 2016- Completed

Lab Safety

1. How do you dispose of all chemicals? As the teacher instruction

2. List the 3 "P's" and explain how to use a fire extinguisher.
   1. Pull the ring
   2. Point the hose as the base of the fire
   3. Press the handle

3. When you are finished with a lab, who determines the clean-up procedures? The teacher

Scientific Method

4. List the steps of the scientific method in order.
   1. Problem – should be asked in the form of a question
   2. Research – find out as much about the topic as possible
   3. Hypothesis – written in an if/then format
   4. Experiment – should have one independent variable, multiple samples, and data collected
   5. Evaluate – organize data
   6. Conclusion – what does data show, does data support the hypothesis?
   7. Communicate – record information is some format

5. Define dependent variable and independent variable. Be able to pick these out of an experiment.
   - Independent variable – the variable that is being tested, you control it (ex. Fertilizer)
   - Dependent variable – the variable that changes as a result of the independent variable, usually what you are measuring (ex. Growth in plants)

6. What is the control and what is its purpose? The control in an experiment is the item or group that does not have the independent variable applies to it so you can compare the experimental group to the control to determine results.

7. What is the hypothesis? An educated prediction of how the independent variable affects the dependent variable.

Metrics

8. Write your acrostic for remembering the steps for metric conversions.
   KHDUDCM
   Kids have dirty underwear despite clean mothers
   Kids have died using dumb crummy metrics

9. Practice the following conversions

   2.5km= _2500_m

   575 cm= _57.5_dm

   3301mg= _330.1_cg

   35.97 L= _35,970_mL

10. What units measure volume, mass, and distance?
    - Volume of a liquid – Liters (L)
    - Volume of a solid – cubic meters (cm^3)
    - Mass – grams (g)
    - Distance – meters (m)

11. What metric unit of measure would you use for the following?
    a. measuring the mass of a paperclip ____grams____
    b. measuring the volume of a spoonful of cough syrup __milliliters___
    c. measuring the diameter of a coin__millimeters or centimeters
    d. measuring the distance from Boerne to San Antonio __kilometers__

Microscope

12. When first finding an object with a microscope…
    a. which objective do you use? Low power
    b. which adjustment knob do you use? Coarse adjustment

13. What part of the microscope regulates the amount of light? Diaphragm

14. What two parts do you hold when carrying the microscope? Arm, base

15. Calculate the total magnification if the eyepiece is 10x and the objective is 40x. 400x

Cells

16. What is the difference between a prokaryotic cell and a eukaryotic cell?
    A prokaryotic cell does not have a nuclear membrane around DNA material
    A eukaryotic cell DOES have a nucleus w/nuclear membrane; it also has more organelles

17. What is the correct order of progression for the organization of cells?
    Cells → tissues → organs → systems

18. Know the following cell parts:
    a. cytoplasm – jellylike substance that organelles are suspended in
    b. cell membrane – semi-permeable outer boundary of the cell (fence)
    c. ribosomes – make proteins (workers)
    d. endoplasmic reticulum – moves ribosomes along ER structure so proteins can be built (conveyor belt)
    e. Golgi bodies – moves substance throughout and out of cell (UPS truck)
    f. nucleus – controls the cell; contains DNA (boss)
    g. mitochondria – provides energy for cell (power plant)
    h. vacuole – stores water and nutrients for cell
    i. chloroplast – ONLY IN PLANT CELL; contains chlorophyll; where photosynthesis occurs
    j. cell wall – ONLY IN PLANT CELL; outermost membrane that gives support to cell

19. What element does ALL organic matter contain? Carbon

20. Photosynthesis:
    a. What is the purpose? To make food (glucose) and store chemical energy
    b. Where in the plant cell does it occur? chloroplast
    c. What is the energy transformation? Radiant to chemical
    d. What is the chemical equation?

$$6CO_2 + 6H_2O + \text{energy} \rightarrow C_6H_{12}O_6 + 6O_2$$

21. Cellular respiration:
    a. What is the purpose? To generate energy for the cell
    b. Where in the cell does it occur? mitochondria
    c. What is the special "relationship" between respiration and photosynthesis?
    What one process gives off (products) the other one needs (reactants)

Reproduction and Genetics

22. What is the difference between sexual and asexual reproduction?
    Asexual reproduction only requires one parent – ex. budding, binary fission, reproductive propagation
    Sexual reproduction requires two parent – gametes (egg, sperm)

23. Know the following terms:
    - heredity - passing genetic traits to offspring.
    - DNA – molecule that gives instructions for making an organism/ double helix
    - genes – segment of DNA/provides instructions for one trait
    - alleles – different versions of a trait (complimentary genes for the same trait)
    - chromosomes – DNA that is coiled up/tightly wound
    - homozygous – purebred for a particular trait (TT or tt)
    - heterozygous – hybrid for a particular trait (Tt)
    - dominant – a trait that shows up in the physical appearance (phenotype) if it appears in the genetic makeup (genotype). It is represented by a capital letter. (TT or Tt)
    - recessive – a trait that shows up less often and only occurs when two recessive alleles are paired together. It is represented by a lower case letter. (tt)

24. Be able to complete a Punnett Square

Human Body Systems

1. Name the function of the following *systems*
    - Digestive – ***converts chemical (food) energy into energy the body can use; mechanical and chemical digestion occur before nutrients and energy is absorbed in to blood and carried throughout the body for cells to use***
    - Respiratory ***– inhales and exhales air (mixture of gases); oxygen that is inhaled through the lungs and carried by red blood cells to throughout the body to the rest of the cells; cells produce a waste gas called carbon dioxide which is also carried out by red blood cells and exhaled through the lungs.***
    - Circulatory – ***made up of different types of blood vessels that move nutrients and waste throughout the body; heart is the pump***
    - Nervous –***made up of the central and peripheral nervous system; provides feedback from internal and external stimuli and allows the brain or spinal cord to respond.***

- Endocrine – ***controls homeostasis by releasing hormones (ex: insulin is a hormone that controls the amount of sugar in blood)***
- Integumentary –***protects the body and prevents water loss (skin)***
- Muscular –***movement of body and attached to bones (cardiac, smooth, skeletal)***
- Skeletal –***provides structure, something for muscles to pull against/makes red blood cells.***
- Urinary – ***controls water balance and chemical balance by filtering and cleaning blood***

2. What is the correct sequence of the level of organization in organisms?
   (tissues, cells, systems, organs, organisms)

   cells → tissue → organ → systems → organism

3. Explain homeostasis.

   All the systems in an organism maintaining equilibrium. Ex: when the temperature in your body rises, your sweat glands release sweat, which pulls heat from your body to maintain your body temperature.