

Biology Fall Final Review
2005/2006
Mrs. Nuño

Unit 1: The Nature of Science (Chapter 1)

- 7 characteristics of life.
- 7 major themes of biology, including the definitions of science terms describing those themes.
- Know the basics of the metric system.- units for mass, length, temperature
- draw a graph which includes all the necessary parts practiced in lab and in your textbook
- dependent and independent variables and which axis of a graph they go on.
- steps of the scientific method, including what is involved in a controlled experiment; experimental vs. control
- lab guidelines: know what goes in each section of the lab write-up

Study your chapter vocabulary, quiz, worksheets, and notes and Lab NB

Unit 2: Chemistry of Life (Chapter 2)

- matter, mass, and weight
- read a periodic table (atomic mass, atomic number)
- atoms, elements, protons, electrons, & neutrons and their charges
- ions, hydrogen bonding, ionic and covalent bonding.
- states of matter and their characteristics?
- properties of water, polarity, hydrogen bonding,
- acids and bases, pH scale
- organic compounds: characteristics and examples of the 4 organic compounds- lipids, carbohydrates, nucleic acids, proteins
- $ATP \rightarrow ADP$
- endergonic and exergonic reactions, be able to read the graph of each type of reaction.
- enzymes- what they do

Study your chapter vocabulary, quiz, worksheets, and notes and Lab NB



Unit 3: Cells: (Chapters 3 and 4)

- types of microscopes; light vs. electron
- parts of the microscope...can you label them? Using a microscope
- people associated with the beginning of cell biology
- cell theory
- how volume and surface area effect cell size
- differences between prokaryotes and eukaryotes
- differences between plant and animal cells
- organization of living things from cells to organism
- location and main *jobs* of the organelles on your worksheet
- label cell organelles on a diagram
- photosynthesis and respiration: basic processes and equations
- movement across membranes: diffusion, osmosis, active transport, passive transport, endocytosis, exocytosis, phagocytosis
- terms hypotonic, hypertonic, isotonic

Study your chapter vocabulary, quiz, worksheets, and notes and Lab NB

Unit 4: Cell Reproduction (Chapters 6 and 7)

- what mitosis and meiosis do for organisms
- structure of chromosomes
- homologous chromosomes
- sister chromatids
- diploid vs. haploid
- number of human chromosomes in somatic and sex cells (gametes)
- sex chromosomes (XX and XY system in humans)
- Down Syndrome and Klinefelter's Syndrome
- karyotypes- what they show, are used for
- Cell cycle
- order and events of mitosis
- order and events of Meiosis
- difference between mitosis and meiosis
- crossing over and independent assortment
- asexual vs. sexual reproduction
- sexual life cycles- haploid, diploid, alternation of generations

Study your chapter vocabulary, quiz, worksheets, and notes and Lab NB



Unit 5: Genetics (Chapter 8)

- Mendel's experiments and laws
- genetics terms such as P, F1, F2, gene, allele, mono- & dihybrid, genotypes, phenotypes
- incomplete dominance and codominance
- Polygenic and environmental influence on genes
- pedigrees
- Punnett squares
- genetics problems:
 - monohybrid
 - backward monohybrid (given info about offspring)
 - dihybrid
 - sex-linked recessive
 - incomplete dominance
- genetic disorders: hemophilia, cystic fibrosis, Huntington's disease, sickle cell anemia

Study your chapter vocabulary, quiz, worksheets, and notes and Lab NB

Unit 6: DNA Structure and Function (Chapters 9 and 10)

- video notes from Photo 51
- people involved in discovering the structure of DNA?
- structure of DNA, the 3 parts and how the bases pair up.
- replication
- transcription
- translation
- difference between DNA and RNA.
- mRNA, rRNA, tRNA structure and function
- read the mRNA code chart

Study your chapter vocabulary, quiz, worksheets, and notes and Lab NB

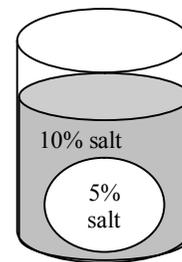


Review Questions

1. What are the seven characteristics of life?
2. Graph the following data. Include all the necessary components of a proper graph.

Bean Seedling Growth		
Day	Plant Height (cm)	
	Plant A (given hormone)	Plant B (control)
1	1.5	1
2	2	1.5
3	3	2
4	3.5	3
5	5	3.5
6	6	4

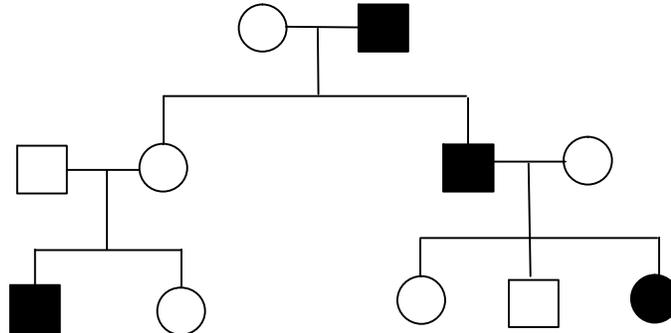
3. What is the atomic number, atomic mass, and symbol for the element Chlorine?
4. List the number of protons, neutrons, and electrons for the element phosphorous.
5. Draw a "planetary" model of the element Carbon.
6. How many of each atom are found in the compound $C_6H_{12}O_6$?
7. How are ionic bonds formed?
8. What numbers represent acids on the pH scale? What would be the strongest acid?
9. What is the difference between cohesion and adhesion?
10. Name the four types of organic compounds and the major role of each.
11. What part of the microscope changes the magnification of the object?
12. What is the cell theory?
13. Who discovered and named cells?
14. What is the job of the nucleus? the mitochondria? the chloroplast?
15. What structures do plant cells have but animal cells lack?
16. Draw an arrow in the diagram below to indicate the direction of osmosis. Label the inside and outside of the cell (oval) with the appropriate term.



17. _____ are units of information about specific traits; they are passed from parents to offspring.
18. When two alleles of a pair are identical, it is a _____ condition; if the two alleles are different, this is a _____ condition.
19. _____ refers to the genes present in an individual; _____ refers to an individual's observable traits.



20. Mendel's theory of _____ states that during meiosis, the two genes of each pair separate from each other and end up in different gametes
21. Human X and Y chromosomes fall in the general category of _____ chromosomes; all other chromosomes in an individual's cells are the same in both sexes and are called _____.
22. The two scientists who assembled the clues to DNA structure and produced the first model were _____ and _____.
23. Assume that the two parent strands of DNA have been separated and that the base sequence on one parent strand is A-T-T-C-G-C; the base sequence that will complement that parent strand is _____.
24. Punnett Square practice: Flowers on peas can be Red (R) or pink (r) and tall (T) or short (t).
- Cross a heterozygous red with a pink pea plant (you are only looking at one trait). Write the genotypic and phenotypic ratios of the offspring.
 - If you do a monohybrid cross and $\frac{3}{4}$ offspring are red and $\frac{1}{4}$ are pink, what are the genotypes of the parents?
 - Cross a pink, homozygous tall plant with a heterozygous red, heterozygous tall plant. What is the phenotypic ratio of the offspring?
25. In carnations, flower color shows lack of dominance. If plants with red flowers are crossed with plants with white flowers, all the F1 plants have pink flowers. Is it possible for the pink-flowered plants to breed true? Explain using a Punnett square.
26. The following pedigree shows the family history of the x-linked genetic disease Hemophilia. Write the genotype next to each family member using Punnett squares to prove your results.



27. What is an x-linked trait? Find the possible offspring of a mother who is a carrier and a father who has normal vision.
28. What are the three parts of DNA?
29. How do the bases pair up in DNA? In RNA?
30. What are the 3 differences between DNA and RNA?
31. What is replication? Transcription?
32. What are the steps of translation? Include the types of RNA involved and their role.

