

1st Semester Honor Biology Review Guide

*This review is designed to help guided you as you prepare for your semester exam.

Website <http://cardinalbiology.weebly.com/>

Online Textbook <http://www.glencoe.com/ose> Access Code: DAD47D351D

Unit 1 Characteristics of Life (pgs 4-10)

Scientific Inquiry and Reflection (pgs 11-21)

Can you

- Identify examples of the characteristics of life.
- Generate examples for the characteristics of life.
- Differentiate between living and non-living.
- Generate a question to be answered using scientific inquiry.
- Develop a hypothesis to be tested.
- How would you design and conduct a controlled experiment.
- Identify the independent and dependent variables from an experiment.
- Identify weaknesses in experimental design.
- Analyze data, graphs & tables
- Distinguish between science and pseudoscience.
- Critique the validity of scientific data.
- Identify reliable sources for peer review and research.

Unit 2 Chemistry of Life (pgs 148-174)

Can you.....

- Draw atom models and identify the proton, neutron, and electron number in an atom.
- Differentiate between ionic and covalent bonds.
- Identify the 6 most common elements in living things.
- Identify the specific elements in each of the organic macromolecules.
- Describe the individual subunits in each of the organic molecules.
- Recognize the structural formulas of each organic molecule.
- Identify examples of the organic macromolecules.
- Summarize the major functions of each organic macromolecule.

- Predict what would happen to your body if certain organic macromolecules were not available.
- Describe hydrolysis and dehydration.
- Differentiate between reactants and products in a chemical reaction.
- Identify how organic molecules are broken down and made.
- Describe the polar property of water.
- Summarize the importance of water.
- Explain why hydrogen bonds form.
- Differentiate between acids and bases.
- Summarize the functions of enzymes.
- Create a model showing how enzymes function.
- Explain how pH and/or temperature affects enzyme function.

Unit 3 Cell Structure & Function (pgs. 182-211)

Can you.....

- Describe the difference between living and nonliving systems.
- Describe how organisms maintain homeostasis.
- Explain the structure and function of the cell/plasma membrane.
- Distinguish between active and passive transport.
- Explain how substances are moved across the membrane.
- Compare and contrast prokaryotic and eukaryotic cell.
- Compare and contrast plant and animal cells.
- Relate cell structures to their function.

Unit 4 Cellular Energy (pgs 216-236)

Can you...

- Summarize the laws of thermodynamics.
- Identify the structure of ATP.
- Explain how ATP stores and releases energy for cells.
- Identify the cell structures used in photosynthesis.
- Identify the reactants and products of photosynthesis.

- Describe the steps of photosynthesis.
- Identify the cell structures used in cellular respiration.
- Identify the reactants and products of cellular respiration.
- Describe the steps of cellular respiration.
- Compare and contrast photosynthesis and cellular respiration.
- Explain importance of oxygen in cellular respiration.
- Summarize lactic acid and alcoholic fermentation.
- Write the chemical reactions for photosynthesis and cellular respiration.
- Identify organisms that use photosynthesis and cellular respiration.
- Provide examples of cellular activities requiring energy.

Unit 5 Cellular Reproduction (Ch 9 pages 242-259 & 10.1 Meiosis 268-276)

Can you...

- Explain why cells are small.
- Identify what factors limit cell size.
- Recognize and diagram the stages of the cell cycle (Interphase, Mitosis, Cytokinesis).
- Identify the structures involved in the cell cycle.
- Explain how the cell divides using Mitosis.
- Differentiate between plant and animal cell cytokinesis.
- Describe the results of mitosis and the cell cycle.
- Identify the number of chromosomes in daughter cells as a result of mitosis.
- Explain how the cell cycle is regulated.
- Describe cancer and how it relates to the cell cycle.
- Explain apoptosis.
- Summarize stem cells and their importance.
- Recognize and summarize the stages of meiosis and the structures involved.
- Explain how meiosis provides genetic variation.
- Describe the results of meiosis and the chromosome number in each new cell.
- Recognize and summarize the stages of meiosis.
- Summarize the results of meiosis.
- Compare and contrast mitosis and meiosis.
- Explain why cell division is important.

Unit 6 DNA & Protein Synthesis (Ch. 12 pgs 324-351)

Can you....

- Diagram and label the structural components of DNA.
- Differentiate between DNA and RNA.
- Explain how DNA replicates.
- Summarize the importance of DNA replication.
- Identify the base pairing rules for DNA.
- Describe the structure and function of the three types of RNA molecules.
- Describe a codon and anti-codon.
- Transcribe DNA into mRNA.
- Identify the base pairing rules for DNA to mRNA and mRNA to tRNA anti-codons.
- Translate mRNA to amino acid sequence.
- Summarize protein synthesis.
- Identify where transcription and translation take place in the cell.
- Identify causes of mutations.
- Analyze how mutations can affect protein synthesis.
- Summarize how mutations affect gene expression.