

# 8th Grade Final Study Guide

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## Unit 6 - Solids = 8 Questions (16%)

- Understand that intermolecular forces of attraction determine a substance's relative melting point, boiling point, state of matter, etc.
- Be able to calculate the density of a substance given its mass and its dimension of length, width, and height.
- Understand the difference between a covalent network solid, a metallic solid, an ionic solid, and a molecular solid.
- Know the three layers of the Earth – crust, mantle, and the core.
- Know the mantle's three layers – lithosphere, asthenosphere, and mesosphere.
- Understand the difference between the outer core and the inner core.
- Know Alfred Wegner's hypothesis of continental drift beginning with Pangaea.
- Know the types of evidence that supports Hess's model of sea-floor spreading.

## Unit 7 - Liquids = 6 Questions (12%)

- Be able to identify a substance as polar and understand that polar substances have the ability to be dissolved in water.
- Be able to identify hydrogen bonding attraction in molecular diagrams.
- Be able to calculate the force of buoyancy given an objects weight in air and its weight when placed in a liquid.
- Be able to identify the relative pressures at different points in a liquid.
- Know the source of water that provides the greatest percentage of the hydrosphere.
- Know the different transitions of the hydrologic cycle (evaporation, transpiration, precipitation, etc.).
- Know the chemical laboratory technique accomplished by the hydrologic cycle – distillation.

## Unit 8 - Gases = 8 Questions (16%)

- Understand that gases like diatomic molecules ( $O_2$ ,  $N_2$ , etc.) exhibit very weak London Dispersion Forces of attraction.
- Understand the assumptions of the kinetic molecular theory of gases.
- Be able to identify the graph of the pressure of a gas and its volume (Boyles Law).
- Understand Avogadro's Principle – at the same temperature, volume, and pressure all gases have the same number of particles.
- Understand what happens molecularly if the temperature of a gas is increased.
- Be able to identify the molecules that predominantly make up the atmosphere ( $N_2 = 78\%$  and  $O_2 = 21\%$ ).
- Be able to correctly identify all five layers of the atmosphere.
- Be able to correctly identify a major pollutant of the atmosphere.

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## **Unit 9 - Chemical Reactions and Calculations = 6 Questions (12%)**

- Be able to identify the type of chemical reaction.
- Be able to balance a chemical reaction.
- Be able to convert from atoms to moles using Avogadro's number.
- Be able to convert from moles to grams using the molar mass.
- Be able to convert from grams to moles using the molar mass.
- Be able to convert from moles to moles using a balanced chemical equation.

## **Unit 10 - Scientific Inquiry and Darwinian Evolution = 3 Questions (6%)**

- Be able to identify the characteristics that make a scientific model valid.
- Be able to identify evidence cited by scientists to support Darwinian evolution.
- Be able to identify the assumptions made in the evidence cited for Darwinian evolution.

## **Unit 12 - Chemical Energy and ATP = 3 Questions (6%)**

- Be able to identify ATP and ADP molecules and their difference.
- Know the differences between carbohydrates, lipids, and proteins in terms of their energy generation and storage capabilities.
- Understand that energy is absorbed to break a chemical bond and energy is released to form a chemical bond.

## **Unit 13 - Photosynthesis = 4 Questions (8%)**

- Know the reactants of photosynthesis.
- Understand what happens to the production of high-energy sugars if a reactant is removed from photosynthesis.
- Know the products of photosynthesis.
- Know the factors that affect the rate of photosynthesis.
- Know that photosynthesis occurs in the chloroplasts.

## **Unit 14 - Cellular Respiration = 7 Questions (14%)**

- Know the starting molecule of glycolysis.
- Know the product of glycolysis.
- Know that cellular respiration occurs in the mitochondria.
- Know that the Krebs Cycle produces citric acid within the cycle.
- Understand that cellular respiration is an aerobic process.
- Understand that photosynthesis and cellular respiration are reverse reactions of each other.
- Understand the purpose of cellular respiration.

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## **Unit 15 - Fermentation = 5 Questions (10%)**

- Understand the purpose of fermentation.
- Know the sources of energy during exercise.
- Know the two types of fermentation.
- Know the products of lactic acid and alcoholic fermentation.
- Understand that fermentation is an anaerobic process.