

- 1) Scientific Processes
 - a) Problem
 - b) Hypothesis
 - c) Variables
 - i) Dependent
 - ii) Independent
 - iii) Controls
 - d) Materials and methods
 - e) Controlled Experiment
 - f) Data
 - i) Quantitative
 - ii) Qualitative
 - g) Graphs
 - i) Pie
 - ii) Bar
 - iii) Line
 - iv) Identification of IV and DV
 - v) X and Y axes
 - vi) interpreting
 - h) Results/Discussion
 - i) Conclusion
 - j) Cause and effect
- 2) States and Properties of Matter
 - a) Density
 - b) Matter
 - i) Solid
 - ii) Liquid
 - iii) Gas
 - iv) Plasma
 - v) Boson particles
 - c) Changes in states of matter
- 3) Scientific Tools
 - a) Beaker
 - b) Ruler
 - c) Triple beam balance
 - d) etc
- 4) Cells
 - a) Organelles
 - i) Cell membrane
 - ii) Cell wall
 - iii) Nucleus
 - iv) Nucleolus
 - v) Cytoplasm
 - vi) Rough endoplasmic reticulum (ER)
 - vii) Smooth endoplasmic reticulum (ER)
 - viii) Mitochondria
 - ix) Chloroplast
 - x) Vacuole
 - xi) Golgi apparatus/body
 - xii) Cilia
 - xiii) Flagella
 - xiv) Ribosome
 - xv) Lysosome
 - xvi) Nuclear membrane
 - xvii) Centrioles
 - b) Multi- v. unicellular
 - c) Prokaryote v. eukaryote
- 5) Measurement
 - a) SI System
 - b) Conversions
- 6) Introduction to Chemistry
 - a) Atomic structure
 - i) Subatomic particles
 - (1) Protons (positive charge)
 - (2) Neutrons (no charge)
 - (3) Electrons (negative charge)
 - ii) Electron rings/orbitals
 - b) Ions
 - c) Isotopes
 - d) Chemical formulas
 - e) Periodic table
 - i) Elements
 - ii) Atomic number
 - iii) Mass number
 - iv) Atomic mass
 - v) Groups, periods

- 7) Chemical bonds
 - a) Covalent
 - b) Ionic
 - c) Hydrogen
 - d) Van der Waals forces
 - e) Metallic bonds
- 8) Macromolecules
 - a) Structure
 - b) Function
 - c) Monomer
 - d) Example
 - e) Types
 - i) Protein
 - ii) Nucleotide
 - iii) Carbohydrate
 - iv) Lipid
- 9) Enzymes
 - a) Activation energy
 - b) Enzyme-substrate complex
 - i) Lock and key model
 - ii) Induced fit model
 - c) Regulation of enzyme activity
 - i) Temperature
 - ii) pH
 - iii) chemicals that destroy protein structure
 - iv) can be “turned off” by cells
- 10) Chemical reactions
 - a) Balancing equations
 - i) Law of conservation of mass
 - ii) Law of conservation of energy
 - b) Reactants, products, arrow
 - c) Energy
 - i) Activation energy
 - ii) Forms of energy
 - (1) Light
 - (2) Heat
 - (3) Chemical bond energy