

8th GRADE SCIENCE FINAL EXAM STUDY GUIDE
WEDNESDAY JUNE 10, 2009 and THURSDAY JUNE 11, 2009

- In addition to this study guide, you could review all:
 - previous quizzes
 - previous test review sheets
 - standards practice multiple choice questions at the end of each chapter

NATURE OF SCIENCE –
CHAPTER 1

Key Terms

Length	Manipulated Variable
Mass	Responding Variable
Volume	Constants

Essential Questions

- What is the difference between observations (quantitative and qualitative) and inferences?
- Be able to identify the different variables (MV, RV, constants) in an experiment.
- What is the purpose of the scientific method (inquiry)?
- What are the steps of the scientific method (inquiry)?
- Be able to design an experiment to answer a scientific question
- Be able to interpret and draw conclusions from a data table
- Be able to interpret and draw conclusions from a graph
- Be able to make generalizations about the validity/reliability of data
- What are the Standard base units for mass, volume, length, and density?
- What do the prefixes kilo- , centi-, and milli – mean?
- How would you measure mass, volume and length in the lab? What instruments would you use?

PHYSICS –
CHAPTERS 9, 10, and 11

Key Terms

Distance	Air resistance
Reference Point	Momentum
Speed	Energy
Velocity	Kinetic Energy
Acceleration	Potential Energy
Force	Law of Conservation of Energy
Net Force	Pressure
Gravity	Density
Weight	Buoyant Force
Inertia	Archimedes principle
Friction	

Essential Questions

Motion

- Why is it important to have a reference point when determining motion?

- What is the difference between speed and velocity?
- How do you determine (calculate) the speed of an object?
- How would you determine time, if given speed and distance? Distance, if given speed and time?
- Be able to read a distance versus time graph
- Be able to read a speed versus time graph
- What is the difference between constant velocity and acceleration?

Forces

- When would you add forces together? Subtract forces?
- What is the difference between balanced and unbalanced forces?
- What are some different types of forces? Which produce motion? Which resist motion?
- What factors affect how strong the pull of gravity is?
- What is the difference between mass and weight?
- What does inertia depend on?
- What is Newton's 1st Law? What does it mean?
- What is Newton's 2nd Law? What does it mean?
- What is Newton's 3rd Law? What does it mean?
- What does the Law of Conservation of Momentum state?

Fluids

- How would you determine the density of an object in lab?
- What equation would you need to use to determine the density of an object?
- Use density to explain why objects sink or float.
- Use buoyancy to explain why objects sink or float
- How do you determine the pressure on an object?

CHEMISTRY – CHAPTERS 2, 3, 4, 5, 6, and 7

Key Terms

Physical property	Mass number
Chemical property	Isotope
Physical change	Groups
Chemical change	Periods
Element	Metal
Compound	Nonmetal
Mixture	Semimetal
Atom	Inert Gas
Molecule	Valence electrons
Chemical bonds	Ions
Law of Conservation of Matter	Ionic Bonds
Endothermic reaction	Ionic Compounds
Exothermic reaction	Covalent Bond
Solids	Molecular Compound
Liquids	Reactant
Gases	Product
Melting	Solution
Freezing	Acids
Vaporization	Bases
Condensation	pH
Atomic number	

Essential Questions

Matter

- How are physical properties different from chemical properties?
- How are physical changes different from chemical changes?
- How do endothermic changes differ from exothermic changes?
- How does the law of conservation of energy apply to chemical reactions?

State of Matter

- Compare the particles in solids, liquids, and gases
- Which states have definite shapes? Definite volumes?
- What state changes require increases in thermal energy? Decrease in thermal energy?
- In one word, describe temperature, pressure, and volume
- How are the pressure, temperature, and volume of a gas related?

The Periodic Table

- Compare protons, neutrons, and electrons
- Be able to determine and use the atomic number and mass number
- What trends appear when reading the periodic table up and down (within groups)?
- What trends appear when reading the periodic table from left to right (within periods)?
- What are the physical and chemical properties of metals?
- What are the physical and chemical properties of nonmetals?

Bonds

- Be able to read electron dot diagrams based on an atom's valence electrons
- Be able to determine how an element will react based on its electron dot diagram
- Compare the reactivity of metals, nonmetals, and the inert gases
- Compare ionic bonds and covalent bonds

Chemical Reactions

- What happens to chemical bonds during chemical changes?
- What evidence indicates a chemical change?
- Be able to read/write a chemical equation
- Explain the law of conservation of matter
- Be able to balance a chemical equation

Acids, Bases, Solutions

- How are solutes, solvents, and solutions related?
- How does a dilute solution compare to a concentrated solution?
- What happens to acids and bases in solution?
- Compare acids and bases in terms of their concentration of hydrogen ions (H⁺)
- Be able to read and explain the pH scale

ASTRONOMY – CHAPTER 12

Key Terms

Rotation
Revolution
Axis
Gravity
Inertia
Lunar Eclipse

Solar Eclipse
Spring Tide
Neap Tide
Light Year
Astronomical Unit
Big Bang

Essential Questions

- What is the reason for day and night?
- What causes the seasons?
- How do satellites stay in orbit?
- What causes the phases of the moon to occur?
- Be able to identify the phases of the moon.
- When do solar eclipses occur? Lunar eclipses?
- What causes the tides to occur?
- When do spring and neap tides occur?