Midterm Study Guide-Physical Science

NOTE: For the midterm exam, please bring your unused bathroom passes, pencils, a calculator, reference sheets, and something to do if you finish early and a snack (No Energy Drinks).

Objectives for Midterm Exam: Please note that this final will a comprehensive final covering Chapters 1, 3, 4, and 5.

Chapter 1 The Nature of Science

1. Identify the steps scientists use to solve problems.
2. Describe why scientists use variables.
3. Distinguish between independent and dependent variable and control.
4. Explain the difference between scientific law and theory.
5. Name the prefixes used in SI and indicate what multiple of ten each one represents.
6. Identify the SI units and symbols for length, density, time and temperature.
7. Convert related SI units.
8. Identify three types of graphs and explain why they are used.
9. Analyze data using the various types of graphs.

Chapter 3 Motion, Acceleration and Forces

1. Distinguish between distance and displacement.
2. Calculate average speed.
3. Explain the difference between speed and velocity.
4. Interpret motion graphs.
5. Identify how acceleration, time and velocity are related.
6. Calculate acceleration.
7. Explain how positive and negative acceleration affect motion.
8. Explain how motion and forces are related.
9. Compare and contrast sliding friction and static friction.
10. Describe the effects of air resistance on falling objects.

Chapter 4 The Laws of Motion

1. Know the difference between balanced and unbalanced forces.
2. Define Newton's first law of motion.
3. Explain how inertia and mass are related.
4. Define Newton's second law of motion.
5. Calculate Newton's second law of motion.
6. Describe gravitational force.
7. Distinguish between mass and weight.
8. Compare circular motion with motion in a straight line.
9. State Newton's third law of motion.

10. Identify reaction and action forces.
11. Calculate momentum.
12. Recognize momentum is conserved.

Chapter 5 Energy

1. Distinguish between kinetic and potential energy.
2. Calculate kinetic energy.
3. Describe different forms of potential energy.
4. Calculate gravitational potential energy.
5. Describe how energy can be transformed from one form to another.
6. Explain how mechanical energy of a system is the sum of the kinetic and potential energy.
7. Discuss the law of conservation of energy.