

**Science – Physics**  
**Hartley-Melvin-Sanborn CSD**  
**Grade Level/Course Benchmarks**

Students will:

1. Use technology to perform accurate scientific investigations and communications. (GENERAL)
2. Understand how scientific knowledge changes and accumulates over time. (GENERAL)
3. Know ways in which science and society interact with one another. (GENERAL)
4. Expand kinetic theory to explain heat and how it affects matter (PHYSICAL)
5. Solve equations for phase change, specific heat, and heat transfer taken from laboratory (PHYSICAL)
6. Solve problems involving pressure, Pascal's Law, Archimedes Principle and gas laws (PHYSICAL)
7. Relate law of conservation of energy and matter to work, power potential energy, kinetic energy, collisions, and simple machines (PHYSICAL)
8. Solve work and power problems taken from word problems and laboratory activities (PHYSICAL)
9. Solve simple electric circuits by drawing and analyzing circuit diagrams (PHYSICAL)
10. Solve nuclear problems, including radioactive decay, artificial transmutation, mass-energy equations, and half-life activities (PHYSICAL)
11. investigate reflection, refraction, interference, diffraction, propagation, Doppler effect, and other wave characteristics as they apply to wave behavior (PHYSICAL)
12. Solve velocity, displacement and acceleration problems using time and distance information derived from laboratory activities, or written problems (PHYSICAL)
13. Interpret and create displacement-time, velocity-time, and acceleration-time graphs (PHYSICAL)
14. Explain force, mass, and acceleration in terms of Newton's Three laws of motion (PHYSICAL)
15. Discuss universal gravitation and its relationship between bodies on earth and in the universe (PHYSICAL)

16. Explain motion in 2 dimensions, including uniform circular motion, projectile motion, and simple harmonic motion (PHYSICAL)
17. Solve problems involving forces, acceleration, momentum, impulses, circular motion, simple harmonic motion, projectile motion, friction, and parallel forces taken from laboratory activities and work problems (PHYSICAL)
18. Relate law of conservation of energy and matter to work, power potential energy, kinetic energy, collisions, and simple machines (PHYSICAL)
19. Discuss universal gravitation and its relationship between bodies on earth and the universe. (EARTH)

Revised 2004-2005 Science Benchmark Day  
9-12 team