

Year at a Glance
Physics I PAP

Readiness & Supporting TEKS

1 st 9 Weeks	2 nd 9 Weeks
<p>Motion</p> <ul style="list-style-type: none"> Beginning of School: Capturing Kids Hearts, lab safety, math review, accuracy and precision (P.1A, 2G, 2J) Graphing motion (P.4A) <ul style="list-style-type: none"> Organization and evaluation of data Distance and displacement (P.4A & B) <ul style="list-style-type: none"> Scalar/Vectors (simple) Speed and velocity Average/Instantaneous velocity Relative motion Frame of reference Rocketry Lessons <ul style="list-style-type: none"> Rocket Propulsion Activity Balloon lab with fins (may take several days to design, test, and re-design) <p>Uniform Acceleration</p> <ul style="list-style-type: none"> Acceleration (P.4 A - B) Big 4 (P.4B) <ul style="list-style-type: none"> Algebra review Free fall (P.4 A - B) <ul style="list-style-type: none"> ADI Introduction lab on Free Fall Vector components (vocab and conceptual) (P.3E) Projectiles (P.4C) Possible Project: Students build and launch a catapult/trebuchet (P.4 A – B, P.4C) Rocketry Lessons <ul style="list-style-type: none"> Foam Rockets 	<p>Forces</p> <ul style="list-style-type: none"> Newton’s Laws (P.4D) Free Body Diagrams (P.4E) Vector addition and components (conceptual; math uses Pythagorean Theorems) (P.3E) Force of gravity (P.5A) Rocketry Activities <ul style="list-style-type: none"> Build Rocket Determine weight and area of rocket <p>Other Forces</p> <ul style="list-style-type: none"> Circular motion and its calculations (P.4C), (P.5B) <ul style="list-style-type: none"> Circular acceleration Circular velocity Centrifugal force Torque & formula Newton’s Law of Universal Gravitation (P.5A), (P.5B) Possible Project: Students build a bridge that support a given amount of weight (P.4C, P.4D, P.5A, P.5B) Rocketry Activities <ul style="list-style-type: none"> Determine center of gravity and pressure Determine weight and area of rocket <p>Momentum</p> <ul style="list-style-type: none"> Conservation of momentum (P.6D) Calculating momentum (P.6C) <p>Exam</p>

3 rd 9 Weeks	4 th 9 Weeks
<p>Energy & Heat</p> <ul style="list-style-type: none"> • Work-energy Theorem $W=Fd$ (P.6A) • KE/PE (P.6B) • Calculate mechanical energy (P.6C) • Power (P.6C) • Conservation of energy (P.6D) • Investigations with Pendulums and Springs (P.6B) • Four Laws of Thermodynamics (P.6E) • Law of Entropy (P.6G) • Examples representing 4 laws of thermodynamics (P.6E) • Conduction/Convection/Radiation (P.6F) • Possible Project: Egg Drop- Students build a device to protect an egg from a fall (P.6B, P.6C) • Rocketry Activities <ul style="list-style-type: none"> • Launch rocket • Determine rocket's altitude • Determine rocket's terminal velocity <p>Waves: Sound & Optics</p> <ul style="list-style-type: none"> • Waves through different types of medium (P.7A) • Wave characteristics (P.7B) • Calculations: frequency, wave speed, wavelength (P.7B) • Transverse vs Longitudinal (P.7C) • Wave behaviors (P.7D) <ul style="list-style-type: none"> • Resonance • Doppler Effect • Interference • Reflection- mirrors (P.7E) • Refraction –convex lenses (P.7E) • Diffraction • Scientist: Snellius – Snell's law (P.3C) • Possible Project: Students build a musical instrument, get in a group, create and play a song (P.7B, P.7D) 	<p>CBA during the 1st week of this 9 weeks</p> <p>Electricity & Magnetism</p> <ul style="list-style-type: none"> • What is electromagnetic force (P.5A) • Electric/magnetic fields in devices (P.5A) • Examples of electric/magnetic fields and forces in real life (P.5D) • Conductors/Insulators (P.5E) • Calculate electric force between objects based upon charges and distances between centers (P.5C) • $V=IR$ (P.5F) • Possible Project: Students will build a 3-D model containing parallel and series circuits (P.5F) • Calculations (P.5F) <p>Atomic & Nuclear</p> <ul style="list-style-type: none"> • Photoelectric (P.8A) • Dual nature (P.8A) • Compare emission spectra (P.8B) • Effects of strong/weak forces (P.5A) • Calculate and apply Mass-Energy Equivalence (P.8C) • Examples of applications of atomic, nuclear and quantum phenomena: nuclear stability, fission, fusion, radiation therapy, diagnostic imaging, semiconductors, superconductors, solar cells, nuclear power (P.8D) <p>Modern Physics (enrichment)</p> <ul style="list-style-type: none"> • Discovering Gravity Waves • Discuss & Explore Modern Physics Field <p>Exam</p>

Process standards are taught throughout the entire year.