



## Physical Science

### TERM 1

Term 1 Dates	MS College and Career Readiness Standards
WK 1: Aug 6-16	<p><b>PHS.1.1</b> Use contextual evidence to describe particle theory of matter. Examine the particle properties of solids, liquids, and gasses.</p> <p><b>PHS.1.2</b> Use scientific research to generate models to compare physical and chemical properties of elements, compounds, and mixtures.</p> <p><b>PHS.1.3</b> Conduct an investigation to determine the identity of unknown substances by comparing properties to known substances.</p>
WK 2: Aug 19-23	<p><b>PHS.1.4</b> Design and conduct investigations to explore techniques in measurements of mass, volume, length, and temperature.</p> <p><b>PHS.1.5</b> Design and conduct an investigation using graphical analysis (e.g., line graph) to determine the density of liquids and/or solids.</p> <p><b>PHS.1.6</b> Use mathematical and computational analysis to solve density problems. Manipulate the density formula to determine density, volume, or mass or use dimensional analysis to solve problems.</p>
<b>Unit Assessment 1</b>	
WK 3: Aug 26-30	<p><b>PHS.2.1</b> Research and develop models (e.g., 3-D models, online simulations, or ball and stick) to investigate both modern and historical theories of atomic structure. Compare models and contributions of Dalton, Thomson, Rutherford, Bohr, and of modern atomic theory.</p>
WK 4: Sept 2-6	<p><b>PHS.3.1</b> Use contextual evidence to determine the organization of the periodic table, including metals, metalloids, and nonmetals; symbols; atomic number; atomic mass; chemical families/groups; and periods/series.</p> <p><b>PHS.3.2</b> Using the periodic table and scientific methods, investigate the formation of compounds through ionic and covalent bonding.</p>
WK 5-6 Sept 9-20	<p><b>PHS.3.3</b> Using naming conventions for binary compounds, write the compound name from the formula, and write balanced formulas from the name (e.g., carbon dioxide - CO<sub>2</sub>, sodium chloride - NaCl, iron III oxide- Fe<sub>2</sub>O<sub>3</sub>, and calcium bromide - CaBr<sub>2</sub>).</p>
WK 7: Sept 23-27	<p><b>PHS.3.4</b> Use naming conventions to name common acids and common compounds used in classroom labs (e.g., sodium bicarbonate (baking soda), NaHCO<sub>3</sub>; hydrochloric acid, HCl; sulfuric acid, H<sub>2</sub>SO<sub>4</sub> ; acetic acid (vinegar), HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub>; and nitric acid, HNO<sub>3</sub>).</p>
<b>Mid-Term or Unit Assessment 2 WK 7.5/WK 8</b>	

Wk 8: Sept 30- Oct 4	<b>PHS.3.5</b> Use mathematical and computational analysis to determine the atomic mass of binary compounds.
<b><i>Unit Assessment 4 optional due to BMA</i></b>	
Wk 9: Oct 7-11	<b><i>Benchmark or Unit Assessment</i></b>

## TERM 1

### Recurring Standards

**Standards taught the first 4-5 weeks; the mid-term data will indicate the remediation needed.**

Wk 5: Sept 9-13	PHS.1.1, PHS.1.2 & PHS.1.3
Wk 6: Sept 16-20	PHS.1.4, PHS.1.5 & PHS.1.6
Wk 7: Sept 23-27	PHS.2.1



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### TERM 2

Term 2 Dates	MS College and Career Readiness Standards
WK 1: Oct 14-18	<b>PHS.4.1</b> Design and conduct experiments to investigate physical and chemical changes of various household products (e.g., rusting, sour milk, crushing, grinding, tearing, boiling, and freezing) and reactions of common chemicals that produce color changes or gasses.
WK 2: Oct 21-25	<b>PHS.4.2</b> Design and conduct investigations to produce evidence that mass is conserved in chemical reactions (e.g., vinegar and baking soda in a Ziploc® bag).
<b>Unit Assessment 1</b>	
WK 3: Oct 28- Nov 1	<b>PHS.4.3</b> Apply the concept of conservation of matter to balancing simple chemical equations. <b>PHS.4.4</b> Use mathematical and computational analysis to examine evidence that mass is conserved in chemical reactions using simple stoichiometry problems (1:1 mole ratio) or atomic masses to demonstrate the conservation of mass with a balanced equation.
WK 4: Nov 4-8	<b>PHS.4.5</b> Research nuclear reactions and their uses in the modern world, exploring concepts such as fusion, fission, stars as reactors, nuclear energy, and chain reactions. <b>PHS.4.6</b> Analyze and debate the advantages and disadvantages of nuclear reactions as energy sources.
<b>Mid-term OR Unit Assessment 2 WK 4.5/ WK 5</b>	
WK 5: Nov 11-15	<b>PHS.5.1</b> Research the scientific contributions of Newton, and use models to communicate Newton's principles.
WK 6: Nov 18-22	<b>PHS.5.2</b> Design and conduct an investigation to study the motion of an object using properties such as displacement, time of motion, velocity, and acceleration. <b>PHS.5.3</b> Collect, organize, and interpret graphical data using correct metric units to determine the average speed of an object.
<b>Unit Assessment 3</b>	
WK 7: Dec 2-6	<b>PHS.5.4</b> Use mathematical and computational analyses to show the relationships among force, mass, and acceleration (i.e., Newton's second law). <b>PHS.5.5</b> Design and construct an investigation using probe systems and/or online simulations to observe relationships between force, mass, and acceleration ( $F=ma$ ). <b>PHS.5.6</b> Use an engineering design process and mathematical analysis to design and construct models to demonstrate the law of conservation of momentum (e.g., roller coasters, bicycle helmets, bumper systems).

<p>WK 8: Dec 9-13</p>	<p><b>PHS.5.7</b> Use mathematical and computational representations to create graphs and formulas that describe the relationships between force, work, and energy (i.e., <math>W=Fd</math>, <math>KE=\frac{1}{2}mv^2</math>, <math>PE=mgh</math>, <math>W=KE</math>).</p> <p><b>PHS.5.8</b> Research the efficiency of everyday machines, and debate ways to improve their economic impact on society (e.g., electrical appliances, transportation vehicles).</p>
<p><b>Unit Assessment 4 optional due to BMA</b></p>	
<p>WK 9: Dec 16-20</p>	<p><b>Benchmark OR Unit Assessment</b></p>

<h2>TERM 2</h2>	
<h3>Recurring Standards</h3>	
<p><b>Standards taught the first 4-5 weeks; the mid-term data will indicate the remediation needed.</b></p>	
<p>WK 5: Nov 11-15</p>	<p>PHS.4.1 &amp; PHS.4.2</p>
<p>WK 6: Nov 18-22</p>	<p>PHS.4.3 &amp; PHS.4.4</p>
<p>WK 7: Dec 2-6</p>	<p>PHS.4.5 &amp; PHS.5.6</p>



## Physical Science

### TERM 3

Term 3 Dates	MS College and Career Readiness Standards
Wk 1: Jan 6-10	<b>PHS.6.1</b> Use models to analyze and describe examples of mechanical waves' properties (e.g., wavelength, frequency, speed, amplitude, rarefaction, and compression).
Wk 2: Jan 13-17	<b>PHS.6.2</b> Analyze examples and evidence of transverse and longitudinal waves found in nature (e.g., earthquakes, ocean waves, and sound waves). <b>PHS.6.3</b> Generate wave models to explore energy transference. <b>PHS.6.4 Enrichment:</b> Use an engineering design process to design and build a musical instrument to demonstrate the influence of resonance on music.*
<b><i>Unit Assessment 1</i></b>	
Wk 3: Jan 20-24	<b>PHS.6.5</b> Design and conduct experiments to investigate technological applications of sound (e.g., medical uses, music, acoustics, Doppler effects, and influences of mathematical theory on music). <b>PHS.6.6</b> Research real-world applications to create models or visible representations of the electromagnetic spectrum, including visible light, infrared radiation, and ultraviolet radiation.
Wk 4: Jan 27-31	<b>PHS.6.7 Enrichment:</b> Use an engineering design process to design and construct an apparatus that forms images to project on a screen or magnify images using lenses and/or mirrors.* <b>PHS.6.8 Enrichment:</b> Debate the particle/wave behavior of light.
<b><i>Mid-term OR Unit Assessment 2 WK 4.5/ WK 5</i></b>	
Wk 5: Feb 3-7	<b>PHS.7.1</b> Using digital resources, explore forms of energy (e.g., potential and kinetic energy, mechanical, chemical, electrical, thermal, radiant, and nuclear energy). <b>PHS.7.2</b> Use scientific investigations to explore the transformation of energy from one type to another (e.g., potential to kinetic energy, and mechanical, chemical, electrical, thermal, radiant, and nuclear energy interactions).
Wk 6-7: Feb 10-21	<b>PHS.7.3</b> Using mathematical and computational analysis, calculate potential and kinetic energy based on given data. Use equations such as $PE=mgh$ and $KE=\frac{1}{2}mv^2$
Wk 8: Feb 24-28	<b>PHS.7.4</b> Conduct investigations to provide evidence of the conservation of energy as energy is converted from one form of energy to another (e.g., wind to electric, chemical to thermal, mechanical to thermal, and potential to kinetic).

<i>Unit Assessment 3 optional due to BMA</i>	
WK 9: March 3-7	<b><i>BMA OR Unit Assessment</i></b>

<b>TERM 3</b>	
<b>Recurring Standards</b>	
<b>Standards taught the first 4-5 weeks; the mid-term data will indicate the remediation needed.</b>	
WK 5: Feb 3-7	PHS.6.1
WK 6: Feb 10-14	PHS.6.2 & PHS.6.3
WK 7: Feb 17-21	PHS.6.5 & PHS.6.6



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### TERM 4

Term 4 Dates	MS College and Career Readiness Standards
WK 1: March 17-21	<p><b>PHS.8.1</b> Compare and contrast temperature scales by converting between Celsius, Fahrenheit, and Kelvin.</p> <p><b>PHS.8.2</b> Apply particle theory to phase change and analyze freezing point, melting point, boiling point, vaporization, and condensation of different substances.</p>
WK 2: March 24-28	
WK 3: March 31- April 4	<p><b>PHS.8.3</b> Relate thermal energy transfer to real world applications of conduction (e.g., quenching metals), convection (e.g., movement of air masses/weather/plate tectonics), and radiation (e.g., electromagnetic).</p> <p><b>PHS.8.4 Enrichment:</b> Use an engineering design process to construct a simulation of heat energy transfer between systems. Calculate the calories/joules of energy generated by burning food products. Communicate conclusions based on evidence from the simulation.*</p>
<b>Unit Assessment 1</b>	
WK 4: April 7-11	<p><b>PHS.9.1</b> Use digital resources and online simulations to investigate the basic principles of electricity, including static electricity, current electricity, and circuits. Use digital resources (e.g., online simulations) to build a model showing the relationship between magnetic fields and electric currents.</p> <p><b>PHS.9.2</b> Distinguish between magnets, motors, and generators, and evaluate modern industrial uses of each.</p>
WK 5: April 14-18	
<b>Mid-term OR Unit Assessment 2 (WK 4.5/ WK 5)</b>	
WK 6: April 21-25	<p><b>PHS.9.3 Enrichment:</b> Use an engineering design process to construct a working electric motor to perform a task. Communicate the design process and comparisons of task performance efficiencies.*</p> <p><b>PHS.9.4</b> Use an engineering design process to construct and test conductors, semiconductors, and insulators using various materials to optimize efficiency.*</p>
WK 7: April 28- May 2	
<b>Unit Assessment 3 optional due to EOY</b>	
WK 8: May 5-9	<i>Review for Assessment</i>
WK 9: May 12-21	<b>EOY Assessment</b>

# TERM 4

## Recurring Standards

Standards taught the first 4-5 weeks; the mid-term data will indicate the remediation needed.

WK 5: April 14-18	PHS.8.1 & PHS.8.2
WK 6: April 21-25	PHS.8.3 & PHS.8.4
WK 7: April 28- May 2	