**Seventh Grade BSD Learning Targets 2016-2018**

Here are the 7th grade learning targets recently updated by the science articulation team. The learning targets have been reorganized into fewer categories to reduce assessments and instructional time. All ALT.1 targets are inquiry supporting targets, all ALT.2 are engineering supporting targets, and all ALT.3 are informational text learning targets. Informational text includes reading text, data tables, and graphs to get information about a science topic. The NGSS Performance expectation codes are shown in parenthesis.

|  |  |
| --- | --- |
| **7TH GRADE SCIENCE 2016-2018** | |
| **SCIENTIFIC PRACTICES** | |
| **Academic Learning Targets** | **Supporting Targets** |
| **ALT 1 – SCIENTIFIC INQUIRY**  I can design and conduct a scientific investigation with controlled variables that answers a scientific question with data. | * **AST 1.1** – I can independently develop a testable question and hypothesis that can be scientifically investigated using data, identifying controls, independent and dependent variables, with progress toward little or no support. |
| * **AST 1.2** – I can design a logical and safe experiment and clearly communicate my procedure |
| * **AST 1.3** – I can collect and present relevant data in an organized way and create graphs when appropriate, with limited support. |
| * **AST 1.4** – I can analyze data and/or observations and give evidence based explanations and identify obvious sources of error. I can communicate my results and suggest improvements. |
| **ALT 2 – ENGINEERING DESIGN**  I can design, construct, test and evaluate a simple solution to a defined problem using appropriate tools and materials. | * **AST 2.1** - I can define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. [(MS-ETS1-1)](http://www.nextgenscience.org/msets1-engineering-design) |
| * **AST 2.2** - I can evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. [(MS-ETS1-2)](http://www.nextgenscience.org/msets1-engineering-design) |
| * **AST 2.3** -I can analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.[(MS-ETS1-3)](http://www.nextgenscience.org/msets1-engineering-design) |
| * **AST 2.4** - I can develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. (MS-ETS1-4) |

|  |  |
| --- | --- |
| **EARTH PROCESSES** | |
| **Academic Learning Targets** | **Supporting Targets** |
| **ALT 3 - LANDFORM CHANGE**  I can explain and model how the Earth's surface changes over time. | * **AST 3.1 - Inquiry:** I can design and conduct a scientific investigation with controlled variables that answers a scientific question with data. |
| * **AST 3.2** **- Engineering:** I can design, construct, test and evaluate a simple solution to a defined problem using appropriate tools and materials. |
| * **AST 3.3 - Informational Text:** I can read and use informational texts about landform change to answer relevant questions |
| * **AST 3.4 -** I can develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity. [(MS-ESS2-4)](http://www.nextgenscience.org/dci-arrangement/ms-ess2-earths-systems) |
| * **AST 3.5** - I can develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process. [(MS-ESS2-1)](http://www.nextgenscience.org/msess2-earth-systems) |
| * **AST 3.6** - I can construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and scales. [(MS-ESS2-2)](http://www.nextgenscience.org/msess2-earth-systems) |
| * **AST 3.7** - I can analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. [(MS-ESS3-2)](http://www.nextgenscience.org/dci-arrangement/ms-ess3-earth-and-human-activity) |

|  |  |
| --- | --- |
| **WEATHER, CLIMATE AND HUMAN IMPACT** | |
| **Academic Learning Targets** | **Supporting Targets** |
| **ALT 4 - WEATHER, CLIMATE, AND HUMAN IMPACT**  I can evaluate natural processes and human activities that affect global environmental change. | * **AST 4.1 - Science Inquiry:** I can collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. [(MS- ESS2-5)](http://www.nextgenscience.org/msess2-earth-systems) |
| * **AST 4.2** **- Engineering:** I can design, construct, test and evaluate a simple solution to a defined problem using appropriate tools and materials. |
| * **AST 4.3 - Informational Text:** I can read and use informational texts about weather, climate, and human impact to answer relevant questions |
| * **AST 4.4** - I can develop and use a model to describe how unequal heating and rotation of the Earth causes patterns of atmospheric and oceanic circulation that determine regional climates. [(MS-ESS2-6)](http://www.nextgenscience.org/msess2-earth-systems) |
|  | * **AST 4.5 –** I can construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems. [(MS-ESS3-4)](http://www.nextgenscience.org/dci-arrangement/ms-ess3-earth-and-human-activity) |
| * **AST 4.6** - I can construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes. [(MS-ESS3-1)](http://www.nextgenscience.org/msess3-earth-human-activity) |
| * **AST 4.7** - I can ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. [(MS-ESS3-5)](http://www.nextgenscience.org/msess3-earth-human-activity) |
|  | * **AST 4.8** - I can apply scientific principles to design a method for monitoring and minimizing a human impact on the environment [(MS-ESS3-3)](http://www.nextgenscience.org/msess3-earth-human-activity) |

|  |  |
| --- | --- |
| **CELLULAR PROCESSES AND HEREDITY** | |
| **Academic Learning Targets** | **Supporting Targets** |
| **ALT 5 - CELL PROCESSES AND HEREDITY**  I can explain and model the processes that help cells grow and pass traits from one generation to the next. | * **AST 5.1** **- Science Inquiry:** I can design and conduct a scientific investigation with controlled variables that answers a scientific question related to cell processes and heredity. |
| * **AST 5.2** **- Engineering:** I can design, construct, test and evaluate a simple solution to a defined problem using appropriate tools and materials. |
| * **AST 5.3** - **Informational Text:** I can read and use informational texts about growth and the passing of traits in organisms to answer relevant questions. |
| * **AST 5.4** - I can construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. [(MS-LS1-6)](http://www.nextgenscience.org/msls1-molecules-organisms-structures-processes) |
| * **AST 5.5** - I can develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. [(MS-LS1-7)](http://www.nextgenscience.org/msls1-molecules-organisms-structures-processes) |
| * **AST 5.6 -** I can develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. [(MS-LS3-2)](http://www.nextgenscience.org/msls3-heredity-inheritance-variation-traits) |

|  |  |
| --- | --- |
| **PHYSICS** | |
| **Academic Learning Target** | **Supporting Targets** |
| **ALT 6 - FORCES & INTERACTIONS**  I can identify and describe types of motion and forces and relate forces qualitatively to the laws of motion and gravitation. | * **AST 6.1** **- Science Inquiry:** I can plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object. [(MS-PS2-2)](http://www.nextgenscience.org/msps2-motion-stability-forces-interactions) |
| * **AST 6.2** **- Engineering:** I can apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects. [(MS-PS2-1)](http://www.nextgenscience.org/msps2-motion-stability-forces-interactions) |
| * **AST 6.3** - Informational Text: I can read and use informational texts about forces and motion to answer relevant questions. |
| * **AST 6.4** – I can analyze the patterns of different types of motion, including: speed, velocity, and acceleration. |
| * **AST 6.5 –** I can identify and describe different types of forces and how they affect motion, including: friction, mass (Newton’s), balanced and unbalanced. |
| * **AST 6.6 –** I can construct an explanation that describes how Newton's Laws best predicts the motion of an object at a given time. |

|  |  |
| --- | --- |
| **WAVES AND EM RADIATION** | |
| **Academic Learning Target** | **Supporting Targets** |
| **ALT 7 - WAVES AND ELECTROMAGNETIC RADIATION**  I can use mathematical representations and develop models to describe the properties of waves.  **OPTIONAL TARGET**  **(Teach if there is time)** | * **AST 7.1 - Science Inquiry:** I can design and conduct a scientific investigation with controlled variables that answers a scientific question with data. |
| * **AST 7.2 - Engineering:** I can design, construct, test and evaluate a simple solution to a defined problem using appropriate tools and materials. |
| * **AST 7.3 - Informational Text:** I can read and use informational texts about waves and electromagnetic radiation to answer relevant questions. |
| * **AST 7.4** - I can develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. [(MS-PS4-2)](http://www.nextgenscience.org/msps1-matter-interactions) |
| * **AST 7.5** - I can use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. [(MS-PS4-1)](http://www.nextgenscience.org/msps1-matter-interactions) |
| * **AST 7.6** - I can integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. [(MS-PS4-3)](http://www.nextgenscience.org/msps1-matter-interactions) |