Voyage to Mars

Next Generation of Science Standards

5th Grade	6th Grade	7th Grade	8th Grade
5-PS1-3 Make observations and measurements to identify materials based on their properties.	**MS-PS1-4** Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	**MS-PS1-4** Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	**MS-PS1-4** Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
5-PS2-1 Support an argument that the gravitational force exerted by Earth on objects is directed down.	**MS-PS2-2** 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** 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** 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.
5-ESS1-1 Support an argument that the apparent brightness of the sun and stars is due to their relative distances from Earth.	**MS-PS2-3** Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	**MS-PS2-3** Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	**MS-PS2-3** Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.
3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**MS-PS2-4** Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	**MS-PS2-4** Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	**MS-PS2-4** Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**MS-PS3-5** Construct, use, and present arguments to support that claim that when the motion energy of an object changes, energy is transferred to or from the	**MS-PS3-5** Construct, use, and present arguments to support that claim that when the motion energy of an object changes, energy is transferred to or from the	**MS-PS3-5** Construct, use, and present arguments to support that claim that when the motion energy of an object changes, energy is transferred to or

	object.	object.	from the object.
	MS-LS1-6 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** 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** 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-LS1-8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	**MS-LS1-8** Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	**MS-LS1-8** Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.
	MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	**MS-ESS1-1** Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.	**MS-ESS1-1** Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
	MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	**MS-ESS1-2** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	**MS-ESS1-2** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
	MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system.	**MS-ESS1-3** Analyze and interpret data to determine scale properties of objects in the solar system.	**MS-ESS1-3** Analyze and interpret data to determine scale properties of objects in the solar system.
	MS-ESS2-3 Analyze and interpret data on the distribution of fossils and	**MS-ESS2-3** Analyze and interpret data on the distribution of fossils and	**MS-ESS2-3** Analyze and interpret data on the distribution of fossils and

	rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
	MS-ETS1-1 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** 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** 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-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	**MS-ETS1-2** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	**MS-ETS1-2** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
	MS-ETS1-3 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** 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** 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.

Voyage to Mars

Common Core Mathematics Standards

5th Grade	6th Grade	7th Grade	8th Grade
M.5.OA.1 Using parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	**M.6.NS.2** Fluently divide multi-digit numbers using the standard algorithm.	**M.7.RP.1** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	**M.8.EE.4** Perform operations with numbers expressed in scientific notion, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. Interpret scientific notion that has been generated by technology.
M.5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluation them.	**M.6.NS.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	**M.7.RP.2d** Explain what a point (x,y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0,0) and (1,r) where r is the unit rate.	
M.5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	**M.6.EE.1** Write and evaluate numerical expressions involving whole-number exponents.	**M.7.NS.1a** Describe situations in which opposite quantities combine to make 0.	
M.5.NBT.2 Explain patterns in the number of zeros of the	**M.6.EE.5** Understand solving an equation or	**M.7.EE.3** Solve multi-step real-life and mathematical	

product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	inequality as a process of answering a question: which values from a specific set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specific set make an equation or inequality true.	problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	
M.5.NBT.3b Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparison.	**M.6.EE.7** Solve real-world mathematical problems by writing and solving equations of the form x + p =q and px = q for cases which p, q, and x are all nonnegative rational numbers.		
M.5.NBT.4 Use place value understanding to round decimals to any place.			
M.5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.			

M.5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.			

Common Core English, Language Arts, and Literacy Standards

5th Grade	6th Grade	7th Grade	8th Grade
RL.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	**RL.6.1** Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**RL.7.1** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**RL.8.1** Cite textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	**RI.6.1** Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**RI.7.1** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**RI.8.1** Cite textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
RI.5.3 Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	**RI.6.3** Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text.	**RI.7.3** Analyze the interactions between individuals, events, or ideas in a text.	**RI.8.3** Analyze how a text makes connections among and distinctions between individuals, ideas, or events.
RI.5.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to grade 5 topics or subject area.	**RI.6.4** Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.	**RI.7.4** Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.	**RI.8.4** Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone, including analogies or

			allusions to other texts.
RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.	**RI.6.7** Integrate information presented in different media or formats as well as in words to develop a coherent understanding of a topic or issue.	**RI.7.7** Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject.	**RI.8.7** Evaluate the advantages and disadvantages of using different mediums to present a particular topic or idea.
RI.5.10 By the end of the year, read and comprehend informational texts, including history / social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently.	**RI.6.10** By the end of the year, read and comprehend literary notification in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the end of the range.	**RI.7.10** By the end of the year, read and comprehend literary notification in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the end of the range.	**RI.8.10** By the end of the year, read and comprehend literary notification at the high end of the grades 6-8 text complexity band independently and proficiently.
RF.5.3a Use combined knowledge of all letter-sound correspondences, syllabication, patterns, and morphology to read accurately unfamiliar multisyllabic words in context and out of context.	**W.6.1b** Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.	**W.7.1b** Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.	**W.8.1b** Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
RF.5.4a Read on-level text with purpose and understanding.	**W.6.2b** Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.	**W.7.2b** Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.	**W.8.2b** Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
RF.5.4c Use context to confirm or self-correct word recognition and understanding, rereading as	**W.6.2d** Use precise language and domain-specific vocabulary to inform about or explain the	**W.7.2d** Use precise language and domain-specific vocabulary to inform about or explain the	**W.8.2d** Use precise language and domain-specific vocabulary to inform about or explain

necessary.	topic.	topic.	the topic.
W.5.1b Provide logically ordered reasons that are supported by facts and details.	**W.6.2e** Establish and maintain a formal style.	**W.7.2e** Establish and maintain a formal style.	**W.8.2e** Establish and maintain a formal style.
W.5.2b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.	**W.6.4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	**W.7.4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	**W.8.4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
W.5.2d Use precise language and domain-specific vocabulary to inform about or explain the topic.	**W.6.7** Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	**W.7.7** Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.	**W.8.7** Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions that allow for multiple avenues for exploration.
W.5.2e Provide a concluding statement or section related to the information or explanation presented.	**W.6.9b** Apply grade 6 Reading standards to literary nonfiction.	**W.7.9b** Apply grade 7 Reading standards to literary nonfiction.	**W.8.9b** Apply grade 8 Reading standards to literary nonfiction.
W.5.4 Provide clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.	**SL.6.1c** Pose and respond to specific questions and detail by making comments that contribute to the topic, text, or issue under discussion.	**SL.7.1c** Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.	**SL.8.1c** Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
W.5.7 Conduct short research projects that use several sources to build knowledge through	**SL.6.1d** Review the key ideas expressed and demonstrate understanding of multiple perspectives is	**SL.7.1d** Acknowledge new information expressed by others and, when warranted, modify their	**SL.8.1d** Acknowledge new information expressed by others and, when warranted, qualify

investigation of different aspects of a topic.	through reflection and paraphrasing.	own views.	or justify their own views in light of the evidence presented.
W.5.9b Apply grade 5 Reading standards to informational texts.	**SL.6.2** Interpret information presented in diverse media and formats and explain how it contributes to a topic, text, or issue under study.	**SL.7.2** Analyze the main ideas and supporting details presented in diverse media and formats and explain how the ideas clarify a topic, text, or issue under study.	**SL.8.2** Analyze the purpose of information presented in diverse media and formats and evaluate the motives behind its presentation.
SL.5.1c Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.	**SL.6.3** Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	**SL.7.3** Delineate a speaker's argument and specific claims, evaluating the sources of the reasoning and the relevance and sufficiency of the evidence.	**SL.8.3** Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.
SL.5.1d Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.	**L.6.2a** Use punctuation to set off nonrestrictive / parenthetical elements.	**L.7.2a** Use comma to separate coordinate adjectives.	**L.8.2a** Use punctuation to indicate a pause or a break.
SL.5.2 Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	**L.6.2b** Spell correctly.	**L.7.2b** Spell correctly.	**L.8.2c** Spell correctly.
SL.5.3 Summarize the points a speaker makes and explain ho each claim is supported by reasons and evidence.	**RH.(6-8).2** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior	**RH.(6-8).2** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior	**RH.(6-8).2** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source

	knowledge or opinions.	knowledge or opinions.	distinct from prior knowledge or opinions.
L.5.2a Use punctuation to separate items in a series.	**RH.(6-8).4** Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history / social studies.	**RH.(6-8).4** Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history / social studies.	**RH.(6-8).4** Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history / social studies.
L.5.2b Use a comma to separate an introductory element from the rest of the sentence.	**RH.(6-8).7** Integrate visual information with other information in print and digital texts.	**RH.(6-8).7** Integrate visual information with other information in print and digital texts.	**RH.(6-8).7** Integrate visual information with other information in print and digital texts.
L.5.2c Use a comma to set off the words *yes* and *no*, to set off a tag question from the rest of the sentence, and to indicate direct address.	**RST.(6-8).1** Cite specific textual evidence to support analysis of science and technical texts.	**RST.(6-8).1** Cite specific textual evidence to support analysis of science and technical texts.	**RST.(6-8).1** Cite specific textual evidence to support analysis of science and technical texts.
L.5.2e Spell grade-appropriate words correctly, consulting references if needed.	**RST.(6-8).2** Determine the central ideas or conclusions of a text: provide an accurate summary of the text distinct from prior knowledge or opinions.	**RST.(6-8).2** Determine the central ideas or conclusions of a text: provide an accurate summary of the text distinct from prior knowledge or opinions.	**RST.(6-8).2** Determine the central ideas or conclusions of a text: provide an accurate summary of the text distinct from prior knowledge or opinions.
L.5.4a Use context as a clue to the meaning of a word or phrase.	**RST.(6-8).3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	**RST.(6-8).3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	**RST.(6-8).3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
L.5.4b Use common grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word.	**RST.(6-8).4** Determine the meaning of symbols, key terms, and other domain specific words or phrases	**RST.(6-8).4** Determine the meaning of symbols, key terms, and other domain specific words or phrases	**RST.(6-8).4** Determine the meaning of symbols, key terms, and other domain specific words or

	as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.	as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.	phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.
L.5.4c Consult reference materials, both print and digital, to find the pronunciation and determine or classify the precise meaning of key words and phrases.	**RST.(6-8).7** Integrate quantitative or technical information expressed in words in a text with a version of the information expressed visually.	**RST.(6-8).7** Integrate quantitative or technical information expressed in words in a text with a version of the information expressed visually.	**RST.(6-8).7** Integrate quantitative or technical information expressed in words in a text with a version of the information expressed visually.
	RST.(6-8).8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	**RST.(6-8).8** Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	**RST.(6-8).8** Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
	RST.(6-8).9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	**RST.(6-8).9** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	**RST.(6-8).9** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
	WHST.(6-8).4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	**WHST.(6-8).4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	**RST.(6-8).10** By the end of grade 8, read and comprehend science / technical texts in the grades 6-8 text complexity band independently and proficiently.
	WHST.(6-8).5 With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting,	**WHST.(6-8).5** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting,	**WHST.(6-8).4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task,

	or trying a new approach, focusing on how well purpose and audience have been addressed.	or trying a new approach, focusing on how well purpose and audience have been addressed.	purpose, and audience.
	WHST.(6-8).7 Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	**WHST.(6-8).7** Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	**WHST.(6-8).5** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.
	WHST.(6-8).8 Gather relevant information from multiple print and digital sources, using terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	**WHST.(6-8).8** Gather relevant information from multiple print and digital sources, using terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	**WHST.(6-8).7** Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
	WHST.(6-8).9 Draw evidence from informational texts to support analysis reflection and research.	**WHST.(6-8).9** Draw evidence from informational texts to support analysis reflection and research.	**WHST.(6-8).8** Gather relevant information from multiple print and digital sources, using terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard

			format for citation.
			WHST.(6-8).9 Draw evidence from informational texts to support analysis reflection and research.