

NATIONAL STANDARDS AND BENCHMARKS

NATIONAL STANDARDS		BENCHMARKS				LESSON			
SCIENCE						1	2	3	4
Understands the composition and structure of the universe and the earth's place in it	Grades 6–8								
	Knows that the planet Earth and our solar system appear to be somewhat unique, although similar systems might yet be discovered in the universe	•							
	Grades 9–12								
Understands the sources and properties of energy	Grades 6–8								
	Knows that energy is a property of many substances	•	•						
	Grades 9–12								
Understands forces in motion	Grades 6–8								
	Knows that all energy can be considered to be either kinetic energy (energy of motion), potential energy (depends on relative position), or energy contained by a field (electromagnetic waves)			•					
	Grades 9–12								
Knows that laws of motion can be used to determine the effects of forces on the motion of objects	Grades 6–8								
	Knows that an object's motion can be described and represented graphically according to its position, direction of motion, and speed			•	•				
	Grades 9–12					•	•		
MATH									
Uses a variety of strategies in the problem-solving process	Grades 6–8								
	Understands the role of written symbols in representing mathematical ideas and the use of precise language in conjunction with the special symbols of mathematics							•	
	Grades 9–12								
Understands the components of mathematical modeling	Grades 6–8								
	Organizes and displays data using tables, graphs, frequency distributions, and plots							•	•
	Grades 9–12								
Understands and applies basic and advanced concepts of statistics and data analysis	Grades 6–8								
	Uses data and statistical measures for a variety of purposes							•	•
	Grades 9–12								
Understands and applies basic and advanced properties of the concepts of measurement	Grades 6–8								
	Selects and uses the best method of representing and describing a set of data							•	•
	Grades 9–12								
Understands how the reader's bias, measurement error, and display distortion can affect the interpretation of data	Grades 6–8								
	Understands how the reader's bias, measurement error, and display distortion can affect the interpretation of data								•
	Grades 9–12								
TECHNOLOGY									
Understands the relationships among science, technology, society, and the individual	Grades 6–8								
	Knows ways in which technology and society influence one another	•						•	•
	Grades 9–12								
Knows examples of advanced and emerging technologies and how they could have an impact on society	Grades 6–8								
	Knows that most technological systems require an input of energy, which is an important consideration both in designing an object or a system and in conserving energy							•	
	Grades 9–12								
Understands scientific principles of energy, work, and power in relation to technological design	Grades 6–8								
	Understands scientific principles of energy, work, and power in relation to technological design							•	
	Grades 9–12								
Understands the electromagnetic fundamentals of generators, transformers, and motors	Grades 6–8								
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	Grades 9–12								
Identifies the elements, structure, sequence, operation, and control of systems	Grades 6–8								
	Identifies the elements, structure, sequence, operation, and control of systems	•						•	•
	Grades 9–12								
Knows that understanding how things work and designing solutions to problems of almost any kind can be facilitated by systems thinking, which employs mathematical modeling and simulation	Grades 6–8								
	Knows that understanding how things work and designing solutions to problems of almost any kind can be facilitated by systems thinking, which employs mathematical modeling and simulation	•						•	•
	Grades 9–12								
LANGUAGE ARTS									
Uses the general skills and strategies of the reading process	Grades 6–8								
	Establishes and adjusts purposes for reading	•	•	•	•				
	Grades 9–12								
Uses a variety of strategies to extend reading vocabulary	Grades 6–8								
	Uses a variety of strategies to extend reading vocabulary	•						•	•
	Grades 9–12								
Uses context to understand figurative, idiomatic, and technical meanings of terms	Grades 6–8								
	Uses context to understand figurative, idiomatic, and technical meanings of terms	•	•	•	•				
	Grades 9–12								
Extends general and specialized reading vocabulary	Grades 6–8								
	Extends general and specialized reading vocabulary	•	•	•	•				
	Grades 9–12								
Determines the appropriateness of an information source for a research topic	Grades 6–8								
	Determines the appropriateness of an information source for a research topic	•	•	•	•				
	Grades 9–12								
Organizes information and ideas from multiple sources in systematic ways	Grades 6–8								
	Organizes information and ideas from multiple sources in systematic ways	•	•	•	•				
	Grades 9–12								
Uses a variety of print and electronic sources to gather information for research topics	Grades 6–8								
	Uses a variety of print and electronic sources to gather information for research topics	•	•	•	•				
	Grades 9–12								
Uses a variety of primary sources to gather information for research topics	Grades 6–8								
	Uses a variety of primary sources to gather information for research topics	•	•	•	•				
	Grades 9–12								
Plays a variety of roles in group discussions	Grades 6–8								
	Plays a variety of roles in group discussions	•	•	•	•				
	Grades 9–12								
Uses strategies to enhance listening comprehension	Grades 6–8								
	Uses strategies to enhance listening comprehension	•	•	•	•				
	Grades 9–12								
Asks questions to broaden and enrich classroom discussions	Grades 6–8								
	Asks questions to broaden and enrich classroom discussions	•	•	•	•				
	Grades 9–12								
Understands influences on language use	Grades 6–8								
	Understands influences on language use								•
	Grades 9–12								