



SciGirls Investigate  
Physical Science Fun!



NEXT GENERATION SCIENCE STANDARDS

	Grade 5	Grades 3-5				Grades 6-8										
	Physical Science	Engineering Design				Physical Science						Engineering Design				
	5-PS1-3. Make observations and measurements to identify materials based on their properties.	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.	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.	3-5-ETS1-3. Plan and carry out fair tests in which variable are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	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-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-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	MS-PS3-2. Develop a model to describe that when the arrangement of object interacting at a distance changes, different amounts of potential energy are stored in the system.	MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes energy is transferred to or from the object.	MS-ETS1-1. Define the criteria and constrains 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. Evaluation 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-ETS1-4. 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.	
No-Slip Grip	X	X	X	X		X	X	X			X					X
Insulation Station	X	X	X	X	X					X	X	X	X	X	X	X
House Warming	X	X	X	X	X					X	X	X	X	X	X	X
Super Sleuths	X															
Print Hints	X															



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	COMMON CORE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY IN SCIENCE AND TECHNICAL SUBJECTS			COMMON CORE STATE STANDARDS FOR MATHEMATICS		
	Grade 5		Grades 6-8	Grade 7	Grade 8	
	Speaking & Listening			Writing Standards	Expressions & Equations	Statistics & Probability
	SL.5.1 Engage effectively in a range of collaborative discussions with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.	SL.5.3 Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.	SL.5.4 Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	W.6.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically.	8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
No-Slip Grip	X	X	X	X	X	
Insulation Station	X	X	X	X	X	X
House Warming	X	X	X	X	X	X
Super Sleuths	X	X	X	X		
Print Hints	X	X	X	X	X	



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## STANDARDS FOR TECHNOLOGICAL LITERACY

STANDARDS FOR TECHNOLOGICAL LITERACY																	
Grades 3-5												Grades 6-8					
Scope of Technology	Core Concepts of Technology			Relationships Among Technologies and other Fields	Attributes of Design	Engineering Design	Other Problem Solving Approaches	Apply Design Processes		Core Concepts of Technology	Relationships Among Technologies and Other Fields	Attributes of Design	Other Problem Solving Approaches	Apply Design Processes			
1.E Creative thinking and economic and cultural influences shape technological development.	2.J Materials have many different properties.	2.K Tools and machines extend human capabilities, such as holding, lifting, fastening, separating, and computing.	2.L Requirements are the limits to designing or making a product or system.	3. B Technologies are often combined.	3.C Various relationships exist between technology and other fields of study.	8.C The design process is a purposeful method of planning practical solutions to problems.	9.C The engineering design process involves defining a problem, generating ideas, selecting a solution, testing the solution(s), making the items, evaluating it, and presenting the results.	10.C Troubleshooting is a way of finding out why something does not work so that it can be fixed.	11.E The process of designing involves presenting some possible solutions in visual form and then selecting the best solution from many.	11.F Test and evaluate the solutions for the design problem.	2.M Technological systems include input, processes, output, and at times, feedback.	3.E A product, system, or environment developed for one setting may be applied to another setting.	3.F Knowledge gained from other fields of study has a direct effect of the development of technological products and systems.	8.E Design is a creative planning process that leads to useful products and systems.	10.F Troubleshooting is a problem-solving method used to identify the cause of a malfunction in a technological system.	10.G Invention is a process of turning ideas and imaginations into devices and systems. Innovation is the process of modifying an existing product of system to improve it.	11.K Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints and refine as needed.
No-Slip Grip	X	X	X	X	X			X				X	X		X	X	
Insulation Station	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X
House Warming	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X
Super Sleuths		X	X		X			X			X		X		X		
Print Hints		X			X			X			X	X		X			