

## Third Grade Standards Connections for Labs

Physics of Roller Coasters	Advanced Physics of Roller Coasters	Chemicals of Innovation	Down the Drain	Engineering for Earthquakes	Simplicity of Electricity	Chemistry of Platination	DNA and Genetics
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Next Generation Science Standards							
<b>Engineering Design</b>							
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 variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	✓		✓			
<b>Physical Science: Forces and Interactions</b>							
3-PS2-2	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	✓					
3-PS2-3	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.						
3-PS2-4	Define a simple design problem that can be solved by applying scientific ideas about magnets						
<b>Earth Science: Earth and Human Activity</b>							
3-ESS-3	Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.			✓			
<b>Science and Engineering Practices</b>							
Practice 1	Asking questions and defining problems	✓		✓			
Practice 2	Developing and using models	✓		✓			
Practice 3	Planning and carrying out investigations	✓		✓			
Practice 6	Constructing explanations and designing solutions	✓		✓			
Practice 7	Engaging in argument from evidence			✓			
Practice 8	Obtaining, evaluating, and communicating information			✓			
<b>Disciplinary Core Ideas</b>							
PS2.A	<i>Forces and Motion</i> • Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.	✓					
PS2.B	<i>Types of Interactions</i> • Objects in contact exert forces on one another • The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.	✓					
PS3.A	<i>Definitions of Energy</i> • The faster a given object is moving, the more energy it possesses.	✓					

ETS1.A	<i>Defining and Delimiting an Engineering Problem</i> • Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.	✓			✓				
ETS1.B	<i>Developing Possible Solutions</i> • At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. • Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.	✓			✓				
ETS1.C	<i>Optimizing the Design Solution</i> • Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.	✓			✓				
<b>Crosscutting Concepts</b>									
Patterns	Patterns of change can be used to make predictions.	✓							
Cause and Effect	Cause and effect relationships are routinely identified, tested, and used to explain change.	✓							
Influence of Engineering, Technology, and Science on Society and the Natural World	Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.	✓			✓				
<b>Common Core Language Arts</b>									
<b>Speaking and Listening</b>									
SL.3.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on Grade 3 topics and texts, building on others' ideas and expressing their own clearly.	✓			✓				
SL.3.1b	Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).	✓			✓				
SL.3.1c	Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.	✓			✓				
SL.3.1d	Explain their own ideas and understanding in light of the discussion.	✓			✓				
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.	✓			✓				
SL.3.4a	Plan and deliver an informative/explanatory presentation on a topic that: organizes ideas around major points of information, follows a logical sequence, includes supporting details, uses clear and specific vocabulary, and provides a strong conclusion.	✓			✓				

