

## Variables-4<sup>th</sup> Grade

Timeframe 10 weeks
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May 4, 2012 DRAFT

Standards	Assessment/ Student Evidence	Academic Vocabulary	Resources
<b>SYSA Systems contain subsystems.</b>	<ul style="list-style-type: none"> <li>Identify at least one of the subsystems of an object, plant, or animal (e.g., a craft stick is a subsystem of the flipper system)</li> </ul>	System Subsystem	<i>Variables</i> Teacher Guide by Foss- Investigations 1, 2 & 4 with SPS inserts
<b>SYSB A system can do things that none of its subsystems can do by themselves.</b>	<ul style="list-style-type: none"> <li>Specify how a system can do things that none of its subsystems can do by themselves (e.g., a flipper system can launch an object, but a cork or base alone cannot)</li> </ul>		
<b>SYSC Systems have inputs and outputs. Changes in inputs may change the outputs of a system.</b>	<ul style="list-style-type: none"> <li>Describe what goes into a system (input) and what comes out of a system (output) (e.g., when experimenting with paper cup boats, adding pennies/weight is an input, while a sinking boat is an output)</li> <li>Describe the effect on a system if its input is changed (e.g., if a longer string is used then the pendulum system completes fewer cycle)</li> </ul>	Input Output	
<b>SYSD One defective part can cause a subsystem to malfunction, which in turn will affect the system as a whole.</b>			
<b>INQB Scientists plan and conduct different kinds of investigations, depending on the questions they are trying to answer. Types of investigations include systematic observations, field studies, models and open-ended explorations as well as controlled experiments.</b>	<ul style="list-style-type: none"> <li>Given a research question, plan an appropriate investigation, which may include systematic observations, field studies, models, open-ended explorations, or controlled experiments</li> </ul>	Investigation Controlled experiment	

Power Standards in green

Complementary Standards in yellow

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<p>INQA Scientific investigations involve asking and answering questions and comparing the answers with evidence from the real world.</p> <p>INQC An experiment involves a comparison for an experiment to be valid and fair. All the things that can possibly change the outcome of the experiment should be kept the same, if possible.</p> <p>INQD Investigations involve systematic collection and recording of relevant observations and data.</p> <p>INQE Repeated trials are necessary for reliability.</p>			
<p><b>INQG Scientific explanations emphasize evidence, have logically consistent arguments, and use known scientific principles, models, and theories.</b></p>	<ul style="list-style-type: none"> <li>• Generate a conclusion from a scientific investigation and show how the conclusion is supported by evidence and other scientific principles</li> </ul>	<p>Conclusion Evidence</p>	
<p>INQH Scientists communicate the results of their investigations verbally and in writing. They review and ask questions about the results of other scientists' work.</p>			

Power Standards in green

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Standards	Assessment/ Student Evidence	Academic Vocabulary	Resources
INQ1 Scientists report the results of their investigations honestly, even when those results show their predictions were wrong or when they cannot explain the results.			

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