





# Ramp

Name(s): \_\_\_\_\_

Date: \_\_\_\_\_

<p><b>NGSS GOALS</b></p>	 <p><b>BRONZE</b></p>	 <p><b>SILVER</b></p>	 <p><b>GOLD</b></p>	 <p><b>PLATINUM</b></p>
<p><b>1. Student work related to this Crosscutting Concept:</b>                      In this project, we redesigned a structure in our ramp system to move heavier loads, move them faster, or move them higher.</p>				
<p><b>Structure and Function:</b>                      Design structures to serve particular functions.</p>	<ul style="list-style-type: none"> <li>We chose our design goal —move heavier loads, move them faster, or move them higher.</li> <li>We identified which structure in our ramp system needed to be changed.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We met Bronze.</li> <li>We changed the relevant ramp structure to make it function as desired.</li> <li>Our test data showed that we made a small improvement (&lt; 2x improvement).</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We met Silver.</li> <li>Our test data showed that we made a large improvement. (&gt; 2x improvement).</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We chose a second design goal</li> <li>We identified ramp structure to change.</li> <li>We completed the redesign and our test data showed that we made an improvement.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>
<p><b>2. Student work related to this Practice:</b>                      In this project, we asked questions and defined problems to help us decide how to redesign our ramp system.</p>				
<p><b>Asking Questions and Defining Problems:</b>                      Ask questions that clarify and/or refine an engineering problem.</p>	<ul style="list-style-type: none"> <li>We asked questions that only partially related to improving our ramp system.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We met Bronze.</li> <li>We asked questions that were relevant to the features of the ramp we wanted to improve.</li> <li>Our questions resulted in at least one redesign idea.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We met Silver.</li> <li>Our questions helped us clarify a test procedure to evaluate our design idea.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We met Gold.</li> <li>Our questions lead us to more than one redesign idea that we tested with an experiment.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>
<p><b>3. Student work related to this Practice:</b>                      In this project, we collected data during tests of the original ramp design. We analyzed and interpreted that data to help us begin our redesign project.</p>				
<p><b>Analyzing and Interpreting Data:</b>                      Analyze data to define whether a system best meets criteria for success.</p>	<ul style="list-style-type: none"> <li>We compared ideal mechanical advantage for all four ramp experiments.</li> <li>We circled the best ideal mechanical advantage.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We met Bronze.</li> <li>We compared actual mechanical advantage for all four ramp experiments.</li> <li>We circled the best actual mechanical advantage.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We met Gold.</li> <li>We compared percentage of accuracy for all four ramp experiments.</li> <li>We circled the best percentage of accuracy.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> <li>We used our data analysis to identify which ramp structure would affect the different goals we evaluated for our redesign —height, weight, and speed.</li> </ul> <p style="text-align: center;"><input type="checkbox"/></p>
<p>Notes:</p>				