





Tower Crane

Name(s): _____

Date: _____

<p>NGSS GOALS</p>	 <p>BRONZE</p>	 <p>SILVER</p>	 <p>GOLD</p>	 <p>PLATINUM</p>
<p>1. Student work related to this Crosscutting Concept: In this project, we explored the cause and effect relationship between the pulley arrangement in our tower crane and the weight and speed of the load we lift.</p>				
<p>Cause and Effect: Students use cause and effect relationships to explain and predict behaviors in design systems.</p>	<ul style="list-style-type: none"> We observed our tower crane lift an object with pulley setup A. We predicted what would happen with pulley setup B. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Bronze. We noted how pulley setup B caused a change in our lifting length and lifting time. We predicted what would happen with pulley setup C. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Silver. We noted how pulley setup C caused a change in our lifting length and lifting time. We observed what was different about each pulley setup. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Gold. We explained the functions and possible additional improvements of the new tower crane. <p style="text-align: center;"><input type="checkbox"/></p>
<p>2. Student work related to this Practice: In this project, we built a working model of a tower crane to test different types of pulley systems.</p>				
<p>Developing and Using Models: Develop and use a model to generate data to test ideas about phenomena in designed systems, including those representing inputs and outputs.</p>	<ul style="list-style-type: none"> We built the tower crane with pulley setup A. We completed our measurements and calculations for pulley setup A. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Bronze. We built pulley setup B. We completed our measurements and calculations for pulley setup B. We completed our tests of A and B at least twice. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Silver. We built pulley setup C. We completed our measurements and calculations for pulley setup C. We completed all of our tests at least three times. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Gold. We made changes to the two pulleys found near the motor. We used our observations of this experiment to help us answer our redesign questions. <p style="text-align: center;"><input type="checkbox"/></p>
<p>3. Student work related to this Practice: In this project, we redesigned our tower crane. We developed an investigation to explore how the new design functions.</p>				
<p>Planning and Carrying Out Investigations: Collect data about the performance of a proposed object.</p>	<ul style="list-style-type: none"> We picked a redesign question. We created a data table to organize our measurements and observations. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Bronze. We identified our independent and dependent variables. We completed at least two tests. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Silver. We identified our experimental controls (what we kept constant for each experiment). We completed at least three tests. Our data helped us evaluate our redesign. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> We met Gold. We completed multiple trials for all of our tests. We created a new data table to clearly compare our redesign test results with the data from our first experiments. <p style="text-align: center;"><input type="checkbox"/></p>
<p>Notes:</p>				