

Design Process Rubric for Rounding Roller Coasters STEAM Module

| Task | 4 | 3 | 2 | 1 |
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| Design Plan | Students created a detailed, fully developed sketch of their roller coaster's design plan, labeling all of the parts and expressing the concept of rounding specific to their number. Students conducted this planning by taking turns speaking and listening to their peers and contributing to the overall group plan. | Students created a mostly developed sketch of their roller coaster's design plan, labeling most of the parts and expressing the concept of rounding specific to their number. Students conducted this planning by taking turns speaking and listening to their peers most of the time. | Students created an under-developed sketch of their roller coaster's design plan, labeling some of the parts and unclearly expressing the concept of rounding specific to their number. Students conducted this planning by sometimes taking turns speaking and listening to their peers. | Student rarely were on task developing a sketch of their roller coaster's design plan. The coaster was not accurately labeled and concept of rounding was not apparent. Students rarely took turns speaking and listening to their peers. |
| Innovative Use of the Materials | Students accurately and appropriately used materials (foam pipe insulation, tape, cardboard and plastic cups) to build an innovative coaster. Student shared materials appropriately and gave positive feedback to their peers in the building process. | Students used most of the materials in their design (foam pipe insulation, tape, cardboard and plastic cups) to build an innovative coaster. Students most of the time shared materials appropriately and gave positive feedback to their peers in the building process. | Students used some of the materials in their design (foam pipe insulation, tape, cardboard and plastic cups) to build. Students sometimes shared materials appropriately and gave positive feedback to their peers in the building process. | Students rarely used the materials appropriately (foam pipe insulation, tape, cardboard and plastic cups) to build. Students rarely shared materials appropriately and overall the process of designing and building lacked positive peer feedback. |
| Demonstrates Rounding Principles | Students clearly and accurately labeled their coaster demonstrating the concept of rounding. Students labeled the coaster within a multi-digit starting and ending number and a 10 number range, equidistant apart. | Students labeled their coaster demonstrating the concept of rounding with accuracy most of the time. Students mostly labeled the coaster within a multi-digit starting and ending number and a 10 number range, equidistant apart. | Students labeled their coaster demonstrating the concept of rounding with accuracy some of the time. Students some of the time labeled the coaster within a multi-digit starting and ending number and a 10 number range, equidistant apart. | Student's did not accurately label their coaster demonstrating the concept of rounding. The range of numbers was inaccurate and the starting and ending numbers were inaccurate. |
| Overall Design Process | Students tested, evaluated thoroughly and then redesigned as needed to lead to sound mechanics of their roller coaster. Ultimately the marble on the track demonstrated motion that clearly expressed how a number would round up or down on each curve. | Students tested, evaluated and then redesigned as needed to lead to mostly sound mechanics of their roller coaster. Ultimately the marble on the track demonstrated motion that most of the time expressed how a number would round up or down on each curve. | Students tested, evaluated and then redesigned as needed to lead to somewhat sound mechanics of their roller coaster. Ultimately the marble on the track demonstrated motion that some of the time expressed how a number would round up or down on each curve. | The design process was not applied with fidelity. This led to inconsistent mechanics of their roller coaster. Ultimately the marble on the track demonstrated motion that rarely expressed how a number would round up or down on each curve. |