

Group Member Names \_\_\_\_\_

## Roller Coaster Design Rubric

Criteria	Design Plan (15)	Budget (20)	Structure (15)	Safety (15)	8 Turns (15)	Height (10)	Loop (10)	Funnel (5)	Speed Calculations (20)	Energy Calculations (25)
Excellent	Group included a strong design plan, including all sketches and research. (15 points)	Group stayed within the \$65 budget and tracked their calculations accurately. (17-20 points)	Roller coaster's structure is very sound and balanced. (15 points)	Roller coaster is very safe, and marble did not fall off the track. (15 points)	Roller coaster includes 8 turns. (15 points)	Roller coaster is between 30 centimeters (cm) and 100 cm. (9-10 points)	Roller coaster includes a very structurally sound loop. (9-10 points)	Roller coaster includes a very structurally sound funnel. (5 points)	Group calculated speed accurately and included data from all trials. (17-20 points)	Group calculated energy accurately and included data from all trials. (21-25 points)
Good	Group included a good design plan, including sketches and research. (11-14 points)	Group only went over budget by \$1 or \$2 budget and tracked their calculations accurately. (13-16 points)	Roller coaster's structure is sound and balanced. (11-14 points)	Roller coaster is safe, but marble almost fell off the track. (11-14 points)	Roller coaster includes 6-7 turns. (11-14 points)	Roller coaster is between 28 cm and 102 cm. (7-8 points)	Roller coaster includes a structurally sound loop. (7-8 points)	Roller coaster includes a structurally sound funnel. (4 points)	Group calculated speed accurately and included most data from all trials. (13-16 points)	Group calculated energy accurately and included most data from all trials. (13-16 points)
Average	Group included an average design plan, including some sketches and	Group only went over budget by \$3 or \$4 budget and tracked	Roller coaster's structure is somewhat sound and balanced.	Roller coaster somewhat safe, but marble almost fell	Roller coaster includes 4-5 turns. (7-10 points)	Roller coaster is between 26 cm and 104 cm. (5-6 points)	Roller coaster includes a somewhat structurally sound loop.	Roller coaster includes a somewhat structurally	Group calculated speed somewhat accurately and	Group calculated energy somewhat accurately and

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	research. (7-10 points)	their calculations somewhat accurately. (9-12 points)	(7-10 points)	off the track once. (7-10 points)			(5-6 points)	sound funnel. (3 points)	included some data from all trials. (9-12 points)	included some data from all trials. (9-12 points)
Poor	Group included a poor design plan, missing most sketches and research. (3-6 points)	Group only went over budget by \$5 or \$6 budget, but did not track their calculations accurately. (5-8 points)	Roller coaster's structure is shaky and somewhat imbalanced. (3-6 points)	Roller coaster is not entirely safe, and marble almost fell off the track between two and three times. (3-6 points)	Roller coaster includes 2-3 turns. (3-6 points)	Roller coaster is between 24 cm and 106 cm. (3-4 points)	Roller coaster includes an unsafe loop. (3-4 points)	Roller coaster includes an unsafe funnel. (2 points)	Group calculated speed somewhat accurately, but did not include data from the trials. (5-8 points)	Group calculated energy somewhat accurately, but did not include data from the trials. (5-8 points)
Very Poor	Group included a poor design plan or no design plan. Missing sketches and research. (0-2 points)	Group only went over budget by \$7 or \$8 budget and tracked their calculations somewhat accurately (0-4 points)	Roller coaster's structure very shaky and very imbalanced. (0-2 points)	Roller coaster is not safe, and marble almost fell off the track more than four times. (0-2 points)	Roller coaster includes 1 turn. (0-2 points)	Roller coaster is between 22 cm and 108 cm. (0-2 points)	Roller coaster includes a shaky loop or does not a loop. (0-2 points)	Roller coaster includes a shaky funnel or does not a funnel. (0-1 points)	Group did not calculate speed accurately, and did not include data from the trials. (0-4 points)	Group did not calculate energy accurately, and did not include data from the trials. (0-4 points)