Roller Coaster Rubric

Achievement level	Design Criterion B: Developing Ideas (Company Presentation)	Design Criterion C: Creating the solution (Roller Coaster Functionality)	Science Criterion A: Scientific Knowledge (Thematic Elements and Company Success)
	i. Develop a design specification which outlines the success criteria for the design of a solution based on the data collected. iii. Present the chosen design and outline the reasons for its selection. iv. Develop accurate planning drawings/diagrams and outline requirements for the creation of the chosen solution.	ii. Demonstrate excellent technical skills when making the solution. iii. Follow the plan to create the solution, which functions as intended, explain changes made to the chosen design and the plan when making the solution. iv. Present the solution as a whole	i. Apply scientific knowledge ii.
Criterion made Simple	i. **Architect:** Model drawing of the physical roller coaster with location of labels and measurements. iii. **Project Director:** Discuss during the presentation of your roller coaster the reasons for your design choices and successes. iv. **Transportation Chief:** Schematic drawing of the roller coaster car with label of safety feature, materials, and measurements, plus a 3-D model of the car.	ii. **Function:** Roller Coaster includes a hill and a loop. iii. **Function:** Roller Coaster looks like the design, the marble stays on the track, goes over at least one hill, through the loop, and no extra energy has been added. iv. **Carpenter:** Summary of book and why it would be a good theme for a roller coaster. Roller coaster presents the theme accurately.	i. **Roller Coaster Labels:** Roller Coaster contains physical labels that describe a required list of physics concepts in accurate locations. ii. **Accountant:** Keeps track of all finances accurately
1-2 **50-60**	i. **Architect:** Architect drawing represents the physical roller coaster with constant, distracting errors. Schematic has few or no labels or measurements. iii. **Project Director**: Presentation lacking technical details like vocabulary and concepts. Does not discuss 2 out of 3: Reason for theme, design features, or challenges. iv. **Transportation Chief:** Car Design Schematic poorly represents the car with no or few labels, and/or no 3-D model.	ii. **Function:** Demonstrates minimal technical skills when making the solution (Coaster has EITHER a hill or a loop). iii. **Function:** Creates the solution, which functions poorly and is presented in an incomplete form. (Goes through roller coaster 1 of 4 times.) iv. **Carpenter:** Summary of book contains little or no information or does not explain theme. Theme is not represented in the roller coaster.	i. **Roller Coaster Labels:** Roller Coaster labels are consistently inaccurate or missing. ii. **Accountant:** Balance sheet accurate 1 out of 4 audits
3-4 **70-75**	i. **Architect:** Architect drawing poorly represents the physical roller coaster with most of the labels. Some labels may be incorrectly placed. Minimal measurements. iii. **Project Director:** Presentation contains vague technical details describing the physics of the roller coaster. Discusses briefly: reason for theme, design features, or challenges. iv. **Transportation Chief:** Car Design Schematic represents the car with few labels or is missing measurements, labels, or theme, and 3-D car shows minimal order.	ii. **Function:** Demonstrates satisfactory technical skills when making the solution (Roller coaster has a hill, loop, and safety feature). iii. **Function:** Creates the solution, which partially functional and is adequately presented. (Goes through roller coaster 2 of 4 times.) iv. **Carpenter:** Summary of book vaguely explains theme and story. Roller coaster minimally represents theme with applicable decorations and features.	i. **Roller Coaster Labels:** Roller Coaster contains physical labels with some erros or inaccurate locations. Some labels are missing. ii. **Accountant:** Balance sheet accurate 2 out of 4 audits
5-6 **83-88**	i. **Architect:** Architect drawing accurately depicts roller coaster and contains all required labels in accurate locations with few or no errors. Measurements are complete. iii. **Projector Director:** Presentation contains accurate technical details describing the physics behind the roller coaster with few or no errors. iv. **Transportation Chief:** Schematic represents the car with all requirements with few or no errors and adequate detail.	ii. **Function:** Demonstrates competent technical skills when making the solution (Roller coaster has a hill, loop, and safety feature plus one additional feature). iii. **Function:** Creates the solution, which functions as intended and is presented appropriately.(Goes through roller coaster 3 of 4 times.) iv. **Carpenter:** Summary of book fully describes the theme and story. Roller coaster represents theme with applicable decorations and features.	i. **Roller Coaster Labels:** Roller Coaster contains accurate physical labels with few or no errors. ii. **Accountant:** Balance sheet accurate 3 out of 4 audits
7-8 **95-100**	i. **Architect:** Architect drawing is laid out in a professional manner and accurately represents roller coaster with labels in the appropriate locations. Measurements are above and beyond. iii. **Projector Director:** Presentation contains accurate technical details describing the physics behind the roller coaster in a skillful and professional manner. iv. **Transportation Chief:** Schematic is laid out in a professional manner and represents the car with all requirements with few or no errors and adequate detail, and the 3-D model matches the schematic.	ii. **Function:** Demonstrates excellent technical skills when making the solution. (Coaster includes a loop and hill, plus includes several (at least 2) other complex turns and corkscrews.) iii. **Function:** Follows the plan to create the solution, which functions as intended and is presented appropriately.(Goes through roller coaster 4 of 4 times.) iv. **Carpenter:** Summary of book fully describes the theme and story in a professional manner	i. **Roller Coaster Labels:** Roller Coaster contains accurate physical labels with few or no erros, including extra concepts not discussed in class. ii. **Accountant:** Balance sheet accurate 4 out of 4 audits
Overall Score	Design Criterion B:	Design Criterion C:	Science Criterion A: