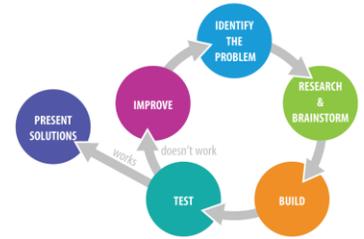# Global Paper Roller Olympics

Your team is commissioned by the Amusement Park Corporation to apply their knowledge of basic inertial, gravitational and centripetal forces, potential and kinetic energy, friction, and the engineering design process, in order to design and build the most exciting and longest lasting roller coaster ride. Using card stock templates to build colorful columns, tracks, loops, corkscrews and support trusses, your "marble" roller coaster will be designed to trigger the release of a second roller coaster. Use stickers or markers to decorate your roller coaster track. Additional points will be provided for the roller coaster leaving and returning to the track, for doing a 360 degree loop, and for triggering a second marble to move.
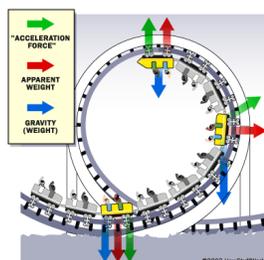
Paper roller templates: http://www.paperrollercoasters.com/

Design objectives and scoring: marble must exit track on table surface or floor to qualify
*the entire roller coaster must be positioned on a 32 cm X 58 cm heavy cardboard or foam core base; components can extend beyond the base as long as they are not touching the base/floor/table top
*the entire roller coaster must measure no higher than 3 meters (from highest point to the lowest point)
*construction materials: restricted to cardstock paper (60-110 lb) and transparent tape (exception: creating trigger to launch 2nd roller coaster may use string, paper clips, thumbtacks)
*marble (roller coaster) should be the standard size of 14-16 mm diameter, made of glass
*Number of seconds marble is in motion: 1 point for each second marble is in motion
*Number of 360 degree loops (mark with red sticker): 3 points for each loop
*Number of marble leaving and returning to track (with at least 1 centimeter of air travel, horizontal or vertical; mark with blue sticker): 2 points for each
*First marble (after exiting track on floor or table top) triggers launch of a second marble near or at the top of the structure, that travels for at least 5 seconds: 5 points
*One touch allowed per trial (one human touch of marble or track)
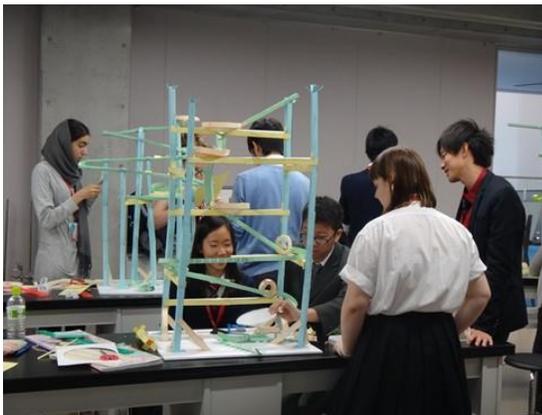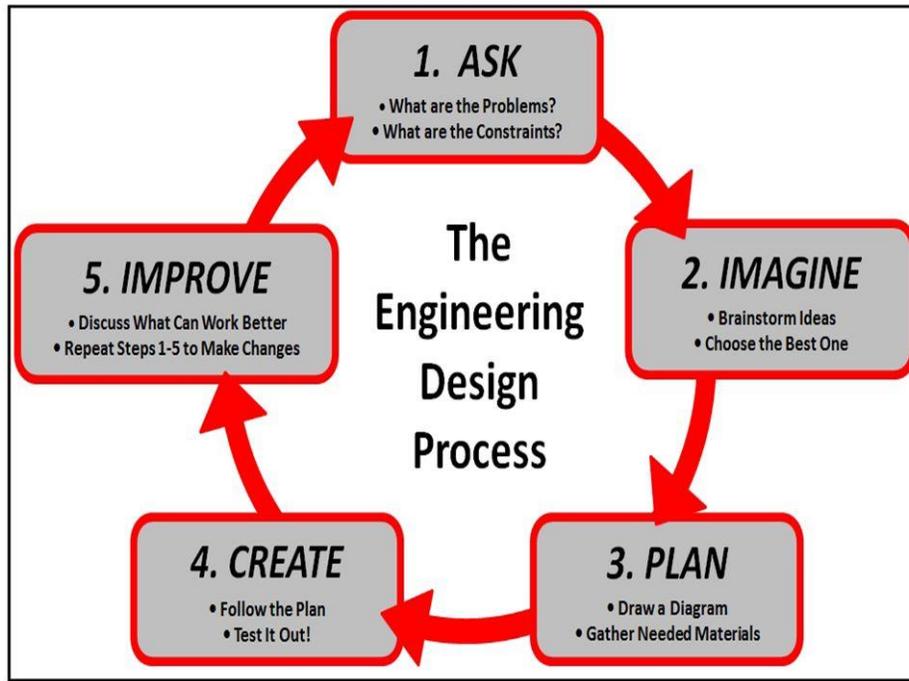
Scoring table: to be submitted

Number of seconds marble in motion		
Number of seconds:	X 1 point=	points
Number of 360 degree loops		
Number of loops:	X 3 points=	points
Number of marble departure/return		
Number:	X 2 points=	points
Launch of second marble	X 5 points=	points
Total score		points

Additional resources:
http://www.mrwaynesclass.com/ProjectCoaster/Lab/index.html
http://www.instructables.com/id/Paper-Roller-Coasters-/step4/Loops-and-Corkscrews/

Paper Roller Coaster: Engineering Zone