

8th grade Problem Solving... “King of the Hill” Slow Roller Challenge:

Design a lightweight device that will roll, not slide, down a ramp taking the longest time possible.

(Who can stay on the hill the longest & be crowned king?)

Criteria:

- *Maximum Device Mass is 300 grams (about the weight of the marked screwdriver)*
- *Dimensions will permit it to fit into a 11 _” x 11 _” cube at all times*
- *Test Ramp is a single wooden meter stick with a 20 degree slope*
- *Device should be constructed in a dumbbell shape with the central bar rolling in contact with the meter stick ramp & the weights of the dumbbell balanced on either side of the ramp*
- ***All parts should come from your home’s recyclable or reusable items or things lying around the house:*** *wood, paper, cardboard, rubber bands, string, and axel shaped items of various diameters & other creative items. You may want to bring extras to barter with! (You’ll need it day two - **Tomorrow**)*
- *We’ll supply the tape, hot melt glue gun & glue, hand drills and basic cutting tools.*
- *You may not bring in knives, razors, razor blades or any other dangerous tools.*
- ***All parts of the device must move together as a unit & progress down the ramp.*** *Each part of the device must have the same angular motion (velocity). Devices similar to “cars” that have wheels that roll but a body that does not roll will be disqualified! If it skids at all, it will be disqualified. It must keep rolling at all times.*
- *The meter stick will be supported from below to avoid obstructing the motion of the device.*

Design Process:

- *You will complete the Design Process Log, sketches, gather materials, get teacher approvals along the way, then construct your prototype.*
- *You will have **the first two days to design**, sketch and prepare materials for your prototype. The **remaining 5 days** will be used to build, test, refine & retest your prototype. The **longest time** recorded will count towards your performance grade.*

Grading: Total of 50 Points

Problem Solving & Design Process followed (15pts) Preparedness (5 pts) Performance (15 pts) Daily Effort (15 pts)

Daily Notes: Record exactly what you did during the period.

Day 1: _____

Day 2: _____

Day 3: _____

Day 4: _____

Day 5: _____

Day 6: _____

Day 7: _____

