

Challenge: Edible Car Race

Assignment:

Using edible substances only, you are to construct a vehicle. The only part of your vehicle that does not have to be edible is the axles.

Due Date: Please bring your car in on _____

Requirements:

- Edible products only (except for the axles)
- Must be able to roll down a 30° ramp.
- Must be able to roll at least 1 meter beyond the ramp.

Scoring:

- You will not only be scored on your final vehicle (25 pts.), but also your final write-up (25 pts.).
- The vehicle will be scored on creativity, effort, workmanship, and performance (speed and momentum).

Write-up:

Include in your write-up the following components:

- **Title** – “Edible Car Race: _____” (name of your vehicle)
- **Introduction** – explain what the project is and what concept(s) it helps to teach. (2-3 sentences)
- **Materials** – list of *all* materials used on car (bullet list) - **5 pts.**
- **Methods of construction** – How did you put your car together? If you tried different things, describe earlier versions/trials as well. (paragraph format) - **5 pts.**
- **Results (speed and energy)** – You must include your car’s mass and average time. You will then need to calculate your car’s speed (at the bottom of the ramp), potential energy (at the top of the ramp), kinetic energy (at the bottom of the ramp - use your speed you just calculated), and explain the difference between your potential and kinetic energies. Should they be the same? Why or why not? Are they the same? Why or why not? (paragraph format) - **10 pts.**
- **Conclusion** – What went right? What went wrong? What would you do to improve next time? (paragraph format) - **5 pts.**

Edible Car Race

Vehicle (name): _____

Objectives	Non-Performance	Low Performance	Average Performance	Exemplary Performance	Earned Points
Edible (bonus point if axles also edible)	0 points More than two parts are inedible beyond the axles.	1 point Most of the vehicle is edible. Only 2 parts inedible beyond the axles.	3 points The majority of the vehicle is edible. Only one part beyond the axles inedible.	5 points All parts of the vehicle are edible with the exception of the axles.	
Creativity/ Effort	1 point Car appears thrown together at the last minute.	3 points Typical idea. Little original thinking. Four wheels on a body. Probably constructed in under half an hour.	4 points Some carving, shaping, or assembly of parts to produce a vehicle with a "look" or "style". Probably half an hour to an hour spent on project.	5 points Many and/or fine details added. Unusual look or design. Probably more than one hour spent on project.	
Engineering/ Planning	1 point Little or no planning. Poor engineering: Body of car rotates; or wheels or axle may not turn; or bottom of car may be even with or lower than bottom of wheels.	3 points Project has some planning, but engineering could be improved. Some wheels are uneven, fixed to car improperly, or freeze causing car to turn or spin.	4 points All wheels turn well, vehicle travels relatively straight. Appears as though vehicle was planned well and possibly put through test runs.	5 points Unusual or superior vehicle design (especially in relation to axles and/or wheels). Student researched and/or tested multiple designs to find best option.	
Workmanship/ Durability	1 point Project is losing pieces, collapsing, or breaking before it is even placed on the ramp.	3 points Project comes apart completely and/or wheels break or come off car as it travels.	4 points A wheel or minor piece or two come off car as it travels.	5 points Car is well constructed and stays intact.	
Performance	1 point Vehicle does not roll. Did not make it down the ramp.	3 points Vehicle has difficulty making it down the ramp. Does not roll well. The vehicle travels less than half a meter.	4 points Vehicle rolls down the ramp and travels at least half a meter.	5 points Vehicle rolls down ramp with ease and travels more than one meter.	
Total Score:					