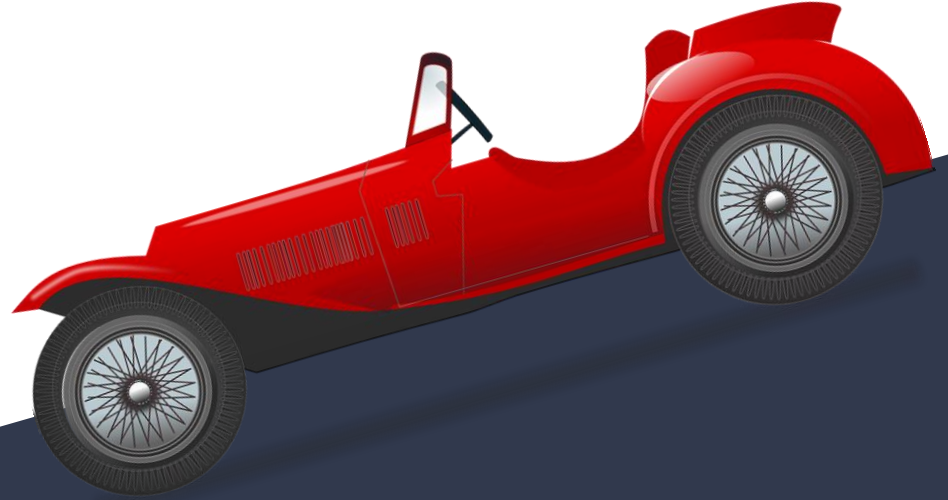


Ramp and Roll - Division A 2020 Rules

NCSO Coaches Clinic
Oct. 4-5, 2019



For latest PDF version, enter your contact info:

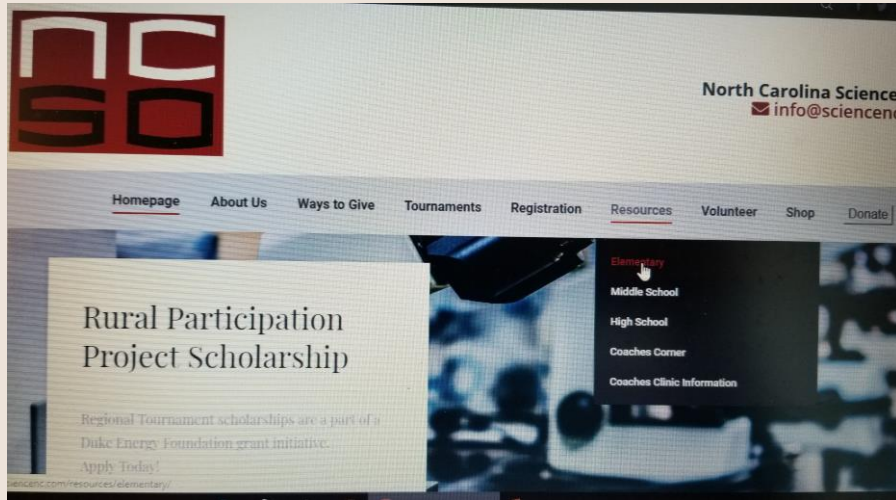
bit.ly/dgramroll20

David Glenn

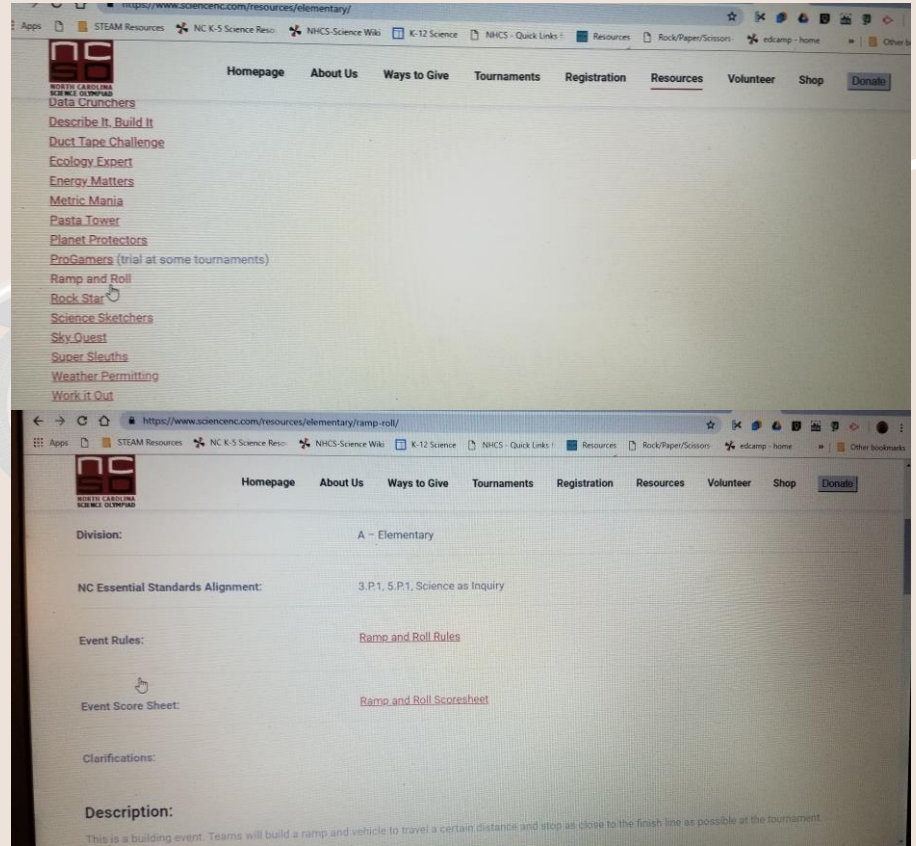
Division A Tournament Director
New Hanover County Schools
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Ramp and Roll Info:



sciencenc.com



Ramp and Roll Basics

Build a **ramp** AND **vehicle** to travel a certain distance and stop near a target

- Team Size: 1 or 2
- Time: 30 mins to build **vehicle** on-site, then,
5 mins to make up to 2 official runs
- Impound: YES
- Safety requirements: None
- Materials: Limited to specified list (more info later slides)

Ramp and Roll Basics

SIGNIFICANT CHANGES TO THE RULES COMPARED TO LAST YEAR:

- 1) Teams may not adjust ramp or designated starting position on the ramp after impound.
- 2) Vehicles must carry a golf ball from start to stop

- Impound: YES

- Safety requirements: None

- Materials: Limited to specified list (more info later slides)

First, a word about Varsity and JV teams...

At Science Olympiad competitions, Varsity and JV teams from the same school compete as completely separate teams.

Therefore, at competition Varsity and JV teams from the same school:

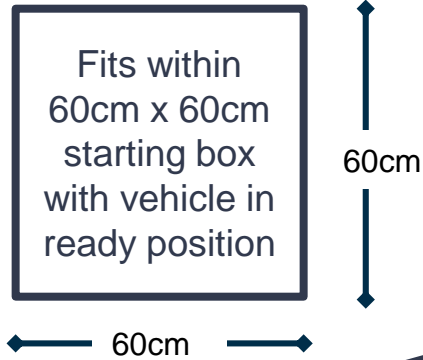
- CANNOT share the same ramp
- CANNOT share the same box
- CANNOT share the same materials
- CANNOT share the same tools

Could a school create a duplicate kit and have two identical boxes, two identical ramps, two identical sets of materials, and two identical sets of tools? ---- Yes

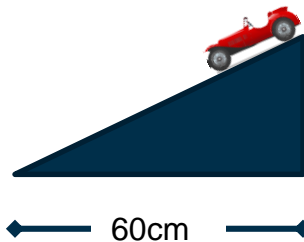
RAMP

- Built in advance
- Impounded: Yes
- Part of the box: NO
- Must be freestanding
- Length and Width restrictions: 60cm x 60cm
- Height restriction: NO
- Felt/protective padding REQUIRED on bottom
- CAN NOT be adjustable

Bird's eye view

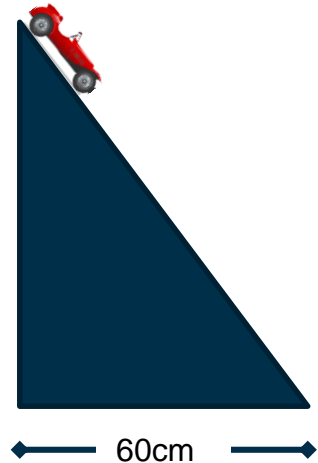


Side view



Ex. 1

Unrestricted
Height

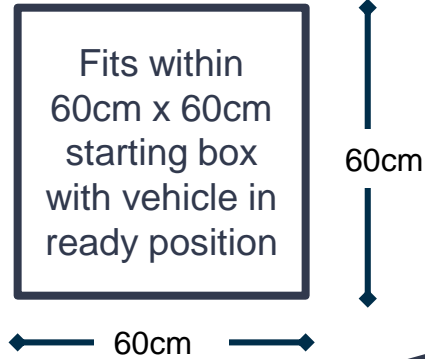


Ex. 2

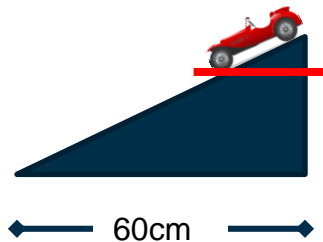
RAMP

- A designated start line must be indicated on the ramp BEFORE impound
- The car's front wheel(s) must touch this line when being released
- This line MAY NOT move
- The ramp MAY NOT be adjusted

Bird's eye view

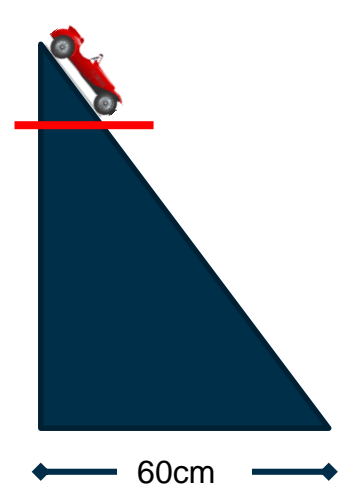


Side view

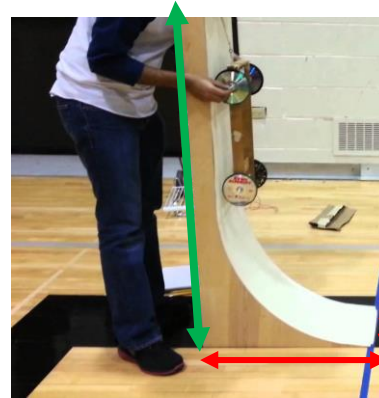
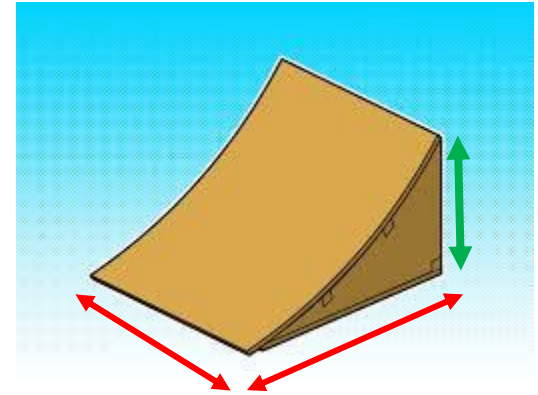


Ex. 1

Unrestricted Height



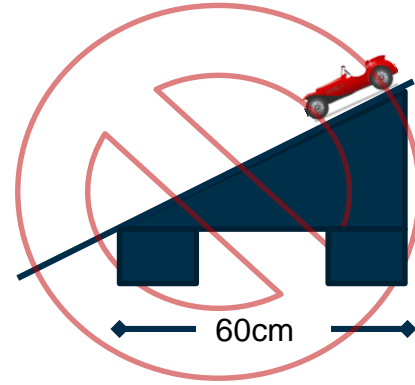
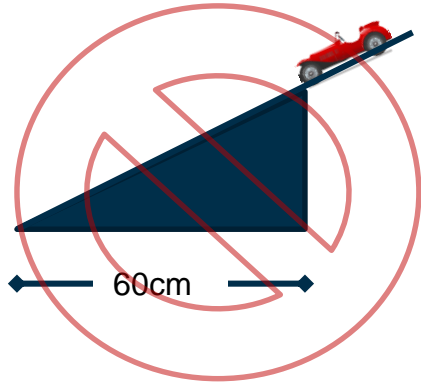
Ex. 2



Red lines indicate **restricted** parameters for width and length.

Green lines indicate **unrestricted** height.

Examples for discussion.



Both ramps extend beyond the 60cm restriction

Non - Examples for discussion.

Ramp Violations

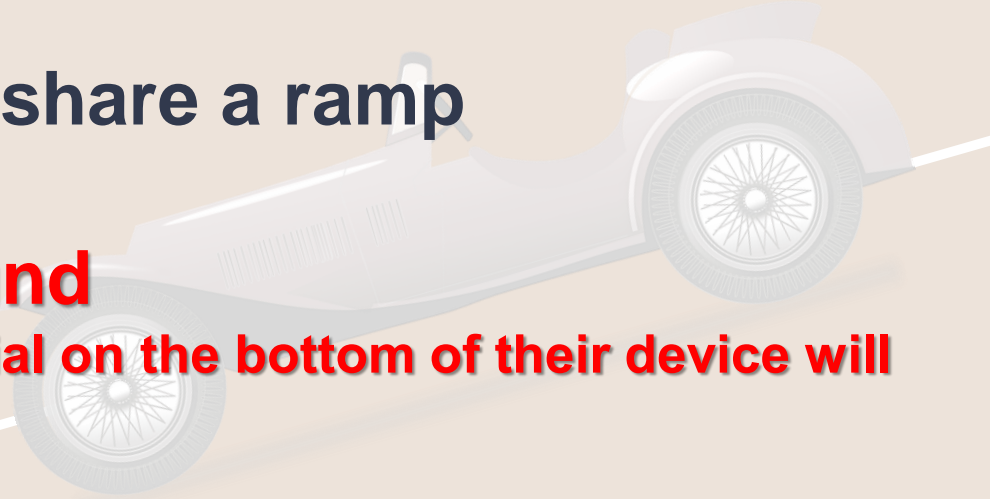
Varsity and JV may not share a ramp

No Padding = **No Impound**

“Teams without protective material on the bottom of their device will NOT be allowed to compete.”

Ramp (width x length) exceeds 60cm x 60cm = **Tier 2**

Skipped Impound = **Tier 2**



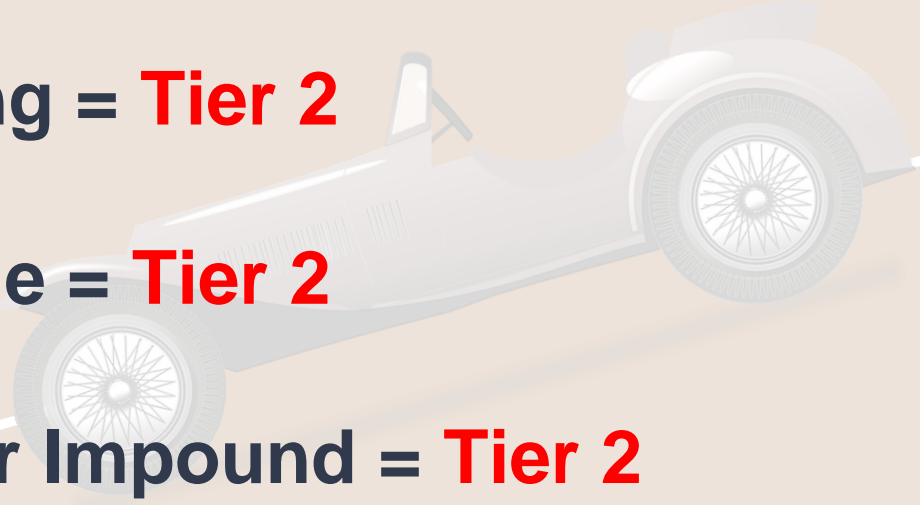
Ramp Violations

Ramp is not freestanding = **Tier 2**

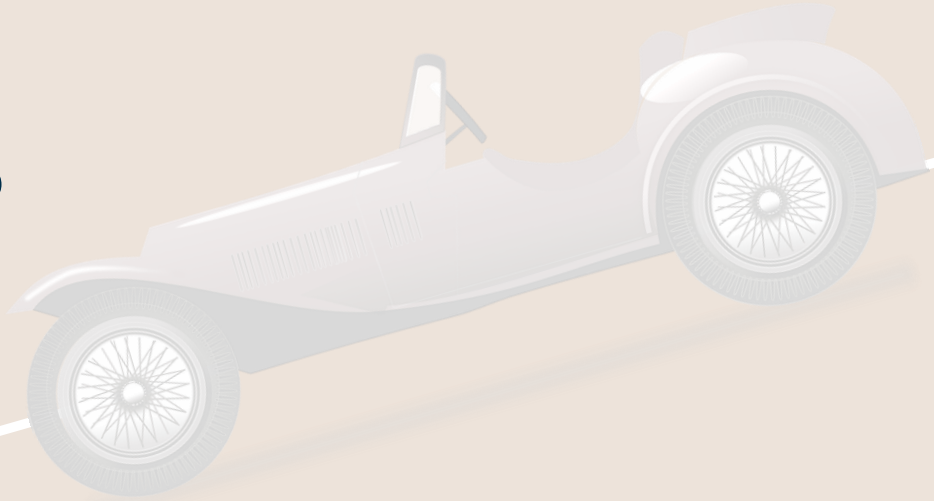
No Designated Start Line = **Tier 2**

Team adjusts ramp after Impound = **Tier 2**

Team does not release vehicle from designated start line = **Tier 2**



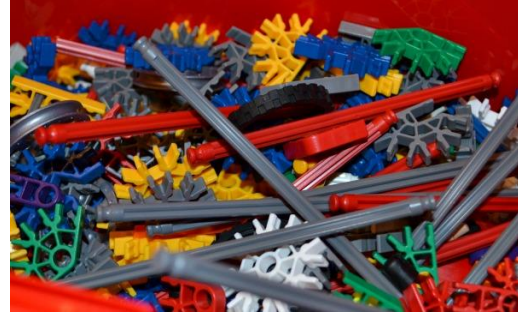
Questions on Ramp?



Clarification: Does ramp have to be made of K'nex? - NO

VEHICLE

- Prep in advance, Build ON-SITE (30 mins)
- Impound: YES, inside box, unassembled
- Length and Width restrictions: must fit on the ramp within 60x60 box
- Height restriction: NO
- Powered SOLELY by gravity; NO additional sources of energy
- Non-electric sighting devices allowed



VEHICLE

- Automatic mechanical braking systems only, i.e string brake; NO remote controls, tethers, etc...
- Vehicle needs a fixed point extending from front edge of vehicle (i.e. K'nex piece)
[this is used for measuring from vehicle to target point]
- USE ONLY MATERIALS FROM LIST;
Tools may not be used as part of vehicle
- **Vehicle must successfully transport golf ball from start to finish**



Building Materials

- K'nex pieces**
- String (any size, brand, quantity)
- Copy paper, any size
- Tape, any size or kind

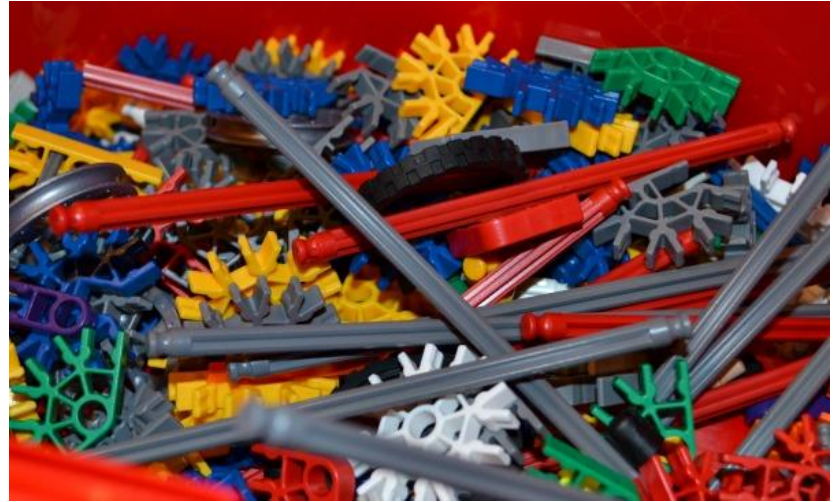
Tools (may not be used as part of vehicle)

- Scissors
- Rulers
- Tape measures
- Stopwatch

- Any quantity of the above tools

K'nex Pieces

- No other brands, must be K'nex
- No K'nex motors or electrical components
- May not be preassembled in box
- If a unique K'nex piece, send a pic or proof to verify



Vehicle Violations

Varsity and JV may not share a vehicle

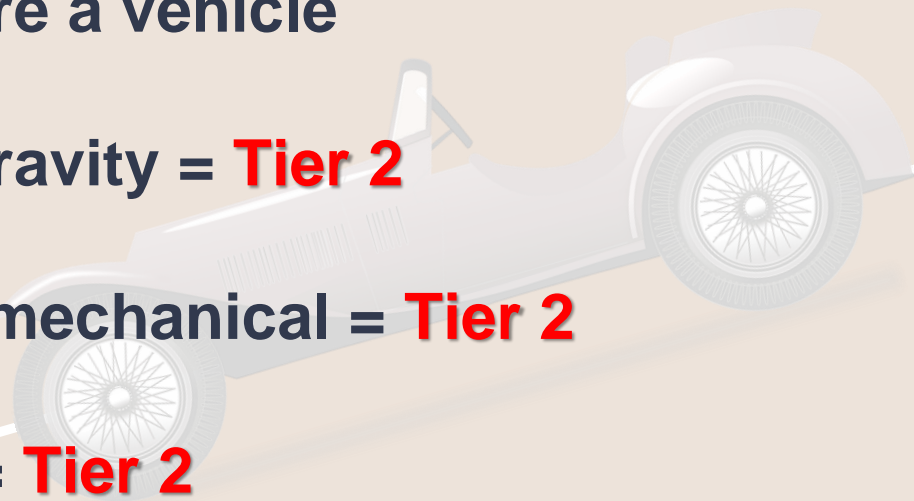
Energy source other than gravity = **Tier 2**

Braking system other than mechanical = **Tier 2**

Electronic sighting device = **Tier 2**

Missing Fixed Point on front of vehicle = **Tier 2**

Vehicle, on ramp, exceeds 60x60 starting box = **Tier 2**



BOX

- Holds all building materials and tools for impound, excluding ramp
- Size: No greater than 33,000 cubic cm with lid on and materials/tools inside
- Impound: YES
- Materials/Tools RESTRICTED to list



BOX

*During IMPOUND event leaders will inspect box for **appropriate materials**. Any violations will be removed and returned to the team after the competition.*

Other items permitted in the box at impound:

- “something to write with”
- “clear plastic bags or other clear containers” for organizing materials. These may not be used as part of vehicle
- “only 1 picture, no larger than 8.5” x 11” of their device; not a collage.”

BOX

*During IMPOUND event leaders will inspect box for **assembled pieces**. Any violations will be disassembled.*

9e – “Teams should make a reasonable effort to organize the supplies within the box neatly for efficient check-in and ease of inspection by the event leader.”

Box Violations

Varsity and JV may not share a box

Not impounded on time = **Tier 2**

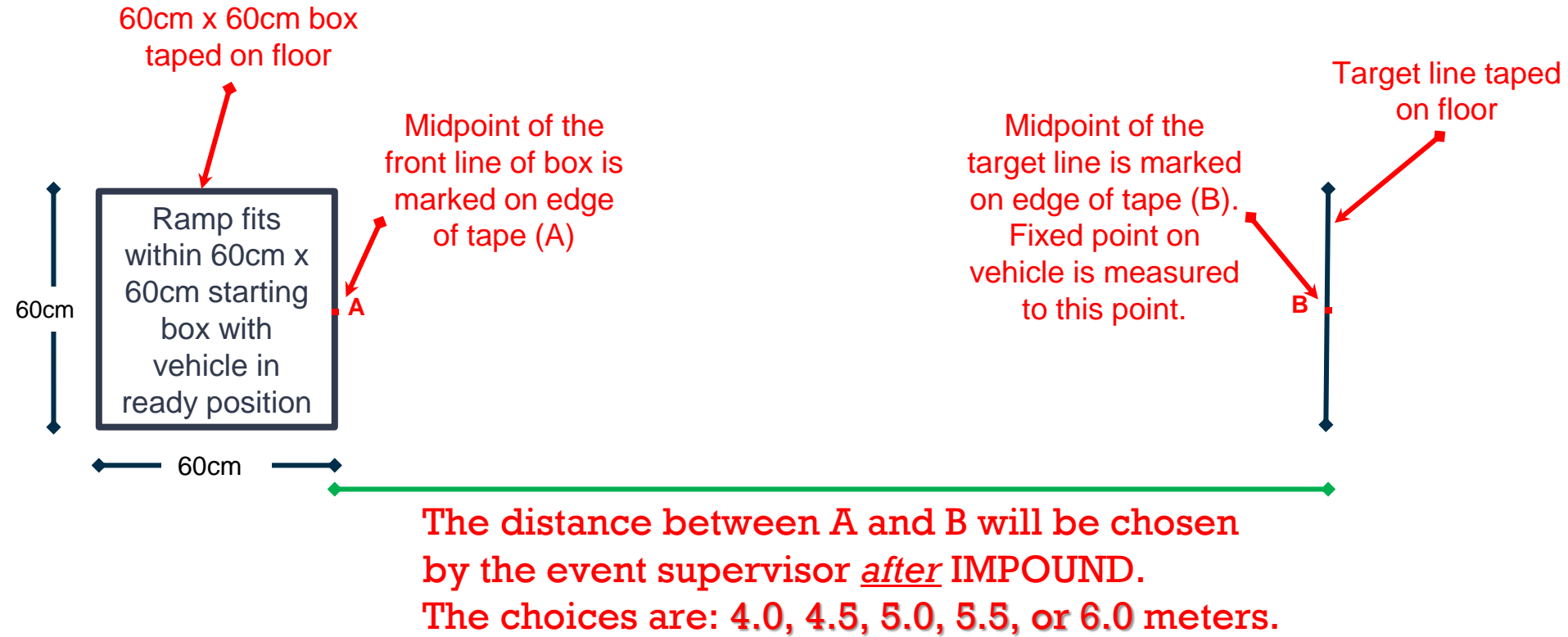
Box not labeled “clearly” (Team name + Varsity/JV designation) at impound = **Tier 2**

Box volume larger than 33,000 cm³ with materials inside and lid attached = **Tier 2**

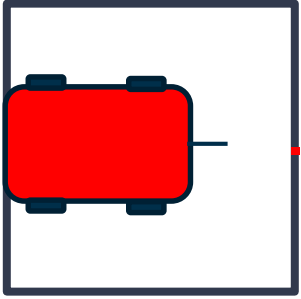
Unauthorized materials = **Removed from box**

Assembled pieces = **Disassembled**



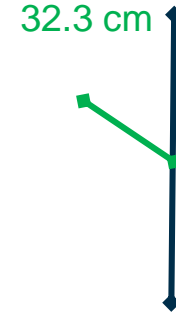
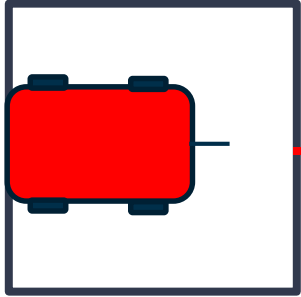


TRACK (Bird's eye view)



Run 1 Example with Measurement (Bird's eye view)

Teams given 5 minutes to complete TWO official runs.



Run 2 Example with Measurement (Bird's eye view)

Ramp and Roll Score Sheet – 2020 (revised 8/1/19)

School Name: _____ Team _____ (Circle One): V JV1 JV2 JV3

Student Names: _____

Impound Checklist

The ramp has a protective covering on the bottom to avoid scratching the floor. Y / N

If no, students may not impound, send them back to their home base to try and fix the problem

The box and ramp were impounded on time and are clearly labeled with the school/team name and designation. Y / N

All materials for vehicle and tools fit in a box that is no greater than 33,000 cm³ including the lid, which fits all the way on the box and closes completely. Y / N

There is a clearly labeled Start Line on the ramp. Y / N

If no, allow students to designate one during impound and compete in Tier 1.

NOTE: Any materials or tools that are not on the approved list will be removed before the competition and given back to the team at a later time. Any pre-assembled materials will be taken apart by the event leaders before the event. No penalty will be assessed for this.

Competition Checklist		Run 1	Run 2
10.b.i	All energy to propel the vehicle comes from gravitational energy.	Y / N	Y / N
10.b.ii.	Only a mechanical braking system is allowed (no remote control or tether).	Y / N	Y / N
10.b.iii.	Only non-electronic sighting devices used.	Y / N	Y / N
10.b.iv.	Vehicle has a fixed point extending from the front edge.	Y / N	Y / N
10.c.	Ramp/vehicle in ready to launch position fits within a 60cm x 60cm square.	Y / N	Y / N
10.c.i.	The ramp is freestanding and not held by the competitors.	Y / N	Y / N
10.c.ii.	Team did not adjust the ramp after impound.	Y / N	Y / N
10.c.iii.	Students released vehicle from designated, unaltered start line.	Y / N	Y / N
10.h.iii.	Team did not roll vehicle to calibrate on the track.	Y / N	Y / N
10.h.iv.	Team released vehicle without pushing it during release.	Y / N	Y / N
10.h.v.	Team did not chase vehicle down the track.	Y / N	Y / N
10.b.v.	Vehicle successfully transported golf ball for entire run.	Y / N	Y / N

Scoresheet Example

<p>Straight-line Distance (distance in cm from fixed point to Target point to nearest 0.10 cm) Circle best run – low score is best.</p>		
<p><i>Tier and Penalties:</i> Tier 1: Run with no violations – all boxes above are a “Yes” for at least 1 run Tier 2: Run with any competition violations – both runs or impound have a “No” DQ: Students continued to work after 30 min time was called or received outside assistance</p>	<p>1 2 DQ</p>	
<p><i>Final Rank</i></p>		

Low Score wins.

The Final Score of a vehicle with one Failed Run must be the other Run Score.

Circle lower of 2 Run Scores above. Ties broken by lowest combined run score.

Run Violations

Teams may not roll vehicle down the track in advance of an official run = **Tier 2**

Teams will do a simple release of the vehicle on the ramp.
Pushing vehicle down ramp = **Tier 2**

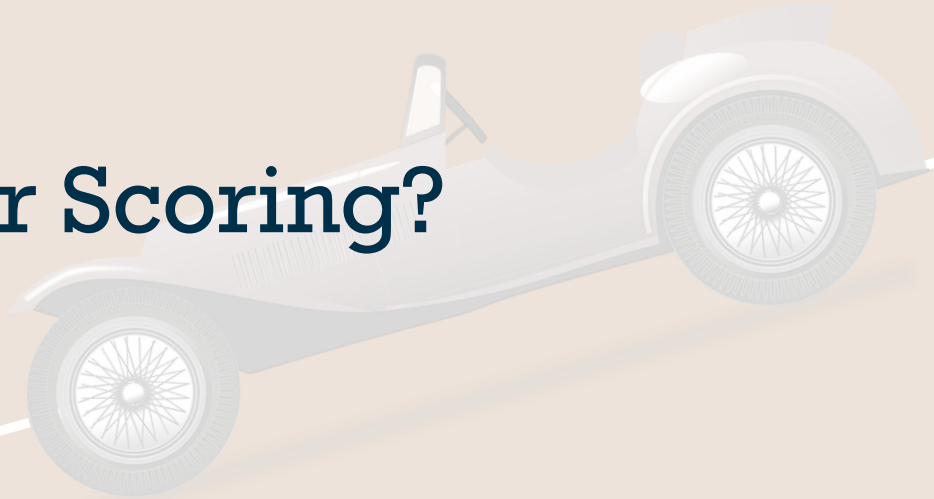
Golf ball falls off vehicle during run = **Tier 2**

Teams may not chase vehicle down track = **Tier 2**

Teams MAY add AND remove pieces from the vehicle during the 5 minute testing period.

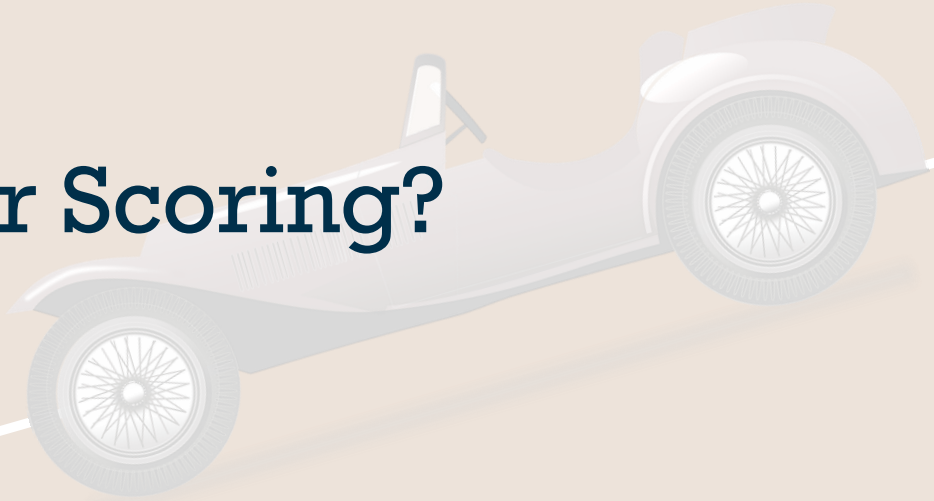


Questions on Runs or Scoring?



Clarification: What type of floor surface will be used? –
Each tournament director will clarify floor surface in
advance. Could be gym floor, carpet, tile hallway...

Questions on Runs or Scoring?



Final Thoughts

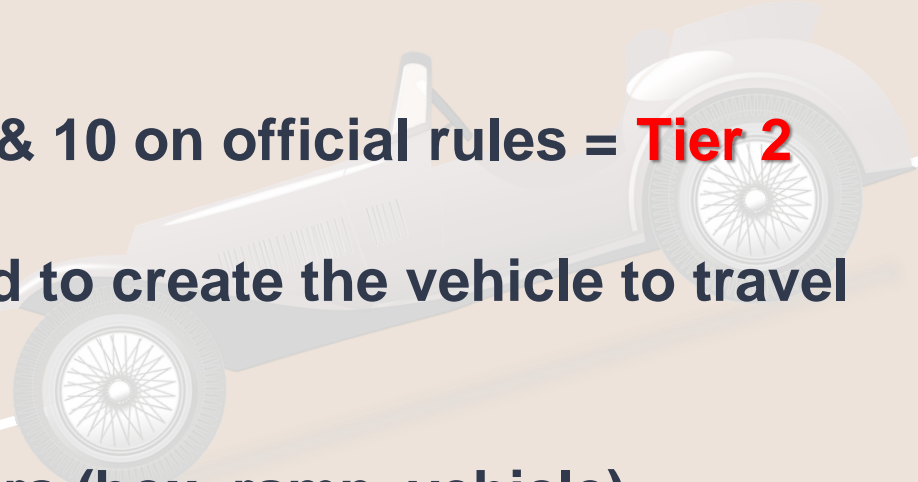
Practice, practice, practice...

Any violation from sections 9 & 10 on official rules = **Tier 2**

Consider what can be adjusted to create the vehicle to travel various distances.

Pay attention to size parameters (box, ramp, vehicle)

Give students the ownership and have fun!



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Thanks for
being here!