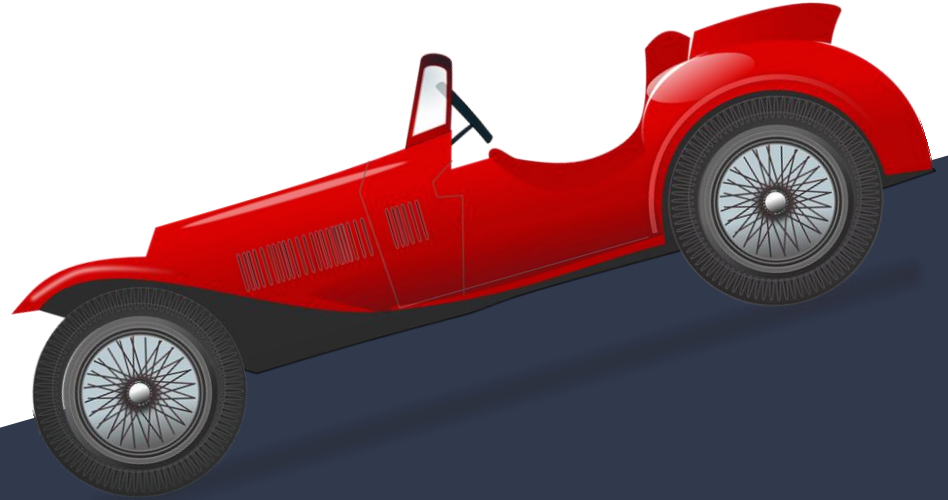


Ramp and Roll - Division A

NCSO Coaches Clinic
Oct. 5-6, 2018



David Glenn

New Hanover County Schools

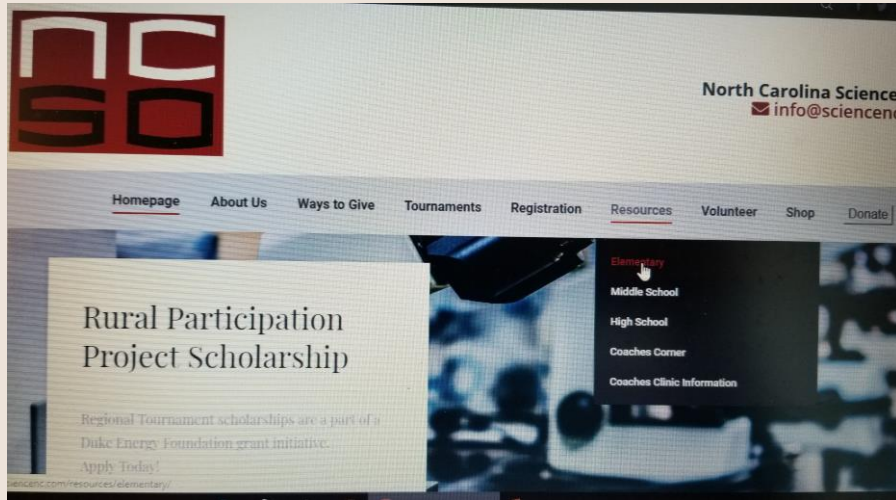
david.glenn@nhcs.net

@davEDglenn

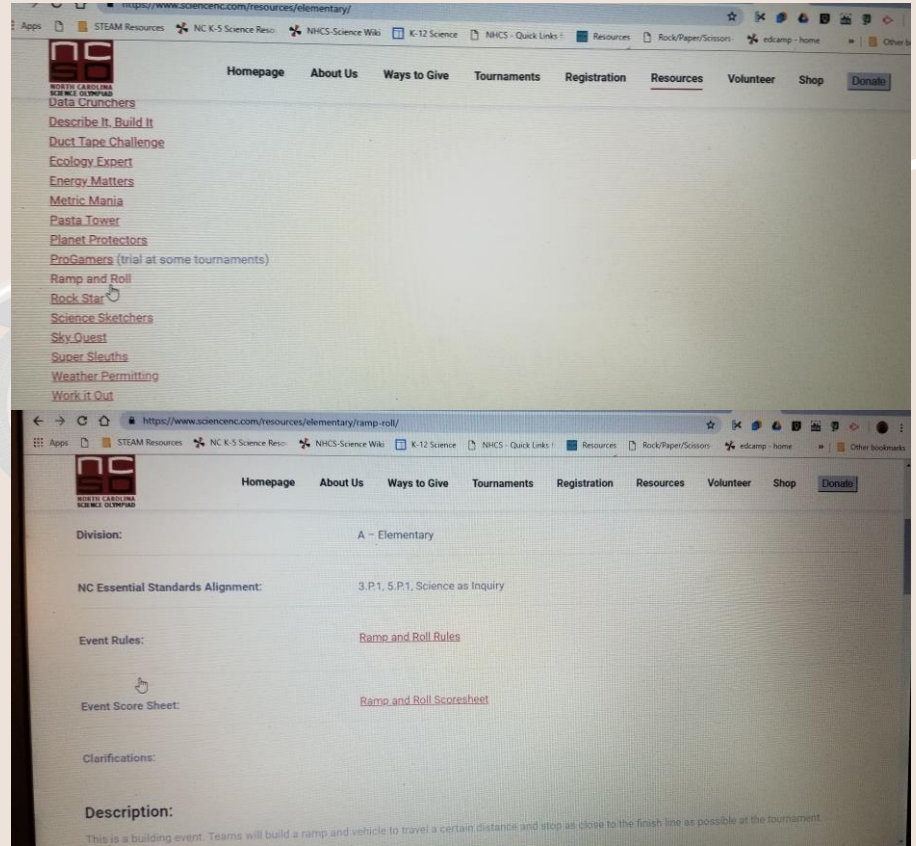
Jacob Simmons

jrynesimmons@gmail.com

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)

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:

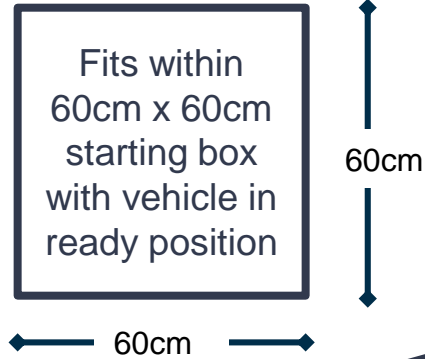
- CANNOT share the same ramp
- CANNOT share the same box
- CANNOT share the same materials
- CANNOT share the same tools

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

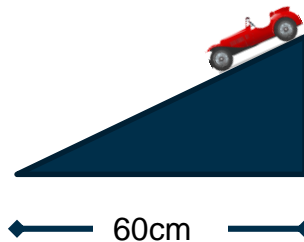
RAMP

- 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 be adjustable

Bird's eye view

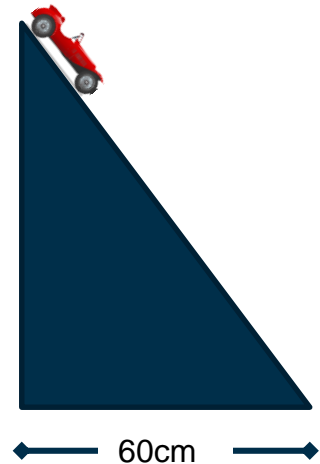


Side view

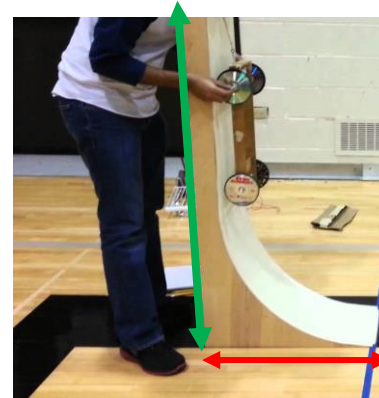
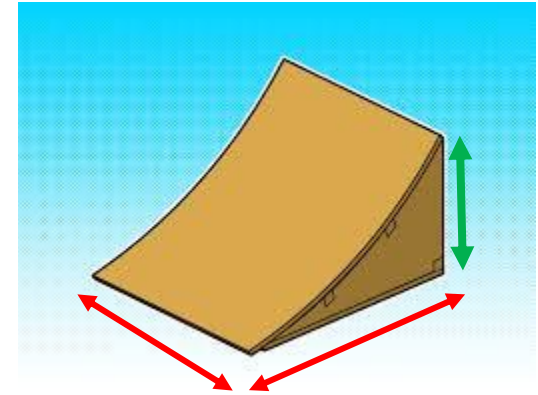
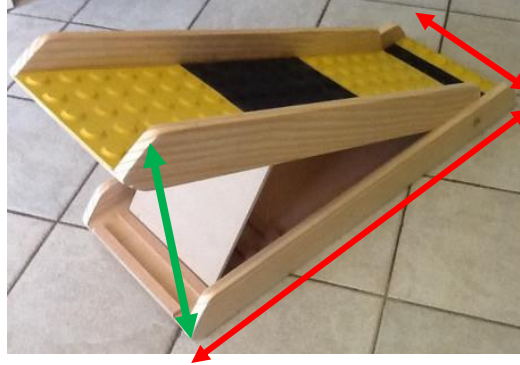


Ex. 1

Unrestricted
Height



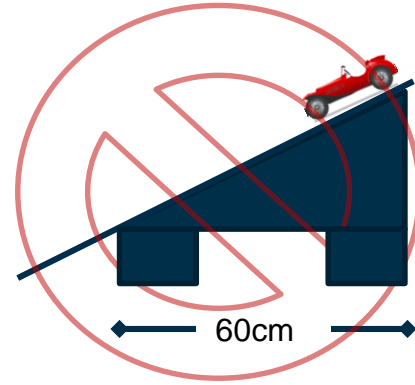
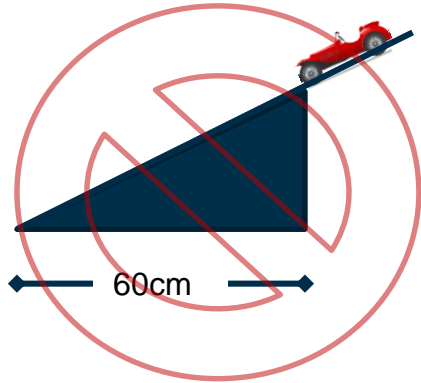
Ex. 2



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

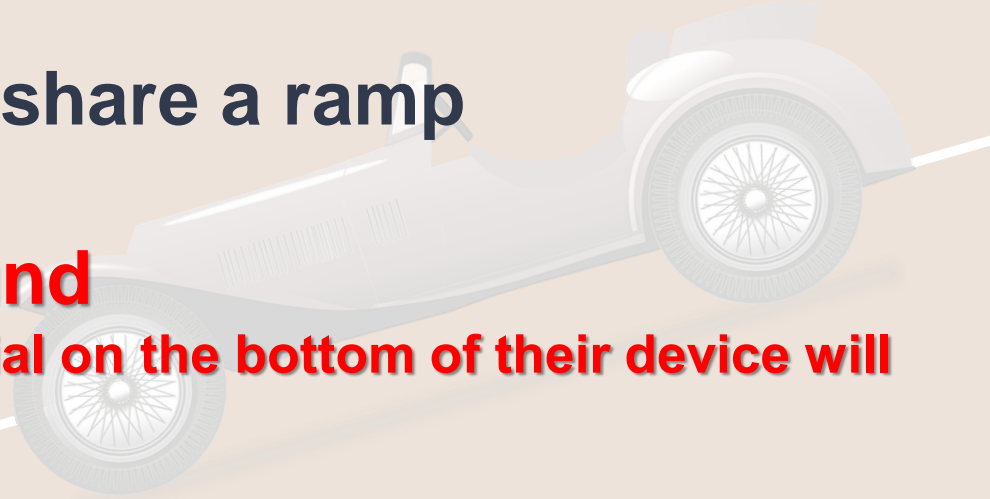
Varsity and JV may not share a ramp

No Padding = **No Impound**

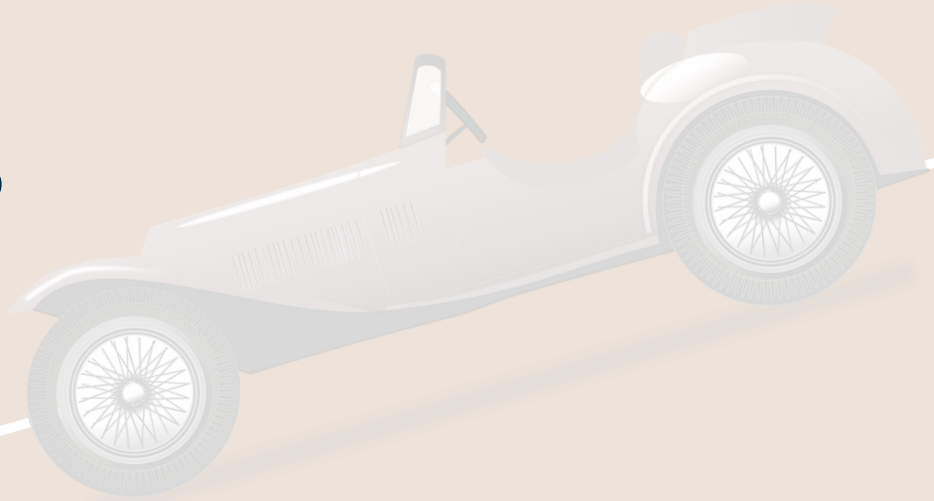
“Teams without protective material on the bottom of their device will NOT be allowed to compete.”

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

Skipped Impound = **Tier 2**



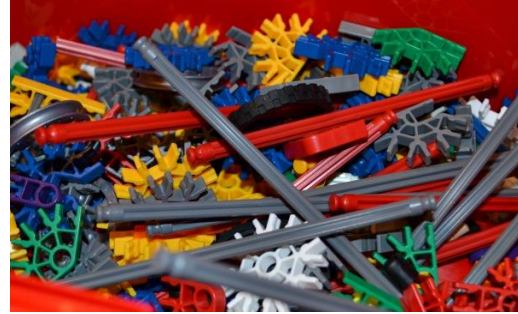
Questions on Ramp?



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, if one is used; NO remote controls, tethers, etc...
- Vehicle needs a fixed point extending from front edge of vehicle (toothpick, Knex 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



Building Materials

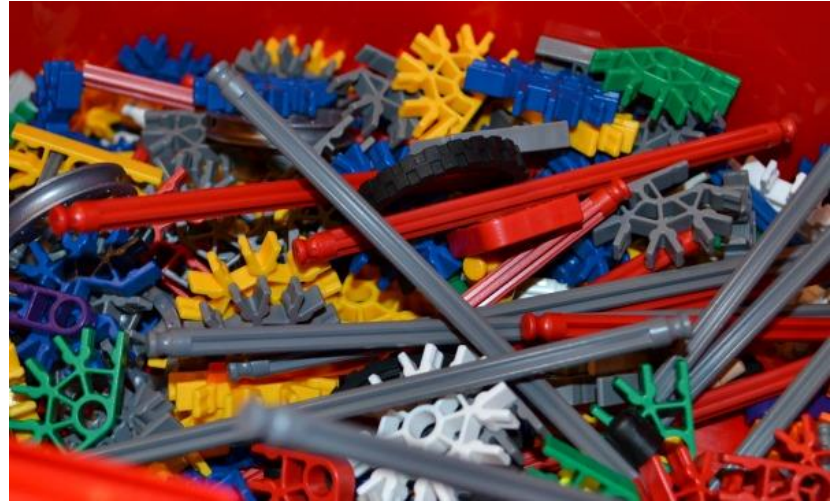
- K'nex pieces**
- String (any size, brand, quantity)
- Copy paper, any size
- Tape, any size or kind
- Toothpicks, any size or kind

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

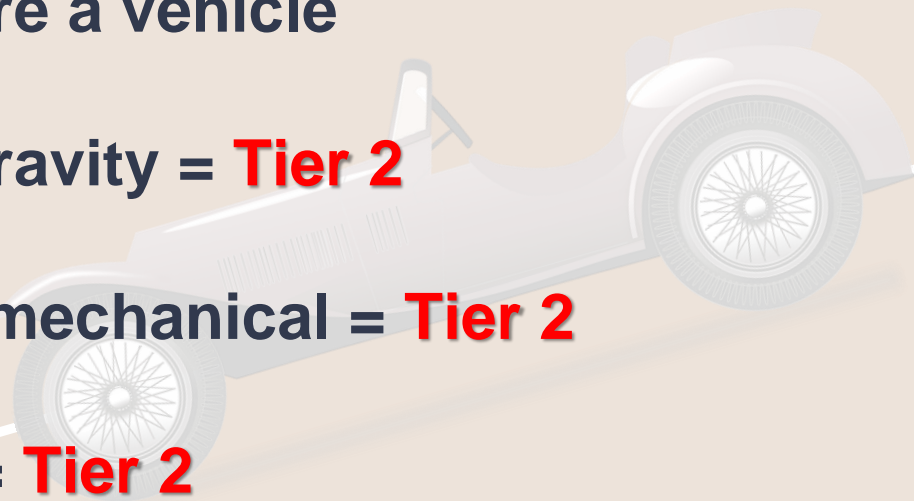
Energy source other than gravity = **Tier 2**

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**

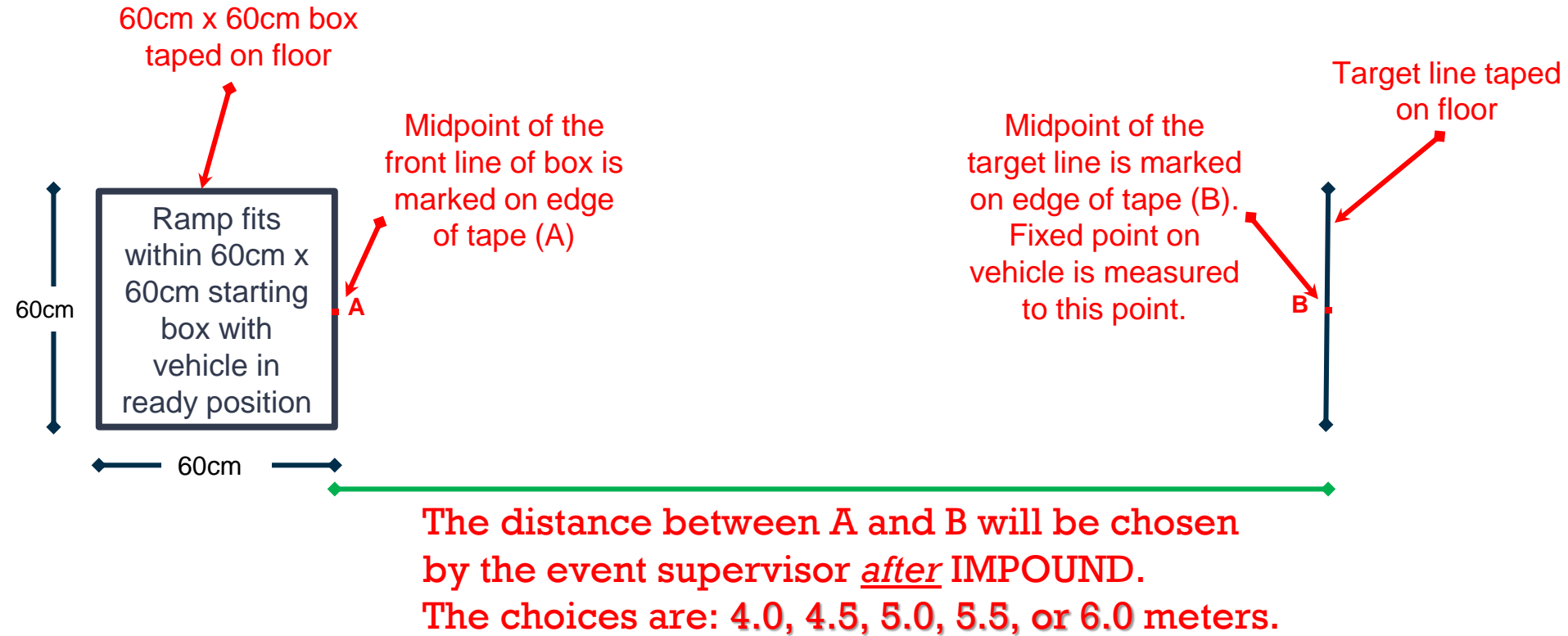
Box not labeled “clearly” (Team name + Varsity/JV designation) at impound = **Tier 2**

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

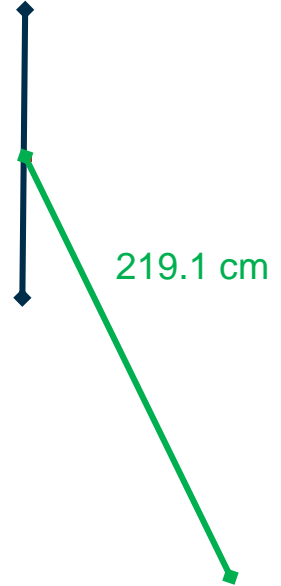
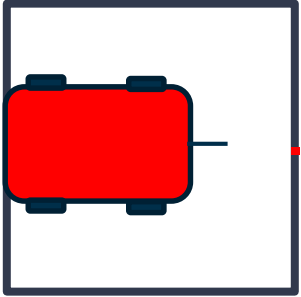
Unauthorized materials = **Removed from box**

Assembled pieces = **Disassembled**



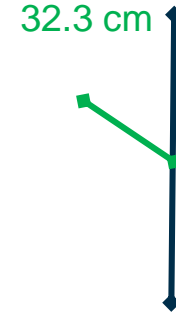
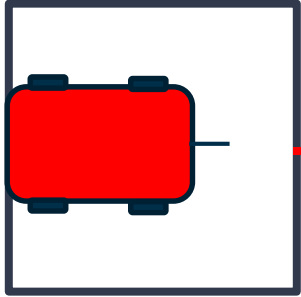


TRACK (Bird's eye view)



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 – 2019 (revised 7/31/18))

School Name: My School Team (Circle One) Varsity JV1 JV2 JV3

Student Names: Bill & Betty

- | | YES | NO |
|---|----------|-------------|
| 1. The ramp has a protective covering on the bottom to avoid scratching the floor.
<i>If no, students may not impound, send them back to their home base to try and fix the problem.</i> | <u>/</u> | <u> </u> |
| 2. The box and ramp were impounded on time and the box is clearly labeled with the school/team name and designation. | <u>/</u> | <u> </u> |
| 3. All materials for vehicle and tools fit in a box that is no greater than 33,000 cm ³ including the lid, which fits all the way on the box and closes completely. | <u>/</u> | <u> </u> |

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.

- | | | |
|---|----------|-------------|
| 9.a.i. All energy to propel vehicle comes from gravitational energy. | <u>/</u> | <u> </u> |
| 9.a.ii. Only a mechanical braking system is allowed (no remote control or tether) | <u>/</u> | <u> </u> |
| 9.a.iii. Only non-electronic sighting devices used. | <u>/</u> | <u> </u> |
| 9.a.iv. Vehicle has a fixed point extending from the front edge. | <u>/</u> | <u> </u> |
| 9.b. Ramp/vehicle in ready to launch position fits within a 60cm x 60cm box. | <u>/</u> | <u> </u> |
| 9.d.iv. Team did not roll vehicle to calibrate on the track. | <u>/</u> | <u> </u> |
| 9.d.vi. Team released vehicle without pushing it during release. | <u>/</u> | <u> </u> |
| 9.d.vii. Team did not chase vehicle down the track. | <u>/</u> | <u> </u> |

Teams with a "no" checked above will be placed in Tier #2. If team has 1 good run with no violations, that can be counted as a Tier 1 run.

Tier 2? NO

If the team left the area or received outside help during loading, then check here for disqualification.

DQ? NO

Straight-line distance 1 for fixed point to finish line mark (record to the nearest tenth of a cm)

219.1 cm

Straight-line distance 2 for fixed point to finish line mark (record to the nearest tenth of a cm)

32.3 cm

Final Distance: 32.3

Tier (Circle one): 1 2 DQ

(Ties broken by the best combined distance.)

Final Rank: 1

(251.4)

Top Half

Bottom Half

Scoresheet Example

Run Violations

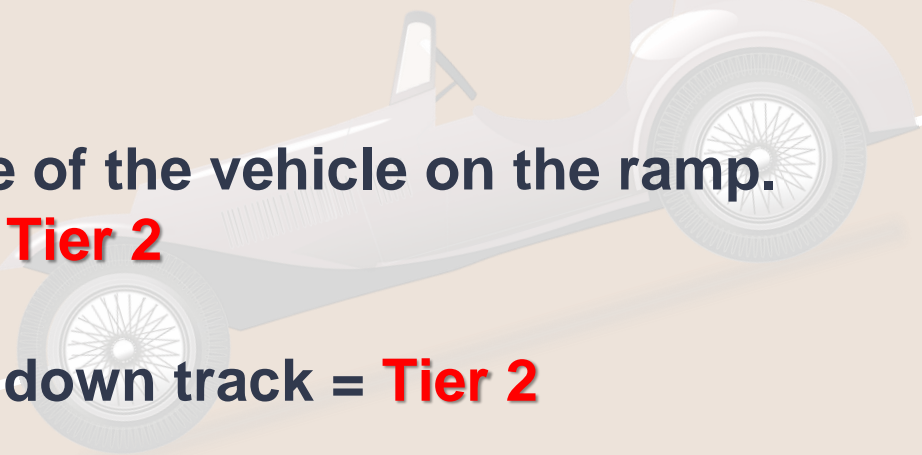
Teams may not roll vehicle down the track in advance of an official run = **Tier 2**

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

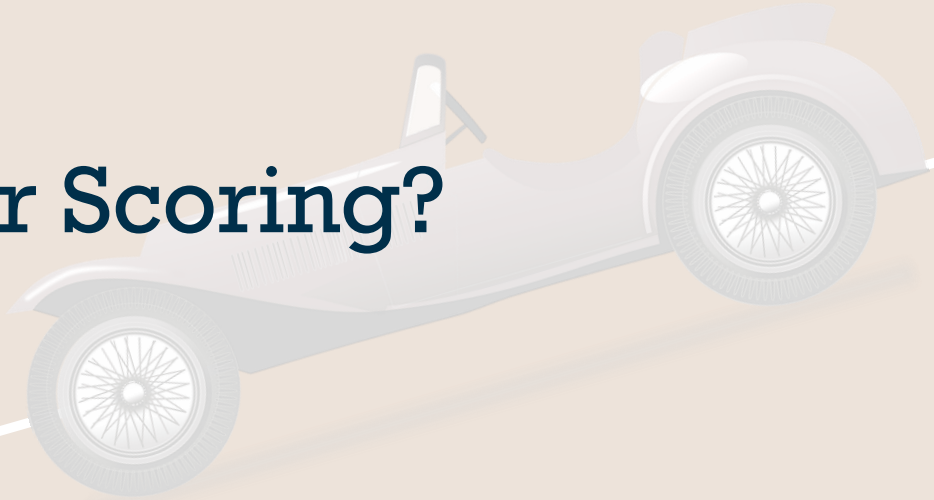
Teams may not chase vehicle down track = **Tier 2**

Teams may remove pieces from the vehicle.

Teams may not add pieces to the vehicle = **Tier 2**

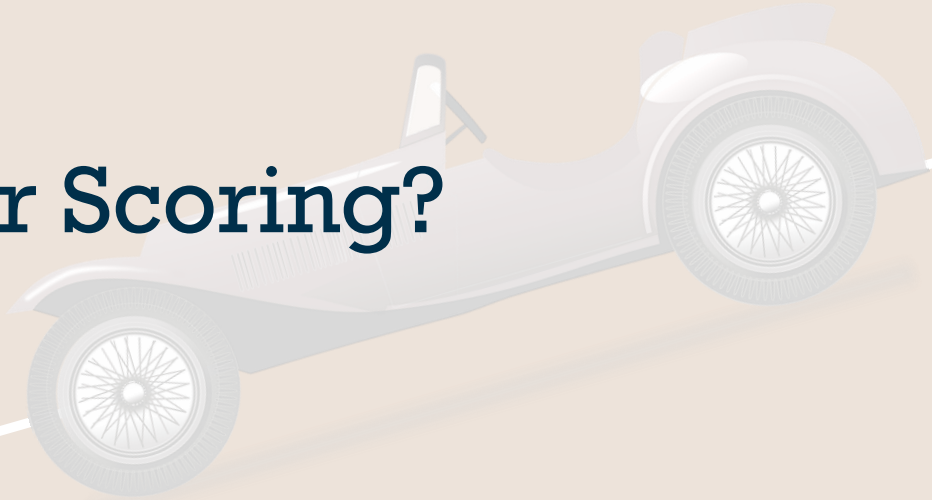


Questions on Runs or Scoring?



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?



Clarification: Teams may not add pieces to the vehicle after the 30 minute build period. During the 5-minute run period, pieces can be removed *but not added*.

Final Thoughts

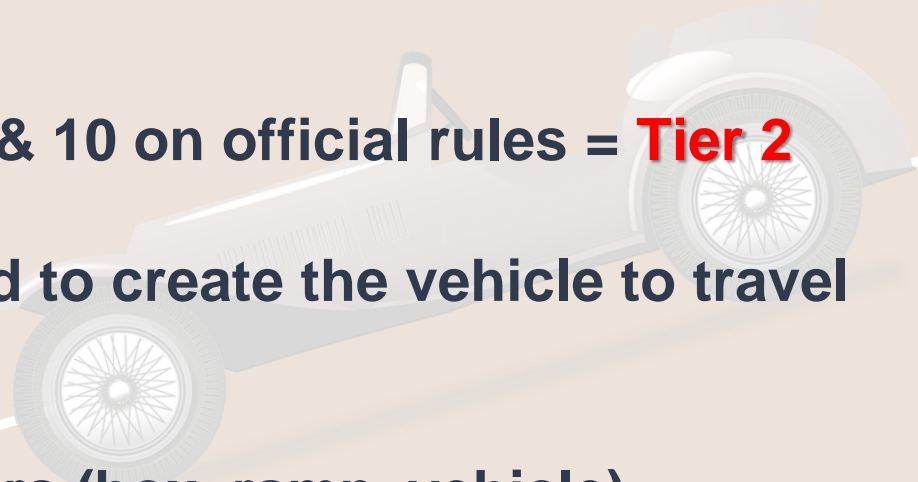
Practice, practice, practice...

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!