



Scrambler!

CAUTION: Please remember that these PPT's are based on DRAFT rules. There may be some changes when the official rules are published in the Rules Manual.

Scrambler '17

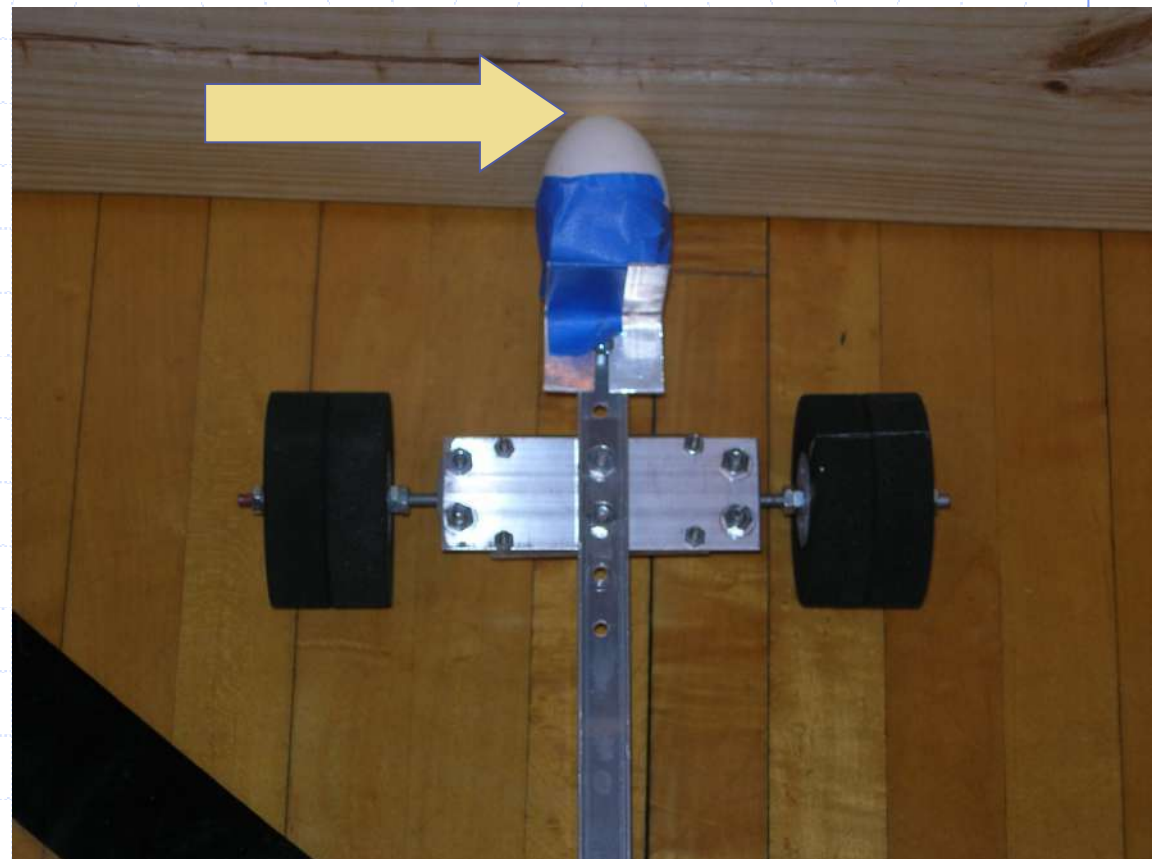


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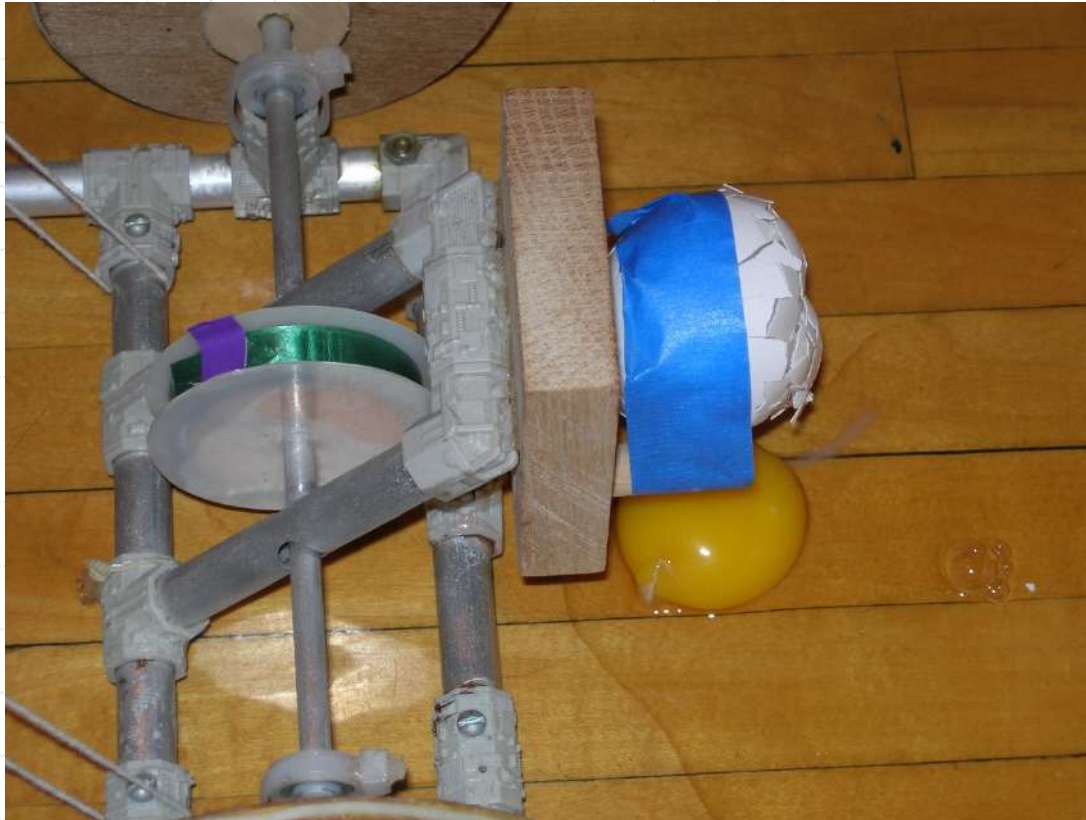
Mr. Dennis Papesh
National Event Supervisor
dpapesh@holyangels.cc

This is what you want it to do... as quickly as possible!!!

The intent is to have a falling mass propel a vehicle (ETV) carrying an egg down a track as quickly as possible and end up with the egg as close to the center of the terminal barrier without...



DOING THIS!!!



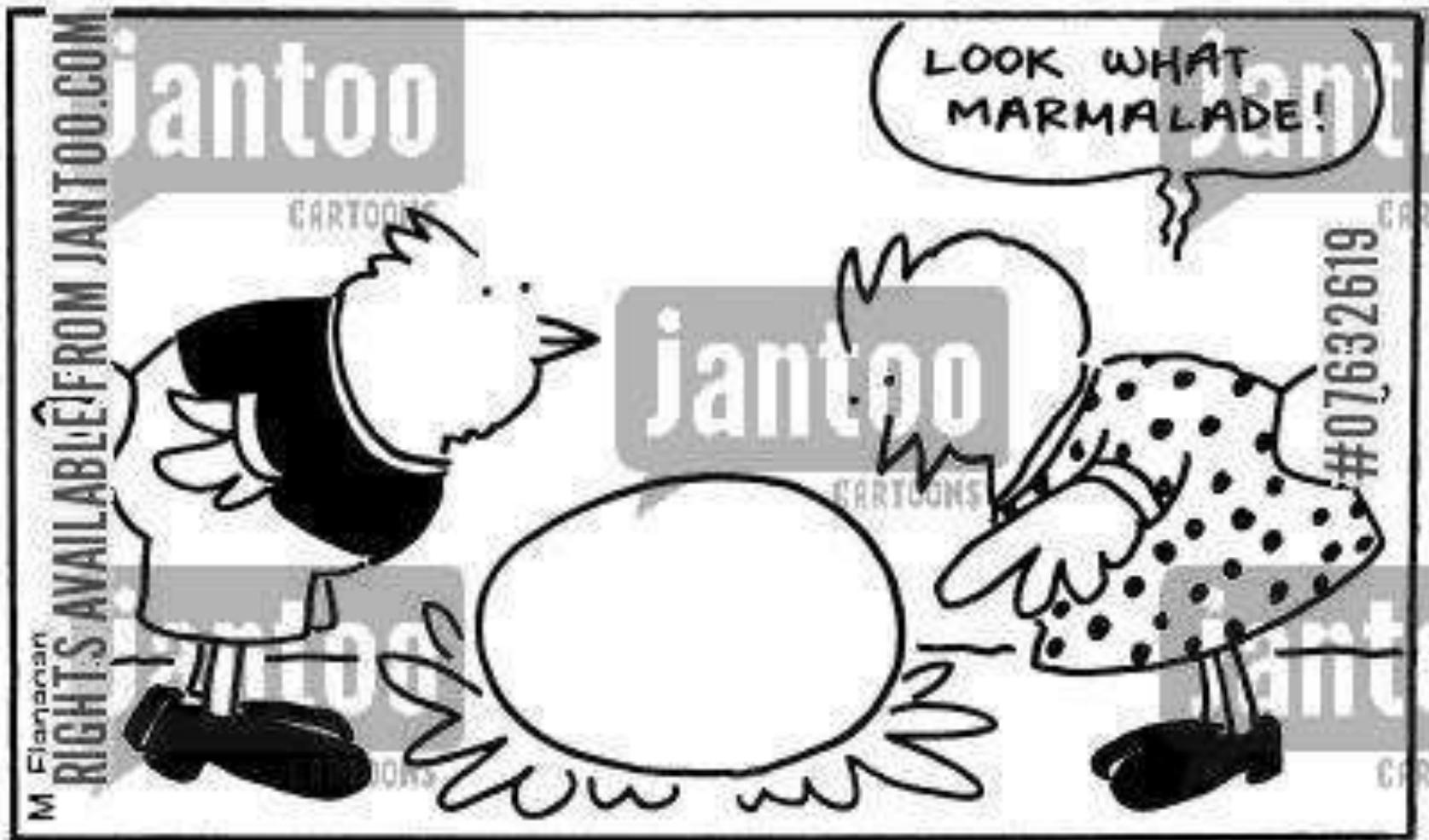
**Now you know why it is called SCRAMBLER....
or in this case SUNNY SIDE UPPER!!**

YouTube Views

- ✱ [Scrambler DVD 2015 Preview](#)
- ✱ [Nat Champ Run 2015 \(9.8 m\)](#)
- ✱ [2014](#)
- ✱ [2009](#)
- ✱ [2008](#)

**A number of things have
changed (as always), so
let's get cracking!**

Construction



Construction

- ✱ Entire device – Maximum of 90 cm in length, height and depth
- ✱ Could be 1 or 2 parts
- ✱ ALL energy from a falling mass – 2.00 kg max (GPE & KE)
 - ‡ Mass must NOT contact floor at ANY time
- ✱ Must start with a #2 pencil
 - ‡ Must NOT hold up mass on its own
- ✱ Stopping mechanism built in
- ✱ No electricity/electronics
- ✱ Egg: large, grade A
 - ‡ Provided by event supervisor
 - ‡ Foremost part of vehicle
 - ‡ Taped to the following.....

The top of this
dowel must be
at least 20 cm
above floor

$\frac{1}{4}$ " dowel for
Photogate

Dimensions:
5 cm x 5 cm
x 0.5 in
(within
dimension
limits listed
in rules)

Backstop

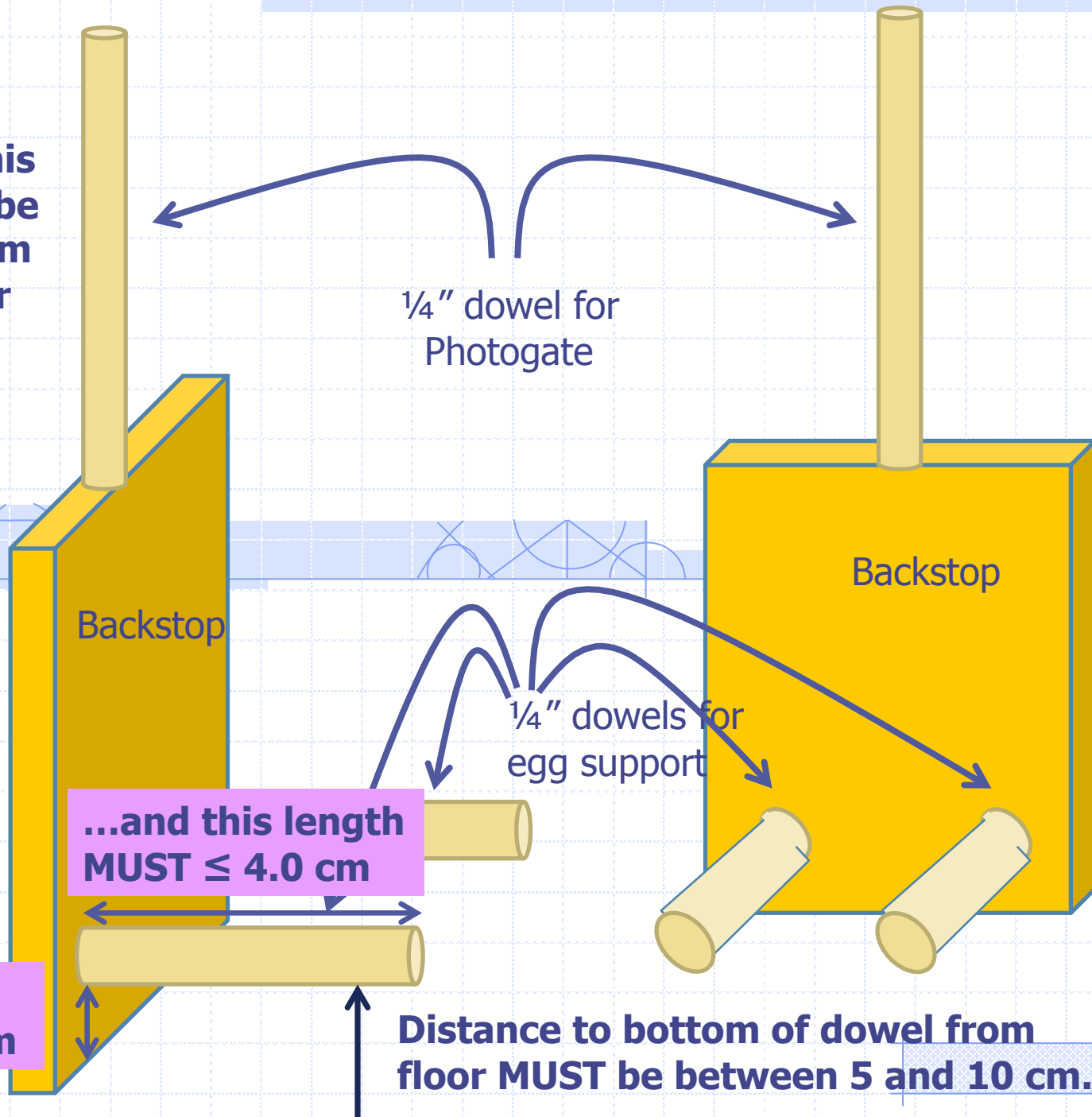
Backstop

$\frac{1}{4}$ " dowels for
egg support

...and this length
MUST ≤ 4.0 cm

This distance
MUST ≤ 1.0 cm

Distance to bottom of dowel from
floor MUST be between 5 and 10 cm.



The top of this
dowel must be
at least 20 cm
above floor

$\frac{1}{4}$ " dowel for

**New for 2017: The tips of
the horizontal dowels
MUST be ≥ 5.0 cm in front
of any part of the vehicle.**

Dimensions:
5 cm x 5 cm
x 0.5 in
(within
dimension
limits listed
in rules)

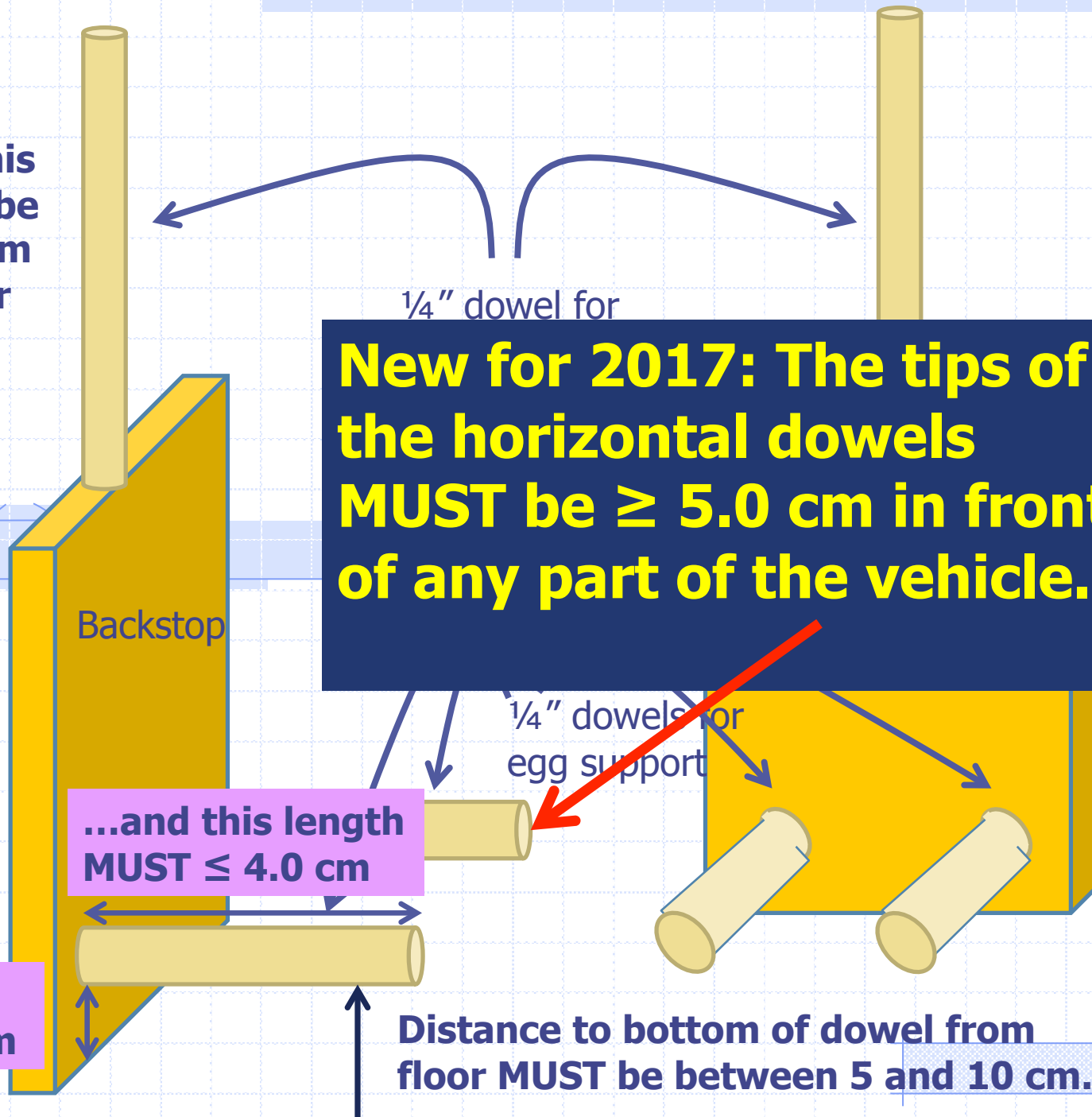
Backstop

...and this length
MUST ≤ 4.0 cm

$\frac{1}{4}$ " dowels for
egg support

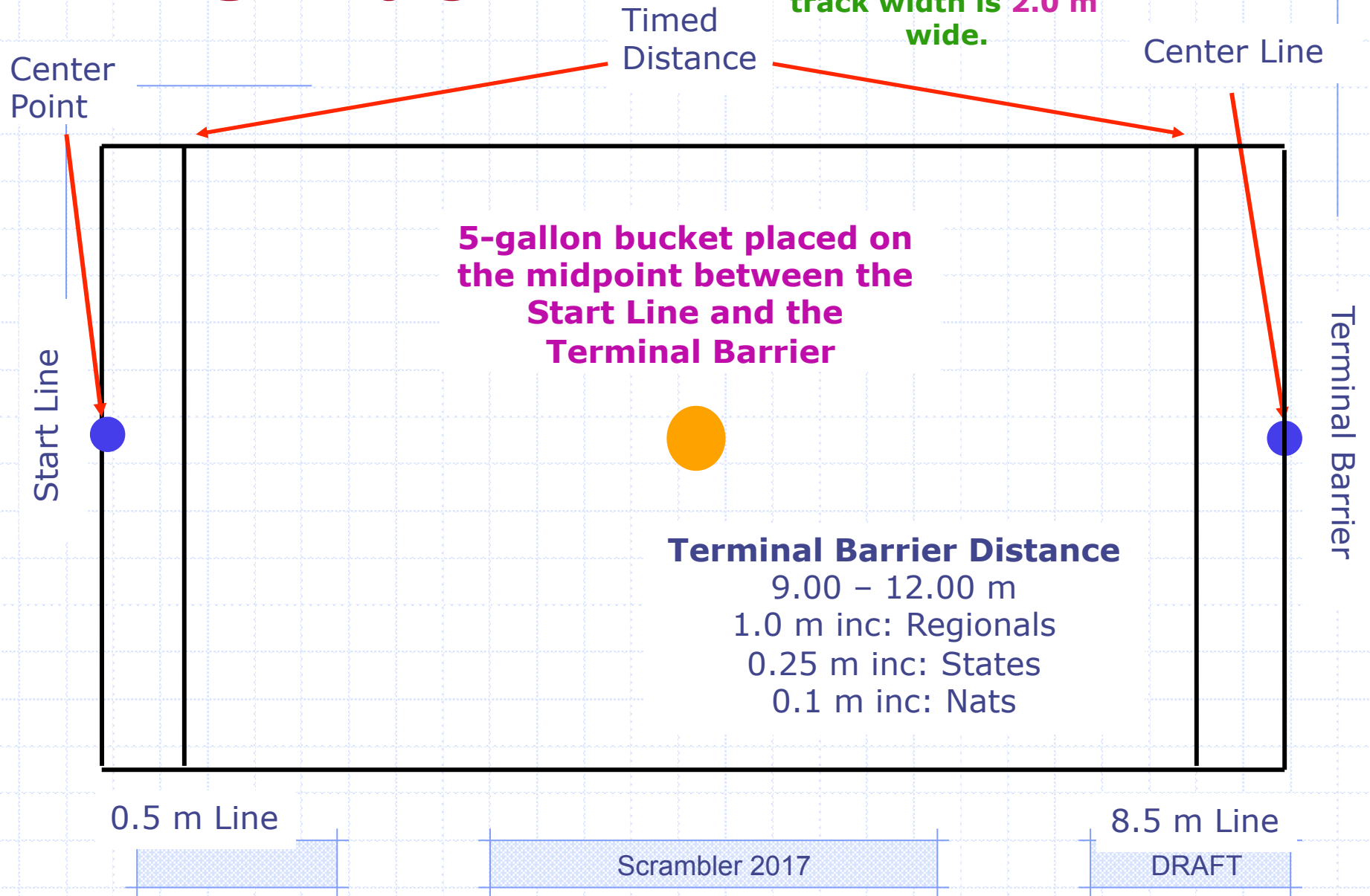
This distance
MUST ≤ 1.0 cm

Distance to bottom of dowel from
floor MUST be between 5 and 10 cm.



The Track

Caution: This diagram is NOT in proportion. The track width is 2.0 m wide.



Competition

- ✱ **8 min. to do 2 runs**
- ✱ **All parts behind or on the Starting Line**
 - ‡ But no parts more than 2.0 m from the Starting line
 - ‡ Tip of egg does NOT have to start ON the Starting Line
- ✱ **Start with pencil**
- ✱ **2nd egg allowed IF 1st is broken prior to the first run! (penalty assessed)**
- ✱ **Only parts of the Scrambler touching the floor at the start can contact the floor at any time during the run**

Scoring

☀ **Time Score: ?? x Run Time (Run Time is the time to travel between 0.5 and 8.5 m lines.)**

‡ Fastest time at Nats last year: 1.809 s!!

☀ **Distance Score: Distance from the pointed end of egg to centerline of the terminal barrier (nearest 0.1 cm)**

☀ **Run Score = Time Score + Distance Score + Penalties**

☀ **Final Score is whichever run gives you the best ranking**

☀ **Tiebreakers**

Penalties

✱ Competition penalties (1000 pt/violation)

- ‡ Egg broken
- ‡ ANY part of egg transport contacts wall before egg does
- ‡ ETV touches Track Width tape at ANY time
- ‡ ETV passes 0.5 m but not 8.5 m
- ‡ Competitor follows ETV down track

Penalties

☀ Construction penalties (3000 pts/violation up to a max of 3

- ‡ Any dimension violation
- ‡ Mass cannot stay at height without the supplied pencil
- ‡ Any violation of Egg Holder counts as 1 construction penalty
- ‡ Piece detaches and contacts floor
- ‡ Etc.

☀ Failed Runs: Anytime run can't be timed or distance measured

- ‡ ETV doesn't reach 0.5 m line
- ‡ Starts before ES is ready
- ‡ Etc.

Building suggestions

- ✱ **First and foremost, build early, practice, log, and calibrate as many runs as possible.**
- ✱ **Practice with a plastic egg filled with any material to around 57-60 g**
- ✱ **Always build just under/over the dimensions!!!!**
- ✱ **Make the ETV as light as possible**
- ✱ **Perhaps try some different floor surfaces**
- ✱ **Did I say calibrate?**
- ✱ **Strongly consider using aligning devices since you need the ETV to go as straight as possible**

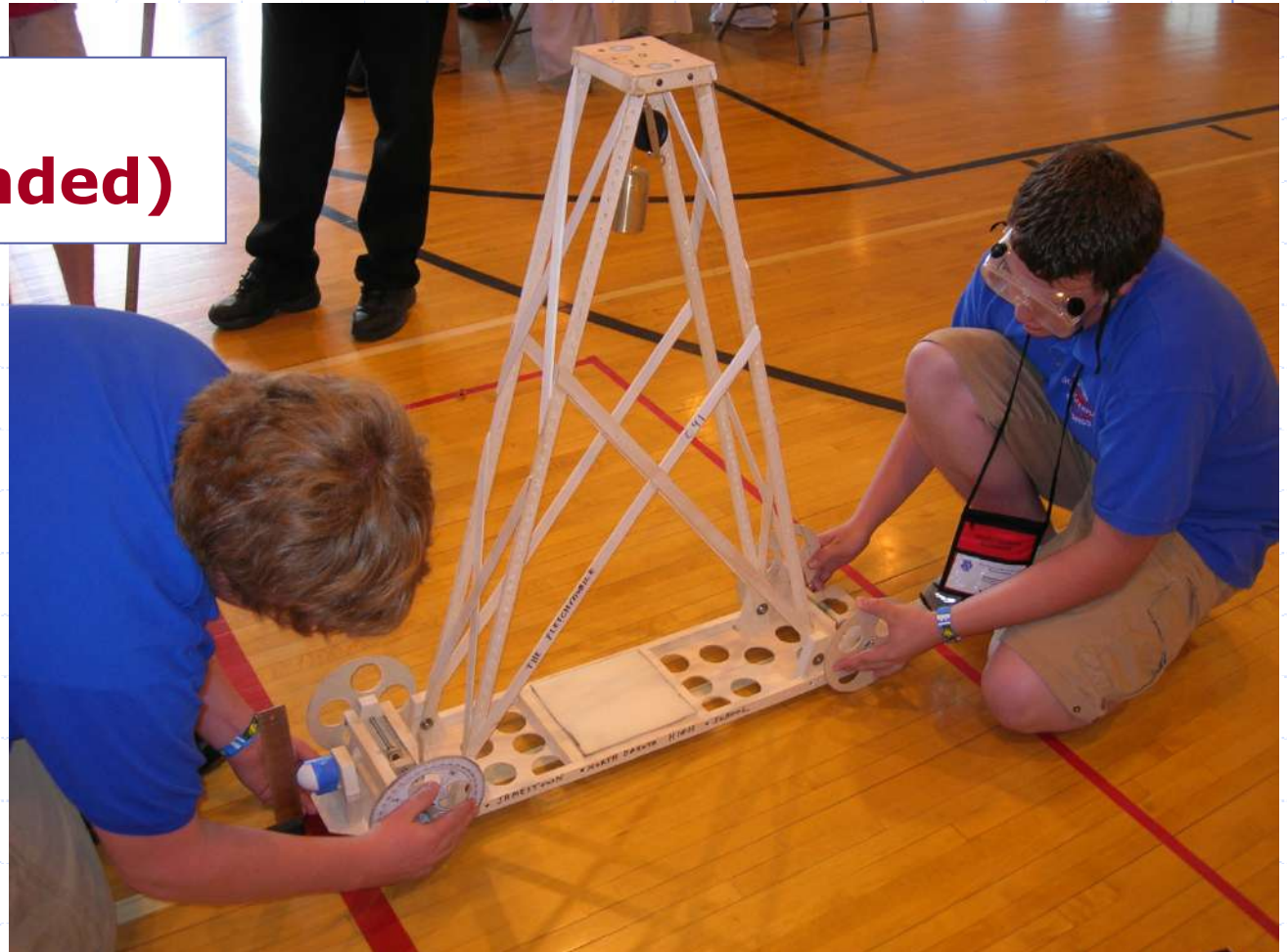
PROPULSION SYSTEMS



DRAFT

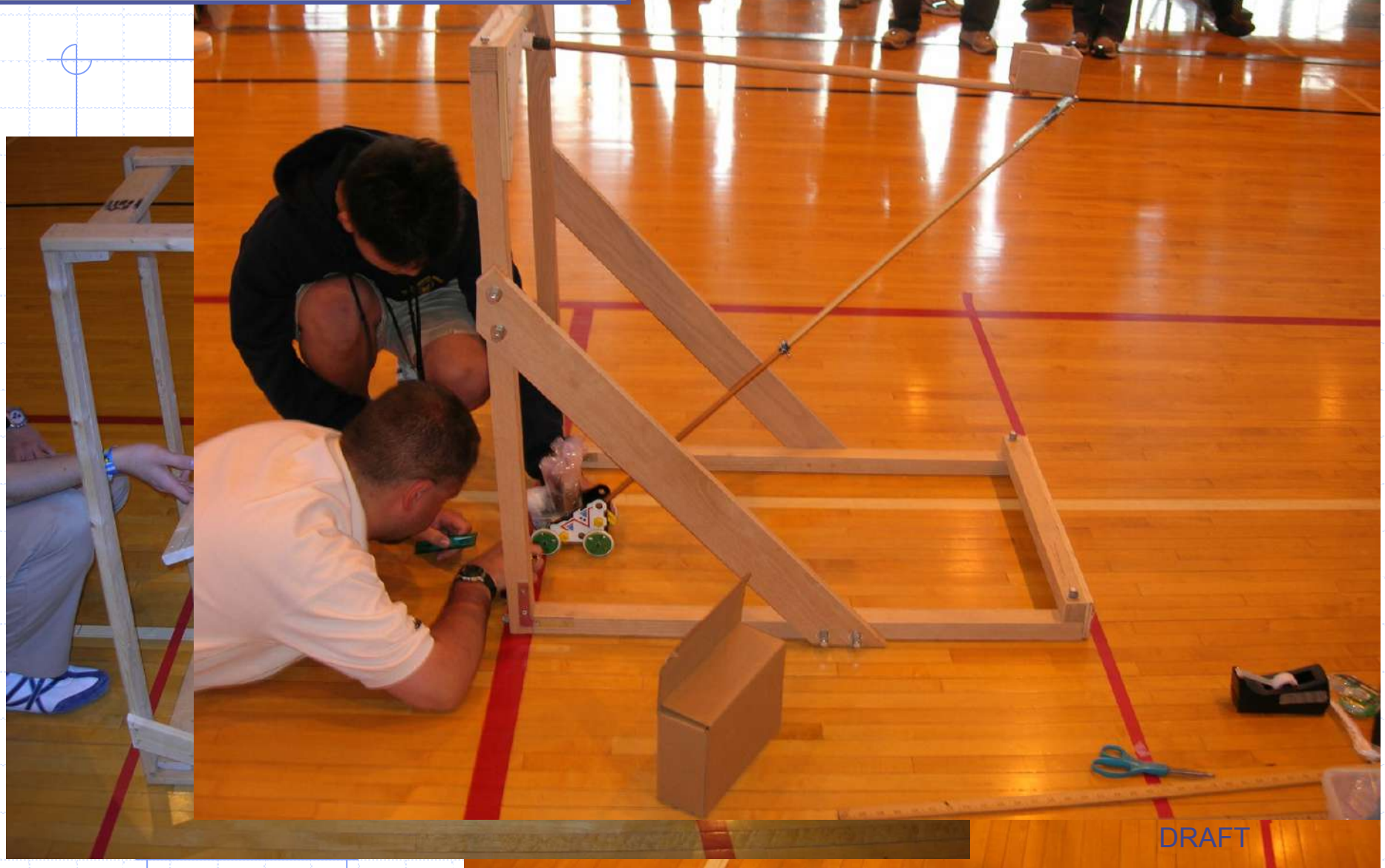
Single (combined units)

☀ (Not recommended)



Separate units: Mass-push

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Pulley Systems

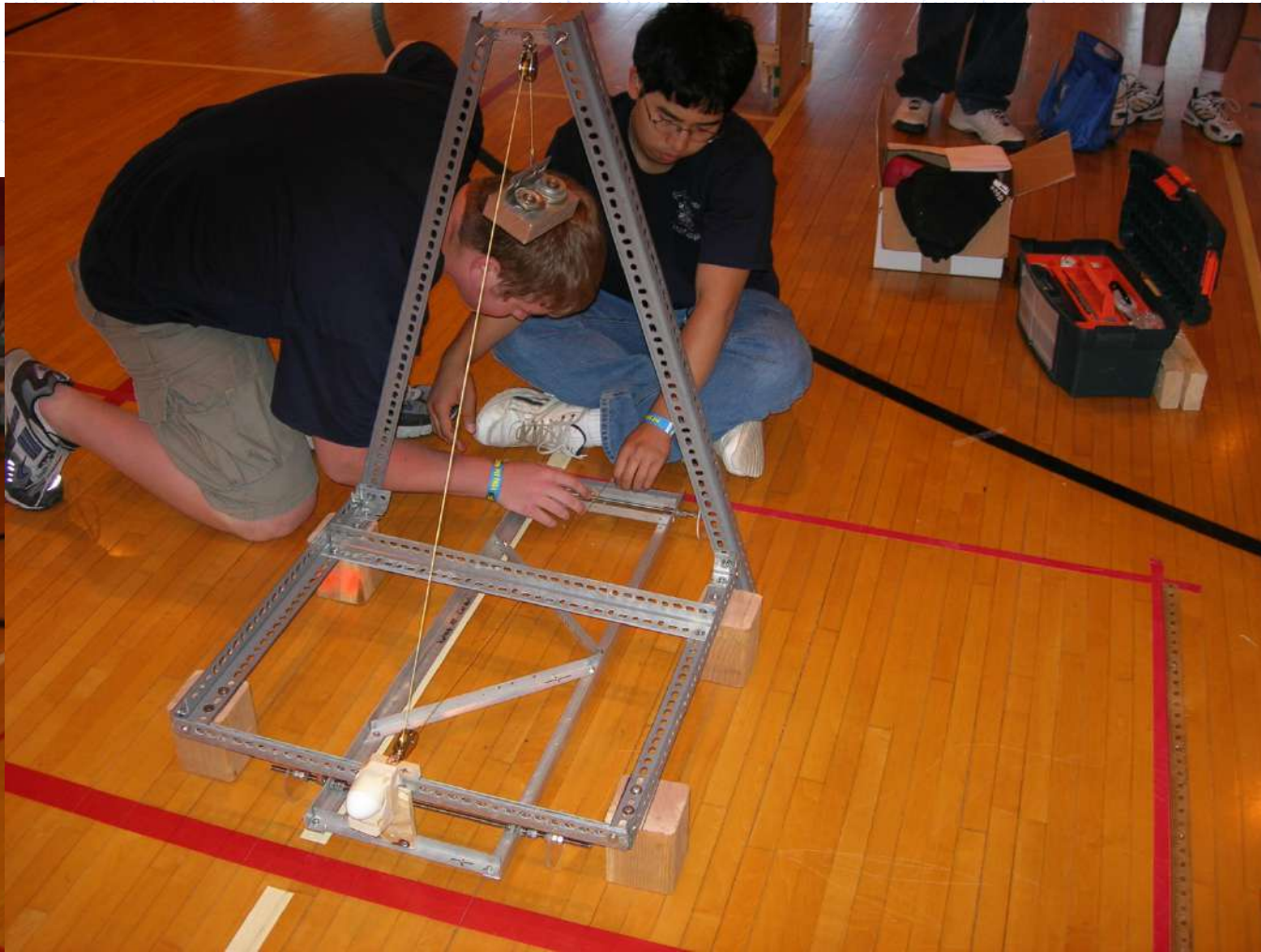
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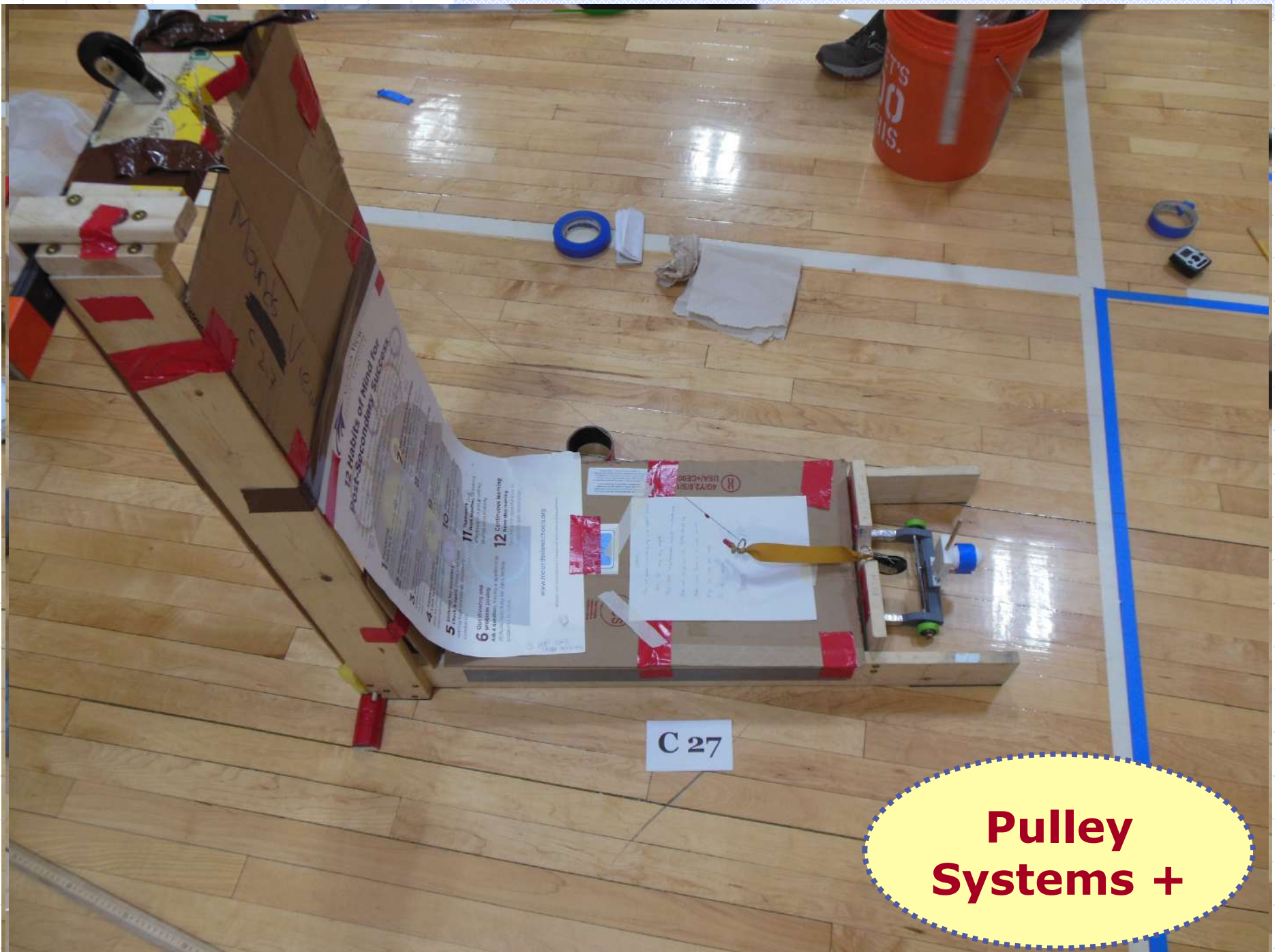
Scrambler 2017

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Pulley Systems



C 27

**Pulley
Systems +**

Miscellaneous Systems



✿ Pendulum

✿ Weight Slide

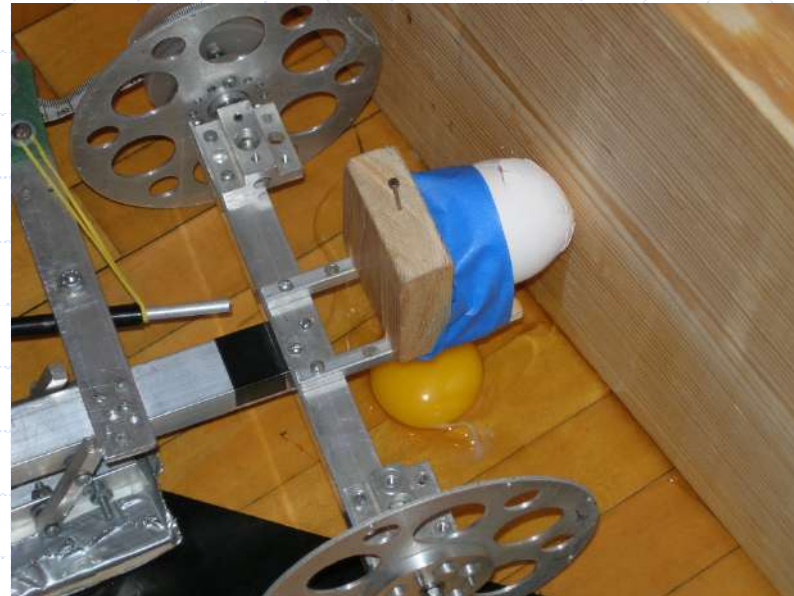
‡ Version One:
spring (not
pictured)

✿ Weight Slide

‡ Version Two
(pictured)

Braking Systems

- ✱ Prayer
- ✱ Axle and String
- ✱ Axle and Wing Nut
 - ‡ By far the most common
 - ‡ Wheel revolution
 - ‡ Example
- ✱ Miscellaneous







OK, however good this presentation has been, I MUST acknowledge and be humbled by....

<http://scioly.org/wiki/index.php/Scrambler>