Michigan State Coaches Clinic
Scrambler
December 7th 2013
Presented by Paul Voydanoff
Region 7 Director
pvoydanoff@solake.org
This is what you want it to do... as quickly as possible!!!

The intent is to have a falling mass propel a cart 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!!

Scrambler 2014
You Tube Views

Like this.....

....or better like this!!!

Those were from a few years ago, and a number of things have changed, so let’s get cracking!
Construction

LOOK WHAT MARMALADE!
Construction

- Entire device – Maximum: 1.00 m high, 0.75 m wide and 1.00 m long
- Could be 1 or 2 parts
- ALL energy from a falling mass – 2.00 kg max (GPE & KE)
- Must start with a #2 pencil
- Stopping mechanism built in
- No electricity/electronics
- Egg: large, grade A
  - Provided by event supervisor
  - Foremost part of vehicle
  - Taped to the following.....
Approximately 8-15 cm long, must break laser beam at 20 cm above floor.

Dimensions: 5 cm x 5 cm x 0.5 in

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

1/4” dowels for egg support

1/4” dowel for Photogate
The Track

Caution: This diagram is NOT in proportion. The track width is only 1.5 m wide.

Terminal Barrier Distance
8.70 – 11.70 m
1.0 m inc: Regionals
0.5 m inc: States
0.1 m inc: Nats
Competition

- 10 min. to do 2 runs
- Tip of egg even with starting line, anywhere along it
- All parts behind starting line
- Start with pencil
- ONLY 1 egg allowed – if broken on first run, NO second run!
Scoring

- **Time Score:** 5 \( \times \) Run Time (Run Time is the time to travel between 0.2 and 8.2 m lines.)
- **Distance Score:** Distance from the pointed end of egg to centerline of the terminal barrier (cm)
- **Run Score = Time Score + Distance Score**
- Whatever run gives you the best ranking is the one counted
- **Tiebreakers**
Penalties

- Run penalties (Tier 2)
  - Egg broken
  - ANY part of egg transport contacts wall besides egg
  - Transport runs outside lane (at ANY time)
  - Transport doesn’t travel 8.20 m
  - Transport passes terminal barrier (Tier 2 and score of 5000)

- Construction penalties (Tier 3)

- Ranked tiers
Building suggestions

- First and foremost, build early, practice, log, and calibrate as many runs as possible.
- Use a plastic egg filled with any material to around 65 g
- Always build just under/over the dimensions!!!!
- Make the transport as light as possible
- Perhaps try some different floor surfaces
- Did I say calibrate?
- Strongly consider using aligning devices since you need the transport to go as straight as possible
PROPULSION SYSTEMS
Single (combined units)

* (Not recommended)
Separate units: Mass-push
Pulley Systems
Miscellaneous Systems

- Pendulum
- Weight Slide
  - Version One: spring (not pictured)
  - Version Two (pictured)
Braking Systems

- Prayer
- Axle and String
- Axle and Wing Nut
  - By far the most common
  - Wheel revolution
  - Example
- Miscellaneous
  - http://www.soinc.org/scrambler_c