

# IDE SERIES

---

2018 SINGAPORE

# COMPETITION MANUAL

Updated: 6 March 2018

Event Organiser:



Official Hardware Sponsor:



Official Travel Partner:



## IDE CHALLENGE 2018

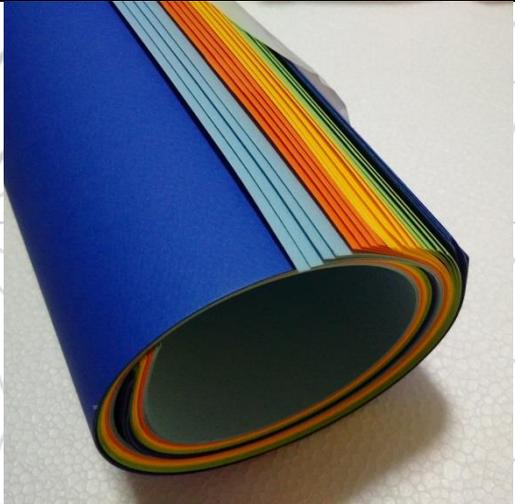
### Challenge for 2018: Faster, Higher, Stronger

This year's competition is made up of three challenges. Students will have 4 hours of construction time to tackle 3 separate challenges in total.

Faster	Higher	Stronger
Students have to build a (unpowered) race car to be released from an inclined ramp and travel a flat ground distance of 3m.	Teams have to build a model that can protect a payload of eggs from being dropped from a height of 3 storeys. The structure that can keep the most number of eggs intact wins.	Teams have to build a bridge structure to traverse a gap of 30cm. The bridge that is able to suspend the greatest weight load wins.

### List of Materials Provided on Competition Day

Teams can only use materials given out by the organisers on the competition day. Each team will be given one set of material to be used for all 3 competition challenges. Dimensions provided are an estimation; there may be minor differences between what is stated here and what is actually given out. This can be due to minor manufacturing defect or measurement rounding.

Material	Quantity	Description	Sample Photo
Corrugated Board	1	53cm x 38cm 3mm thick  Random colour will be distributed to the teams	
Vanguard Sheet	1	50cm x 35cm  Random colour will be distributed to the teams	

Material	Quantity	Description	Sample Photo
Cloth Tape	1	8m length 24mm thick	
NEWater bottle	2	Standard unopened NEWater bottle	
Trash Bag	2	30 inch x 39 inch	

Material	Quantity	Description	Sample Photo
Straws	50	8 inch length	
Satay Sticks	4	20cm length	
Rubber Band	20	Fresh unused rubber bands	

## Tools and Equipment

Tools will be not be provided on the competition day. Each team is required to bring their own tools that they deem necessary to work on the competition. The definition of a tool is an object that modifies or measures a given object, not act as a material in the model that a team is building.

**Teams are not allowed to use their own glue, adhesives, or tapes for this competition.** Teams caught using materials not provided by the organisers will face disqualification.

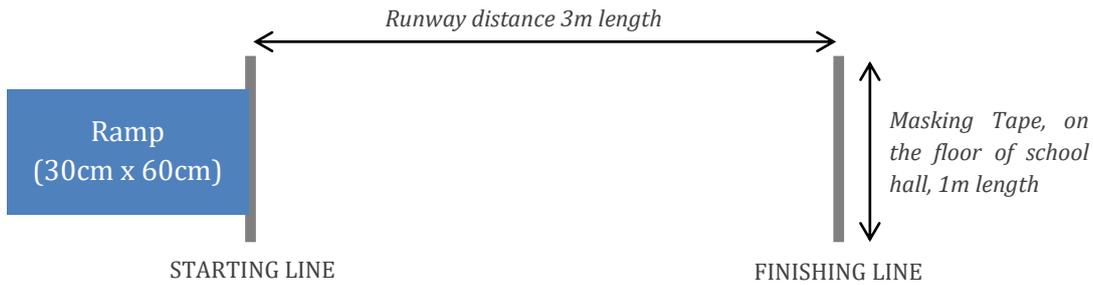
Electrical tools (which include battery operated tools) such as hand drill, soldering iron, etc are not allowed. Dangerous tools such as blow torch and flammable items are not allowed. Competition officials will be making inspections during the competition preparation period to ensure that teams are not using any electrical or dangerous tools.

# CHALLENGE DETAILS

## Faster

Students have to build a (unpowered) race car to be released from an inclined ramp and travel a flat ground distance of 3m. The length and width of the car cannot exceed 20cm by 20cm. The ramp has an inclined angle of approximately 26 degrees. The car must have a minimum of 3 points of contact with the ground at all times.

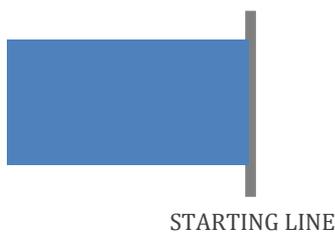
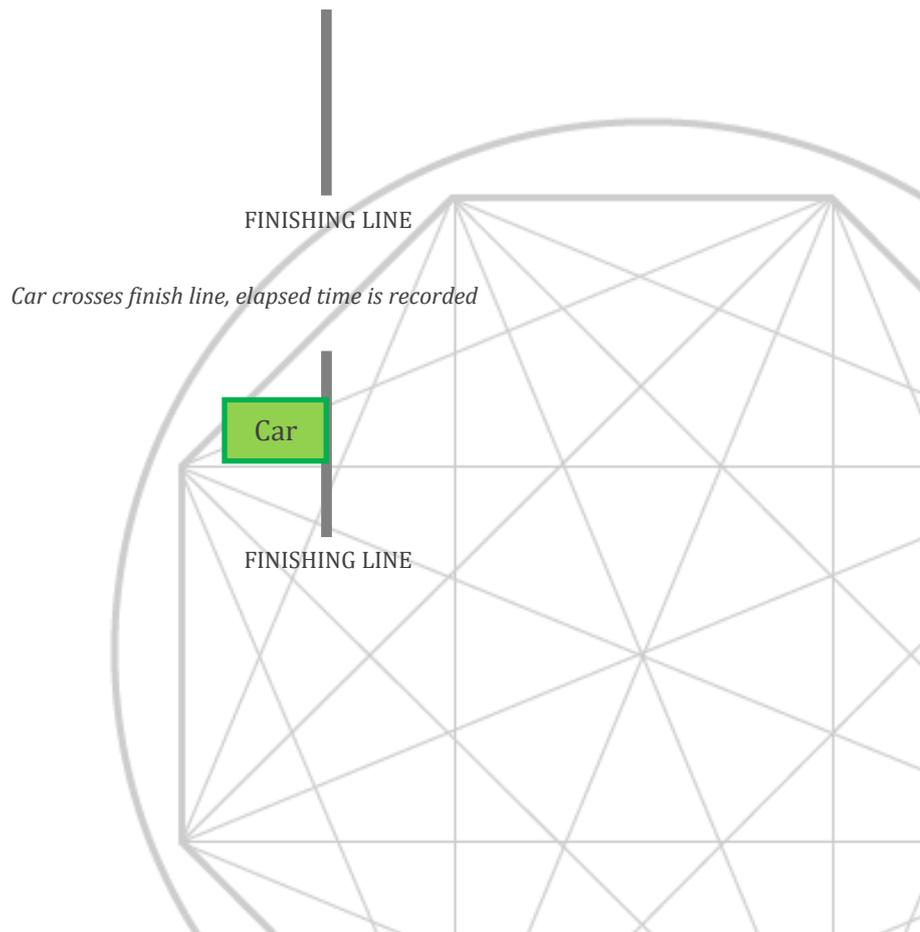
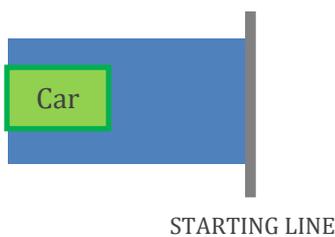
Layout of Competition Runway (not to scale)



Teams will place their model cars on the ramp, releasing the car upon the countdown of the referee (3, 2, 1, GO!). The elapsed time shall be the time duration between the referee’s “GO!” and the moment the model car crosses the finishing line. When the car crosses the finishing line, it must cross the finishing line as a complete model. If any part of the car is left behind or falls off, the run is disqualified. Each team has two runs. The best timing of the two run shall be used for the competition scoring.

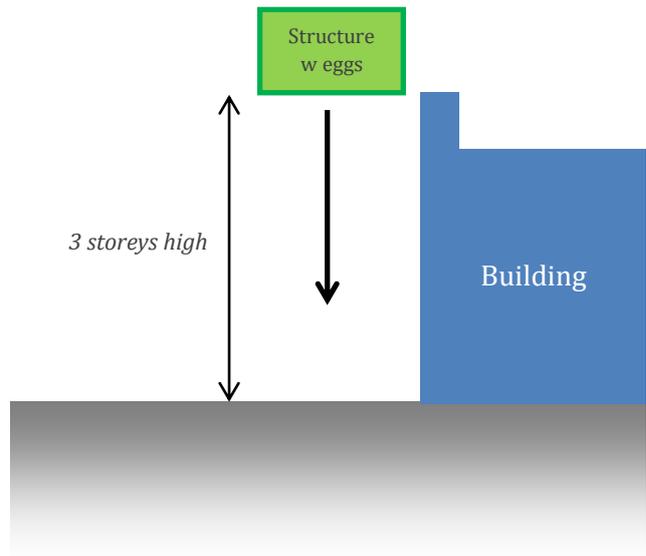
In the event that the car does not make it across the finishing line, the distance travelled will be measured from the Starting Line to the point of the car furthest away from the Starting Line.

*Position of model car at starting position*



## Higher

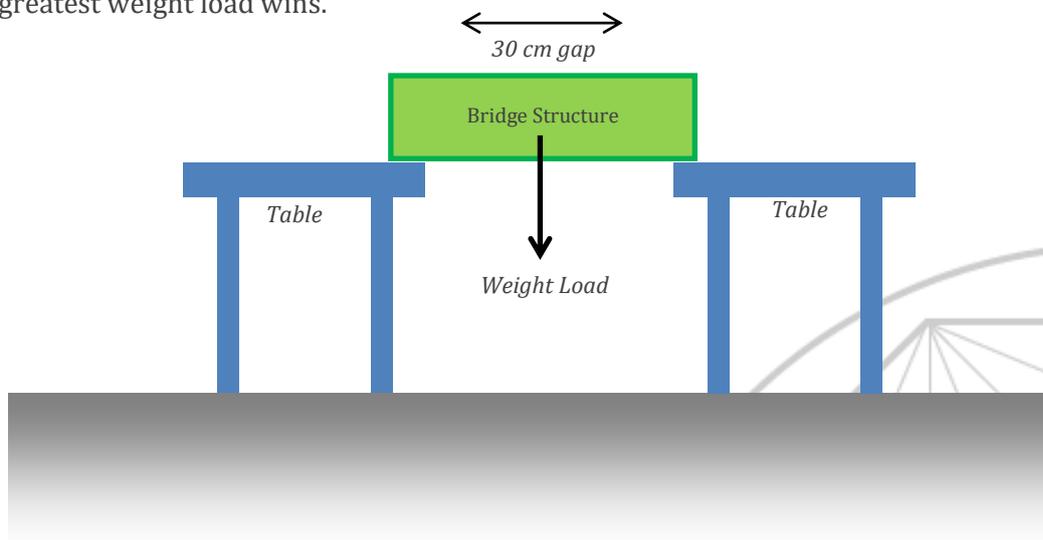
Teams have to build a model that can protect a payload of eggs from being dropped from a height of 3 storeys. The structure that can keep the most number of eggs intact wins.



Each team can load up to a maximum of 10 eggs in their structure. Each egg will be individually wrapped in ziplock/clear plastic bag to minimise spillage. Each team can only drop their structure once. The number of eggs loaded into the structure does not matter, only the number of intact eggs will go toward the competition score.

## Stronger

Teams have to build a bridge structure to traverse a gap of 30cm. The bridge that is able to suspend the greatest weight load wins.



The bridge structure must not be affixed onto the table in anyway. The bridge must have a minimum width of 10cm. There are no limits on the length or height of the bridge. A loop of string will be tied around the middle section of the bridge, and weights (drink cans) will be suspended from the string. A competition judge will systematically add weights onto the string. Each weight is approximately 330g. The maximum number of weights the bridge is able to suspend will go toward the competition score.

# COMPETITION RULES

## Rules and Regulations

### General:

1. During the competition, all teams must look after their own personal property, team construction and materials. Any member(s) of the competition who is/are caught in the act of sabotage, theft or mischief, whether to cause harm to other participating teams or not, will be dealt with by the competition organisers and may subject the team to disqualification.
2. No external help is to be rendered in this competition. This includes receiving direction, contribution, construction of any kind from any party or person not belonging to the team. Failure to comply with this rule will be dealt seriously and may subject the team to disqualification.
3. All students and Teacher Mentors (TMs) will be quarantined from each other during the competition preparation time. No communication between TMs and students is allowed during this period.
4. All decisions by the competition officials and organising parties are final.

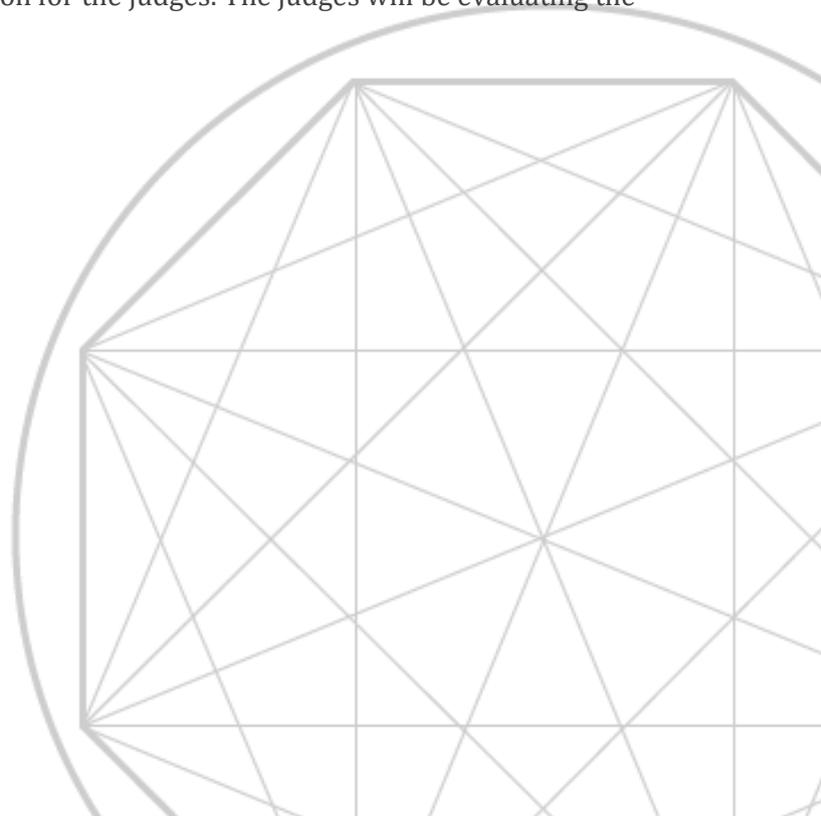
### IDE Challenge

1. Teams are only allowed to use materials provided by the organisers on the day of the competition.
2. Teams are not allowed to bring their prototypes created during the preparation week to the competition.
3. Electrical and dangerous tools are not allowed to be used.
4. The final product must be an original construct by the team.

### Judging

A panel of judges will be invited for this competition. They will judge each team based on a variety of factors, which include the team's strategy as well as the innovation, design and engineering aspects of their construction.

Teams do not have to prepare a formal presentation for the judges. The judges will be evaluating the team's performance during the competition run.



### Scoring Example

There is a total of 20 registered teams. Each team’s score is determined by its relative score rank against all other teams. Each competition challenge awards points in the range of 6 to 25, for a maximum attainable total of 75 points. The top rank for each competition challenge will be awarded 25 points, the second rank will be awarded 24 points. The last rank (rank 20) will be awarded 6 points. In case of a draw in rank, teams will be accorded the same points of that rank.

*Example using Higher Challenge:*

Teams	Higher Challenge (No. eggs that survived)	Rank	Score
Team A	10	1	25
Team B	10	1	25
Team C	9	3	23
Team D	8	4	22
Team E	8	4	22
Team F	8	4	22
Team G	7	7	19
Team H	7	7	19
Team I	6	9	17
Team J	6	9	17
Team K	6	9	17
Team L	4	12	14
Team M	4	12	14
Team N	3	14	12
Team O	3	14	12
Team P	3	14	12
Team Q	3	14	12
Team R	2	18	8
Team S	2	18	8
Team T	1	20	6

