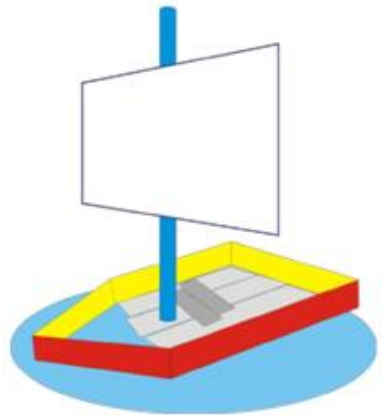
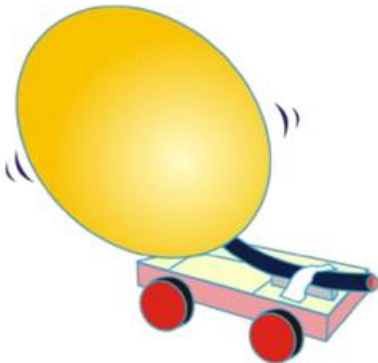


AWIM

Rules & Regulations



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1. Overview

1.1. Introduction

A World In Motion® (AWIM) is a teacher administered, volunteer-assisted program that brings science, technology, engineering and mathematics (STEM) education to life for students. AWIM incorporates the laws of physics, motion, flight and electronics into age-appropriate hands-on activities that reinforce classroom STEM curriculum.

1.2. Purpose

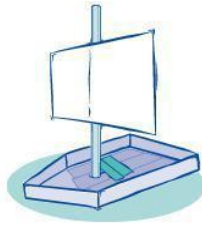
The Engineering Design Experience (EDE) is structured to take students through a design experience as they engage in Critical Thinking, Project Management, Communications, Inquiry & Analysis, and Teamwork & Collaboration to solve an engineering design challenge.

1.3. Competition Summary

There are two challenges in India for the students, namely, **JetToy Challenge** and **Skimmer Challenge**. The Competition includes designing, fabricating and validating the challenge toy as per specifications. The vehicle would be evaluated for its design, performance, and durability as specified for different parameters as defined in this rulebook. The Teams would also be required to make a presentation on their concept “Dream Car” which would also be evaluated as per parameters laid down. The cumulative scores of all the events would decide the overall ranking of the teams in the event. On the day of the event, the toy vehicles for the competition must be constructed on site, using materials supplied in an official kit only. All the material required will be

made available for the student teams by the organizers.

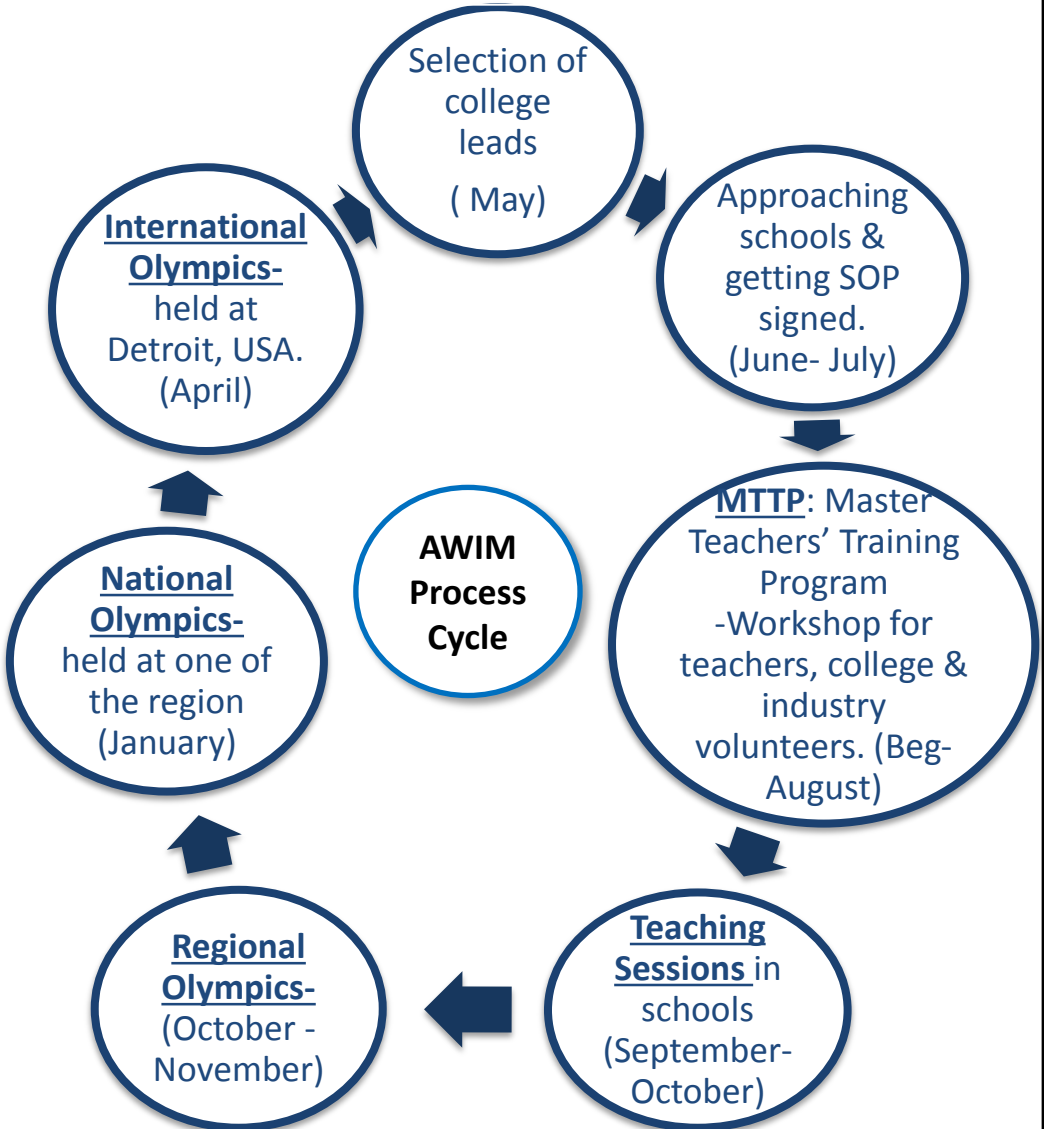
Skimmer Challenge (Grade 5): Students make paper sailboats that are propelled by fans across the floor. They test the effect of different sail shapes, sizes, and construction methods on the performance of their skimmers. The goal of this challenge is to design a set of skimmers that reliably meet specific performance criteria. Friction, forces, and the effect of surface area are some of the physical phenomena students encounter in this challenge.



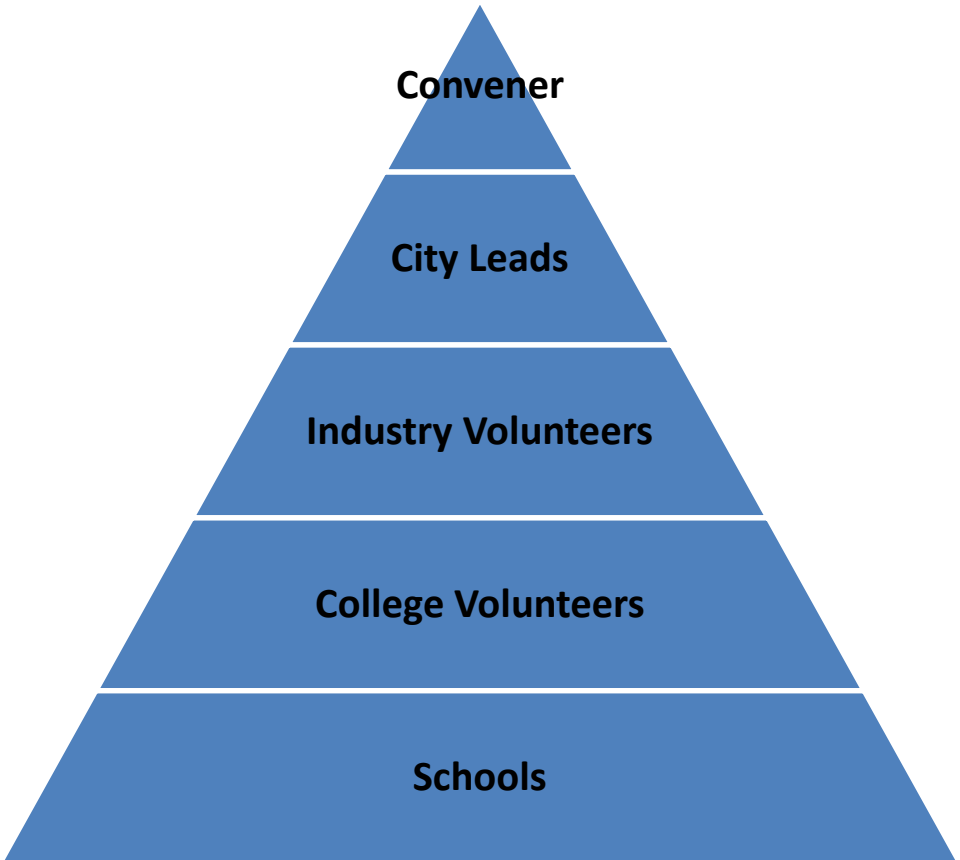
JetToy Challenge (Grade 6): Students make balloon powered toy cars. Their challenge is to design an appealing toy that performs in a specific way, such as travels far, carries weight, or goes fast. Students experiment with different chassis designs and nozzle sizes to determine their effect on the JetToy's performance. Jet propulsion, friction, and air resistance are the core scientific concepts students explore in this challenge.



1.4. AWIM process cycle:



1.5. AWIM Structure:



2. SAEINDIA AWIM Rules and Organizing Authority

2.1. Authority of the Rules

The SAEINDIA AWIM Rules are the responsibility of the EEB – Rules & Regulations Committee and are issued under the authority of SAEINDIA.

Official announcements from the AWIM EEB, Organizing Committee shall be considered part of and shall have the same validity as these rules.

Ambiguities or questions concerning the meaning or intent of these rules will be resolved by the EEB – Rules & Regulations Committee.

2.2. Rules Validity

The Approved Rules of the AWIM Challenge (Jet Toy & Skimmer), for the Calendar year 2016 Competition are posted in this book.

2.3. Rules Compliance

By entering AWIM, the team, students of the teams as individuals, teachers and other associated personnel agree to comply with and be bound by these rules and all the rule interpretations or procedures issued or announced by SAEINDIA, AWIM Organizing Committee, and EEB – Rules & Regulations Committee. All team members, teachers and other associated representatives are required to cooperate with and follow all instructions from competition organizers, officials and judges.

2.4. Understanding the Rules

Teams are themselves responsible for reading, interpretation and understanding the rules of the competition. For any enquiry regarding the rules, teams should contact Rules & Regulations Committee. Communication with any other individual contacts will not be considered as official. In case of any doubt in rules, teams are advised to clarify it. Teams must keep the copy of such communications for future reference. Communication with other e-mail IDs or individual event organizers will not be considered as official.

2.5. Participating in the Competition

Teams, students as individuals, teachers and other representatives of various cities who are present on-site at a competition are considered to be “Participating in the Competition” from the time they arrive at the event site until they depart from the site at the conclusion of the competition or earlier by withdrawing.

2.6. Violations on Intent

The violation on intent of a rule will be considered in the event of any violation of the rule itself. Questions about the intent or meaning of a rule may be addressed to the AWIM Organizing Committee.

2.7. Right to Impound

AWIM EEB & Organizing Committee reserves the right to impound on the toy model made at the event site, anytime during the competition for inspection and examination. The AWIM EEB authorizes inspection of the toy by the track officials (technical committee), track judges and organizers.

2.8. General Authority

Rules & Regulations Committee and the competition organizing bodies reserves the right to revise the schedule of the competition and/or interpret or modify the competition rules at any time and in any manner in the interest of the participating children or the competition, that is in their sole judgment, required for the efficient operation of the event.

3. Eligibility

3.1. School Students

Eligibility is limited to class 5th (Skimmer) & 6th (JetToy) students to ensure that this is an engineering competition rather than a race.

3.2. Teachers

Each team is supposed to have a teacher accompanying the students. The Teacher is required to accompany the team to the competition and will be considered as audience when the competition is in progress. No interference or disturbance from Teachers during the course of competition would be permitted, proper action would be taken by officials against any teacher found to disobey or dishonor the rule or set guidelines

3.3. Industry / Student Volunteer

Each team is supposed to have an Industry / Student volunteer accompanying the student teams. Student volunteers are required to accompany the team to the competition and will be considered as audience when the competition is in progress. No interference or disturbance from the volunteers during the course of competition would be permitted, proper action would be taken by officials against any volunteer found to disobey or dishonor the rule or set guidelines.

4. Registration

Teams are required to register as per the communication done to all City Leads. A Maximum of 18 members (12 students, 3 teachers & 3 Volunteers, inclusive of JetToy & Skimmer participants) per city is allowed to participate in the competition.

All the schools willing to be a part of AWIM needs to sign SOP (Statement of Partnership). The SOPs should be signed before MTTP. Format for SOPs (JetToy) is shown below as reference.

Statement of Partnership for Jettoy

SAEINDIA WORLD IN MOTION[®]



School Name: _____

Board Affiliation: _____ Total Students (9th -12th): _____

Principal's Name: _____ Email: _____
Mobile No.: _____

School Address: _____

State: _____ City: _____ State: _____ Pin Code: _____

School (Type): _____

Faculty Coordinator's Name: _____ Designation: _____

Faculty Coordinator's Email: _____
Mobile No.: _____

By signing this form we agree to credit SAE International / SAEINDIA as developer and the organizer of the A World In Motion® competition in any publicity, insurance or any other resulting from use of this program. We will allow minimum one Science teacher and one Art teacher to participate in the AWIM Training Program and they in turn will work with the students with the help of AWIM Volunteers.

Principal's Signature with stamp: _____
Date: _____

For JetToy (Q) at JETTOY, Contact AWIM Regional Coordinator - Name: _____, Contact: _____

Send scanned copy of the duly filled & stamped form to the undersigned or hand over to AWIM Regional coordinator
Rita Jha
rjha@saesaeindia.com
Rita Jha@saesaeindia.com

5. TECHNICAL REQUIREMENTS

With reference to Materials, Vehicle Specifications, Race Lanes, Event / Track Description & Scoring Guide & Presentation Score Sheet please refer this rulebook.

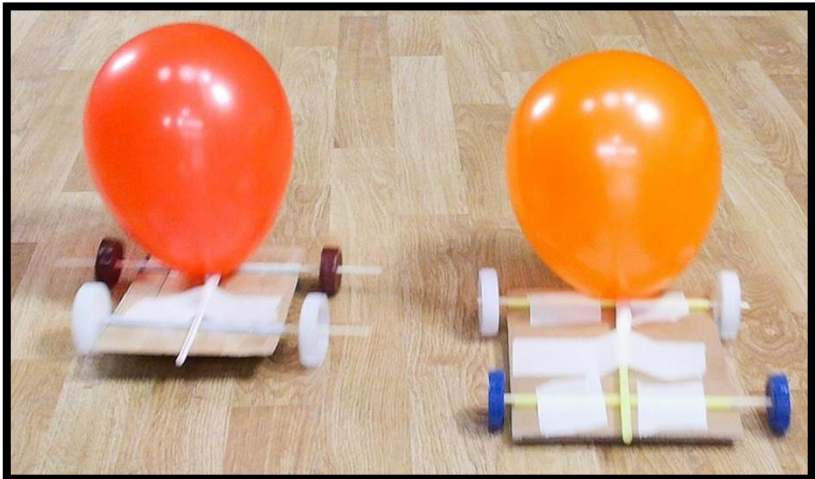
6. PROTEST

Participating teams are assumed to have full faith in the Rulebook and Event Procedures and hence any team may not protest against particular event procedures or the rulebook interpretation.

In case of any objection / misunderstanding with the judgment taken during the event or any issue with the competitors, teams may discuss with the event organizers. All such complaints will be taken into account for official consideration and further action (if required) only in case the concern submits a written note.

All written complaints should be addressed to AWIM Organizing Committee. The complaint sheets must be filed & handed over to the organizing committee or DB representative within 2 hours of the completion of related event. The Decision of event organizing committee will be considered as final.

7. JETTOY CHALLENGE



7.1. RULES & REGULATIONS



The JetToy Olympics offers teams an opportunity to engage in a friendly competition with students from other cities using SAE International's – *A World In Motion*[®] JetToy program.

❖ **Materials & Vehicle Specifications:**

1. JetToy vehicles in the competition must be constructed on site, at the day of the event using materials supplied only in an official JetToy kit. All materials for Student team use will be made available by the organizers.

2. Teams may build multiple JetToy vehicles to use in different events.

3. Teams can use only one balloon motor per vehicle as propulsion system.

4. Different nozzle sizes can be used for different events.

5. No propulsion system besides the JetToy balloons and nozzles may be used.

6. The test vehicle size should be as per the cut lines and folder lines marked on the JetToy chassis pattern provided in the kit box.

7. Teams are not allowed to use any external material for the construction, decoration & preparation of the concept car in presentation round. Any such external material usage if found will lead to the elimination of team.

However, teams will be allowed to use external material for demonstrating the concept in front of the Judges. E.g. Tub with water, Wooden ramps, Tables, Rope, etc.

8. Tampering of Nozzle and Axle will not be allowed for the event.

9. Any kind of foreign material impacting the propulsion system may lead to team disqualification.

❖ Race Lanes:

1. The floor of the Race lane will be of Natural stone – like Marble, Granite, Kota, Plain Cement / concrete, Epoxy coated Concrete floor or of Ceramic tiles. Surfaces like rubber matt or any surface which hampers the natural movement of the toy car will not be acceptable as a Race lane. Engineering Education Board (EEB) committee will reserve all the rights to certify the floor for the event.

2. Teams will have to perform on the assigned race lane for the competition. This can be either team specific lane assignment or event specific lane assignment.

3. The race lane will be 10 meters length by 3 meters wide except for Speed event. For all events, points will be awarded as per the Track Description & Scoring Guide (Refer 7.3)

4. For the speed event, if the vehicle does not cross 3m mark the attempt will be declared valid and the team will be awarded zero marks.

5. During any attempt by the team, if the vehicle does not move from the start point even after release of the Nozzle, the attempt will not be counted and the team will be given chance to inspect their vehicle again. Minor repair will be allowed and should be done in front of track judges (no external help allowed).

6. If a vehicle leaves the confines of the lane points will be awarded at the location of exit, as per track scoring guideline.

7. JetToy when released from the Start position, during all track events, should have all the 4 wheels grounded. An attempt will be provided if the Jettoy wheelies abruptly (max 2 times per team) If the Jettoy is found wheeling regularly the event will be disqualified for the team.

8. While performing on the track, Teams will be allowed to replace the Adhesive Tape in case the tape is not able to hold the balloon motor in place because of the following reasons,

- (a) the Adhesive Tape is old & does not have proper adhesive property or
- (b) in case the Adhesive Tape loses its adhesive property because of the high ambient Temperature at the venue on the event day.

Note: Teams should use the Tape provided by the Track Judges only.

9. Teams will be given three attempts during the competition. However, teams are allowed to use **ONLY ONE JetToy** for taking all the 3 trials for a particular track.

Marking system is as in the table given below. Please refer to **JetToy Olympics – Track Description & Scoring Guide** for specific event scoring details.

Sr.No.	Performance	JetToy
1	Distance	10
2	Weight	10
3	Accuracy	10
4	Longest Travel	25#
5	Speed	*
6	Presentation	*
Total		55

Max points awarded will have a sealing for “Longest travel time” as 25 points. The JetToy must be moving and be within the track to clock the maximum points.

***(i) Points will be awarded for the event to decide the Winner for the specific event only & the team will be awarded for the event category.**

***(ii) The points for event no. 5 & 6 in the table above will not be considered for deciding the overall “AWIM JetToy Champion”.**

Conduct of the Competition :

1. Points can be acquired in 4 different Performance events, which include Distance, Weight-carrying ability, Accuracy and Longest travelling time to become overall Champions.

2. Points can also be acquired in Speed event and in Presentation round for winning individual award category.

3. Maximum balloon inflation for any event will be a diameter of 8 inches.

4. Weights for the weight-carrying ability event will consist of 3 washers stacked & taped in a cylindrical arrangement.

5. Teams will compete to acquire the highest number of total points.

6. Only Test Engineer (2 nos) will be permitted at the starting line; one to operate the pump giving directions and the other to hold and launch the vehicle.

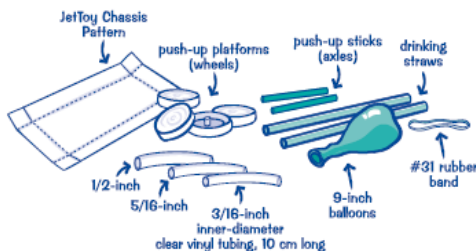
All teams will be given a specific amount of time to complete their 3 attempts per event. Any trials that are not finished during the allotted time will be forfeited.



7.2. KIT MATERIAL

➤ Following materials are provided to build a JetToy during the competition.

MATERIAL	QUANTITY
1. JetToy Chassis Pattern	2
2. Nozzles (Small, Medium, Large)	3
3. Wheels	16
4. Axles	8
5. Drinking Straw	4
6. Balloon	4
7. Rubber Band	4
8. Scale	1
9. Scissors	2
10. Cellotape	2



7.3. Jettoy Challenge- Event / Track Description & Scoring Guide



I. Distance

➤ **Objective:** Student design teams will construct a JetToy car that can travel as far as possible.

-Track Specs : The track will be 10m long x 3m wide.

-Teams must release JetToy behind the 0m mark.

-JetToy must stay on track for attempts to be valid (if JetToy leaves the track, points are rewarded at point of exit).

-JetToy balloon must be inflated to maximum of 8 inch diameter or less. Track Judges will confirm the balloon diameter before JetToy is released.

➤ **Scoring:**

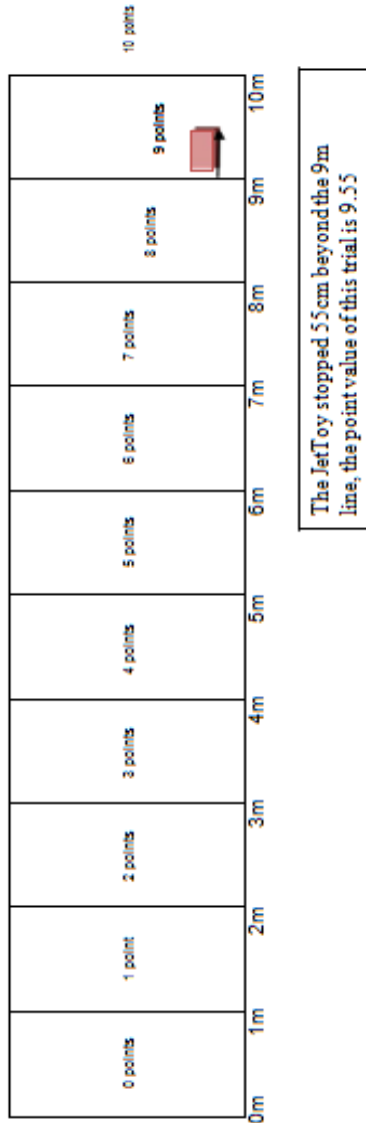
✓ Design teams get three attempts.

✓ Final score is based on the average of the 3 attempts.

✓ Point total is awarded by judge determining the scoring box and adding the total cm travel in the point box.

✓ Measurements are taken from the furthest point of travel (i.e. most distant point), reference car front edge.

➤ Distance Track –



II. WEIGHT

➤ **Objective:** Student design teams will construct a JetToy car that can carry a specific amount of weight.

-Track Specs : The track will be 10m long x 3m wide.

-Teams must release JetToy behind the 0m mark.

-JetToy must stay on track for attempts to be valid (if JetToy leaves the track, points are rewarded at point of exit).

-JetToy balloon must be inflated to maximum of 8 inch diameter or less. Track Judges will confirm the balloon diameter before JetToy is released.

-Weights for the event will consist of 3 washers,taped in a cylindrical arrangement provided by Track Judges.

➤ **Scoring:**

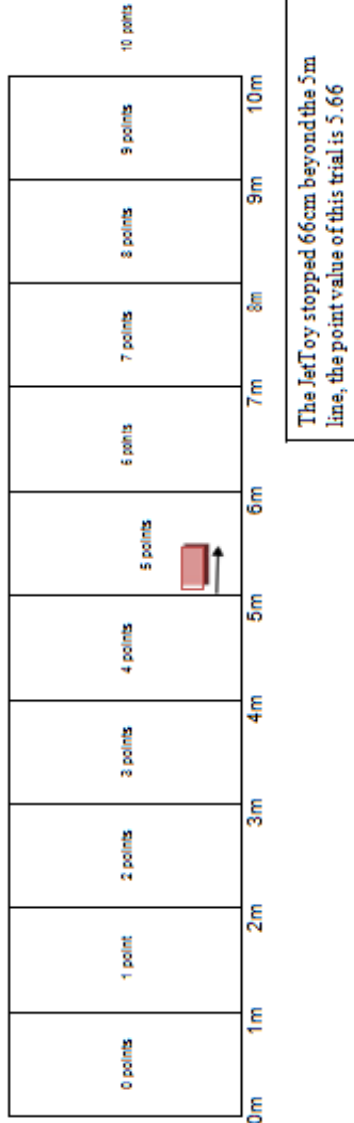
✓Design teams get three attempts.

✓Final score is based on the average of the 3 attempts.

✓Point total is awarded by judge determining the scoring box and adding the total cm travel in the point box.

✓Measurements are taken from the furthest point of travel (i.e. most distant point), reference car front edge.

➤ Weight Track –



III. ACCURACY

➤ **Objective:** Student design teams will construct a JetToy car that can travel a specific distance.

-Track Specs : The track will be 10m long x 3m wide.

-Teams must release JetToy behind the 0m mark.

-JetToy must stay on track for attempts to be valid (if JetToy leaves the track, points are rewarded at point of exit).

-JetToy balloon must be inflated to maximum of 8 inch diameter or less.

➤ **Scoring:**

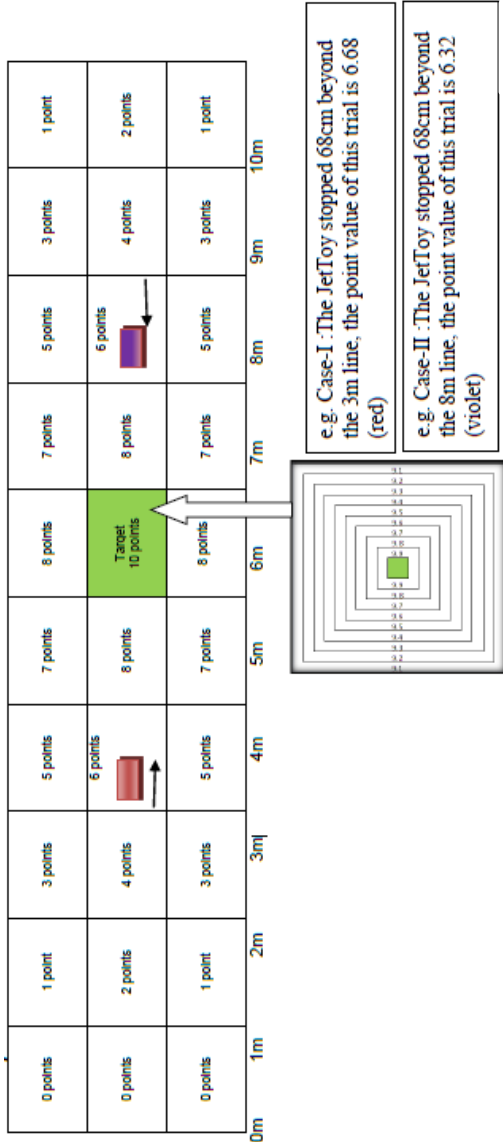
✓ Design teams get three attempts.

✓ Final score is based on the average of the 3 attempts.

✓ Points awarded are by determining the scoring box and adding/subtracting the total cm traveled in the Point Box.

✓ Measurements are taken from the furthest point of travel (i.e. most distant point), reference - car front edge; if vehicle lands in target square the points are determined by square where 50% + of vehicle stops. Target square begins at 9.1 points; increases by a tenth of a point each 5 cm to center of target at 10 points; decreases by tenths beyond center.

➤ Accuracy Track –



IV. SPEED

➤ **Objective:** Student design teams will construct a JetToy car that can travel as fast as possible over 3m distance.

-Track Specs: 3m long x 3m wide

-Teams must release JetToy behind the 0m mark

-JetToy must stay on track for attempt to be valid.

-JetToy balloon must be inflated to maximum of 8 inch diameter or less. Track Judges will confirm the balloon diameter before JetToy is released.

-Track judge will time the teams attempt using a stopwatch or by installing appropriate sensors.

- Time starts when nozzle is released on the instruction of Judge.

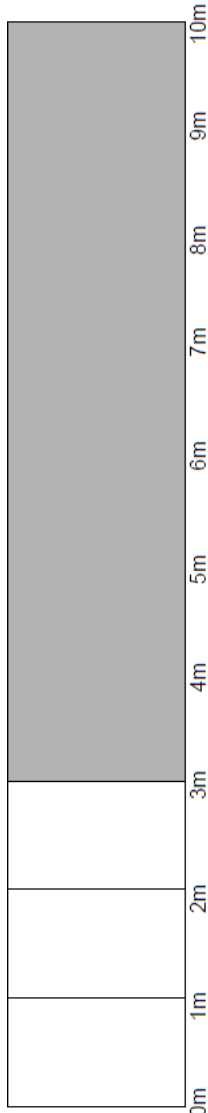
- Time stops when JetToy passes the 3m mark.

➤ **Scoring:**

- ✓Design teams will run 3 trails

- ✓Final score is based on the Best of the 3 attempts, in case of sensors the indicated speed will be recorded).

➤ Speed Track –



The JetToy crosses the 3m line with the best time/speed among all participating is declared as category winner

V. LONGEST TRAVELLING TIME

➤ **Objective:** Student design teams will construct a JetToy car that can travel for an extended period of time (longest travel time).

-Track Specs:10m long x 3m wide

-Teams must release JetToy behind the 0m mark

-JetToy must stay on track for attempt to be valid. The Jettoy must be moving and be within the track to clock the maximum points.

-JetToy balloon must be inflated to maximum of 8 inch diameter or less. Track Judges will confirm the balloon diameter before JetToy is released.

-Track judge will time the teams attempt using a stopwatch

- Time starts when nozzle is released

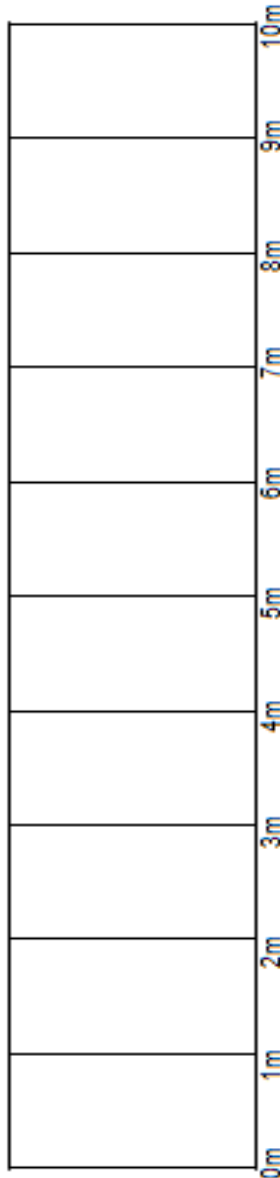
- Time stops when JetToy stops moving forward or leaves the track.

➤ **Scoring:**

- ✓Design teams get three attempts.

- ✓Final score is based on the average of the 3 attempts.

➤ Time Track –



The JetToy stays on track and keeps moving
for 32.34 sec., point value of the trial is 32.34

❖ Artistic Design

➤ **Objective:**

Student design teams will construct a JetToy that is functional and artistically designed.

➤ **Scoring:**

Overall competition will be evaluated by Jury panel to designate the JetToy they believe to be the best Artistic Design as well as on the Concept.

❖ Presentations

➤ **Objective:**

Student design teams will present their JetToy design.

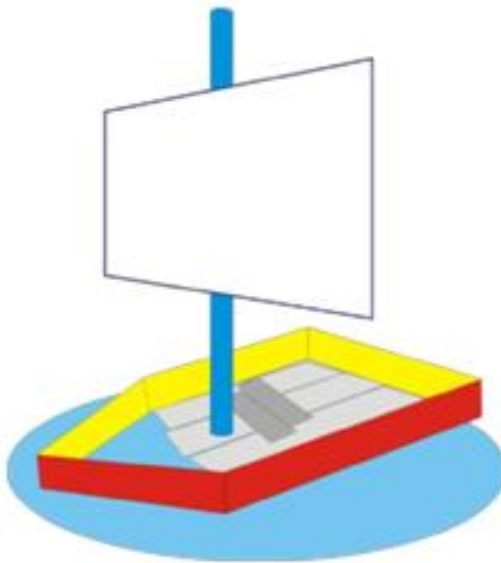
➤ **Scoring:**

Presentations will be evaluated by a Jury panel.

SKIMMER CHALLENGE



8.1. RULES & REGULATIONS



The Skimmer Olympics offers teams an opportunity to engage in a friendly competition with students from other cities using SAE International's – *A World In Motion*[®] Skimmer program.

❖ Materials & Vehicle Specifications:

1. Skimmers in the competition must be constructed on site, the day of the event using materials supplied only in an official Skimmer kit. All materials will be made available for Student team use by the organizers.

2. Teams may build multiple Skimmer vehicles to use in different events.

3. Teams can use only one sail per vehicle as propulsion system.

4. Different sail sizes can be used for different events.

5. No propulsion system besides the Skimmer sails may be used.

6. The test vehicle size should be as per the cut lines and folder lines marked on the Skimmer Hull pattern provided in the kit box. However, sail size can differ.

7. Teams are not allowed to use any external material for the construction, decoration & preparation of the concept car in presentation round. Any such external material usage if found will lead to the elimination of team.

However, teams will be allowed to use external material for demonstrating the concept in front of the Judges. E.g. Tub with water, Wooden ramps, Tables, Rope, etc.

8. Tampering of sails will not be allowed for the event.

9. Any kind of foreign material impacting the propulsion system may lead to disqualification.

❖ Race Lanes:

1. The floor or Table used for the Race lane will be made from PVC Floor Coverings commonly known as Vinyl Flooring (Residential or School flooring material), with Gloss finish laminates or with similar surface finish –No other surfaces like rubber matt, etc. can be used. EEB committee will reserve all the rights to certify the floor for the event.

2. Teams will have to perform on the assigned race lane for the competition. This can be either team specific lane assignment or event specific lane assignment.

3. The race lane will be 3 meters length by 2 meters wide except for Speed event. For all events, points will be awarded as per the Track Description & Scoring Guide (Refer 8.3)

4. For the speed event, if the skimmer does not cross 1m mark the attempt will be declared valid and the team will be awarded zero marks.

5. During any attempt by the team, if the skimmer does not move from the start point even after release, the attempt will not be counted and the team will be given chance to inspect their toy again. Minor repair will be allowed and should be done in front of track judges (no external help allowed).

6. If a skimmer leaves the confines of the lane, points will be awarded at the location of exit, as per track scoring guideline.

7. Skimmer when released from the Start position during Speed test should travel without tipping. Additional attempt will be provided if the Skimmer tips. If the Skimmer is found to tip

regularly, the event will be disqualified for the team.

8. While performing on the track, teams will be allowed to replace the adhesive Tape in case the tape is not able to hold the sail motor in place because of the following reasons,

1. the Adhesive Tape is old & does not have proper adhesive property or
2. in case the Adhesive Tape loses its adhesive property because of the high ambient Temperature at the venue on the event day.

Note: Teams should use the Tape provided by the Track Judges only.

9. Teams will be given three attempts during the competition. However teams are allowed to use **ONLY ONE SKIMMER** for taking all the 3 trials for a particular track.

Marking system is as in the table given below. Please refer to **Skimmer Olympics – Track Description & Scoring Guide** for specific event scoring details.

Sr.No.	Performance	Skimmer
1	Distance	09
2	Weight (G1)	09
3	Weight (G2)	18
4	Accuracy	10
5	Turn test	10
6	Speed	*
7	Presentation	*
Total		56

****(i) Points will be awarded for the event to decide the Winner for the specific event only & the team will be awarded for the event category.***

****(ii) The points for event no. 6 & 7 in the table above will not be considered for deciding the overall “AWIM Skimmer champion”.***

Conduct of the Competition:

1. Points can be achieved in 5 different events. Performance events include distance, weight-carrying ability (G1 & G2), Accuracy and turn test to become overall Champions.

2. Points can also be acquired in Speed event and in Presentation round for winning individual award category.

3. Weights for the weight-carrying ability event will consist of 2 & 4 washers which are provided in AWIM Kit stacked & taped in a cylindrical arrangement.

4. Teams will compete to acquire the highest number of total points.

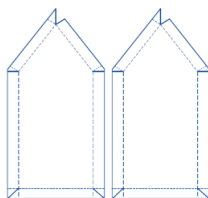
5. Only Test Engineer (2 nos) will be permitted at the starting line; one to operate the fan and give directions to other to hold and launch the skimmer.

All teams will be given a specific amount of time to complete their 3 attempts per event. Any trials that are not finished during the allotted time will be forfeited.

8.2. KIT MATERIAL

❖ Following materials are provided to build a skimmer during the competition.

MATERIAL	QUANTITY
1. Skimmer Hull Pattern	1
2. U-Clip	3
3. Drinking Straw	3
4. Sail Sheet	3
5. Scale	1
6. Scissors	2
7. Cellotape	2



Skimmer Hull Pattern

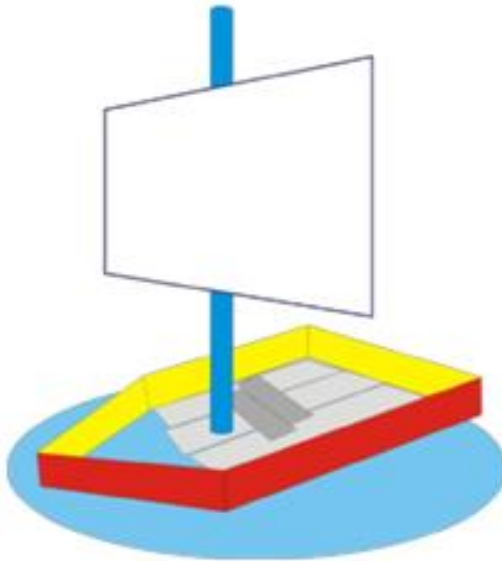


U-Clip



Sail Sheet

8.3. Skimmer Challenge- Event / Track Description & Scoring Guide



I. Distance

➤ **Objective:** Student design teams will construct a Skimmer that can travel as far as possible.

-Track Specs 3m long x 2m wide

-Teams must release Skimmer from the Skimmer Dock that is located 30cm in front of the fan

-Skimmer must stay on track and should not tip-off. (if Skimmer leaves the track or tip-off, points are awarded at point of tip-off or point of exit)

-Fan must be turned on high before Skimmer is released (The teams may decide to change the fan speed, however the fan speed MUST be the same for all three trials.)

➤ **Scoring:**

✓ Design teams get three trials.

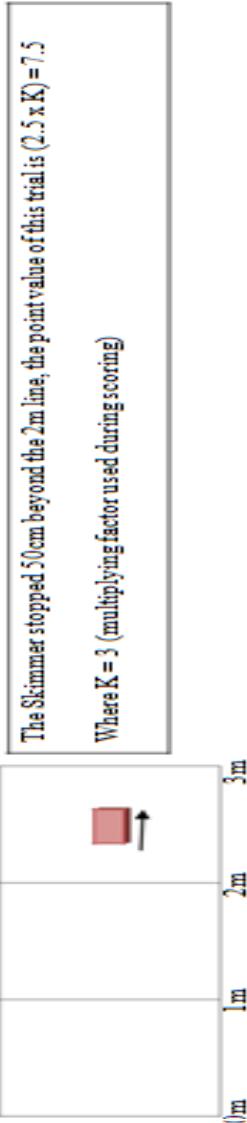
✓ Each trial distance will be measured by the judge using the measuring tapes from the furthest point of travel (i.e. most distant point), reference-Hull front edge (most distant point)

✓ Measurement is taken when the Skimmer stops for > 3 seconds.

✓ If the Skimmer tips, the measurement is taken for the point where the tip begins

✓ Final score is based on average of the 3 trials.

➤ Distance Track –



The Skimmer stopped 50cm beyond the 2m line, the point value of this trial is $(2.5 \times K) = 7.5$
Where $K = 3$ (multiplying factor used during scoring)

II. WEIGHT

➤ **Objective:** Student design teams will construct a Skimmer that can carry a specific amount of weight.

-Track Specs 3m long x 2m wide

-Teams must release Skimmer from the Skimmer Dock that is located 30cm in front of the fan

-Skimmer must stay on track and should not tip-off. (if Skimmer leaves the track or tip-off, points are awarded at point of tip-off or point of exit)

-Skimmer fan must be turned on high before Skimmer is released (The team may decide to change the fan speed, however the fan speed **MUST** be the same for all three trails.)

-Skimmer weight = washers (Group 1 = 2washers, Group 2 = 4washers)

➤ **Scoring:**

✓ Design teams get three trials.

✓ Each trial distance will be measured by the judge using the meas. tapes from the furthest point of travel (i.e. most distant point), reference-Hull front edge (most distant point)

✓ Measurement is taken when the Skimmer stops for > 3 seconds.

✓ If the Skimmer tips, the measurement is taken for the point where the tip begins.

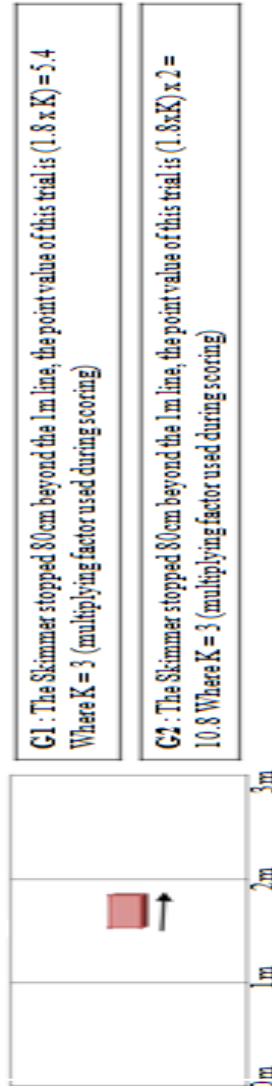
✓ Final score is based on average of the 3 trials.

✓ Skimmer weight = washer.

Group 1 = 2 washers – score is measured of distance (in cm)

Group 2 = 4 washers–score is measured of distance (in cm) x 2

➤ Weight Track – Group 1/2 (G1/G2)



III. ACCURACY

➤ **Objective:** Student design teams will construct a Skimmer that can travel a specific distance.

-Track Specs: 3m long x 2m wide

-Teams must release Skimmer from the Skimmer Dock that is located 30cm in front of the fan

-Skimmer must stay on track and should not tip-off. (if Skimmer leaves the track or tip-off, points are awarded at point of tip-off or point of exit)

-Skimmer fan must be turned on high before Skimmer is released (The team may decide to change the fan speed, however the fan speed MUST be the same for all three trails.)

➤ **Scoring:**

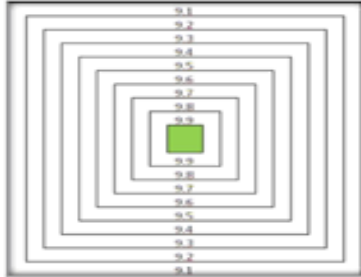
✓ Design teams get three trials.

✓ Final score is based on average of the 3 trials.

✓ Point are awarded by determining the scoring box and adding the total cm traveled in the Point Box.

✓ Measurements are taken from the furthest point of travel (i.e. most distant point), reference-Hull front edge; if Skimmer lands in target square the points are determined by square where 50% + of Skimmer stops - target square begins at 9.1 points; increases by a tenth of a point, target at 10 points; decreases by tenths beyond center.

➤ Accuracy Track –



If the skimmer stops anywhere in the block, the team gets full marks as defined for the block

0 Point	4 Points	9 Points	0m 1m 2m 3m
2 Points	5 Pts 	10 Points	
0 Point	4 Points	9 Points	

IV. TURN

➤ **Objective:** Student design teams will construct a Skimmer that can turn left or right at a specific distance.

-Track Specs: 3m long x 2m wide

-Teams must release Skimmer from the Skimmer Dock that is located 30cm in front of the fan

-Skimmer must stay on track and should not tip-off. (if Skimmer leaves the track or tip-off, points are awarded at point of tip-off or point of exit)

-Skimmer fan must be turned on high before Skimmer is released (The team may decide to change the fan speed, however the fan speed **MUST** be the same for all three trails.)

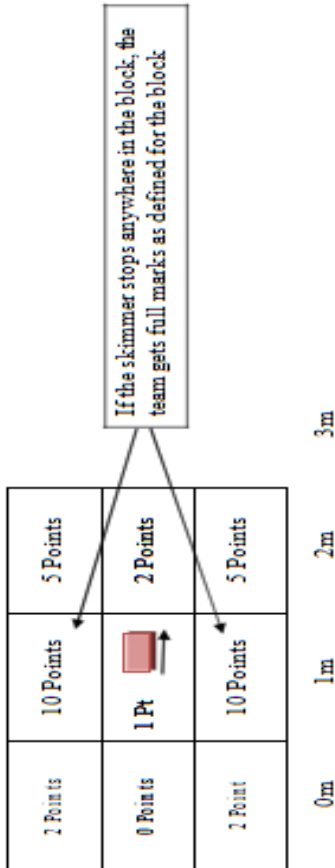
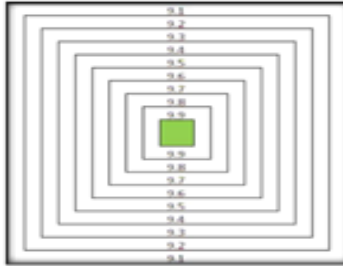
➤ **Scoring:**

✓ Design teams get three trials.

✓ Final score is based on average of the 3 trials.

✓ Measurements are taken from the furthest point of travel (i.e. most distant point), reference-Hull front edge; if Skimmer lands in target square the points are determined by square where 50% + of Skimmer stops - target square begins at 9.1 points; increases by a tenth of a point, target at 10 points; decreases by tenths beyond center.

➤ Turn Track –



V. SPEED

➤ **Objective:** Student design teams will construct a Skimmer that can travel as fast as possible over a 1m distance.

-Track Specs :1m long x 2m wide

-Teams must release Skimmer from the Skimmer Dock that is located 30cm in front of the fan

-Skimmer must stay on track and should not tip-off. (if Skimmer leaves the track or tip-off, points are awarded at point of tip-off or point of exit)

-Skimmer fan must be turned on high before Skimmer is released (The team may decide to change the fan speed, however the fan speed **MUST** be the same for all three trails.)

-Track judge will time the teams trials using a stopwatch or by installing appropriate sensors.

- Time starts when Skimmer is released

- Time stops when Skimmer passes the 1m mark

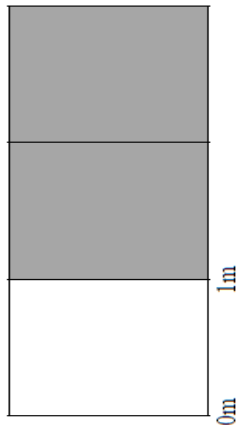
➤ **Scoring:**

- ✓Design teams get will get designated time to run 3 trails.

- ✓Final score is based on the best of 3 trials

➤ Speed Track –

The Skimmer crosses the 1m line with the best time/speed among all participating is declared as category winner



❖ Artistic Design

➤ **Objective:**

Student design teams will construct a Skimmer that is functional and artistically designed.

➤ **Scoring:**

Overall competition will be evaluated by Jury panel to designate the Skimmer they believe to be the best Artistic Design as well as on the Concept.

❖ Presentations

➤ **Objective:**

Student design teams will present their Skimmer design.

➤ **Scoring:**

Presentations will be evaluated by a Jury panel.