



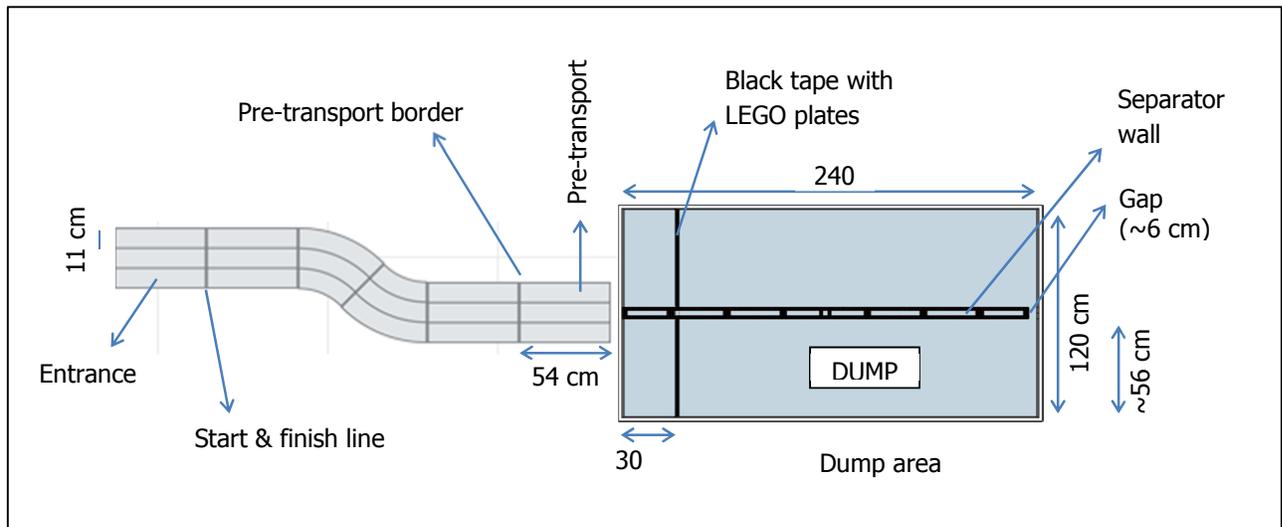
Simple & Powered Machines Category

Game description, rules, and scoring

THE TRASH HERO

1. Overview

There are 2 different competition areas: a pathway and a dump table. They will look like the picture below (top view).



Requirements:

- 1 set of Simple & Powered Machines base set (9686). Team area allowed to use other LEGO Education set beside 9686, however, the number and type of the components must matches of those available in the 9686 set (see appendix at the last page). Color doesn't matter.
- Alkaline batteries (Energizer brand).



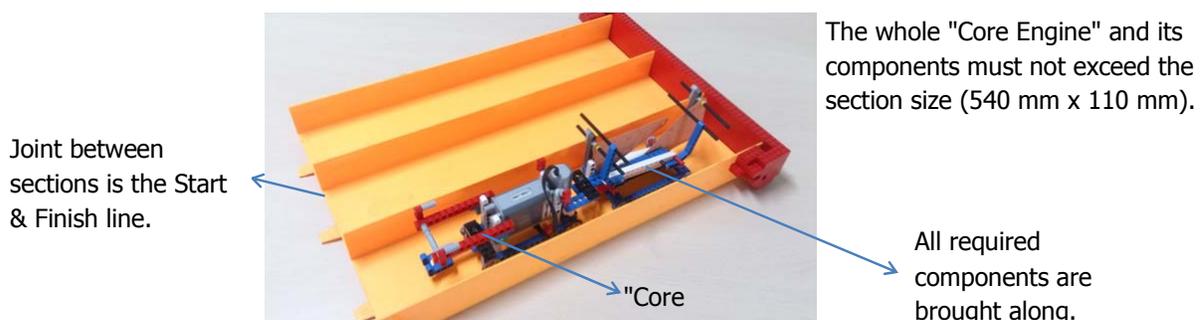
- 2 participants for each team, accompanied by a coach. Participant is elementary (primary) school students whose date of birth fall on/or after January 1, 2004.

2. Introduction

A team of recycler must rush to a remote dump area through a Pathway to collect as many Recyclable Items as they can within limited time. They need to build a modular "Core Engine" and rush to the dump area through a narrow Pathway. At the Entrance of the Pathway, they need to PREPARE AND BRING ALONG all materials needed to modify their "Core Engine" for its next tasks, collecting and transporting Recyclable Items (represented with ping – pong balls). Beware! Everything is limited. You only have 2 minutes to rush, modify, collect, and transport items. You are only given a space the size of the Entrance to contain all recyclable items including your robot and its equipment.

3. Gameplay

- Before the game starts:
 - A team member has put their "Core Engine" and all of its required components, for its next tasks, in the Entrance (behind the Start & Finish Line).



- Another team member is also ready in the dump table with NO robot components in the Base.
- 20 Recyclable Items (ping pong balls) are placed somewhere in the dump area (it will be a specific spot during the match).



20 Recyclable Items
is place at the start
of the match

- After the game starts:
 - Two teams compete against each other within the same time limit (2 minutes). Both team members are allowed to stay close to the Base.
 - Within the time limit, each team must rush, modify the "Core Engine", collect Recyclable Items, and transport them back to Entrance (Finish Area).



"Core Engine" and its
components arrived at the
end of pathway.

Modified →

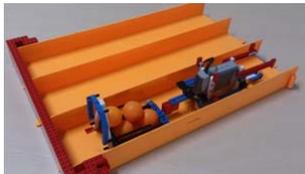


"Core Engine" is now a
collector. Overall dimension
MUST NOT exceed 300 mm
(L) x 300 mm (W).



Feel free to put the unused
components in the Pre-transport
area (540 mm (L) x 110 mm
(W)).

Modified
(again)



"Core Engine" is now a
locomotive. Overall
dimension and cargo
MUST NOT exceed 540

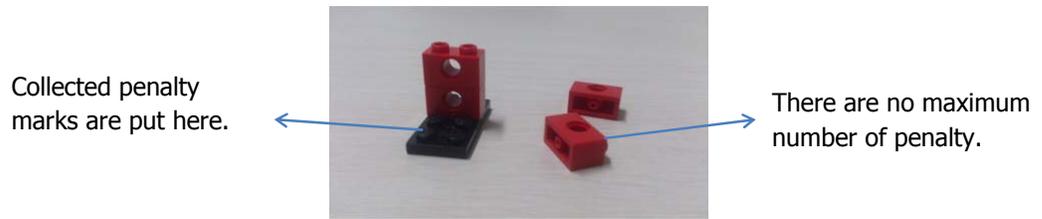


This setup is NOT
allowed. Overall
dimension and cargo
MUST NOT exceed 540



This setup is allowed.
Overall dimension
including cargo does not
exceed 540 mm (L) x 110

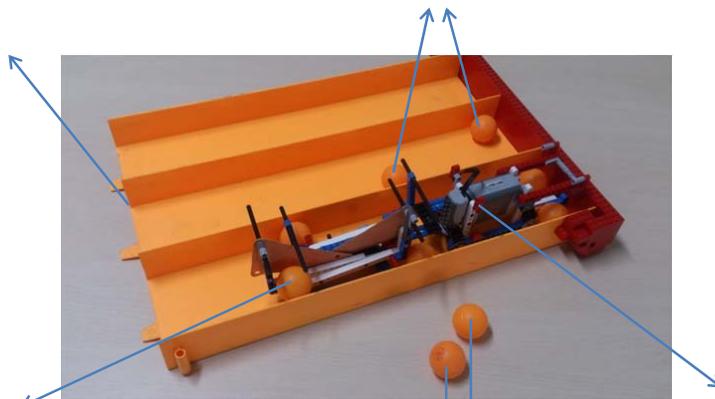
- If the robot is touched when it is rushing on the Pathway and is outside Base, the team gets a penalty mark on its table side.



- You are allowed to run the robot back & forth through the pathway to transport cargo as long as the time limit is not up yet.
- After the time limit is up:
 - Score is calculated by: number of Recyclable Items IN the Entrance (behind the Finish line) and IN the Base and Pre-transport area.
 - No robot components left in the Base, gives you extra point.
 - Balls spilled outside Entrance, are lost.
 - Penalty marks are also taken into account.

Joint between sections is the Finish line.

0 point



There are only 5 Recyclable Items taken into account.

0 point

"Core Engine" and all of its components are in the Entrance at the end. No components left in the Base gives you extra point.

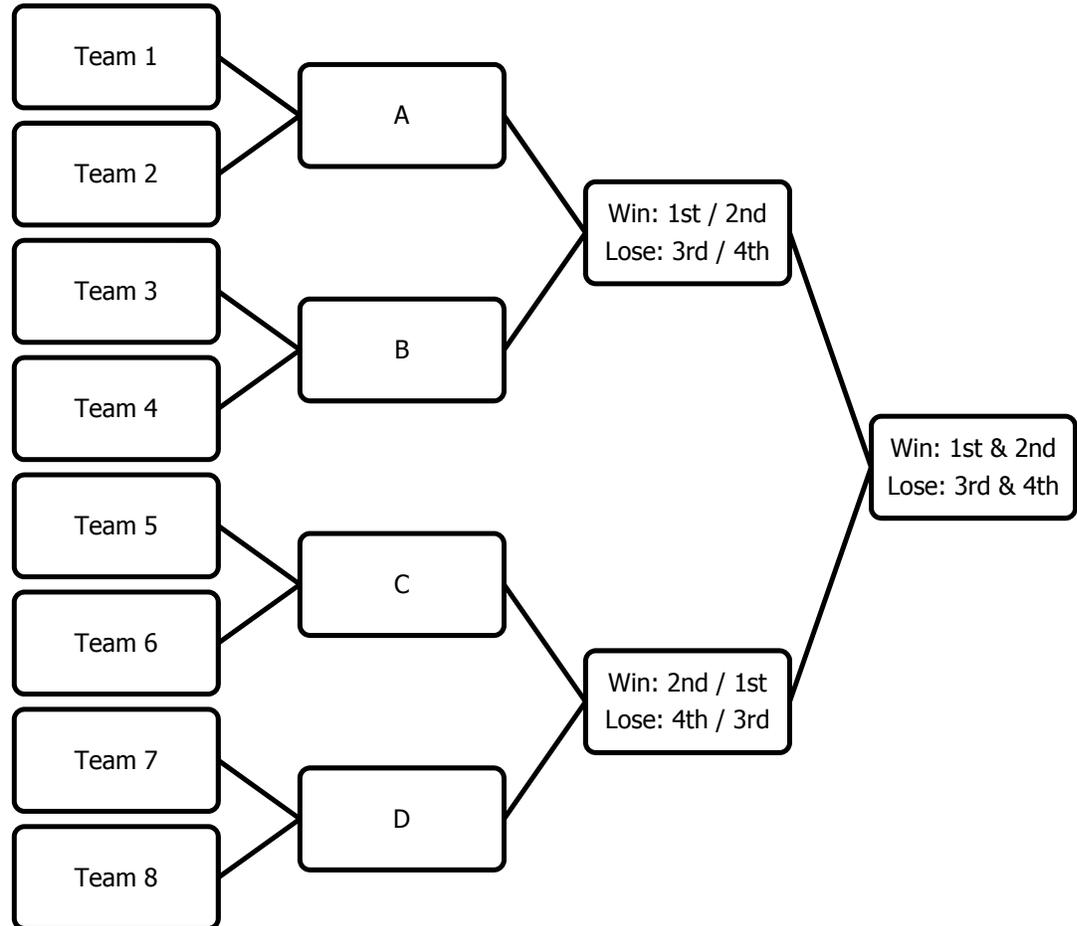
4. Game Flow

- Qualification
 - Teams will compete against each other in pairs determined by drawn paired numbers.
 - Final score of each team will be sorted to get 8 best teams for Final round.
 - If there are more than 1 team whose points are the same between top 8 and the rest, those teams will have to do a rematch.

...
6	Team X	76
7	Team Z	82
8	Team A	82
9	Team J	82
10	Team M	84
...

Team Z, A, and J will have to do a rematch. Since the number of teams are odd in this case, the rematch will be done one-by-one not head-to-head.

- Final
 - Before the Final round begins, 8 teams will be paired using the same method as for Qualification round.
 - The Final round will adopt knock-out system, which means, those teams who get less point from each pair will lose.
 - Below is the illustration of how to get winners in Final round:

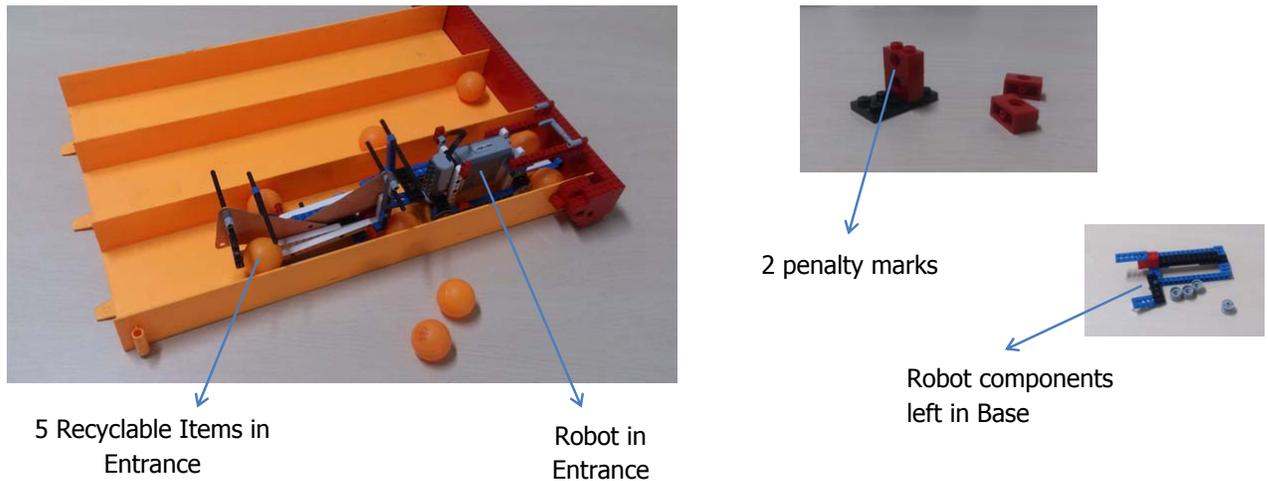


5. Scoring

Scoring allocation:

Required condition	Score
Recyclable Items in Entrance	10 points per item
Recyclable Items in Base or Pre-transport	2 points per item
Robot in Entrance	30 points
No robot parts in Base	15 points
Penalty marks	-2 points per mark

Scoring example:



Required condition	Score	Counts	Total
Recyclable Items in Entrance	10 points per item	5 x 10 points	50 points
Recyclable Items in Base or Pre-transport	2 points per item	0 x 2 points	0 points
Robot in Entrance	30 points	30 points	30 points
No robot parts in Base	15 points	0 points	0 points
Penalty marks	-2 points per mark	2 x -2 points	-4 points
Final score			76 points

6. FAQ (Frequently Asked Questions)

Q: Can I be a single player in this category?

A: No. You must have a partner and a coach. The requirement for this category is at least 2 persons per team and 1 coach.

Q: How old must we be to join?

A: See IRO2016 General Rules section for detailed age range.

Q: Can I build my robot as high as possible for it to rush the Pathway? It is not stated in the dimension.

A: Make sure it doesn't fall to its side when rushing. Wish your team a luck if it falls to its neighbouring Pathway, it doesn't bother other team's robot. If it does, you two teams must start over and you need to reduce your robot height.

Q: When I prepare my robot to transport Recyclable Items back to Entrance, some of my Recyclable Items accidentally roll out of the Pre-transport area. Can I just pick it / them up back to the Pre-transport area?

A: You cannot touch or pick up your Recyclable Items outside Pre-transport, Entrance, and Base area. If your Recyclable Items roll themselves outside Pre-transport and Entrance, your robot must push them back to the Pre-transport or Entrance.

Q: When my robot is transporting items back to Entrance and time is up, is it taken into account or do I get penalty?

A: We will let your robot completes its task transporting back your items back to Entrance and you don't get any penalty (as long as you do not touch your robot in the Pathway).

Q: If my Recyclable Items suddenly pop out of the Pathway, will I lose them?

A: Yes. Instantly.

Q: When do I get penalty?

A: You get penalty mark EVERYTIME you touch your robot when it is outside Base area, Pre-transport, or Entrance.

Q: Can I get more Recyclable Items on my table side?

A: Yes, you can. You can also give your Recyclable Items to your neighbouring table side. That's the use of 6cm gap on one end of the table.

Q: Will there be a time display for teams on / around the table?

A: Yes.

