

TRASH TREK Rules (Updated Nov 6, 2015)

Models (Any details not shown or mentioned are left to chance and officially don't matter.)

Methane – Secure the Holder exactly on its marks, then place the two Methane Loops in their holes, aligned as shown.

Landfill Bin – Secure as shown.

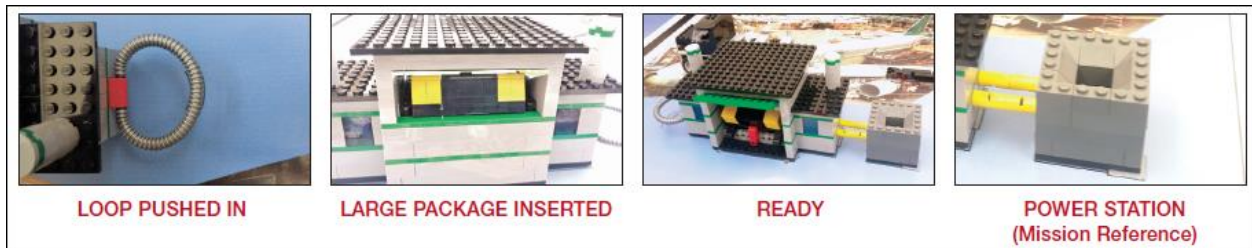
Turtle + Plastic Bag – Place exactly on their marks as shown.

Toys In Packaging – Place one Toy Plane in the Small Package on its mark as shown, and place the other Toy Plane in the Large Package which gets inserted in the Factory...



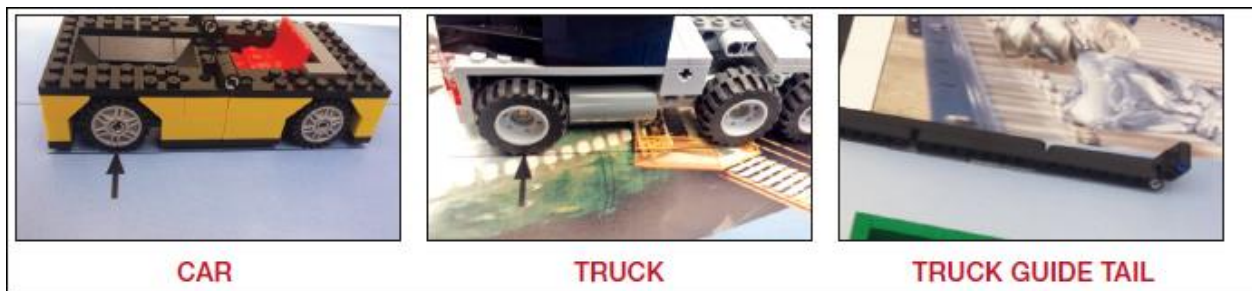
SPECIAL NOTE ABOUT THE LARGE PACKAGE: This Model is designed to easily come apart into five pieces. *Taking it apart is allowed as an exception to definition D08 below.*

Factory – Secure the Factory, slide the loop fully in, and the Large Package with Toy Plane inside as shown.

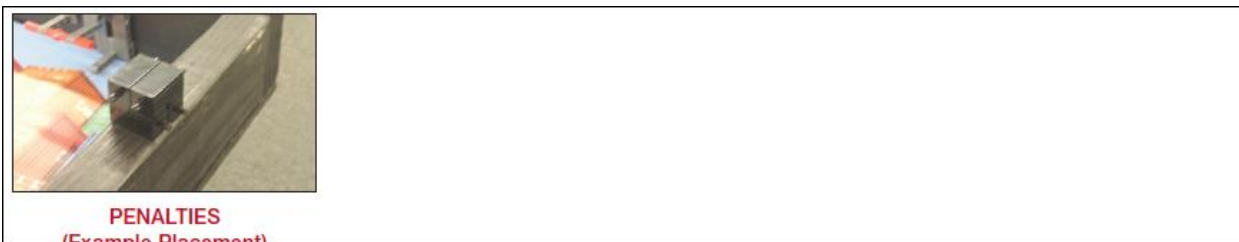


Car + Truck – Place each pointing west, aligned with its marks and arrows at the bottom of the front tires as shown.

Truck Guide – Secure exactly within its mark, with its tail east.



Penalties – Place four Black Bars off the Field out of the way. At a tournament, these are in the Ref's control.

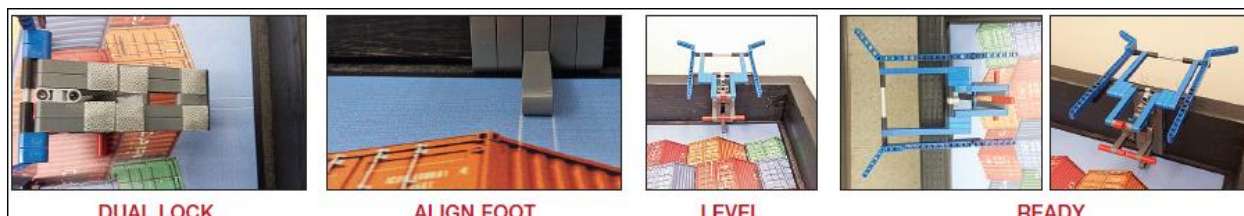


Sorter – Secure exactly within its marks. For ease and accuracy, apply only two pairs of Dual Lock at a time.

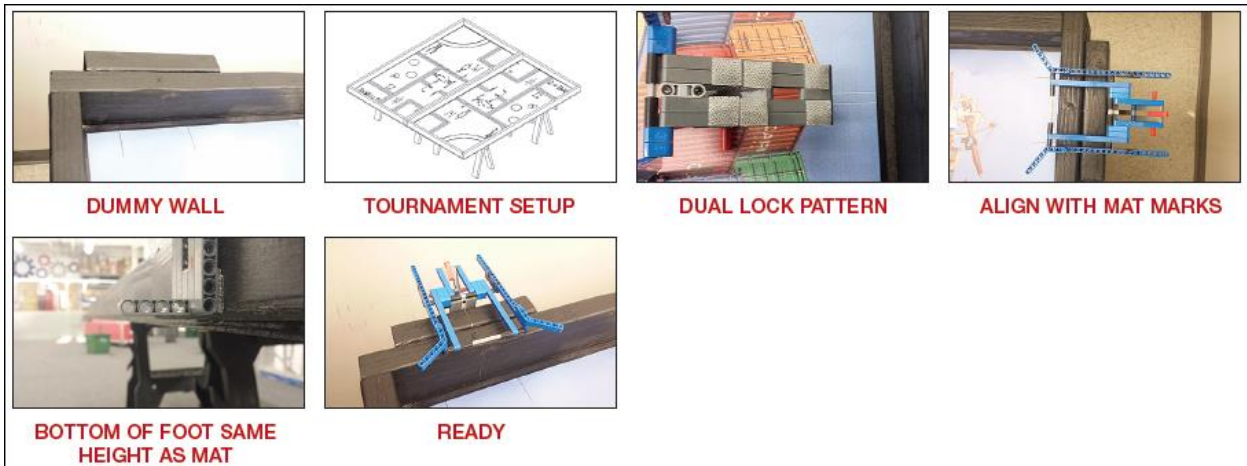
- Be sure alignment at the end of the arrow is as close as possible.
- Secure the Bin Bracket, then place Green Bins as shown, with the north side of each Green Bin resting ON the Bin Bracket's axle.
- Make sure the foot of the east chute rests between its tabs on the Bin Bracket as shown.
- Insert a Plastic Bag in its slot fully as shown.
- Load two Blue and two Black Bars in the red tray as shown, with studless plates up. Bar color order and axle directions are important; bar alignment is not. Refer to the small reminder on the Mat, south of the Sorter.
- Load the Yellow Bin containing a Yellow Bar as shown, centered east/west, with studless plates down.
- Finally, attach either all white or all black Identification Plates to the Green Bins as shown. Color is not important for practice, but will tell your Bins apart from the other team's Bins at a tournament.



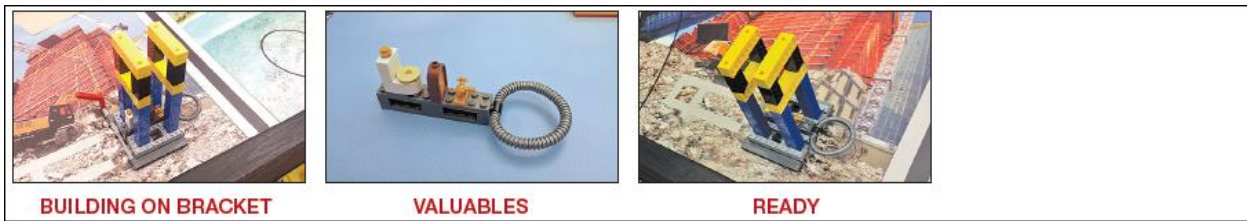
East Transfer – Secure to the inner surface of the north Border Wall. Use the Dual Lock pattern shown here, and align the Model's foot with its marks on the Mat. Be sure the Model is level.



West Transfer – Secure to the FAR side of a SECOND thickness of north Border Wall, known as a “Dummy Wall.” This arrangement is needed to replicate the spacing conditions at a tournament, where the north Border Wall is double-thick (one north wall for your Table, and one for the other team's Table). Use the Dual Lock pattern shown here, and center the Model over its marks on the Mat. Secure the Model so it's level, and the bottom of its foot is at the same height as the Mat.

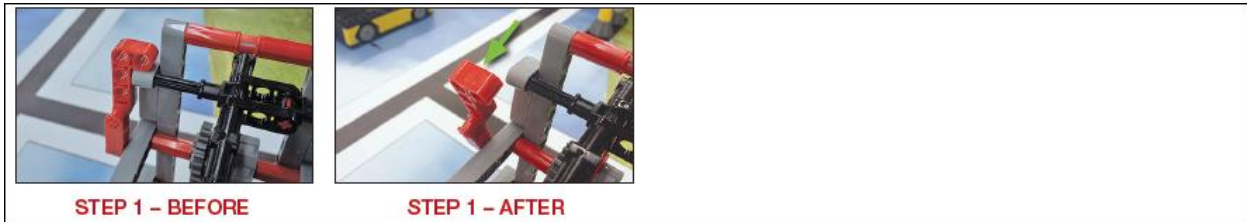


Bracket + Building + Valuables – Secure the bracket exactly within its marks, red lever at northwest. Then use four of each color Bars to make the Building as shown, with studless plates facing west. Perfect Bar alignment is not expected. Finally, insert the Valuables fully onto the ground floor from the east as shown.



Composter – Secure exactly on its marks. Be sure the Model is pressed down tightly. The multistep setup for this Model takes a little bit of memory and practice:

STEP 1 – Pivot the red lever lock west.



STEP 2 – Slide the black rocker arm & rubber tires north to disengage them from the red cross.



STEP 3 – Raise the food scrap bin gently/slowly all the way up and hold it there...



RAISING...

STEP 4 – While still holding the food scrap bin all the way up, undo Step 2, then undo Step 1.

STEP 5 – Push the rubber tires east out of the way, then slide the yellow plunger west, and let go of the rubber tires.



RUBBER TIRES OUT OF THE WAY

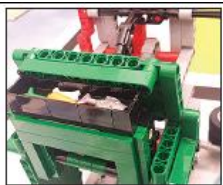


YELLOW PLUNGER WEST, AND LET GO

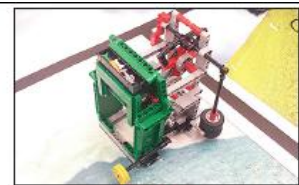
STEP 6 – Push the green lid west onto the food scrap bin and insert the Compost disc, studs up. This is needed!



PUSH GREEN LID ONTO SCRAPS



INSERT COMPOST DISC



READY

Base – Loosely place these things in Base however you like: Octopus, Chicken, Engine/Windshield, two People, and two Yellow Bars. The spare set of Identification Plates are not part of the Field and may not be used as Equipment.



BASE CONTENTS

Loop Quality – Every time you handle a loop, make sure it's rounded as possible, and not rotated/deflected.

Overviews





Robot Game: Rules

Guiding Principles

GP1 – Gracious Professionalism® – You are “Gracious Professionals.”

- You compete hard against PROBLEMS, while treating PEOPLE with respect and kindness – people from your own team, as well as other teams, and other countries.
- Coaches and parents lead by example.
- You build onto other people’s ideas instead of resisting or defeating them.
- If you joined *FIRST* LEGO League with a main goal of “winning a Robotics competition,” you’re in the wrong place!
- The Robot Game is developed and produced so you can:
 - have fun with science and technology, gaining confidence, knowledge, and skill at the same time.
 - practice taking risks and innovating in a team setting.
- Everyone running a tournament is a volunteer, including each Referee (Ref). Refs spend hours after work and on weekends to learn the Challenge, but you must expect them to occasionally make calls you disagree with.
- For every call you think cost you points incorrectly, another call probably gave you points incorrectly, and the same thing occasionally happens to all teams – please see the bigger picture.

GP2 – Interpretation

- Robot Game text means exactly and only what it says. Take it literally whenever possible.
- If taking text literally seems to allow an arguably clever strategy or advantage, then it’s allowed.
- If taking text literally leads to something outrageous/absurd, take the more popular/“common sense” meaning.
- If a word isn’t given a game definition, use its common/dictionary meaning.
- If a detail isn’t mentioned, it doesn’t matter.
- People will not count as Animals. By Rule GP2 they should, but most scoring systems (already written) could not handle this interpretation, so regrettably this Update must over-rule GP2.

GP3 – Benefit of the Doubt – You get the “benefit of the doubt” when the Ref:

- thinks a faulty Model or poor Field setup/maintenance is a factor.
- thinks a split-second or the thickness of a line is a factor.
- thinks a situation could “go either way” due to confusing, conflicting, or missing information.
- is unable to point to compelling official text to support a call.

This good-faith courtesy is not to be used as a strategy.

GP4 – Variability – Our suppliers, donors, and volunteers try very hard to make all Fields correct and identical, but you should always expect/design for flaws and variability. Just a few examples...

- Border Walls
- Lighting

- Table surface and Mat
- Field setup

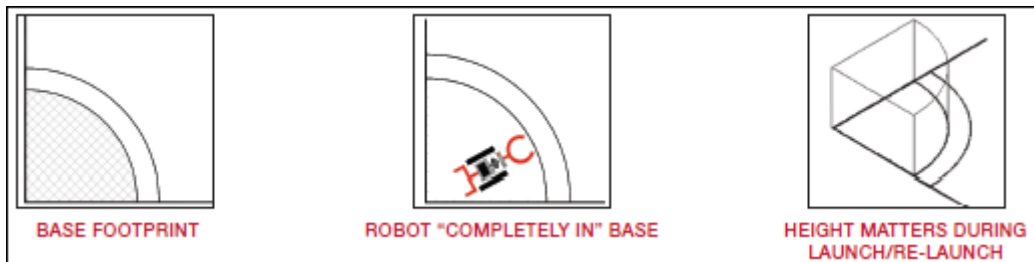
GP5 – Info Precedence

- In case of conflict between sources of game info, precedence/authority in descending order is:
 - #1 = Current Robot Game Updates text
 - #2 = Missions and Field Setup text
 - #3 = Rules text
 - #4 = Local Head Ref decision
- Pictures and video have no standing, except when referred to by text in #1, #2, or #3.
- Emails and Forum comments have no standing, even from official sources. Consider them opinion.

Definitions

D01 – Autonomous – A Launched Robot is said to be “Autonomous” – performing with no help.

D02 – Base – “Base” is over the Field’s inner quarter-circle. It extends to the inner south and west Border Walls, but no farther, and has an invisible ceiling 12” (30.5cm) high. Base is important during Robot Launches/re-Launches only.



D03 – Equipment – “Equipment” is everything you bring to a Match for Mission-related activity.

D04 – Field – The “Field” is the Robot’s game environment, consisting of LEGO Models on a Mat, surrounded by Border Walls. The Field is held on a Table. For full details, see Field Setup.

D05 – Interruption – If you interact with an Autonomous Robot, that’s an “Interruption.” No longer Autonomous, the Interrupted Robot is not allowed to move or do anything.

D06 – Match – A “Match” is when two teams play opposite each other on two Fields arranged back to back.

- Matches last 2-1/2 minutes.
- Your Robot Launches from Base and tries as many Missions as possible.
- The Field is not reset for the purpose of multiple attempts.
- Re-Launches are allowed during the Match, but the timer doesn’t pause.

D07 – Mission – A “Mission” is one or more objectives worth points.

- Some must be visible at the END of the Match.
- Some must be performed in a particular way, and must be watched by the Ref AS THEY HAPPEN.

D08 - Model – A “Model” (often called a “Mission Model”) is any LEGO structure already at the Field when you arrive to compete. You don’t bring Models to the competition Field – they’re already there when you arrive.

- You are not allowed to take Models apart, even temporarily.

- If you combine a Model with something, the combination must be loose enough that if asked to do so, you could pick the Model up and nothing else would come with it.

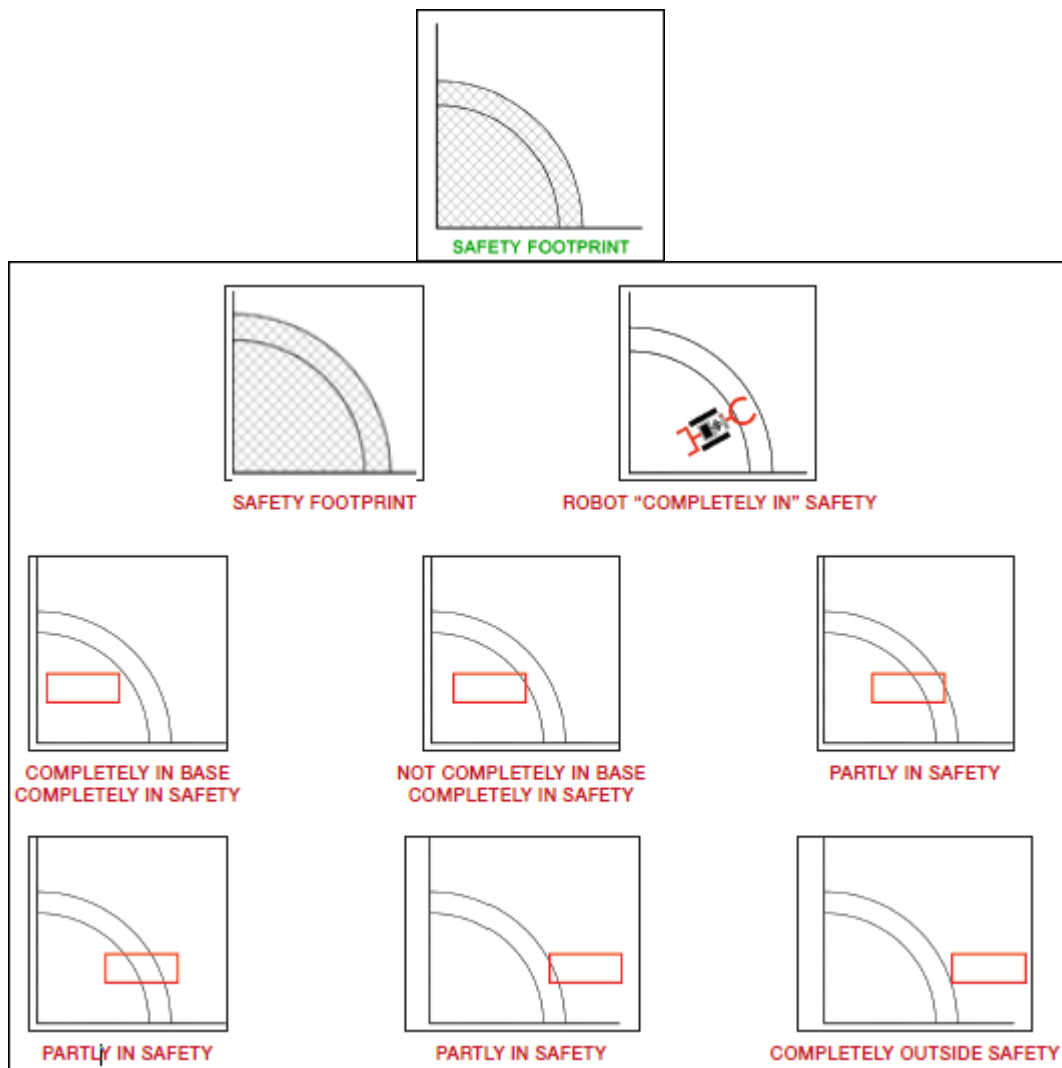
D09 – Penalties – A “Penalty” is a deduction from your final score due to a specific action that is allowed but discouraged. Penalty values are found in the Missions. There are two types of Penalty:

- Interruption Penalty – Caused by you Interrupting the Robot while it’s not completely in Safety.
- Junk Penalty – Caused:
 - immediately – by each piece of equipment the Robot strands partly in Safety.
 - at the end of the Match – by each piece of equipment still stranded completely outside Safety.

ROBOT DOESN'T HAVE TO “END” ANYWHERE By D09, the Robot is unable to Strand itself, so it can never count as R14 Junk.

D10 – Robot – A “Robot” is a LEGO MINDSTORMS controller and all Equipment currently combined with it.

D11 – Safety – “Safety” contains Base, extends to the outer black arc, and has no ceiling.



NTD: Partly in safety = partly outside safety

Equipment, Software, and People

R01 – All Equipment – All Equipment must be made entirely of LEGO-manufactured building elements in original factory condition.

- Except: LEGO string and tubing may be cut to length.
- Except: Reminders written on paper are okay.
- Except: Marker may be used only in hidden areas, for ownership identification.

R02 – Controllers – You are allowed only one individual controller in any particular Match.

- It must exactly match a type shown below (Except: Special-edition color differences are okay).
- All other controllers must be left in the pit area for that Match.
- All forms of remote control or data/info exchange with Robots including Bluetooth in the competition area are illegal.



R03 – Motors – You are allowed up to four individual motors in any particular Match.

- Each one must exactly match a type shown below.
- You may include more than one of a type. Example: 3 EV3 LARGE + 1 EV3 MEDIUM = 4 motors = Okay.
- All other motors must be left in the pit area for that Match. Example: If you have 3 motors installed in the Robot, you may have at most 1 other motor ANYWHERE with you. Example: If you have 2 motors installed in the Robot, you may have at most 2 other motors ANYWHERE with you.



R04 – EXTERNAL SENSORS – Use as many external sensors as you like.

- Each one must exactly match a type shown below.
- You may include more than one of each type.



R05 – Other Electric/Electronic Things – No other electric/electronic things are allowed in the competition area for Mission-related activity.

- Except: LEGO wires and converter cables are allowed as needed.
- Except: Allowable power sources are (1) controller’s power pack or (6) AA batteries.

R06 – Non-Electric Elements – Use as many non-electric LEGO elements as you like.

- Except: Factory-made wind-up/pull-back “motors” are not allowed.
- Except: Additional/duplicate Models are not allowed.

R07 – Software – The Robot may only be programmed using LEGO MINDSTORMS RCX, NXT, EV3, or RoboLab software (any release). No other software is allowed. Patches, add-ons, and new versions of the allowable software from the manufacturers (LEGO and National Instruments) are allowed, but tool kits, including the LabVIEW tool kit, are not allowed.

R08 – Technicians

- Only two team members, called “Technicians,” are allowed at the competition Field at once. Except: Others may step in for honest emergency repairs during the Match, then step away.
- The rest of the team must stand back as directed by tournament officials, with the expectation of fresh Technicians being able to switch places with current Technicians at any time.

Play

R09 – Pre-Match Preparation – After getting to the Field, you have at least one minute to prepare. During this time only, you may...

- ask the Ref to confirm that a Model or setup is correct.
- calibrate light/color sensors on the Field outside Safety.

R10 – Hands Off – If something on the Field is not completely in Safety, you are not allowed to touch it except as specifically described in a Mission, Rule, or Update.

- **STRADDLING EXCEPTION FOR THE BARS** - When a BAR comes to rest partly in Safety after ANY action, you must immediately take it completely into Safety. Normal rules and scoring will then apply to these Bars the same way they would for any Bars completely in Safety. This ruling is part leniency and part clarification, since Bars will often land on the Safety line without being Stranded, and giving them to the Ref “out of play” would be problematic. It’s amazing how many months I stared at this, and how many expert reviewers I gave it to, and none of us caught it... But YOU did!

R11 – Workspace and Storage

- **ON THE FIELD:** Handling and storage of allowable things may extend out of Safety, into adjacent irrelevant Field space only if specific actions and locations are completely non-strategic.
- **OFF THE FIELD:** Equipment and Models are not allowed on the floor.

R12 – Launching – A proper Launch (or re-Launch) goes like this:

- **Ready Situation**
 - Your Robot and everything related to its next Autonomous period are arranged as desired and all completely contained within and under the limits of BASE.
 - **THINGS OUTSIDE SAFETY ARE IRRELEVANT DURING A LAUNCH** - For Launching, where we say “everything related” to the next Autonomous period has to fit in Base, that only includes things you’re actually allowed to HANDLE. See R10 and R14.
 - The Ref can see that nothing in Base is moving, and that you’re not touching anything.
- **Activation Method Options**
 - **ACTIVE:** Reach with one hand and touch a button or signal a sensor to prompt a program.
 - **PASSIVE:** Do nothing and allow a running program to resume.

SPECIAL CASE: Match Start – In this case, the exact time to Launch is the beginning of the last word/sound in the countdown, such as “Ready, set, **GO!**” or **BEEEEEP!**

- The properly Launched/re-Launched Robot is Autonomous until you Interrupt it.
- Every change completely outside Safety caused by the Robot stays that way.
 - Except: The Robot may change its own changes.
- You are not allowed to cause anything to leave or even extend out of Base except by Launching/re-Launching.
- If you accidentally propel something out of Base, that’s okay to recover immediately without disturbing the Field.

R13 – Interrupting – If you INTERRUPT the Robot, you must stop it immediately, then *calmly pick it up for a re-Launch *if there will be one. Here’s what happens to the Robot and any Model it was transporting, depending on where each was at the time...

- **Robot – Completely in Safety?**
 - YES: Re-Launch.
 - NO: Re-Launch + Interruption Penalty.
- **Model – Completely in Safety?**
 - YES: Keep it.
 - NO: Was it with the Robot during the most recent Launch?
 - YES: Keep it.
 - NO: Give it to the Ref (out of play).

*LENIENCY: If there is no re-Launch allowed/intended, leave everything stopped in place, and there's no Penalty or movement of anything. Your Match is considered finished. Use this leniency if your robot has no more to do, especially if it's out of control, or stuck and straining its motors.

R14 – Stranding – If the UNINTERRUPTED Robot loses contact with something it was transporting, that thing must be allowed to come to rest. Once it does, here's what happens, depending on its rest location...

- Equipment
 - Completely in Safety: Keep it.
 - Partly in Safety: Take it completely into Safety + keep it + Junk Penalty (immediately logged on Ref's Sheet).
 - Completely outside Safety: Leave it as is.
- Model
 - Completely in Safety: Keep it.
 - Partly in Safety: Give it to the Ref (out of play).
 - Completely outside Safety: Leave it as is.

You may hand-recover unintended fragments from a truly broken Robot any time, with no Penalty.

- OBJECTS STRADDLING THE SAFETY LINE ARE MOVED IMMEDIATELY - When the Robot Strands something partly in Safety, that thing is not allowed to be left there. Its consequence (depending on what it is) must be applied immediately.
- STRADDLING EXCEPTION FOR THE BARS - When a BAR comes to rest partly in Safety after ANY action, you must immediately take it completely into Safety. Normal rules and scoring will then apply to these Bars the same way they would for any Bars completely in Safety. This ruling is part leniency and part clarification, since Bars will often land on the Safety line without being Stranded, and giving them to the Ref "out of play" would be problematic. It's amazing how many months I stared at this, and how many expert reviewers I gave it to, and none of us caught it... But YOU did!
- ROBOT DOESN'T HAVE TO "END" ANYWHERE By D09, the Robot is unable to Strand itself, so it can never count as R14 Junk.

R15 – Field Damage – If the Autonomous Robot separates Dual Lock or breaks a Model, Missions obviously made possible or easier by this damage or the action that caused it do not score.

R16 – Interference

- You are not allowed to negatively affect the other team except as described in a Mission.
- Missions the other team tries but fails because of illegal or accidental action by you or your Robot score anyway.

R17 – End Of The Match – As the Match ends, everything must be preserved exactly as-is...

- If your Robot is moving, stop it ASAP and leave it in place.
- After that, hands off everything until after the Ref has given the okay to reset the table.

R18 – Scoring

- Scoresheet – The Ref recalls action and inspects the Field with you, Mission by Mission...
 - If you agree with the Ref on all facts, you sign the sheet, and the score is final.
 - If you don't agree, tell the Ref nicely. Refs can be wrong, and when they are, they want to know. If there is any lingering disagreement, the Head Ref makes the final decision.

- Impact – Only your BEST regular Match score counts toward awards/advancement. Playoffs, if held, are just for extra fun.
- Ties – Ties are broken using 2nd, then 3rd highest scores. For a rare tie across all three Matches, tournament officials decide what to do.

Big/Serious Changes For 2015...

- Words have been cut by ~60%.
- Remaining ideas are simpler and many are VERY different – WARNING to Veteran teams! Example: The Rules used to tell you “IN” meant “partly in” was okay. Now that Rule is gone, and “Completely In” is required throughout the Robot game.
- Questions will be answered by a contact in your region.

Robot Game: Missions

Background

The TRASH TREK Challenge is about what happens to things when we think we're done with them, or when we think they're no good any more. The truth is that with some imagination, we can get much more use out of them, or the materials they're made from. A really smart time to think about this is before we even make or buy them! Recycling is great, but that's only one part of a very big picture. As you work on the Missions, imagine how we might be able to innovate our way toward ZERO WASTE one day...

Missions

M01 – Using Recycled Material – Everything constructed, crafted, or manufactured is made from materials that originally came from nature. But most of those materials are limited, or take decades or even centuries to accumulate.

- Basic Mission Description: Get material discarded from someone else, but useful for you. You'll avoid taking from nature, and the material won't become waste.
- Specific physical requirement, visible at the end of the match: Green Bin containing at least one matching Yellow or Blue Bar, all from the other team, is completely in your Safety.
 - Value: **60** per bin in either safety... for each scoring bin in either safety, the other team gets the points too, and vice versa.

M02 – Methane – We want to avoid Landfills, but existing Landfills do produce Methane, which can be converted into energy.

- Basic Mission Description: Collect Methane from the Landfill Area and use it to help run the Truck and/or the Factory.
- Specific physical requirement, visible at the end of the match: Methane is in the Truck's engine compartment, and/or the Factory's Power Station.
 - Value: **40** per methane.
- Leniency: Full/Exact nesting is not required.

M03 – Transport – The distance a discarded material may need to travel is an important part of the equation when deciding what to do with that material.

- Basic Mission Description: Load the all-Yellow Material Bin onto the Truck to be transported east/unloaded.
- Specific physical requirement, visible at the end of the match (score one or both):
 - Value: **50** - The Truck supports all of the Yellow Bin's weight.
 - Value: **60** - The Yellow Bin is completely east of the Truck's Guide.

The Transport Mission max score is indeed 110. This is the meaning you were supposed to take from "score one or both." Think it through, and use high caution when throwing around the word "impossible" - especially in FIRST LEGO League.

M04 – Sorting – As we strive toward zero waste, one of the most urgent needs for innovation is in the area of sorting. Current separation technology and processing can be difficult, expensive, limited, and error-prone.

- Basic Mission Description: Yellow/Blue Bars are recyclable. Black Bars are impurities we have no current way to use. Process Bars through the Sorter. Bars sorted into their matching Green Bins have positive potential.
- Specific physical requirement, visible at the end of the match:
 - Yellow/blue bars are in their matching green bin and the bin (bins score independently)...
 - *Value: Per Bin (See M01 on page 23) - is completely in the other team's Safety, by way of your West Transfer.
 - *Value: 7 Per Bar - is completely in your West Transfer Area and/or completely on your West Transfer.
 - *Value: 6 Per Bar - was never completely in your West Transfer Area (all "Areas" are defined below).*

.....
*Method Constraint: These require sequence/path as described, in addition to final positions.

- Black bars are (bars score independently)...
 - Value: 8 Per Bar - part of a scoring Flower Box, or in their original Setup position.
 - Value: 3 Per Bar - in their matching Green Bin, or in the Landfill Bin.
 - Value: Minus 8 Per Bar - anywhere else.

Method Constraint: Bars must only enter Green Bins directly from the Sorter's east chute or CAREERS BONUS [applies to Bars of every color, and not just the Black Bars]

If the Match ended immediately after it began, the Black Bars would be worth 96 points.

If the Package with Black Bars is no longer in the Factory, its Bars are no longer in the original setup position.

There are three possible end-of-Match scoring situations related to the Blue/Yellow Bars and Green Bins, and ANY ONE BIN can only score in ONE of these ways:

Requirement: A bin from one team containing at least one of THEIR matching bars is completely in THE OTHER TEAM'S safety (for each such Bin, BOTH teams score 60 points each).

Path Constraint: The Bin changed Fields by way of the SENDING TEAM'S West Transfer.

Method Constraint: The Bar or Bars got into the Bin by way of the SENDING TEAM'S Sorter (or hand-unclogging of the Sorter).

Points (60) are for the Bin. One or more Bars must be in the Bin, but the Bars are not worth points.

>>>OR<<<

Requirement: On YOUR West Transfer and/or completely in YOUR West Transfer area is one of YOUR Bins with at least one of YOUR matching Bars in it.

Method Constraint: The Bar or Bars got into the Bin by way of YOUR Sorter (or hand-unclogging of the Sorter).

Points (7) are per Bar. They need to be in the Bin, but the Bin isn't worth points.

>>>OR<<<

Requirement: One of YOUR Bins is on YOUR Field, with one or more of YOUR matching Bars in it, but it's NOT on YOUR West Transfer nor completely in YOUR West Transfer area.

Method Constraint: The Bar or Bars got into the Bin by way of YOUR Sorter (or hand-unclogging of the Sorter).

Points (6) are per Bar. They need to be in their Bin, but the Bin is not worth points.

M05 – Careers – Many scientists, engineers, and technicians are needed to keep up with today's trends in waste reduction.

- Basic Mission Description: Move at least one person to the Sorter Area to earn a helpful exception to the Rules.
- Specific physical requirement, visible at the end of the match as needed: At least one Person is completely in the Sorter Area.
 - Value: 60 Plus this R10 Leniency Bonus: Team technicians and/or the ref (if needed/asked) are allowed to unclog any east chute blockage by hand, and/or put mis-sorted bars into their correct bin, including bars that didn't land in any bin. The leniency allowing you to unclog the east chute blockage by hand does NOT allow you to remove the Plastic Bag from the Sorter by hand.

This is a fun, dynamic Model with a small but real error rate, which will be well understood by Tournament season. So that we may all enjoy the Model, please use the R10 leniency for Model errors, handle with care when doing so, use "Benefit Of The Doubt" for hand errors, and use common sense and good will the whole time.

YOU MAY NOT MOVE BARS AROUND BY HAND - The exception described in M05 only allows you correct rare situations resulting from Bars getting stuck on your Sorter's east chute:

--If a Bar gets to a hole, but doesn't fall through... You can put it through.

--If a Bar lands in the wrong Bin, or on the mat, FROM THE EAST CHUTE... You can put it into the correct Bin.

That's all the leniency allows. It is the ROBOT'S job to transport Bars, and to load and activate the Sorter, and to move the Plastic Bag.

PERSON MUST BE PRESENT - If you wish to hand-unclog the Sorter, a Person must be in the Sorter area AT THE TIME.

M06 – Scrap Cars – There are hundreds of millions of Cars worldwide, made from an enormous variety of materials. Are we making the best use of Cars at the end of their lives? How much of a scrapped Car really gets re-used?

- Basic Mission Description: Fix the old Car by installing the Engine/Windshield, or fold the Car and sell it for scrap.
- Specific physical requirement, visible at the end of the match as needed (Score Only One Way):
 - Value: **65** The Engine/Windshield unit is installed in the unfolded Car in the proper space and direction.*
 - Value: **50** The Car is completely folded and completely in the East Transfer Area.
- *Leniency: Full/exact nesting is not required.
- Method Constraint: The Car must never cross into Safety, even partly.

M07 – Cleanup – For discarded material, the only outcome worse than waste is pollution. Plastic Bags for example, seem to be everywhere, causing a variety of problems – jamming Equipment, threatening Animals, etc.

- Basic Mission Description: Move Bags from the Sorter and/or the Beach, and return Animals to their favorite spots.
- Specific physical requirement, visible at the end of the match as needed (Score Any That Apply):
 - Value: **30** Per Bag - Plastic Bags are completely in Safety.
 - Value: **20** Per Animal - *Animals (including chicken) are completely in any circle which is completely empty of Plastic Bags.
 - Value: **35** - The Chicken is completely in the small circle. So, if the chicken is in the small circle, total 55 points.
- *The fish Food Scrap doesn't count as an Animal.
 - People will not count as Animals. By Rule GP2 they should, but most scoring systems (already written) could not handle this interpretation, so regrettably this Update must over-rule GP2.
 - The direction "compass" will not count as a circle. By Rule GP2 it should, but the compass as a circle would be SUCH an easy target, it would ruin the integrity of the Mission and affect the game's MoJo.

M08 – Composting – Discarded organic material doesn't have to become waste. It can be converted into fertilizer.

- Basic Mission Description: Start the Composting process. After some time, it will eject Compost.
- Specific physical requirement, visible at the end of the match (Score Only One Way):
 - Value: **60** The Compost is ejected, but not completely in Safety.
 - Value: **80** The Compost is completely in Safety.

M09 – Salvage – A building being demolished should only be a shell of its former self. Many tons of valuable materials and objects can be salvaged first.

- Basic Mission Description: Move the Valuables to Safety.
- Specific physical requirement, visible at the end of the match:
 - Value: **60** The Valuables are completely in Safety.

M10 – Demolition – Compared to the amount of material discarded by a family every week, the amount of material discarded from a demolition site is unbelievable. Where does it all go? Where SHOULD it all go?

- Basic Mission Description: Demolish the Building and decide what to do with the materials.
- Specific physical requirement, visible at the end of the match:
 - Value: **85** None of the Building's twelve beams is left standing in Setup position.
- **STRADDLING EXCEPTION FOR THE BARS** - When a BAR comes to rest partly in Safety after ANY action, you must immediately take it completely into Safety. Normal rules and scoring will then apply to these Bars the same way they would for any Bars completely in Safety. This ruling is part leniency and part

clarification, since Bars will often land on the Safety line without being Stranded, and giving them to the Ref “out of play” would be problematic. It’s amazing how many months I stared at this, and how many expert reviewers I gave it to, and none of us caught it... But YOU did!

M11 – Purchasing Decisions – Some manufacturers put products in packaging which is hard or impossible to divide into pure sorted recyclables. What choices do you have when you see that?

- Basic Mission Description: Decide about buying Toy Planes based on their Packaging.
- Specific physical requirement, visible at the end of the match:
 - Value: 40 Per Plane - Toy Planes are completely in Safety.

M12 – Repurposing – Recycling gives new life to the materials an object is made from, but the process does take time and energy. Instead, is there a way to give new life to the object itself?

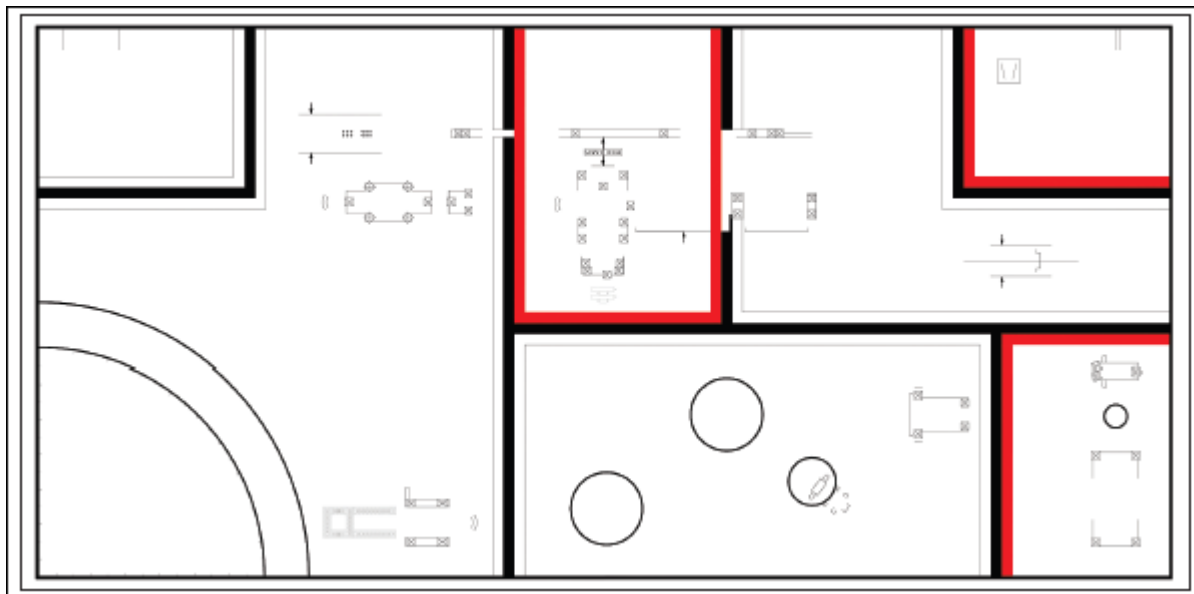
- Basic Mission Description: Use the packaging from a Toy Plane as a flower box by putting compost in it.
- Specific physical requirement, visible at the end of the match:
 - Value: 40 - The Compost is perfectly nested inside one of the Packages from which a Toy Plane has been removed. The Package is in original condition.

Penalties – For each Penalty as described in Rule D09, the Ref will place one Black Bar on the Mat in a convenient out-of-the-way place, not to exceed four Bars. The Ref may shift them out of the Robot’s way as needed, but they must always stay in a negative scoring position.

- Value: See SORTING mission, black bar details above

“Areas” – Where the Missions refers to the Landfill Area, Sorter Area, or East Transfer Area, those areas are defined by the inner white strips, colored red below. Each area is defined as only the space above and inward from those white strips. Anything still partly above the adjacent thick black line doesn’t count as being in the area.

The West Transfer Area is the mirror image of the East Transfer Area.



Robot Game: Updates

27 August 2015

Corrections to Mission M04

WAS: “Value: (See M01 Above) per bar” **CHANGED TO:** “Value: (See M01 Above) Per Bin”

Also: In 4 places: **WAS:** “East Transfer” **CHANGED TO:** “West Transfer”

Correction to Mission M05

WAS: “any West chute blockage” **CHANGED TO:** “any east chute blockage”

4 September 2015

Corrections for Mission M04 (9-4-15)

Under “Specific physical requirement, visible at the end of the match;”

Under “Yellow/blue bars are in their matching green bin and the bin (bins score independently),”

The first and third sentences describing VALUE should start with an asterisk.

ALSO (Related): The sentence:

“Method Constraint: Bars must only enter Green Bins directly from the Sorter’s east chute or CAREERS BONUS”

should be indented to the left, and a space down.

Clarifications for Mission M04 (9-4-15)

The sentence:

“Method Constraint: Bars must only enter Green Bins directly from the Sorter’s east chute or CAREERS BONUS”

applies to Bars of every color, and not just the Black Bars.

ALSO: If the Match ended immediately after it began, the Black Bars would be worth 96 points.

ALSO: If the Package with Black Bars is no longer in the Factory, its Bars are no longer in original setup position.

Correction to D11 (9-3-15)

The diagram showing the footprint of Safety should look like this one instead:



Clarification for M05 (9-3-15)

The leniency allowing you to unclog east chute blockage by hand does NOT allow you to remove the Plastic Bag from the Sorter by hand. The robot game video is misleading about this – sorry – this is why Rule GP5 tells you to pay attention to TEXT and NOT VIDEO.

Clarification for M07 (9-3-15)

If the Robot can get the Chicken completely in the small circle (far east)...

---Is the Chicken in an circle? Yes. 20 points.

---Is the Chicken in the small circle? Yes. 35 points.

Total 55 points. This is the meaning you were supposed to take from “Score Any That Apply.”

15 October 2015

1 - “ALL” BARS ENTERING GREEN BINS M04 Clarification (9-3-15)

The sentence: “Method Constraint: Bars must only enter Green Bins directly from the Sorter’s east chute or CAREERS BONUS” applies to Bars of every color, and not just the Black Bars.

ALSO: If the Match ended immediately after it began, the Black Bars would be worth 96 points. **ALSO:** If the Package with Black Bars is no longer in the Factory, its Bars are no longer in original setup position.

2 - PLASTIC BAG REMOVAL M05 Clarification (9-3-15)

The leniency allowing you to unclog the east chute blockage by hand does NOT allow you to remove the Plastic Bag from the Sorter by hand. The robot game video is misleading about this – sorry – this is why Rule GP5 tells you to PLEASE pay attention to the TEXT, and NOT the video.

3 – CHICKEN 55 M07 Clarification (9-3-15)

If the Robot can get the Chicken completely in the small circle (at far east)...

---Is the Chicken in a circle? Yes, right? 20 points.

---Is the Chicken in the small circle? Yes, right? 35 points.

Total 55 points. This is the meaning you were supposed to take from “Score Any That Apply.”

4 - THINGS OUTSIDE SAFETY ARE IRRELEVANT DURING A LAUNCH R12 Clarification (10-12-15)

For Launching, where we say “everything related” to the next Autonomous period has to fit in Base, that only includes things you’re actually allowed to HANDLE. See R10 and R14.

5 - OBJECTS STRADDLING THE SAFETY LINE ARE MOVED IMMEDIATELY R14 Clarification (10-12-15)

When the Robot Strands something partly in Safety, that thing is not allowed to be left there. Its consequence (depending on what it is) must be applied immediately.

6 - STRADDLING EXCEPTION FOR THE BARS R14 + R10 / M10 Ruling (10-12-15)

When a **BAR** comes to rest partly in Safety after ANY action, you must immediately take it completely into Safety. Normal rules and scoring will then apply to these Bars the same way they would for any Bars completely in Safety. This ruling is part leniency and part clarification, since Bars will often land on the Safety line without being Stranded, and giving them to the Ref “out of play” would be problematic. It’s amazing how many months I stared at this, and how many expert reviewers I gave it to, and none of us caught it... But YOU did!

7 - PEOPLE/ANIMALS M07 Ruling (10-12-15)

People will not count as Animals. By Rule GP2 they should, but most scoring systems (already written) could not handle this interpretation, so regrettably this Update must over-rule GP2.

8 - COMPASS CIRCLE M07 Ruling (10-12-15)

The direction “compass” will not count as a circle. By Rule GP2 it should, but the compass as a circle would be SUCH an easy target, it would ruin the integrity of the Mission and affect the game’s MoJo.

9 - YOU MAY NOT MOVE BARS AROUND BY HAND M05 Clarification (10-12-15)

The exception described in M05 only allows you correct rare situations resulting from Bars getting stuck on your Sorter’s east chute:

--If a Bar gets to a hole, but doesn’t fall through... You can put it through.

--If a Bar lands in the wrong Bin, or on the mat, FROM THE EAST CHUTE... You can put it into the correct Bin.

That’s all the leniency allows. It is the ROBOT’S job to transport Bars, and to load and activate the Sorter, and to move the Plastic Bag.

10 - ROBOT DOESN’T HAVE TO “END” ANYWHERE D09 + R14 Clarification (10-12-15)

By D09, the Robot is unable to Strand itself, so it can never count as R14 Junk.

11 - M04 REPHRASED, BUT NOT CHANGED M04 Clarification (10-12-15)

There are three possible end-of-Match scoring situations related to the Blue/Yellow Bars and Green Bins, and ANY ONE BIN can only score in ONE of these ways:

Requirement: A bin from one team containing at least one of THEIR matching bars is completely in THE OTHER TEAM'S safety (for each such Bin, BOTH teams score 60 points each).

Path Constraint: The Bin changed Fields by way of the SENDING TEAM'S West Transfer.

Method Constraint: The Bar or Bars got into the Bin by way of the SENDING TEAM'S Sorter (or hand-unclogging of the Sorter).

Points (60) are for the Bin. One or more Bars must be in the Bin, but the Bars are not worth points.

>>>**OR**<<<

Requirement: On YOUR West Transfer and/or completely in YOUR West Transfer area is one of YOUR Bins with at least one of YOUR matching Bars in it.

Method Constraint: The Bar or Bars got into the Bin by way of YOUR Sorter (or hand-unclogging of the Sorter).

Points (7) are per Bar. They need to be in the Bin, but the Bin isn't worth points.

>>>**OR**<<<

Requirement: One of YOUR Bins is on YOUR Field, with one or more of YOUR matching Bars in it, but it's NOT on YOUR West Transfer nor completely in YOUR West Transfer area.

Method Constraint: The Bar or Bars got into the Bin by way of YOUR Sorter (or hand-unclogging of the Sorter).

Points (6) are per Bar. They need to be in their Bin, but the Bin is not worth points.

12 - WEST TRANSFER AREA DEFINED "Areas" Clarification (10-12-15)

The West Transfer Area is the mirror image of the East Transfer Area.

13 - PERSON MUST BE PRESENT M05 Ruling (10-12-15)

If you wish to hand-unclog the Sorter, a Person must be in the Sorter area AT THE TIME.

14 - TRANSPORT 110 M03 Frequently Asked (10-12-15)

The Transport Mission max score is indeed 110. This is the meaning you were supposed to take from "score one or both." Think it through, and use high caution when throwing around the word "impossible" - especially in *FIRST* LEGO League.








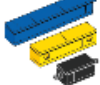




29 October 2015

Update 9 from October 15 has been rewritten. Please reread.

1071

Team Name

Team Signature

	M01 Using Recycled Material	240		M07 Cleanup	155
	Opponent's Green Bins with matching bars in Safety?	<input type="text" value="4"/> 0-4		Plastic Bags in Safety Area?	<input type="text" value="2"/> 0-2
	M02 Methane	80		Animals completely in any Circle w/o Bags?	<input type="text" value="3"/> 0-3
	Methane installed in the Truck's Engine?	<input checked="" type="radio"/> Yes <input type="radio"/> No		Chicken completely in Small Circle?	<input checked="" type="radio"/> Yes <input type="radio"/> No
	Methane installed in the Factory's Power Station?	<input checked="" type="radio"/> Yes <input type="radio"/> No		M08 Composting	80
	M03 Transport	110		Compost ejected?	<input checked="" type="radio"/> Yes <input type="radio"/> No
	Truck supports all of the Yellow Bin's weight?	<input checked="" type="radio"/> Yes <input type="radio"/> No		Compost completely in Safety Area?	<input checked="" type="radio"/> Yes <input type="radio"/> No
	Yellow Bin completely East of Truck's Guide?	<input checked="" type="radio"/> Yes <input type="radio"/> No		M09 Salvage	60
	M04 Sorting	16		Valuables completely in Safety Area?	<input checked="" type="radio"/> Yes <input type="radio"/> No
	Yellow/Blue Bars in matching Bin in/on East Transfer?	<input type="text" value="1"/> 0-15		M10 Demolition	85
	Yellow/Blue Bars in matching Bin never in East Transfer?	<input type="text" value="1"/> 0-15		No building's beams left in setup position?	<input checked="" type="radio"/> Yes <input type="radio"/> No
	Black Bars in original position/scoring Flower Box ?	<input type="text" value="1"/> 0-12		M11 Purchasing Decisions	80
	Black Bars in matching Green Bin or Landfill Bin?	<input type="text" value="1"/> 0-12		Toy Planes completely in Safety Area?	<input type="text" value="2"/> 0-2
	Black Bars elsewhere in play?	<input type="text" value="1"/> 0-12		M12 Repurposing	40
	M05 Careers	60		Compost in either Toy Package (Flower Box)?	<input checked="" type="radio"/> Yes <input type="radio"/> No
	At least one Person is in Sorter Area?	<input checked="" type="radio"/> Yes <input type="radio"/> No			
	M06 Scrap Cars	65			
	Engine/Windshield installed in Car?	<input checked="" type="radio"/> Yes <input type="radio"/> No			
	Car completely folded and in East Transfer Area?	<input type="radio"/> Yes <input checked="" type="radio"/> No			
	Car NEVER partly in Safety Area?	<input checked="" type="radio"/> Yes <input type="radio"/> No			

