

Referee Training Outline

Typical FLL tournament structure

- Team registration – distribute schedules (rounds and judging)
- Teams set up in their pits
- Coaches meeting?
- Opening Ceremonies – address and Q&A from head ref?
- Qualifying Rounds start
 - At least 3 matches for each team, vying for high score for seeding
- Judging goes on concurrently
- Lunch break
- Elimination rounds (all teams or just top teams)
 - Head to head by seeding
- Awards ceremony (field & Judged)

Potential points for Head Referee address

1. Most important – keep to schedule! – critical to for matches and judging
2. Be on-deck
3. Setup quickly
4. Thumbs up for refs
5. Start fully in base, single touch start (no guiding)
6. Yellow bacteria penalty for grabbing robot out-of-base, ask ref to reach if you can't
7. Only two team members at table at any time (tell ref if you will be tagging in) except for repair emergencies
8. No resetting models or clearing field damage this season
9. Review your missions accomplished with ref and initial your sheet
10. If disagree it comes to the head ref (final)
11. You get benefit of doubt (head ref's doubt, not yours)
12. Only math or entry errors can be challenged after this
13. Don't take mission models from the field!
14. Introduce self, refs (optional)
 - Refs – veteran FLLers, experienced referees (here last year)
 - Head ref – FLL from 2002, coach/mentor/judge/head ref, MA ref advisor, photog

Reference Documents should be available

- Robot Game – Field Setup, Rules, Missions
- Robot Game Rulings <http://firstlegoleague.org/challenge/robotgameupdates>
- Instructions for construction of Mission Models
- USFIRST <http://www.firstlegoleague.org/challenge/foodfactorrobotgame>
- MA Referee <http://www.syraweb.org/Referee2011.htm>

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▪ **Robot Game - Rules**

- Verify table setup – thoroughly before first match, quickly before each match
- Fields are often imperfect, what cannot be cured must be endured
- Each Mission Model properly constructed (1st) and properly set
- All 23 objects in base (verify before last team leaves table)
- Team comes to table, next team “on-deck”
- Team sets up quickly, quick check for prohibited equipment (extra motors, extra robot)
- Attachments can stay in box, on side table
- Keep to schedule (judging happens in parallel)
- Team thumbs up, all tables start together, no clock stopping
- Robot starts fully in base volume (W x D x H, 16” high, scale), **including wires**
- Robot started with a single touch (NO guiding)
- Countdown/buzzer to signal start of match
- Setup of around 1 minute, match lasts 2.5 minutes, scoring and breakdown around 1 minute, a full round is one match per team
- Teams try to accomplish as many missions as they can, some are combined
- Active robot - running autonomously, only active robot can fulfill a mission
- Inactive robot - as soon as it has been touched
- Robot can be recovered by hand, yellow bacterium penalty (6 points) if out of base
- Free recovery if part of robot is still in base (tether exception)
- Place taken pieces on field edge, or hold in hand
- If mission models leaving the base are in control of robot when recovered (carrying or pushing), they are returned to team, otherwise they stay where they are
- Robot pieces that fall off robot by accident are returned to team, no added penalty
- No reset of mission models moved by robot!
- Field damage – no score can result from an action that causes field damage
- Any cargo being moved to base must cross line into base itself (not just the robot)!
- Groups of related objects (like bacteria) – only first one must cross into base
- Freely handle robot and cargo inside the base
- At buzzer for end of match
- All stop (no scores count after)
- Scoring at end only - they often un-score accomplished missions during the match
- Verify missions accomplished with team at table, they initial sheet
- Disputes go to head ref for **final** decision
- Only team members at table verify scoring, **NO COACHES!**
- Verify that they have not taken any mission models
- IN – penetrates volume (not necessarily in contact)
- TOUCHING – in direct contact
- Team gets benefit of YOUR doubt

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Robot Game – Missions for Food Factor challenge

- Missions are attempted in ANY order, combined or not
- Penalty for recovering robot by hand (ref can reach if requested)
- Scored only at end
- Mission model cannot be fastened to each other or another object, OK to group loosely
 - Gravity rule

Mission by Mission:

MISSION: POLLUTION REVERSAL — No matter where pollution originates, it usually finds its way into water. And of course, all plants and animals take in water. Since we depend on plants and animals for our food, pollution is a source of contamination, not just in what we breathe and drink – but also in what we eat. The yellow and blue balls represent pesticides on the farm and heavy metals in the water. While on their rings, they're off the mat.

SCORING CONDITION(S): Balls touching the mat are worth 4 POINTS EACH.

MISSION: CORN HARVEST — A harvester (combine) is just one of the many huge pieces of machinery that handle massive amounts of food at once. Equipment like this runs on gasoline, and has oil. You can also find hydraulic fluid, nuts & bolts, screens, gaskets, set screws, bearings, sealant, paint chips, and bugs on it – any of these materials and substances could find their way into the food.

SCORING CONDITION(S): Get points for one of these only:

---ANY piece of corn touching the mat is worth 5 POINTS (additional pieces do not add to your score).

-----OR-----

---ANY piece of corn in Base is worth 9 POINTS (additional pieces do not add to your score).

MISSION: FISHING – Fish must be eaten or frozen immediately after being caught. The number of germs that depend on fish is much, much higher than the number of people who do!

SCORING CONDITION(S): Big fish in Base are worth 3 POINTS EACH, if the baby fish is still touching its mark.

MISSION: PIZZA AND ICE CREAM – When you go out in public to eat, you place a lot of trust in the people preparing your food. Do they wash their hands or wear fresh gloves? In what direction do they sneeze? How clean are their storage and preparation areas? At what temperatures are the foods stored and cooked? How old are the ingredients? How are pests controlled?

SCORING CONDITION(S): Pizza and ice cream in Base are worth 7 POINTS EACH.

MISSION: FARM FRESH PRODUCE – In general, the fresher your food is and the fewer ingredients there are in it, the less chance it has had to become contaminated. Small farms and fisheries close to where you live are a good source of fresh food, but many small farms don't get the same level of inspection as large ones do.

SCORING CONDITION(S): The yellow farm truck in Base is worth 9 POINTS.

MISSION: DISTANT TRAVEL – Your body suppresses and eliminates the vast majority of chemicals and germs you eat, and it's especially good at getting rid of stuff it's been exposed to before – stuff it's used to. But when you eat in a city or country that's very far from home, your body's defenses can be caught off guard by contaminants it's never processed before. It's common for travelers to get quite sick after eating certain foods, while other people who ate the same foods right next to them have no problems.

SCORING CONDITION(S): The robot touching the east wall is worth 9 POINTS. Remember Rule 23.

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MISSION: COOKING TIME – Before cooking, some foods have more germs, or tougher germs than others. If you're supposed to cook a food for 40 minutes, but you think "it should be okay" after 35 – think again!

SCORING CONDITION(S): The white pointer in the red zone is worth 14 POINTS.

MISSION: STORAGE TEMPERATURE – Germs grow fast. If your refrigerator is set even a few degrees higher than it's supposed to be, the "shelf life" of many of the foods is cut in half, or even further. If you go to play ball instead of helping to put the picnic food back in the cooler – that's bad! If you ever hear the phrase "it's only been out for a few hours" –make some noise!

SCORING CONDITION(S): The thermometer spindle clicked/dropped fully showing the low red temperature is worth 20 POINTS (the spindle needs to drop all the way).

MISSION: PEST REMOVAL – Some animals carry many, many germs that don't bother them, but which are really bad for us. And some animals have extremely unclean habits (enough said about that!). These animals have become very good at infesting population centers and especially food storage, shipping, and preparation areas, living in the shadows, climbing and nesting in the tiniest unseen places. Convince them to live somewhere else! Keep all food well-sealed, and all food areas clean. At the first sign of these pests, it's usually too late!

SCORING CONDITION(S): Rats in your Base are worth 15 POINTS EACH (to you only).

MISSION: REFRIGERATED GROUND TRANSPORT – In shipping, cases of frozen and refrigerated foods are often thrown onto pallets, spilled, torn, and crushed by forklifts, and each other, as they are warehoused and loaded onto trucks bound for the marketplace. Then the cases go on bumpy rides for hours in the sun. Amazingly, only a tiny percentage of the food gets contaminated during all this. The problem is, this tiny percentage totals tens of thousands of tons a year! And while most of that is discovered and thrown away, "some" is not.

SCORING CONDITION(S): Get points for one of these only...

---The trailer in Base is worth 12 POINTS.

-----OR-----

---The trailer with meat inside, and no germs inside, with any of its wheels touching the port dock north of the white line is worth 20 POINTS, and 6 ADDITIONAL POINTS for each big fish inside. For fish points, the baby fish must still be touching its mark.

MISSION: GROCERIES – Here's your chance to buy undamaged goods, as fresh as possible, with the fewest ingredients possible, from trustable places, and get your cold stuff home and put away as soon as possible!

SCORING CONDITION(S): EACH grocery unit is worth 2 POINTS if the table is supporting all of its weight, and no weight other than grocery units (the flower centerpiece can be there too).

MISSION: DISINFECT – It would be very tough to eliminate food contamination from all sources, but you can probably do more than you think, and if you can at least avoid making it worse, that would be a great start.

SCORING CONDITION(S): Empty dispensers are worth

---12 POINTS EACH, if NO bacteria is touching the mat outside Base.

-----OR-----

---7 POINTS EACH, if ANY bacteria is touching the mat outside Base.

MISSION: HAND WASH/BACTERIAL – Innovative ideas in the future may help us reduce germs, chemicals, and particles, in natural, farming, processing, and public food settings, but studies have shown that one of the biggest source of contamination to your food is your own hands. So wash them! Front and back, with soap, in hot water, for three times longer than you do now! As this mission should show, you can never wash your hands enough.

SCORING CONDITION(S): Bacteria in or on the sink are worth 3 POINTS, only if all of these are true:

---All were in Base at some time prior to being in the sink.

---While between Base and the sink, each was the only one in motion.

---All equipment involved with each bacterium's trip to the sink was

--completely in Base at the beginning of the trip.

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--completely out of Base at the end of the trip.

---The sink is supporting all the weight of every germ, and not supporting any weight except germs. Bacteria getting to the sink any other way are given back to the team in Base by the referee (the "ref").

MISSION: HAND WASH/VIRAL – Viruses almost always need a "host" (another living thing) to live on. They are almost always bad, and they're also somewhat harder to deal with than bacterial germs. Alcohol sanitizer, bleach sanitizer, and high heat are the better weapons against viral germs, but hand washing is also helpful.

SCORING CONDITION(S): Get points for one of these only...

---One to eight viral germs in the sink are worth exactly **6 POINTS** only.

-----OR-----

---Nine or more viral germs in the sink are worth exactly **13 POINTS** only.

MISSION: GOOD BACTERIA – Not all bacteria are bad. There are about a thousand types of good bacteria living on/ in your body, which total in the tens of trillions! Bacteria do all sorts of good work for you, and help process your food, both before and after you eat it. How do we get rid of bad bacteria without upsetting the good bacteria? Bacteria are this year's "touch penalty objects" as described in the Rules. When you cause a touch penalty, the ref takes one yellow bacterium.

SCORING CONDITION(S): Yellow bacteria are worth **6 POINTS EACH** in Base only.

- Missions are scored as accomplished or not, numeric totals are figured at scoring table
- Consult sample scoring sheet for mission locations upon the field
- Consult Rulings on-line for rules changes/clarifications



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Robot Game Rulings (Current as of 11-04-2011)

31 - SPILLED TRUCK

For the yellow truck to score in Base, here's what needs to be in Base: The yellow truck. If the truck's produce is spilled and scattered outside Base, that doesn't mean anything for the truck mission. See Rule 3.

TEMPORARY NOTE: Update 23 has been rewritten. Original info unchanged. Info added.

30 - RESCUE WITH GERMS WHICH HAVE NOT BEEN TO BASE

Germs which have not been to Base are defined or assumed to be cargo (see Rules 11 and 18) upon a robot touch if any of these are true:

- They are obviously being transported by the robot (touching the mat or not).
- They are on the robot.
- They are on the mat, surrounded, fenced in, or otherwise staged for sliding transport by the robot or things it was obviously in control of.

These germs are NOT considered cargo in any other circumstances.

29 - DROOPY BACTERIA DISPENSERS

True enough, the small fixes applied to the bacteria dispensers weren't enough to stop them from leaning. Better fixes would have either been too difficult to describe, or would have interfered with the robot's path under the bin. Luckily the droop is pretty consistent, and the dispensers work exactly as intended. This post is official acceptance of the droop. You've all been working with the droop for about two months now, and we're not going to mess with it on you. To teams: Expect the same droop at tournaments as you're used to in practice. To tournament officials: Prepare the bacteria dispensers as per Update #12, and don't try to lessen the droop in any other way (no tape, Dual Lock, weights, further redesign, etc.) - it would hurt teams more than it would help.

28 - RATS AND CORN MALFUNCTION

Don't expect a benefit-of-the-doubt ruling if you gently push on a rat slide and the rat doesn't come down. Even with a slide in perfect condition, you have to give that model an honest smack to get the rat's weight off the slide (lighten up, rat!), and guarantee its descent. That's just the nature of the model, and all correctly built models behave the same. However, it is well known by now that the rat slides and corn harvester do need maintenance (see "Field Setup") in order to work like they did when they were correctly built (clicked pin connections for the slides, and spread walls for the harvester). This post is to remind you about Rule 14's "Quality Control" procedure. You share the responsibility for being sure the models are in tip-top shape if those models are critical to your game. It so happens that when the robot interacts with these particular models, it's only half way toward earning full credit for the associated missions, so benefit-of-the-doubt is much harder for the ref to give. The ref can still give you that favorable call, but it has to be REALLY obvious that a failure was the model's fault. So do your part to reduce your chance of depending on a benefit-of-the-doubt call.

27 - BABY FISH REMOVE-AND-RESTORE

It's one of the Top 3 most frequent questions this year (by people who have read the materials): "Is it okay if the baby fish comes off its mark temporarily?" I thought Rules 3 and 23 dictate an easy "Yes," but now I know what the problem was. It's been the word "still," which hints toward the need for uninterrupted contact. Sorry about that! Please ignore the word "still" with regard to fish-dependent scoring, and know that Rule 23 applies: The baby fish only needs to be on its mark at the END of the match.

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26 - OKAY TO SHIFT BALLS AND RINGS

Rules 14 and 19 redundantly say objects can't be moved out of the robot's way by hand. But here's an exception: If there's a [ball on the mat] in the robot's way, or a [ring with no ball] in the robot's way, it can be shifted out of the robot's way. You should ask the referee to shift these objects, but if there's no way for the ref to get there in time, you may do it yourself. Neither the movement nor the new location of these objects is allowed to be a part of any strategy other than simply clearing the robot's path.

25 - BACTERIA CLUSTER ENTERING BASE

If a cluster of several objects is entering Base but not all individuals are in yet, and you touch the robot, Rule 18 Bullet #3, and Rule 21 together mean the ref should take away the ones that hadn't made it to Base yet (correct, but REALLY?) In practice though, it's tough to win an argument about which ones were in or out, so referees usually either treat the cluster as a single object, (nice, but incorrect), or they stretch the Benefit-Of-The-Doubt rule too much (nice, but sloppy, and inconsistent). This needs to be repaired in the Rules, but here's your exception for now: When the robot is moving a continuous cluster of bacteria into Base, they are to be treated as one object. As soon as the first is in, they're all in. Two separate clusters are assessed separately, and fish, rats, pizza, and ice cream will still also be assessed individually.

24 - MULTI-PART MODELS

It is unclear from the Rules how to treat multi-part models in certain situations. Update 7 clears one situation up, and now here's another: If the yellow truck has reached Base, and you're taking it into Base by hand, its contents can come too, no matter where in the truck they were. The same is true with the refrigerated truck and its contents. Be careful though, overall, models still follow Rule 21.

23 - DISINFECT METHOD

Looking at Rule 3, Bullets 1 & 3... You are free to empty a germ dispenser without using the lever. BUT BE CAREFUL - No matter how you empty a dispenser, if you break the model, peel up any of its Dual Lock connections, or permanently force the lever out of its normal range of action, that is field damage, and Rule 14 says that missions benefitting from destruction are marked scoreless. Specifically, when germs come out of a dispenser that was damaged in the process, missions related will be scored unfavorably as follows:

- The dispenser they came from will not score as empty.
- Germs of that color ending up in the sink won't count.
- Germs of that color on the mat outside Base at the end of the match will still reduce the value of any other empty dispensers from 12 points to 7 points.

This update does not cover damage caused to a dispenser which was already emptied in a separate, earlier interaction.

22 - CHANGING THINGS OUTSIDE BASE

Where Rule 14 says that only the robot may make changes outside Base, this wording is new, but the rule is not. Like last year, a separate [whatever] can be sent to do things, but the point of this rule is to say that the motion of all things leaving Base must be initiated by the robot. Your hands can set things up, then start the robot, but it is the robot that must start all processes. NOTE: This is not some cryptic way of telling you a cart is or is not a good tool for the sink mission.

21 - ROBOT IS EQUIPMENT

Since the robot always initiates the movement of anything leaving Base, the robot is always part of the equipment that has to be totally in Base when each bacterium starts to move out, and totally out of Base when each bacterium comes to rest at the sink.

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20 - MEAT MODEL

The "meat" model is the solid brown 2x4 crate with smooth top seen in pretty much every picture of the Base area. You built it with the yellow truck, but don't let that throw you; the Field Setup instructions tell you the meat goes in Base.

TEMPORARY NOTE: Temporary Note about Temporary Notes: These are usually just to get you up to speed on something, and by themselves are nothing a referee would ever have to know or make a call about. They will be deleted without warning.

19 - NORTH OF WHITE LINE

The area where wheels must touch the mat is directly north of the applicable white line on the dock - that's between the fences.

18 - DISTANT TRAVEL

The robot itself must be touching the east wall when the match ends. The "robot" is the controller and anything joined with it in any way by hand which is designed not to separate from it except by hand. Separate objects are never considered part of the robot. Translation: Neither a separate craft sent to the wall, nor a separate object left there can substitute for robot.

17 - CONTROLLER ALLOWANCE

Though it was dropped to save text, it is understood that exactly one NXT controller is part of the allowable electrical parts list. In addition to your motors and sensors and wires and batteries, you may have exactly and only one NXT controller OR one RCX controller. Simultaneous apologies to people A) who were confused by the omission and B) who think this post is silly.

16 - YOU CAN GRAB BOTH RATS

You won't find it written anywhere that one rat or the other is "your" rat. You are free and expected to grab either one or both. To go for both is a competitive move, but it's not ungracious.

15 – "BETWEEN" BASE AND THE SINK

The place where the constraints on a bacterium's trip apply is not limited to the direct line between Base and the sink, but rather anywhere along that bacterium's entire route from Base to the sink, wherever that route may go. Stated another way: The correct between: "I can't believe I got lost between home and work." The incorrect between: "The defender was between me and the goal."

14 – LEGO MANUFACTURED SENSORS

Rule 4 says you are only allowed to use certain LEGO-manufactured MINDSTORMS motors and sensors, but it's hard to tell them from others, so here's the list in pictures. It shows all motors and sensors allowed, the only ones allowed, and the exact ones allowed. They are... Top row: The NXT touch, light, ultrasonic, and color sensors. Middle row: The RCX touch, light, and rotation sensors. Last row: The NXT motor, and the RCX motor. Don't buy or use any sensor or motor not looking exactly like one of these, even if it's from an official LEGO source, and even if it says "LEGO" on it. There are two reasons for these limits: 1) These are the components from the standard "Education" and/or "Commercial" MINDSTORMS sets, and therefore have the highest probable availability everywhere FLL is present. 2) This selection provides excellent and appropriate functionality, and a reasonable place to "draw the line" to keep the competition robot-centered as opposed to wallet-centered.

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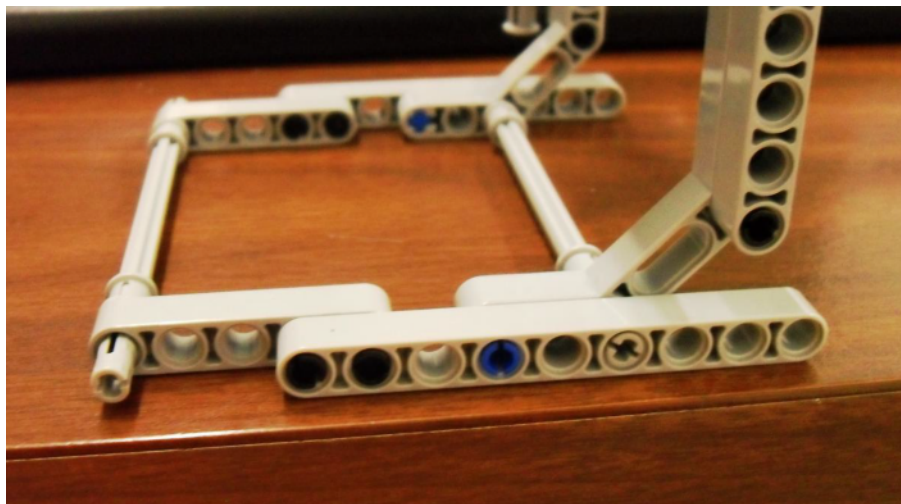


13 – BABY FISH MARK

With Rules 3, 22, and 23 in mind, the baby fish needs to actually touch the white outline, even if it's just a tiny bit, and this touching needs to be observable at the end of the match.

12 - MATS PULLING UP

Please move the outer beams of your Bacteria Dispenser models one more space forward beyond the fix described in the Field Setup instructions (see new picture here), and be sure to move the front Dual Lock as far forward as possible. Thanks. The original instruction for where to put the model still applies. Thought the front feet of the models have grown, the rest of the model stays in place. The BACK of these models are to be lined up with their marks on the mat.



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11 - YELLOW BACTERIA IN SINK

Since it is unclear from the Good Bacteria mission if yellow bacteria would be worth 3 points in the sink, you are welcome to put them there, but you'll be cutting their value in half, and they will still be taken as touch penalty objects as needed.

10 - FISH IN TRAILER

When you send fish out of Base hoping to get 6 points for each in a scoring trailer at the dock, you're giving up the 3 points they were worth in Base. It's either 3 or 6 but not both. So when you send them out, you have to ask yourself... "Do I feel lucky?"

9 - "ALL" NEED TO HAVE BEEN IN BASE

Here, the "all" is only referring to the bacteria in question - the ones reaching the sink. You don't have to bring 48 to Base unless you're trying to score all 48.

8 - SPILLED BACTERIA

One or more bacterium on the mat outside Base reduces the value of all empty dispensers from 12 points to 7 points. Color's not mentioned, so color's not a factor. The bacteria are only colored to help the field reseters avoid counting.

7 - SPILLED GROCERIES

There are three units of groceries that can spill their contents: the bread, and the two crates of produce. For a model of this type to score on the table, each individual piece (including the container) needs to meet the general scoring conditions, but the food pieces need not be in the container.

6 - BACTERIA MOVEMENT

The constraints placed on the bacteria's movement to the sink are designed to make the mission take forever. You are free as always to spend time trying to find a legal way around the constraints. With whatever time you have left over, you'll probably want to become masterfully efficient at: Bacterium #1 - Load, Out, Drop, Return. Bacterium #2 - Load, Out, Drop, Return, Bacterium #3 - Load, Out, Drop, Return... This way, formerly "perfect" teams can now enjoy the same season-long continuous improvement process other teams and real engineers engage in.

5 - FARM ANIMALS

After lengthy and complicated contract negotiations, the farm animals have won exemption from all mission participation until July, 2017.

TEMPORARY NOTE: In the Field Setup instructions on Page 4, under "Interactive Models (Rat Slides)," the first sentence should read "For the **west** slide..."

4 - THEORETICAL MAXIMUM SCORE

452

3 - BACTERIA POINTS ARE FOR EACH

Despite the absence of "each" where the point value is given, bacteria moved to the sink legally are worth 3 points EACH.

2 - THERMOMETER LEVER

The Field Setup page shows the thermometer's lever pointing east and its gauge showing hot. This is the correct way, even though it is different than the building instructions. Please reposition your lever so the model can be set to match the pictures on the Field Setup page.

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1 – BORDER WALL HEIGHT

The Field Setup instructions now allow you to make your table border walls anywhere between 2.5 and 3.5 inches high. Existing tables are 3.5 inches, and they're fine, but you now have the OPTION of using shorter walls. This relaxation in the height specification is to accommodate internationally differing standard lumber sizes. All borders on a particular setup must be the same, whether the table is a single/half/practice table, or a double/full/competition table.

EQUIPMENT RULES

Your robot, attachments, and other accessories must be made entirely of LEGO-manufactured elements in original factory condition. Stickers are not allowed, except LEGO stickers, applied per LEGO instructions. Paint, tape, glue, oil, etc. are not allowed.

- Exception 1: You may reference a paper list to keep track of robot programs.
- Exception 2: LEGO string and tubing may be cut to length.
- Exception 3: Marker may be used for ownership identification, for marks in hidden areas only.

REGULAR ELEMENTS

- You may use as many non-electric LEGO elements as you like, including pneumatics, and they may be from any source or set. Exception: Factory-made wind-up/pull-back "motors" are not allowed.

ELECTRIC ELEMENTS

- You are allowed a maximum of six non-rotation sensors in the competition area. Choose your favorite combination from among the LEGO-manufactured Mindstorms touch sensors, light sensors, color sensors, and ultrasonic sensors.
- You are allowed a maximum of three MINDSTORMS™ motors in the competition area.
- These quantity limits don't just apply to what's on your robot "right now." The referee (the "ref") adds up everything you have with you in your boxes, your hands, your trays, and on the table too. All of it counts towards your total.
 - Example: If you have multiple motorized attachments, but it takes two motors to drive the robot, you must find a way to switch that third/last legal motor from one attachment to the next.
 - A fourth motor in the competition area is always illegal, no matter what.
 - Even if you plan to run only three motors at a time, the fourth motor is illegal.
 - Even if the fourth motor is a spare, or used as weight, or as decoration, the fourth motor is illegal.
- "RCX" robots are allowed, with a max of eight sensors from among touch, rotation, and light.
- You may not use more than one robot in any one match, but it's okay to use a different robot in a different match.
- LEGO wires and converter cables are allowed as needed.
- No other electric elements nor devices are allowed for use in any way in the competition area.
- Spare electrical parts are allowed in the PIT area.
- Objects functioning as remote controls are not allowed anywhere, any time.

NON-ROBOT EQUIPMENT

- Your equipment may include LEGO elements or devices other than the robot and its attachments.
 - Example 1: You may use a gauge to help set a feature on your robot in Base.
 - Example 2: The robot may carry a ramp out to help itself cross a barrier.If outside Base, such "strategic objects" are left wherever the robot leaves them.

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SOFTWARE

- The robot may only be programmed using LEGO MINDSTORMS, RoboLab, or NXT-G 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. If the robot is in violation of this rule and cannot be corrected, the decision about exactly what to do rests with the tournament officials, but it is possible the team may not be eligible for awards.