

# CITY SHAPER

## Robot Game Rules (Updated to RG26 Nov 25, 2019)

The object of the game is to shape your growing city with more stable, beautiful, useful, accessible and sustainable buildings and structures. Solve the real-world problems represented in the Missions to score points. You can also score by building new units on the field. New unit point values depend on their height and location.

Remember: Each official match lasts 2-1/2 minutes. You may not have time to complete all the Missions, so be strategic about which ones you choose.

NOTE: If your Robot and all of its equipment fit in the 'Small Inspection Area', the advantage for this game is 5 points added to each Mission where you score ANY points. Exceptions: Mission 14 doesn't apply, and for Mission 2, you get 10 added instead of 5.

### **Mission 1 Elevated places** (Score all that apply)

→ If the Robot is Supported by the Bridge: **20**

→ If one or more Flags are clearly raised any distance, only by the Robot: **15 Each Flag**

You can only get Flag points if you get Bridge points. Rule ~~31~~ 30 allowance: It is okay and expected for Robots to collide while trying to earn Flag points.

When clearly only one Robot is holding a Flag raised, only that Robot scores for that Flag.



### **RG12 - BRIDGE BARRIERS NOT ALLOWED**

The only way Robot X can stop Robot Y from scoring Flag points is to be faster or stronger at scoring Flag points. Robot clashes are expressly allowed in the text of Mission 1 by Rule 30's first sentence, but all other competitive action is governed by Rule 30's second sentence.

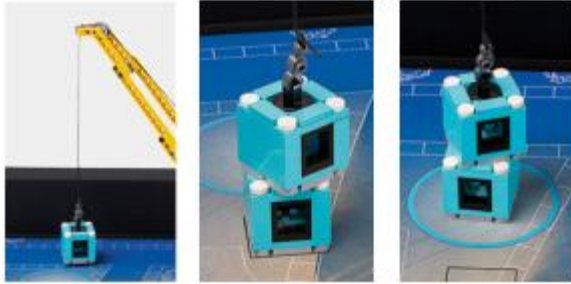
### **RG19 - LEAVING THE FLAG**

There is no exception to Rule 35 in Mission 1, so Bridge and Flag scoring conditions need to be visible the referee as the Match ends.

## Mission 2 Crane (score all that apply) If the Hooked Blue Unit is

→ Clearly lowered any distance from the Guide Hole: 20

→ Independent and Supported by another Blue Unit: 15 and Level 1 is Completely in the Blue Circle: 15



## Mission 3 Inspection drone

→ If the Inspection Drone is Supported by axle (A) on the Bridge: 10



## RG02 - DRONE SHAPE AND SETUP (Clarified - Improved Building Instructions are available)

Per original Update RG02, the correct way to build the Drone is shown below, and now the Building Instructions have been revised to show this.

The correct way to place the Drone on the Mat is on its square mark, with the Loop parallel over its line marks (the open Loop faces the Launch Area).



## Mission 4 Design for wildlife

→ If the Bat is Supported by branch (B) on the Tree: 10



## Mission 5 Treehouse (Score all that apply)

If a Unit is Independent and Supported by the Tree's

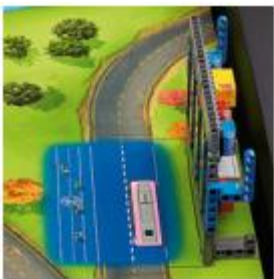
→ Large Branches: 10 Each Unit

→ Small Branches: 15 Each Unit



## Mission 6 Traffic jam

→ If the Traffic Jam is lifted, its moving part is Independent, and it is Supported by its own hinges as shown: 10



## Mission 7 Swing

→ If the Swing is released: 20



## Mission 8 Elevator (Score one or the other)

If the Elevator's moving parts are Independent, and Supported only by its hinges as shown, in the following position

→ Blue Car Down: 15

→ Balanced: 20



### RG03 - ELEVATOR SETUP

The correct setup position for the Elevator is with the Blue Car UP, as shown here:



### **Mission 9 Safety factor**

→ If the Test Building is Independent and Supported only by the blue beams, and some beams have been knocked out at least half way: **10 Each Beam**



### **Mission 10 Steel construction**

→ If the Steel Structure is standing, and is Independent, and Supported only by its hinges as shown: **20**



### **Mission 11 Innovative architecture** (score one or the other)

If there is a team-designed Structure clearly bigger than a Blue Building Unit, built only from your white LEGO bricks

→ Completely In any Circle: **15**

→ Partly in any Circle: **10**



Random Structure shown. Design and build your own Structure before you compete, then bring that to each Match. You don't build it during the Match.

Your mission 11 Structure needs to be built from Bag 10 elements only. It can include the red and gray elements. Not all of the Bag 10 elements need to be used.

### RG04 - MISSION 11 STRUCTURE SIZE

Some measure of your Mission 11 Structure needs to be at least as long as a four-stud LEGO element.

### IP02 - MISSION 11 AND THE (MOSTLY) WHITE BRICKS

In your CITY SHAPER<sup>SM</sup> challenge set, you will find LEGO elements in the bags labelled "10" to make a team-designed model for robot game Mission 11. **The model can be of any design if it meets the requirements of Mission 11.** This model is supposed to represent your team's Innovation Project in some way, but you will not be *required* to explain your model's design or discuss your Project during your robot game matches. (You may want to share this information with others – and that's fine – but it's not required.) Please see the robot game missions, rules and updates for more information about Mission 11.

### RG18 - M11 STRUCTURE CATEGORY

The M11 Structure is Equipment. It can seem like a Mission Model, and on some pages outside the Robot Game text it's even implied to be one, but by Rules 2 and 5, and this Update, it is Equipment.

### Mission 12 Design & build (Please take the needed time to understand the scoring examples)

→ LOCATION - If there are any Circles with at least one color-matching Unit Completely In, and Flat Down on the Mat: **10 Each Circle** (Note: The Blue Circle is not Part of Mission 12).

→ HEIGHT - If there are Independent Stacks at least partly in any Circles, add all of their heights together: **5 Each Level** (Note: A Stack is one or more Building Units with Level 1 touching Flat Down on the Mat, and any higher levels touching Flat Down on the level below).



Color match = no  
Tan stack = 2 levels  
White stack = 1 level  
15 points shown



Color match = no  
Bridged stack = 4 levels  
20 points shown



Color match = red  
Red stack = 2 levels  
Other stack = 4 levels  
40 points shown

## RG25 - M12 STABILIZERS

Be sure **all forms** of Equipment are no longer touching any of your M12 Stacks at the end of the Match...

---M12 says Stacks need to be Independent for their HEIGHT / Levels to score.

---Rule 33 defines "Independent" as not touching any Equipment.

---Rule 2 makes it clear that frames for stabilizing your M12 Stacks are Equipment.

If this is a surprise to you, have a fresh look at the other Missions to see where else the word "Independent" is important.

## RG17 - PARTLY IN / COMPLETELY IN

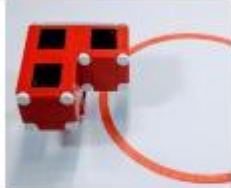
For M12 and M13, look at the whole Stack, not just Level 1, to decide if it is "in." A Stack is

---in (partly in) a Circle if ANY bit of the Stack is in the space above the Circle's interior or line.

---Completely In a Circle if EVERY bit of the Stack is in the space above the Circle's interior or line.



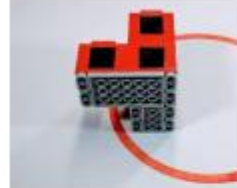
Partly In.  
10 points shown.



Partly In.  
10 points shown.



Partly In.  
10 points shown.



Partly In.  
10 points shown.



Partly In (Benefit Of The Doubt).  
10 points shown.



Completely In.  
20 points shown.  
(Includes Circle Color Match.)



Completely In (Benefit Of The Doubt).  
20 points shown.  
(Includes Circle Color Match.)

## RG16 - BRIDGED, EXAMPLES

Notice how Bridging to a Circle can affect Height Score.



Two Stacks.  
10 points shown.  
(Not Bridged.)



One Stack.  
25 points shown.  
(Bridged.)



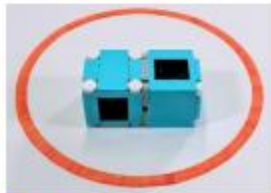
Two Stacks.  
5 points shown.  
(Not Bridged.)



One Stack.  
20 points shown.  
(Bridged.)

## RG15 - "BRIDGED" STACK COMBINATIONS

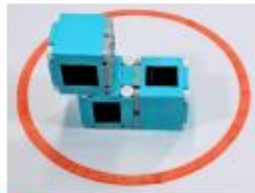
Stacks touching only each other's sides are separate. But if one Unit touches Flat Down on multiple Stacks, they are "Bridged" and all count as one Stack. Notice how Bridging Completely In a Circle can affect Height score.



Two Stacks.  
10 points shown.



One Stack.  
10 points shown.



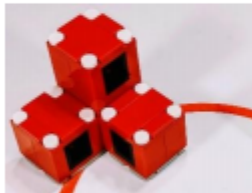
Two Stacks.  
15 points shown.  
(Not "Bridged.")



One Stack.  
10 points shown.  
("Bridged.")

## RG14 - BUILDING UNITS, GENERAL

- A Building Unit is the whole Model, not the individual rooms (left picture).
- It's not required for windows to face sides, or gray bases to face the Mat (center picture).
- Stacked Building Units require surface-to-surface contact, like floors and ceilings (right picture).



This is 1 Building Unit, not 4.  
10 points shown.



This scores as a Stack.  
5 points shown.



This top Unit doesn't count.  
5 points shown.

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  - Rule 2 makes it clear that frames for stabilizing your M12 Stacks are Equipment.
- If this is a surprise to you, have a fresh look at the other Missions to see where else the word "Independent" is important.



### Mission 13 Sustainability upgrades (only one counts per stack)

→ If an Upgrade (solar panels, roof garden, insulation) is Independent, and Supported only by a Stack which is at least partly in any Circle: **10 Each Upgrade**



#### RG17 - PARTLY IN / COMPLETELY IN

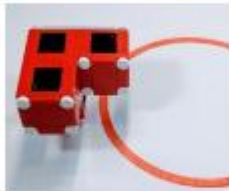
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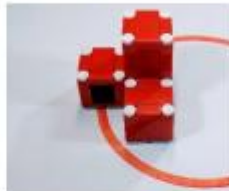
---Completely In a Circle if EVERY bit of the Stack is in the space above the Circle's interior or line.



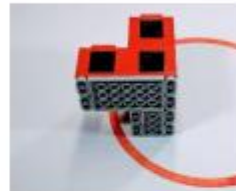
Partly In.  
10 points shown.



Partly In.  
10 points shown.



Partly In.  
10 points shown.



Partly In.  
10 points shown.



Partly In (Benefit Of The Doubt).  
10 points shown.



Completely In.  
20 points shown.  
(Includes Circle Color Match.)



Completely In (Benefit Of The Doubt).  
20 points shown.  
(Includes Circle Color Match.)

### Mission 14 Precision (only one score counts)

→ If the number of Precision Tokens left on the Field is 6: **60** / 5: **45** / 4: **30** / 3: **20** / 2: **10** / 1: **5**










# Design, Program, Build

## Construction

Use any LEGO-made building parts in their original factory condition

YOU MAY	YOU MAY NOT
Cut LEGO string and tubing.	Use factory-made wind-up/pull-back "motors."
Mark parts for identification on hidden areas.	Create or use additional/duplicate mission models.
<i>TIP – At tournaments you should expect, and design for, rare imperfections like changes in light, or bumps under the mat.</i>	

HARDWARE			
Required	Equipment	Number allowed	EV3 (also NXT and RCX equivalents)
X	Controller	1 per Match	
X	Motors	Any combination, maximum of 4 in total.	 Medium  Large
	Sensors	Unlimited	   
SOFTWARE			
You can use any software that allows the Robot to move autonomously – meaning it moves on its own.			
No form of remote control is allowed.			

## Definitions

Here's what to know and expect, and how to get ready for a Match.

01. ROBOT – This is your LEGO MINDSTORMS controller and all the Equipment you combine with it by hand, which is not intended to separate from it, except by hand.

02. EQUIPMENT – This is anything you bring to a Match for Mission-related activity, including the Robot.

### RG25 - M12 STABILIZERS

Be sure **all forms** of Equipment are no longer touching any of your M12 Stacks at the end of the Match...

---M12 says Stacks need to be Independent for their HEIGHT / Levels to score.

---Rule 33 defines "Independent" as not touching any Equipment.

---Rule 2 makes it clear that frames for stabilizing your M12 Stacks are Equipment.

If this is a surprise to you, have a fresh look at the other Missions to see where else the word "Independent" is important.

### RG23 - REMINDER NOTES

You can bring notes to the Match, on one sheet of paper, to remind you of Robot position and program specifics. Maximum paper size is 9 in. by 12 in. (229 mm by 305 mm) - "Letter" and "A4" both qualify. The paper can have no other purpose, and will not count as Equipment.

### RG25 - M12 STABILIZERS

Be sure **all forms** of Equipment are no longer touching any of your M12 Stacks at the end of the Match...

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03. MATCH – When two teams play opposite each other on two Fields placed north to north. Your Robot Launches one or more times from the Launch Area and tries as many Missions as possible in 2-1/2 minutes.

04. FIELD – Includes Home, the Field Mat, the Mission Models, and everything else extending to include the inner sides of the Border Walls.

### RG01 - MAT PLACEMENT AND SETUP (Revised to correct the width of Home)

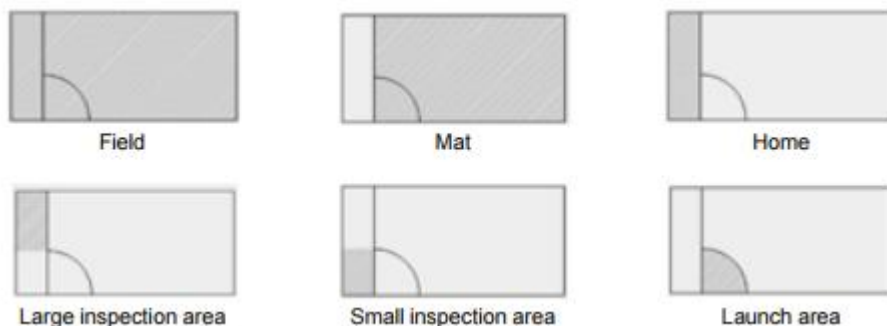
When placing your Field on an Official Table, slide the Mat gently until it meets up against the South and East Border Walls. When Table size and Mat placement are correct, Home will measure about 45" by 15 1/2" (1143mm by 342mm).

To hold the Mat in place, you may use a thin strip of black tape on the West edge as needed. Where the tape sticks to the Mat, it may cover the Mat's black border only.

05. MISSION MODEL – Any LEGO object already at the Field when you get there.

06. LAUNCH AREA – This is the Mat's inner quarter-circle area and the black lines that form it. It extends to include the face of the south Border Wall, but no farther. It does not include the white band of sponsor logos.

07. HOME – Table surface west of the Field Mat that includes the faces of its Border Walls.



### RG01 - MAT PLACEMENT AND SETUP (Revised to correct the width of Home)

When placing your Field on an Official Table, slide the Mat gently until it meets up against the South and East Border Walls. When Table size and Mat placement are correct, Home will measure about 45" by 13 1/2" (1143mm by 342mm).

To hold the Mat in place, you may use a thin strip of black tape on the West edge as needed. Where the tape sticks to the Mat, it may cover the Mat's black border only.

08. LAUNCH – Whenever you're done handling the Robot and then you make it GO.

### RG21 - ALLOWABLE JIG USE

A careful read of the Rules reveals these two facts about the use of frames ("jigs") for Robot Launch alignment.

---You are not allowed to be touching any jig at the time of a Launch.

---The **Robot** is not allowed to be touching a jig at the time of a Launch, **unless** the jig is completely in the Launch Area.

This means there are two allowable ways to use a jig:

---For any jig >> Align the Robot against the jig, pull the jig completely into Home, then Launch.

(If you just want to use the jig to AIM the Robot, this is the recommended way.)

---Only for jigs which fit and stay completely in the Launch Area >> Align the Robot against the jig, let go of the jig, then Launch, **leaving the jig as is, untouched** until the next Robot Interruption.

(If you want to use the jig to aim AND GUIDE the Robot, this is the required way.)

09. INTERRUPTION – The next time you interact with the Robot after Launch.

10. PRECISION TOKEN – These are six red discs on the Field, already worth points when the Match starts. Interrupting the Robot before it gets Completely Into Home causes the Referee to take them away.

11. TRANSPORT & CARGO – When something is purposefully/strategically being

→ taken from its place, and/or

→ moved to a new place, and/or

→ being released in a new place, it is being ‘Transported’ and is called ‘Cargo’. When the object is clearly no longer touching whatever was Transporting it, Transport is ended, and the object isn’t Cargo any more.

### Tournament rules

Remember you have at least three Official Rounds, so don’t panic if something goes wrong. Your best score is the one that will count.

Bring to the match	Leave behind at the pits
Your full competitive team (up to 10), including two designated technicians.	All other electronic items
Your Robot (only one if you have more than one) and all its Equipment, including:	Spare Robots
ONE controller's power pack or SIX AA batteries	Extra controllers
LEGO wires and converter cables, as needed	

12. Teams, Coaches, Referees and all others are expected to model the FIRST® Core Values at all times.

13. Remote control and/or data exchange with Robots (including Bluetooth) in the competition area is illegal.

14. You can only safely touch the Robot while preparing to Launch, or when it’s completely in Home.

15. The thin line around any scoring area counts as part of the area.

16. BENEFIT OF THE DOUBT – If the Referee is faced with a very tough call, and no one can point to strong text to settle it, you get the Benefit of the Doubt, but don’t rely on this as a strategy.

17. Official Robot Game Updates override the Missions and Field Setup. Missions and Field Setup override the Rules. Your local Head Referee will make final decisions after a Match, when needed.

## **Before the match timer starts**

18. You have at least 1 minute to prepare. This is your chance to ask the Referee to check that Mission Model setup is correct, and/or calibrate light/color sensors anywhere you like.

19. Show the Referee that ALL your Equipment fits in either the Large or Small Inspection Area (your choice), under an imaginary ceiling 12 in. (30.5 cm) high. If it fits in the Small Inspection area, you get an advantage. The "Small Area" advantage for the City Shaper game is 5 points added to each Mission where you score ANY points. Exceptions: Mission 14 doesn't apply, and for Mission 2, you get 10 added instead of 5.

After passing Inspection, arrange your Equipment anywhere in Home for storage and adjustments, and/or the Launch Area for Launch.

### **RG08 - HAND USE FOR INSPECTION**

Your hands can be used to restrain/confine Equipment within the volume of an Inspection Area.

Before the Match starts, you are allowed to calibrate sensors anywhere you like, and/or ask the Referee to check the correctness of Mission Models and setups.

### **RG10 - BOXES AND TRAYS**

---You can carry your Equipment to the Field in any box or tray.

---When you get to the Field, place all your Equipment in one of the Inspection Areas and store the box/tray as directed by the Referee.

---After Inspection, all your Equipment is stored in Home, as directed by Rule 19.

20. Decide on two technicians to begin play. Only two Technicians are allowed at the competition Field at once, but technicians can switch out at any time. The rest of the team must stand back as directed by tournament officials unless needed for emergency repairs during the Match.

## **During the match**

21. Launch sequence READY SITUATION: Your Robot and everything it's about to move or use is arranged as you like. It must fit completely in the Launch Area and measure no taller than 12 in. (30.5 cm).

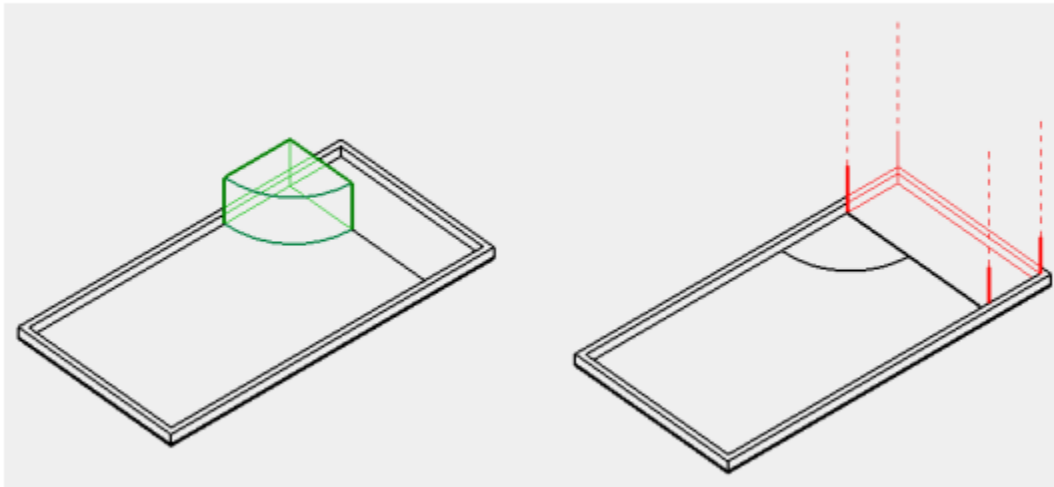
→ When the Referee can see that nothing on the Field is moving or being handled, she/he will begin the countdown of the first launch.

→ The precise timing of the first Launch of the Match is at the beginning of the last word or sound in the countdown, such as "Ready, set, Go!" or Beeeep!

## RG22 - HOME SAFETY

Be sure you know Rule 27. Interrupting the Robot even partly in the Launch Area can cause you to lose a Precision Token. To avoid losing a Token, Interrupt the Robot completely in Home only.

(Experienced teams are not experienced with this year's Rules. The Launch Area is not the same as "BASE" from past years.)



All mention of the "Launch Area" means here and only here, especially Rule 21

"Leave from here"

All mention of the "Home" means here and only here, especially Rule 27

"Return to here"

22. Don't interact with any part of the Field that's not completely in Home, except to Launch. – Except: If Equipment breaks off the Robot unintentionally, you may pick it up immediately from anywhere.

## RG09 - LAUNCH AREA STRANDING

Things Stranded partly or completely in the Launch Area \*can be taken into Home if you wish. If that action clearly/directly produces a scoring condition, the score won't count.

\*This exception to Rules 22 and 29 does not apply if the Stranded thing reaches out of the white/logo arc

## RG13 - HOME, STRATEGIC AND ADAPTIVE STORAGE

With the implied permission from Rule 22, and clarification here, things completely in Home can be stored, handled, and shifted around any way you like, any time after inspection.

---If the Robot happens to interact with something which is at rest in Home, that shall not be considered an interaction with you, so it's not an Interruption. Said another way: After any Launch, and before the next Interruption, the Robot is free to go in and out of Home, and interact with things, even if you "staged" them strategically.

---If the Robot is on the way Home and you think its entry will be blocked by something in Home, you can shift that thing out of the way, as long as it was and remains completely in Home the whole time.

Reminder: The Launch Area is not part of Home. You can not touch anything in the Launch Area between a Launch and the next Interruption, except to remove a Stranded Object as allowed in RG09.

23. Don't cause anything except the Robot to move or extend out of Home, even partly, except to Launch. – Except: If something accidentally crosses out of Home, you can take it back.

24. Anything the Robot affects or puts completely outside the Launch Area stays as is unless the Robot changes it.

25. Don't take Mission Models apart unless the Mission asks you to.

26. Do store all your Equipment and anything the Robot brings to Home in Home.

27. INTERRUPTION PROCEDURE – If you Interrupt the Robot, stop it instantly, then calmly pick it up for the next Launch. Where was the Robot Interrupted?

→ Completely in Home: No problem.

→ Not Completely in Home: Lose a Precision Token.

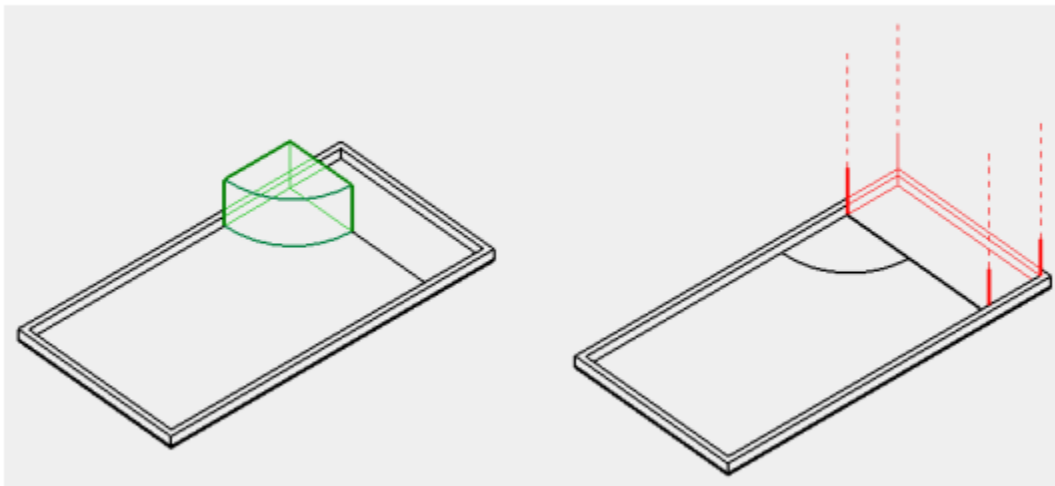
### RG07 - MIS-LAUNCH

If you Interrupt the Robot so soon after Launch that it hasn't yet reached a Launch Area perimeter line, you will need to re-Launch, but you will not lose a Precision Token. This is an exception to Rule 27.

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(Experienced teams are not experienced with this year's Rules. The Launch Area is not the same as "BASE" from past years.)



All mention of the "Launch Area" means here and only here, especially Rule 21

**"Leave from here"**

All mention of the "Home" means here and only here, especially Rule 27

**"Return to here"**



28. INTERRUPTION WITH CARGO – If the Robot has Cargo when Interrupted, Where was the Cargo acquired?

→ Completely in the Launch Area: Keep it.

→ Not Completely in the Launch Area... Where was the Cargo at Interruption?

→ Completely in Home: Keep it.

→ Not Completely in Home: Referee takes it.

### **RG05 - RULE 28 CLARIFIED**

Here are the three possibilities and their outcomes:

1 - If the Cargo came with the Robot from the latest Launch: You get the Cargo back.

2 - If the Cargo was Completely in Home when the Robot was Interrupted: You get the Cargo back.

3 - Otherwise: The Referee takes the Cargo.

29. STRANDED CARGO – If the Uninterrupted Robot loses Cargo, let the Cargo come to rest. Where did the Cargo come to rest?

→ Completely in Home: Keep it.

→ Not Completely in Home: Leave as is.

### **RG09 - LAUNCH AREA STRANDING**

Things Stranded partly or completely in the Launch Area \*can be taken into Home if you wish. If that action clearly/directly produces a scoring condition, the score won't count.

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Reminder: The Launch Area is not part of Home. You can not touch anything in the Launch Area between a Launch and the next Interruption, except to remove a Stranded Object as allowed in RG09.

30. INTERFERENCE – Do not negatively affect the other team at the table except as allowed in a Mission description. If you, your team or your Robot prevents another team from completing a Mission, the Referee will award them the points for that Mission.

## **RG12 - BRIDGE BARRIERS NOT ALLOWED**

The only way Robot X can stop Robot Y from scoring Flag points is to be faster or stronger at scoring Flag points. Robot clashes are expressly allowed in the text of Mission 1 by Rule 30's first sentence, but all other competitive action is governed by Rule 30's second sentence.

31. FIELD DAMAGE – If the Robot separates Dual Lock or breaks a Mission Model and clearly benefits from the damage, Missions benefitting will not score.

### **End of the match**

32. As the Match ends, everything must be preserved exactly as-is.

→ If your Robot is moving, stop it ASAP and leave it in place. (Changes after the end don't count.)

→ After that, hands off everything until after the Referee has given the ok to reset the Field. Keep these two special definitions in mind as you read Mission scoring requirements:

33. INDEPENDENT – Not touching any equipment.

## **RG24 - ARCHITECTURE EQUIPMENT WARNING**

Be sure your M11 Structure is not touching any of your M12 Stacks at the end of the Match...

---M12 says Stacks need to be Independent for their HEIGHT / Levels to score.

---Rule 33 defines "Independent" as not touching any Equipment.

---Rule 2 and Update 18 make it clear that your M11 Structure is Equipment.

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---Rule 33 defines "Independent" as not touching any Equipment.

---Rule 2 makes it clear that frames for stabilizing your M12 Stacks are Equipment.

If this is a surprise to you, have a fresh look at the other Missions to see where else the word "Independent" is important.

34. SUPPORTED – 100% of its weight is held up and kept from falling.

### **Scoring**

35. Only the final (end-of-Match) condition of your Field is evaluated for scoring.

## **RG19 - LEAVING THE FLAG**

There is no exception to Rule 35 in Mission 1, so Bridge and Flag scoring conditions need to be visible the referee as the Match ends.

36. The Referee discusses what happened and inspects the Field with you, Mission by Mission.

→ If the team and Referee agree, a team member signs the scoresheet, and it is final.

→ If the team and Referee disagree, the Head Referee makes the final decision.

37. Only a team's best score from regular Match play counts toward awards/advancement. Any playoffs held are just for fun.

38. Ties are broken using 2nd, then 3rd best scores. If still not settled, tournament officials decide what to do.

## FIELD SETUP

### Your challenge set contains:

Field Mat, Mission Models, Dual Lock and White LEGO bricks that can be used to build your Innovation Project prototype

**1. BUILD THE MISSION MODELS** – Use the LEGO elements from your Challenge Set, and building instructions. Estimated time for 1 person = 6 hours. **Accurate Mission Model construction is essential. Double-check your builds, especially that all pieces are connected securely.**

**2. DUAL LOCK AND SECURE MISSION MODELS** – Follow the instructions on the following pages.

**Dual lock** – Find the brown sheets of this material from 3M in your Challenge Set. It sticks Models to the Mat, but allows removal too.

**SECURING MODELS** – “X” Squares show where to Dual Lock Models to the Mat. Use it as in this example, and be very exact.



STEP 1: Sticky side down



STEP 2: Sticky side up



STEP 3: Align model, press down

**MODEL STRESS** – When pressing a Model down, press on its lowest solid base structure instead of crushing the whole Model. Lift at that same structure if you need to separate the Model from the Mat.

**Loose models** – Place as shown detailed here.



One blue unit w/flat roof



One white unit



In home, arranged any way you like:  
Bat, sustainability upgrades (solar panels, roof garden, insulation), 14 units, your structure for mission 11



Inspection drone



Six precision tokens

## Simple secured models

Secure and prepare as shown and detailed here.



Swing



Tree



Traffic jam

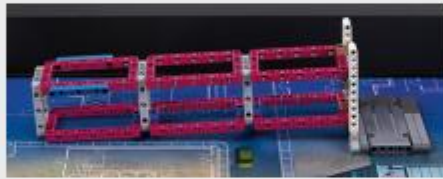


Elevator

## Multi-step secured models

Secure and prepare as shown and detailed here.

Steel construction:



Step 1



Step 2: Push East

Test building:



Step 1



Step 2

Crane:



Step 1: Tie square knot near end of string



Step 2: Hook this blue unit and wind all the way up. Rotate arm all the way clockwise

## Multi-step secured models (continued)

### Bridge:



Step 1: Carefully remove the bridge's entrance



Step 1: bottom view



Step 2: Double-check all dual lock locations



Step 3: Reinstall the entrance



Step 4: Adjust dual lock to get corners on red dots



Step 5: Be sure flag moves freely and points down



Step 6: Be sure the bridge top is centered over the north wall and substitute wall (if you have a wall).



Step 7: Use the support axles under the bridge top so it can hold a heavy robot. Experiment to see which length makes the top most level



*TIP - Use books for Bridge support if your Field has no walls.*

## **RG20 - COMPLETE BRIDGE SHIPMENT**

Your complete/correct Bridge Mission Model includes two top halves with Flags, but only ONE ramp side, as shown below. That is all you need to practice, since the Robot has no reason to drive past the Flags. The only time a second ramp is attached to the far side is for the other team, at a competition.



## **RG06 - STRATEGIC/PRECISION STOP**

If a new scoring condition is produced by the strategic timing of an Interruption (your eyes did the work of a timer or sensor), and this is obvious to the referee, Missions benefitting will not score.

## **RG26 - EFFICIENT AND EFFECTIVE GAME SUPPORT**

Robot Game Support is only able to provide fast and reliable answers to direct questions which are focused on particular text or graphics from the Field Setup, Missions, Rules, or these Updates.

The more a team's email is focused on descriptions, pictures, or videos of someone's Field, or event, or something they saw or heard, the slower and less reliable our answer is likely to be. In fact, it is usually inappropriate or even impossible for us to try to:

- study or interpret stories, photos, attachments, or links in emails from teams
- score situations we did not or can not see in person
- explain or second guess decisions other people made, after the fact, when we weren't there

We respond to all emails, but your understanding and cooperation here will help everyone.