

FIRST[®] LEGO[®] League **TUTORIALS**

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Developing a Mission Strategy

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FIRST LEGO LEAGUE LESSONS

Objectives

- Learn how to come up with a strategy for the robot game

Step 1: Understand the Missions

Rule #1 is to read the Challenge Guide thoroughly – everyone should do this

Rule #2 is to read the Updates during the season

Tip: Many teams like to take notes on each mission (the rules, the points, etc.) and place them next to the missions on the mat.



Photo Credits: Michael Graffin, Iona Primary

Step 2: Plan Your Robot Game

Which missions are near base and could be done quickly?

Which missions might be grouped together because of their proximity?

Which missions might use the same attachment/tool to complete?

Are some missions harder than others?

Are some missions harder to get to?

What are the team's goals for the year when it comes to the robot game?

How many points is the mission?



Use the answers to the questions to determine which missions to do and when.

A Planning Guide is available on the next page.

Step 2: Mission Planning Guide

This worksheet is available for download in the Useful Worksheets and Guides section.

Use it to evaluate all your options for a given year's robot game

AllBeginnerIntermediateAdvancedBeyondWROFLL

Search:

Introduction to FIRST LEGO League

Useful Guides and Worksheets

- Roles and Responsibilities Chart: [Word docx](#)
- LEGO CAD Tools Quick Guide: [PDF](#)
- Run Notecards: [PPTX](#)
- Engineering Journal: [Word docx](#)
- Tournament Checklist: [Word docx](#)
- Core Values Poster (by Ana Paula from Roboticando): [PDF](#)
- Mission Strategy Quick Guide: [PDF](#)
- Pseudocode Worksheet for Missions: [Word docx](#)
- Mission Strategy Worksheet "Coming Soon": [Word Doc](#)

Robot Game Mission Planning Guide

Mission	Near Base	Hard/Easy to Activate	Hard/Easy to Navigate	Group With	Activation Mechanism	Points

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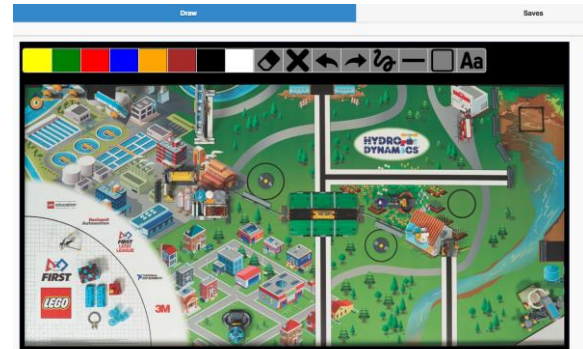
Step 3: Team Robot Game Strategy

Now, use an online tool such as our Interactive Sketch Planner to determine the path your robot will take

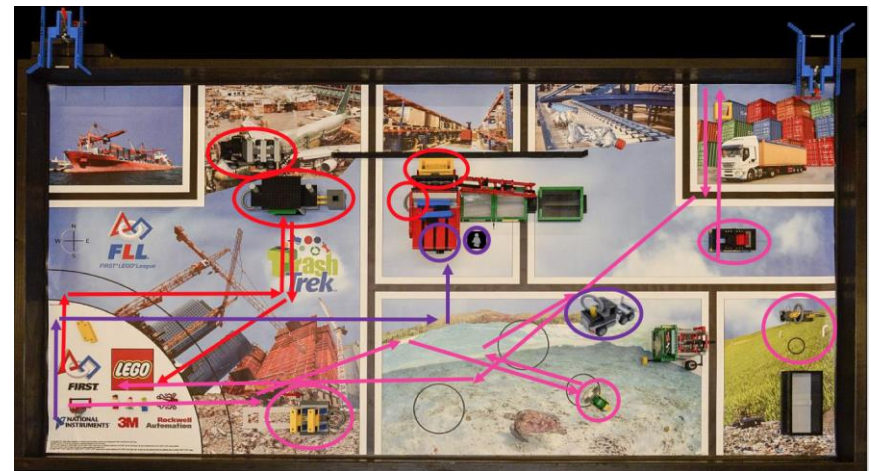
- Each time you go out of base is called a “run”
- Draw each run using a different color.

Or print out an image of the challenge mat and hand-draw

We recommend that each team member comes up with a strategy and then the team listens to all the ideas and combines them.



<http://ev3lessons.com/resources/>



Step 4: Building & Programming

Once you have a strategy, start to build your robot and write Pseudocode for each “run”.

You can use our Robot Game Pseudocode Worksheet if you want in the “Useful Worksheets & Guides” section.

We have an additional Pseudocode lesson in Beginner if you want to learn more about how to write pseudocode.

SAMPLE:

Run Information: Mega-Awesome Run: Airplane and Tsunami

	Setup/Action	Direction/Motion	Amount	Other Settings
1	Robot in base, Facing W, touching S wall, attachment STICK			
2	Move to Airplane	Move Forward	10 inches	50 power
3	Trigger Airplane	Use Motor A	30 degrees	50 power
4	Turn towards Tsunami	Turn Left	90 degrees	25 power
5	Straighten out	Back into S. Wall	1 second	50 power
6	Move to Tsunami	Move Forward	10 inches	80 power
7	Trigger Tsunami	Use Motor A	50 degrees	20 power
8	Turn towards Base	Turn Right	45 degrees	50 power
9	Return to Base	Move Backwards	15 inches	100 power
10	Remove stick, realign in base facing N, against E wall, add attachment (CAGE)			

Some Thoughts

Remember that a robot game strategy may change over time

- You might get a new idea or find a way to combine missions
- You might build a different attachment

As a rookie team, complete missions closer to base first

- Usually, they are easier to get to and easier to activate
- When you finish those and can do them reliably, start to add more missions

You don't need to do *all* the missions to “win”.

- Doing the missions you can well can often yield better results than completing all the mission unreliably.
- Example: We have won the robot performance award and Champion's without completing all the missions

Credits

This lesson was written by Sanjay and Arvind Seshan

More lessons available at www.ev3lessons.com and www.flltutorials.com



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