

Session 1



CHALLENGE



PRESENTED BY Qualcomm



Session Overview

Outcomes

- The team will learn how to connect and use the sensors and motors.
- The team will make connections from the mission models to the Efficiency Project Spark ideas.

Introduction
(10 minutes)

**Introduction to
Challenge**

Team Tasks
(100 minutes)

Robot Lesson 1

**Efficiency
Project Spark**

Share
(10 minutes)

Share

Introduction

- Read pages 4-9 explaining how **FIRST® LEGO®** League Challenge works.
- Now that you have read about **CARGO CONNECTSM**, you are ready to get started.

FIRST® LEGO® League Challenge Overview

<p>CORE VALUES</p> <p><i>FIRST® Core Values</i> will be evaluated during the Robot Game matches and during the Innovation Project and Robot Design presentations.</p>	➔	<p>Your team will:</p> <ul style="list-style-type: none">• Apply teamwork and discovery to explore the challenge.• Innovate with new ideas about your robot and project.• Show how your team and your solutions will have an Impact and be Inclusive!• Celebrate by having fun in everything you do!
<p>ROBOT DESIGN</p> <p>Your team will prepare a short explanation on your Robot Design, programs, and strategy.</p>	➔	<p>Your team will:</p> <ul style="list-style-type: none">• Identify your mission strategy.• Design your robot and programs using your work plan.• Create your robot and coding solution to match your mission strategy.• Iterate and test your robot and programs.• Communicate your Robot Design process, your programs, and your robot solution.
<p>ROBOT GAME</p> <p>Your team will have three 2.5-minute matches to complete as many missions as possible.</p>	➔	<p>Your team will:</p> <ul style="list-style-type: none">• Build the mission models and follow the field setup to put the models on the mat.• Review the missions and rules.• Design and build a robot.• Explore building and coding skills while practicing with your robot on the mat.• Compete at an event!
<p>INNOVATION PROJECT</p> <p>Your team will prepare a 5-minute presentation to explain your Innovation Project.</p>	➔	<p>Your team will:</p> <ul style="list-style-type: none">• Identify and research a problem to solve.• Design a solution to the problem that helps others or your community.• Create a model or prototype of your solution.• Share your ideas, collect feedback, and iterate on your solution.• Communicate your solution at an event.

CARGO CONNECTSM 5



Placeholder for season launch video

Introduction

- Take notes in your Engineering Notebook.

Session 1

→ Introduction (10 minutes)

- Read pages 4-9 explaining how *FIRST*® LEGO® League Challenge works.
- Now that you have read about CARGO CONNECTSM, you are ready to get started.

→ Tasks (50 minutes)

- Open the SPIKE™ Prime or EV3 Classroom app. Find your lesson.

What are the four parts of *FIRST* LEGO League Challenge?

Our Notes:

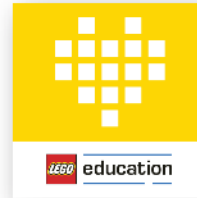
Robot Lesson 1

- Open the SPIKE™ Prime or EV3 Classroom app. Find your lesson.



Robot Trainer Unit: Moves and Turns

Complete the Getting Started activities before this session.



Getting Started: Start Here, Motors and Sensors

- Identify the building and coding skills you learned in the lesson that will help you solve missions.

Robot Lesson 1

Reflection Questions

- Can you use your fantastic coding skills to navigate your robot to a model on the mat?
- Can your robot already complete any of the missions?

Read over the *Robot Game Rulebook* for all the details on the missions.





Efficiency Project Spark



Being more efficient with the way we transport cargo is beneficial for many reasons.

How can you make the journey of cargo more efficient?

Think about...

- The cost of transporting cargo.
- The time it takes to transport cargo.
- The energy used to transport cargo.
- Ensuring cargo arrives undamaged.

The models you built this session relate to missions in the Robot Game that represent improving the efficiency of transporting cargo.

Efficiency Project Spark



- Build the Efficiency models in Bags 1-4 using Building Instruction Books 1-4.

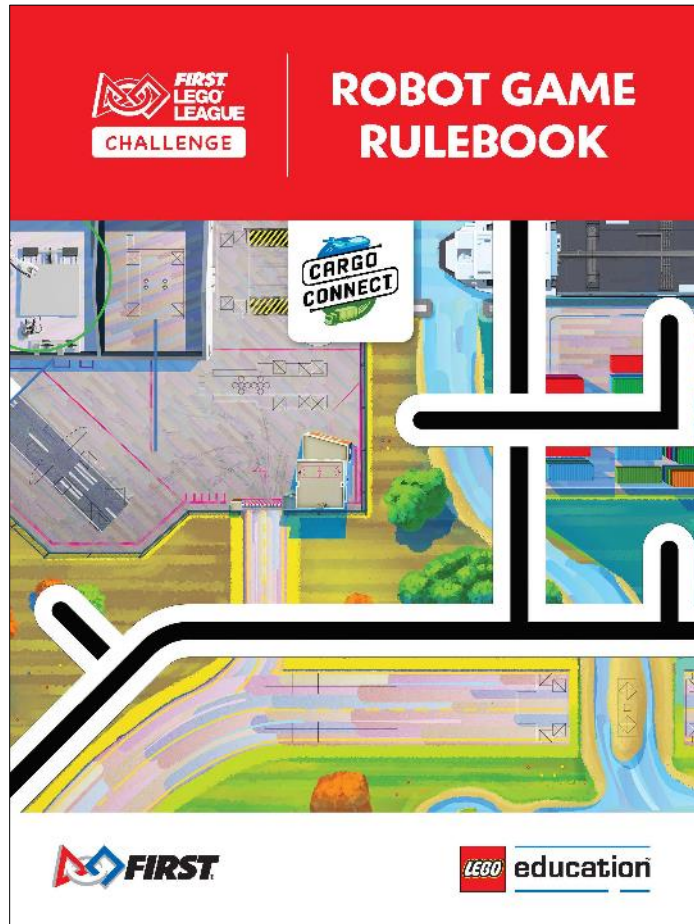
Mission Model Building Information



Scan QR code to go to the building instructions.

Bag Number	Bag Contents	Mission Number	Mission Name
EFFICIENCY MODELS – Build in Session 1			
1	2x platooning trucks	M13 / M15	Platooning Trucks Load Cargo
2	Switch engine	M05	Switch Engine
3	Hinged container Container contents 3x gray containers	M02 / M15 / M16	Unused Capacity Load Cargo CARGO CONNECT™
4	Doorstep Package	M11	Home Delivery

Efficiency Project Spark



- Check out the *Robot Game Rulebook*. This will be a great resource throughout the sessions.
- Review the missions that relate to the models you built.

Efficiency Project Spark



- Discuss how the mission models are linked to the Project Spark.
- Brainstorm and record your ideas that relate to this Project Spark.



Platooning Trucks

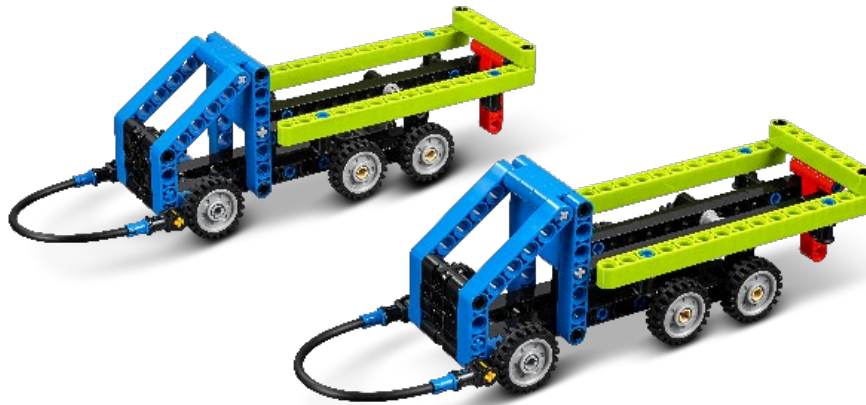


EFFICIENCY MODELS – Build in Session 1

1 2x platooning trucks

M13 / M15

Platooning Trucks
Load Cargo

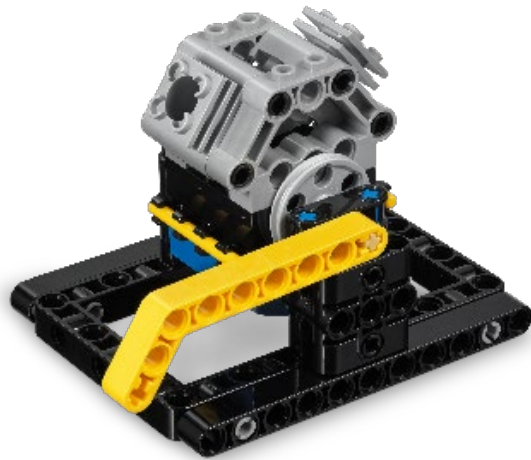




Switch Engine



2	Switch engine	M05	Switch Engine
---	---------------	-----	---------------



Shipping Containers



3 Hinged container
Container contents
3x gray containers

M02 / M15 / M16

Unused Capacity
Load Cargo
CARGO CONNECT™



Doorstep Package



4 Doorstep Package

M11

Home Delivery



Share

- Get together at the mat.
- Place each model where it belongs. Refer to the Field Setup section in the *Robot Game Rulebook*.
- Show the robot skills you learned.
- Show how the models work and explain how they relate to the Project Spark.
- Discuss the reflection questions.
- Clean up your space.



Reflection Questions

- Do any of the mission models make you think of good ideas for the Innovation Project?
- What could you create that would improve the efficiency of transporting a particular product?

Use the QR code on the mat to find the building instructions.





Clean Up



Career Connections

- Check out the careers highlighted on pages 34-35 of your *Engineering Notebook*.

