

# Engineering And Robotics Learned Young

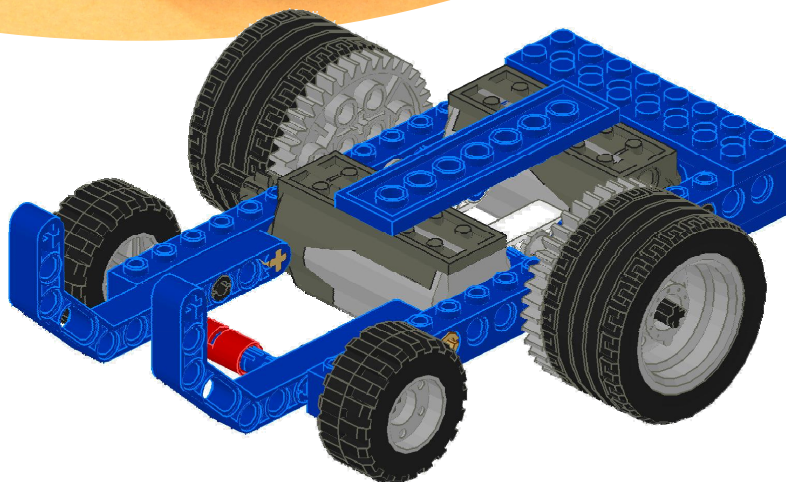
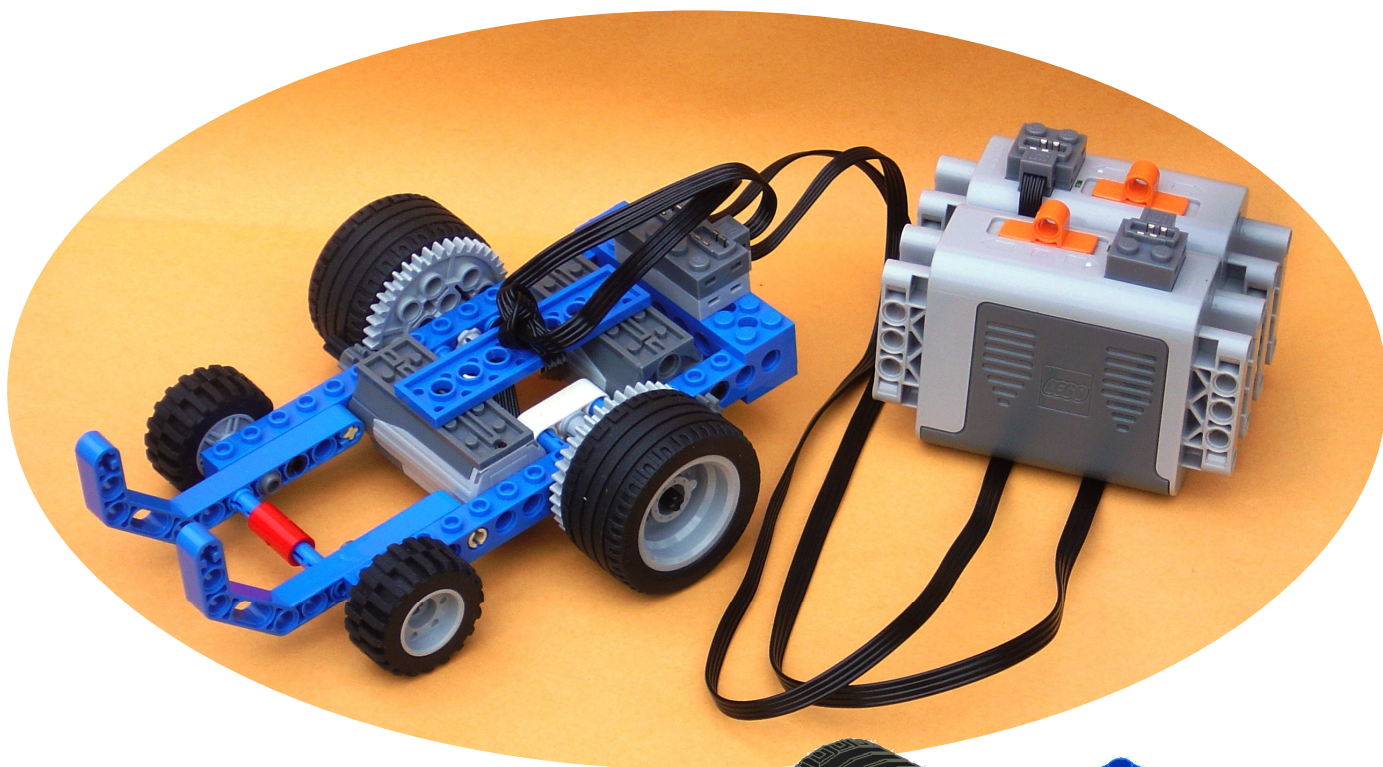
◆ EARLY ◆

## Basic Base

### Construction Instructions

EARLY is pleased to present *The EARLY Basic Base*, affectionately known as "BB". BB was designed to help teams "Get Moving!" and can be constructed from one Motorized Mechanisms kit using one additional motor. EARLY would like to thank the Moore Elementary Robotics Team for their inspiration and help in bringing BB to life along with their enthusiasm in sharing BB with all the EARLY teams.

Please contact [Mission.Control@EARLYrobotics.org](mailto:Mission.Control@EARLYrobotics.org) with any questions or comments. Thank you for maintaining the Spirit of EARLY!



1



One 1x16 Brick



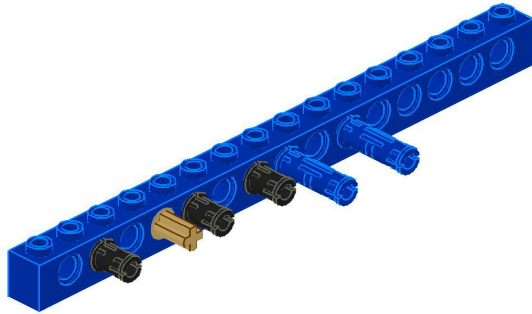
Three Pins



Two Long Pins



One Axle Pin



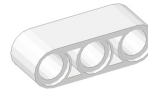
2



One 6 Unit Axle



One Bushing

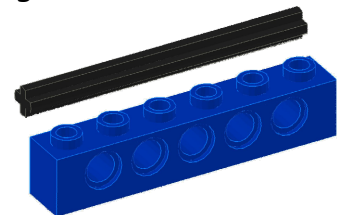


One 1x3 Liftarm

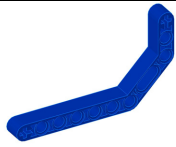


***EARLY Tip***

A "LEGO Unit" is a measure of length equal to the length between studs on a LEGO brick. So, a "6 Unit Axle" is the same length as a brick with six studs.



3



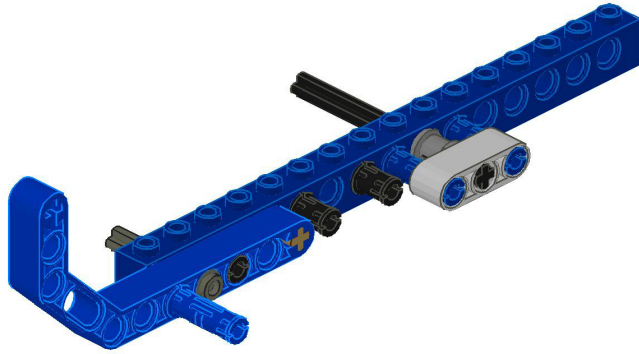
One 1x2x4x7 Liftarm



One 3 Unit Stud Axle



One Long Pin



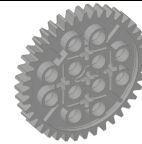
4



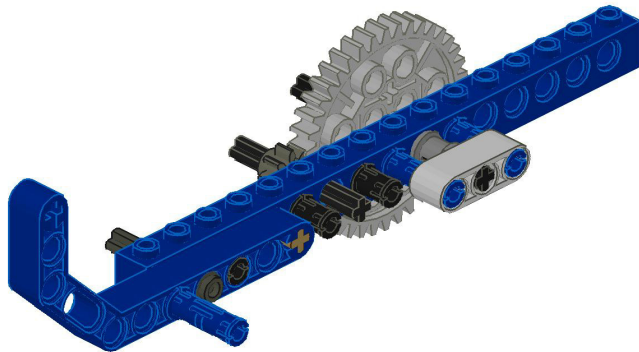
One 4 Unit Axle



One 8 Tooth Gear



One 40 Tooth Gear



5



One Small Wheel



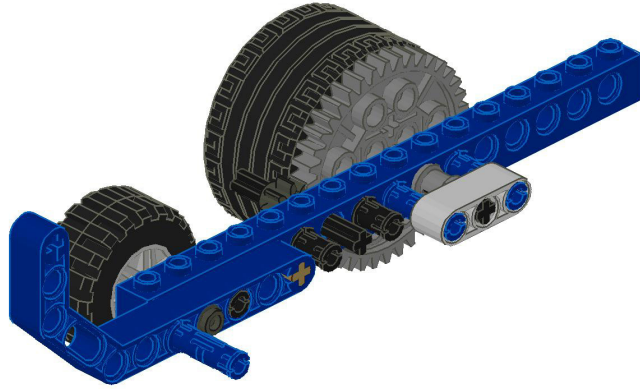
One Small Tire



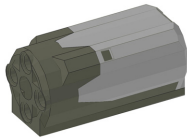
One Large Wheel



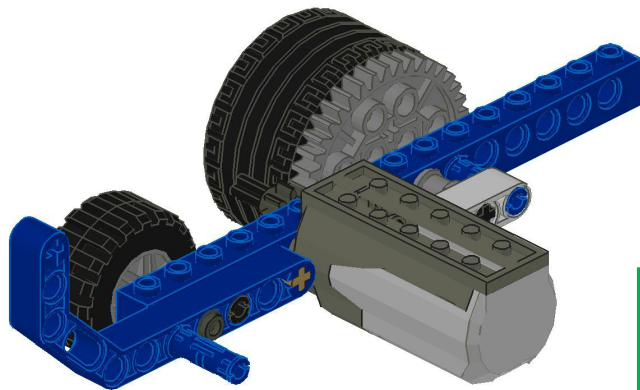
One Large Tire



6



One Motor



You've completed the **Right Assembly**. Set this assembly aside. The **Right Assembly** will be integrated in Step 14.

7



One 1x16 Brick



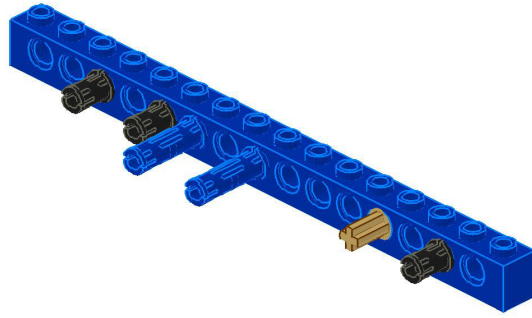
Three Pins



Two Long Pins



One Axle Pin



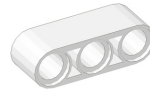
8



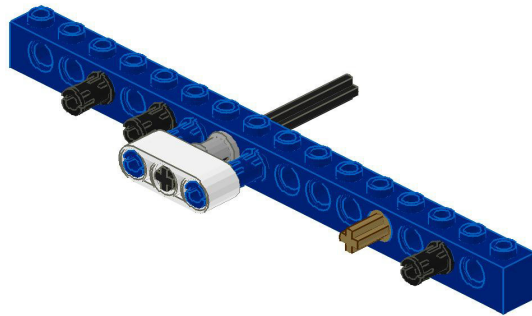
One 6 Unit Axle



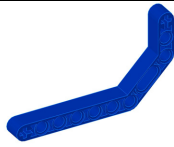
One Bushing



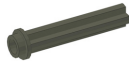
One 1x3 Liftarm



9



One 1x2x4x7 Liftarm



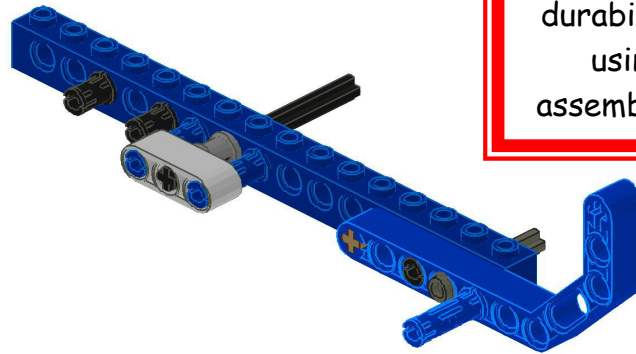
One 3 Unit Stud Axle



One Long Pin

***EARLY Tip***

To help your robot's durability, investigate using pins when assembling your robot.



10



One 4 Unit Axle



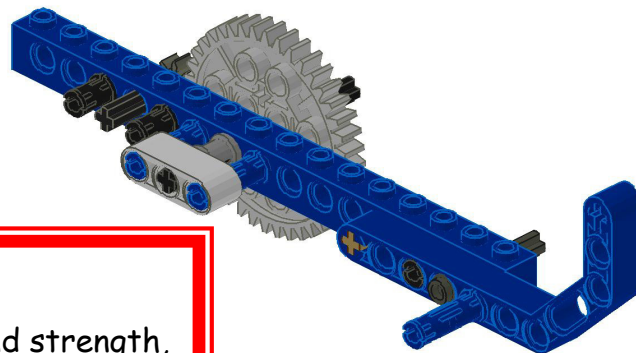
One 8 Tooth Gear



One 40 Tooth Gear

***EARLY Tip***

To tune your robot's speed and strength, try different gears. Performing many tests will help you tune your robot.



11



One Small Wheel



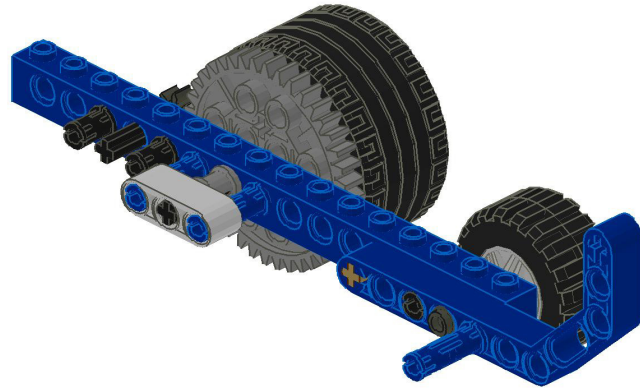
One Small Tire



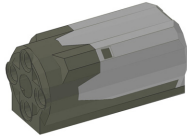
One Large Wheel



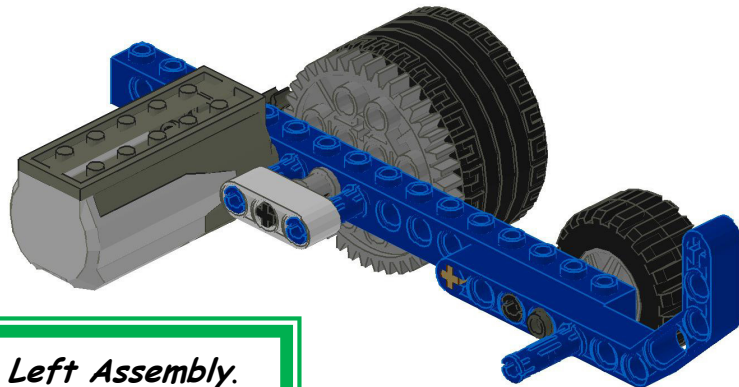
One Large Tire



12

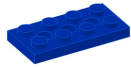


One Motor



You've completed the *Left Assembly*.  
Set this assembly aside. The *Left Assembly* will be integrated in Step 15.

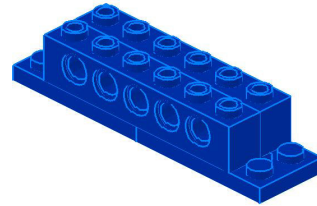
13



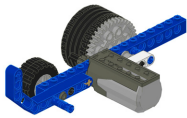
Two 2x4 Plates



Two 1x6 Bricks



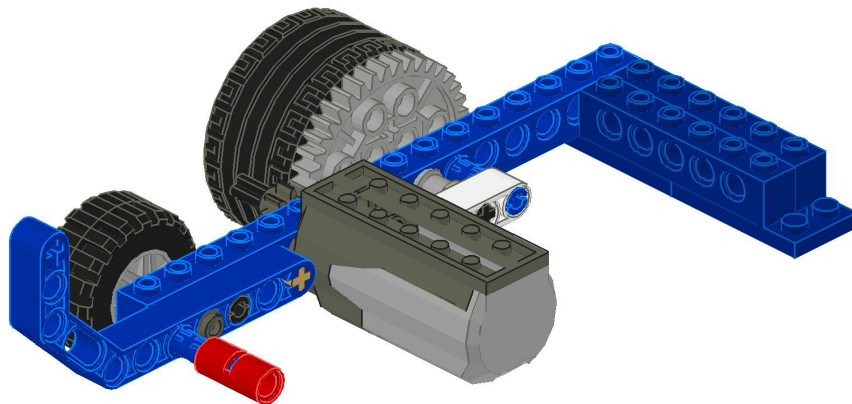
14



Right Assembly

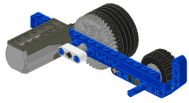


One Spacer

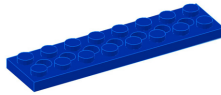




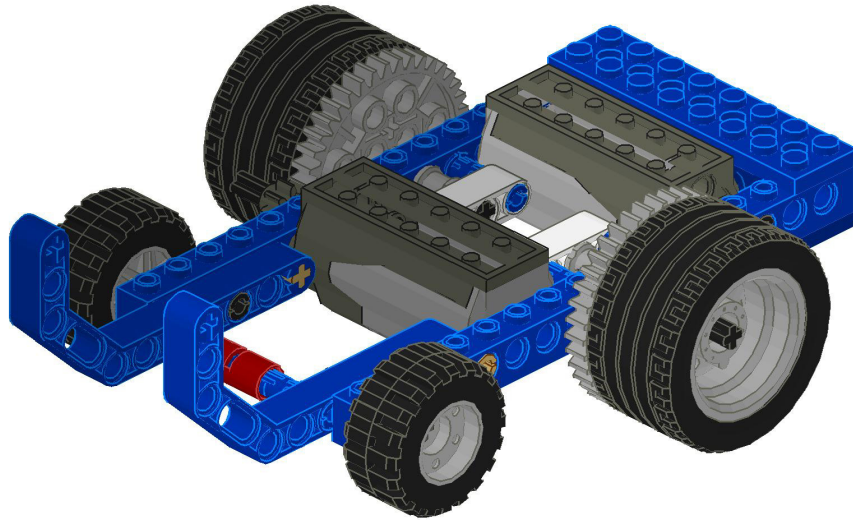
15



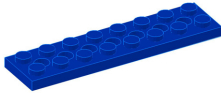
Left Assembly



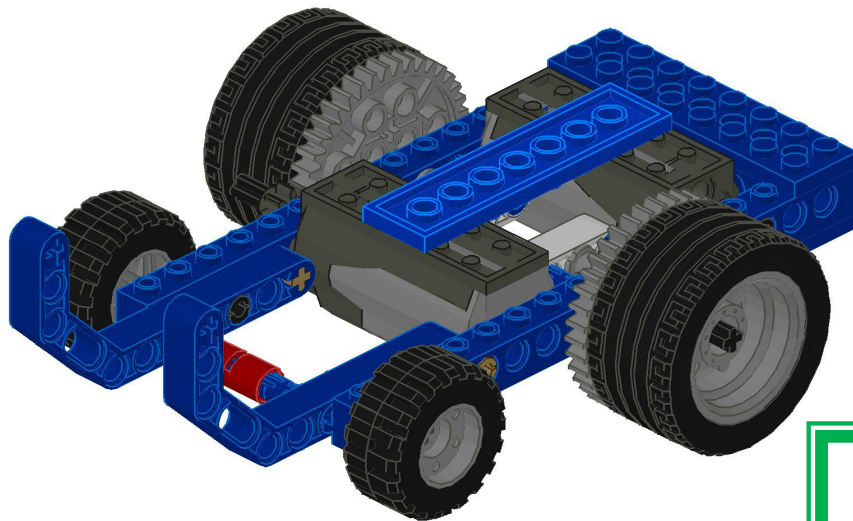
One 2x8 Plate



16



One 2x8 Plate



You're ready to  
Get Moving!

Congratulations, you now have a BB! To "Get Moving!", just connect two controllers to the motors using long wires. Have FUN!

Please contact [Mission.Control@EARLYrobotics.org](mailto:Mission.Control@EARLYrobotics.org) with any questions or comments. Thank you for maintaining the Spirit of EARLY!

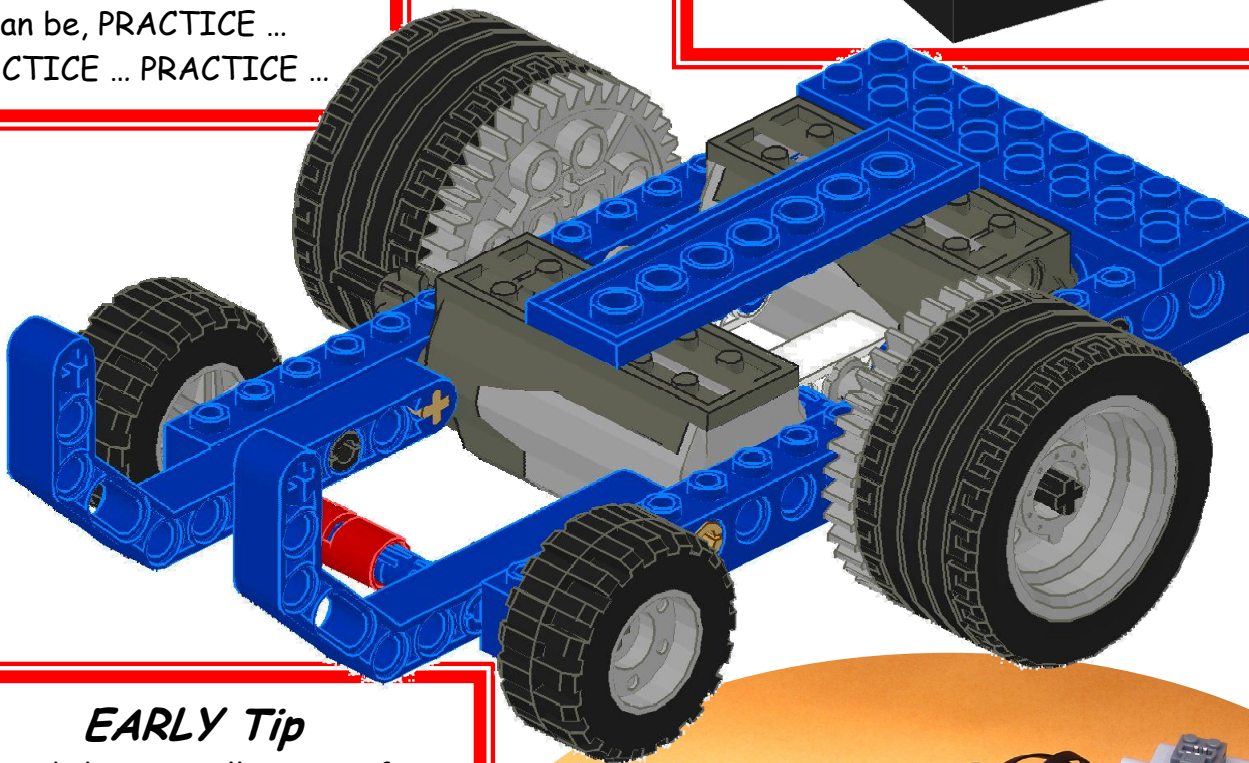
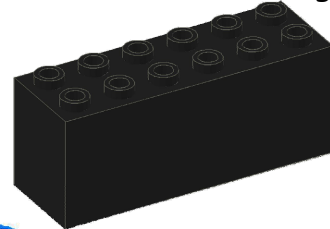
### ***EARLY Tip***

To make the best robot you can, use the engineering process: Design, Build, Test ...  
Design, Build, Test ...  
Design, Build, Test ...

To make your robot the best it can be, PRACTICE ...  
PRACTICE ... PRACTICE ...

### ***EARLY Tip***

To help your robot steer well, keep the center-of-gravity near the drive wheels. The weighted bricks can be used to help move your robot's center-of-gravity.



### ***EARLY Tip***

To avoid the controller wires from rubbing on the ground, becoming tangled with your robot, or interfering with the controller switches, carefully plan the wire routes and secure the wires. Remember, an EARLY robot may have up to six 20" extension wires.

