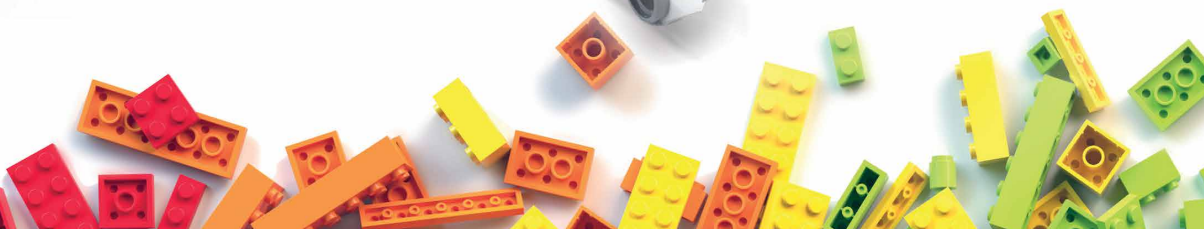


POWER YOUR BUILDS

MECHS MOVE!

MULTI-CREATURE MOBILITY LAUNCH KIT



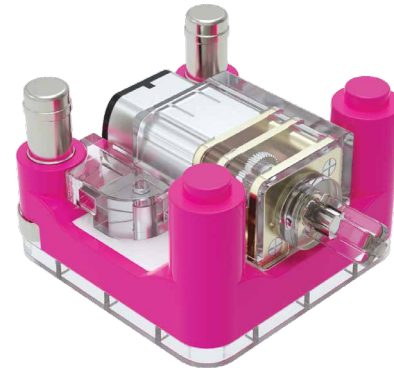
**circuit
CUBES**

HELLO CUBES!

Bring your toys to life with Circuit Cubes, the electronic building blocks that add power, motion, and light to your creations. Designed by STEM teachers, Circuit Cubes can turn a light on, power a motor, or make wheels spin — plus, they work with your LEGO® bricks.

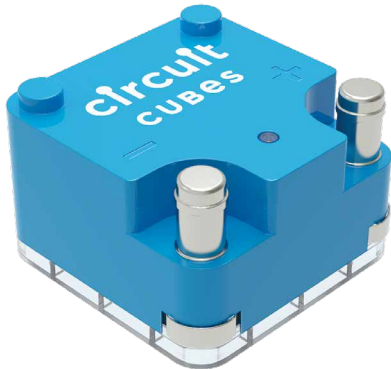
MOTOR CUBE

A perfect fit for your LEGO® gears and wheels, this mighty little motor actually rotates at more than 1,000 RPM (rotations per minute), but the tiny gears attached to the motor shaft reduce the rotations to about 100 RPM. This ensures maximum torque to turn the wheels or gears of your projects.



BATTERY CUBE

The standard battery Cube is the power for your circuit. It has a positive and negative terminal. Just turn on the switch to power your creation and it's rechargeable too. If the LED on the top of your cube is flashing red then you have caused a short circuit and power output is disabled to allow you to troubleshoot the circuit.



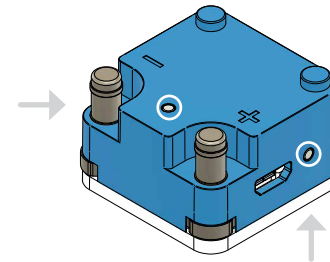
CHARGING!

Unplugged (top light)

- ● = ON
- ● + ● = short circuit

Plugged (side light)

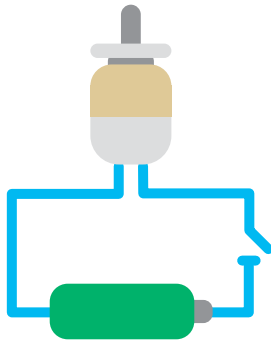
- ● = charging
- ● = charge complete



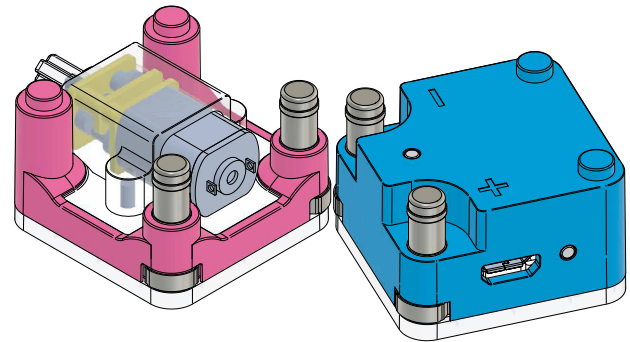
LET'S CONNECT

POLARITY

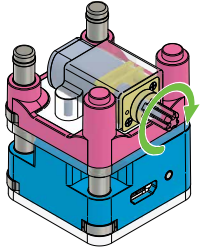
You won't find +/- signs on the Motor Cube because direct current (DC) motors, like this one, can accept current in both directions. If you wire it up one way, it will rotate in one direction. Flip your wires and it will spin in the opposite direction.



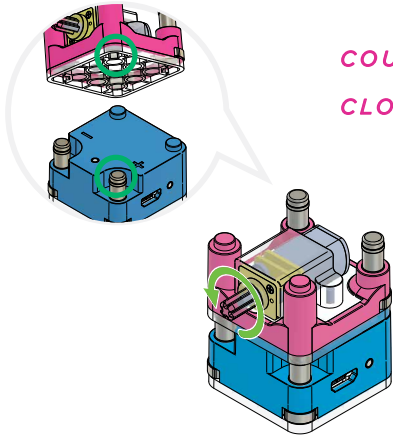
MAGNETIC



CONTACT

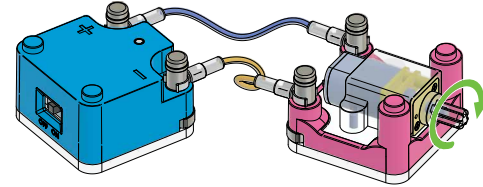


CLOCKWISE

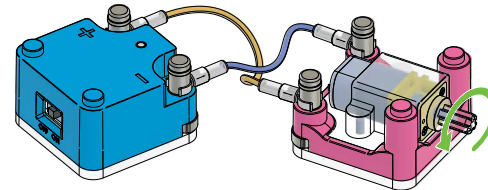


*COUNTER
CLOCKWISE*

WIRE



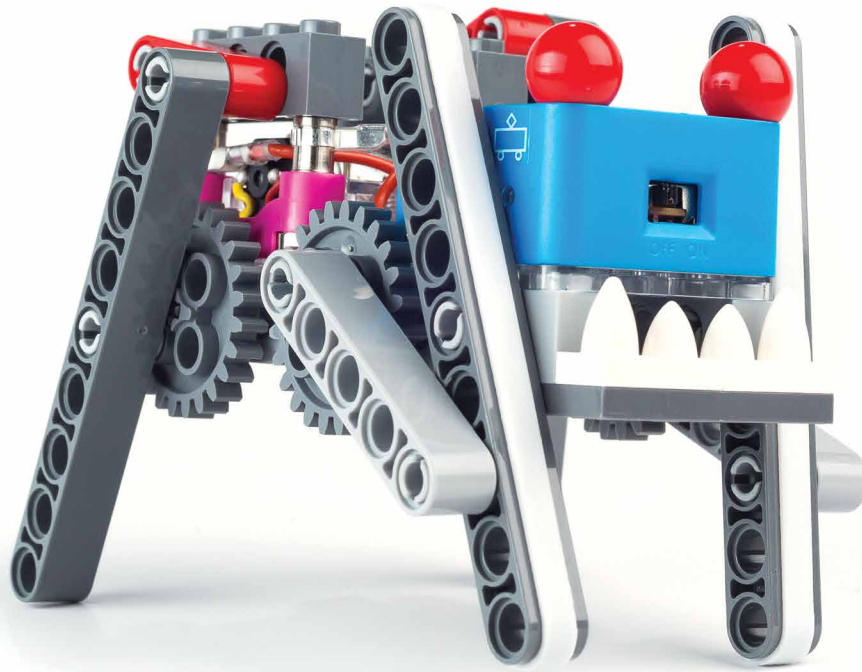
CLOCKWISE



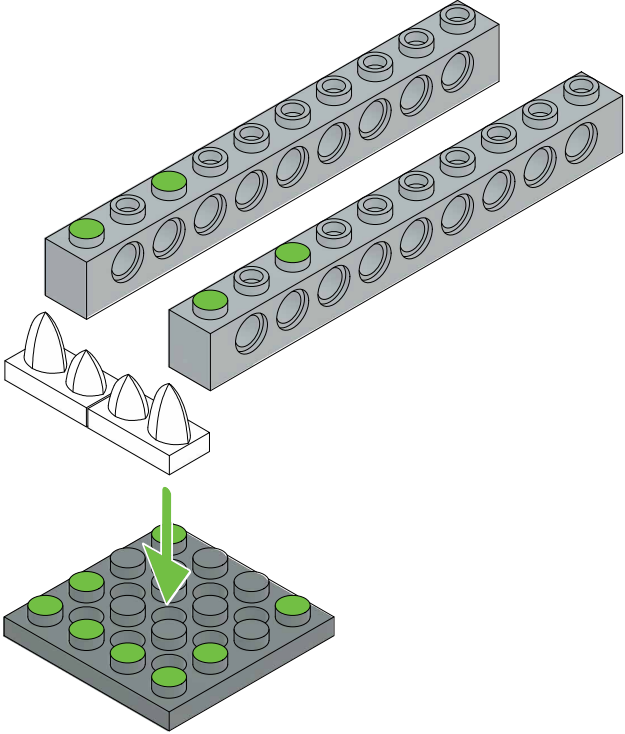
COUNTER-CLOCKWISE

STRETCH

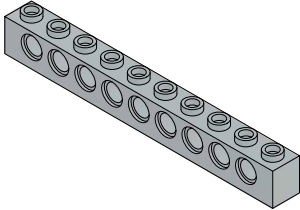
A LOOPY, LEGGY, TOOTHY PROWLER



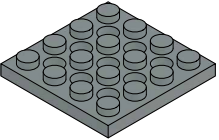
1



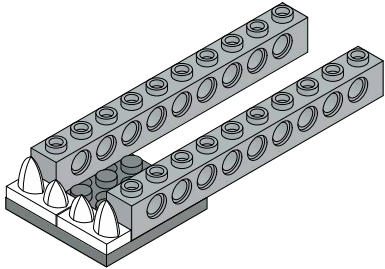
2



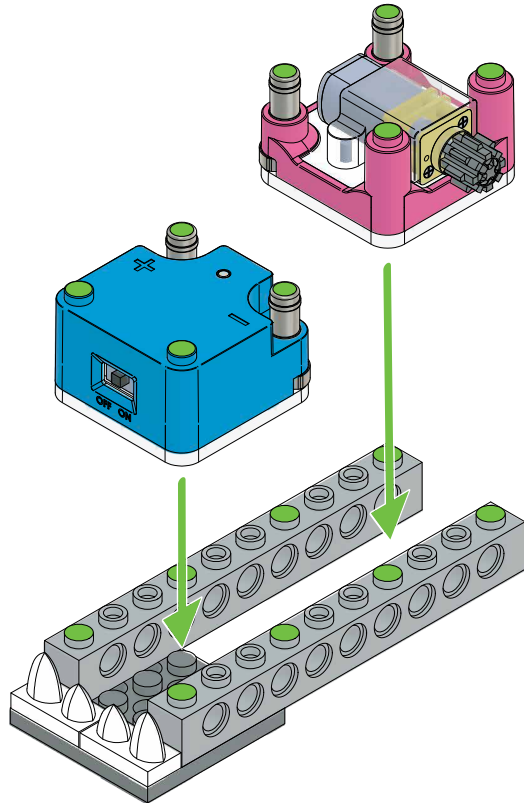
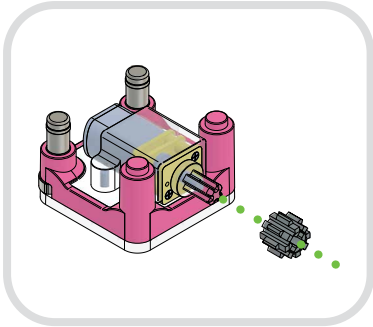
1



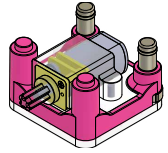
2



2



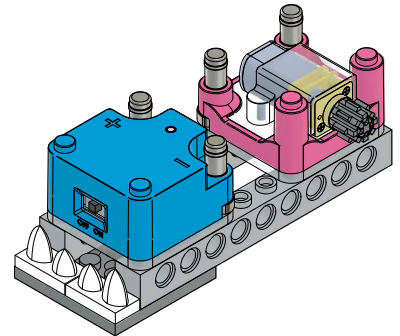
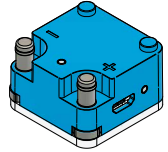
1



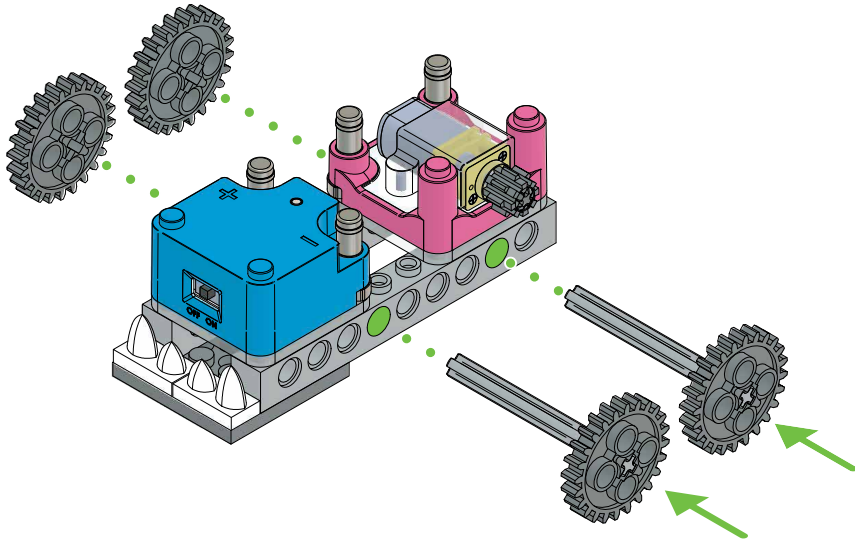
1



1



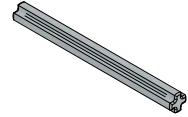
3



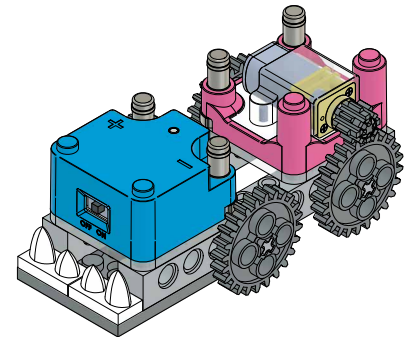
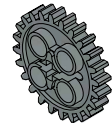
1:1 SCALE



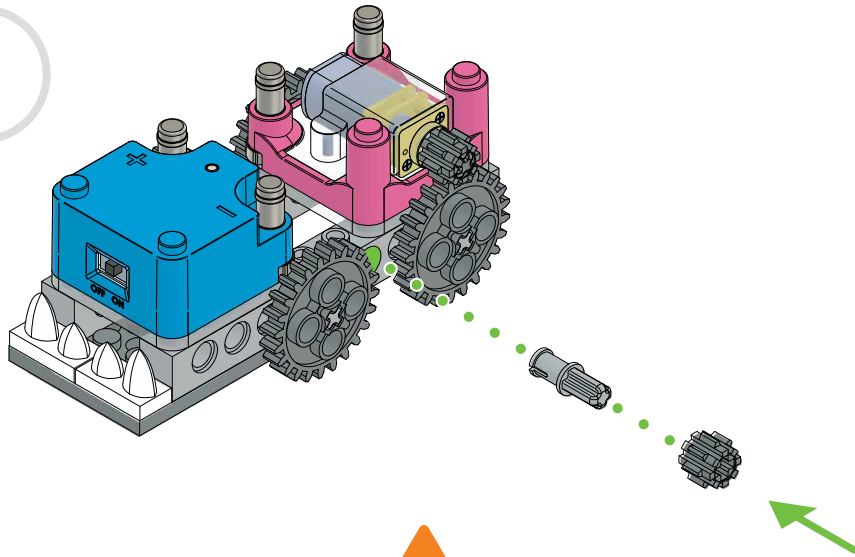
2



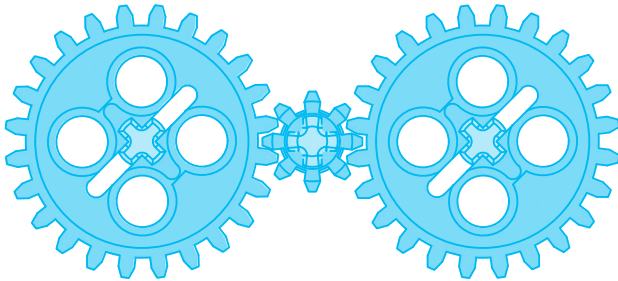
4



4



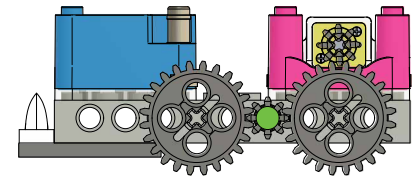
CHECK GEAR ALIGNMENT



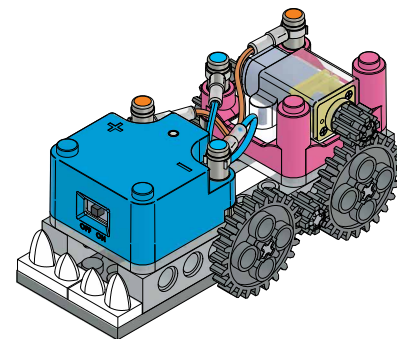
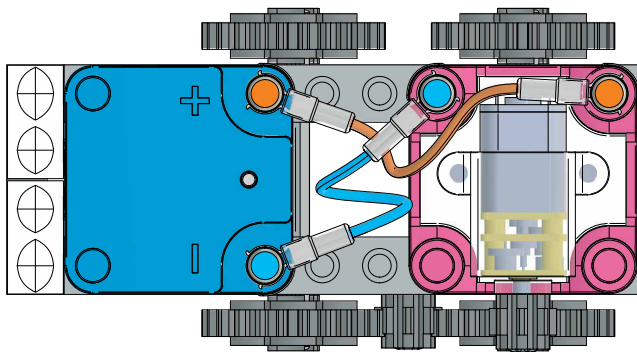
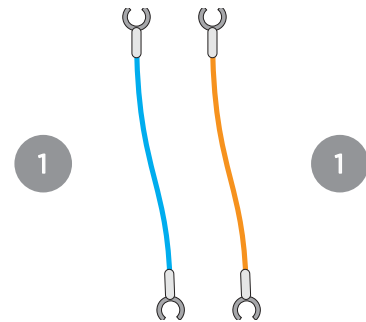
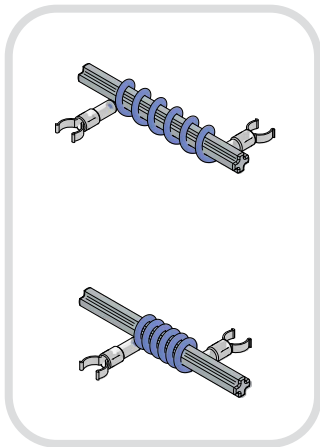
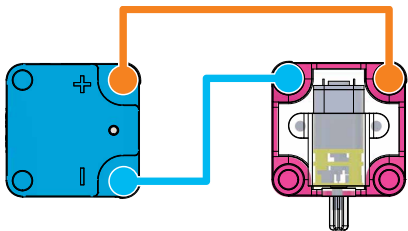
1



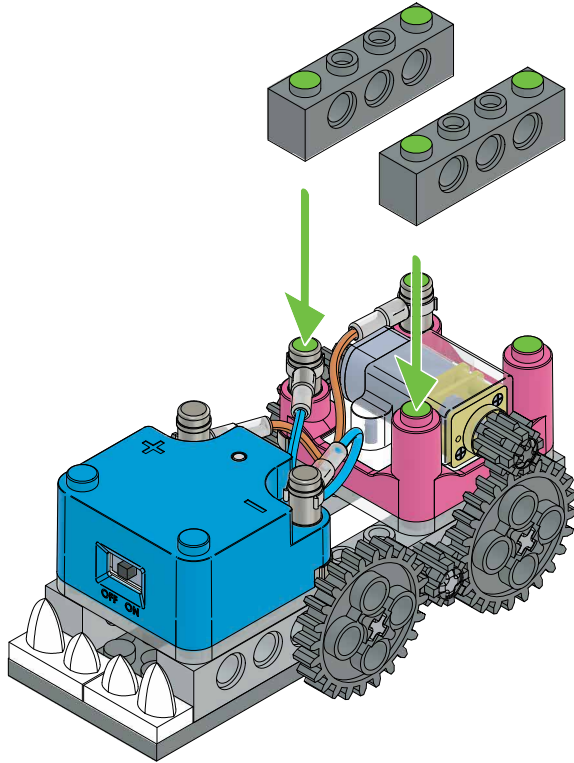
1



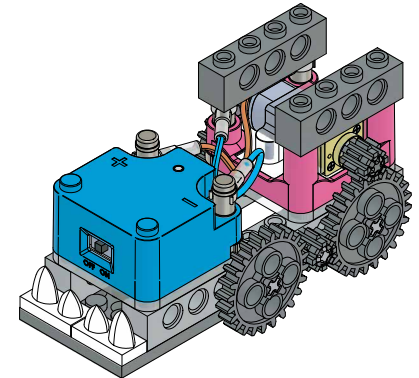
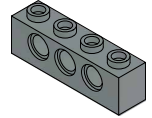
5



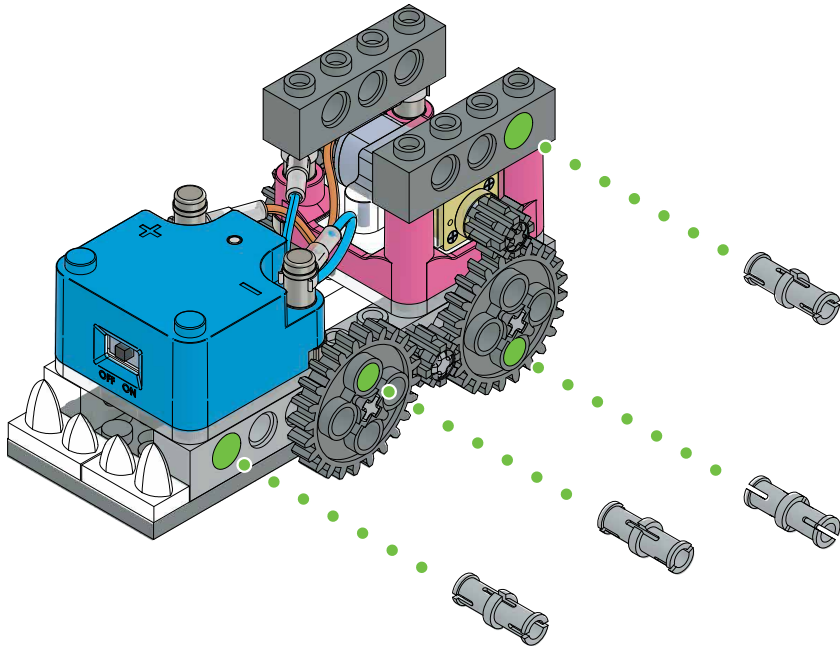
6



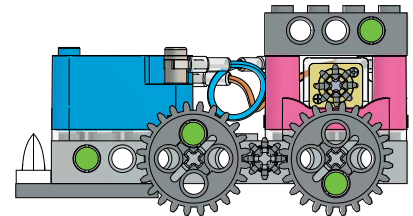
2



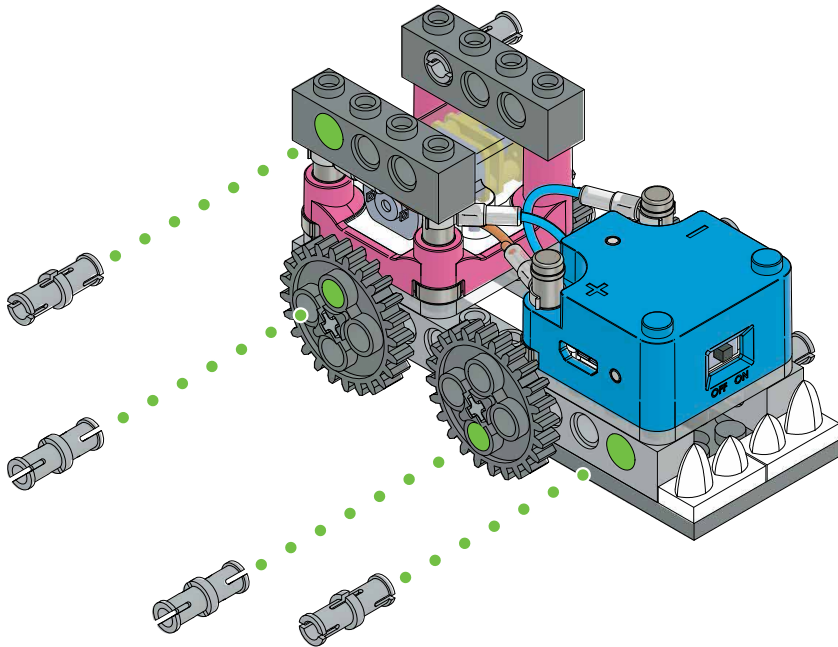
7



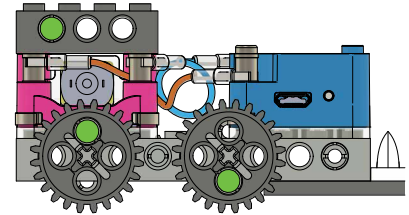
4



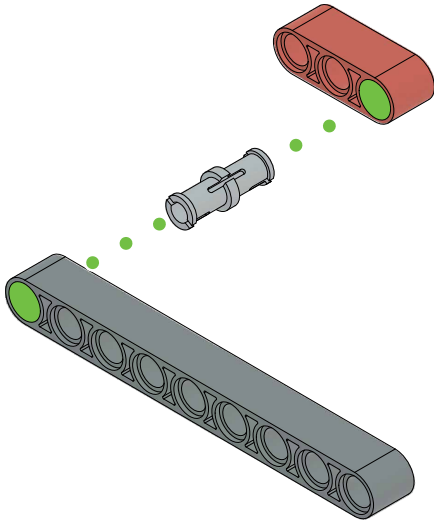
8



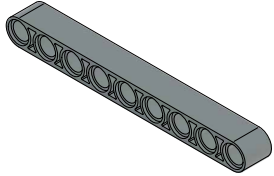
4



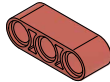
9



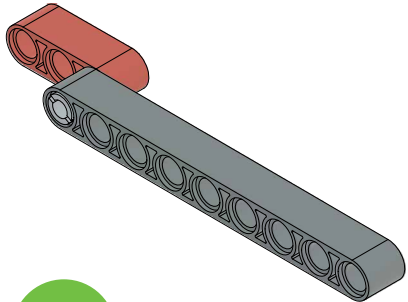
2



2

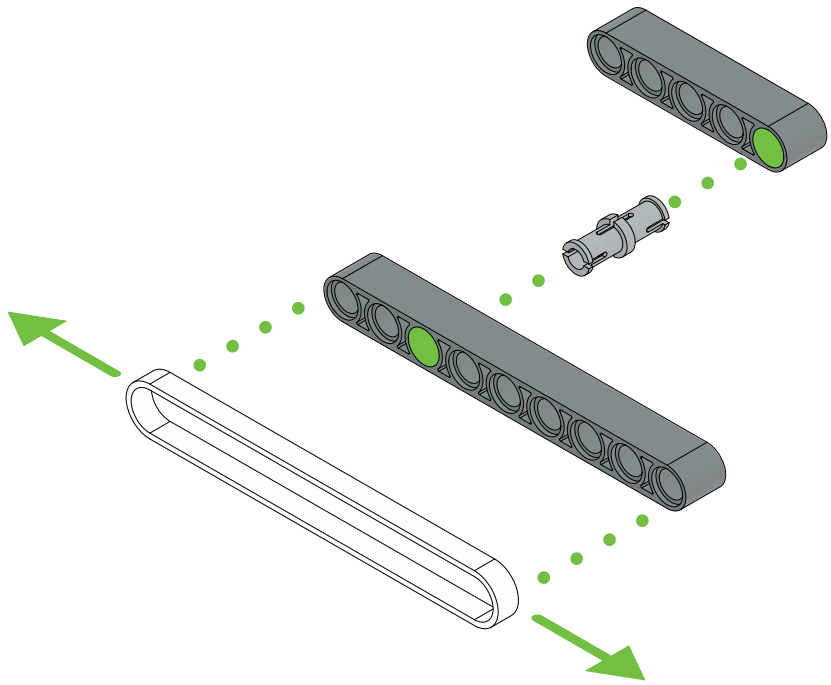


2

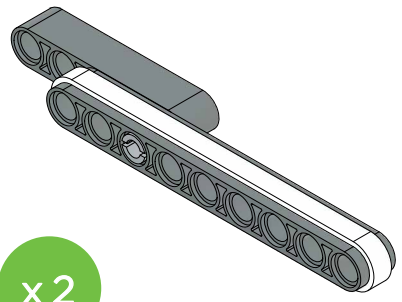


x 2

10

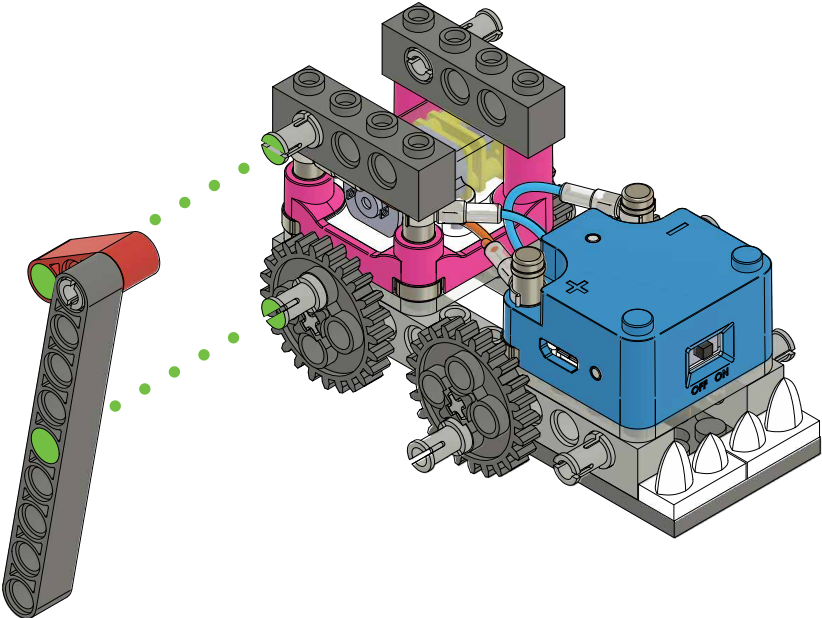


- 2
- 2
- 2
- 2

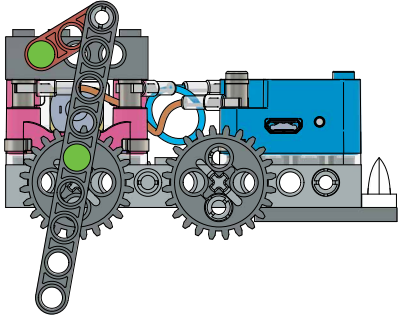
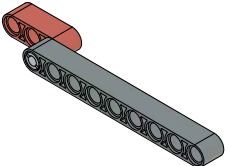


x2

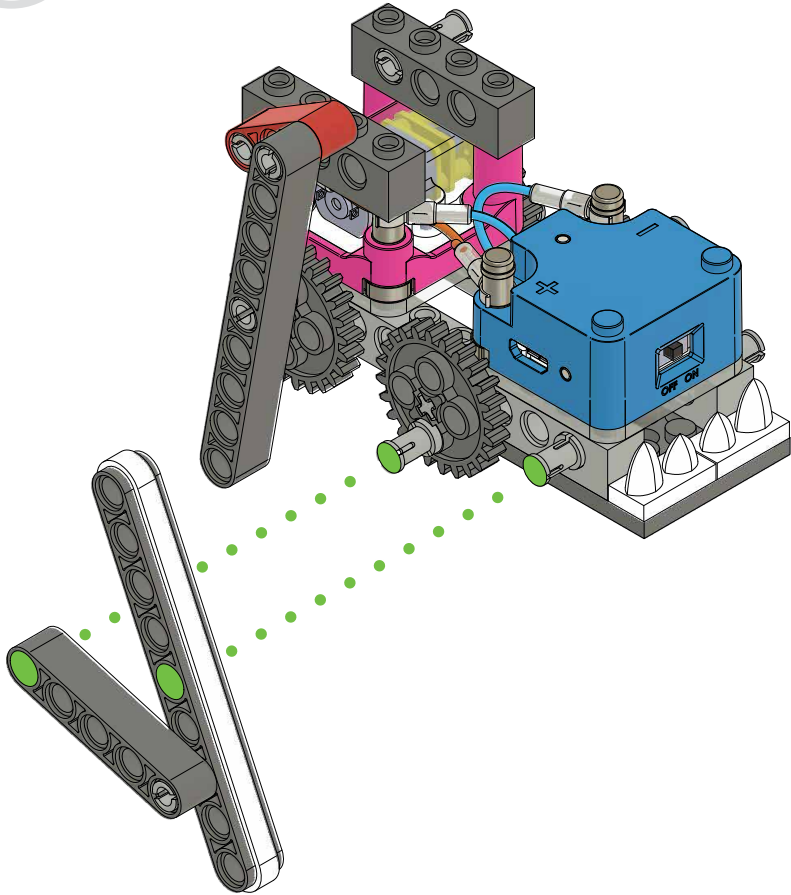
11



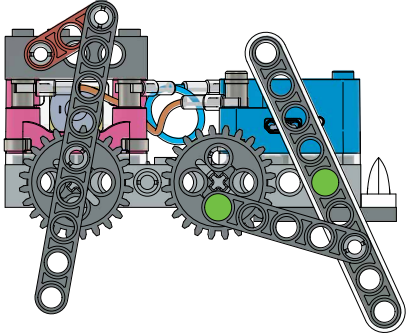
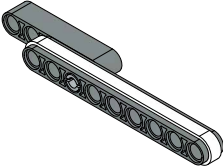
1



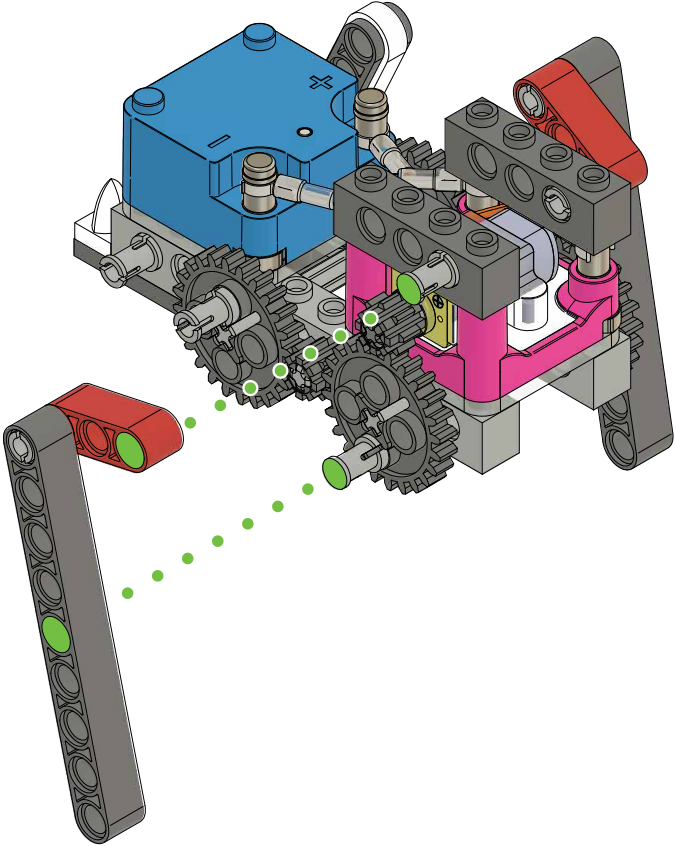
12



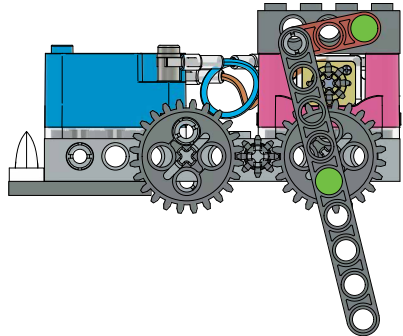
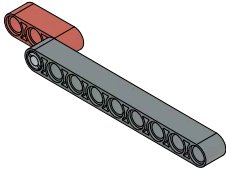
1



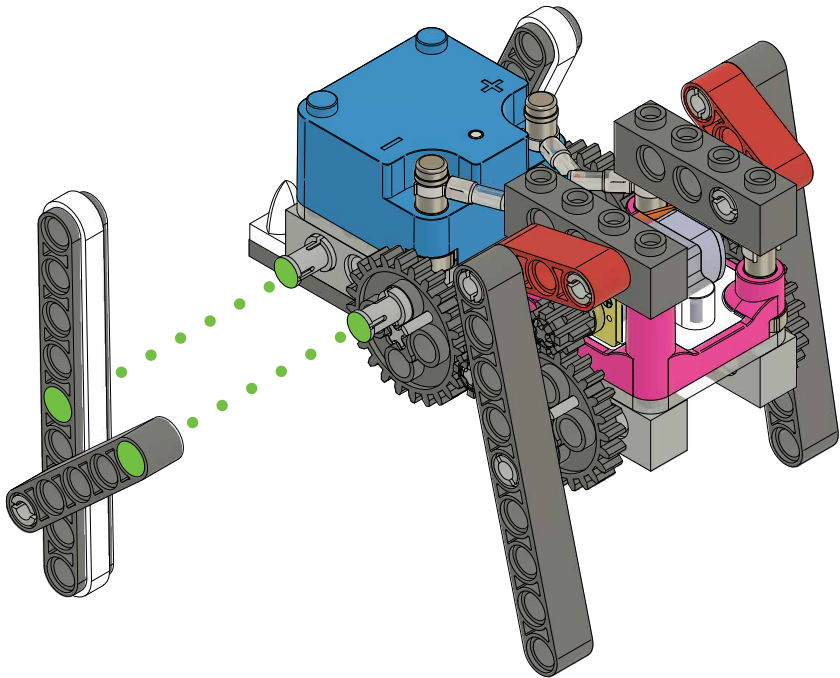
13



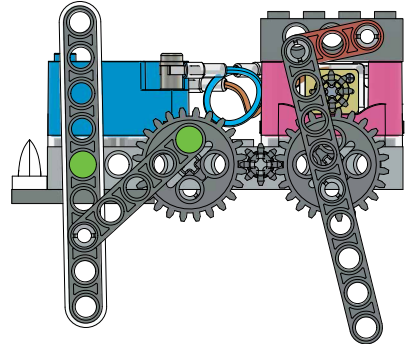
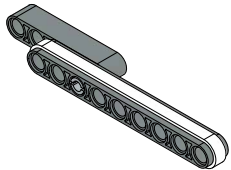
1



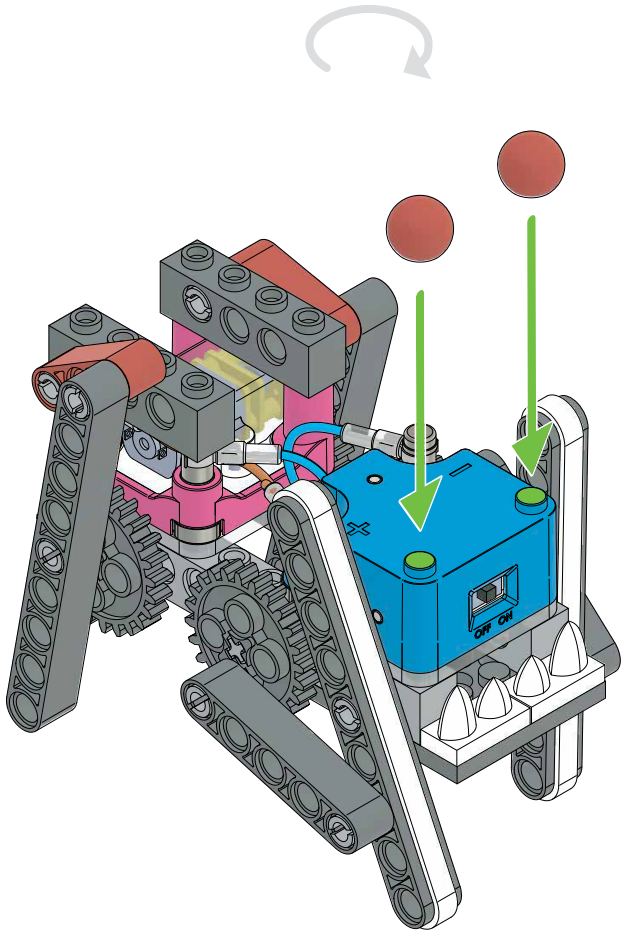
14



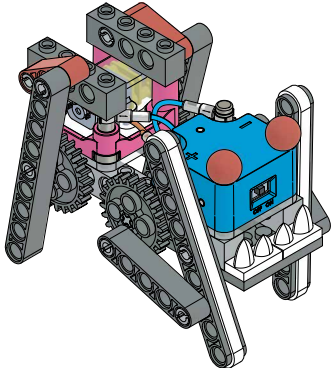
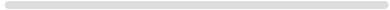
1



15



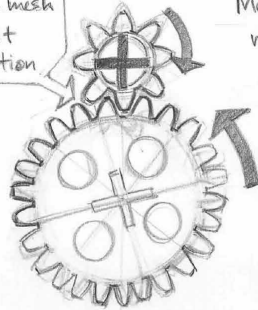
2



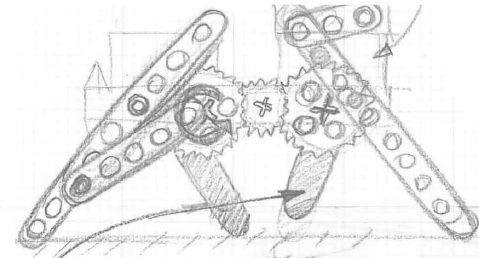
STRETCH

A LOOK AT THE GEAR TRAIN

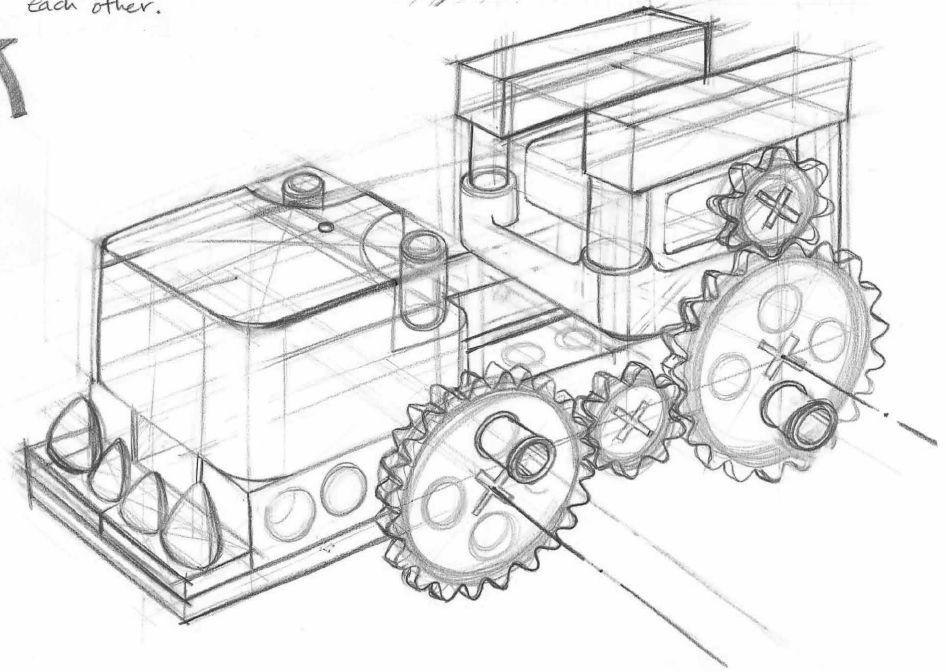
Gear teeth mesh to transmit force & motion.

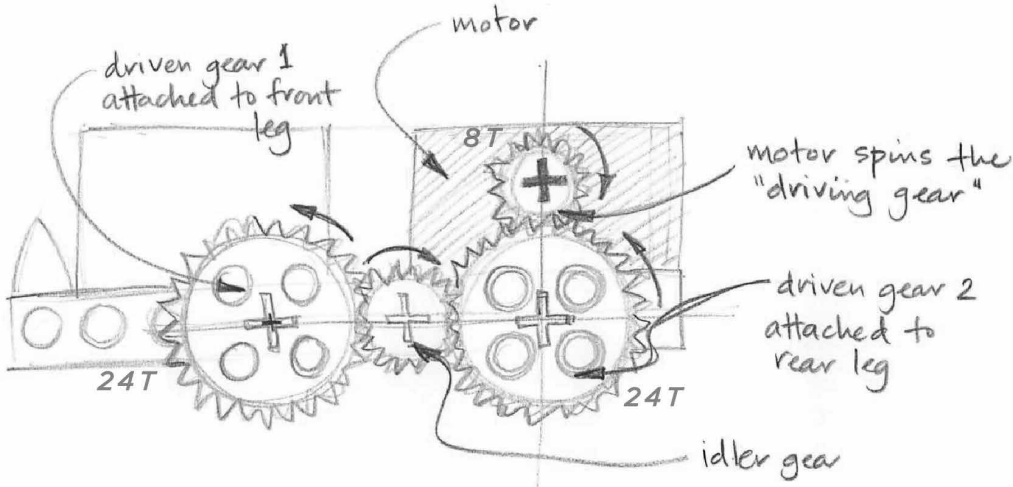


Meshed gears rotate opposite each other.



The gear train is the set of gears that moves the legs.

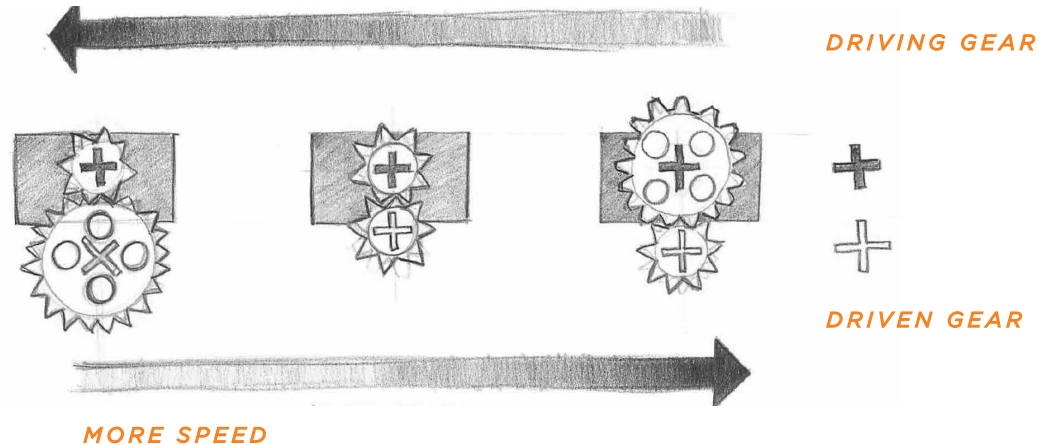




An 8-tooth gear attached to the motor spins two 24-tooth driven gears, separated by an idler. The idler gear ensures the driven gears rotate in the same direction.

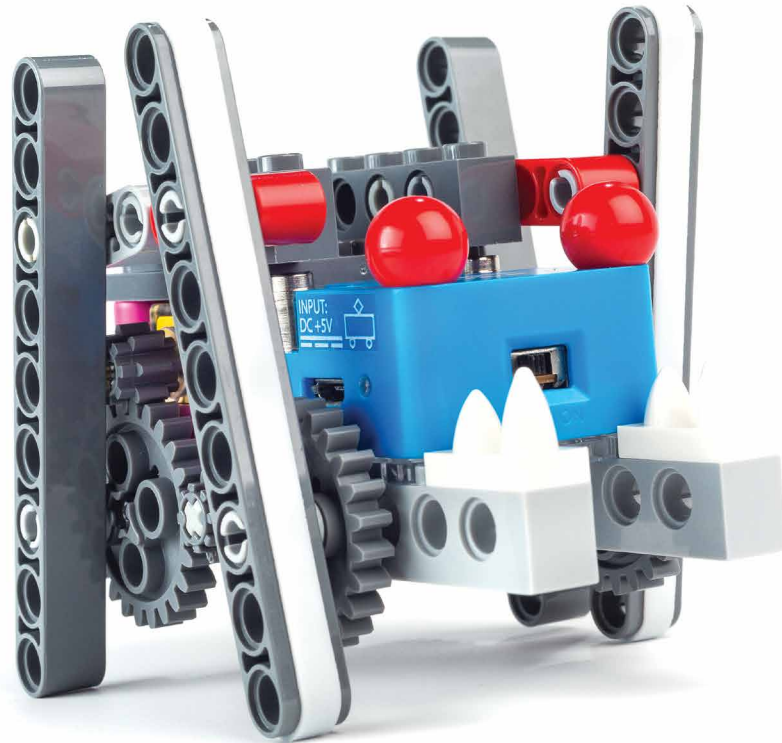
MORE TORQUE

Equal size gears will spin at the same rate with the same torque. Mismatched gears will either speed up or increase the torque, but never both.

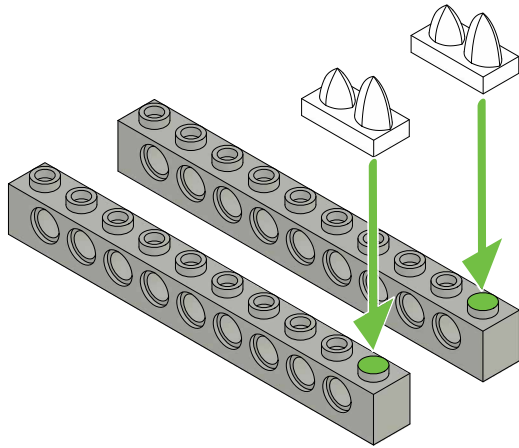


STOMPER

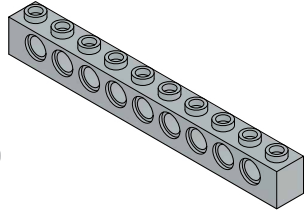
A BITTY BULLDOG 'BOT WITH CHOPS



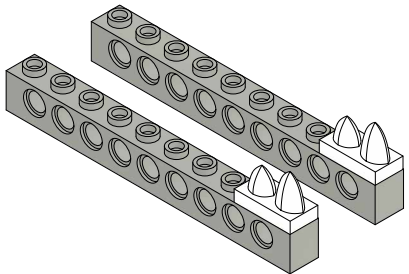
1



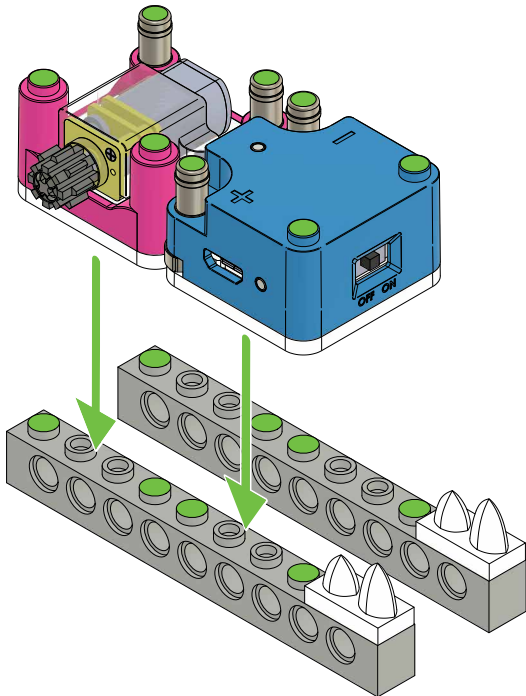
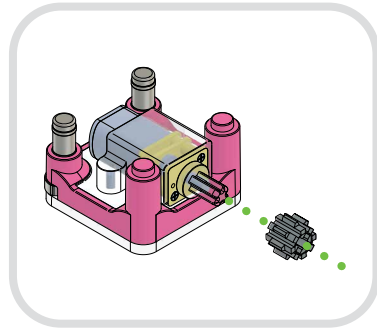
2



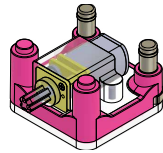
2



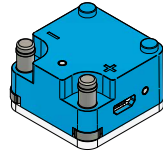
2



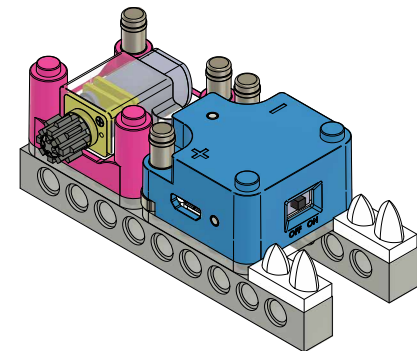
1



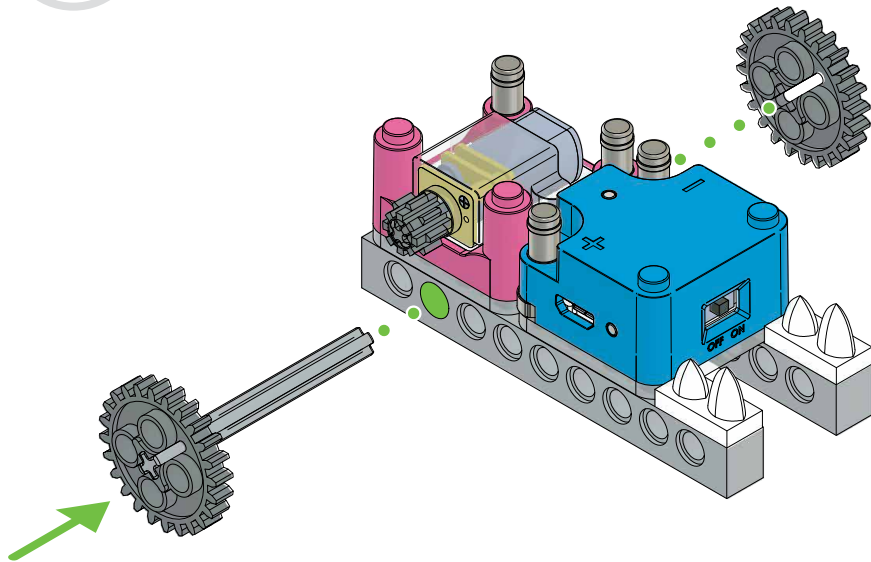
1



1



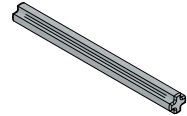
3



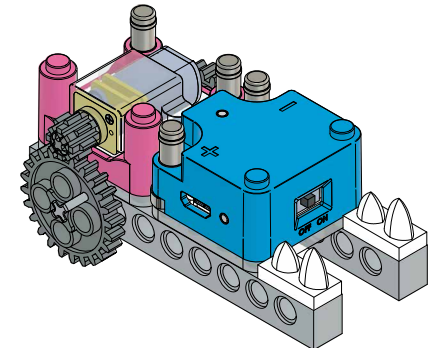
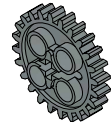
1:1 SCALE



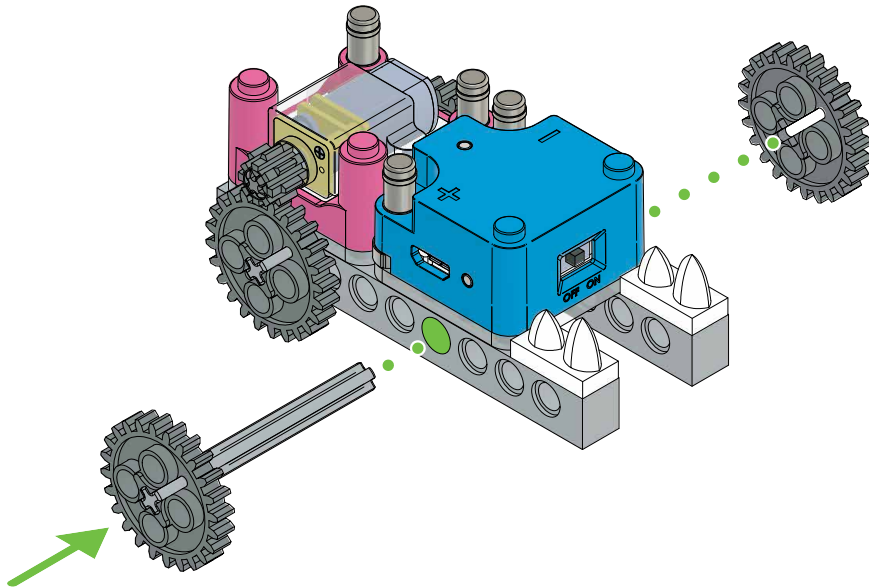
1



2



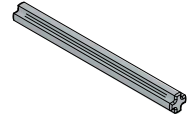
4



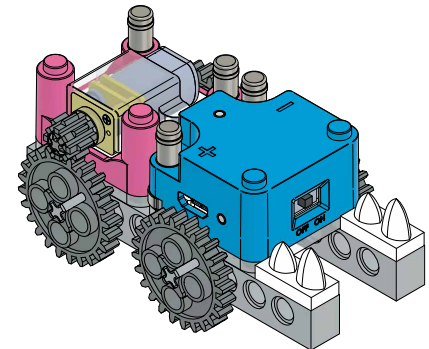
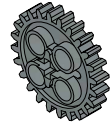
1:1 SCALE



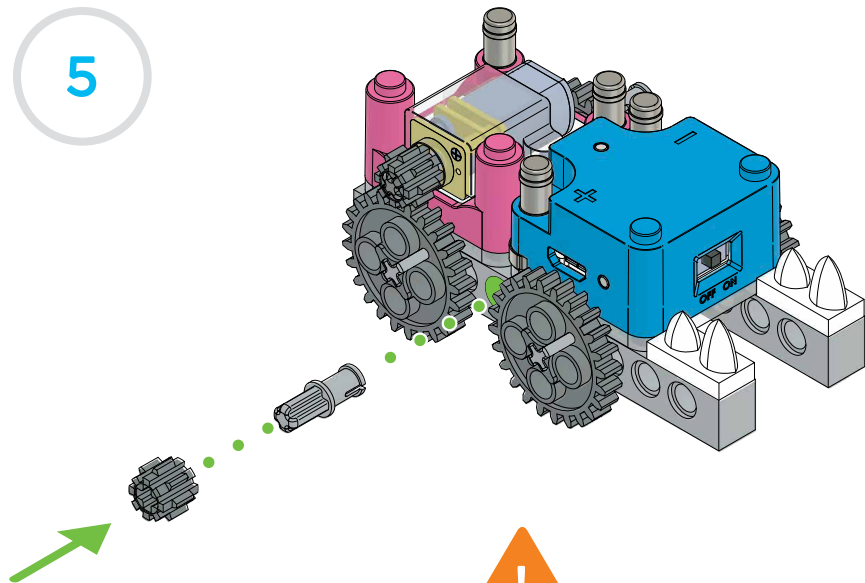
1



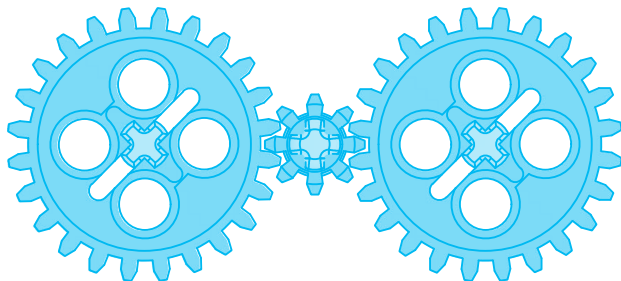
2



5



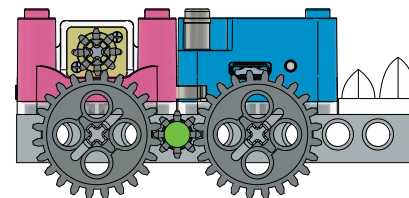
CHECK GEAR ALIGNMENT



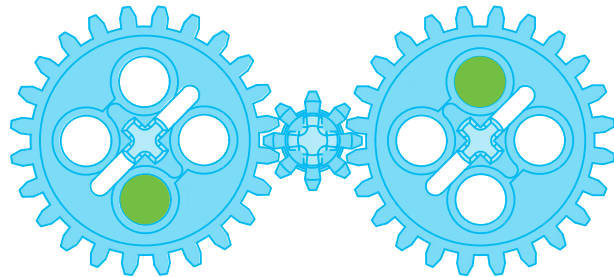
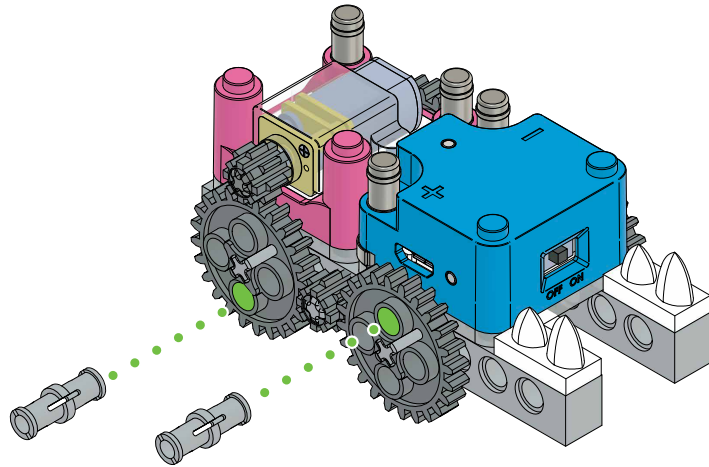
1



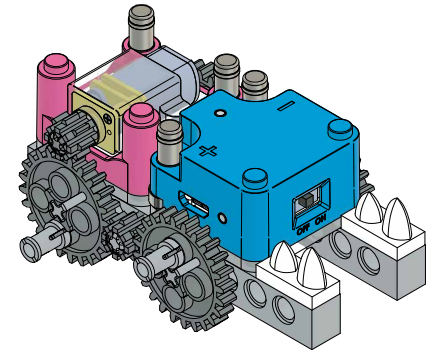
1



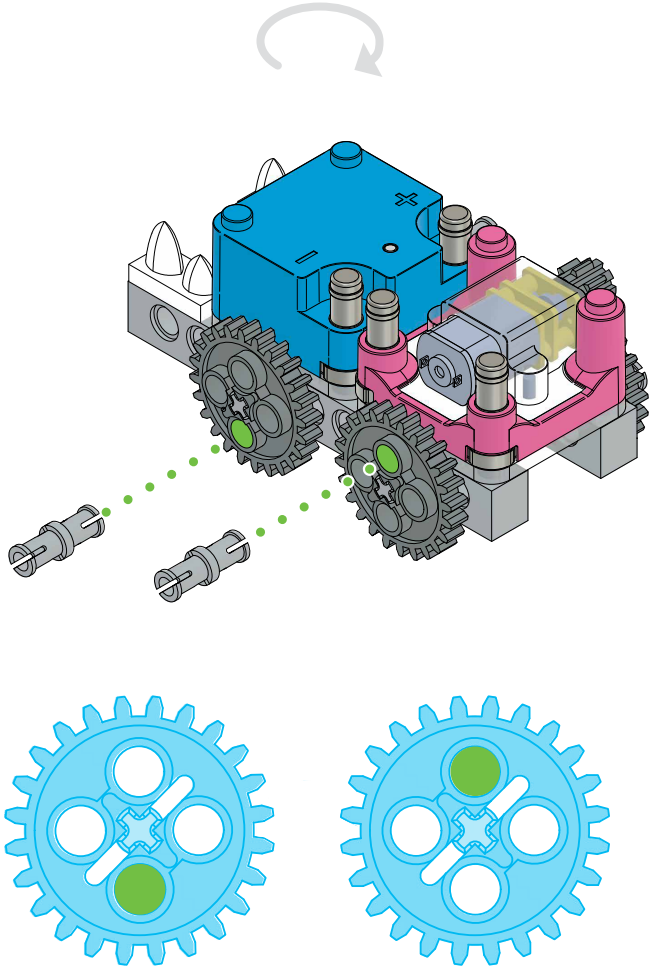
6



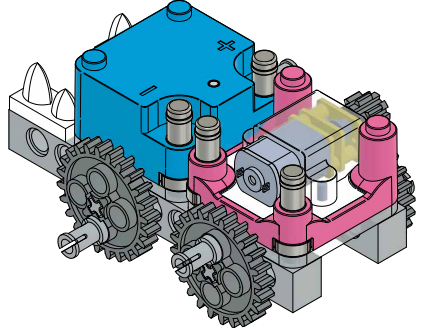
2



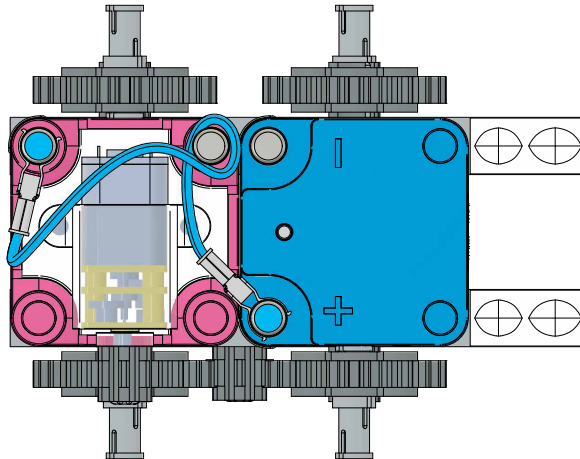
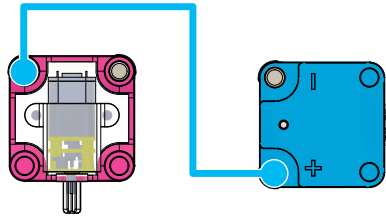
7



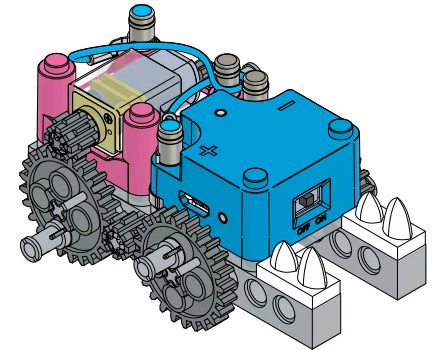
2



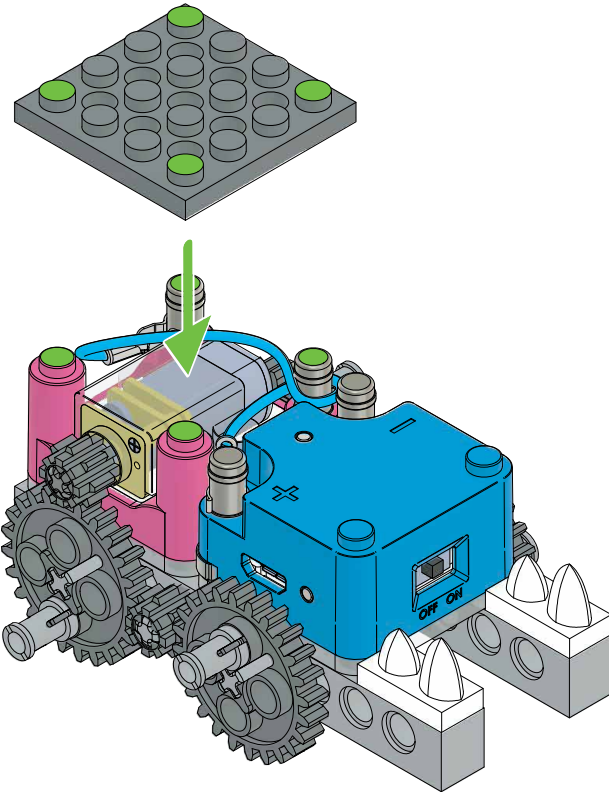
8



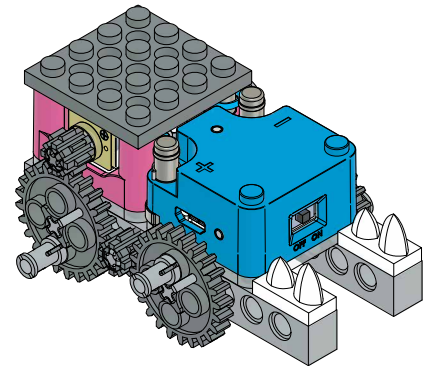
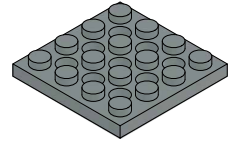
1



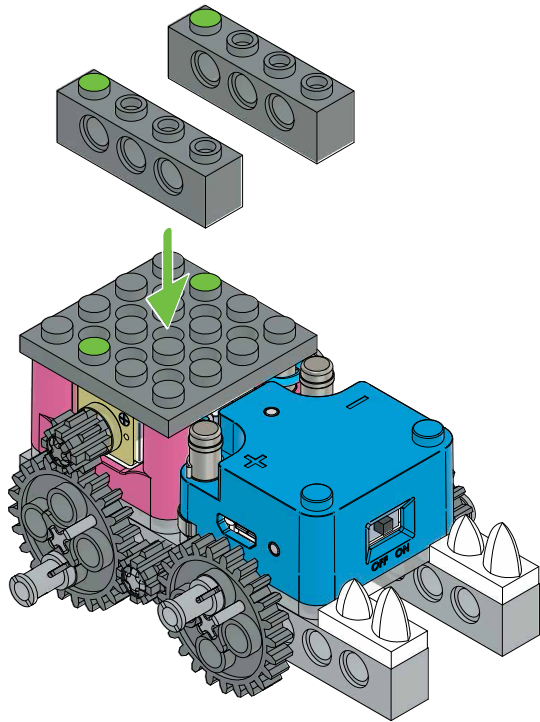
9



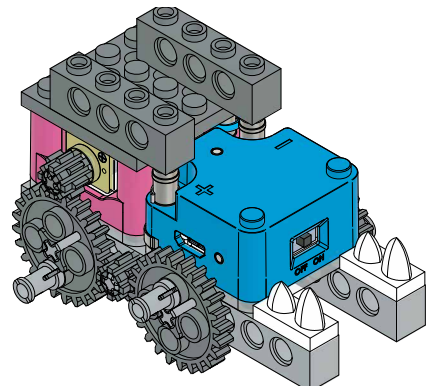
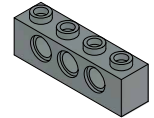
1



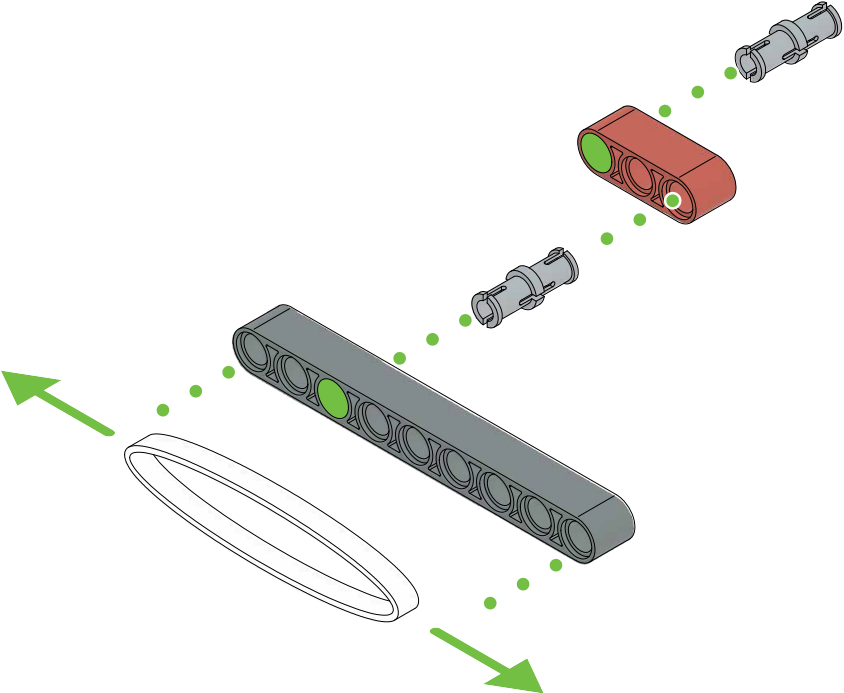
10



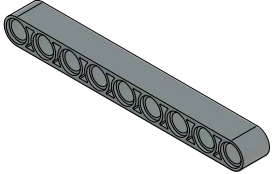
2



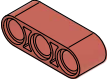
11



2



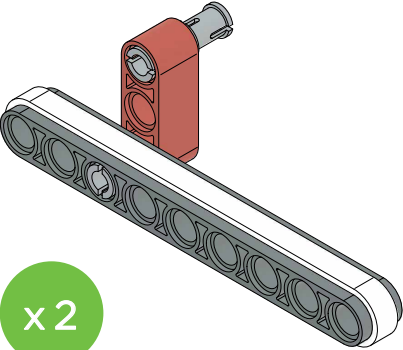
2



2

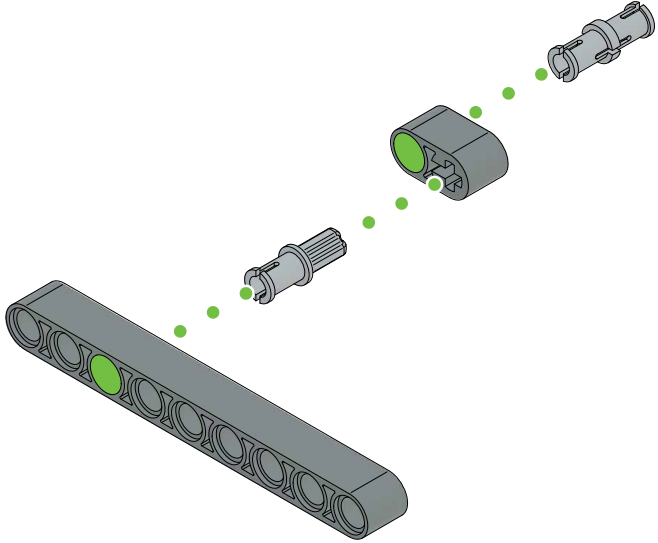


4

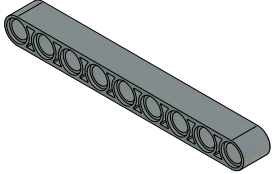


x2

12



2



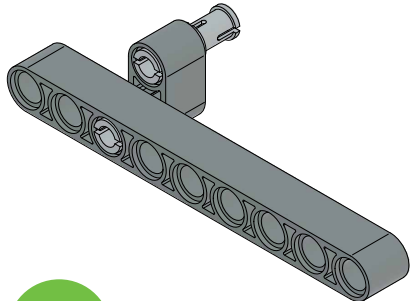
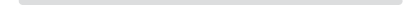
2



2

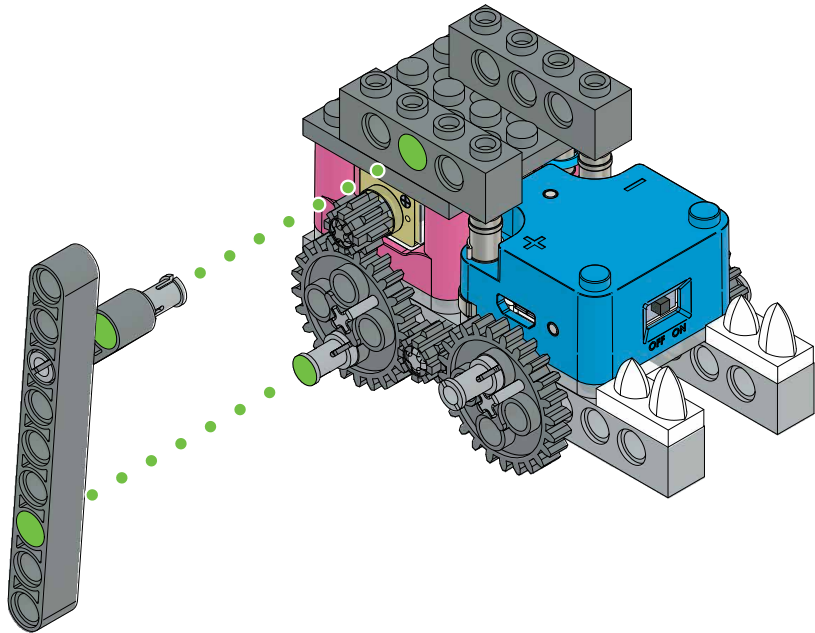


2

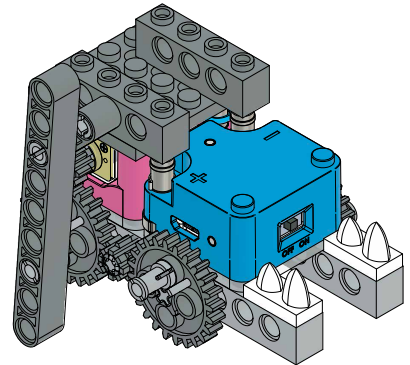
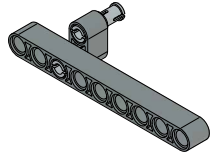


x2

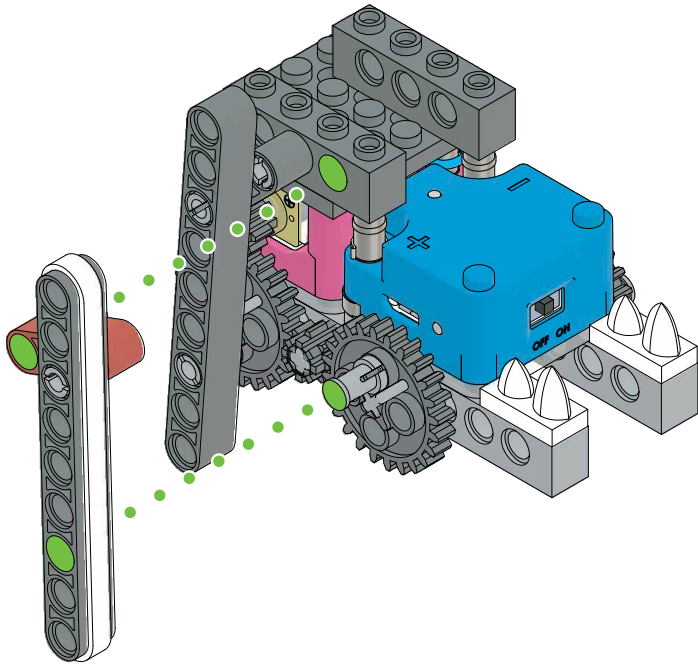
13



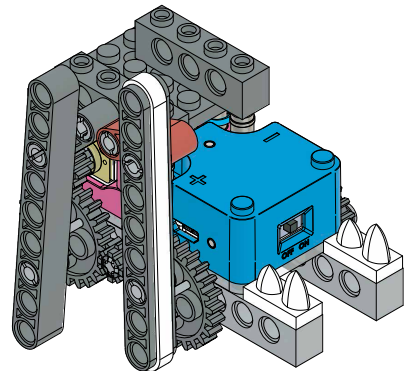
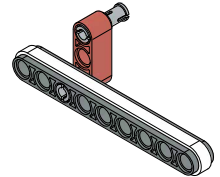
1



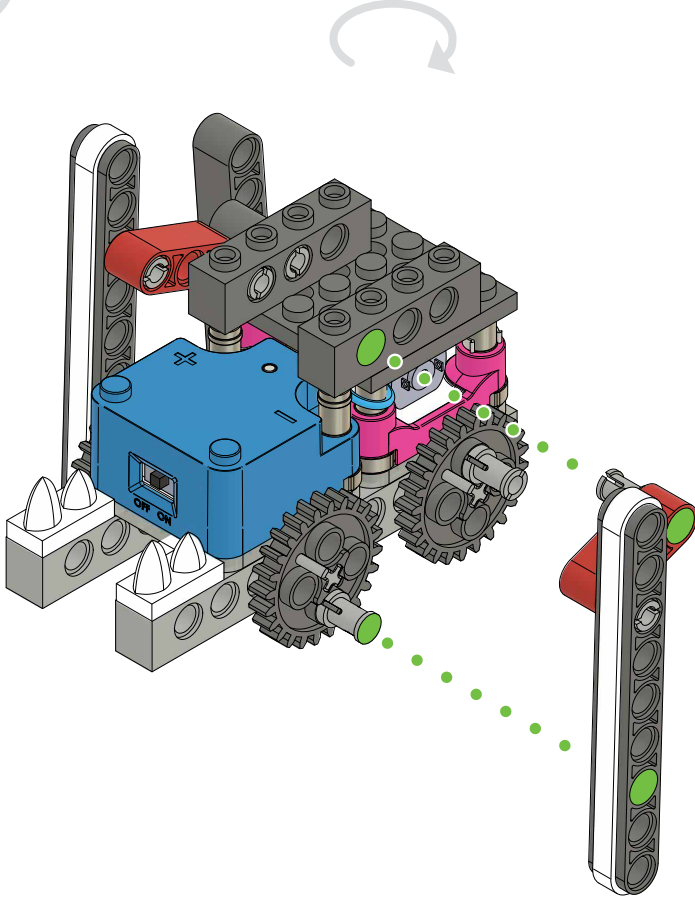
14



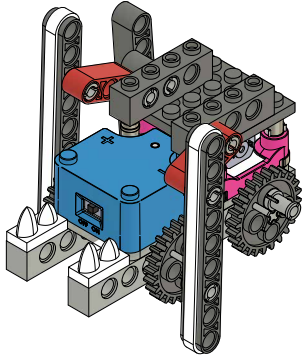
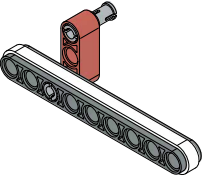
1



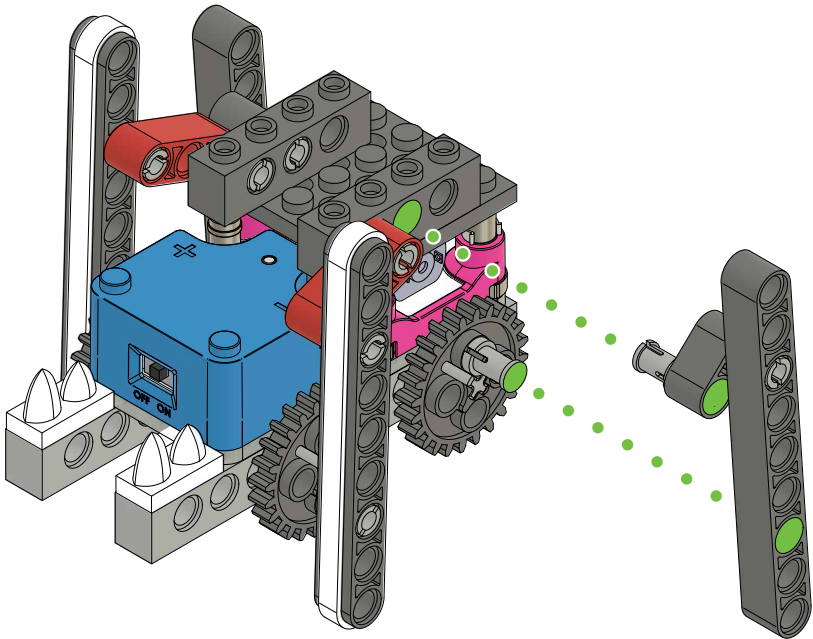
15



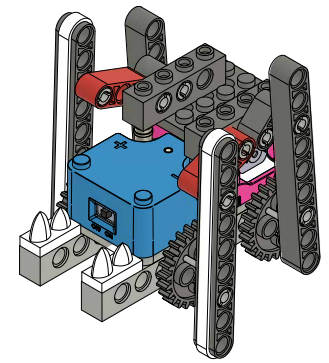
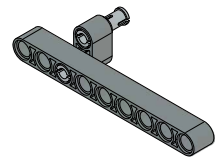
1



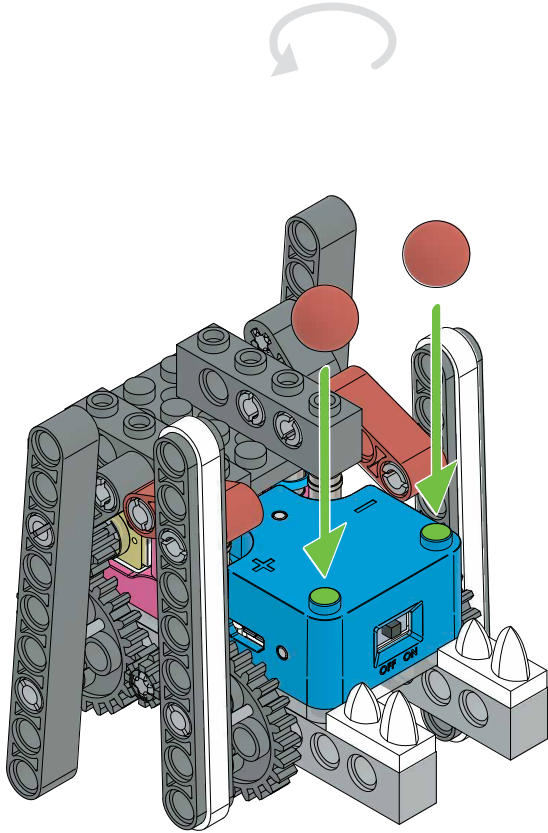
16



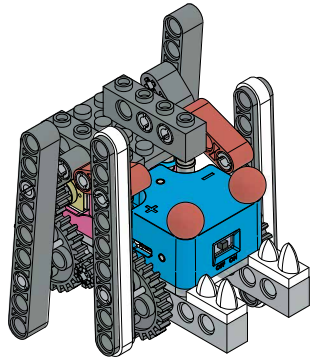
1



17

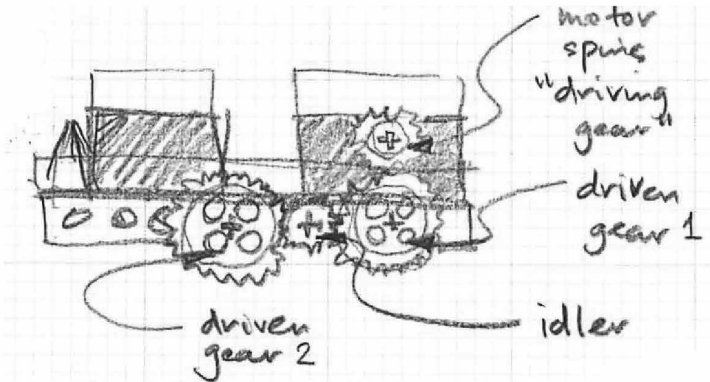


2

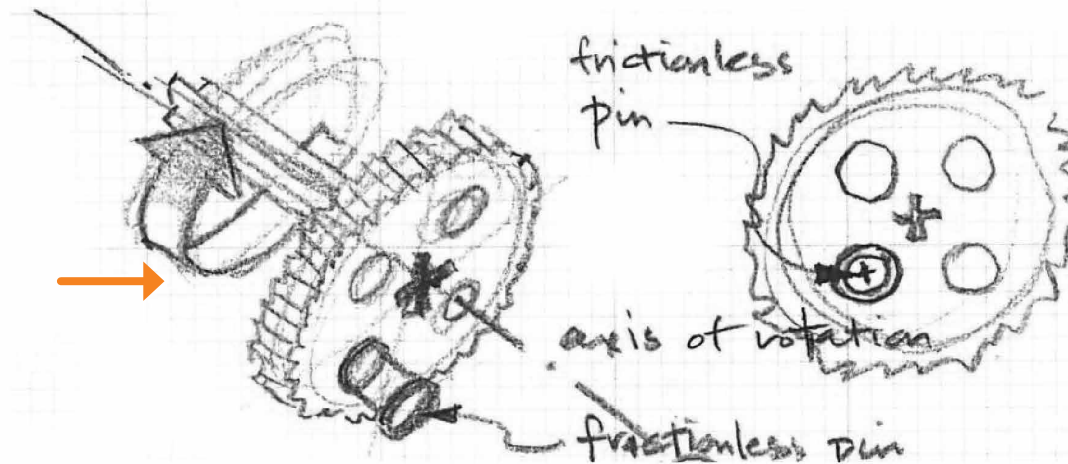


STOMPER

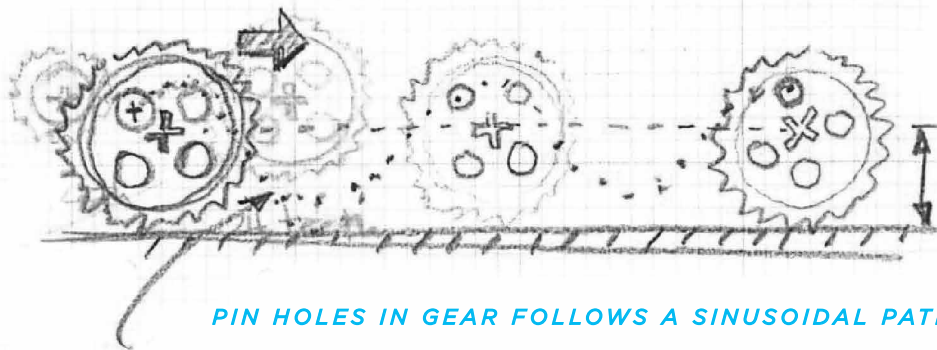
CREATING A WALKER



Stomper and Stretch share the same drive train. The pins in the driven gears move the legs as they spin around.

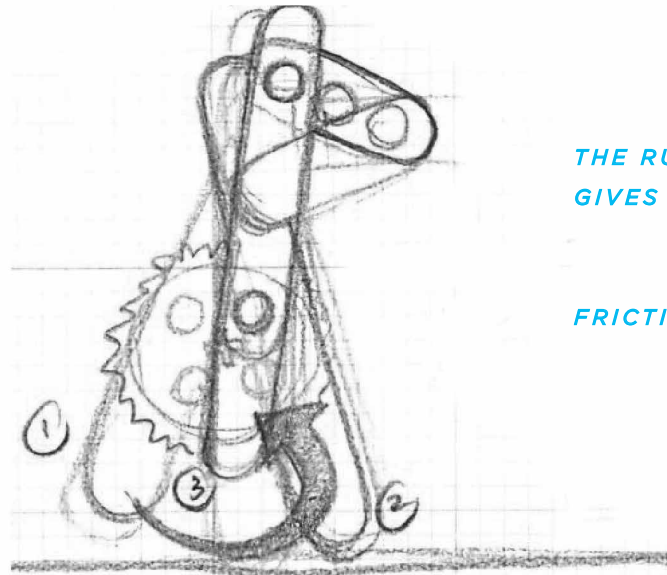


GROUND



AXLE AT WHEEL
CENTER STAY AT
HEIGHT FROM
THE GROUND

The frictionless pins
move in a circular motion
around the axle. This up-down
and side-side movement
creates the stepping motion.

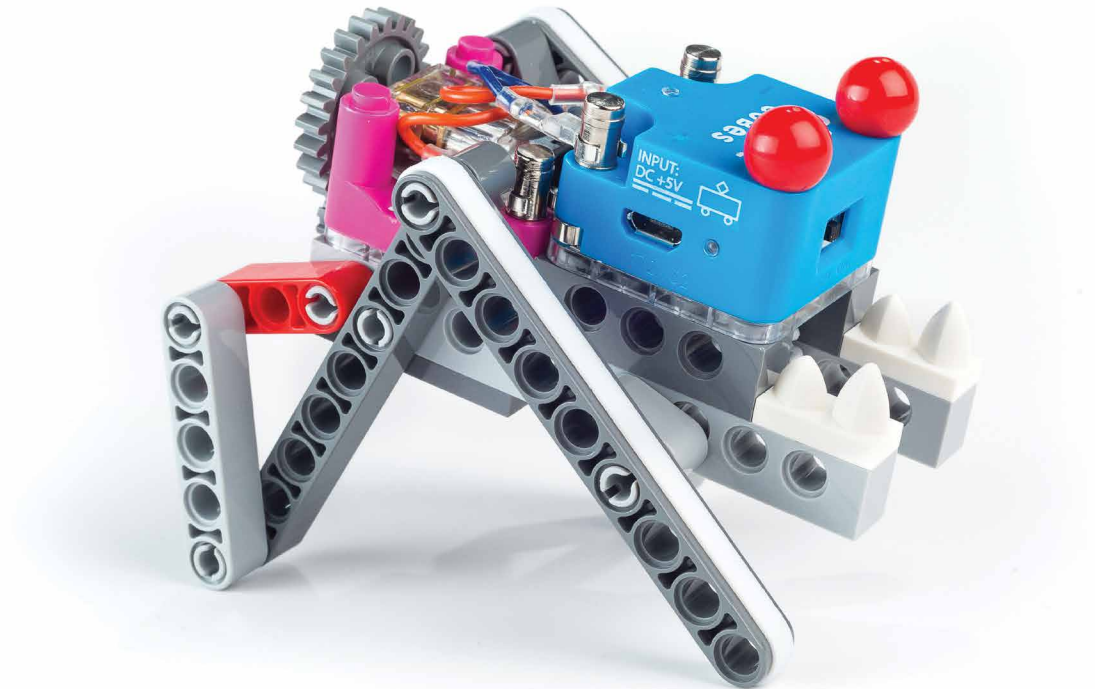


THE RUBBER BAND
GIVES IT FRICTION

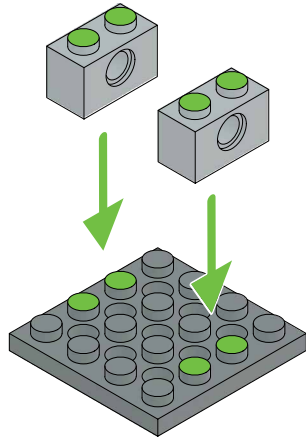
FRICTION = TRACTION

BUZZ

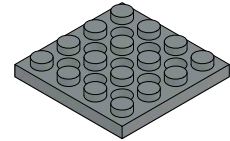
PART BUG, PART ROBOT, ALL FUN



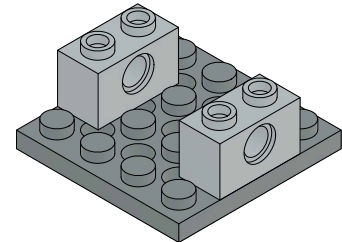
1



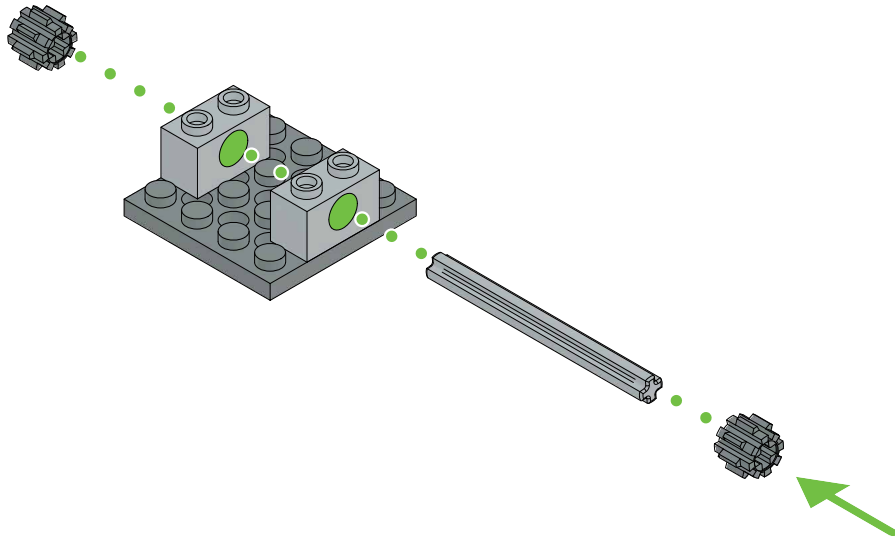
1



2



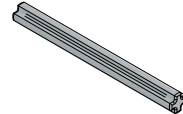
2



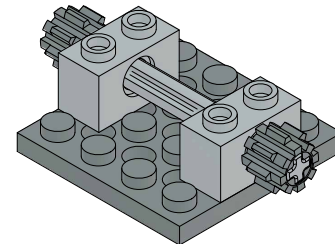
1:1 SCALE



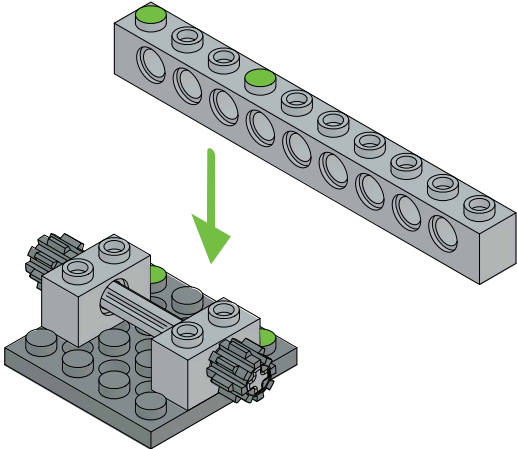
1



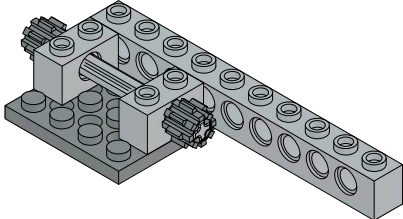
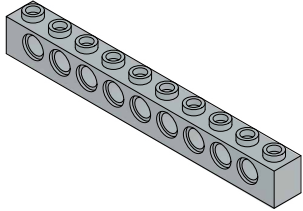
2



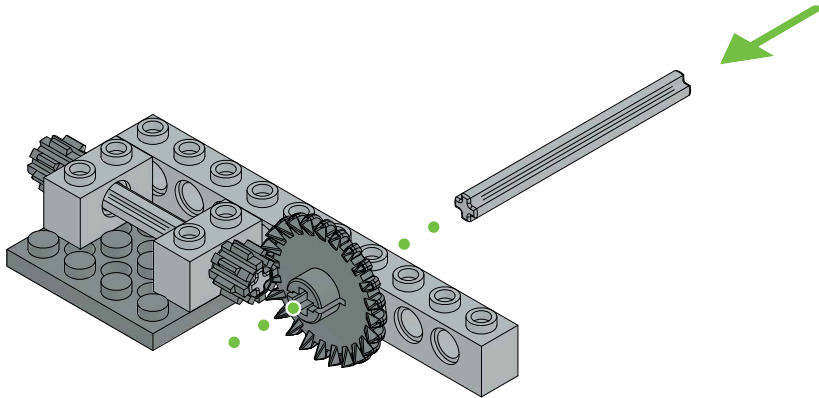
3



1



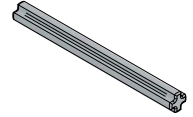
4



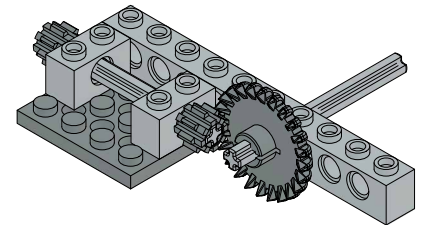
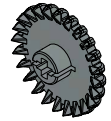
1:1 SCALE



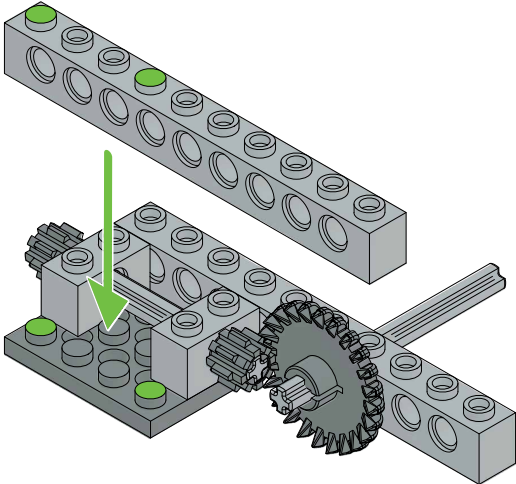
1



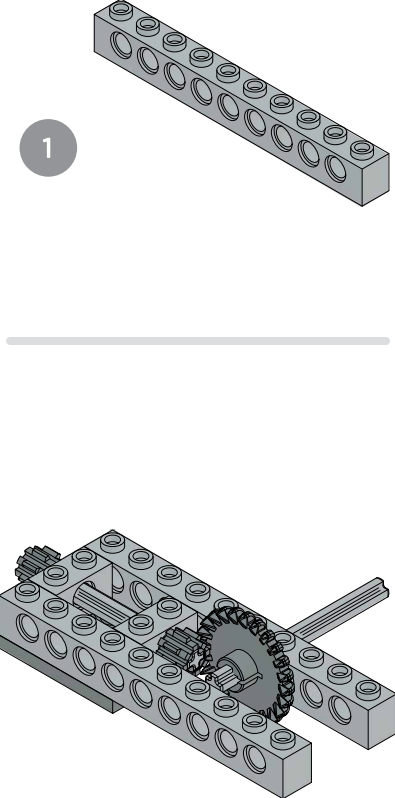
1



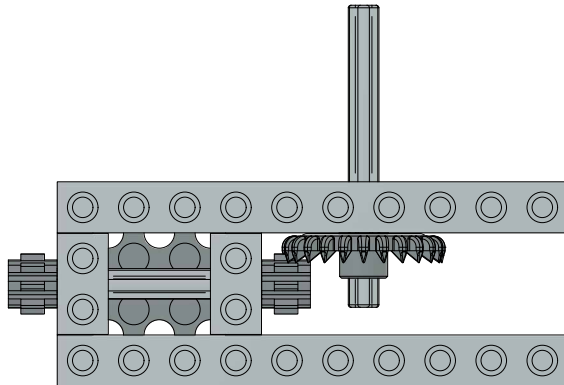
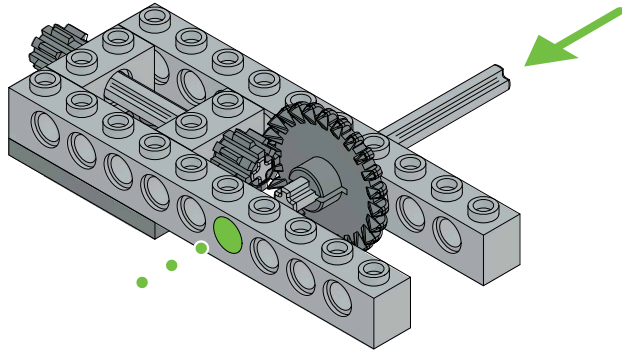
5



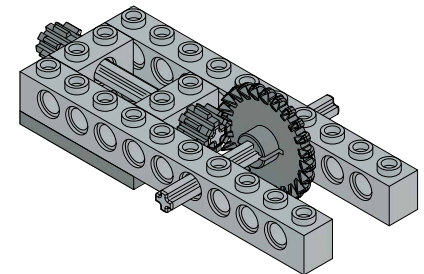
1



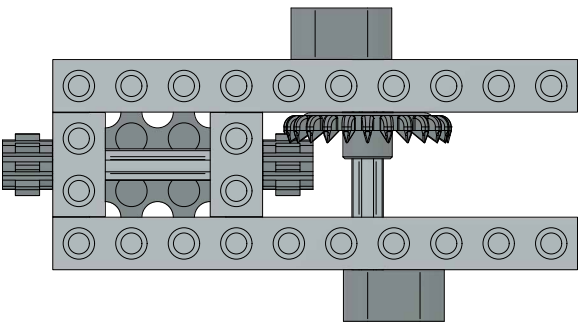
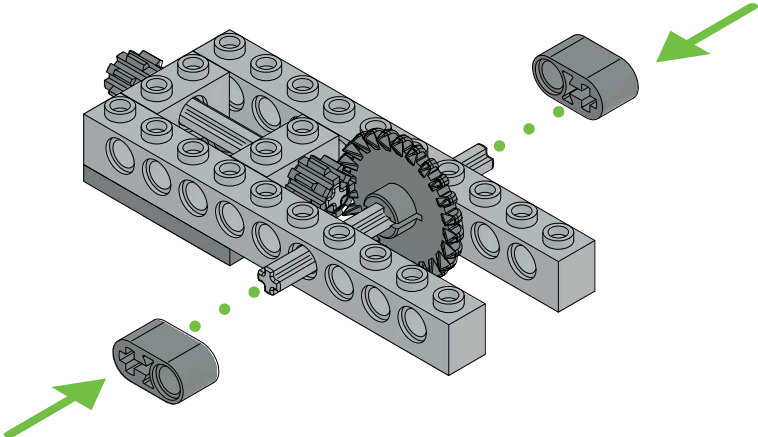
6



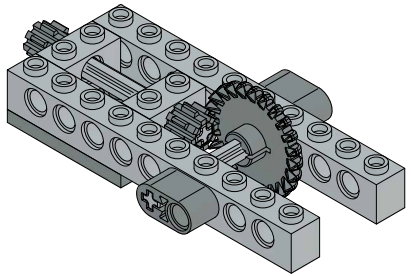
PUSH AXLE THROUGH



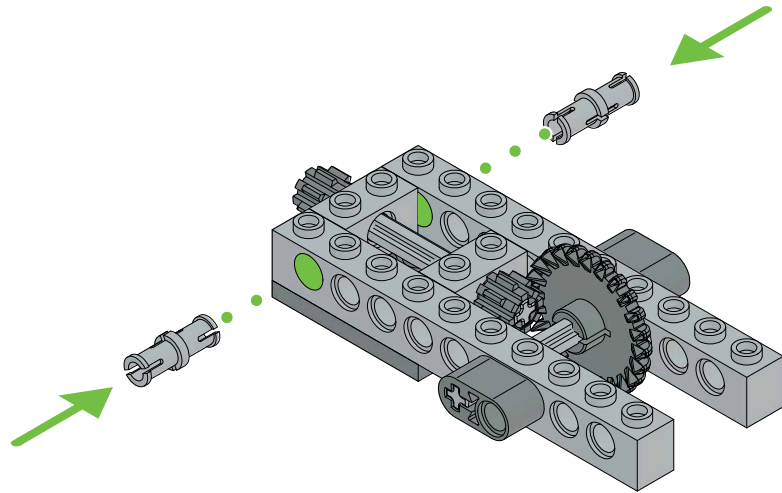
7



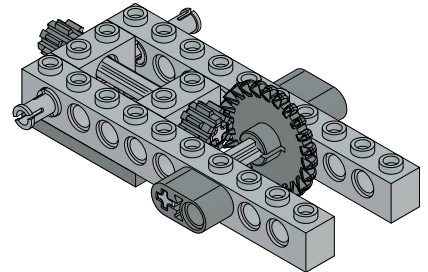
2



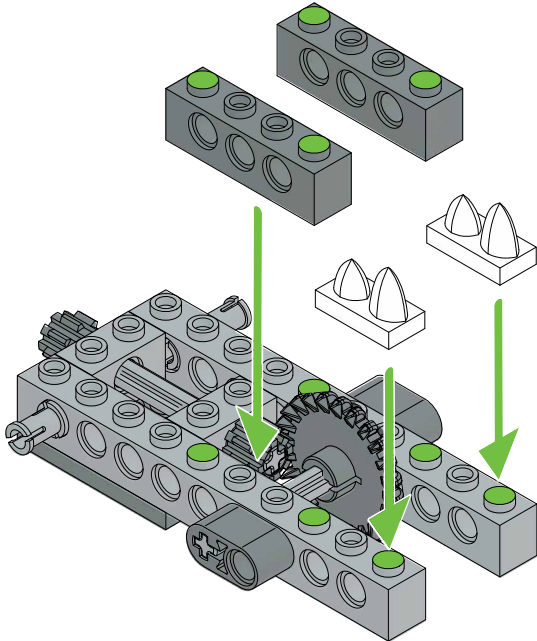
8



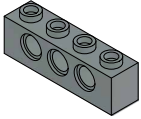
2



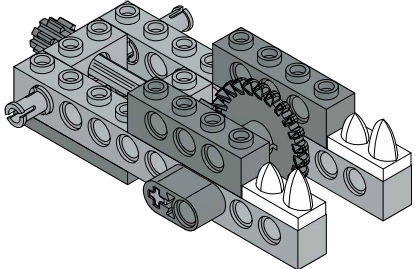
9



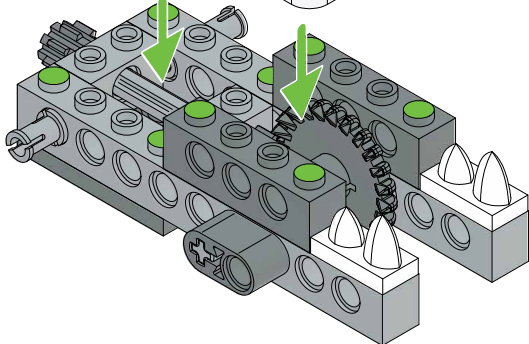
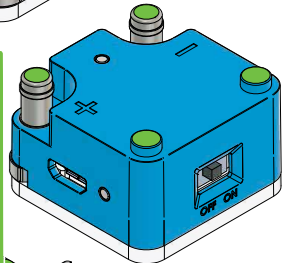
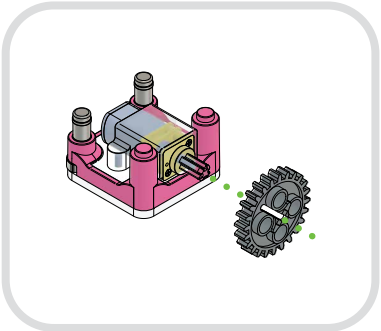
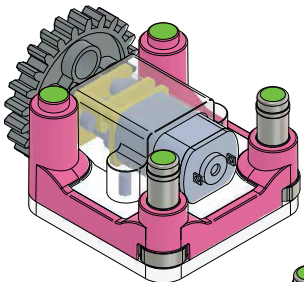
2



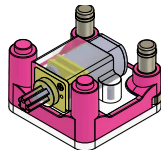
2



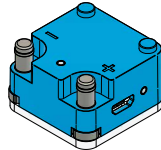
10



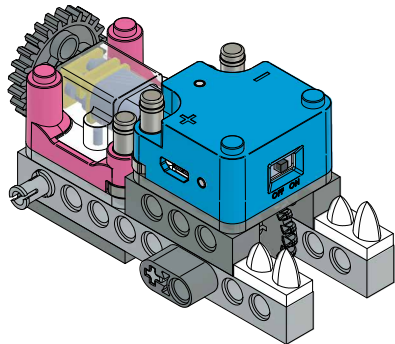
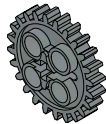
1



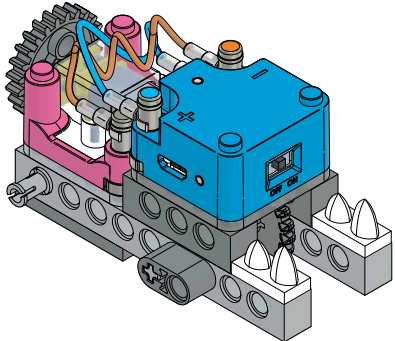
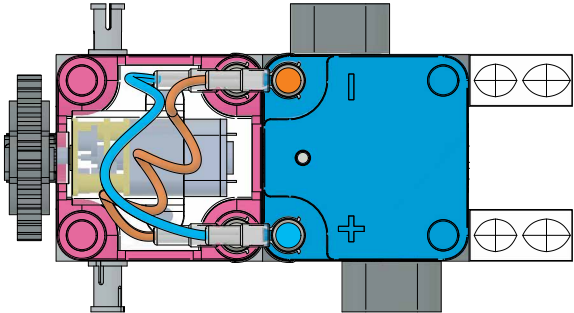
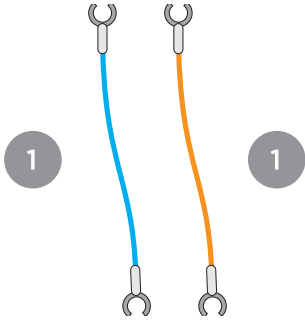
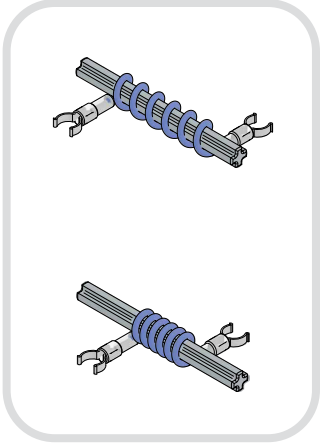
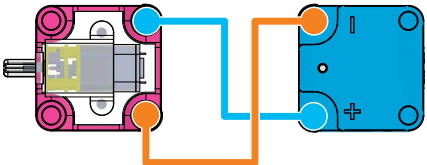
1



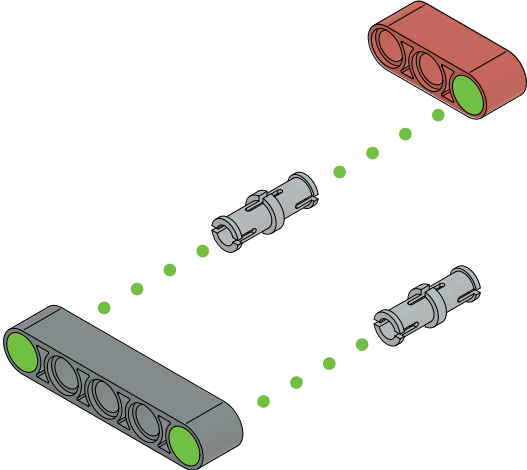
1



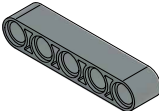
11



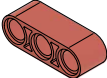
12



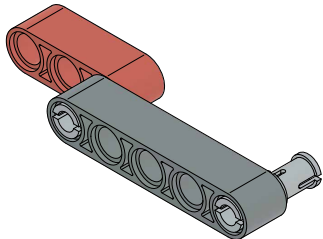
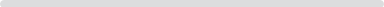
2



2

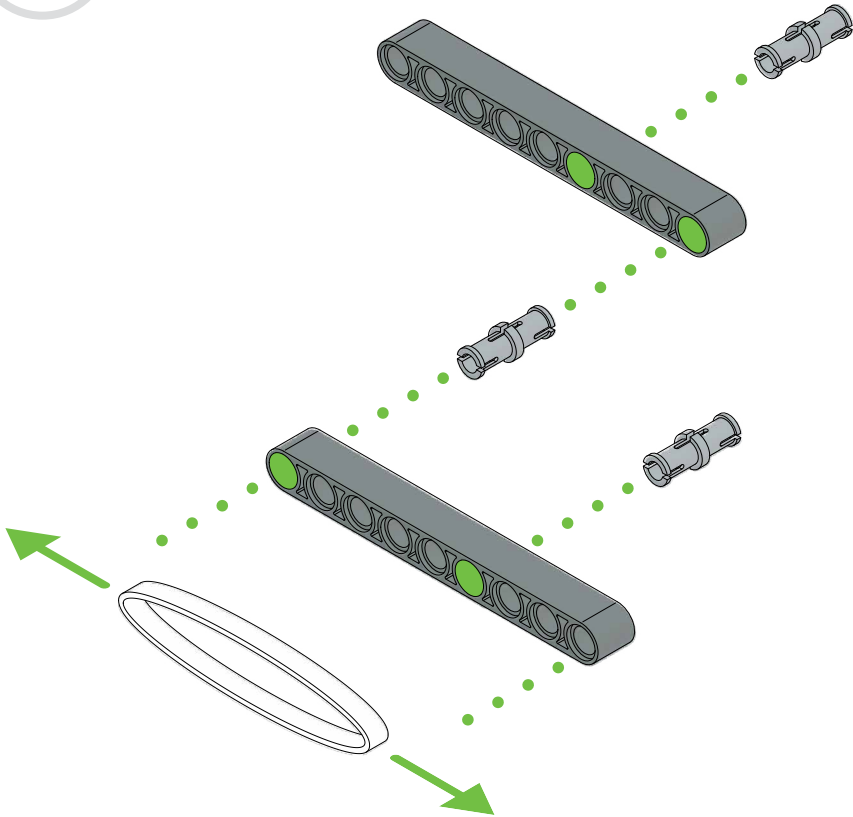


4

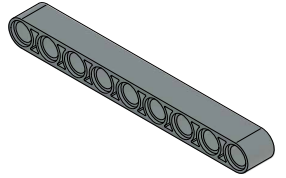


2 x

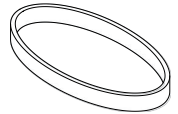
13



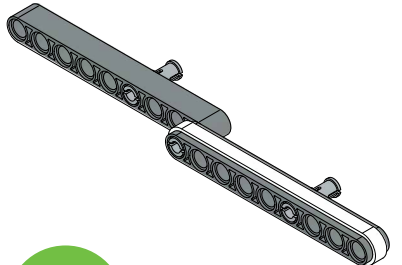
4



2

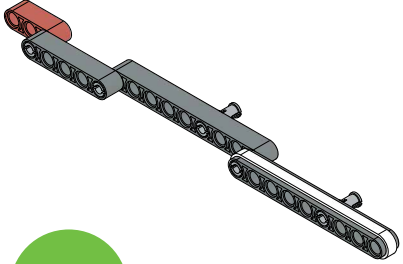
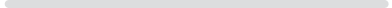
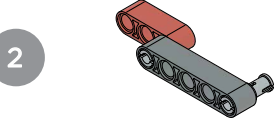
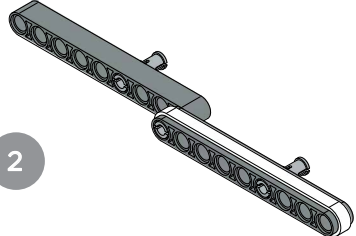
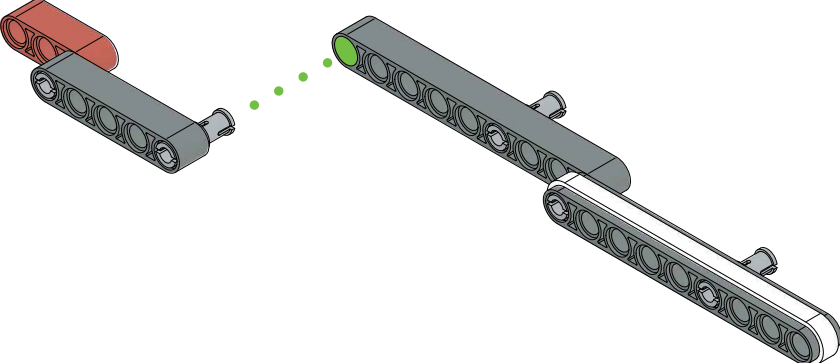


6



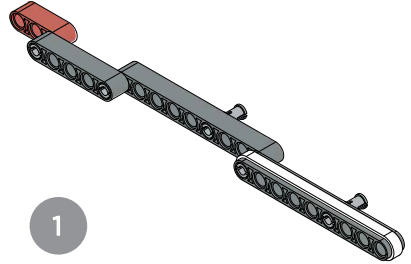
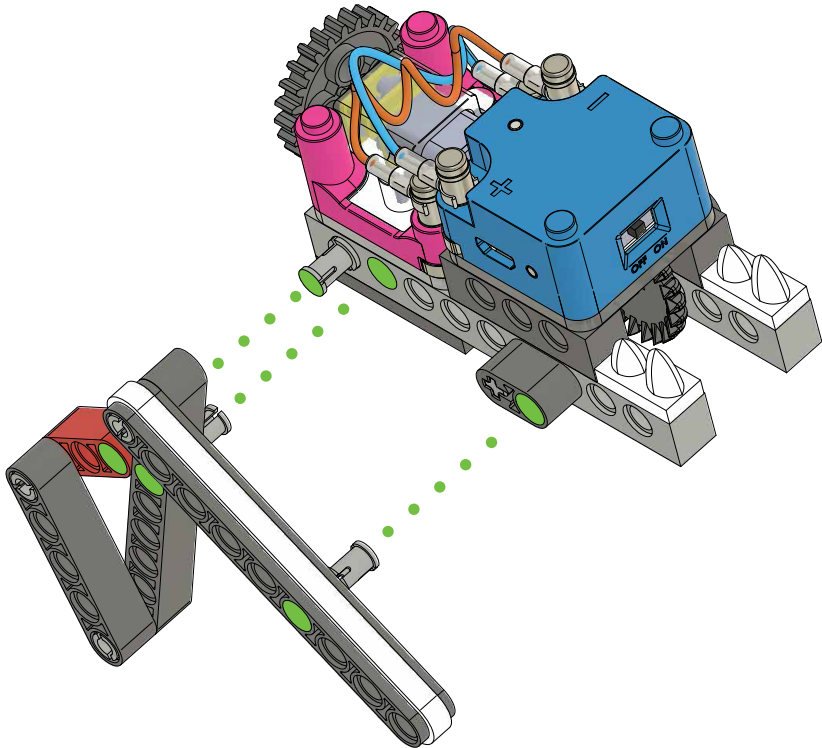
2 x

14

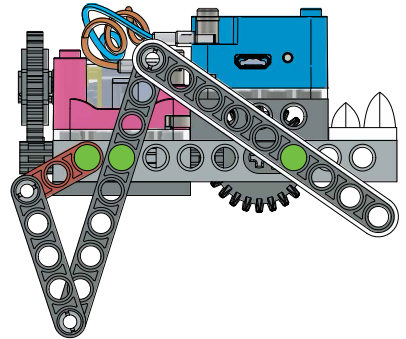


2x

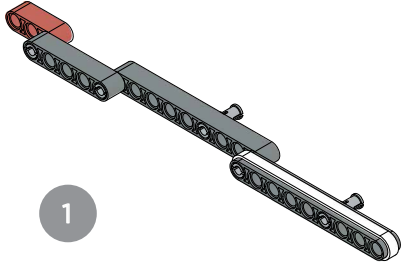
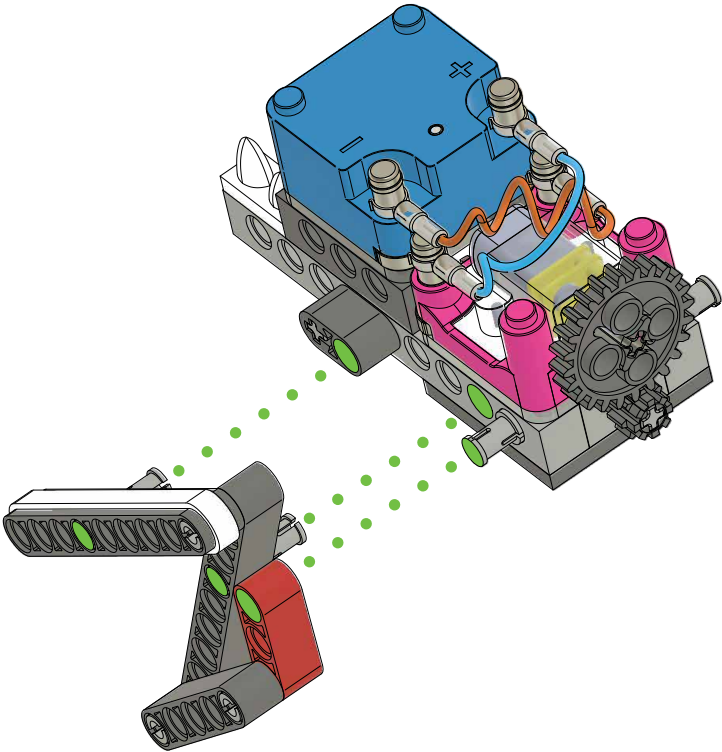
15



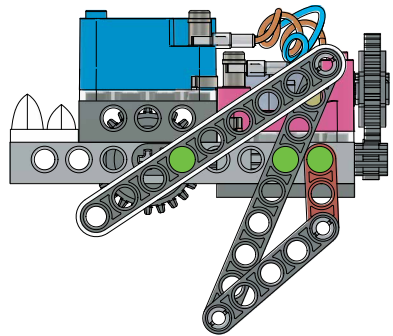
1



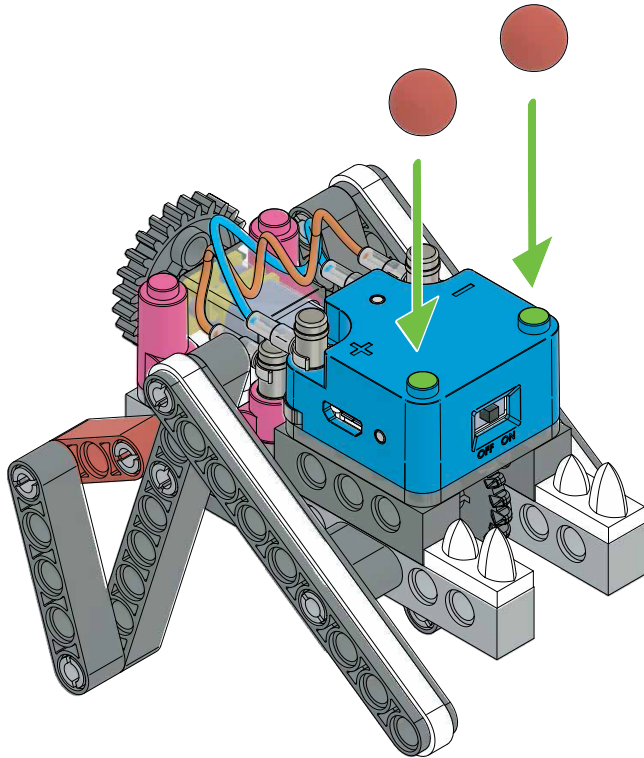
16



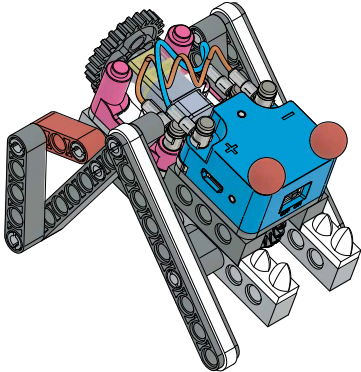
1



17

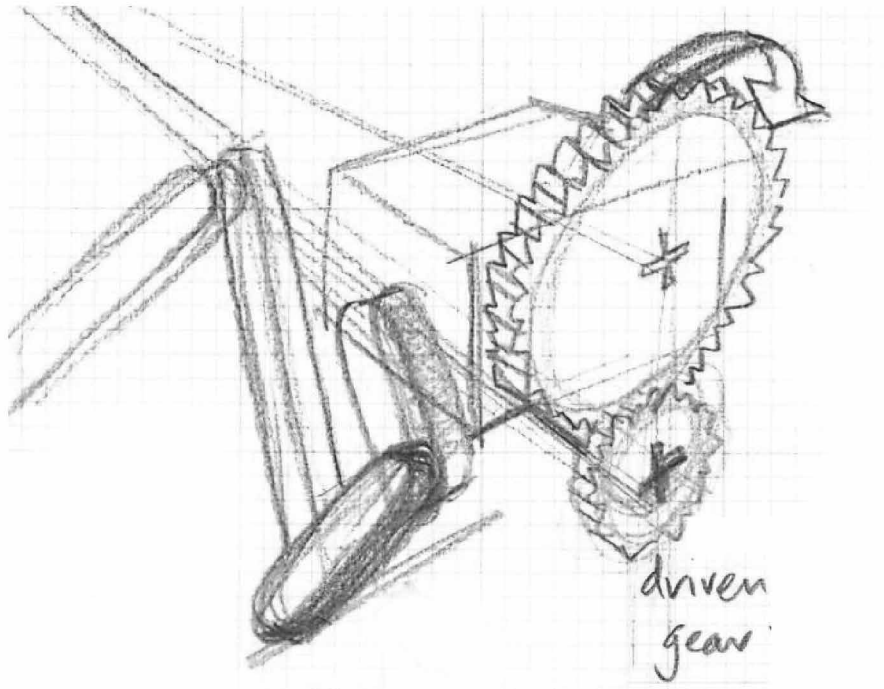


2



BUZZ

THE BUZZ ABOUT CROWN GEARS

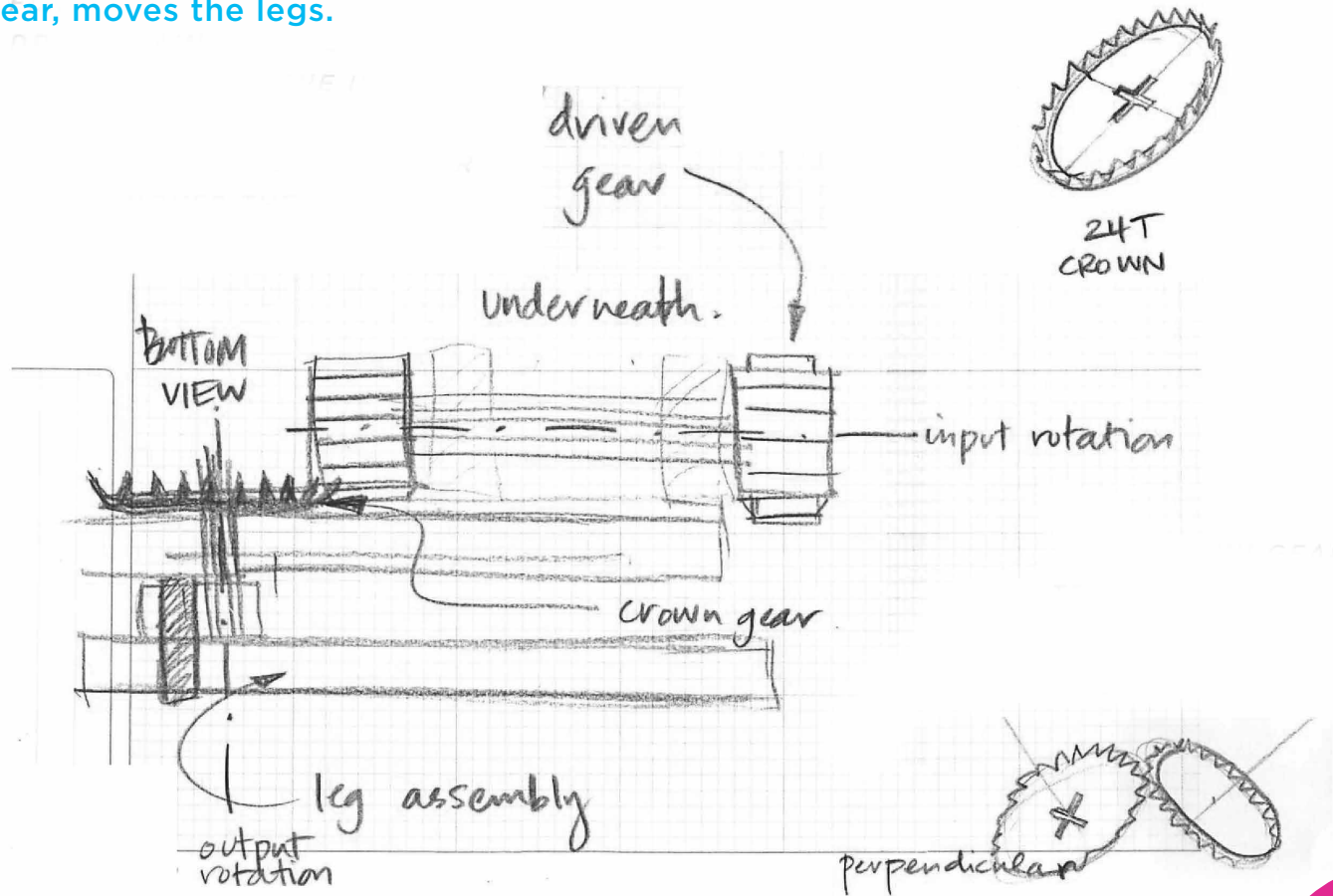


Unlike Stretch and Stomper, Buzz's motor points out the back. A 24-tooth gear attached to the motor spins an 8-tooth driven gear on an axle under the Motor.

NOTICE HOW THE MOTOR ROTATES A GEAR OUT OF THE BACK TO MOVE THE LEGS.

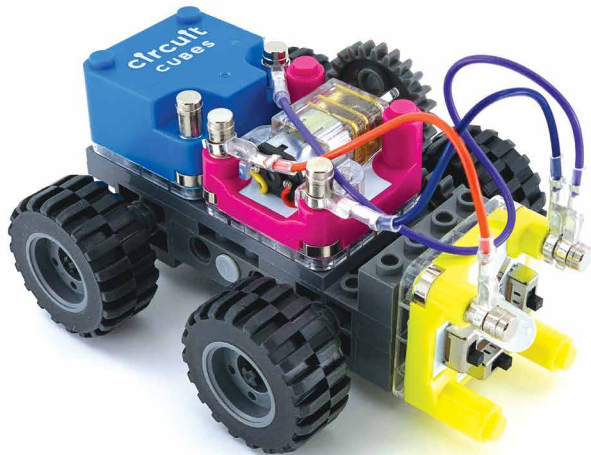
Flip Buzz over to see the drive train. The Motor spins the 8-tooth gear on the input axle, and a second 8-tooth gear paired with a crown gear, moves the legs.

24-TOOTH GEAR



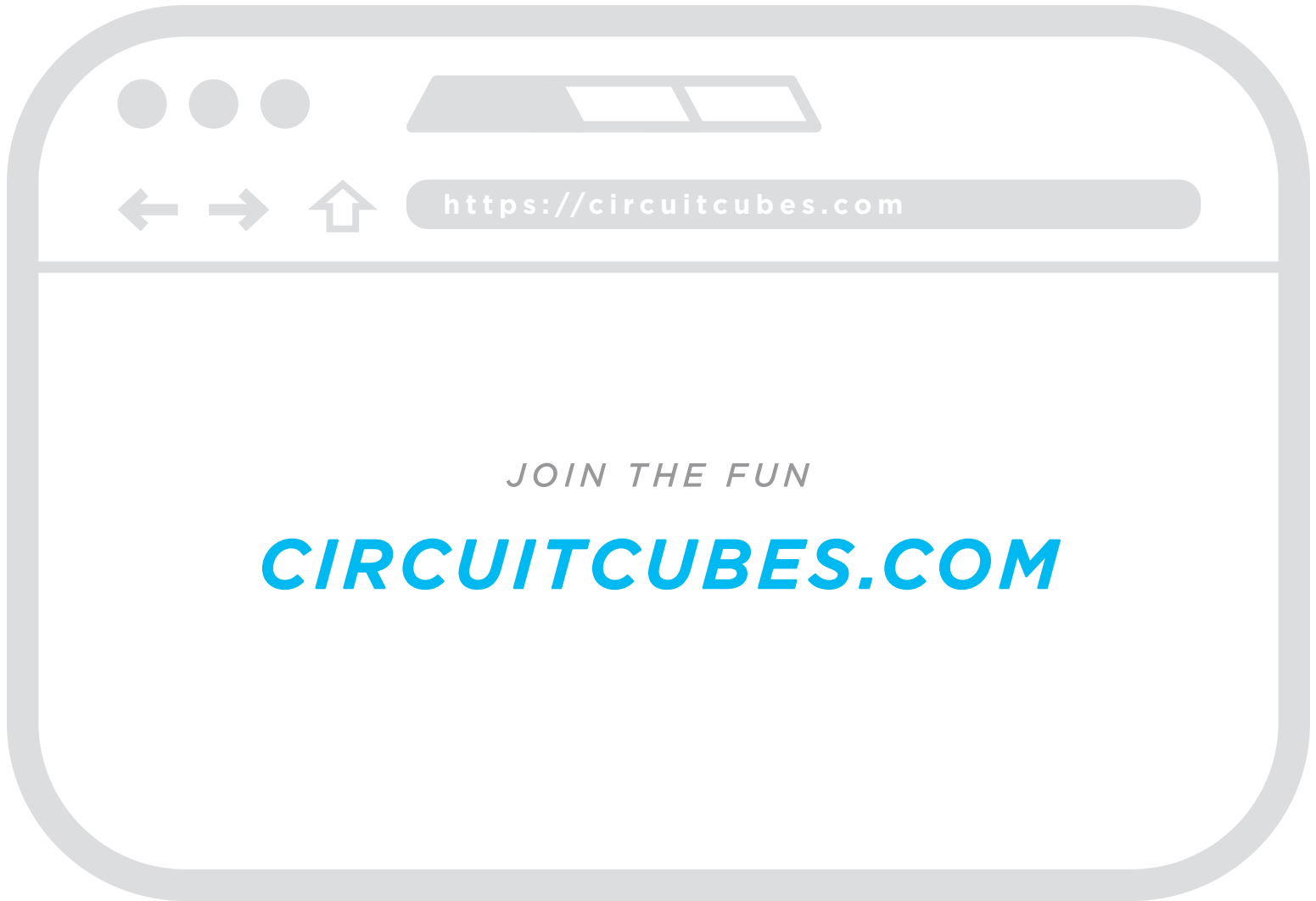
NEW BUILDS ONLINE!

We're always making new things, and we want to see what you've made too!



GEARS GO

Love making things move? Try out our Gears Go Kit & learn about drive train, gear ratio and much more!



LEGAL

Tenka Inc. / 291 School Street, Suite 3 / Willits, CA 95490.
Designed by Tenka Inc. in California, USA. Assembled in China.
Please retain this information for future reference. Images for illustration purposes only. Actual product may differ.

PATENTS Circuit Cubes is a registered trademark of Tenka Inc. © 2020 Tenka Inc. All rights reserved. Patent approved. For details visit: circuitcubes.com/patents

IMPORTANT SAFETY INFORMATION Handle Circuit Cubes with care. They contain sensitive electronic components, including batteries, and can be damaged or cause injury if dropped, burned, punctured, crushed, disassembled, or if exposed to excessive heat or liquids. Do not use damaged Circuit Cubes.

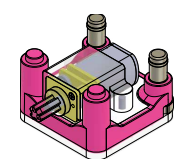
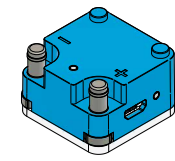
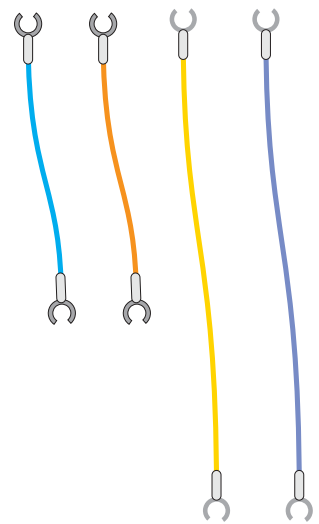
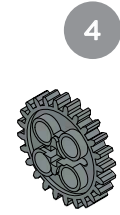
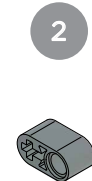
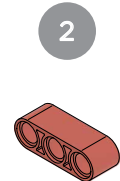
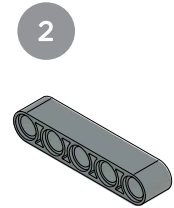
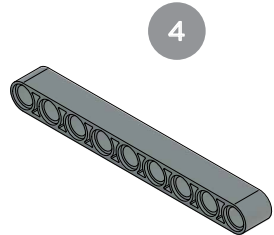
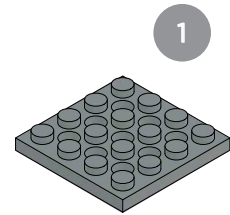
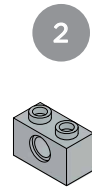
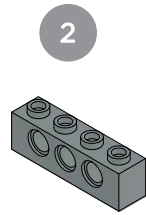
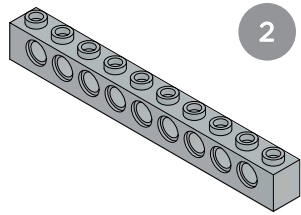
BATTERIES The battery is non-replaceable. Do not attempt to replace the batteries yourself. You may damage the batteries, which can overheat and cause injury. Do not expose battery to water or allow the battery to get wet. Circuit Cubes are only intended to work with one Battery Cube in a circuit — parts may fail if you add multiple Battery Cubes in a circuit.

DISPOSAL The lithium-ion polymer in your Battery Cube should be recycled by Tenka Inc. or an authorized service provider. For more information about Tenka Inc. lithium-ion polymer batteries, go to: circuitcubes.com/pages/cubecare

WARNING This product contains chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). **WARNING** Choking hazard — small parts. Not for children under 3 years. **WARNING** This product contains small magnets. Swallowed magnets can stick together across intestines, causing serious injuries. Seek immediate medical attention if magnets are swallowed or inhaled. **WARNING** This toy is only intended for use by children over the age of 8 years.

CONTACT For help with your Circuit Cubes or other questions, please email: support@circuitcubes.com







circuit
CUBES