



# **45300 core kit building blocks and Programming manual**

# 1.moon base

Design a solution for a robot that will assemble a base on the moon. 120+ minutes , grades 1-5

## 1) 1. Prepare

(15-30 minutes)

- Reading projects and related teaching assistant materials.
- Define how you want this project to be presented. You can use the video that comes with the project or use your own materials.
- Determine the final outcome of the project. For example, define the parameters of a student presentation and the specific elements they should include in the document.

## 2) 2. Exploration phase

(10-45 minutes)

The moon is the natural satellite of the earth and the closest place in space that we can go to. Establishing a base on the moon, on Mars or on another planet is a quest for humanity. As humans have already been to the moon, some challenges may have known solutions. Other challenges would have to be solved before we can reach this goal. For example, our ability to move objects around in space is definitely one of these challenges.

Rockets are used to send both people and materials into space. To ease astronauts' tasks in space, robots of various functions have been developed. For example, robots can be programmed to move on their own or to grab objects. Designing robots for moon usage starts on Earth, testing behaviors and adjusting designs before sending the robots into space.

Questions for discussion

1. How can things be sent to the moon?  
Things can be sent to the moon or to other places using rockets.
2. How could things land on the moon?  
Many methods, such as parachutes, balloons and rockets have been invented in order to safely land packages. The moon's atmosphere is very thin, so parachutes are not a good solution. Rockets have traditionally been used.
3. What is a good way to create and build a base on the moon?  
Robots are often used for tasks that are too dangerous for humans to execute.

### 3) 3. Create and test phase

(40-60 minutes)

#### **Build and program**

The students will build a robot that can drive and turn, and then they will program it to move on a surface.

The students can collect the small modules or build their own items to collect.

This program will enable your students to understand the behavior of the robot. Allow some time for exploration and tinkering as your students become familiar with the robot's movement.

To control the robot's movement, it is important to understand the relationship between motor power and time. For example, if the time stays the same, the robot will go farther if the power level is set to 10 instead of 4.



Some elements students should pay attention to when building this model :

- The front tyres are bigger than the back tyre
- The wire of the motor must not interfere with the mechanism
- The tyres are correctly assembled on their hub

#### **Team Building option**

If you have extra devices, you can reduce the building time for this model by having each student build a part of their team's robot: • Student A can build from step 1 to 23 • Student B can build from step 24 to 41

#### **Plan and try a solution :**

- Define the path that your robot should follow in order to reach the first moonbase module
- Program your robot to move to the first module

#### **Try and modify your solution :**

- Plan the path that your robot should take in order to reach the first and second moonbase modules
- Plan the path that your robot should take in order to reach its final location
- Program your robot to follow these plans



#### 4) 4. Share phase

(45+ minutes)

Students should spend some time compiling the information they have collected throughout the project.

Depending on which skill(s) you would like to focus on, you might ask each team or student for one or more of the following:

- A sketch of their strategy (Decomposition)
- A video of their robot collecting the moon modules (Evaluation)
- A video of them explaining their solution (Abstraction)
- A screen capture of their programming string (Algorithmic Thinking)
- An explanation of their program (Algorithmic Thinking)
- Pictures and explanations of some of the tests that they carried out during the project (Evaluation)

Organize a session where each team can demonstrate their solution.

#### 5) 5. Differentiation

This project can be made more challenging by adding one or more of the following requirements:

- Use more than two modules
- The trajectory must be completed within one minute
- The robot can only turn 90 degrees right during the trajectory

The following maths -related problems could be formulated :

- Two of the modules have landed perfectly on the moon. The other two modules have landed in a line that is parallel to the previous two. Demonstrate where the modules could have landed and program the robot to pick up the modules.



- Two modules have landed at a distance of 20cm of each other. The other two modules have landed so that the four modules in total create a rectangle with a perimeter that is smaller than 60cm. Demonstrate where these modules could have landed and program the robot to pick them up.
- The four modules need to be picked up by two different robots, but they have to arrive at the base at the same time.
- Have the students build their own modules and create their own mission about building a base on the moon.

## **2. animal senses**

Explore how animals use their senses to receive different types of information. 120+ minutes ,  
grades 1-5

### **1) 1. Prepare**

(15-30 minutes)

- Select a specific theme to talk about with your students. For example, you could focus specifically on insects and reptiles.
- Decide how you would like to introduce this project. Find some videos to watch or information to read with your students.
- Define the elements that your students should consider as they develop their models (ie, using sensors to interact with the environment, different reactions according to various stimuli, etc.).
- Determine the final outcome of this project. For example, define the parameters of a student presentation and the specific elements they should include in the document.

### **2) 2. Exploration phase**

(30-60 minutes)

Introduce your students to the subject and make sure they understand the problem they have to solve.

### **3) 3. Creation and testing phase**

(90-120 minutes)

## **Build and program**

Have your students build and program a model of an animal they have chosen. Make sure that they use sensors as an element in modeling the animal's interaction with its environment.

Design Library inspiration:

- [Wobble](#)
- [flex](#)
- [Gr a b](#)

Let your students plan, try and modify their model until they get to a point where they are happy with what they have done. In order to challenge some of the more advanced teams, ask them to describe the environment in which the animal lives.

## **4) 4. Sharing stage**

(45+ minutes)

Make sure that your students document their work.

Use different ways in order to let your students share what they have learned and their reflections on these experiences.

Have your students create their final reports and present their projects.

# **3.city security**

Explore the different safety rules related to urban transportation and describe how some of them could be improved. 120+ minutes , grades 1-5

## **1) 1. Prepare**

(15-30 minutes)

- Select a specific theme to talk about with your students. For example, you could focus specifically on truck safety in traffic situations.
- Decide how you would like to introduce this project. Find some videos to watch or information to read with your students. You could also take a virtual or actual field trip around your neighborhood or city. Have your students look for possible problems with current transportation ( eg, could a bus stop be made safer, could a traffic signal be improved, etc.).
- Define the elements that your students should consider as they develop their solutions (ie, where and how do accidents happen, are there any statistics about these accidents, is there a safety device that could be improved, etc.).

- Determine the end result of this project. For example, define the parameters of your students' presentations and the specific elements that they should include in their documents. Be precise about whether you would like the students' solutions to be physical (using LEGO bricks) , digital (using a program) or both.

## 2) 2. Exploration phase

(30-60 minutes)

Introduce your students to the subject and make sure they understand the problem they have to solve.

## 3) 3. Creation and testing phase

(90-120 minutes)

### **Build and program**

Have your students build and program a device that can improve city safety.

Design Library inspiration:

- [flex](#)
- [Revolve](#)
- [Motion](#)

Let your students plan, try and modify their solutions until they get to a point where they are happy with what they have done. In order to challenge some of the more advanced teams, introduce some constraints or have them explore more than one solution.

## 4) 4. Sharing stage

(45+ minutes)

Make sure that your students document their work.

Use different ways in order to let your students share what they have learned and their reflections on these experiences.

Have your students create their final reports and present their projects.

# 4.emotional design

Discover how robots can create positive emotions in everyday life.

120+ minutes , grades 1-5

## 1) 1. Preparation \_

(15-30 minutes)

- Select a specific theme to talk about with your students. For example, you could focus specifically on robots that can make people laugh.
- Decide how you would like to introduce this project. Find some videos to watch or information to read with your students.
- Define the elements of the maze that the robots will go through (ie, movement, sensors, expressions, etc.).
- Determine the final outcome of this project. For example, define the parameters of a student presentation and the specific elements they should include in the document.

## 2) 2. Exploration phase

(30-60 minutes)

Introduce your students to the subject and make sure they understand the problem they have to solve.

## 3) 3. Creation and testing phase

(90-120 minutes)

### **Build and program**

Have your students build and program a robot that can make people laugh. Have them program specific behaviors for their robot.

Design Library inspiration:

- [Wobbly](#)
- [Cranks](#)
- [Walk](#)

Let your students plan, try and modify their solutions until they get to a point where they are happy with what they have done. In order to challenge some of the more advanced teams, introduce new parameters such as generating different emotions.

## 4) 4. Sharing stage

(45+ minutes)

Make sure that your students document their work.

Use different ways in order to let your students share what they have learned and their

reflections on these experiences.

Have your students create their final reports and present their projects.

## 5. Grab objects

Discover how prosthetic design can help people with disabilities. 120+ minutes , grades 1-5

### 1) 1. Prepare

(15-30 minutes)

- Reading projects and related teaching assistant materials.
- Define how you want to introduce this project. You can use the video that comes with the project or use your own materials.
- Determine the final outcome of this project. For example, define the parameters of a student presentation and the specific elements they should include in the document.

### 2) 2. Exploration phase

(10-45 minutes)

The human hand can perform several different actions. When these movements are combined together, they present a range of possible movements and actions. These important movements are: finger flexion and extension (closing and opening), thumb flexion and extension (closing and opening), thumb rotation, and wrist flexion, extension, and rotation.

When a person is unable to perform one or more of these actions, certain actions become difficult and sometimes impossible to do.

Prosthetics can help people regain mobility. Some very advanced robotic arms can replicate nearly all the movements of a normal hand.

#### Questions for discussion

1. What different movements can you make with your hands?

*Students may use words such as catch, hold, and throw to describe actions. Ask them to describe in detail how their fingers are used in these movements.*

2. What do the muscles in your hands do?

*Muscles are responsible for all its movements.*

3. How to create an artificial arm?

*Motors can be used to create movements similar to those of the human*

*hand. It can also be used to apply pressure to objects to hold them in place.*

### 3) 3. Creation and testing phase

(40-60 minutes)

Building and Programming Students will build a robotic hand that they can **program** to grasp, lift, and place objects. The hand is equipped with motion sensors that can be used to detect objects, detect tables, and detect arm movements.

Students will use this robotic hand to move small objects. Their first task is to grab a flower and place it on the table. Their second task is to grab an electrical plug and insert it into the socket. Students also have the option to build their own objects to use in these tasks.



This program will enable your students to control the opening and closing of their hands. Allow some time to explore and tinker as your students become familiar with the arm movements.



**Plan and try the solution** : Program the robot to:

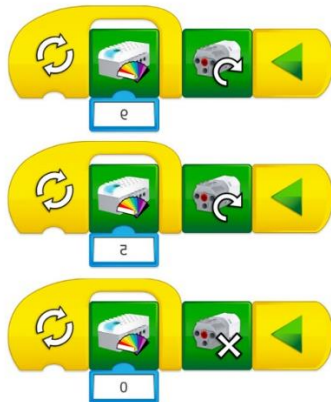
- Grab the flower and put it on the shelf
- Grab the electrical plug and insert it into the socket

### Try modifying your solution:

the robot doesn't work properly when using this program.

When the clip is closed, it should turn on the green light on the Smarthub , and when the clip is on, it should turn on the red light.

Make changes to the program to resolve the problem.



## 4) 4. Sharing stage

(45+ minutes)

Students should spend some time compiling the information they have collected throughout the project.

Depending on the skills you want to focus on, you can ask each team or student to provide one or more of the following:

- A sketch of their strategy (broken down)
- Video of the robot (evaluation)
- Video of them explaining their solution (abstract)
- Screenshot of its programming string (Algorithmic Thinking)
- Interpretation of their programs (algorithmic thinking)
- Pictures and explanations of some of the tests they conducted during the project (evaluations)

## 6.examine

Discover how robots can be used to inspect tight spaces. 120+ minutes , grades 1-5

### 1) 1. Prepare

(15-30 minutes)

- Select a specific theme to talk about with your students. For example, you could focus specifically on robots that inspect water pipes.
- Decide how you would like to introduce this project. Find some videos to watch or information to read with your students.
- Define the elements of the maze that the robots will go through (ie, define holes, walls, obstacles to avoid or to collect, etc.).
- Determine the final outcome of this project. For example, define the parameters of a student presentation and the specific elements they should include in the document.

## 2) 2. Exploration phase

(30-60 minutes)

Introduce your students to the subject and make sure they understand the problem they have to solve.

## 3) 3. Creation and testing phase

(90-120 minutes)

Build and program

Have your students build and program a robot that can move in a maze. If they cannot create a robot that can turn, guide them to the Design Library for inspiration or allow them to execute some of the movements with their hands.

Design Library inspiration:

- [R e e l](#)
- [S t e e r](#)

Let your students plan, try and modify their solutions until they get to a point where they are happy with what they have done. In order to challenge some of the more advanced teams, introduce more obstacles or modify the maze to make it harder to navigate .

## 4) 4. Sharing stage

(45+ minutes)

Make sure that your students document their work.

Use different ways in order to let your students share what they have learned and their reflections on these experiences.

Have your students create their final reports and present their projects.



## 7. Send a message

Discover how to transfer mail from one place to another. 120+ minutes , grades 1-5

### 1) 1. Prepare

(15-30 minutes)

- Reading projects and related teaching assistant materials.
- Define how you want to introduce this project. You can use the video that comes with the project or use your own materials.
- Determine the final outcome of this project. For example, define the parameters of a student presentation and the specific elements they should include in the document.

### 2) 2. Exploration phase

(10-45 minutes)

Communication between people has always been a fundamental part of our existence. Not long ago, before the invention of satellites and cell phones, people used all kinds of ingenious devices to exchange information.

For a long time, the only way to send a message from one place to another was to write it down and have someone deliver it. In order to send messages more efficiently, new methods of delivering messages, such as using electrical current and wave signals, are also developed, as well as a method of converting public messages into signals. Morse code is one of the most well-known methods. Morse code transcribes each letter into a series of short and long signals.

#### Questions for discussion

1. What are the ways to send messages?

*We have long used wires and electricity to transmit information from one place to another. Waves are also commonly used to transmit messages over long distances. Light and electricity are good examples of technologies used to send signals. Light and electricity are called "binary phenomena" because they have two states (light and no light). Binary systems that harness electricity are the basis of modern communications.*

2. What is one way to convert or change a message into a signal?

*Elements such as light, sound and images can be explored. Discuss with your students the importance of senders and receivers having the same*

*code when exchanging messages.*

### 3) 3. Creation and testing phase

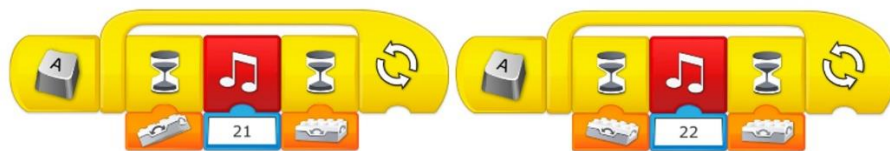
(40-60 minutes)

#### Building **and Programming**

Students will build a joystick that uses a tilt sensor. The tilt sensor will detect where the joystick is tilted. These locations are called "modes". They can program different outputs for each mode, such as playing sounds or displaying colors.

This program will enable your students to understand the behavior of a joystick. Allow some time to explore and tinker as your students become familiar with its movements.

Additional programming strings can be added to this program to activate other modes of the tilt sensor.



#### **Plan and try a solution:**

Program the joystick to send messages, using short and long tones as codes.

For example: try sending the word "Max" or "Mia" using Morse code.

#### **Try and modify your solution :**

Program a message using your own signal system.



## 4) 4. Share Phase

(45+ minutes)

Students should spend some time compiling the information they have collected throughout the project.

Depending on the skills you want to focus on, you can ask each team or student to provide one or more of the following:

- A sketch of their strategy (broken down)
- Video of the robot (evaluation)
- Video of them explaining their solution (abstract)
- Screenshot of its programming string (Algorithmic Thinking)
- Interpretation of their programs (algorithmic thinking)
- Pictures and explanations of some of the tests they conducted during the project (evaluations)

Organize a session where each team can demonstrate their solution.

# 8.volcano alert

Explore the different ways scientists monitor volcanic activity. 120+ minutes , grades 1-5

## 1) 1. Prepare

(15-30 minutes)

- Reading projects and related teaching assistant materials.
- Define how you want to introduce this project. You can use the video that comes with the project or use your own materials.
- Determine the final outcome of this project. For example, define the parameters of a student presentation and the specific elements they should include in the document.

## 2) 2. Exploration phase

(10-45 minutes)

Scientists around the world monitor the activity of various volcanoes. In some cases, they do this in order to make sure that the people living around these volcanoes are always safe. In other cases, they do this in order to prepare important scientific expeditions to study the composition of the earth.

## WeDo 2.0 Core Suite

Volcanoes are described as being in one of three different stages: extinct, dormant and active. For each of these stages, scientists have assigned a color, and have defined the actions to be taken at each stage:

Green: the volcano is not showing any signs of activity.

Yellow: the volcano is showing some signs of activity and should be monitored. Orange: the volcano is active with some minor emissions. Red: the volcano is active with major emissions, or the volcano will erupt imminently.

### Questions for discussion

1. What are the different stages of a volcano?

*Volcanoes are considered to be active, dormant, or extinct. There are different active stages of volcanoes and each of them is monitored differently.*

2. How can scientists explore volcanoes?

*Volcanologists or geologists explore active volcanoes using different devices in order to reduce the danger of such exploration. Rovers and drones are now used to collect data regarding rock composition, temperature, substances in the air, etc.*

3. What would be a good way to signal that a volcano is erupting?

*Different alarm systems are used around the world. Colors are often used to indicate the level of volcanic activity and the actions that should be taken.*

## 3) 3. Creation and testing phase

(40-60 minutes)

### Build and program

The students will build a device that will provide scientists with information about volcanic activity. When the device is shaken, the needle of the device will run a random amount of time and stop in front of one of the colored bricks. This will simulate an alert system to indicate the volcanic hazard level in the area.

This program will enable your students to control the motion of the alarm device. Allow some time for exploration and tinkering as your students become familiar with the needle's movements.

They should tinker enough to understand how to reset the needle to the starting position.



### **Plan and try a solution :**

Program your alarm to alert you when the needle stops at the red position. For each red alert, move the drone into the volcano so that it can study the eruption.

### **Try and modify your solution :**

Program your alarm to emit different signals for each of the three stages of the volcano. For each alert, move the drone, the animal and the rover according to the signal.

## **9. Construction steps**

1) lunar-bi



1

Warning! Choking hazard. Small parts and small balls.  
 Achtung! Erstickungsgefahr. Kleine Teile und kleine Kugeln.  
 Attention! Danger d'étouffement. Petits éléments et petites balles.  
 Avvertenza! Rischio di soffocamento. Piccole parti e piccole palle.  
 Waarschuwing! Verstikkingsgevaar. Kleine onderdelen en kleine ballen.  
 Advertencia! Peligro de asfixiantes. Partes pequeñas y bolas pequeñas.  
 Advarsel! Kvælningssfare. Små dele og små kugler.  
 Vihvõrunt! Kõhnutumisohu. Lillid hõltsed ja lillid pallid.  
 Varoitus! Tukehtumisvaara. Pieniä osia ja pieniä palloja.  
 Varning! Kvæmningsrisk. Små delar och små ballar.  
 Advarsel! Kvælningsfare. Små deler og små baller.  
 Atenção! Risco de asfixia. Pequenas partes e pequenas bolas.  
 Προειδοποίηση! Κίνδυνος πνιγμού. Μικρά μέρη και μικρές μπίλιες.  
 警告! 窒息の危険性。小さな部品および小さなボール。  
 警告! 謹防窒息危險。当心小物件和小球。  
 경고! 질식 위험. 작은 부품 및 작은 공 포함.  
 Внимание! Риск удушья. Мелкие детали и маленькие шарики.  
 Ostrzeżenie! Niebezpieczeństwo udławiania się. Małe części i małe kulki.  
 Upozornění! Nebezpečí zalknutí. Malé části a malé koule.  
 Upozornenie! Nebezpečenstvo dusenia. Malé časti a malé guľky a loptičky.  
 Figyelmeztetés! Fulladásveszély. Kis alkatrészek és kis labdák.  
 Обережно! Ризик задыхи. Дрібні деталі та маленькі шарики.  
 Upozorenje! Opasnost od gušenja. Mali dijelovi i male loptice.  
 Упо́зоре́нє! Опасност од гуше́ння. Мали делови и мале куґлице.  
 Предупреждение! Опасност од задушывање. Мали делови и мали топчиња.  
 Opozorilo! Nevarnost zadušitve zaradi tujke. Majhni deli in majhne kroglice.  
 Avertisment! Pericol de sufocare internă. Părți mici și mingi mici.  
 Внимание! Опасност от задавяне. Малки части и малки топки.  
 Bridinājums! Aizsēršanas risks. Sikas detaļas un sīkas bumbiņas.  
 Hoiatusi! Kägistamisohu. Väikesed osad ja väikesed pallid.  
 Ispejimas! Pavojus užspringti. Smulkios detalės ir maži kamuoliukai.  
 Uyarı! Boğulma Tehlikesi (Havasızlıktan). Küçük parçalar ve küçük toplar.  
 تحذیر! خطر الاختناق اجزاء صغيرة وكرات صغيرة.  
 Peringatan! Bahaya tersedak. Bagian kecil dan bola kecil.  
 Avarant! Bahaya tercekik. Bahagian kecil dan bola kecil.



# WARNING:

## CHOKING HAZARD.

Toy contains small parts and a small ball.

Not for children under 3 years.



# AVERTISSEMENT :

## RISQUE D'ÉTOUFFEMENT.

Le jouet contient des petites pièces ainsi qu'une petite boule.

Il ne convient pas aux enfants de moins de 3 ans.



# ADVERTENCIA:

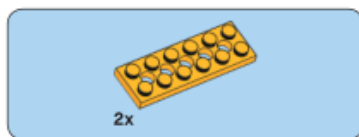
## PELIGRO DE ASFIXIA.

Juguete que contiene partes pequeñas y una pelota pequeña.

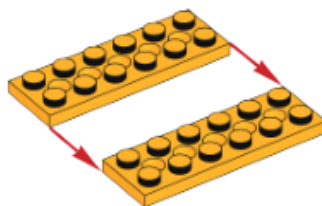
No recomendado para niños menores de 3 años.



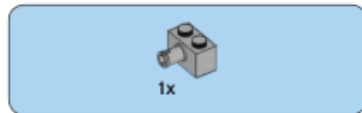
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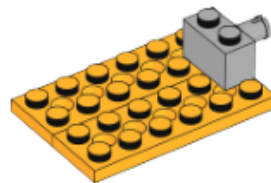
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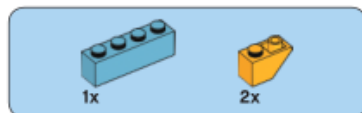
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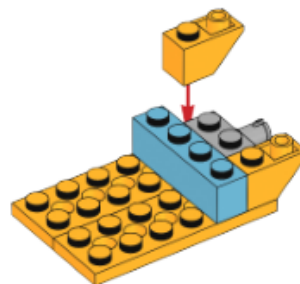
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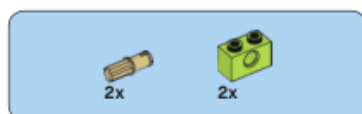
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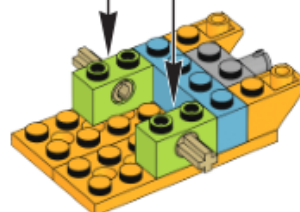
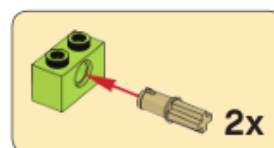
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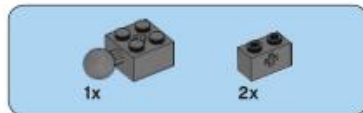


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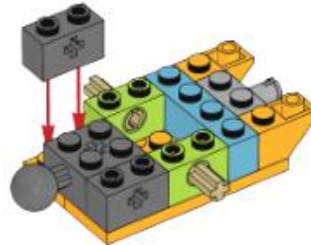


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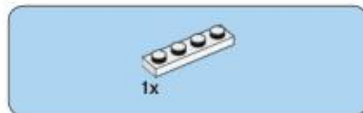




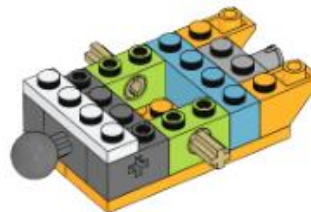
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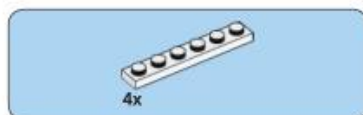
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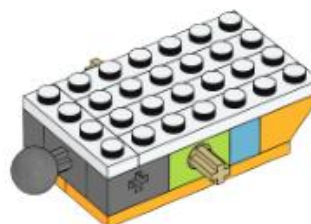
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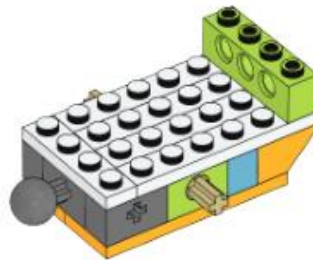
7



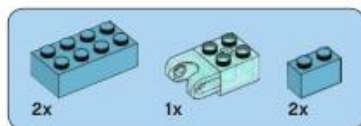




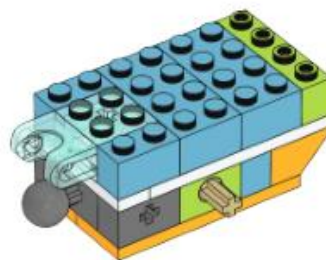
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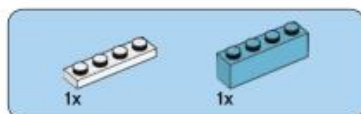
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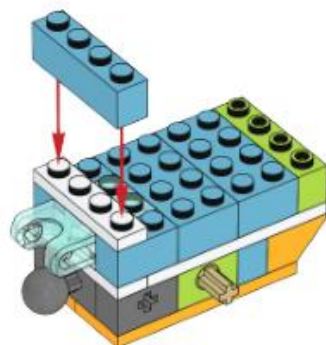
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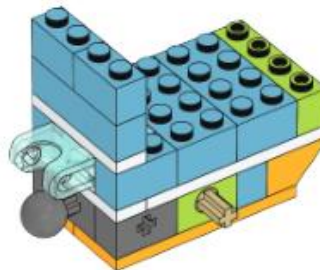
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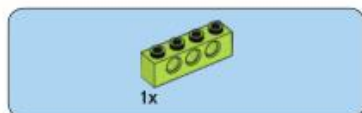
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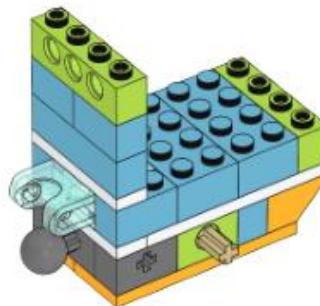
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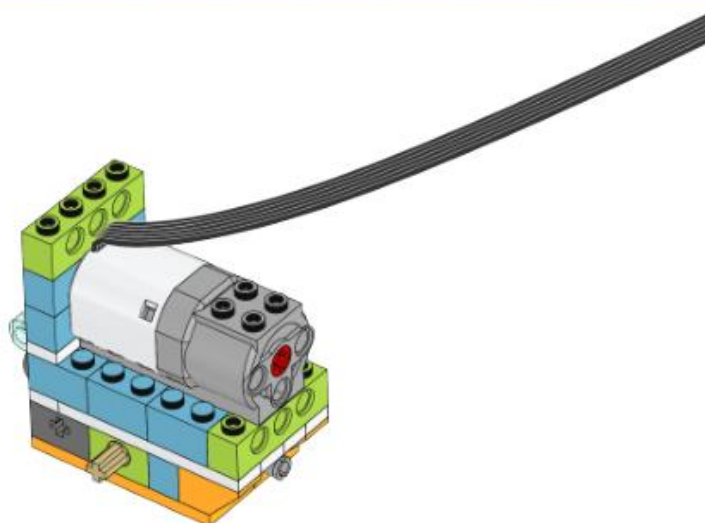
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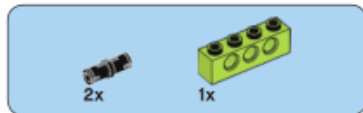


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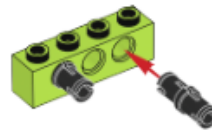


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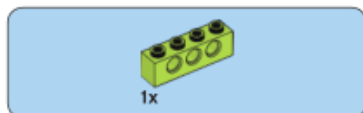




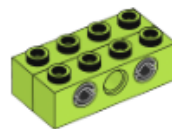
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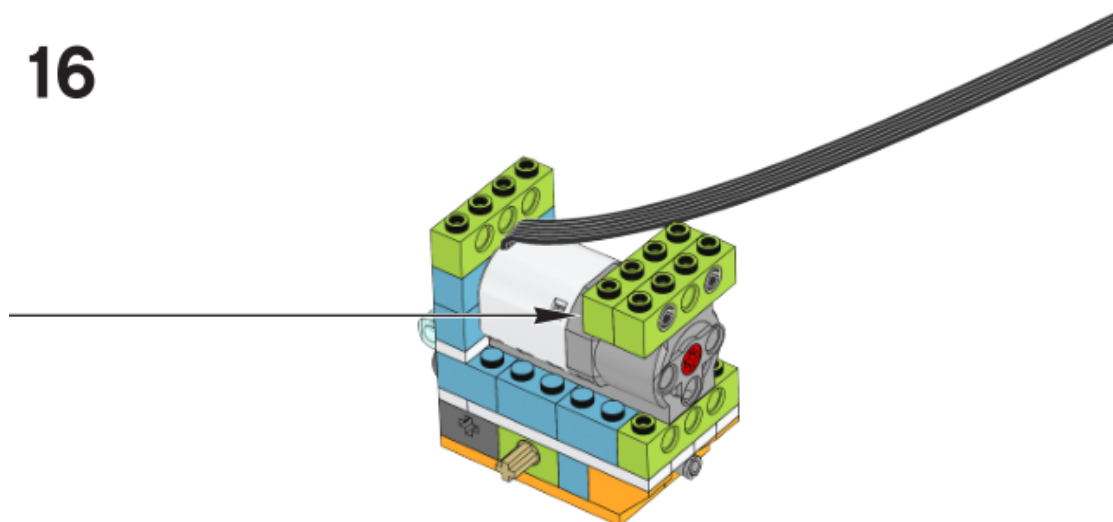


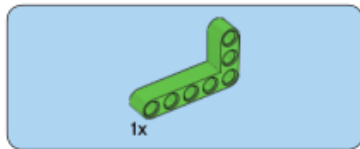
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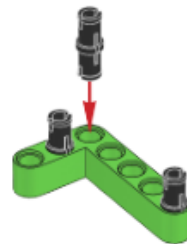
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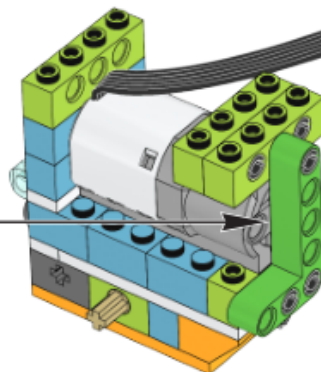


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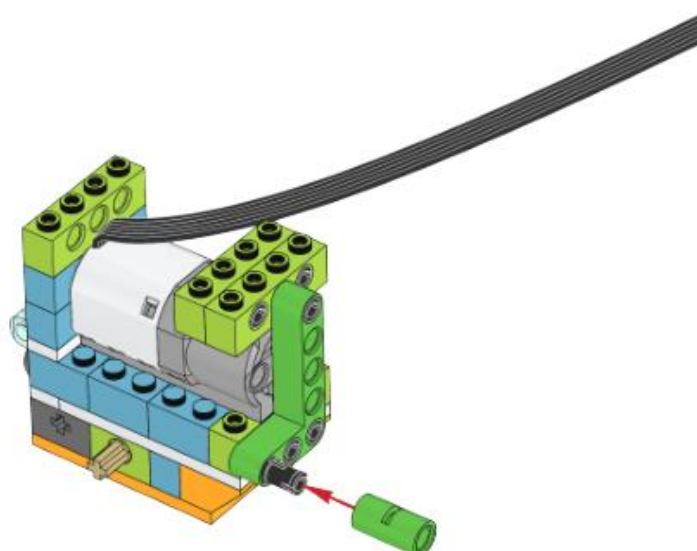
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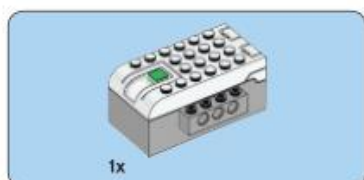




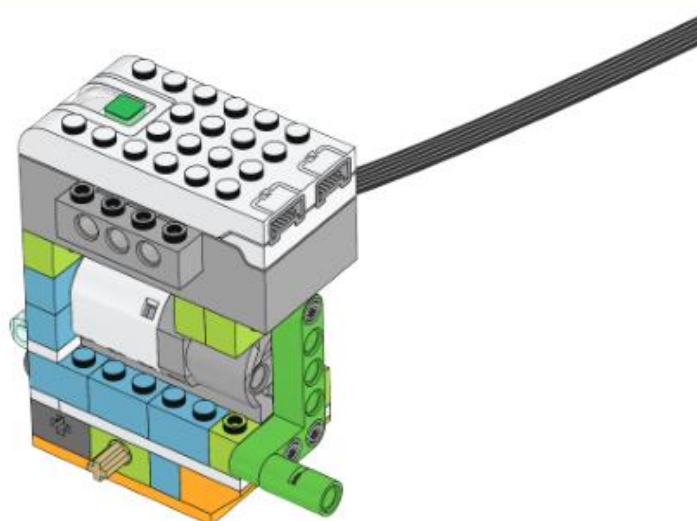
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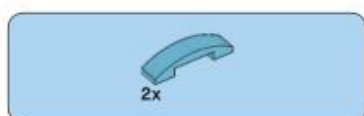
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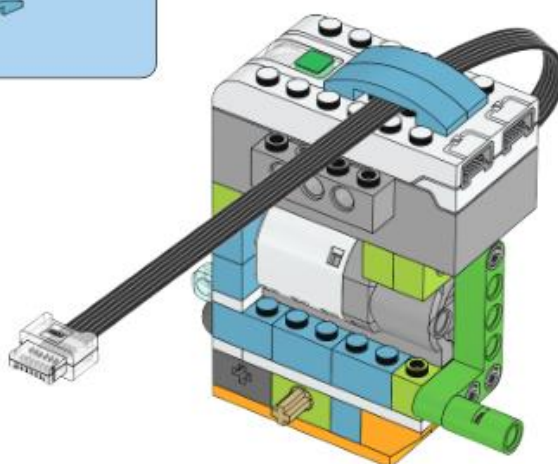
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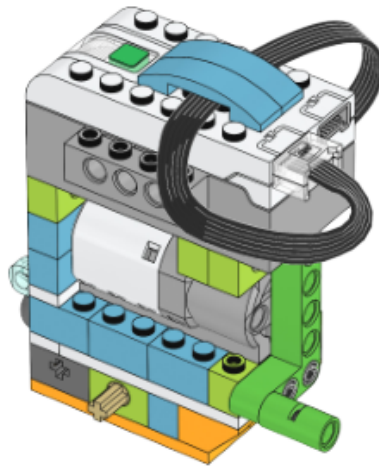
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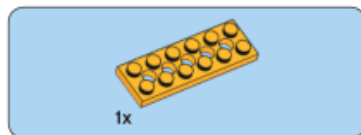
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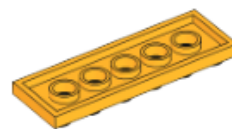
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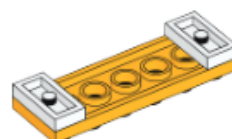
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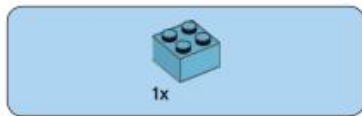
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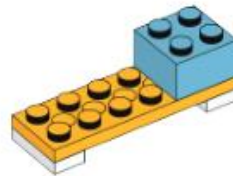
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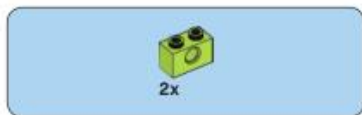
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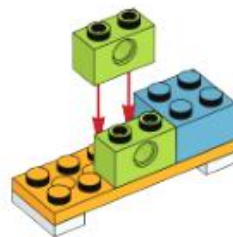
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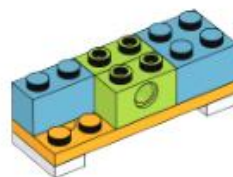
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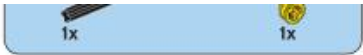
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28



30



29



31



30



32

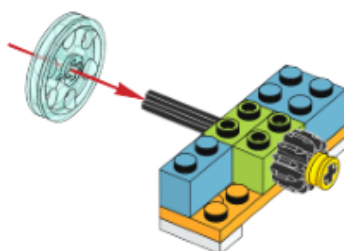
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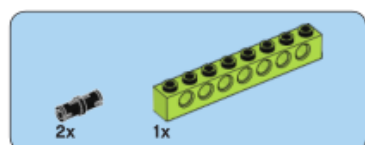




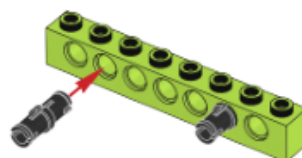
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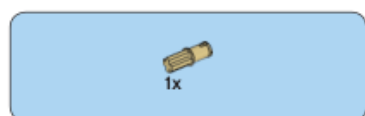
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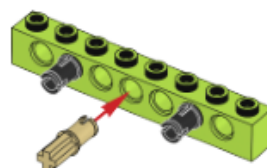
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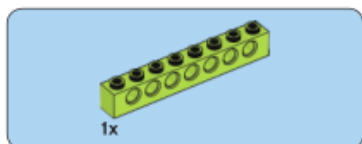


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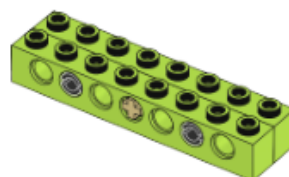


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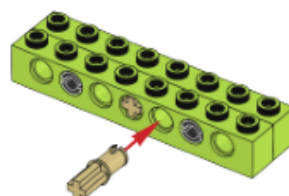




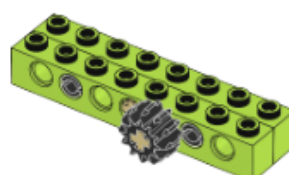
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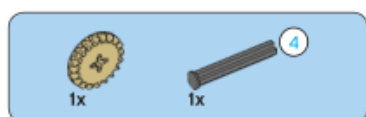


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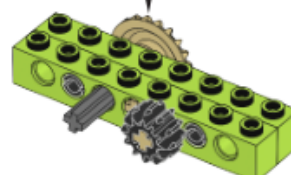
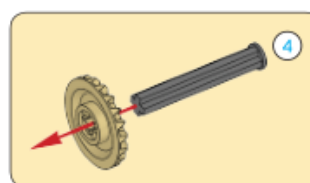


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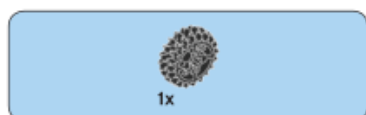




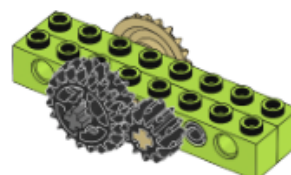
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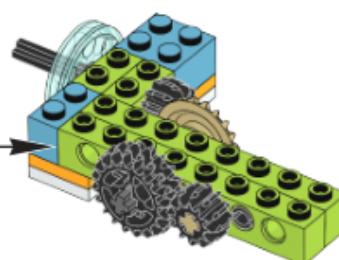


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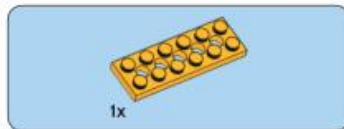


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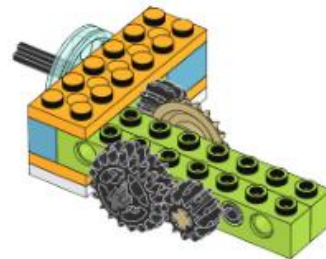
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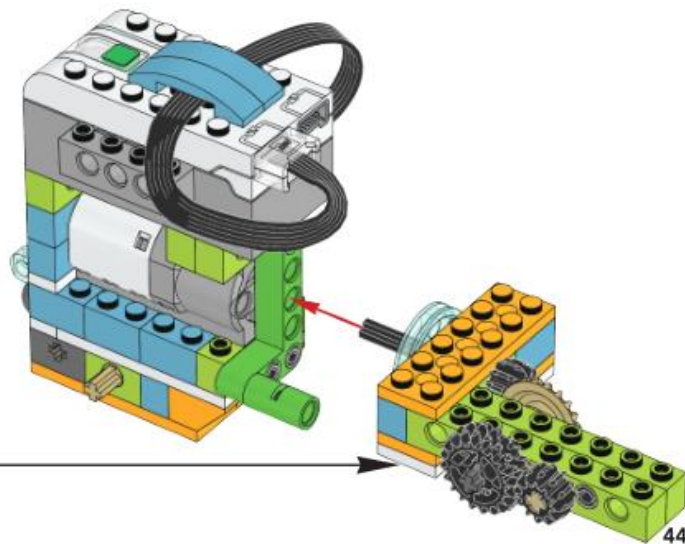


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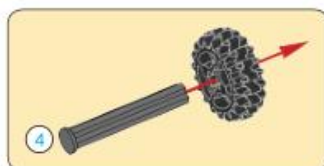
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44



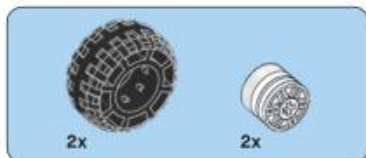
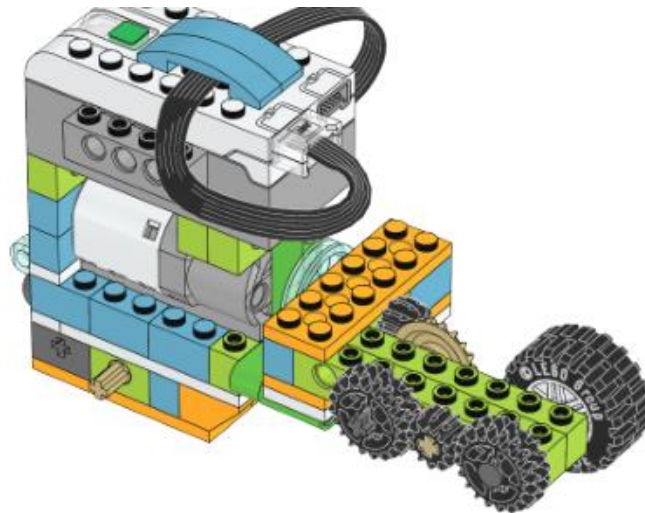
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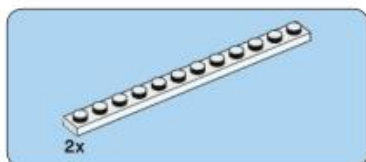
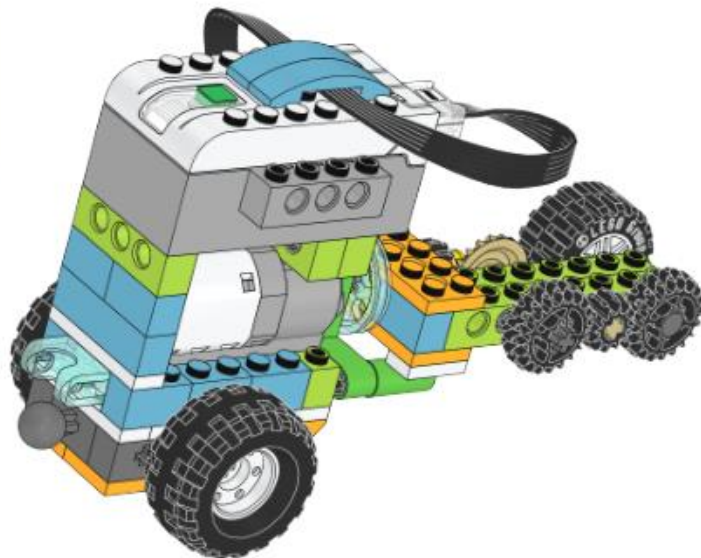
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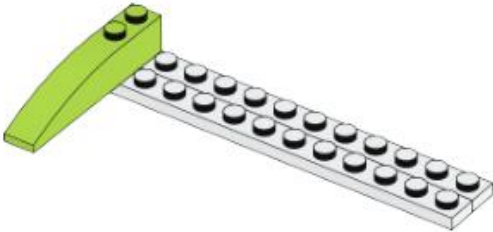


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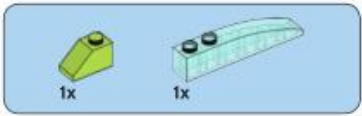




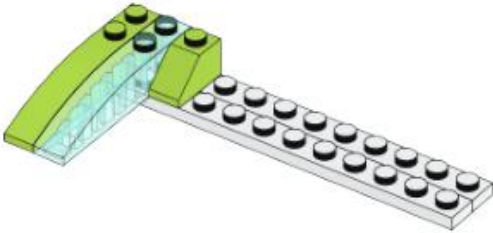
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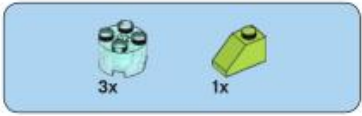
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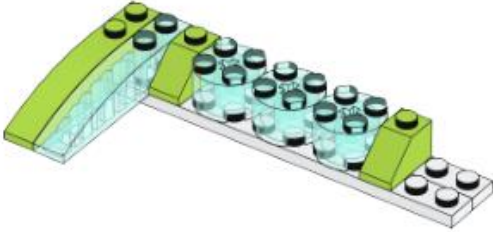
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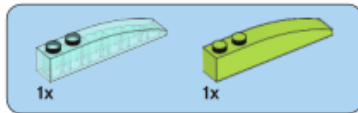


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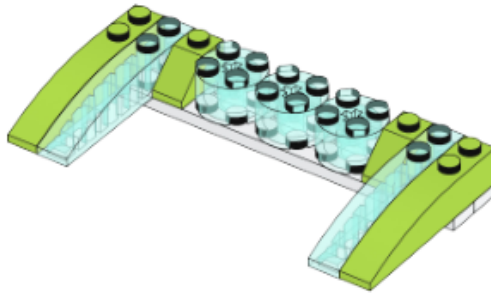


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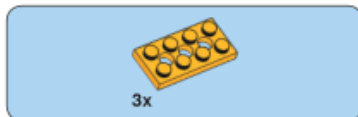




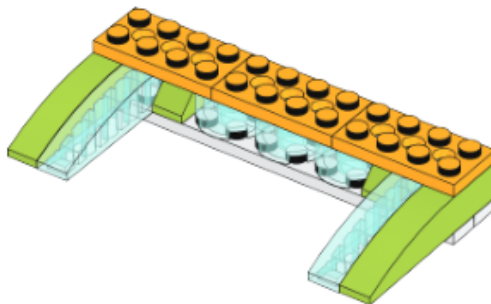
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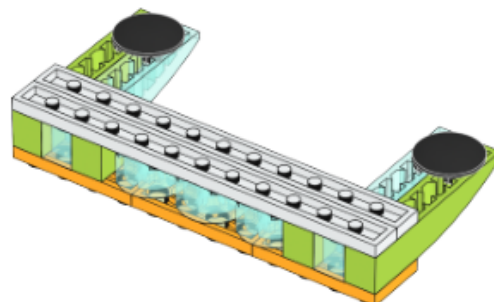
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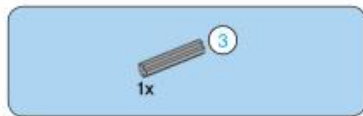


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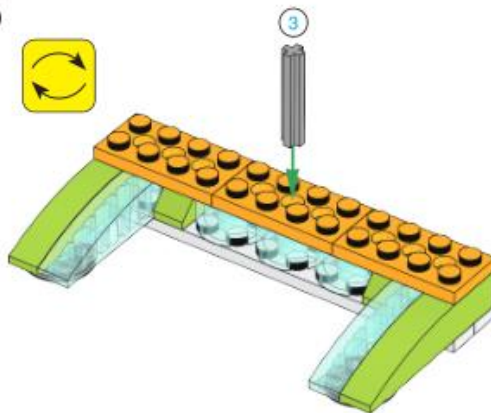


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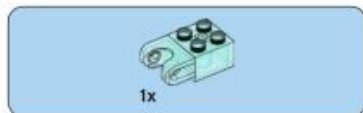




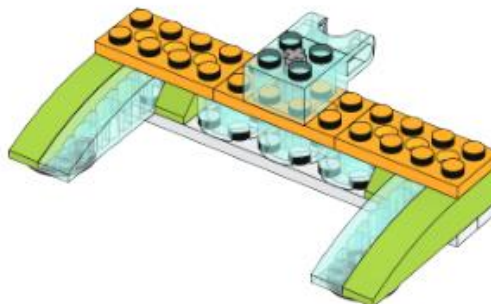
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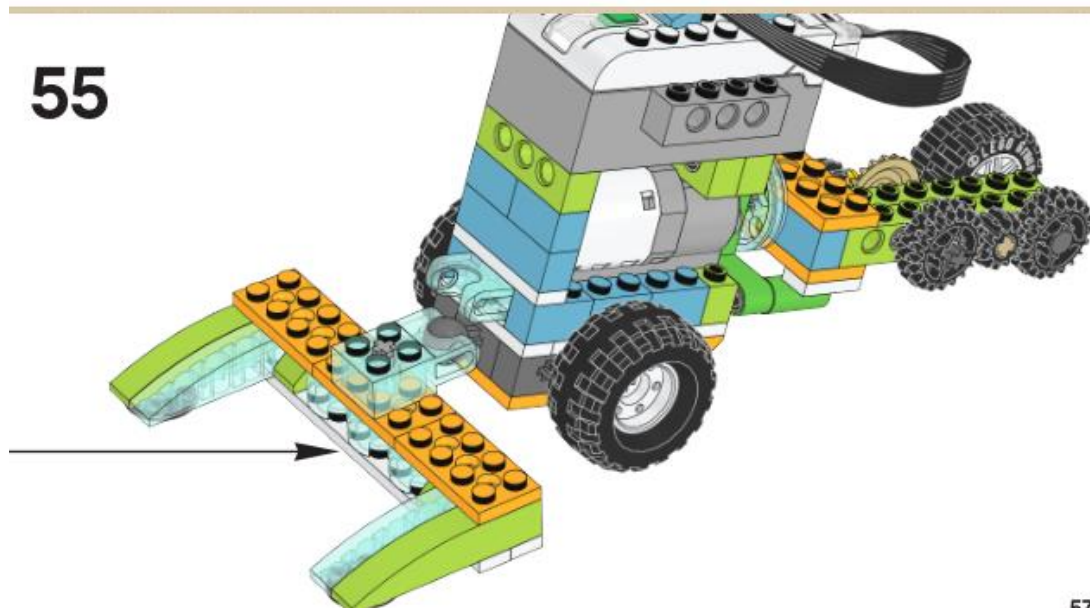


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56

55



57



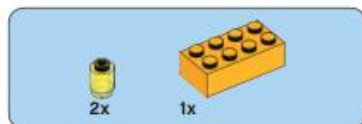


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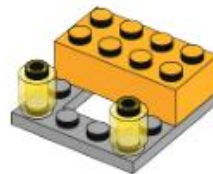


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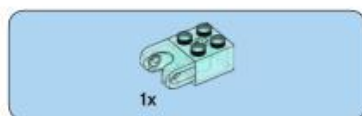


**57**



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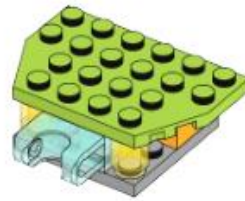
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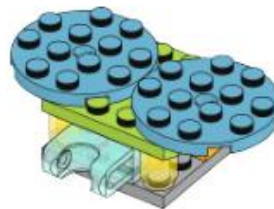


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60

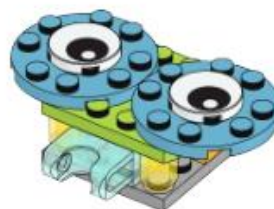


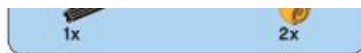
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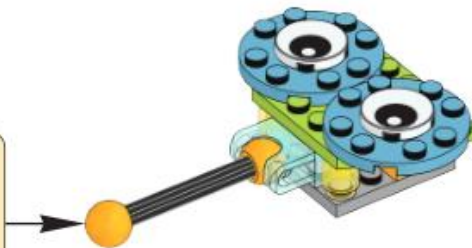
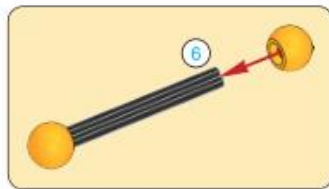


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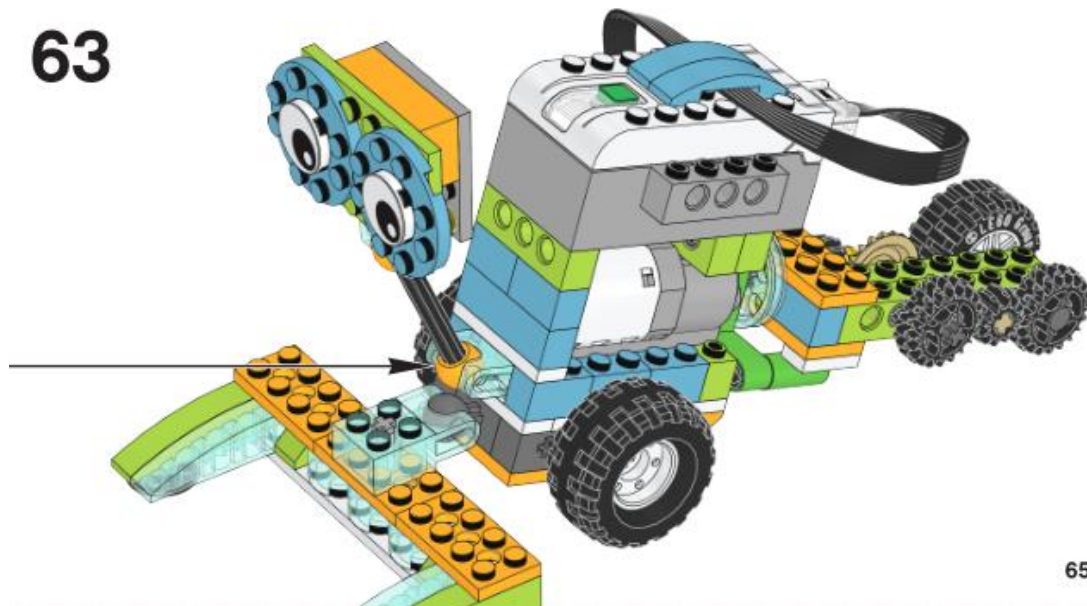


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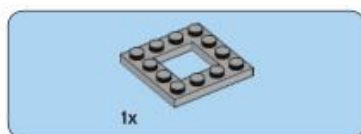


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63

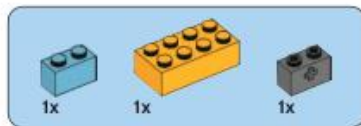


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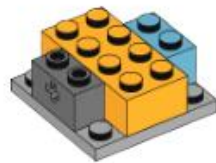


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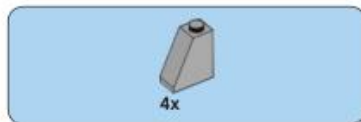




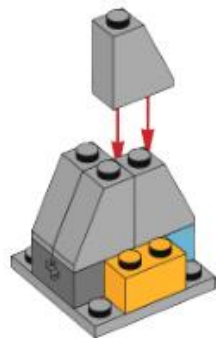
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67



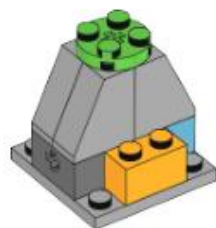
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68



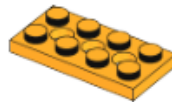
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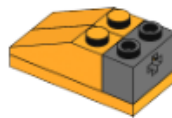
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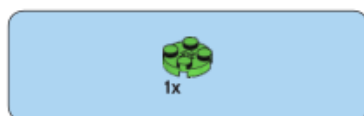
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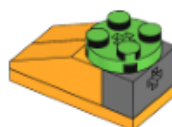
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71



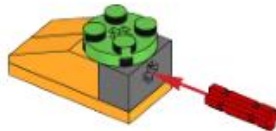
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72



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72

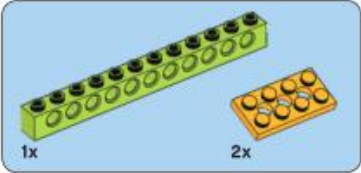


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2) volcano-alarm



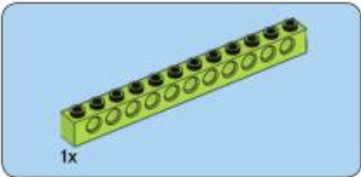
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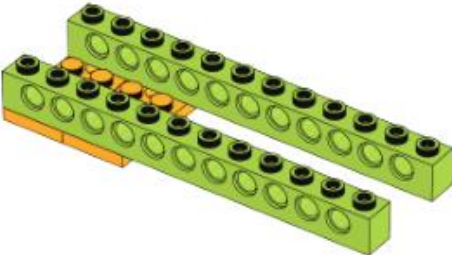
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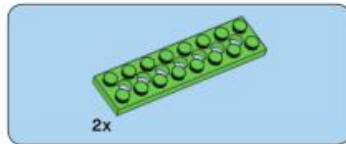


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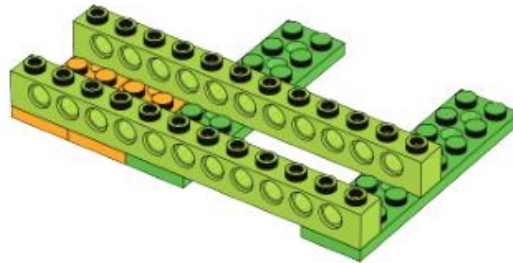


2





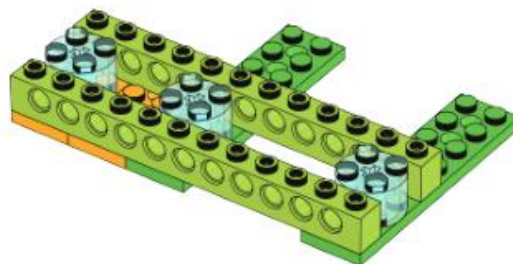
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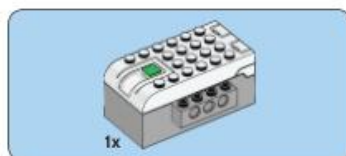
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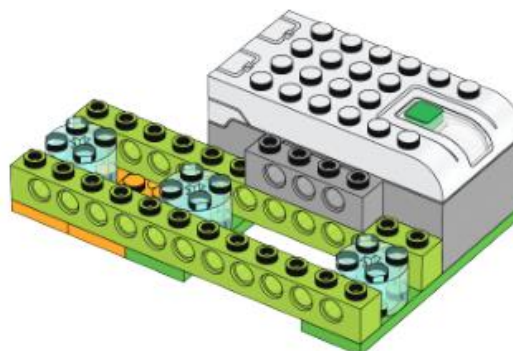
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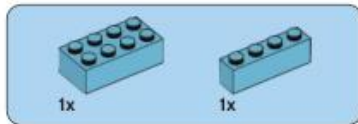


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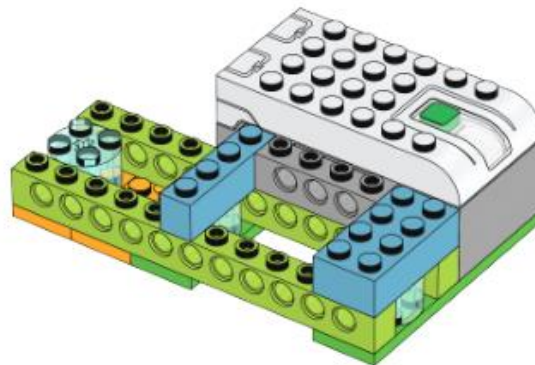


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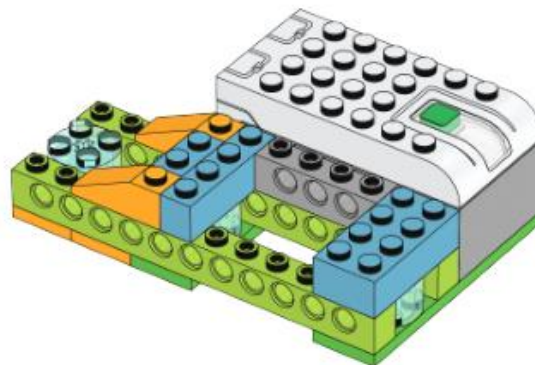
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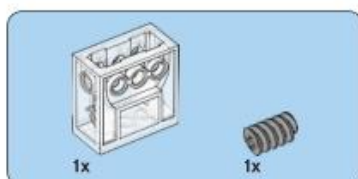
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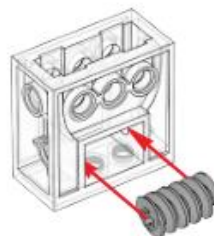
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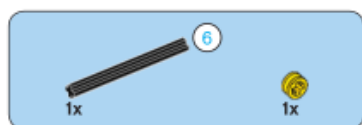


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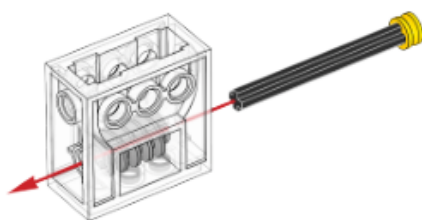


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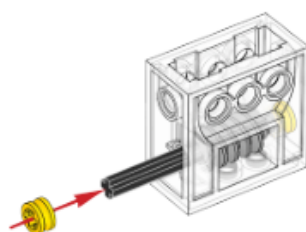
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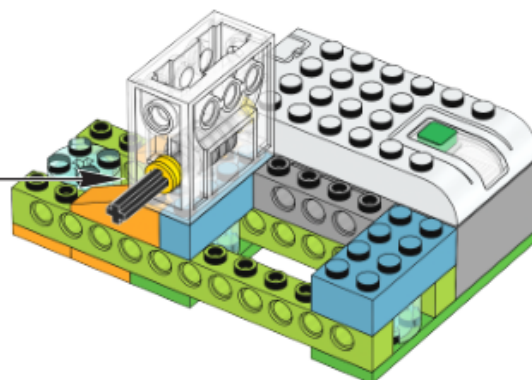


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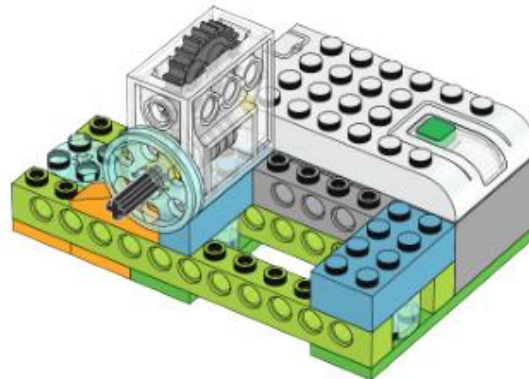
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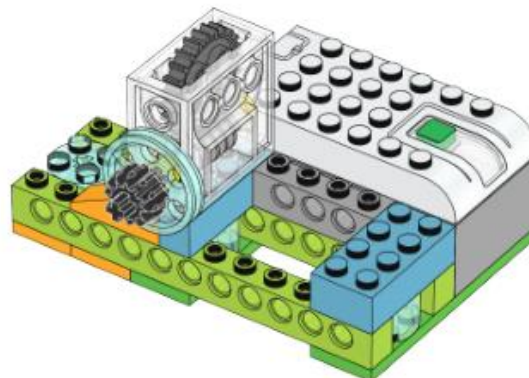
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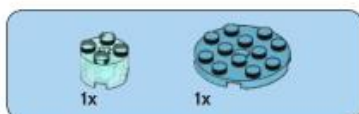
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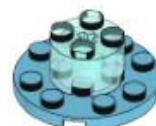
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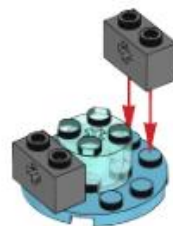


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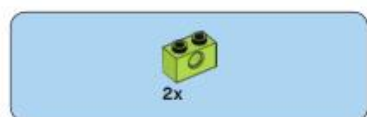




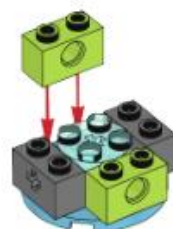
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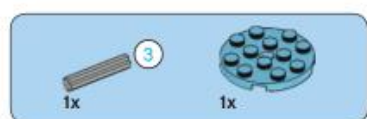
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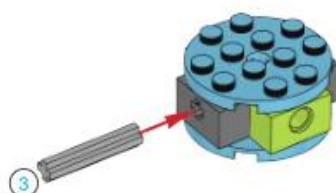
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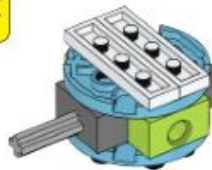


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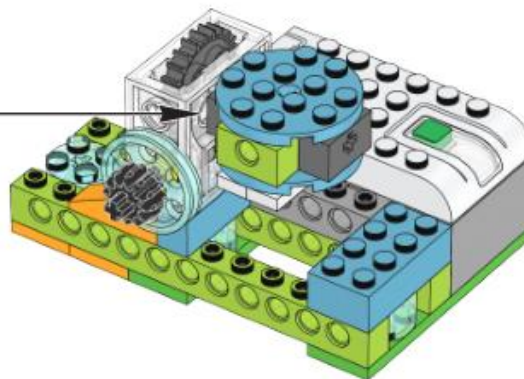


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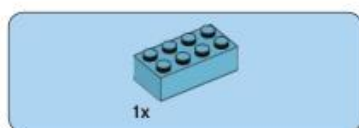


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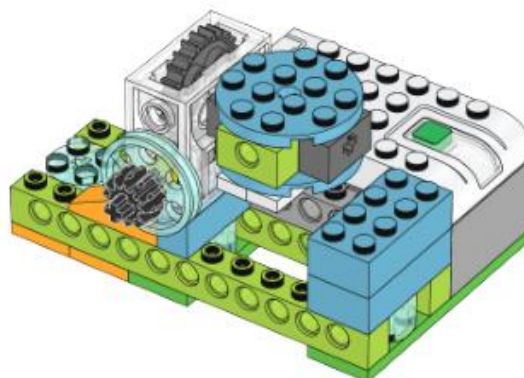
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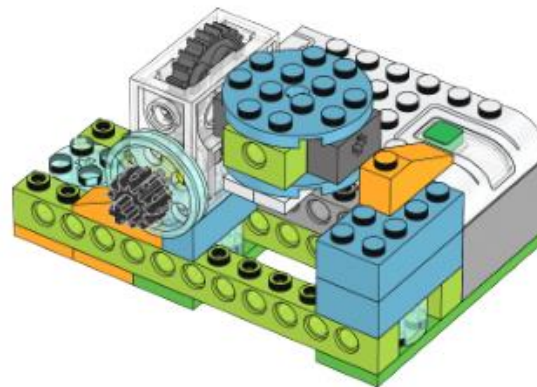


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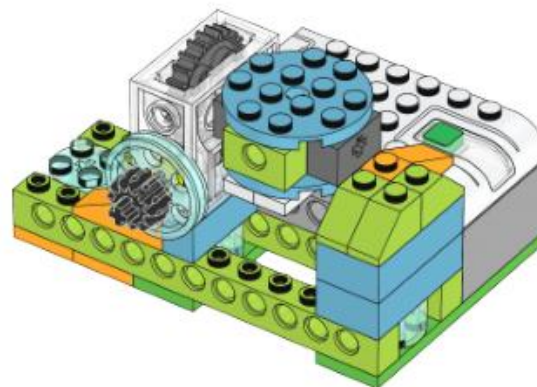
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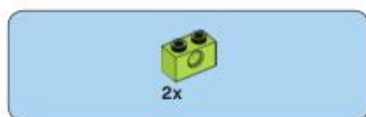
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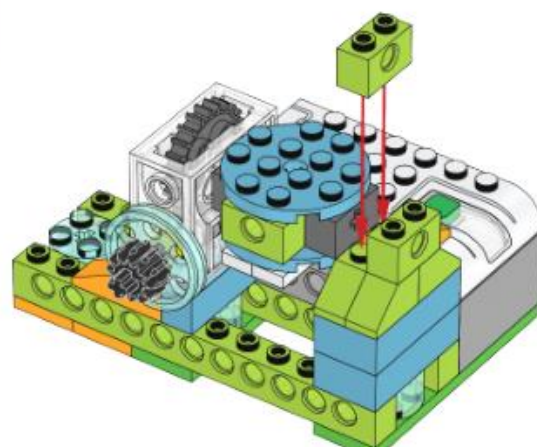
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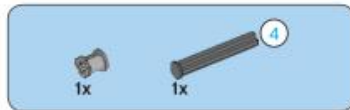
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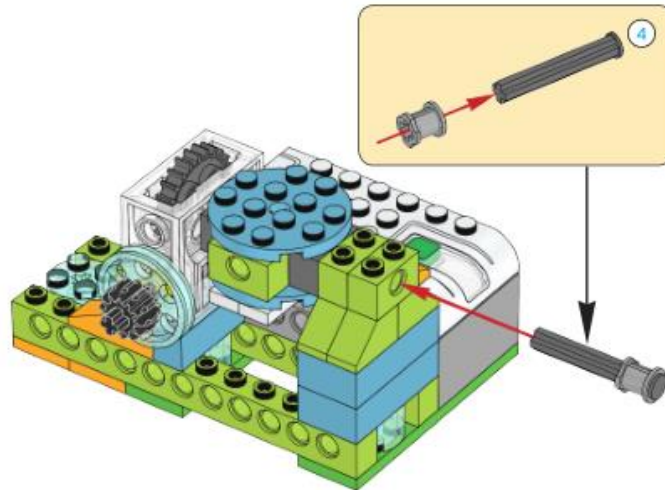
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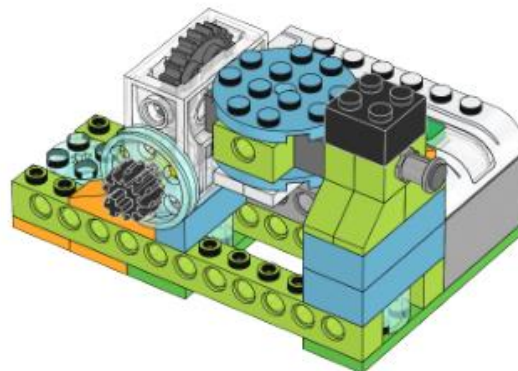




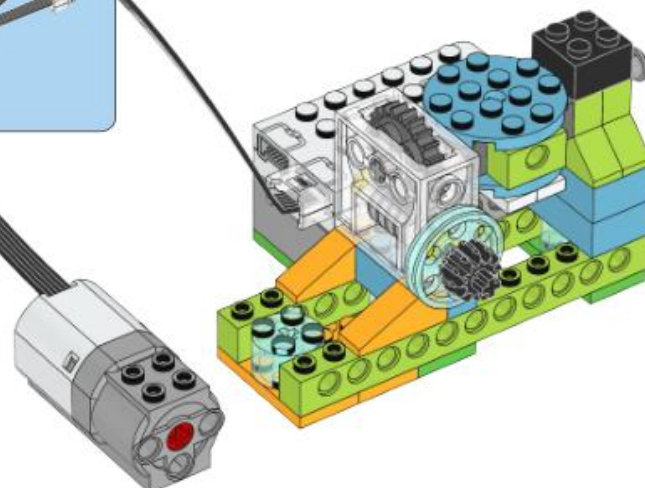
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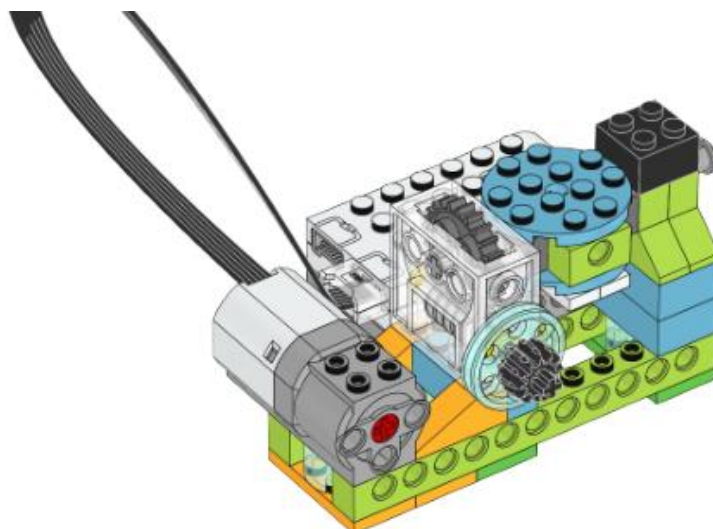
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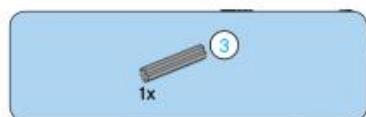
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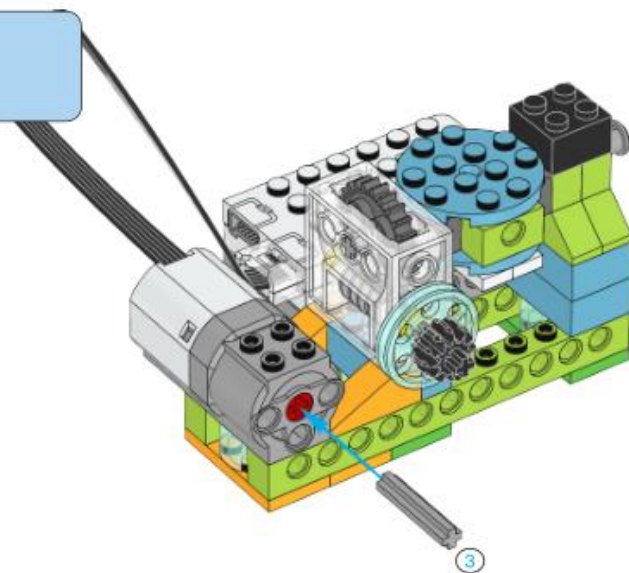
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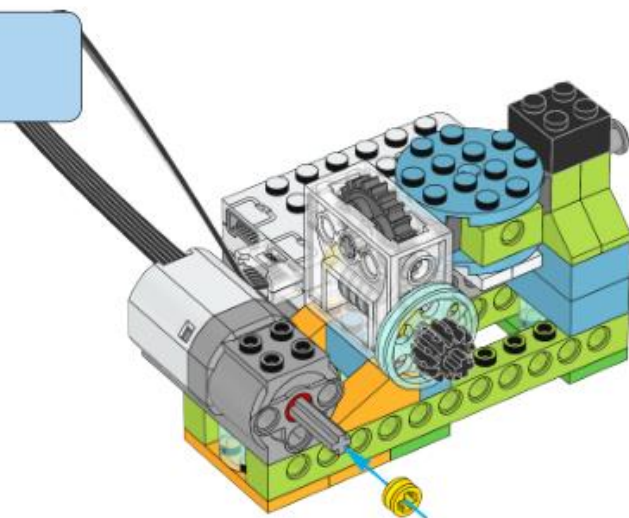
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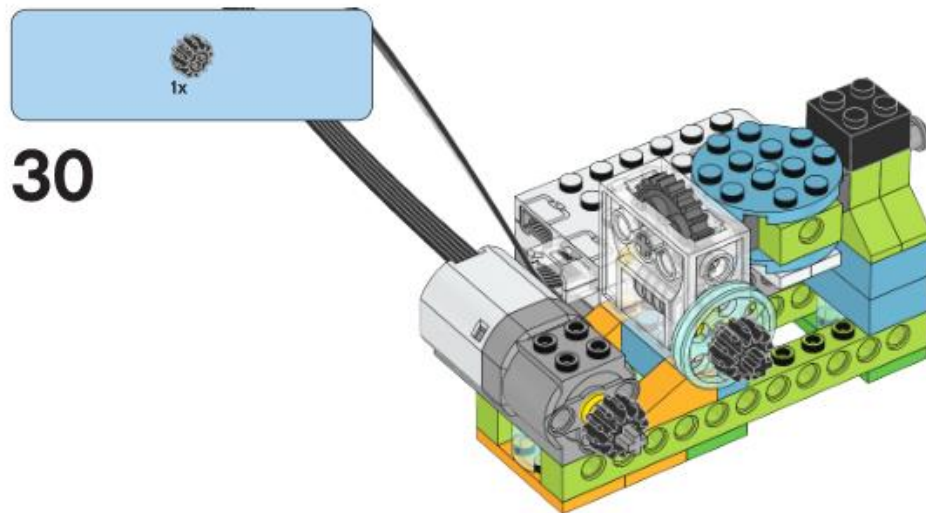
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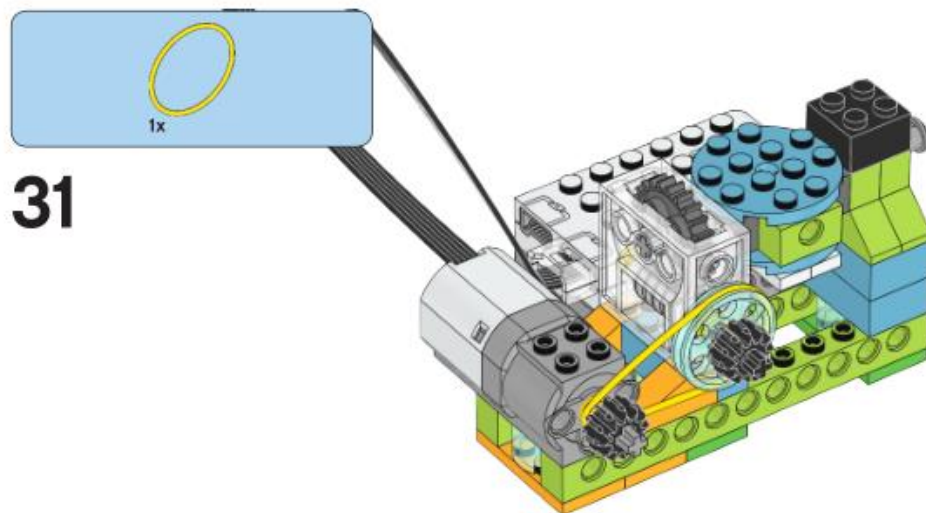
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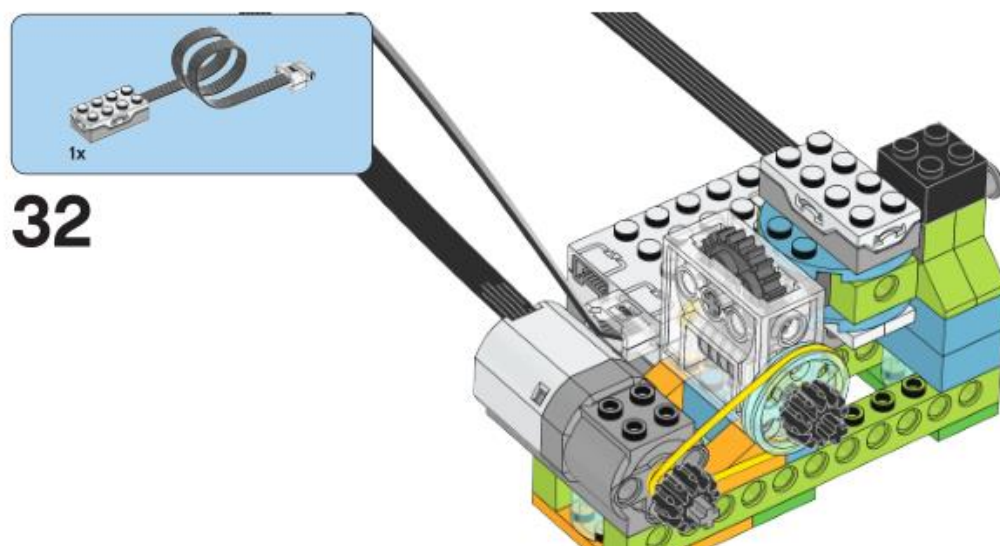




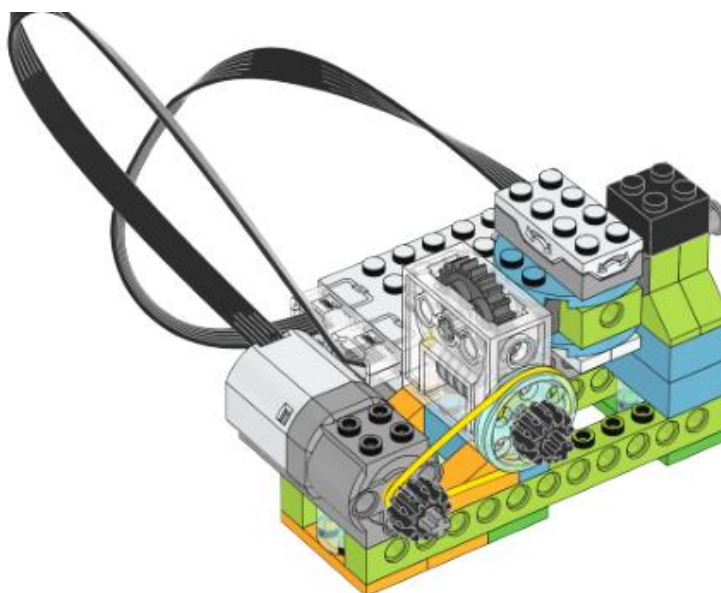
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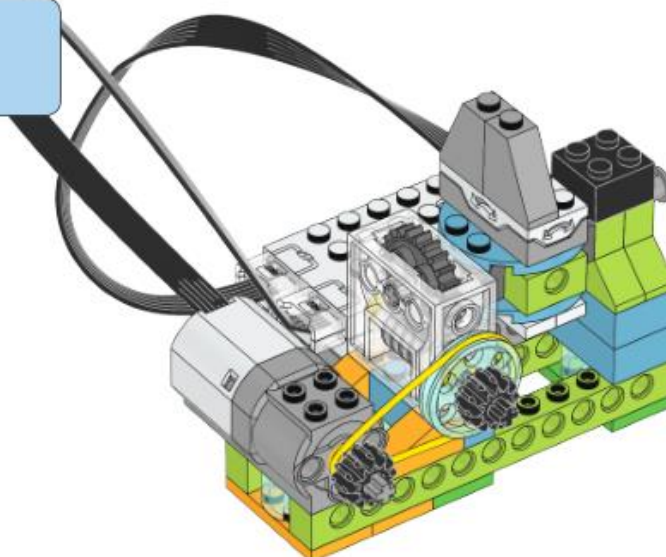
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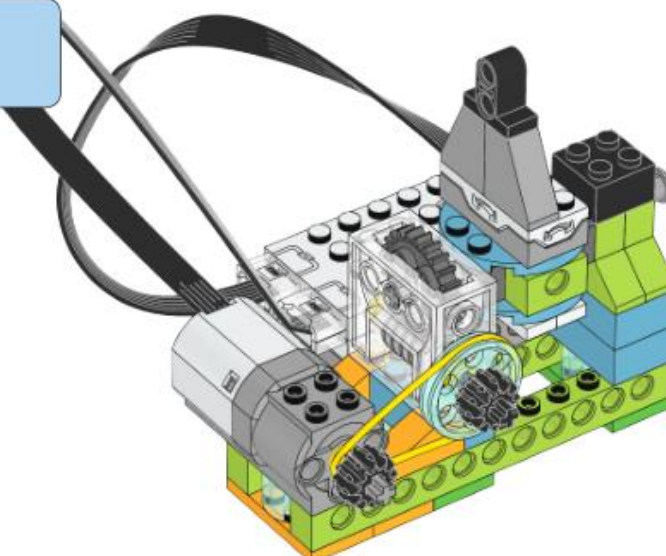
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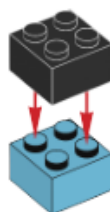
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37

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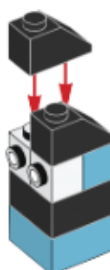


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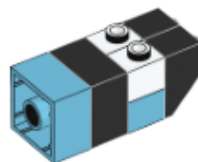


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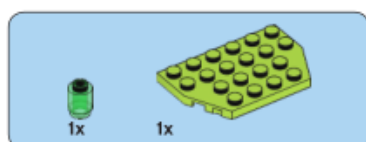


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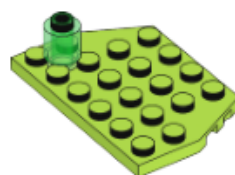
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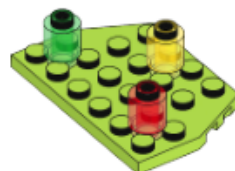
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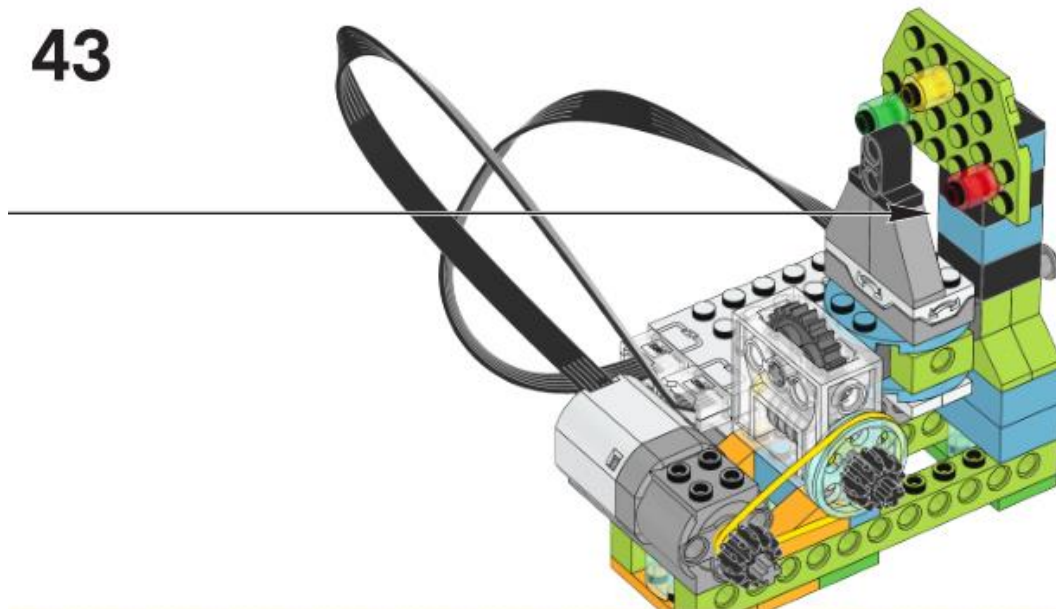


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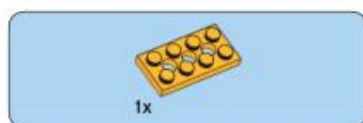


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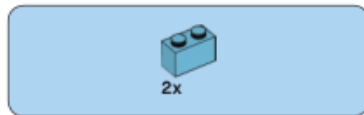


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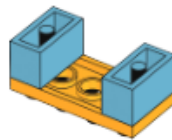


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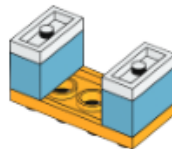


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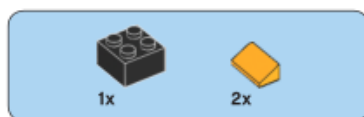


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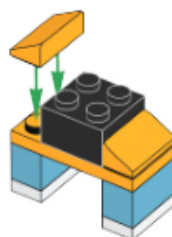


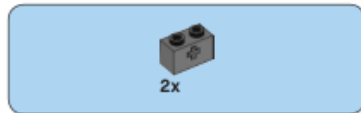
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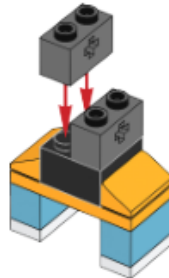


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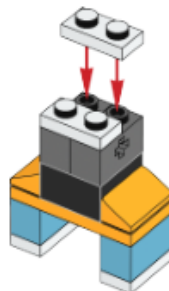
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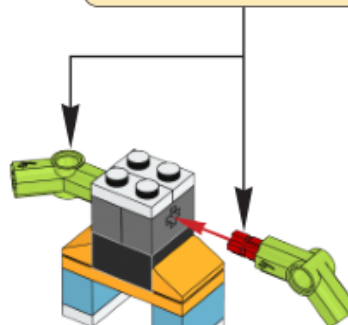
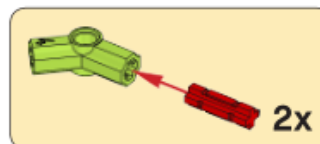
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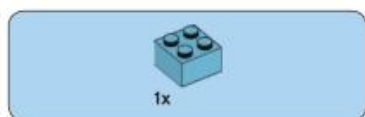
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50



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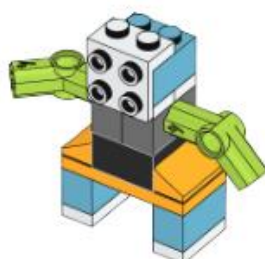
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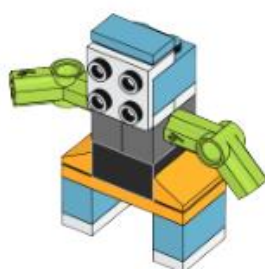
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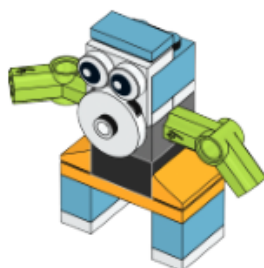
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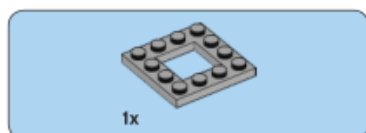




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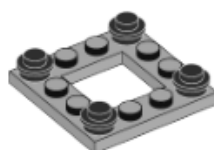
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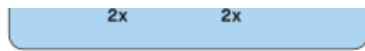


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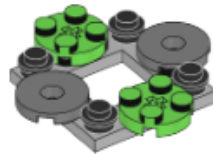


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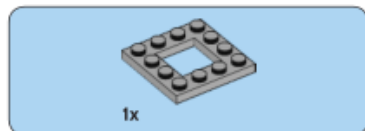




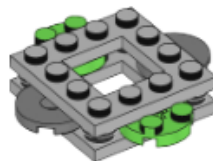
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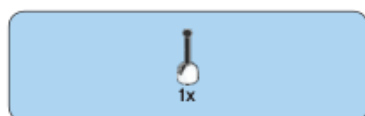
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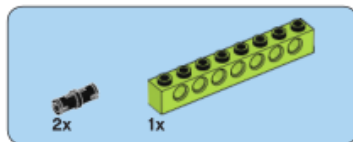


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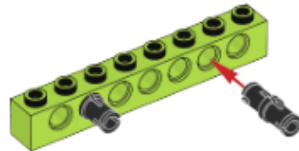


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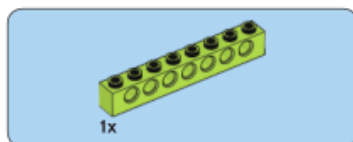


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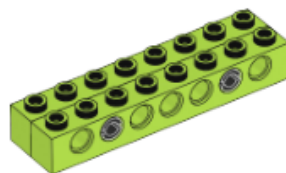


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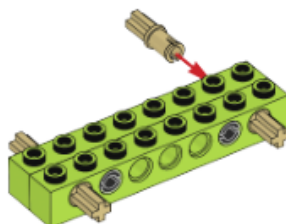


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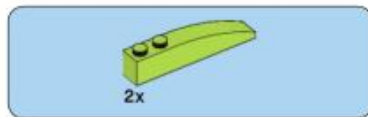


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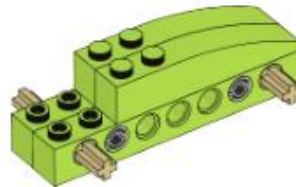


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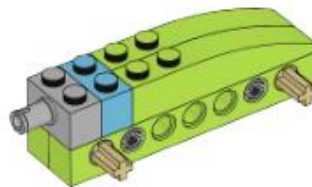
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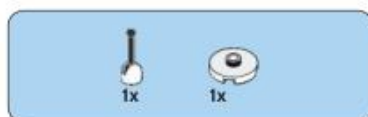
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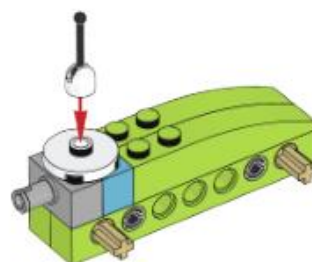
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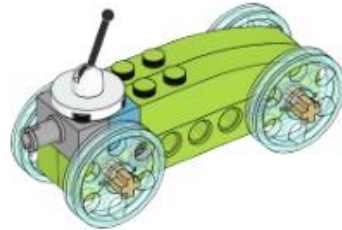


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66



67



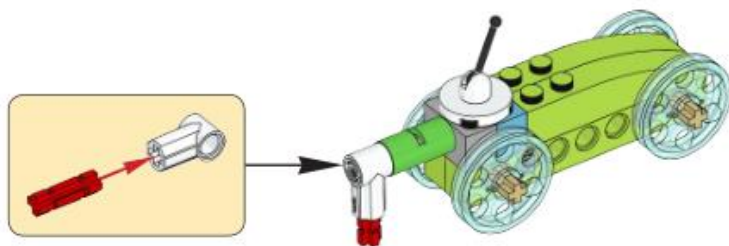
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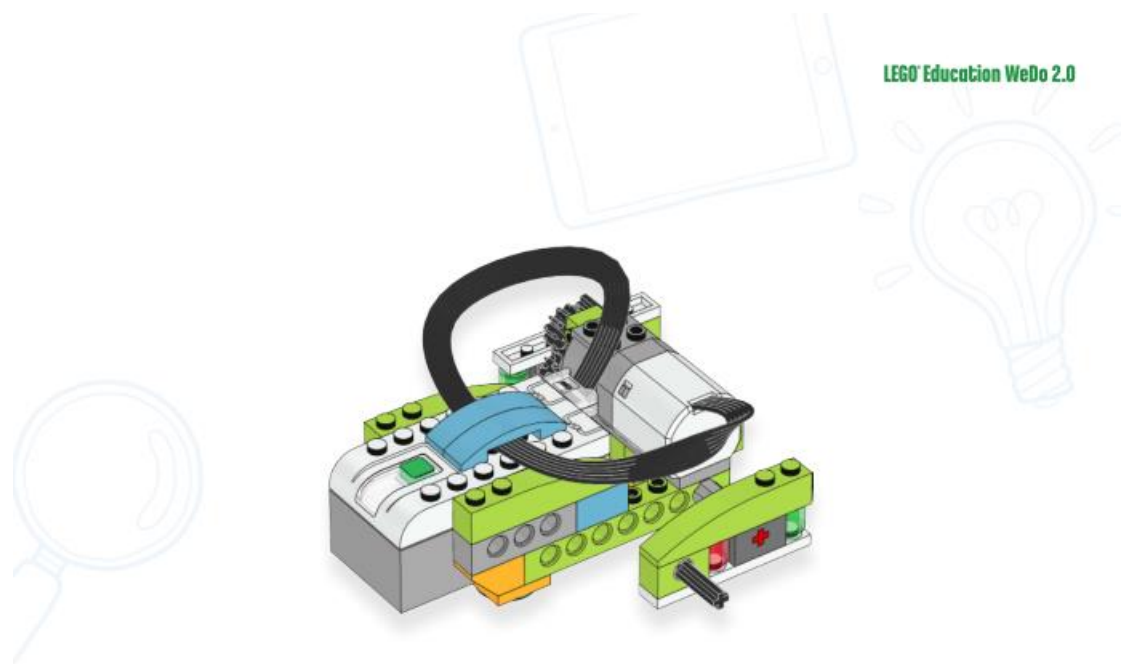
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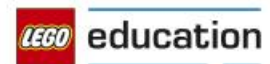
3) walk

## WeDo 2.0 Core Suite



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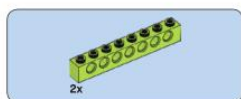
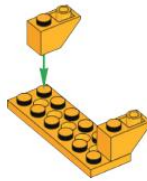


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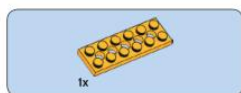
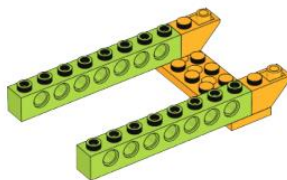




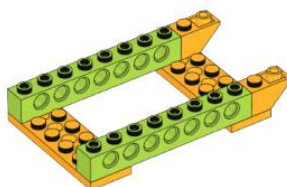
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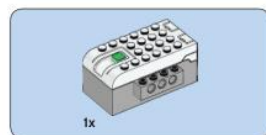
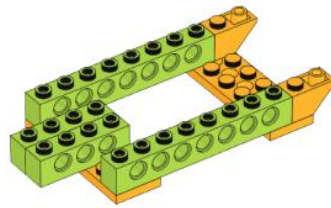




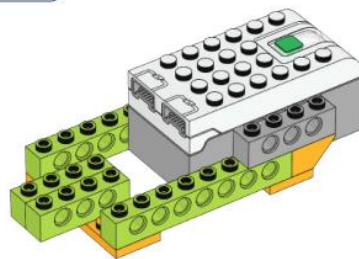
## WeDo 2.0 Core Suite



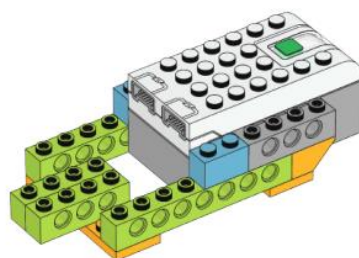
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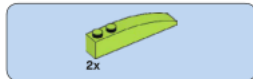
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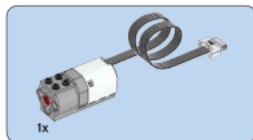
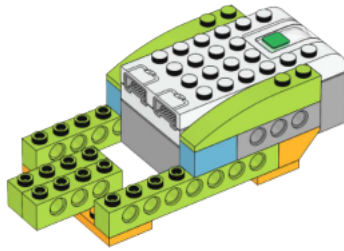
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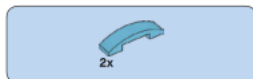
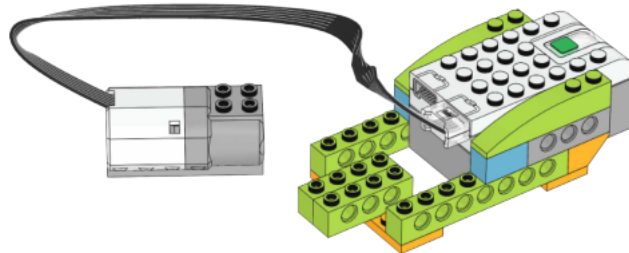
## WeDo 2.0 Core Suite



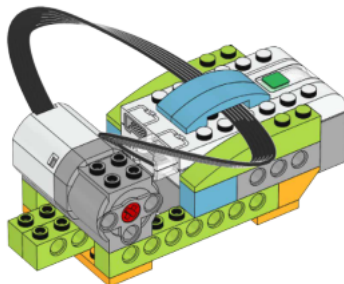
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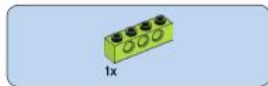
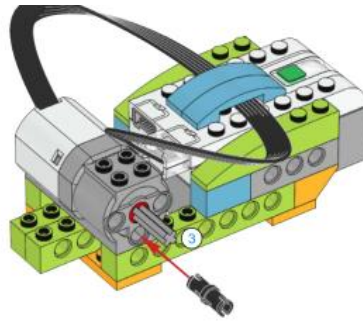
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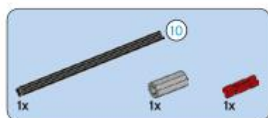
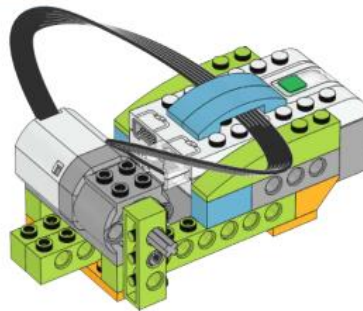
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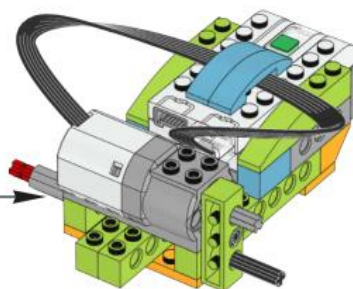
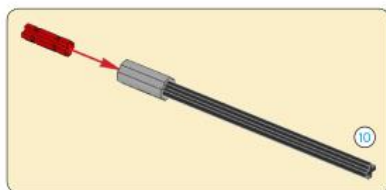
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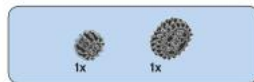


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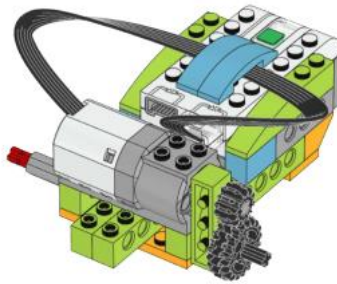


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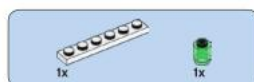
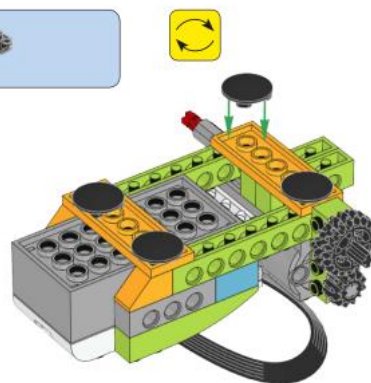




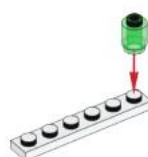
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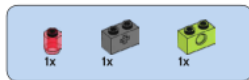


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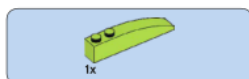
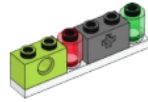


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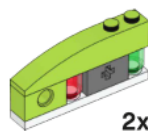




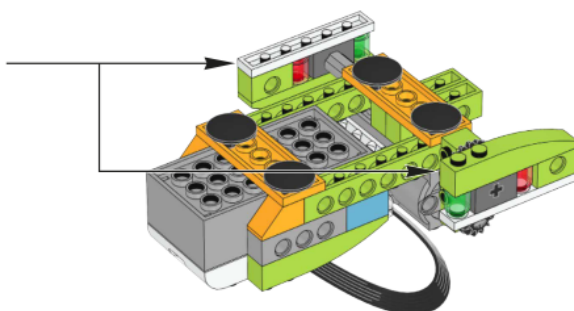
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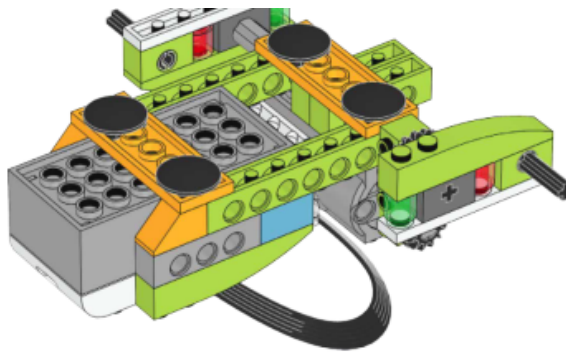
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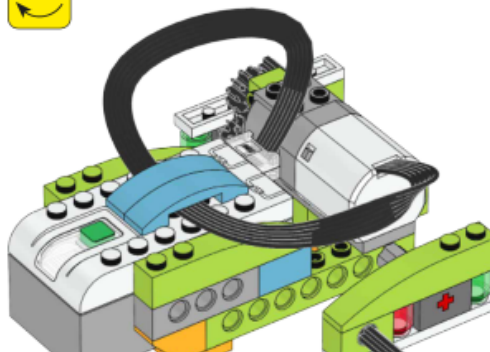
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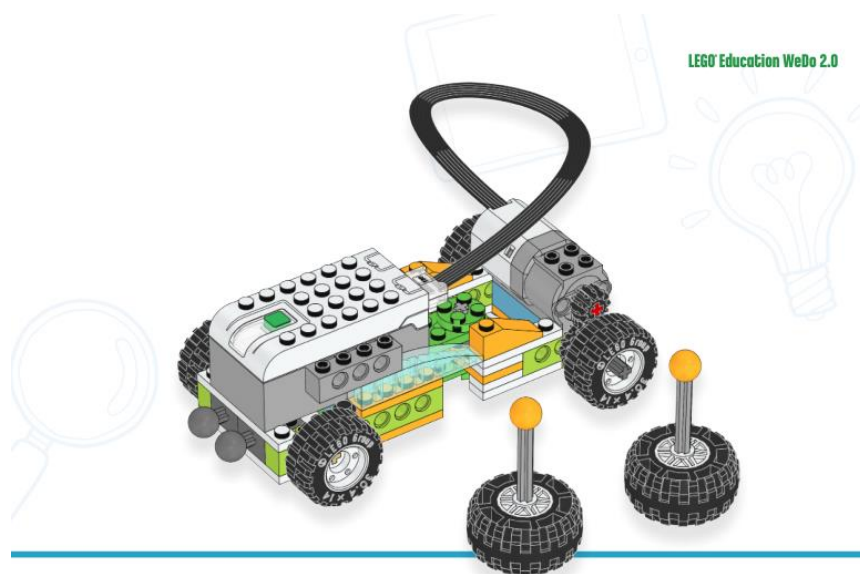


20



4) steer

## WeDo 2.0 Core Suite



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**LEGO** education

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**LEGO** education

Warning! Choking hazard. Small parts and small balls.  
Achtung! Erstickungsgefahr. Kleine Teile und kleine Kugeln.  
Attention ! Danger d'étouffement. Petits éléments et petites balles.  
Avvertenza! Rischio di soffocamento. Piccole parti e piccole palle.  
Waarschuwing! Verstikkingsgevaar. Kleine onderdelen en kleine ballen.  
¡Advertencia! Peligro de atragantamiento. Partes pequeñas y bolas pequeñas.  
Advarsel! Kvælningsfare. Små dele og små kugler.  
Vibðrunt! Köfnunghættu. Lítil hlutir og lítil kúlur.  
Varoitus! Tukehtumisvaara. Pieniä osia ja pieniä palloja.  
Varning! Kvävningrisk. Små delar och små bollar.  
Advarsel! Kvælningsfare. Små deler og små baller.  
Atenção! Risco de asfixia. Pequenas partes e pequenas bolas.  
Προειδοποίηση! Κίνδυνος πνιγμού. Μικρά μέρη και μικρές μπίλες.  
警告! 窒息の危険性。小さな部品と小さなボール。  
警告! 窒息窒息危险。当心小零件和小球。  
경고! 질식 위험. 작은 부품 및 작은 공 포함.  
Внимание! Риск удушья. Мелкие детали и маленькие шарики.  
Ostrzeżenie! Niebezpieczeństwo udławienia się. Małe części i małe kulki.  
Uproozhnenie! Nebezpečje zaletit. Male delci a male kugle.  
Uproozhnenie! Nebezpečje dusenja. Male časti a male kugly a koptičky.  
Figyelem! Fulladásveszély. Kis alkatrészek és kis labdák.  
Опорожнені! Ризик заданья. Дрібні деталі та маленькі кулі.  
Uproozhnenie! Opasnost od gušenja. Mali dijelovi i male loptice.  
Упоорожнені! Опасност од гушення. Мали делови и мале топички.  
Предупредување! Опасност од задушување. Мали делови и мали топички.  
Opozorilo! Nevarnost zadušitve zaradi tulca. Majhni deli in majhne kroglice.  
Avertissement! Pericol de sufocare internă. Partii mici și mingi mici.  
Внимание! Опасност от заданье. Малики части и малики топки.  
Bridningst! Användnings risk. Små detaljer och små bollar.  
Hoituus! Kätöistämiskit. Väikesed osad ja väikesed pallid.  
Ispejimai! Pavoja užspringti. Smulkios detalės ir mažai kamuoliukai.  
Uvart! Bogauna tahleku! (Havaeickian) Kizuk parçalar ve küçük toplar.  
تحذير! خطر الاختناق أجزاء صغيرة وكرات صغيرة.

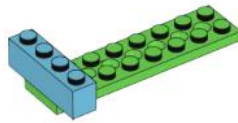
**WARNING:**  
CHOKING HAZARD.  
Toy contains small parts and a small ball.  
Not for children under 3 years.

**AVERTISSEMENT :**  
RISQUE D'ÉTOUFFEMENT.  
Le jouet contient des petites pièces ainsi qu'une petite boule.  
Il ne convient pas aux enfants de moins de 3 ans.

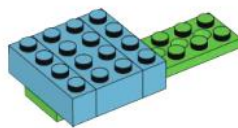
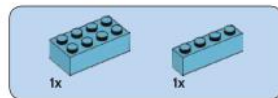
**ADVERTENCIA:**  
PELIGRO DE ASFIXIA.  
Juguete que contiene partes pequeñas y una pelota pequeña.  
No recomendado para niños menores de 3 años.



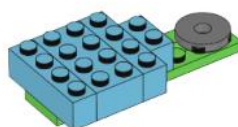
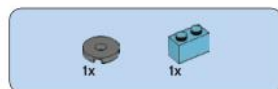
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**2**

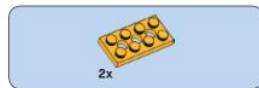


**3**

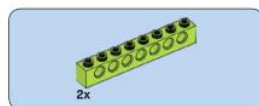
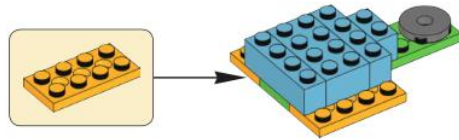




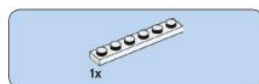
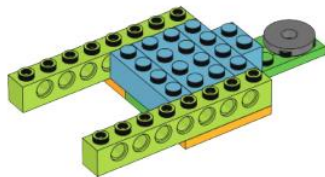
## WeDo 2.0 Core Suite



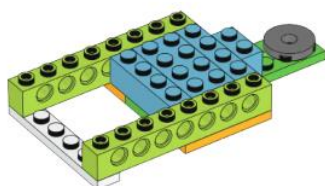
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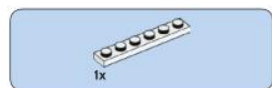
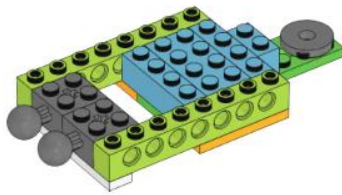
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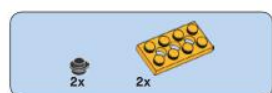
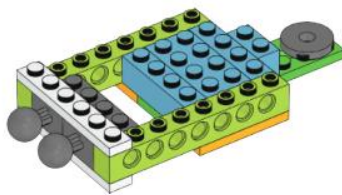
## WeDo 2.0 Core Suite



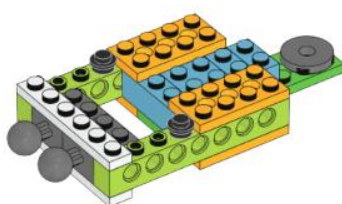
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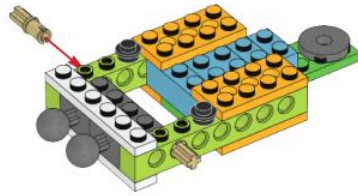


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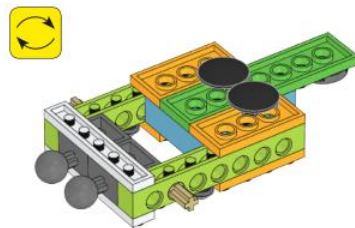




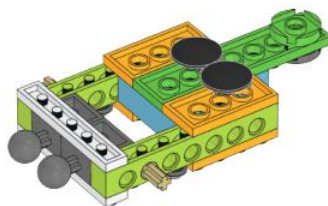
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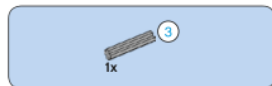


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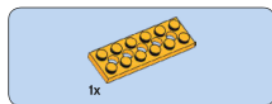
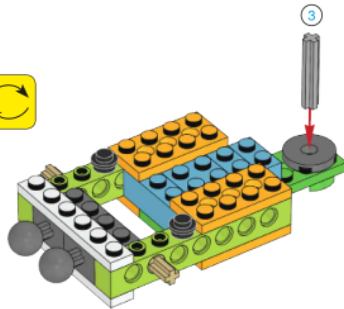


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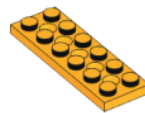




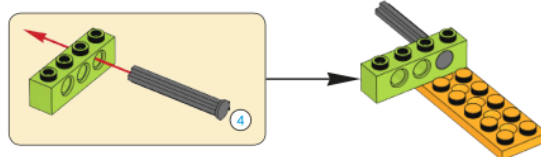
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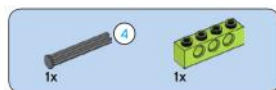


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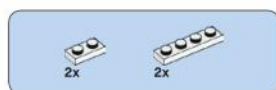
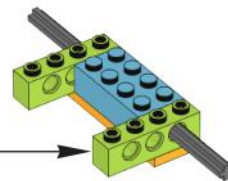
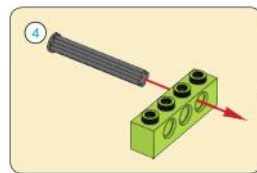




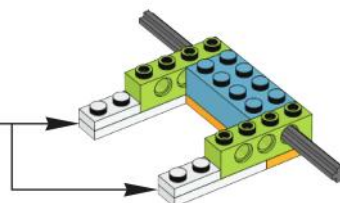
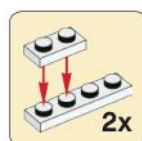
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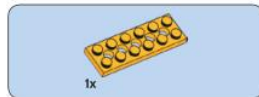


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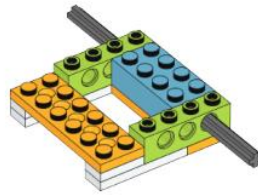


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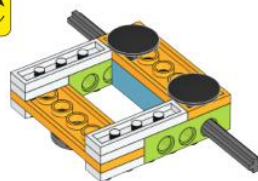
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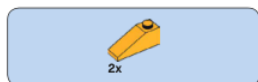
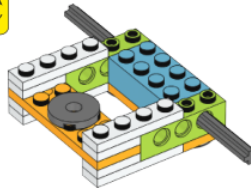


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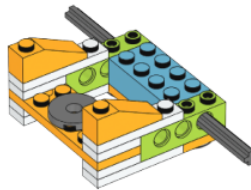




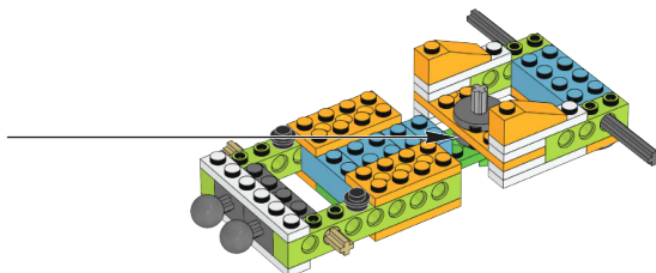
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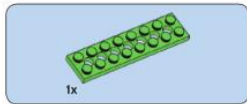


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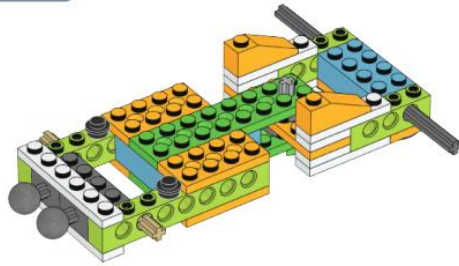


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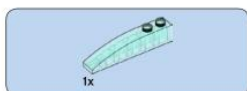
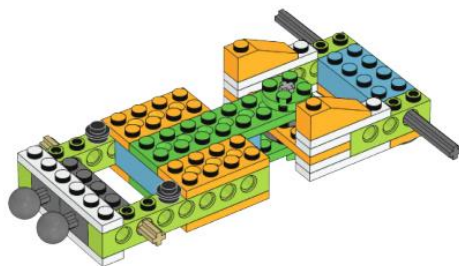




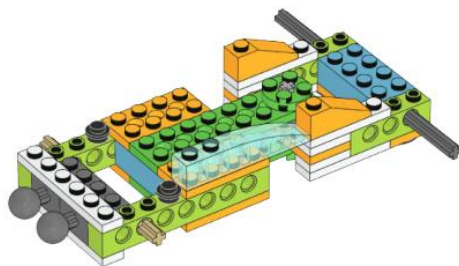
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26



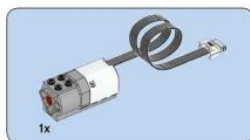
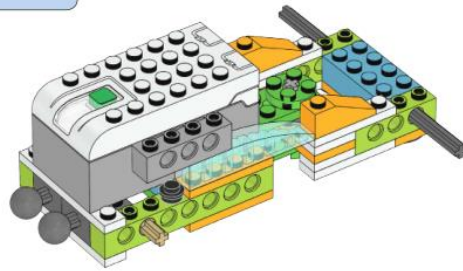
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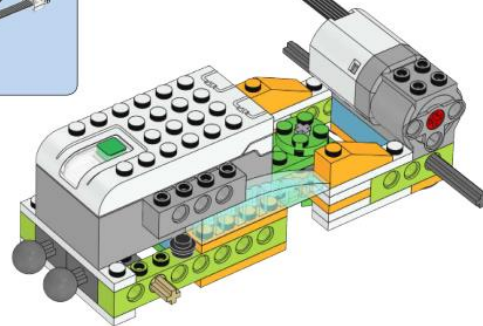




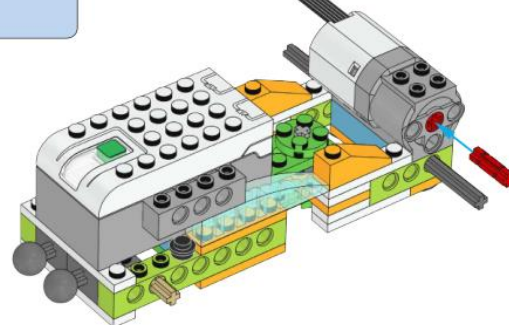
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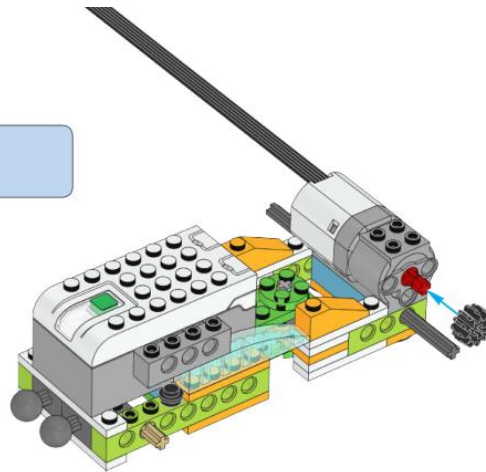


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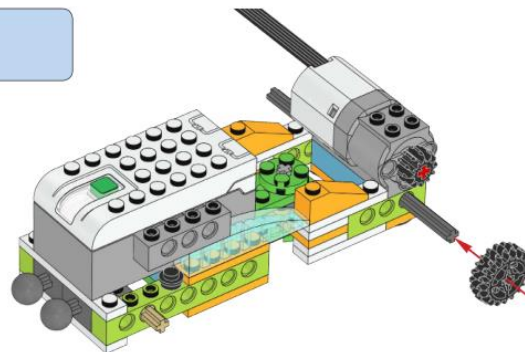




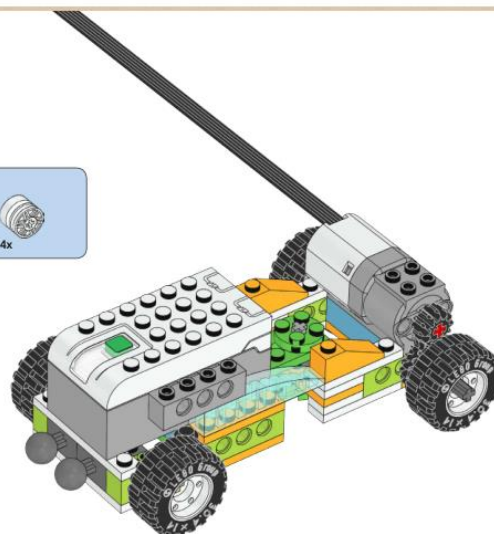
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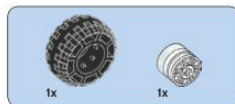
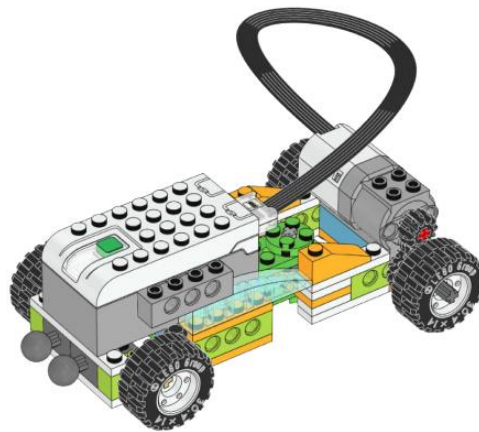
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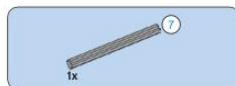
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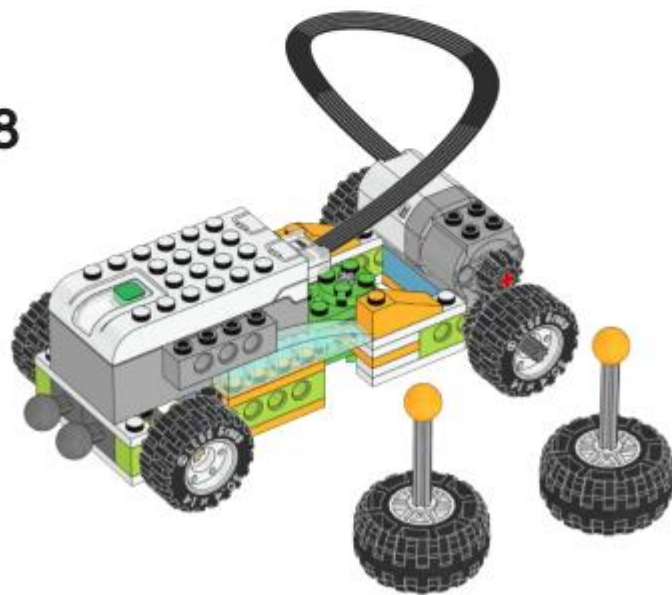




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5) reel

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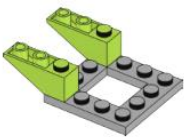


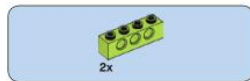
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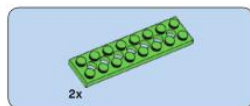
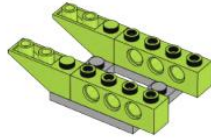


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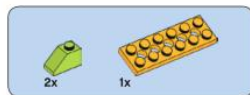
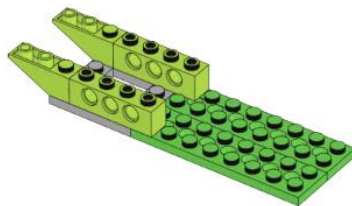




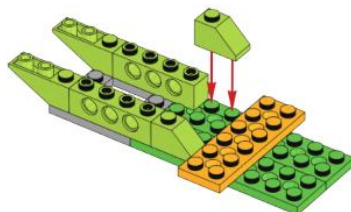
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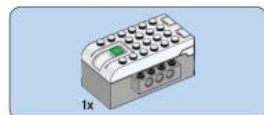
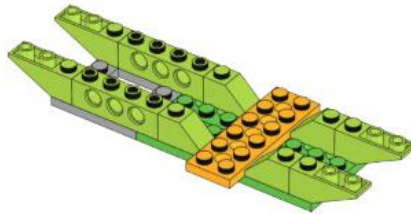
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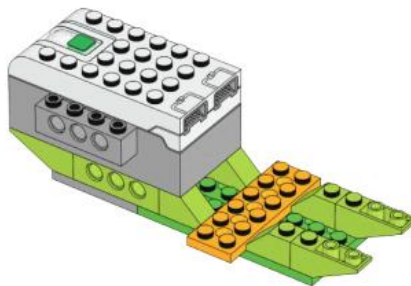
## WeDo 2.0 Core Suite



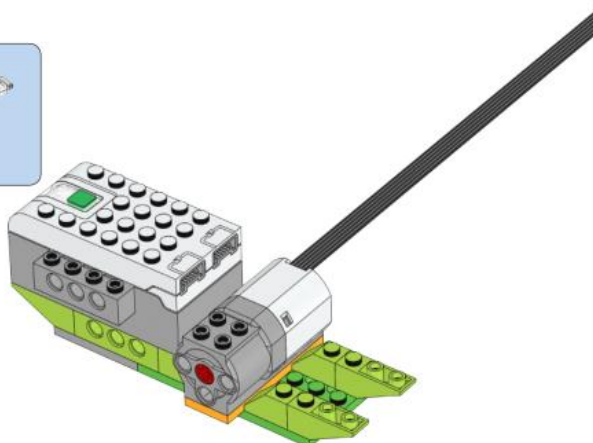
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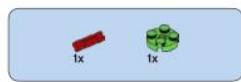


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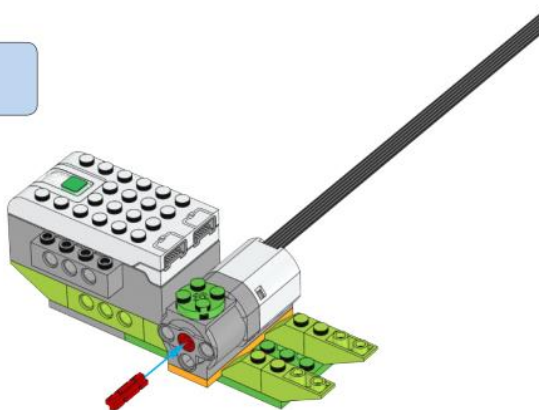


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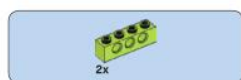
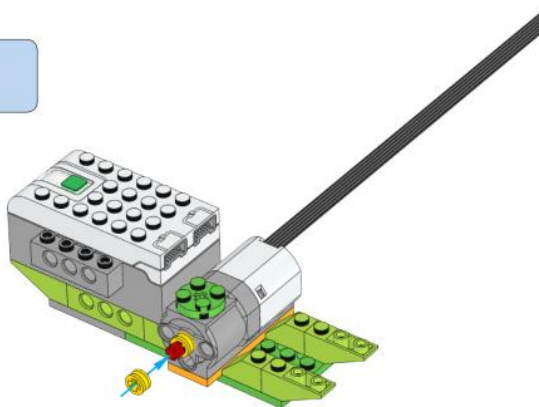




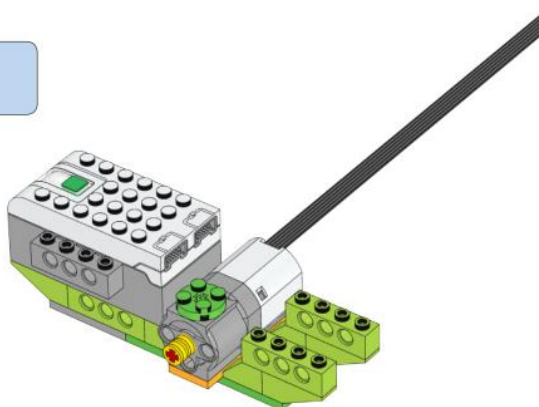
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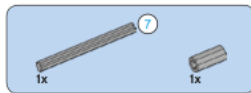
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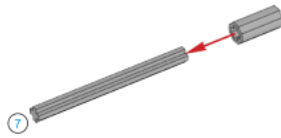
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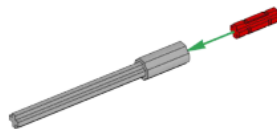




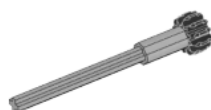
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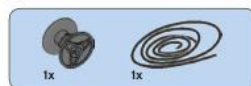
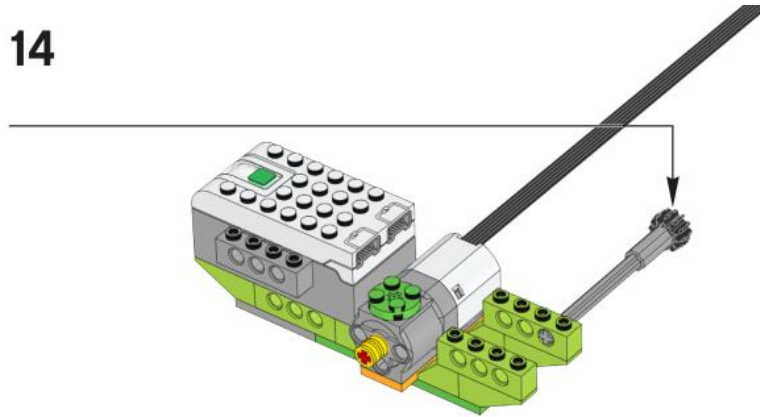
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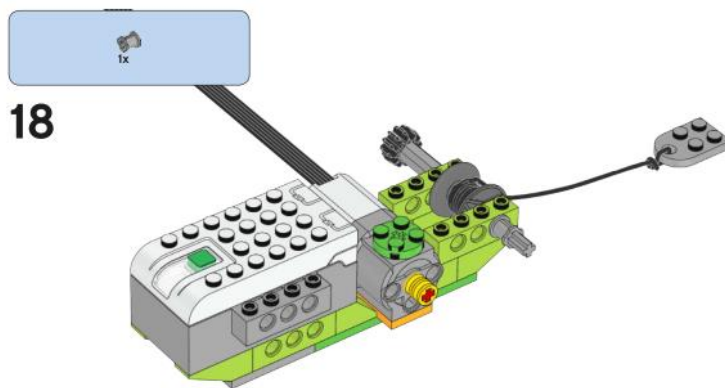
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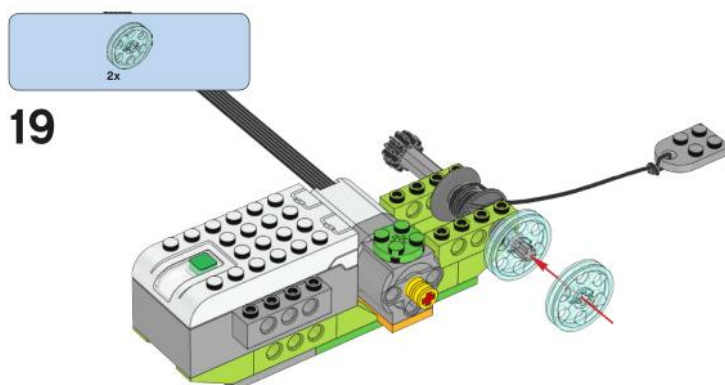
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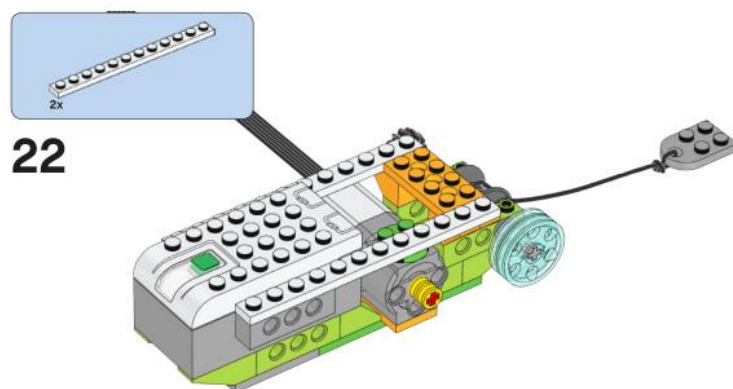
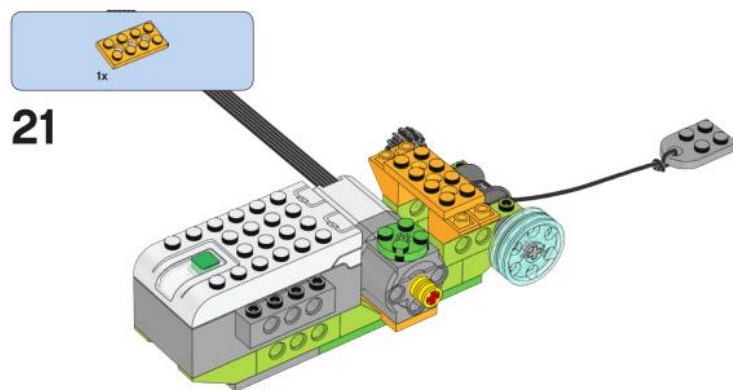
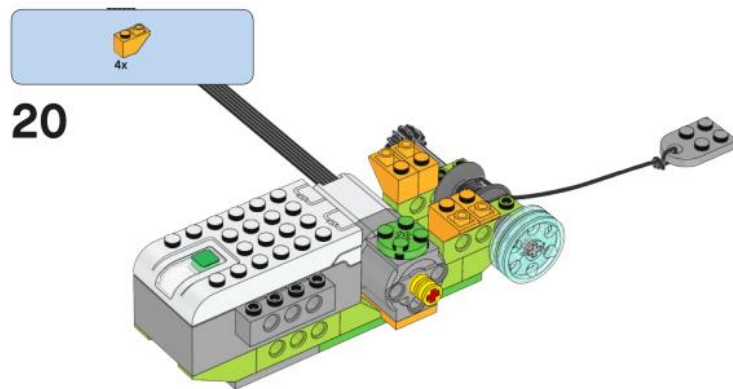


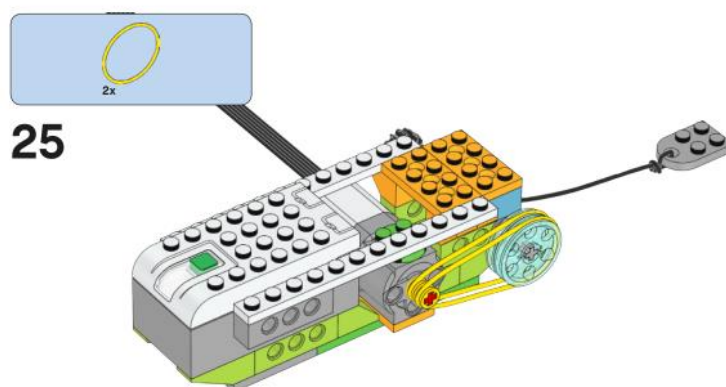
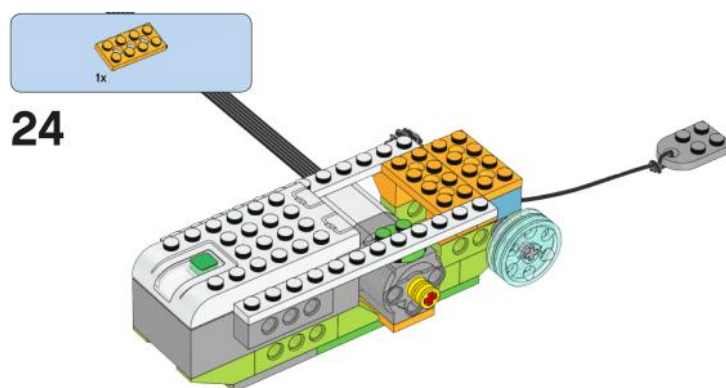
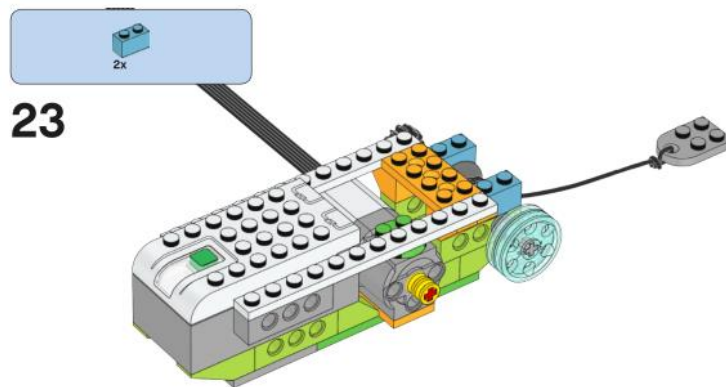
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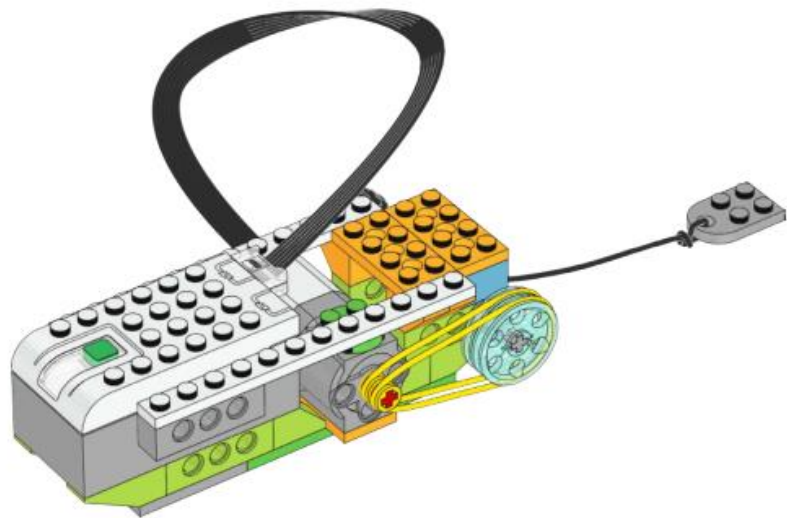
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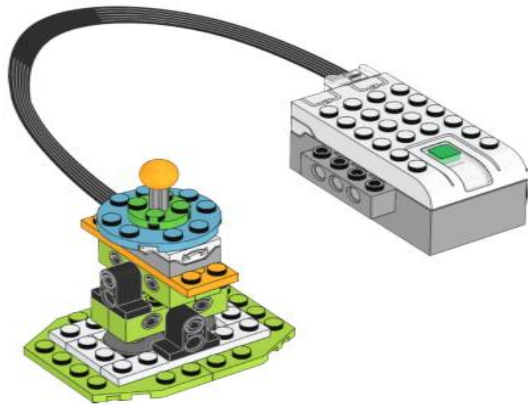




26



6) joystick



1

Warning! Choking hazard. Small parts and small balls.  
Achtung! Erstickungsgefahr. Kleine Teile und kleine Kugeln.  
Attention ! Danger d'étouffement. Petits éléments et petites balles.  
Avvertenza! Rischio di soffocamento. Piccole parti e piccole palle.  
Waarschuwing! Verstikkingsgevaar. Kleine onderdelen en kleine ballen.  
¡Advertencia! Peligro de asfixiantamiento. Partes pequeñas y bolas pequeñas.  
Advarsel! Kvelningsfare. Små deler og små kugler.  
Varning! Kvelningsrisk. Små delar och små bollar.  
Advarsel! Kvelningsfare. Små deler og små baller.  
Atenção! Risco de asfixia. Pequenas partes e pequenas bolas.  
Προειδοποίηση! Κίνδυνος πνιγμού. Μικρά μέρη και μικρές μπίλες.  
警告! 窒息の危険性。小さな部品および小さなボール。  
경고! 질식사 위험. 작은 부품 및 작은 공 포함.  
Внимание! Риск удушья. Мелкие детали и маленькие шарики.  
Ostrzeżenie! Niebezpieczeństwo udławienia się. Małe części i małe kulki.  
Upozornění! Nebezpečí zadušení. Malé části a malé koule.  
Upozornenie! Nebezpečnosť dusenia. Malé časti a malé guľky a loptičky.  
Figyelem! Fulladásveszély. Kis alkatrészek és kis labdák.  
Опозореніе! Ризик задущя. Дрібні деталі та маленькі шарики.  
Upozorenje! Opasnost od gušenja. Mali dijelovi i male loptice.  
Упоаореніе! Опасност од гушэння. Малы деловы і малы лопціцы.  
Предупреждение! Опасност од задущаванье. Малы деловы и малы топчыня.  
Opozorilo! Nevarnost zadušitve zaradi tujske. Majhni deli in majhne kroglice.  
Avertisment! Pericol de sufocare internă. Părți mici și mingi mici.  
Внимание! Опасност от задъсване. Малки части и малки топки.  
Bridinėjums! Aiztīšanas risks. Sīkas detaļas un sīkas bumbiņas.  
Hoatusti Kägistamisoht. Väikesed osad ja väikesed pallid.  
Ispejmenst! Pavojus užspringti. Smulkios detalės ir maži kamuoliukai.  
Uyarı! Boğulma Tehlikesi (Havasızlıktan). Küçük parçalar ve küçük topalar.  
تحذیر! خطر الاختناق أجواء مسفورة وكرات صغيرة.  
Peningatani! Bahaya tersedak. Bagian kecil dan bola kecil.  
Amaran! Bahaya tersedak. Bahagian kecil dan bola kecil.

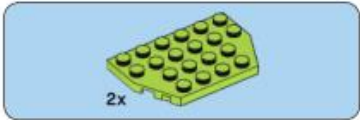
**WARNING:**  
CHOKING HAZARD.  
Toy contains small parts and a small ball.  
Not for children under 3 years.

**AVERTISSEMENT :**  
RISQUE D'ÉTOUFFEMENT.  
Le jouet contient des petites pièces ainsi qu'une petite boule.  
Il ne convient pas aux enfants de moins de 3 ans.

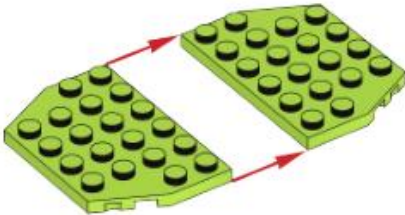
**ADVERTENCIA:**  
PELIGRO DE ASFIXIA.  
Juguete que contiene partes pequeñas y una pelota pequeña.  
No recomendado para niños menores de 3 años.



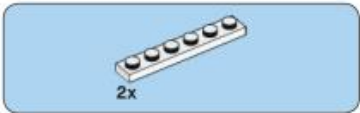
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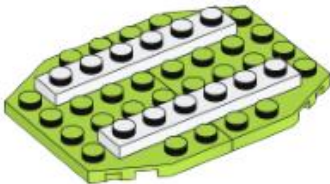
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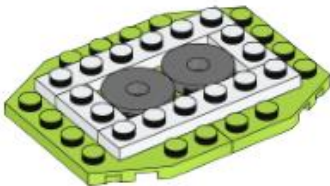
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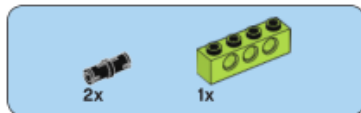


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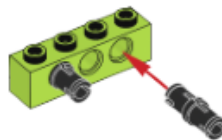


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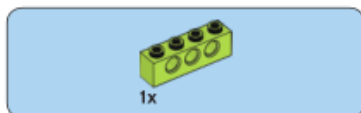


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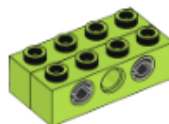


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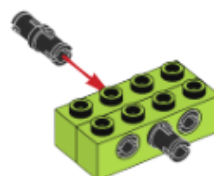


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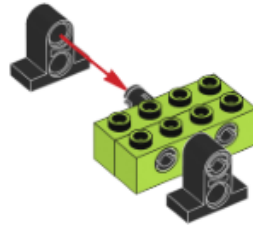
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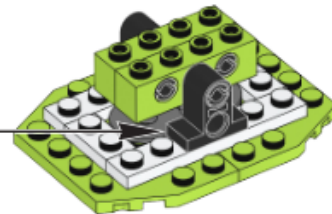


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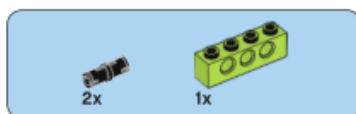


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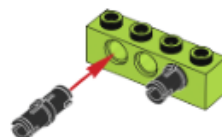
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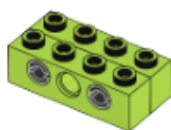


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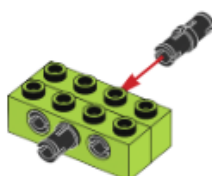


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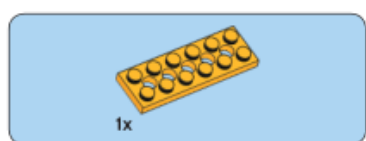


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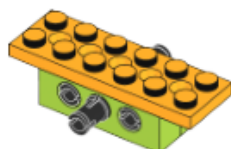


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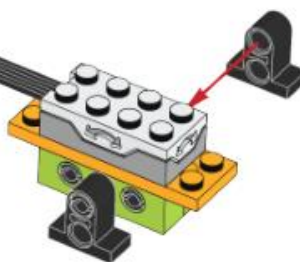
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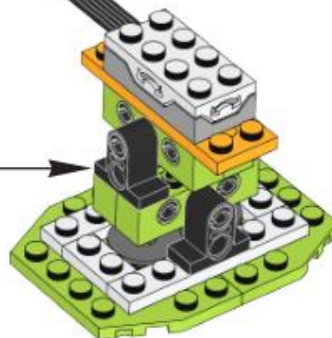


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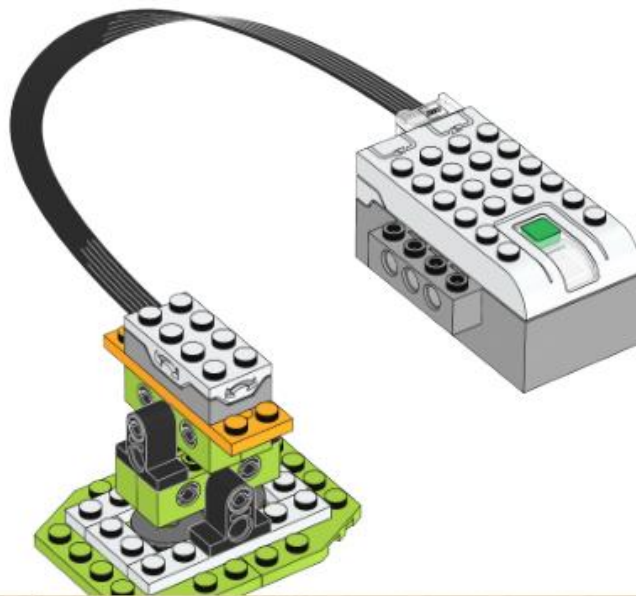
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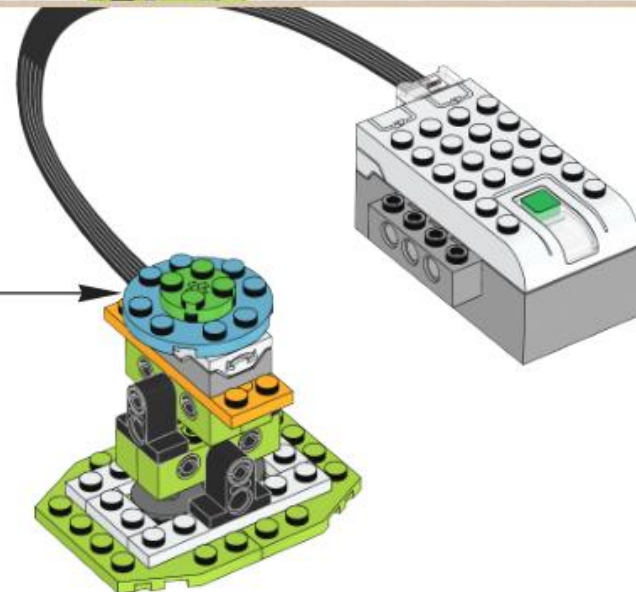
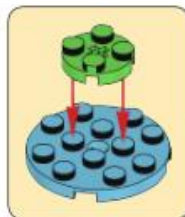
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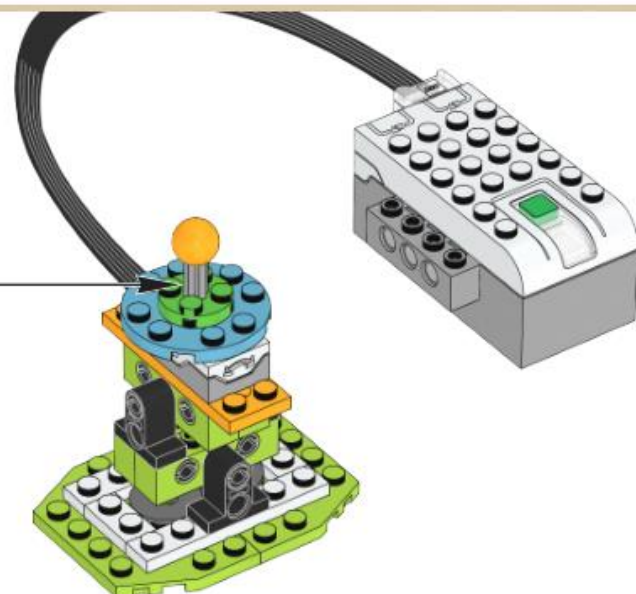
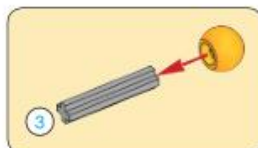
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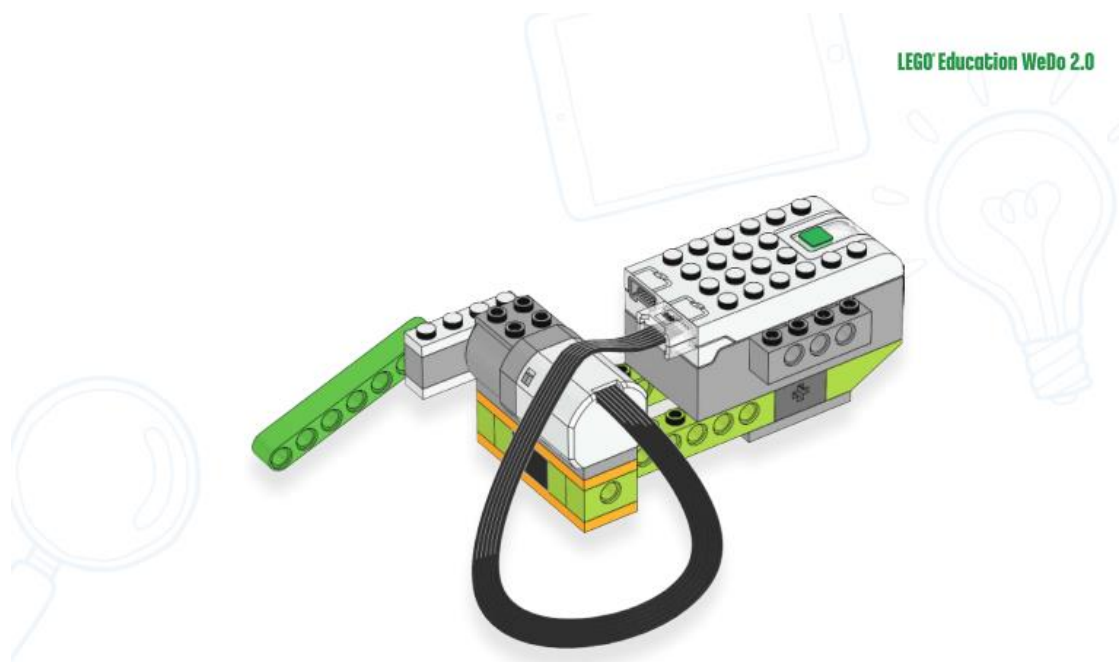
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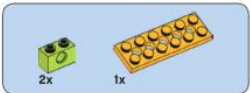


WeDo 2.0 Core Suite

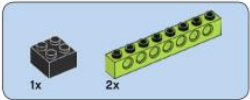
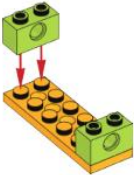


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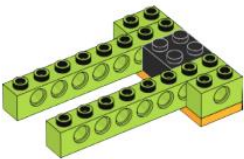
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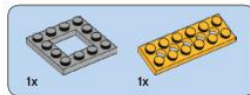
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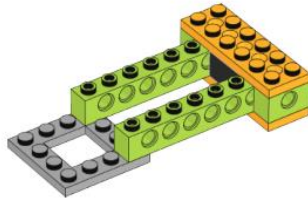
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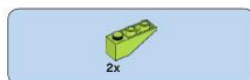
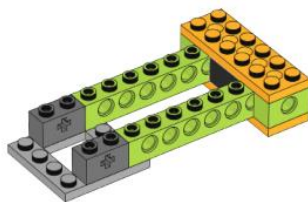
## WeDo 2.0 Core Suite



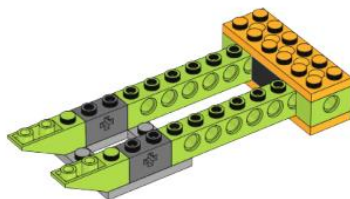
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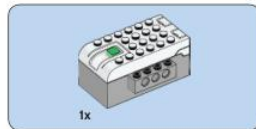
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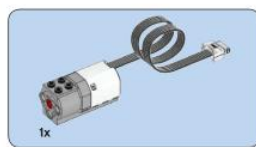
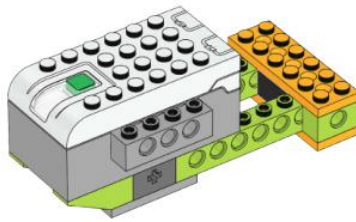
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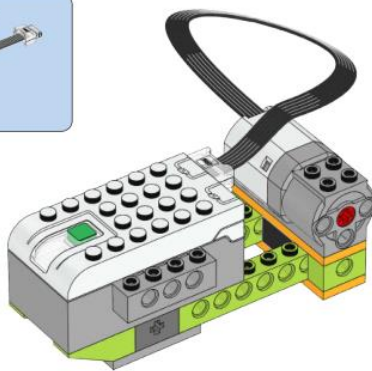
## WeDo 2.0 Core Suite



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7



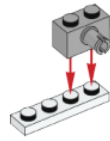
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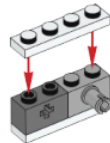




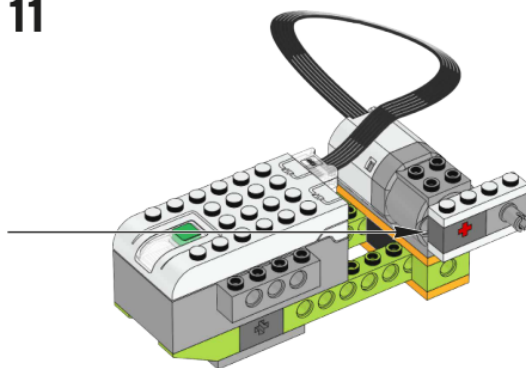
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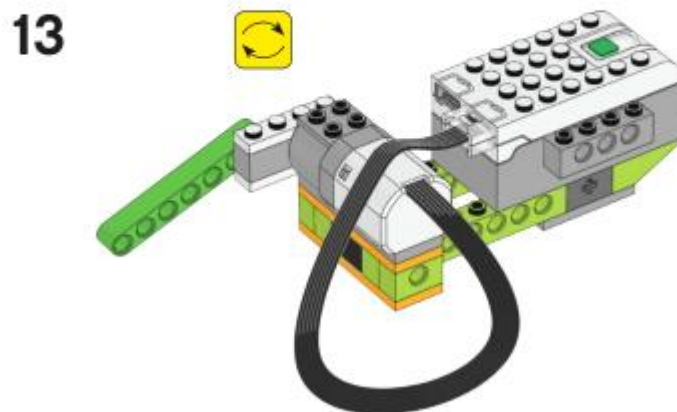
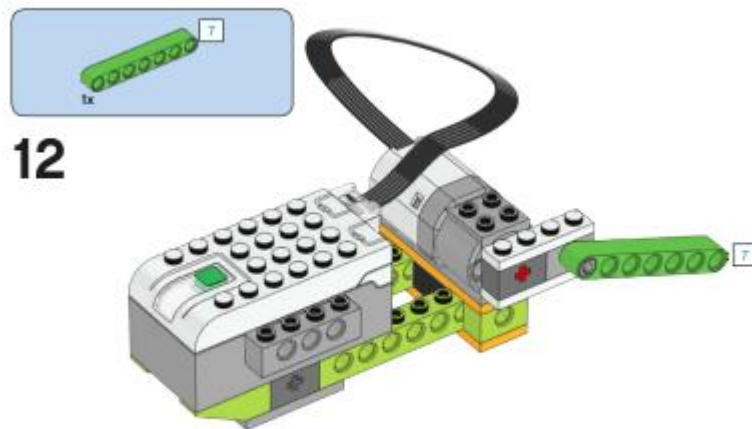


10



11





8) flex

WeDo 2.0 Core Suite



LEGO® Education WeDo 2.0

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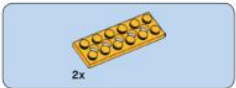


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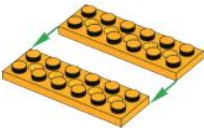


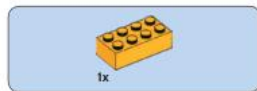
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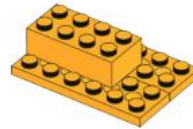


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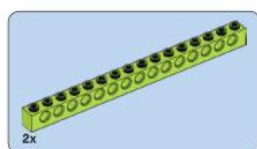
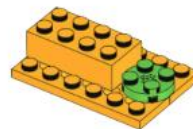




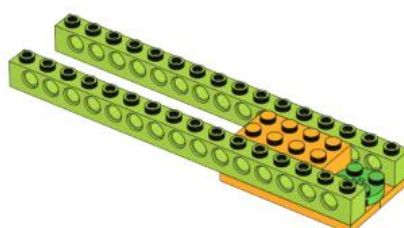
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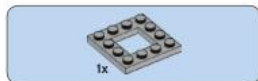


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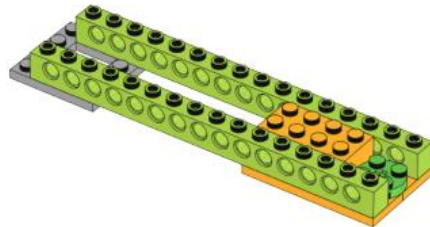


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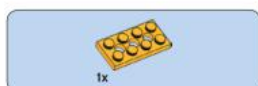
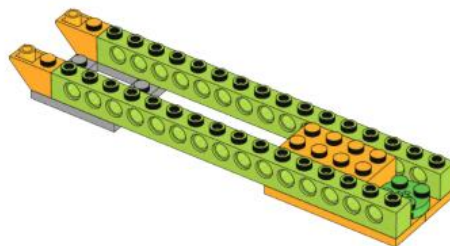




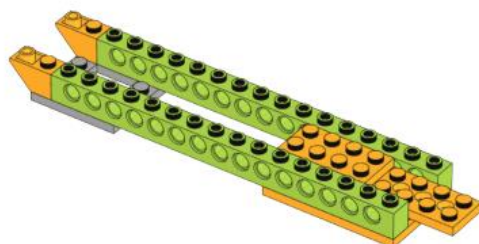
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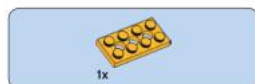
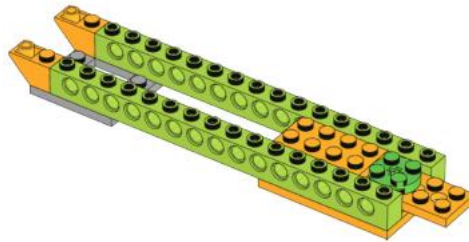


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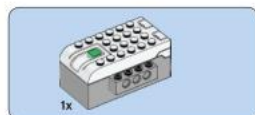
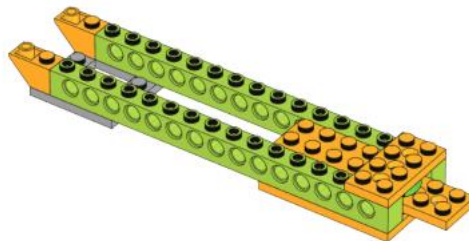




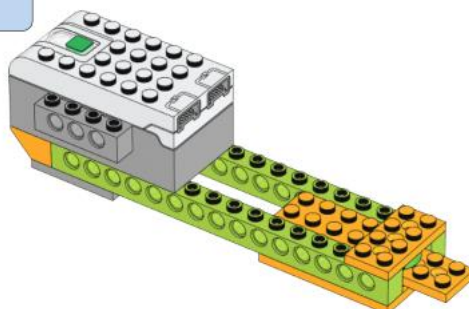
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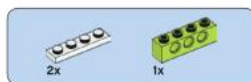
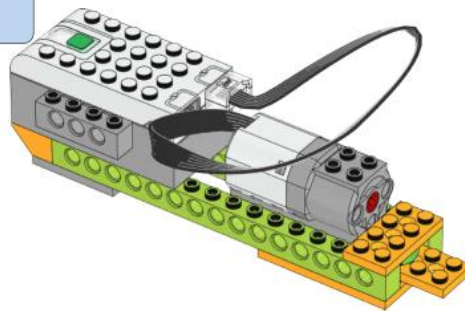


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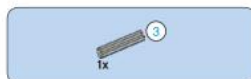
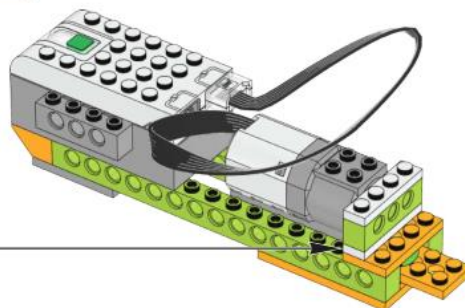
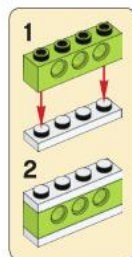




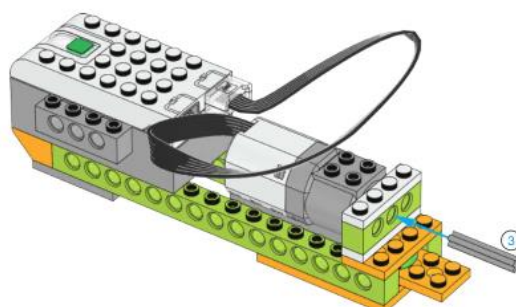
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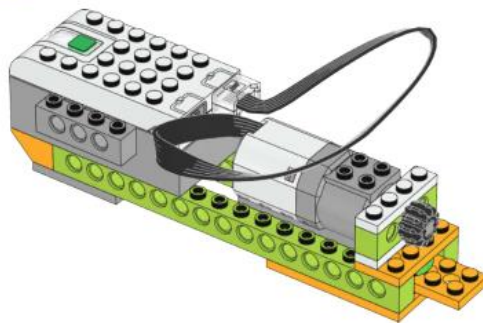


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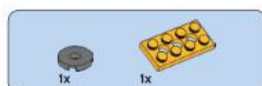
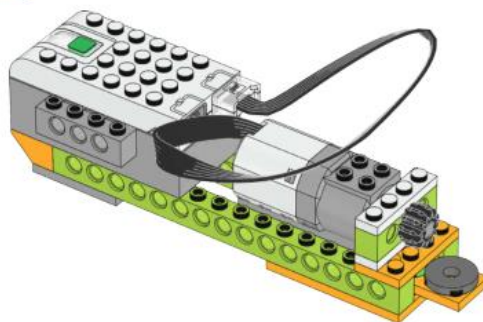




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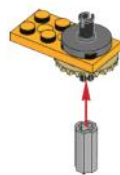




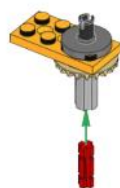
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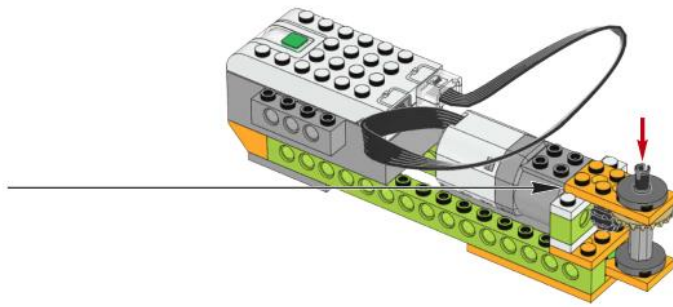
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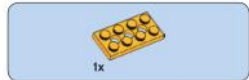
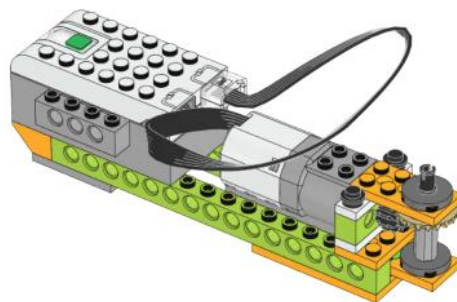
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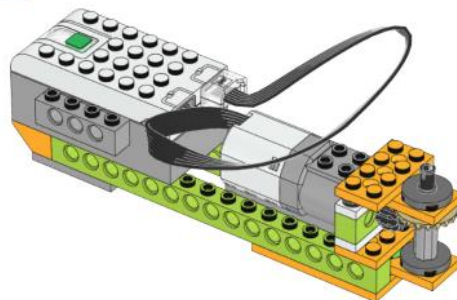
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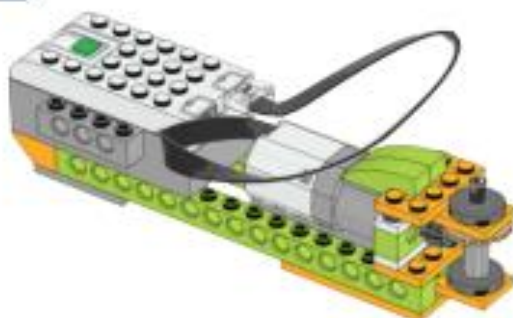


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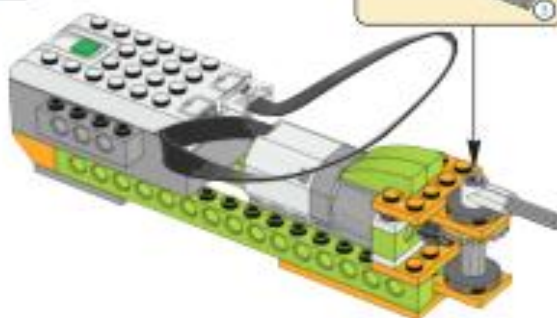




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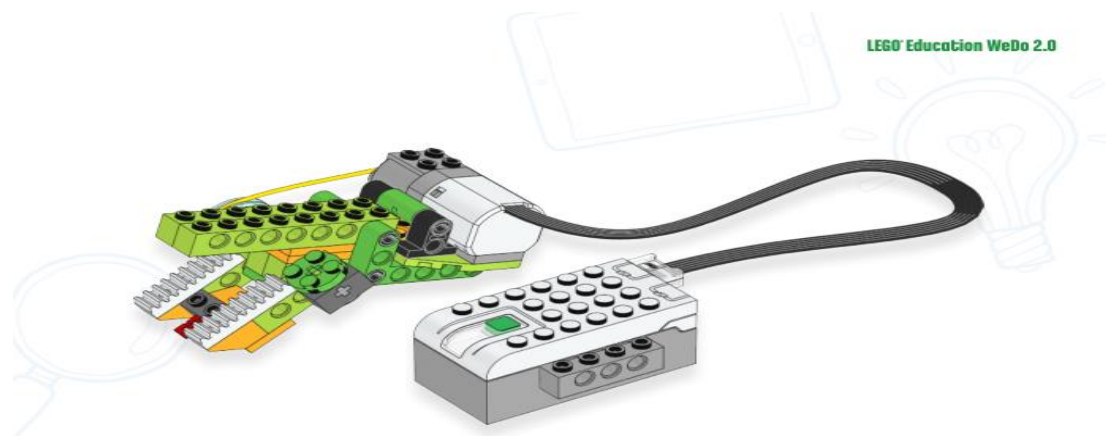
24



25



## 9) grab



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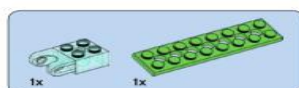
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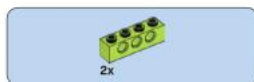
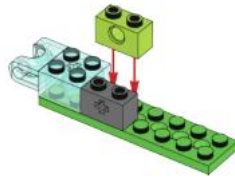


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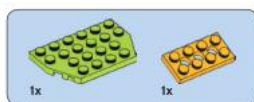




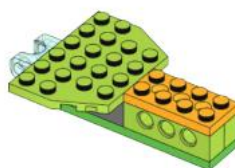
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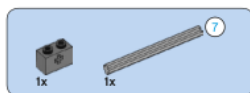
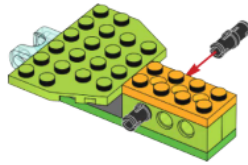


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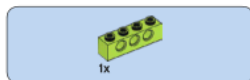




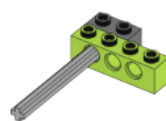
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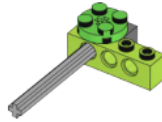


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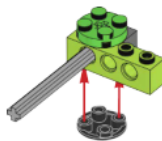




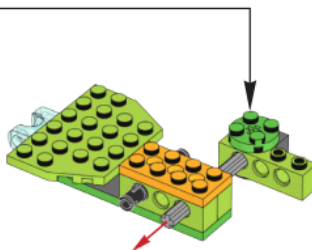
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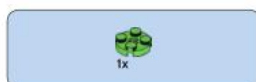




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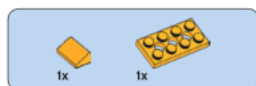
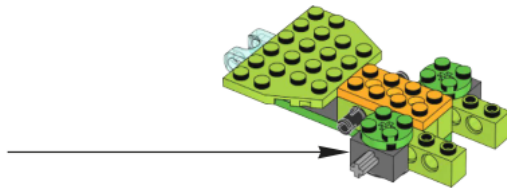


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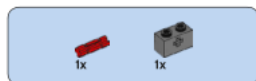
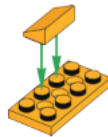




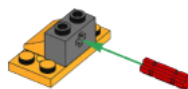
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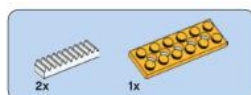
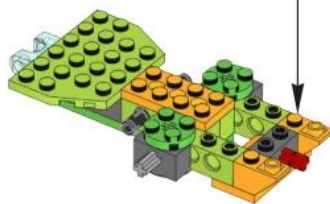




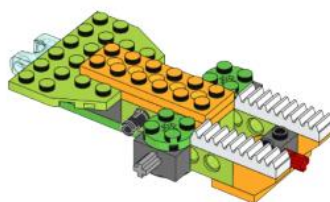
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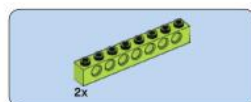
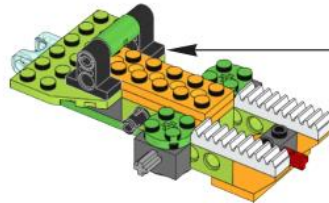
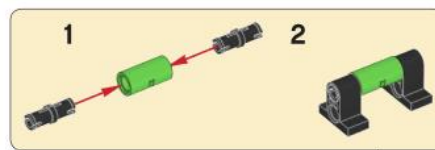


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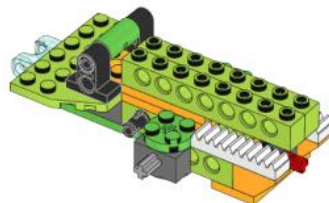




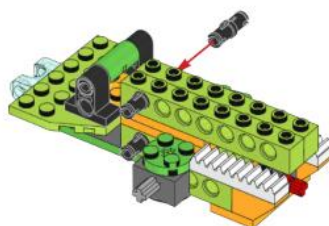
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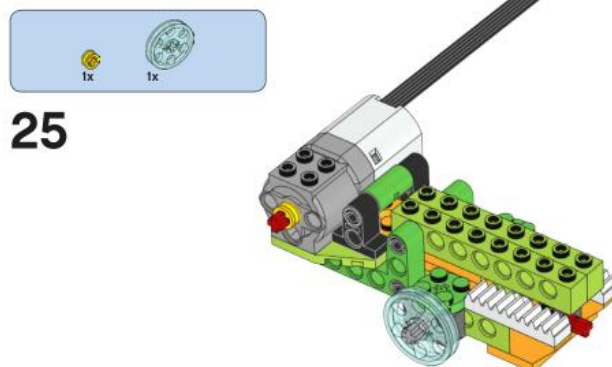
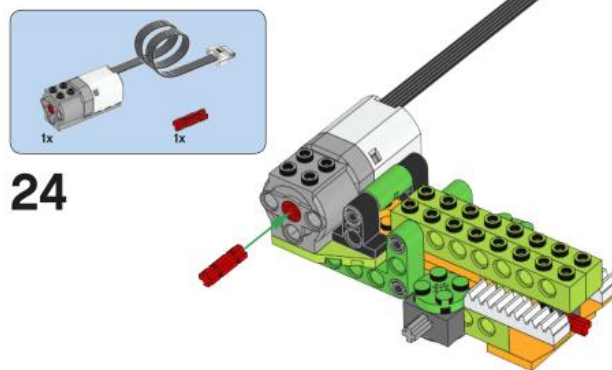
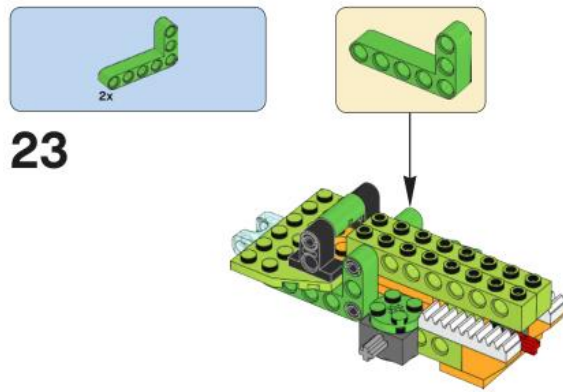


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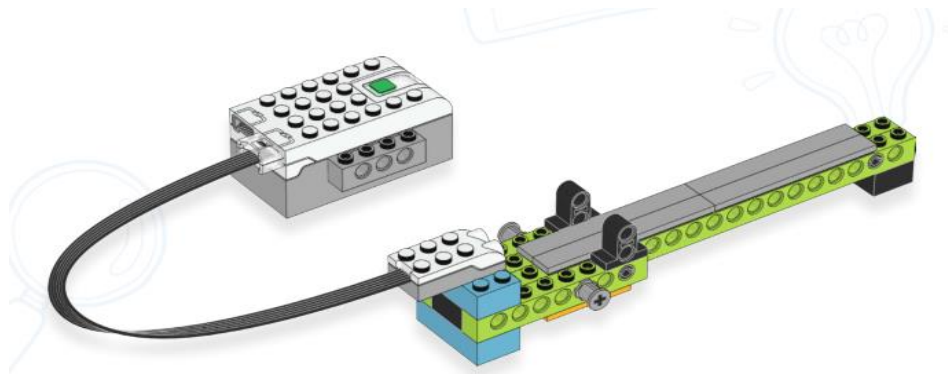
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28



## 10) motion



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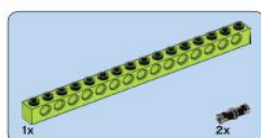


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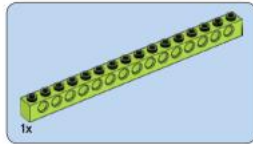
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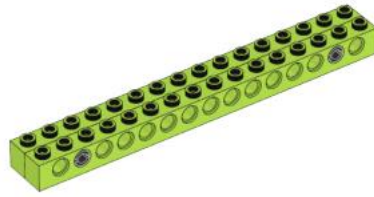


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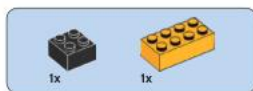




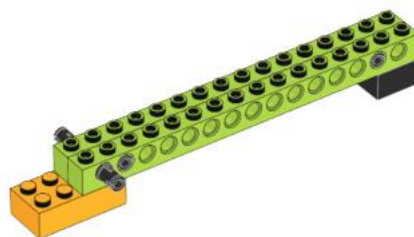
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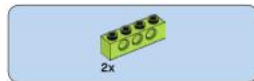


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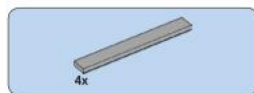
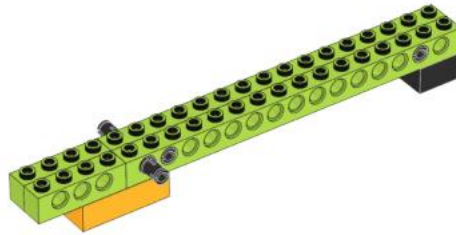


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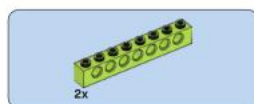
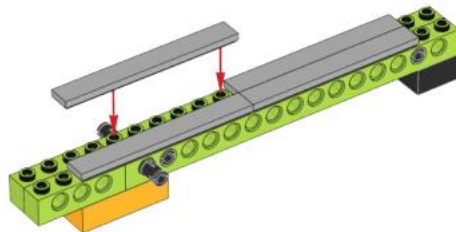




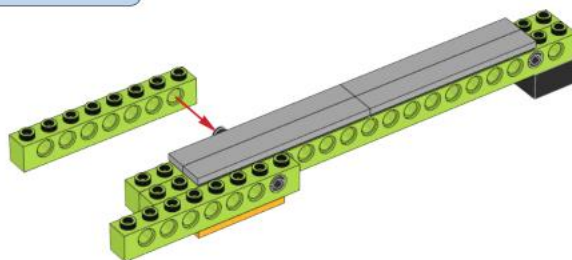
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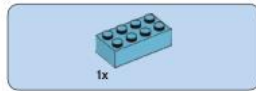


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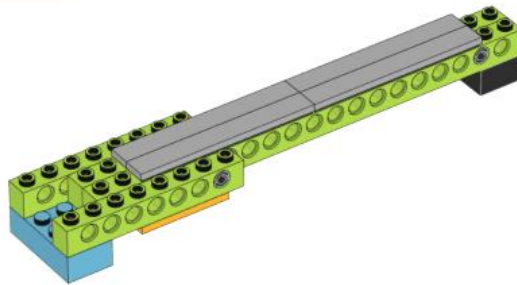




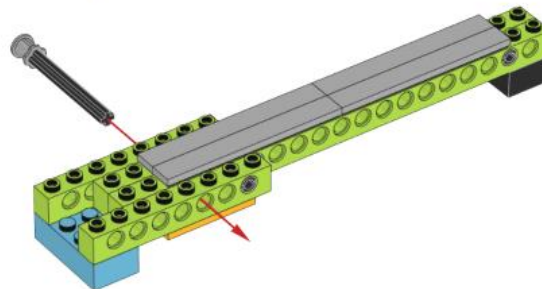
## WeDo 2.0 Core Suite



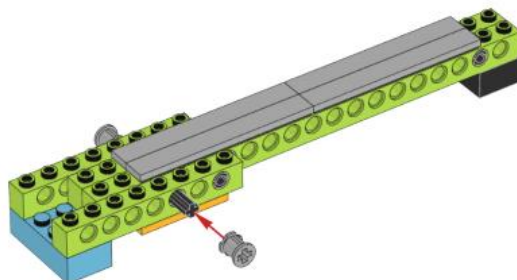
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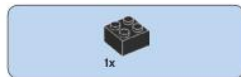


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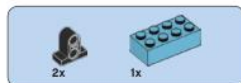
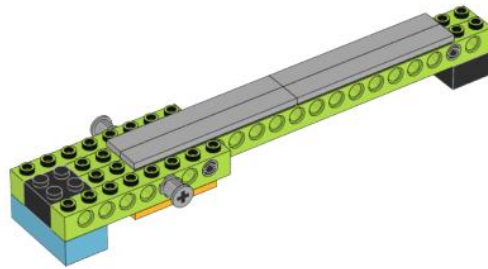


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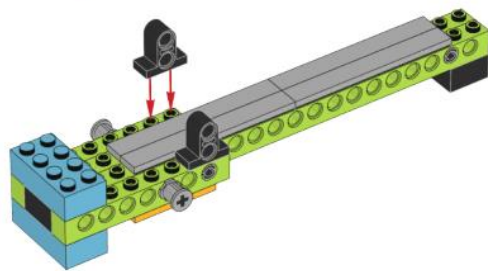




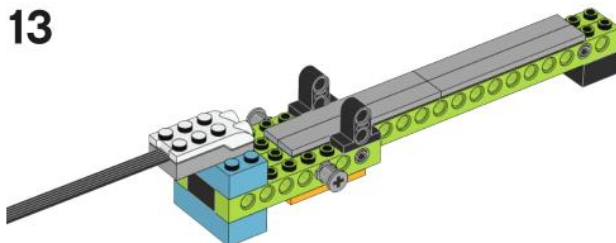
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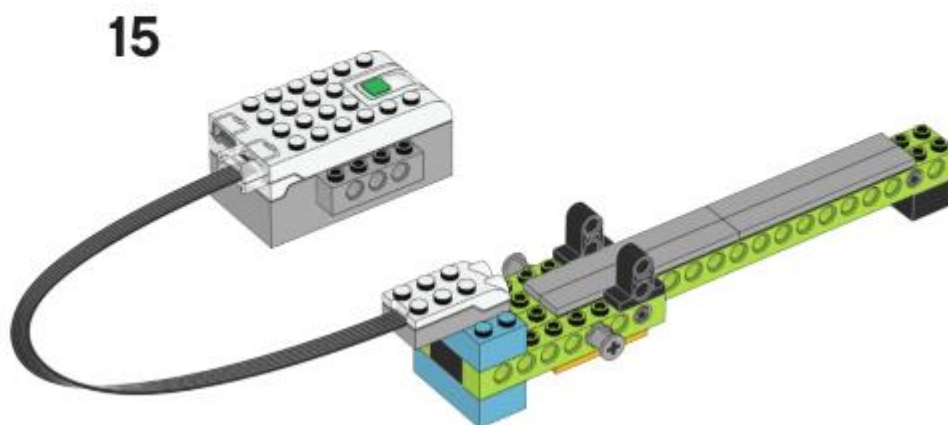
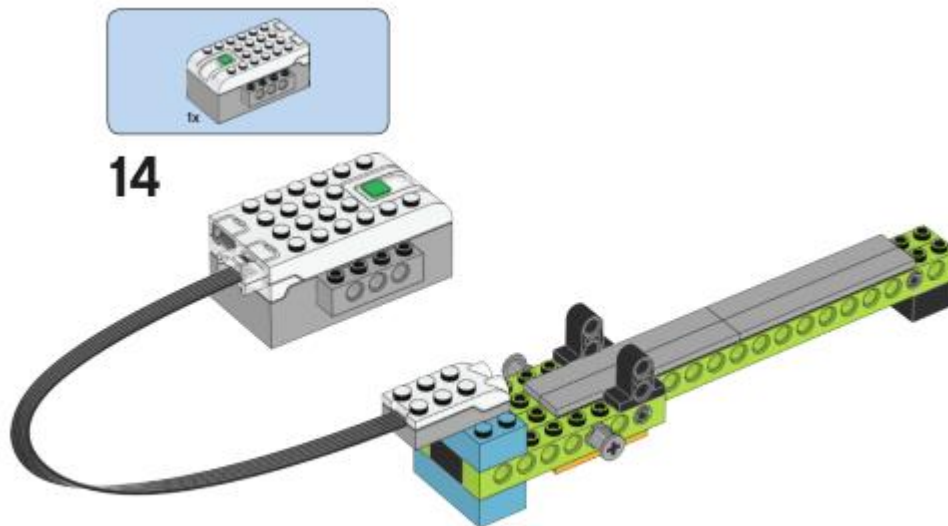


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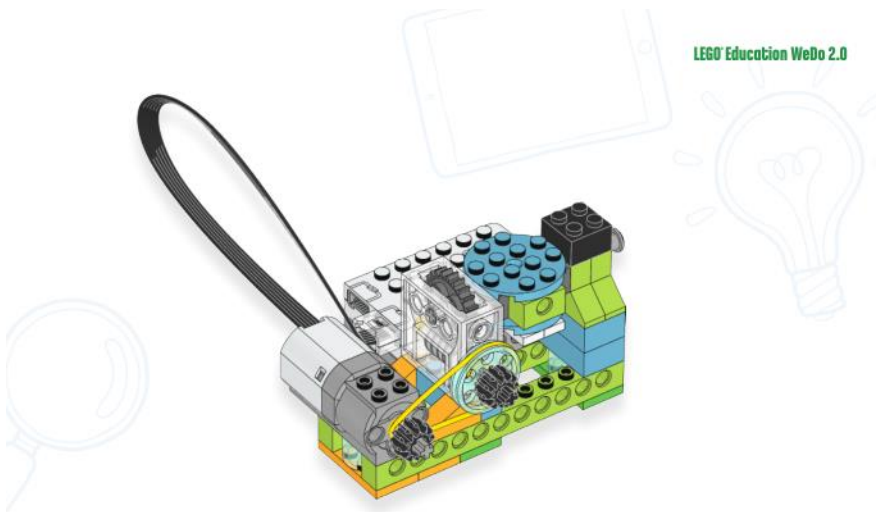
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11) revolve

WeDo 2.0 Core Suite



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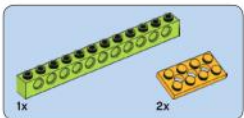


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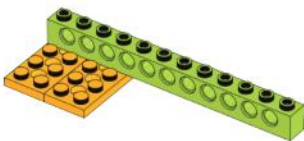


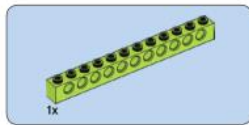
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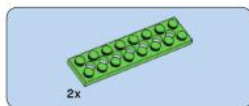
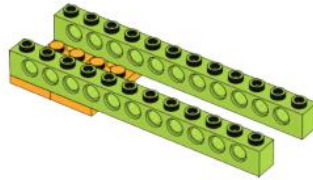


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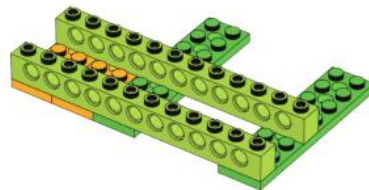




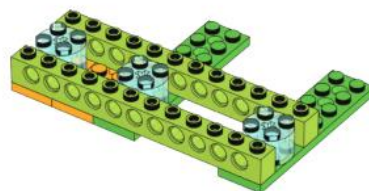
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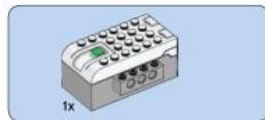
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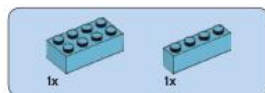
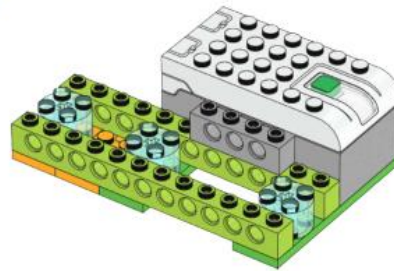
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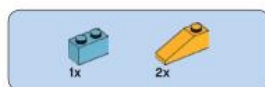
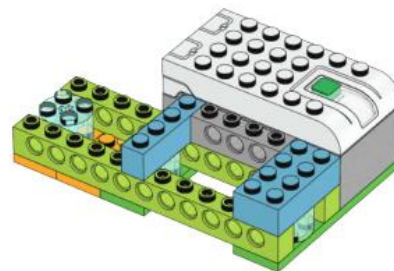
## WeDo 2.0 Core Suite



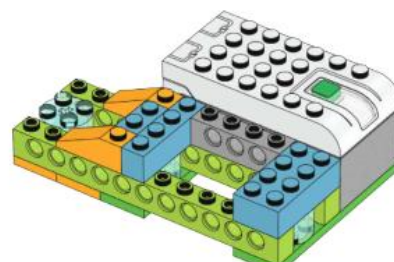
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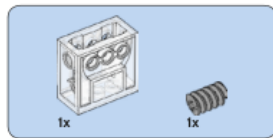
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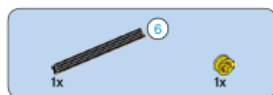
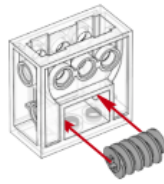
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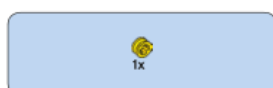
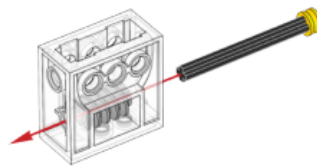
## WeDo 2.0 Core Suite



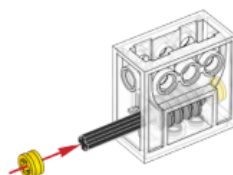
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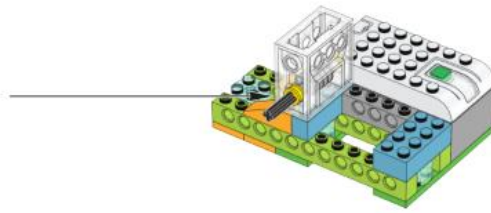
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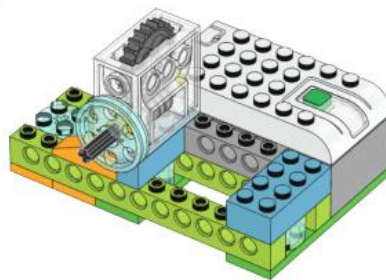
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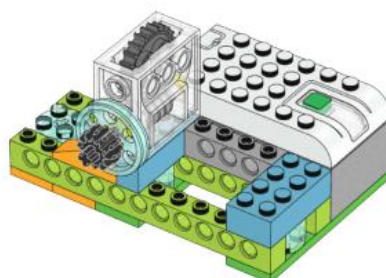
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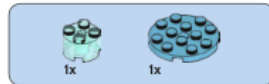
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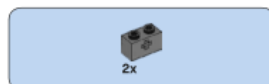
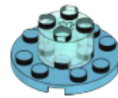
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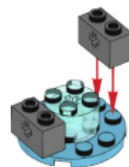




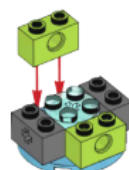
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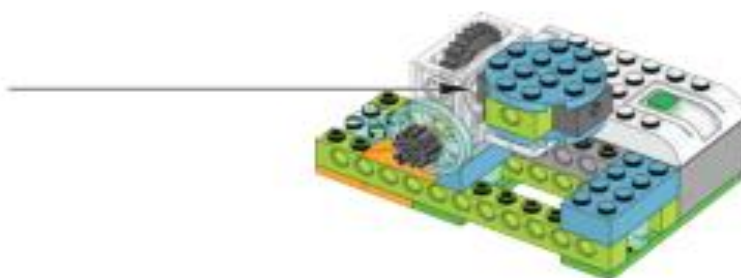
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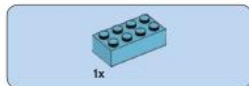
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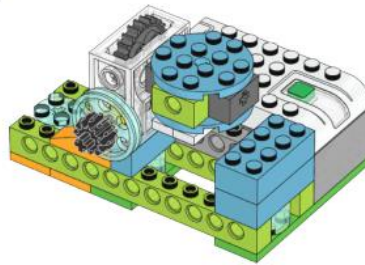
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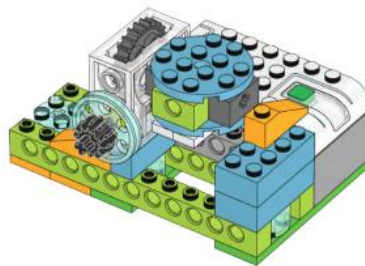
## WeDo 2.0 Core Suite



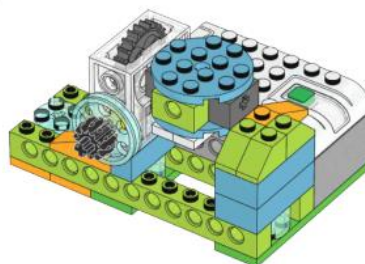
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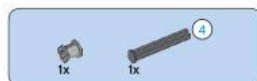
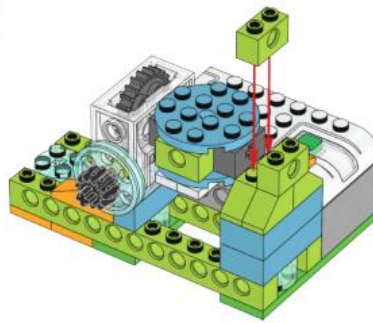


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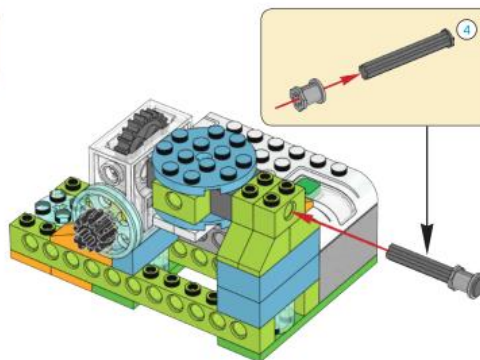




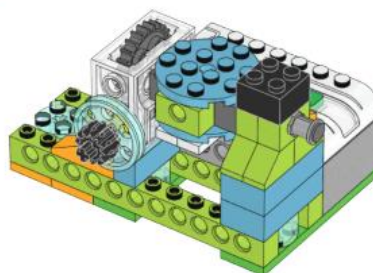
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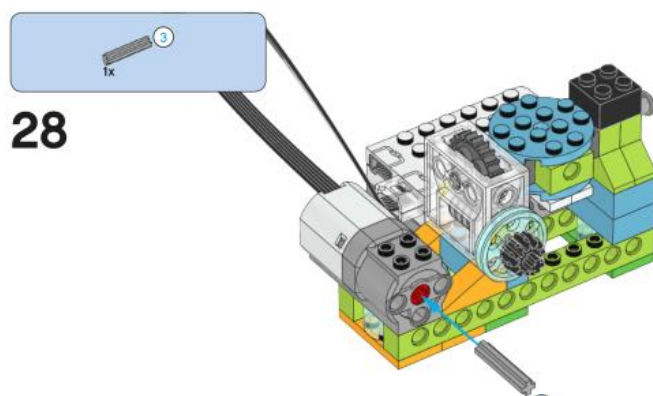
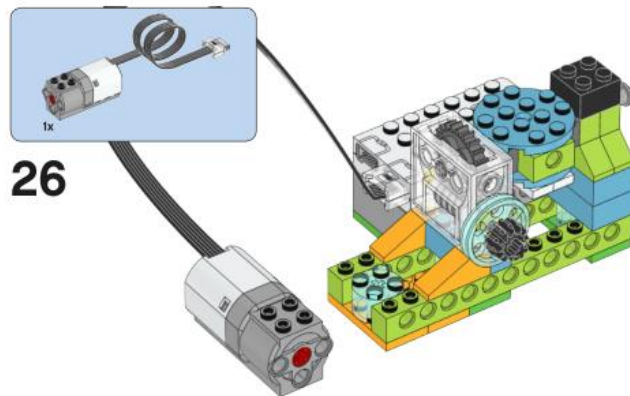


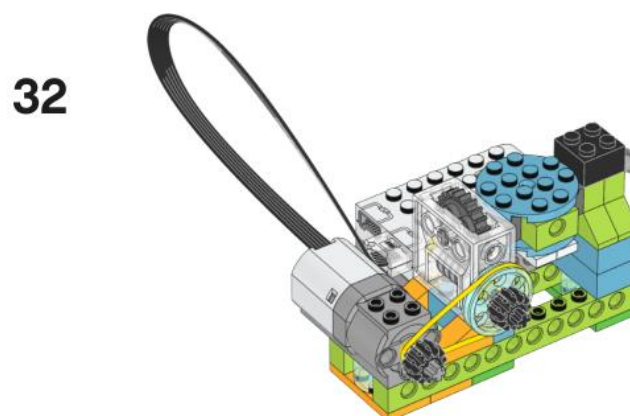
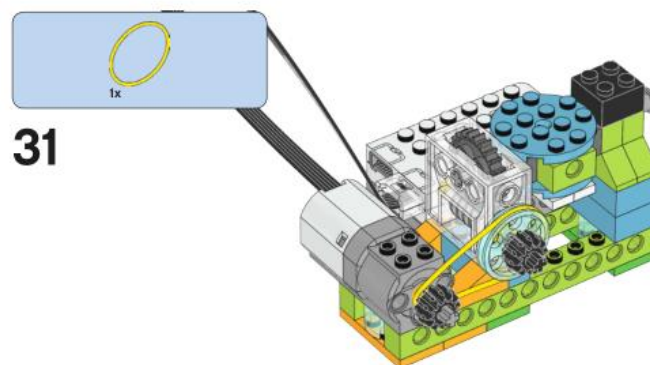
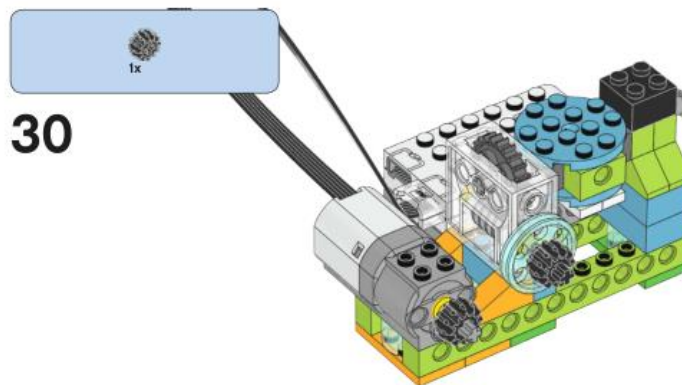
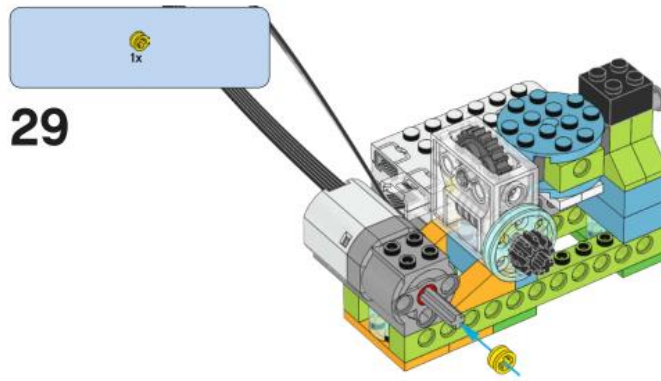
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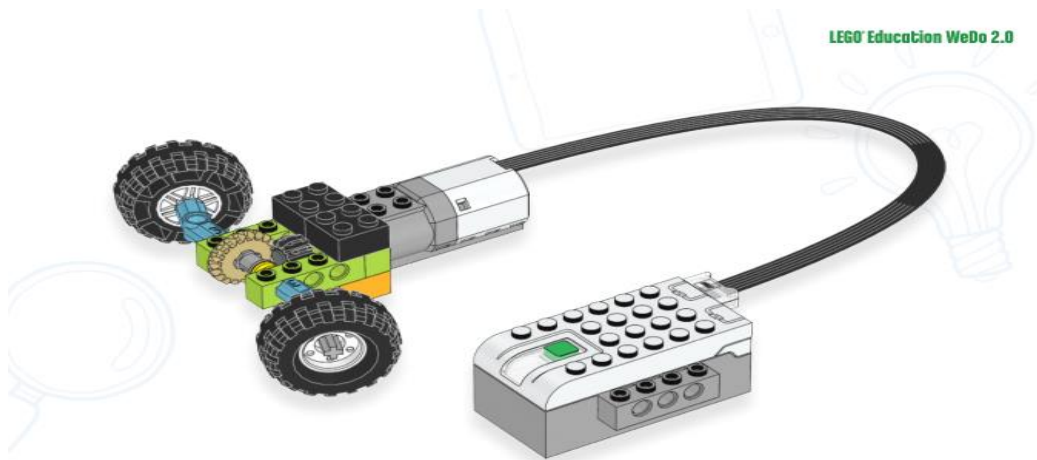
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## 12) wobble



45300

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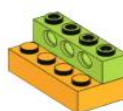
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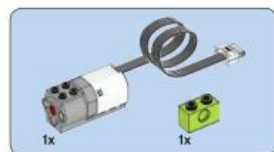
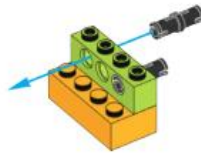
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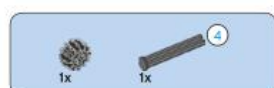
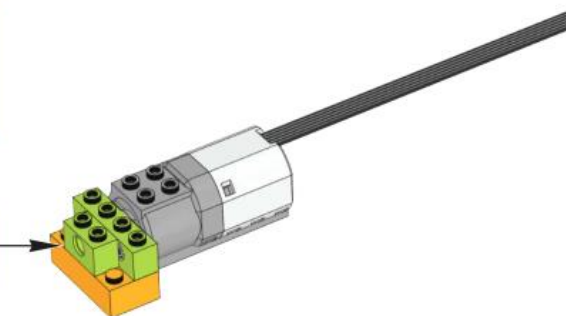
## WeDo 2.0 Core Suite



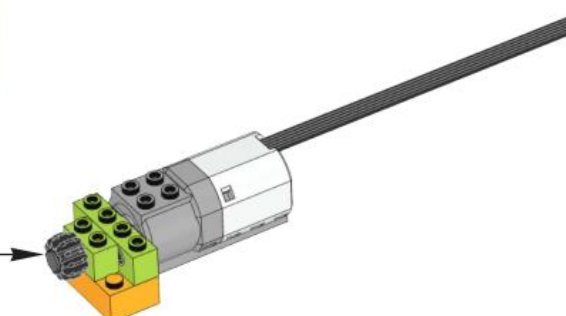
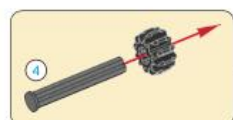
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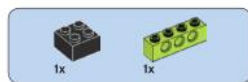


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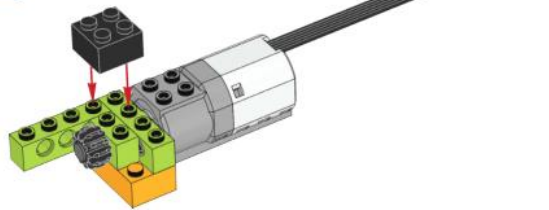




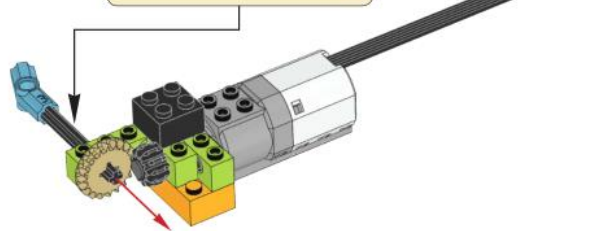
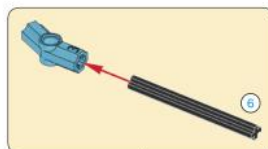
## WeDo 2.0 Core Suite



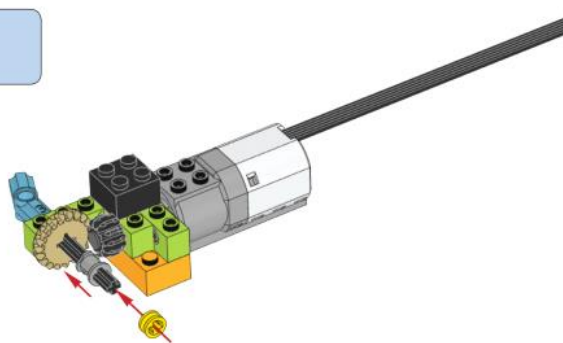
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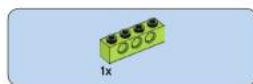


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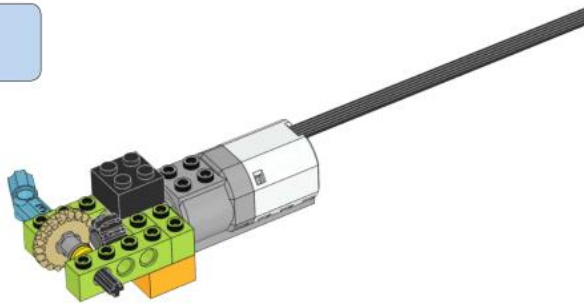


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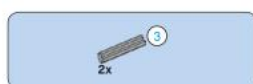
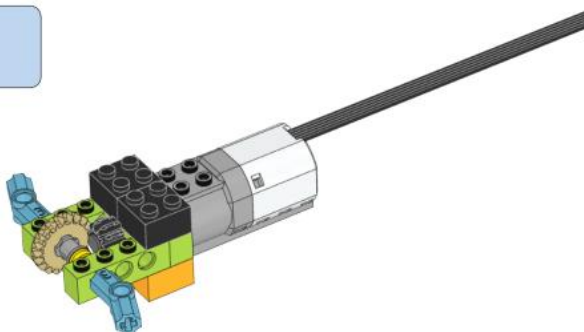




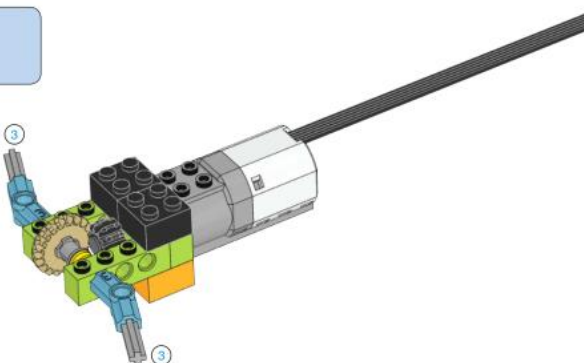
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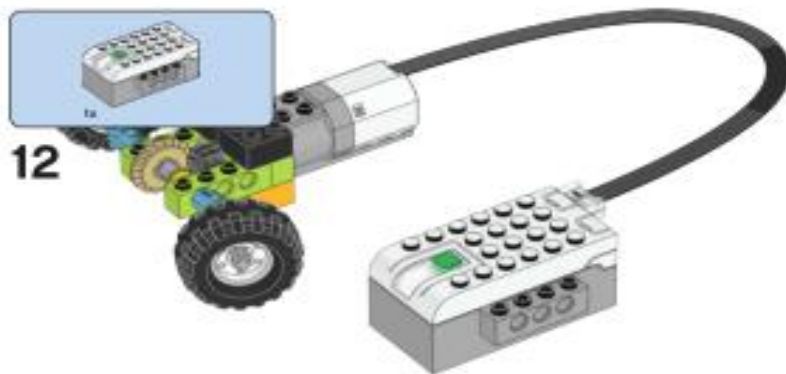


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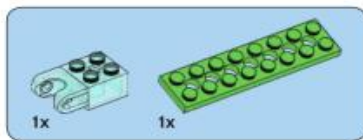




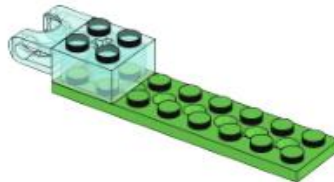
### 13) grabber



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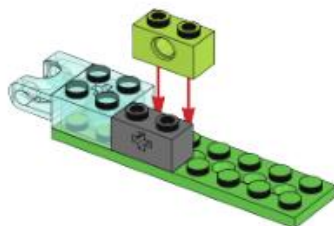
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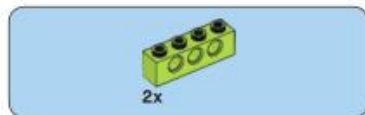


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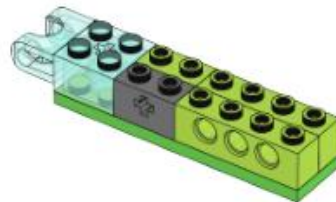


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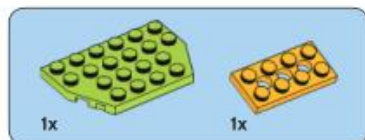




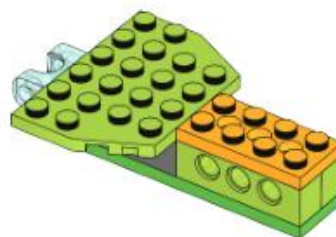
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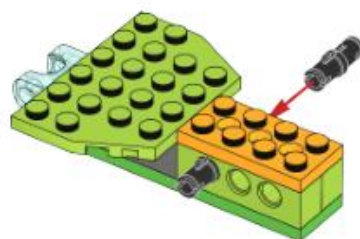
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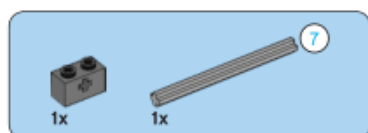
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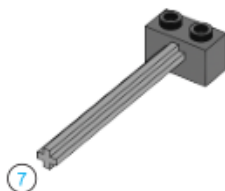
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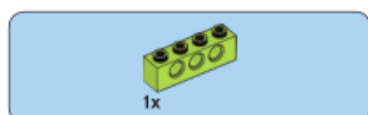
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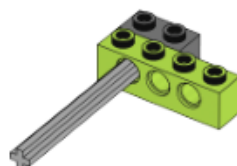
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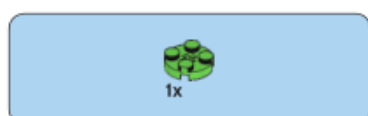
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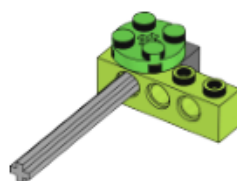
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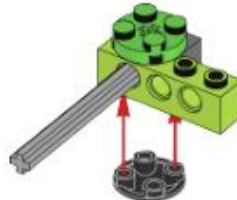


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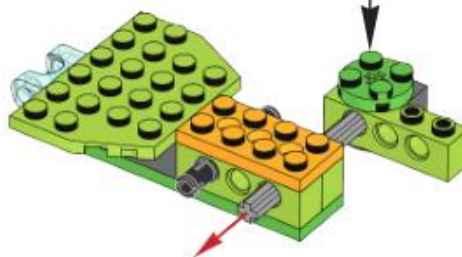


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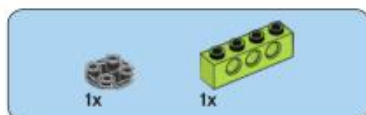


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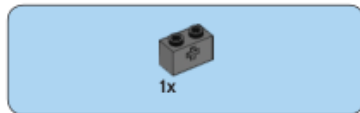


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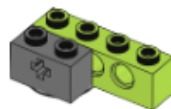


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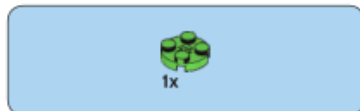




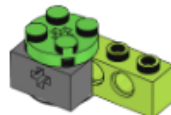
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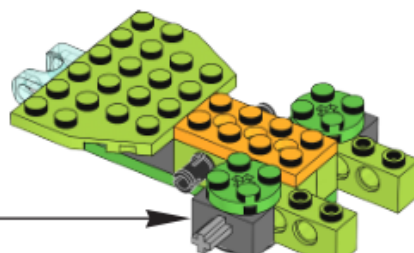


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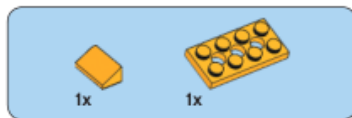
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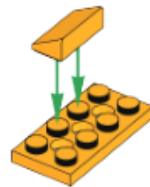


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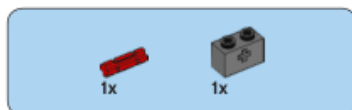




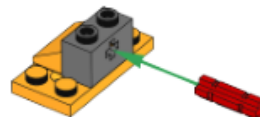
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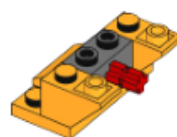
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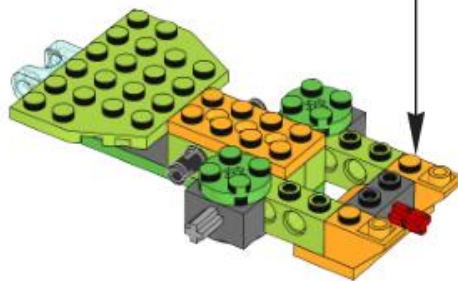


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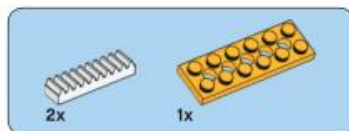


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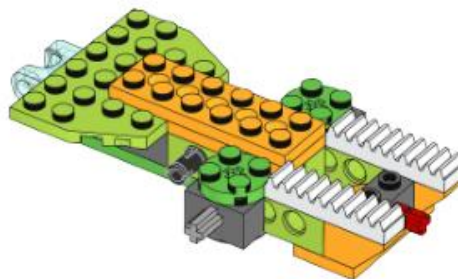
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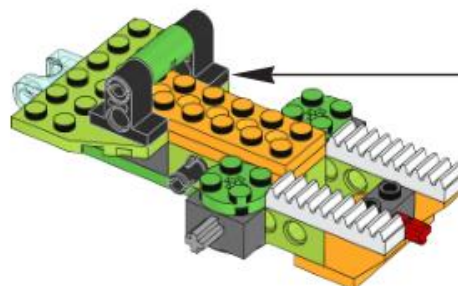
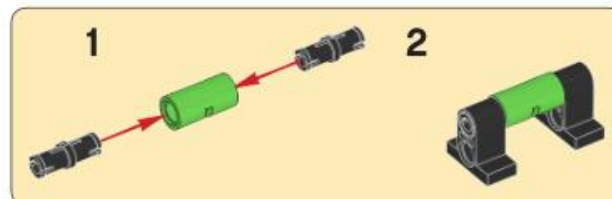
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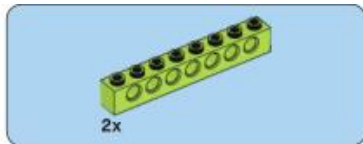
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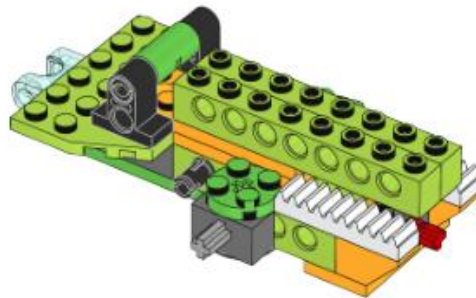
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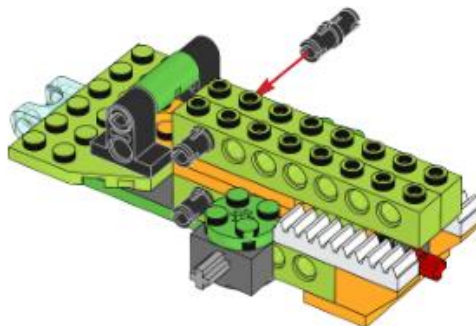
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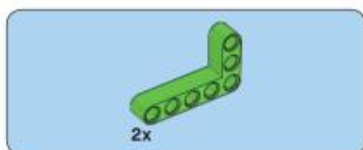
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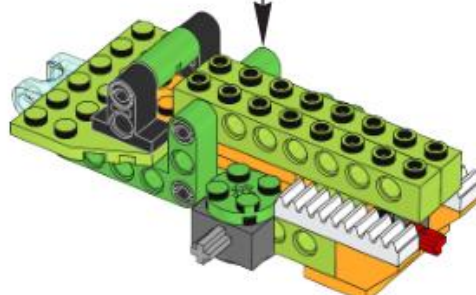
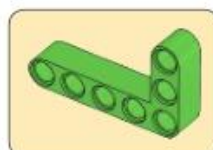
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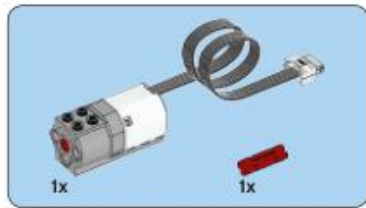


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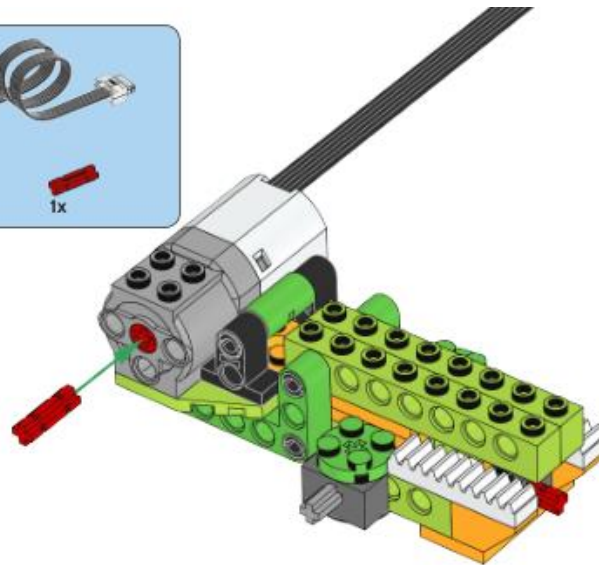


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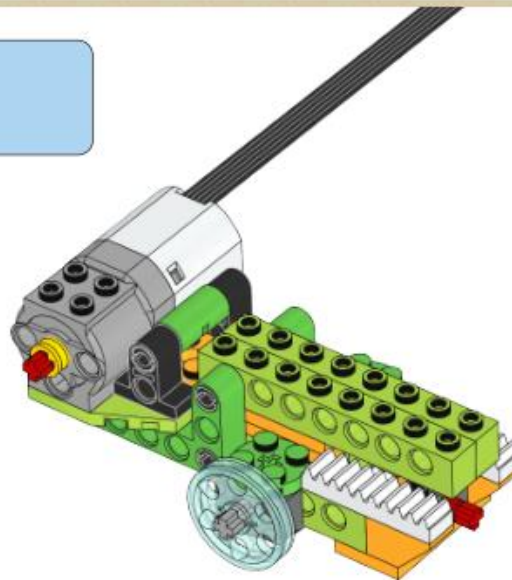
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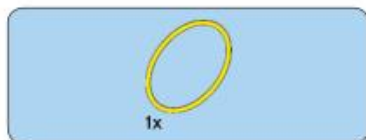
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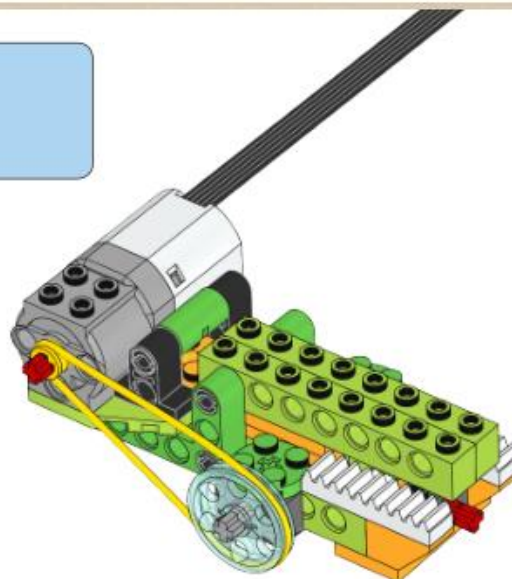
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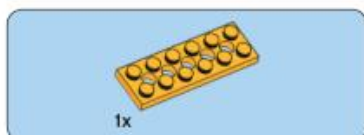


26



26

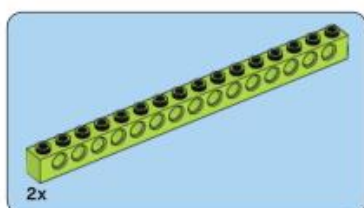




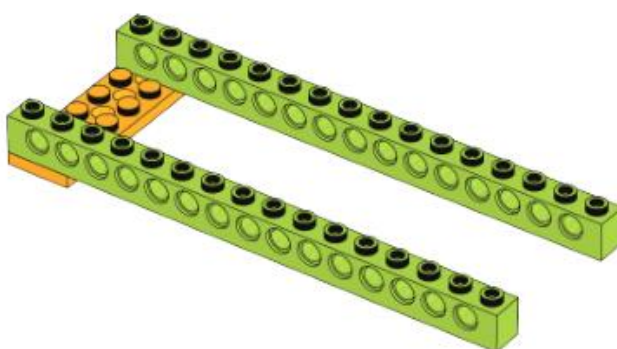
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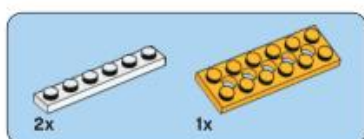
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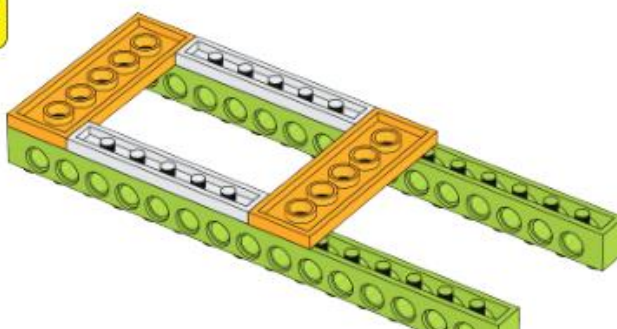
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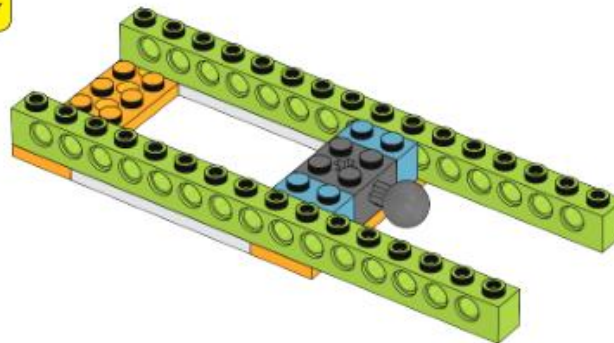


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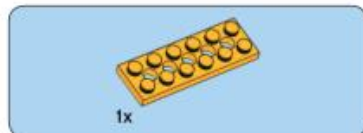




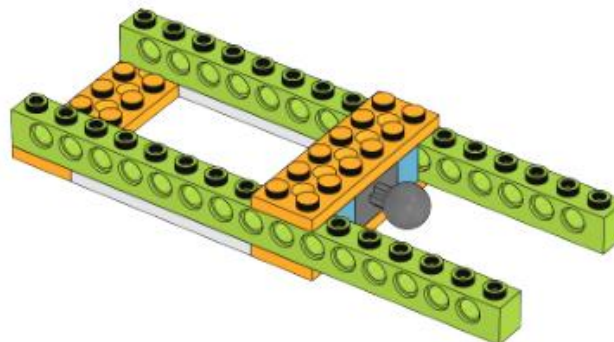
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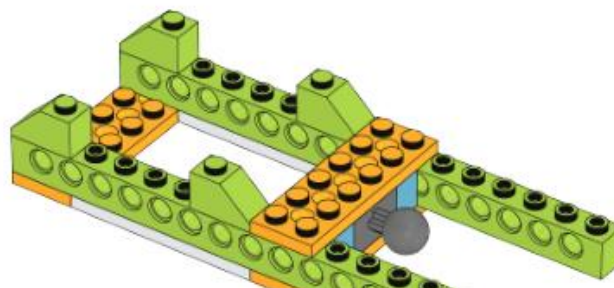
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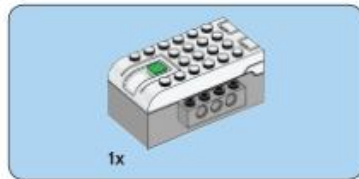
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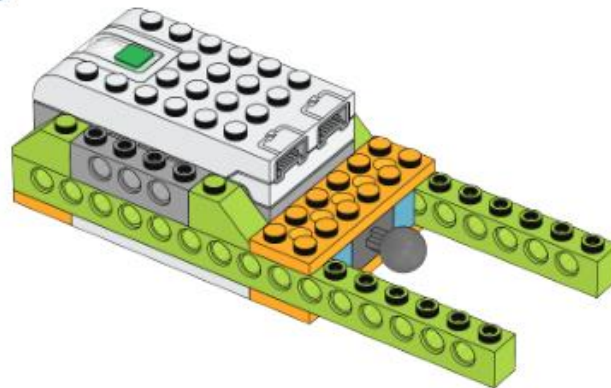
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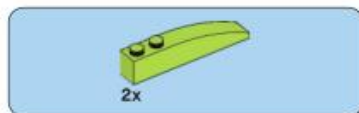




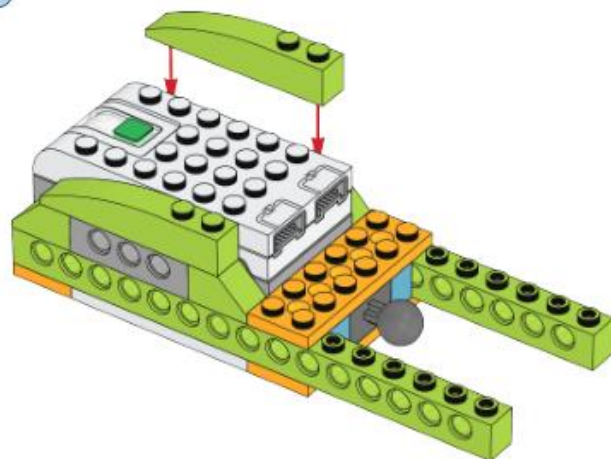
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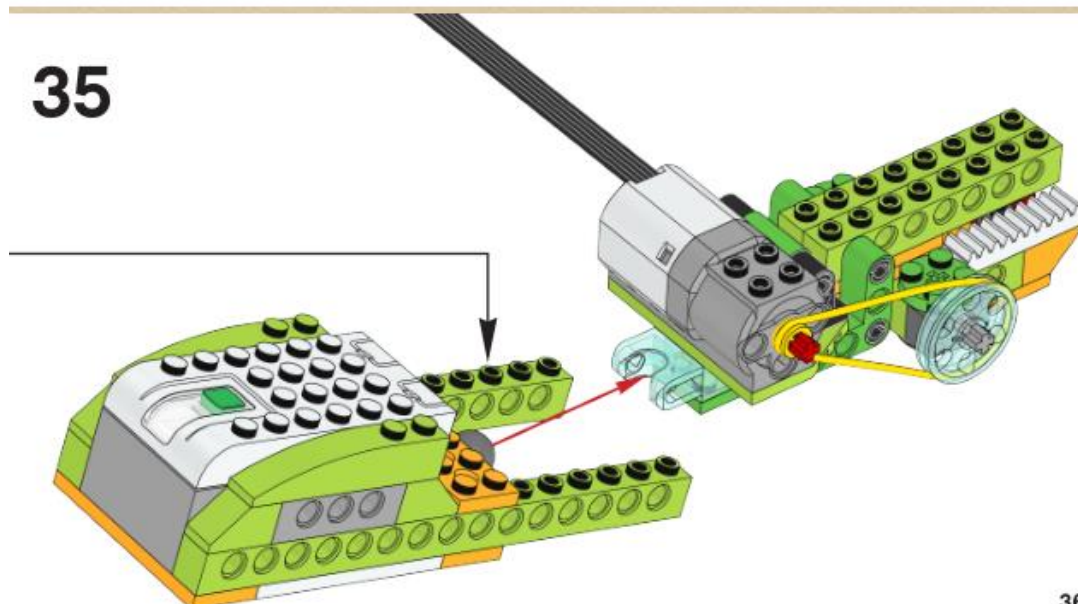


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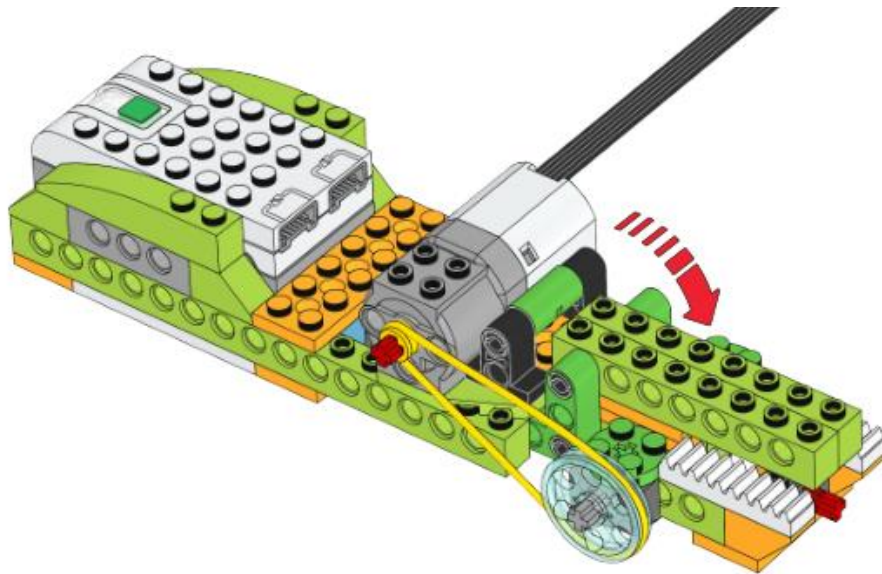
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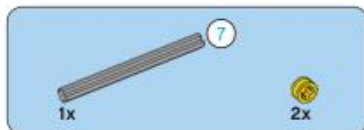


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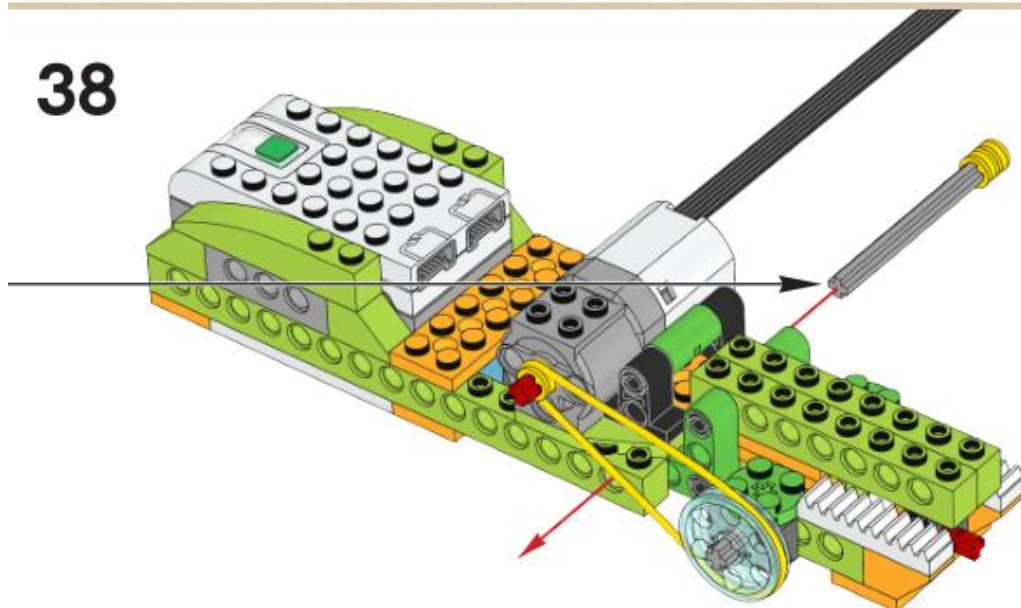


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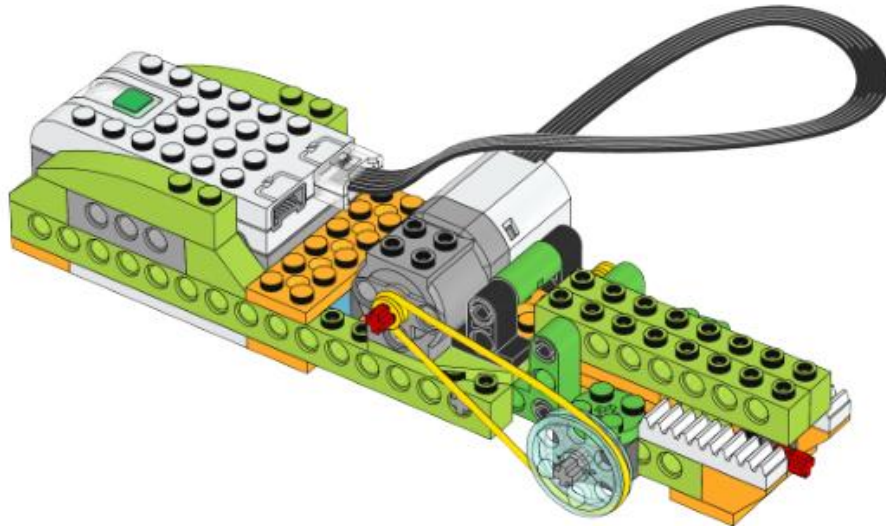
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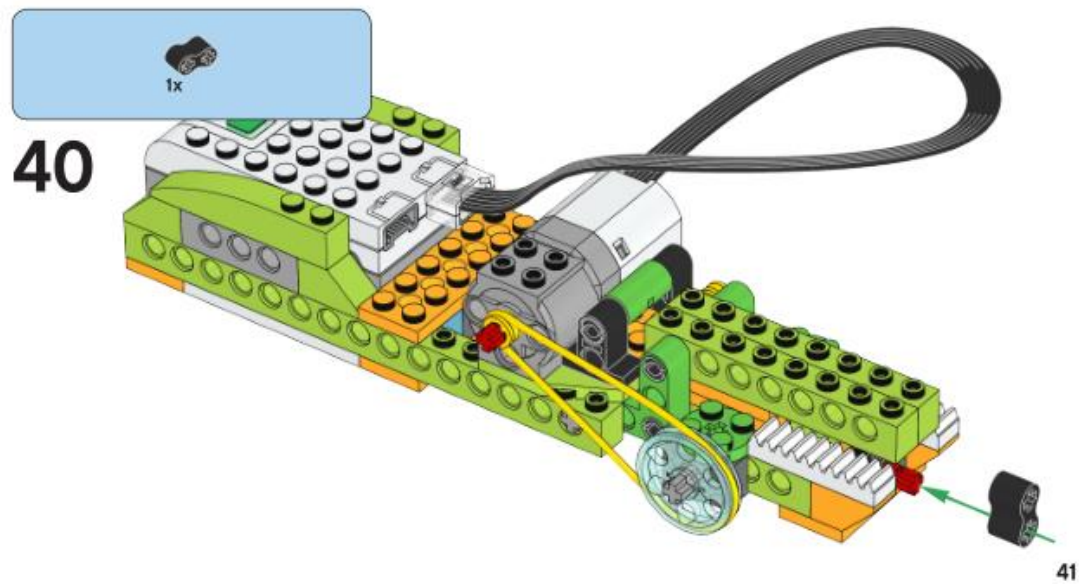
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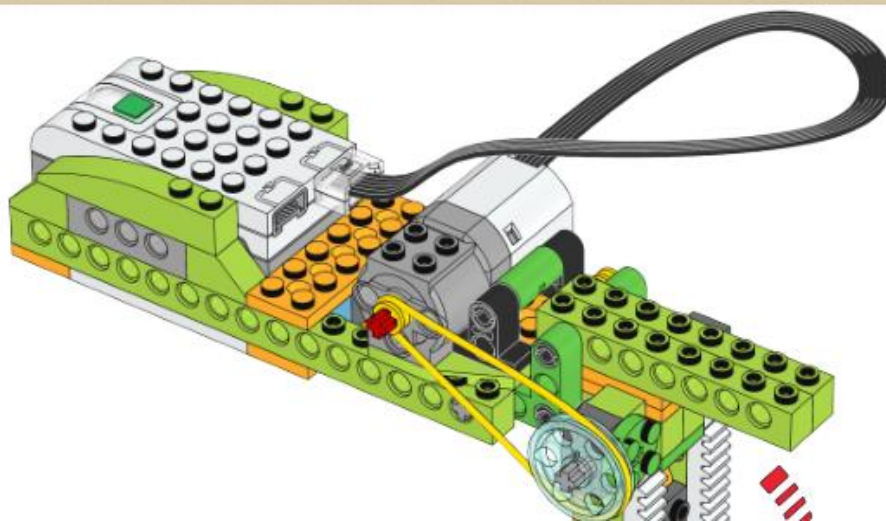


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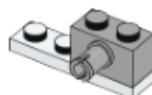
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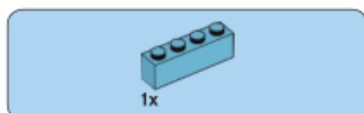


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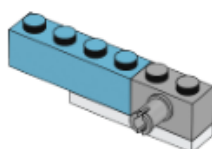


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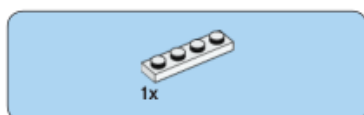


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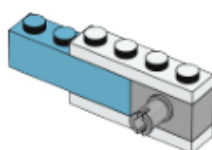


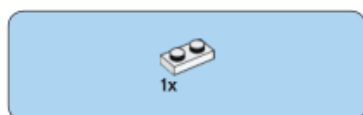
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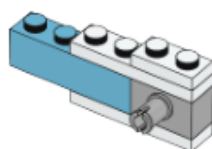


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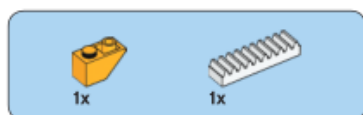




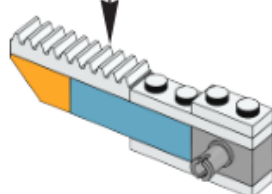
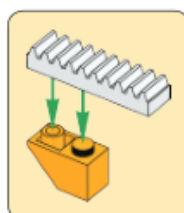
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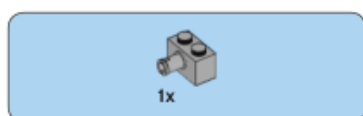
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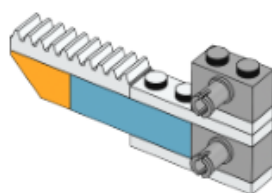
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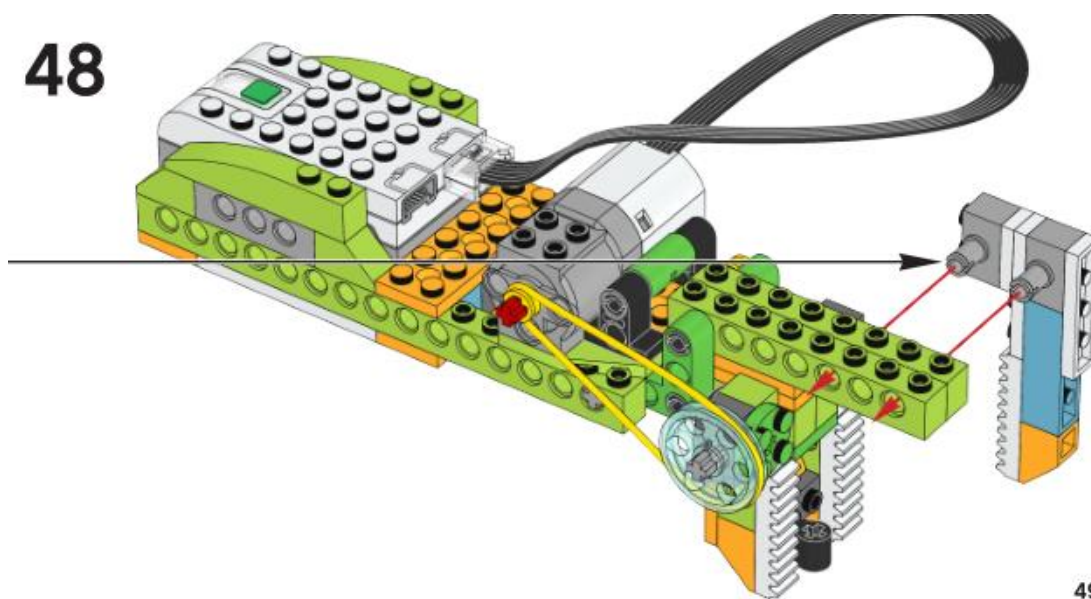
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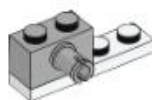
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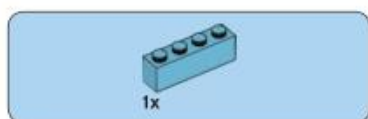
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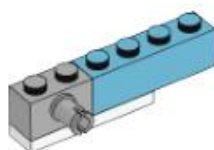
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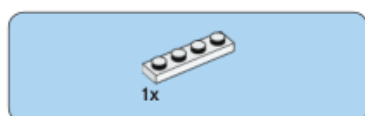


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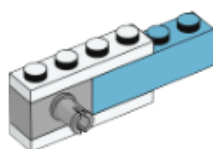


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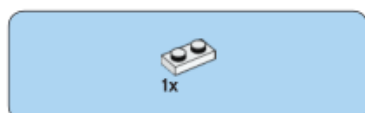




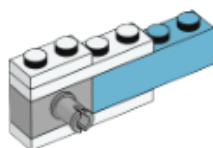
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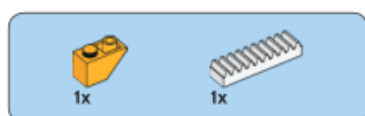
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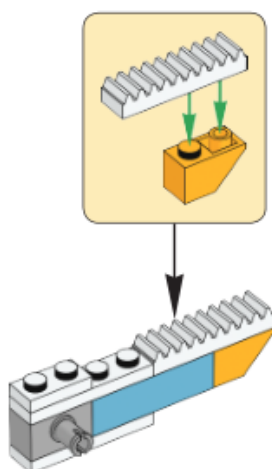
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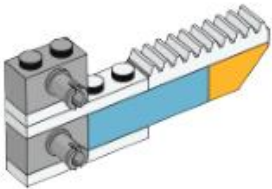


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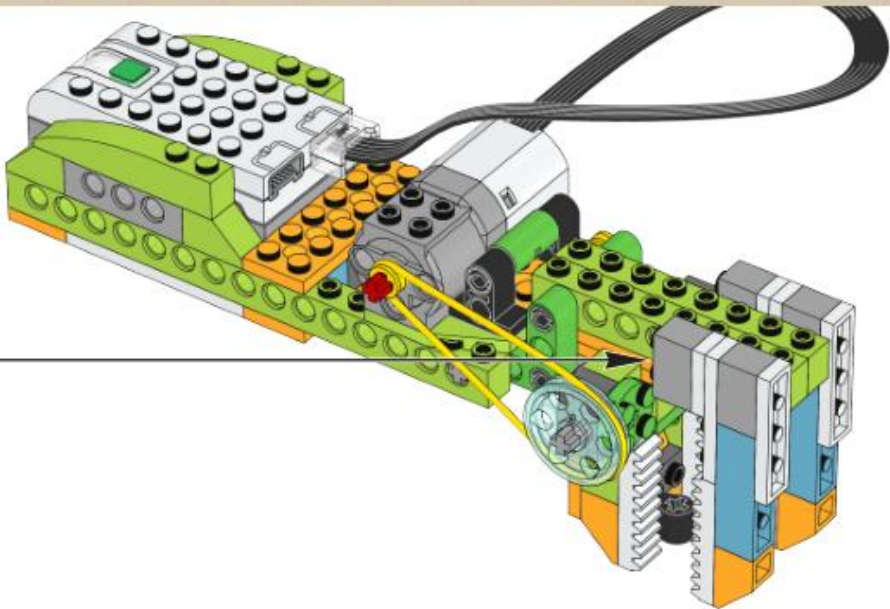


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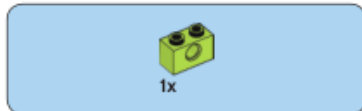


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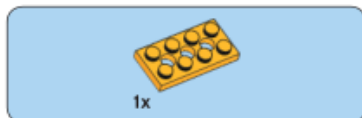




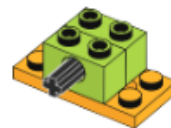
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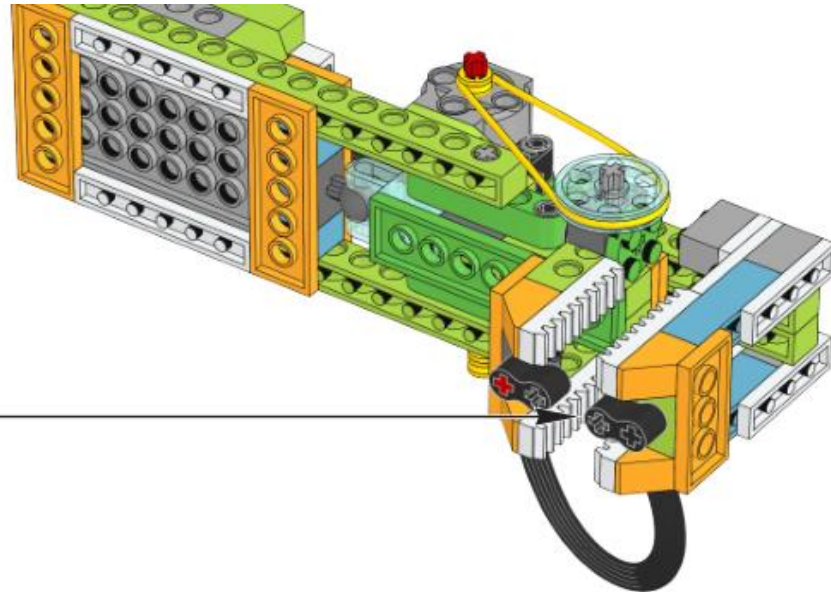


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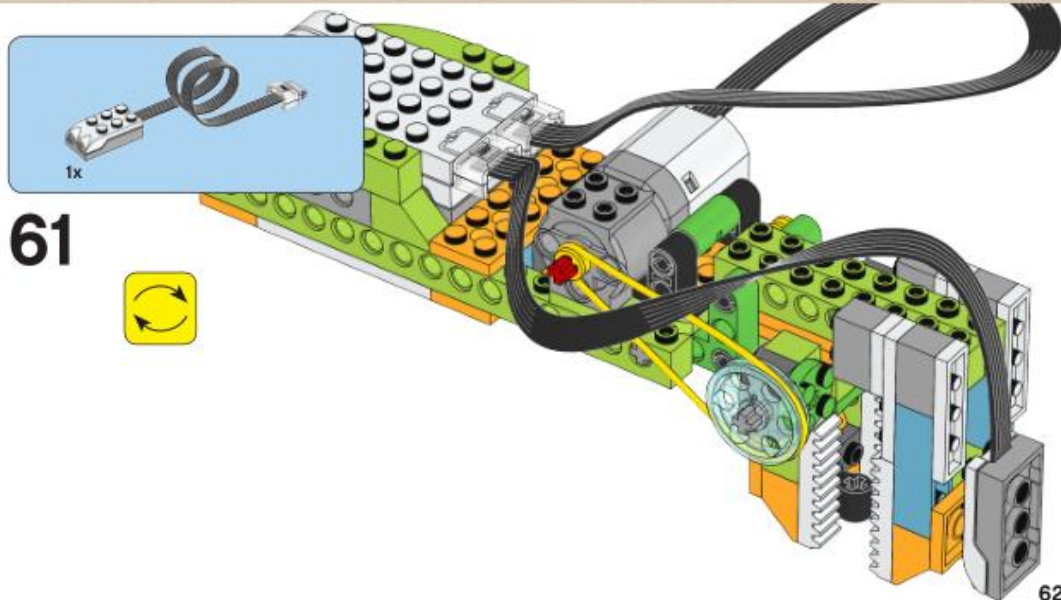




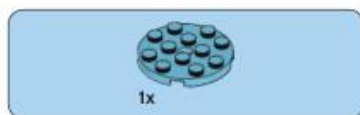
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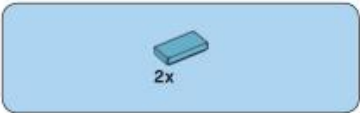
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62







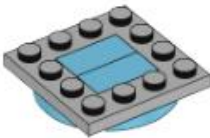
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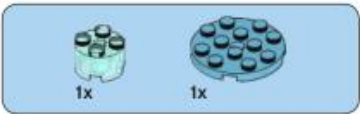
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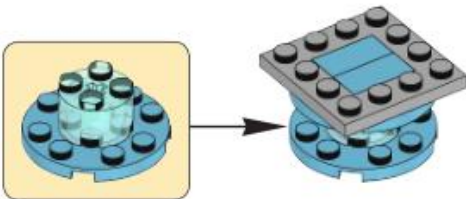
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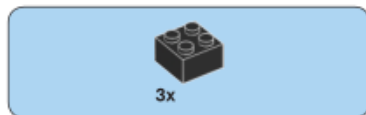
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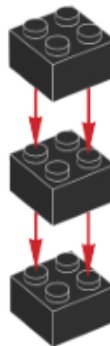
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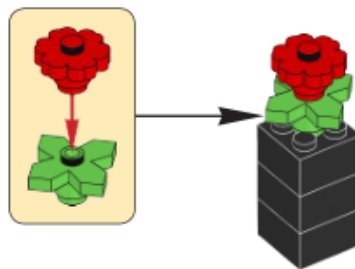
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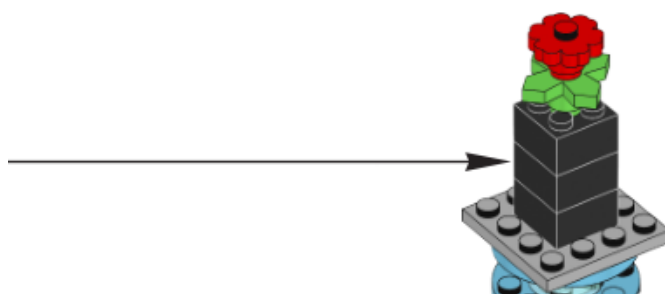


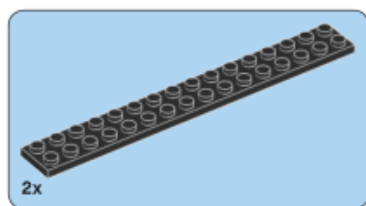
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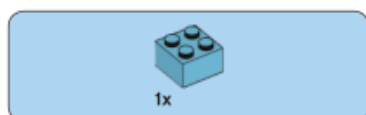




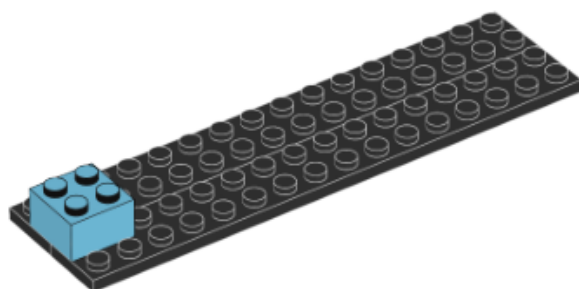
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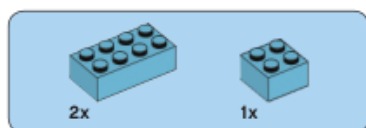
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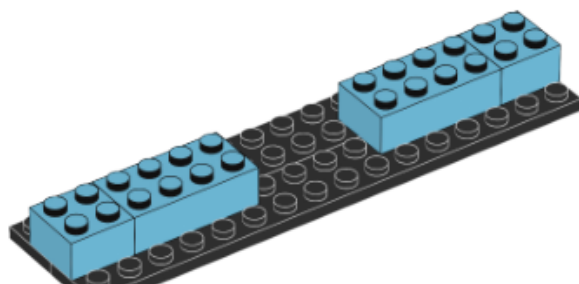
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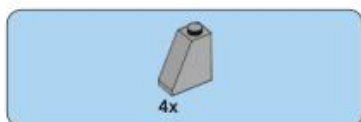


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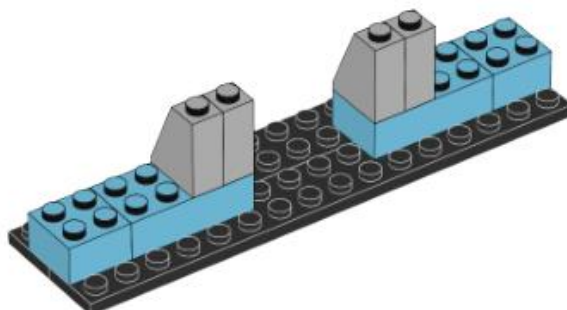


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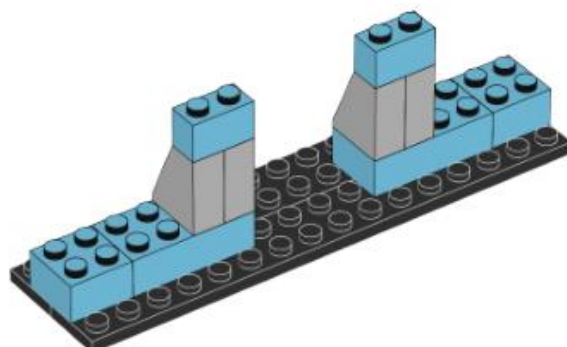
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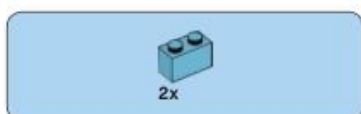
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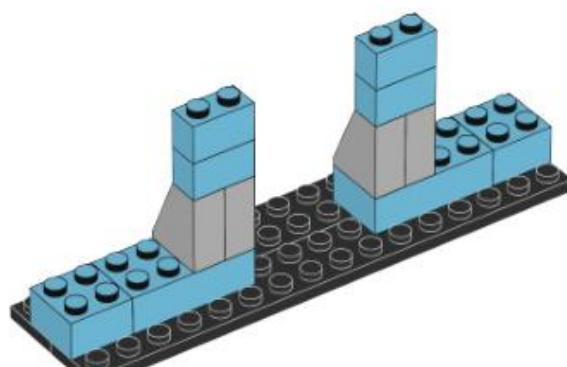
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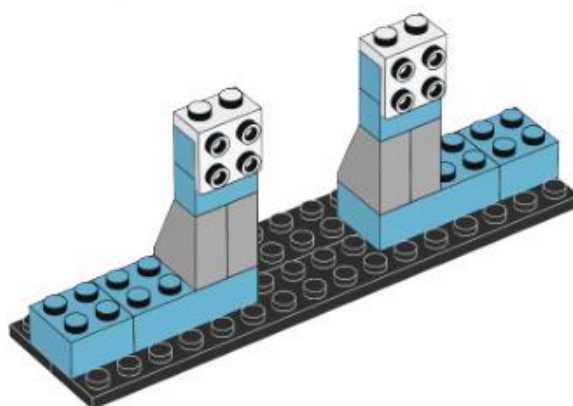


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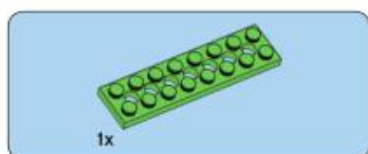




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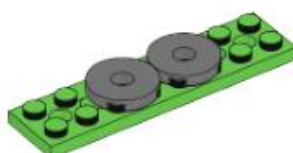
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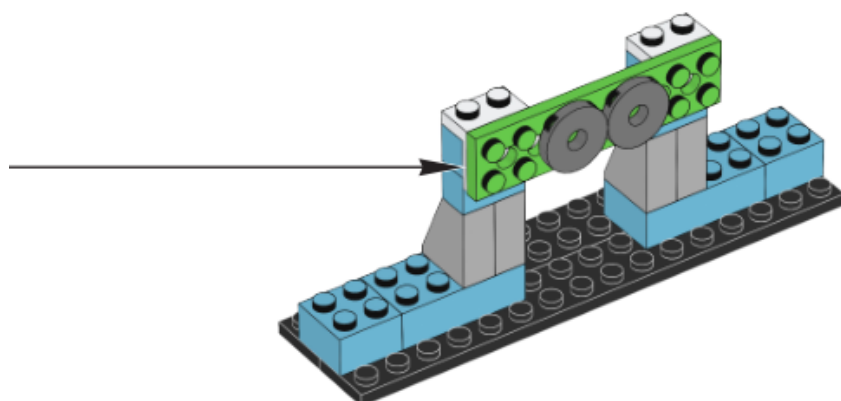
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77



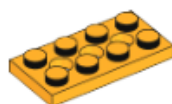
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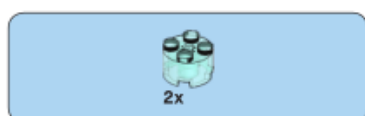
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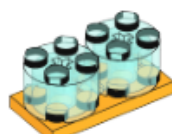
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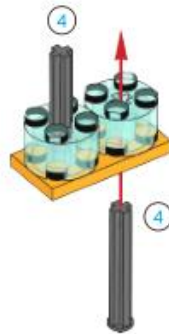


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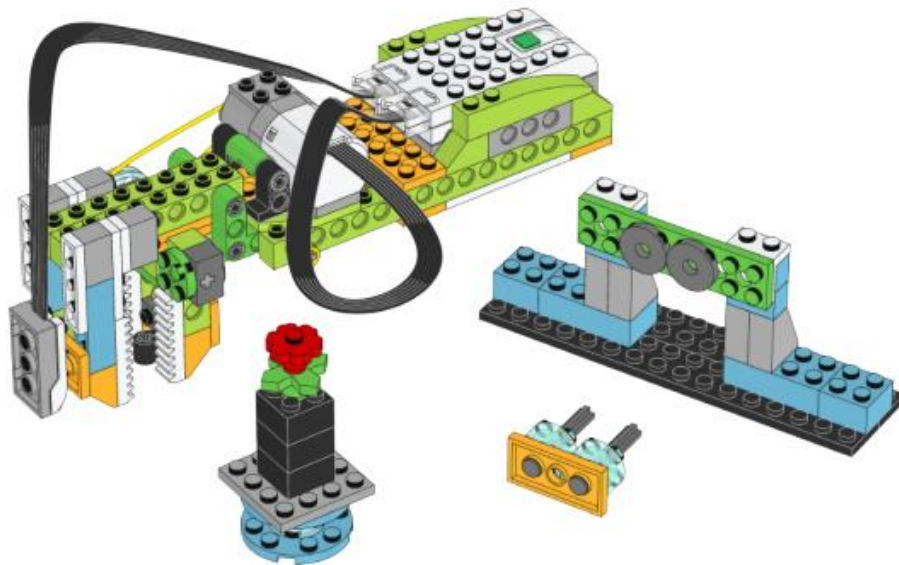


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