



```
when green flag clicked
if [Distance Sensor sensor1 < 5] then
  motor [port1 v] direction [clockwise v] speed [9]
  play [music1 v]
  led [all v] color [red v]
```



ROBOT PROGRAMMING MANUAL

MKZ-RM



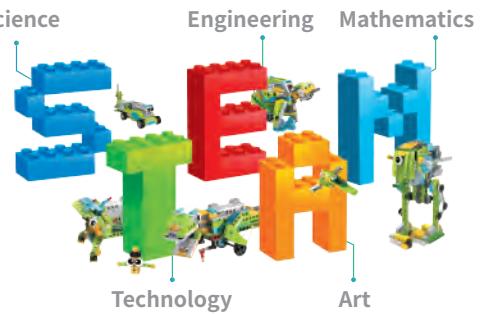
Find more ideas here.



APP Download

What is STEAM?

STEAM stands for science, technology, engineering, mathematics and art. STEAM Education aims at cultivating children's comprehensive scientific thinking and abilities and emphasizing the interdisciplinary integration. It is very popular in the United States, Germany, the United Kingdom, Finland and other countries.



PBL (Project-based Learning) The Main Teaching Mode of STEAM

Project-based learning is a teaching and learning method that takes children as the center to design and implement projects, thereby promoting children's learning effects. Within a certain period of time, the child chooses, plans, proposes a project idea, and solves practical problems through various forms such as display.

Compared with traditional learning methods, project-based learning can effectively improve children's practical thinking and problem-solving abilities. The goal of project-based learning is to enable children to master subject knowledge more efficiently through practical methods that combine with reality, and to cultivate children's social and emotional skills in the process.

Makerzoid Robot Lab

As the leader of STEAM education, Makerzoid adopts interesting PBL guidance, so that children can enjoy valuable STEAM courses at home to learn while playing.

CONTENT

Chapter 1 Robot Introduction

1.1 Host Controller	001
1.2 Motor	002
1.3 Distance Sensor	003
1.4 App Instruction	004
1.5 Basic Knowledge About Building Blocks	006
Spaceship	011
Stretch Car	016
Inertia Car	020
Tumbler	025
Pivoting Fan	031

Chapter 2 Robot Programming

2.1 Graphical Programming	037
---------------------------	-----

2.2 Introduction to the Programming Area	038
--	-----

2.3 Programming Tutorials	039
---------------------------	-----

Chapter 3 The Intelligent Car

3.1 Build a Car	041
3.2 Car Programming	049
3.3 The Racing Car	051
3.4 The Obstacle Detecting Car	055
FAQ	059
FCC	060

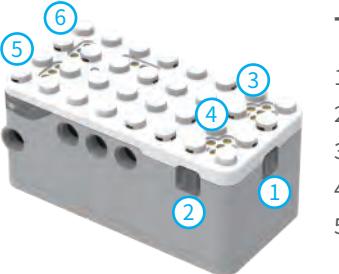
Check out more tutorials on the App.

CHAPTER 1 : ROBOT INTRODUCTION

1.1 The Host Controller

The Front

- 1.Power
- 2.Motor Stopping
- 3.Motor Port-1
- 4.Motor Port-2
- 5.Distance Sensor Port-1
- 6.Distance Sensor Port-2



The Back

- 1.Motor Clockwise
- 2.Motor Counterclockwise
- 3.LED-1
- 4.LED-2
- 5.Gyro Sensor Port



Video tutorials

Host Controller Switching Mode



App Control Pairing Mode
Press the power switch and then release, it lights up red lights for 10 seconds and turns into green light, then it enters App control pairing mode.



Built-in Program Executing Mode
Long press the power switch for 10 seconds then release, the robot will automatically execute the built-in program (You can modify the program on programming page in the APP).

Installing the Battery

Remove the battery cover



Insert two AAA batteries
(batteries are not included)



Put the battery cover back

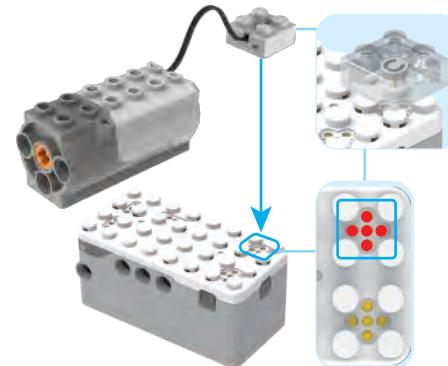


Battery Installation Instructions

1. Non-rechargeable batteries cannot be charged;
2. Please charge the rechargeable battery under adult supervision;
3. Used batteries should be removed from the product;
4. The rechargeable battery should be removed from the toy before charging;
5. The power terminals should not be short-circuited.
6. Batteries of different sizes or old and new batteries cannot be used together;
7. The toy cannot be connected to more than one power source;
8. The battery should be inserted with the correct polarity.

1.2 Motor

Connected to the host controller



Introduction to the motor

Based on the principle of the conversion of electric energy to kinetic energy, the motor provides strong power for the robot to make the robot move.



Clockwise



Counterclockwise

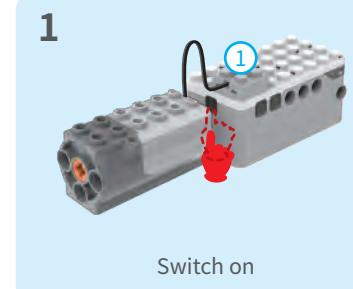
Joint

Cross shaft hole

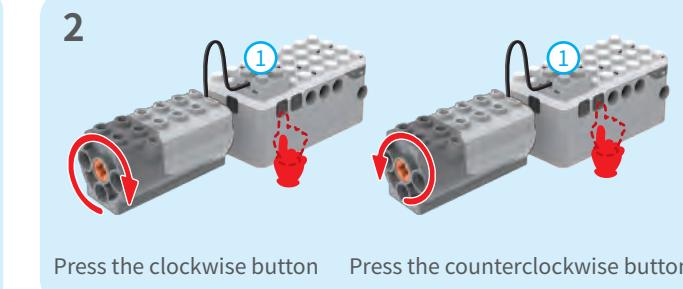
Warm tips:

1. The motor is made of silicone material, please do not pull it, squeeze it with blocks or gears, which may cause the wire to break.
2. To remove the motor connector, please use a starter, do not pull the wire.

The use of the motor

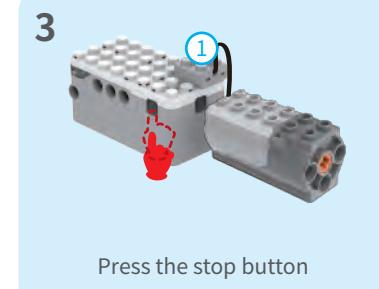


Switch on



Press the clockwise button

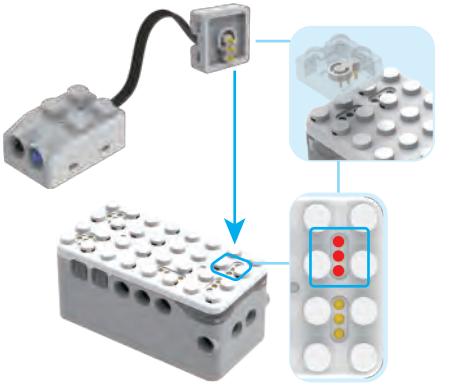
Press the counterclockwise button



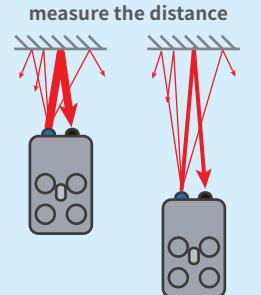
Press the stop button

1.3 Distance Sensor

Connected to the host controller

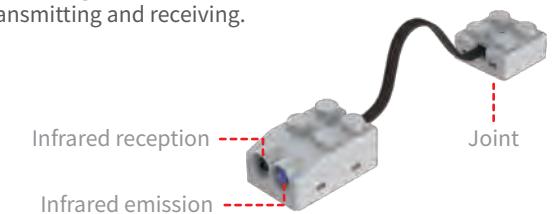


The use of the distance sensor



Warm tips

The infrared distance sensor judges distance and obstacles through the infrared light. There are two small eyes in the sensor, which are used for transmitting and receiving.

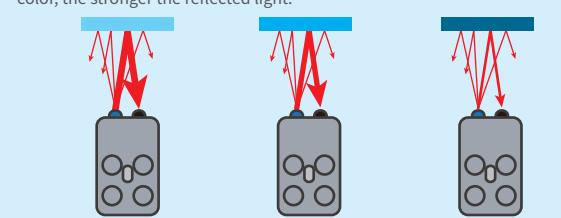


Warm tips:

1. The motor is made of silicone material, please do not pull it, squeeze it with blocks or gears, which may cause the wire to break.
2. To remove the motor connector, please use a starter, do not pull the wire.

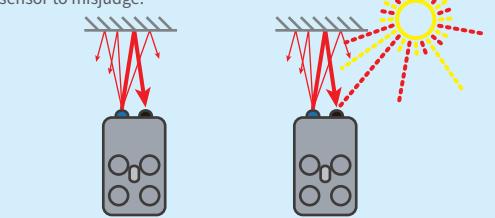
Color reflection

The color of the object will affect the strength and weakness of the reflected light. The darker the color, the weaker the reflected light, and the lighter the color, the stronger the reflected light.



The influence of the sunlight

Sunlight contains very strong infrared light, which will affect the intensity of infrared light received by the sensor and cause the sensor to misjudge.



1.4 APP Instruction



Video tutorials



APP Download



APP icon

- ① Scan the QR Code
- ② APP store-search "makerzoid"



iOS



Android

1 APP Download



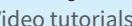
The APP includes different robot kits, you can choose the kit you have purchased

2 Choose the Robot Kit



It teaches you how to build and control (should be connected to the host controller first) a robot

3 Build and Control the Robot

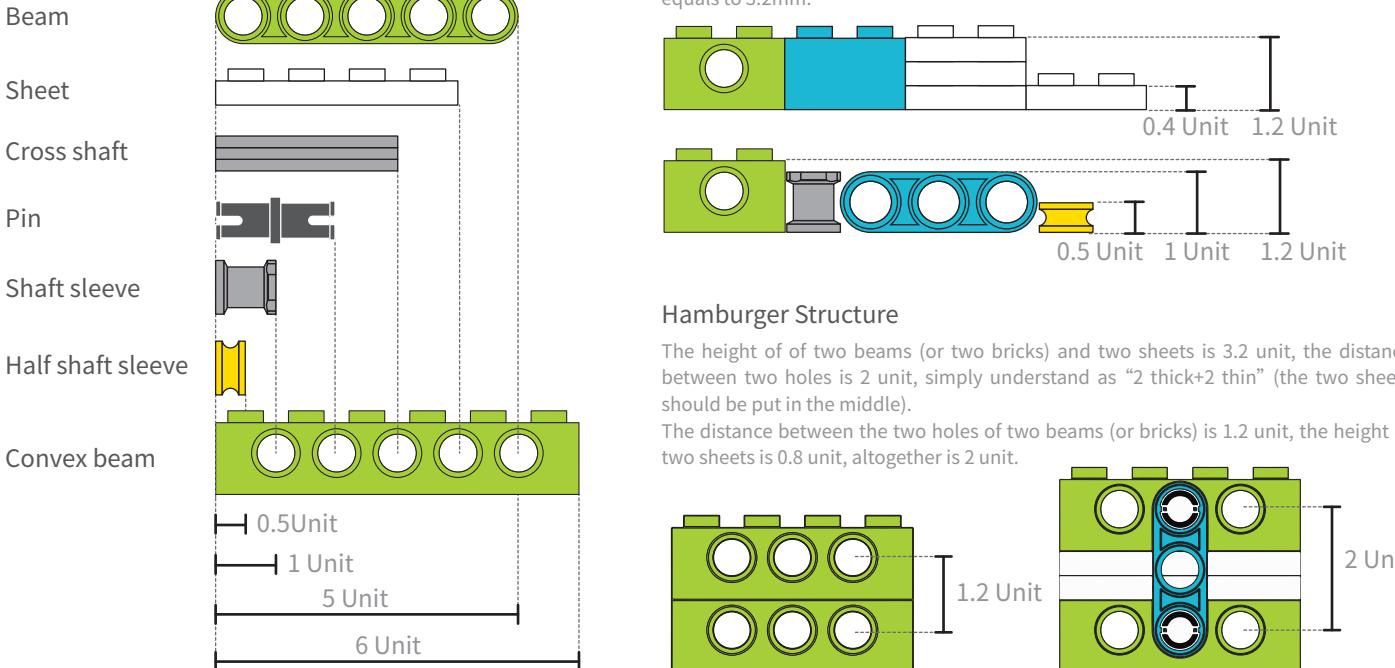


Video tutorials

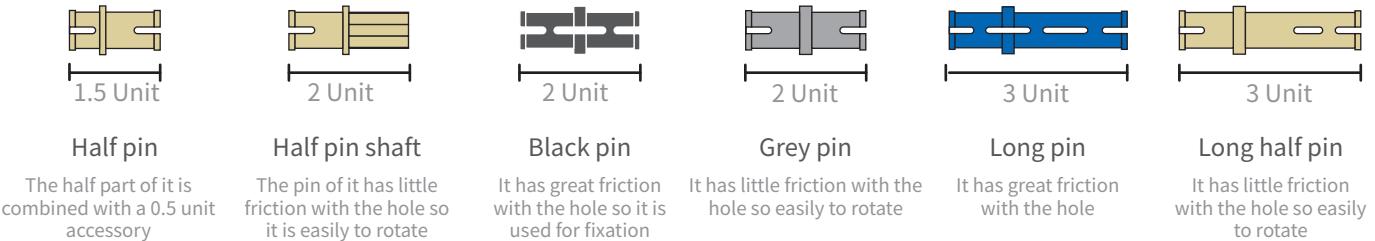
BASIC KNOWLEDGE ABOUT ROBOT PARTS

1.The Unit Size

One unit equals to eight millimeters. Generally the width, height, length of the part and the unit size are integer multiples.

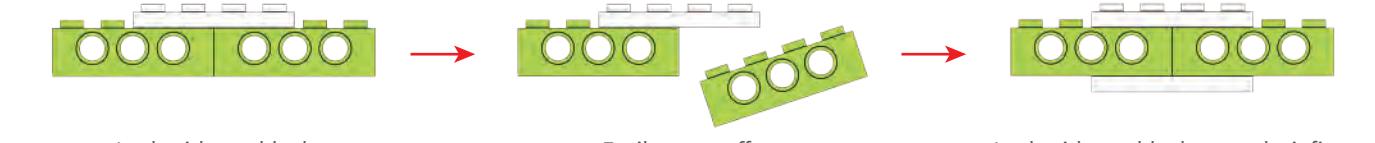


3.The Difference Between Pins



4.Use skills

Interlock



Two points determine a straight line



Connected with a pin, able to rotate

Connected with two or more pin, able to fix the shape

PRECAUTIONS

The four most important points to read this manual

Firm Bricks

Make sure the building steps and connect all the bricks firmly. A small gap can easily hinder the complete set of actions.

Moveable Shaft

The shaft determines of the rotation of the object. Make sure not to let anything block it, and do not continue to rotate when it is blocked or stuck.

Unlimited Creativity

The number of blocks in each robot is not absolute, and children can replace it flexibly. For example, 8-shaft can be replaced with 10-shaft, and the building steps of the robot are also not constant. Children can also build the same robot in their own way.

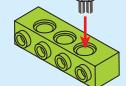
Be Patient

Please read each step carefully before building the robot to ensure that it is built strictly in accordance with the diagrams in this book. It doesn't matter if you fail, keep going.

How to keep a brick-thick length for the connected object on the shaft?

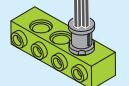
Put the connecting object on the lower end of the shaft sleeve so that the shaft sleeve exposes a little length.

1



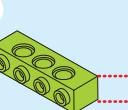
Place a brick hole face up on the table, align the exposed part of the shaft sleeve with the brick hole, and insert it down until the shaft sleeve touches the tabletop.

2



Pull out the shaft sleeve from the brick hole. At this time, the connecting object on the shaft sleeve is exactly the thickness of a brick from the bottom of the shaft sleeve.

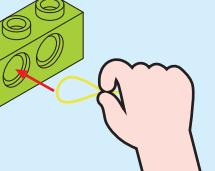
3



(Tip: How to make a wider distance? Build more bricks until it is thick enough, then the next step is the same as above.)

How to pass the rubber band through the brick hole?

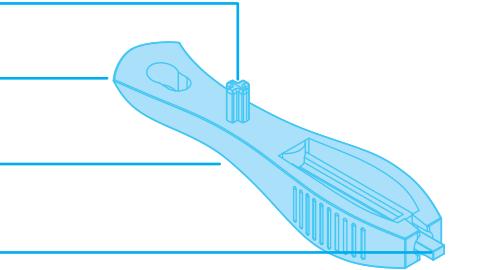
Use your thumb and index finger to pinch one end of the rubber band into a small ring. Pass this small ring through the brick hole until you can catch the rubber band from the other end.



DISASSEMBLY SKILLS

The function of the splitter is to use the principle of leverage to dismantle parts, which is easy to use and quick to disassemble.

1



Don't bite the blocks.



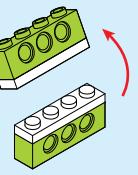
Detach the blocks

As shown in Figure 1, the blocks are tightly attached. You can hold a hole brick with two hands, press down at the same time and then pull it out. You will find that the lower block is separated from the other block.

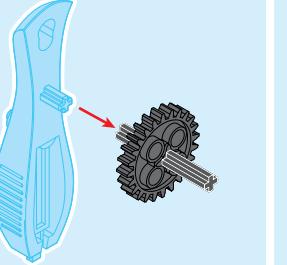
Figure1



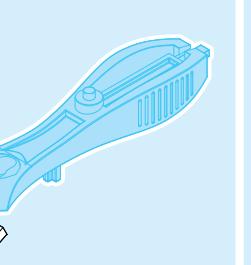
Figure2



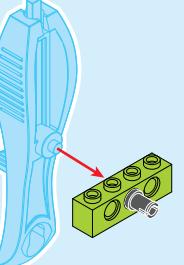
1



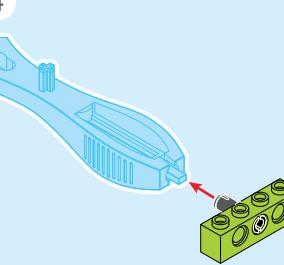
2



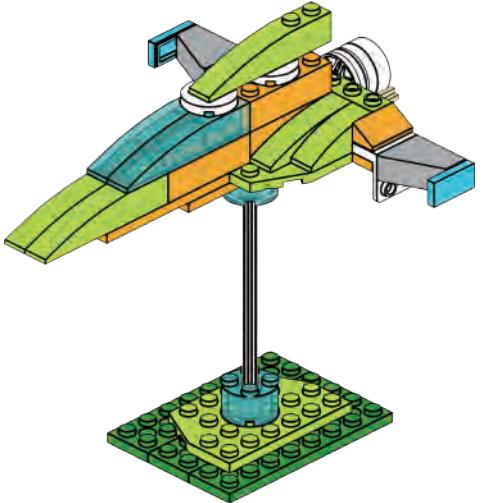
3



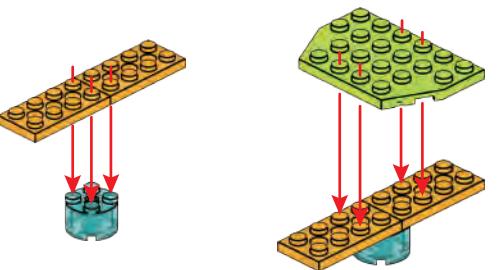
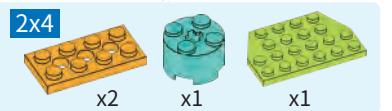
4



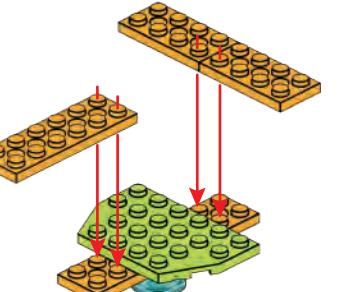
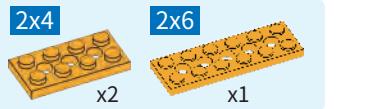
SPACESHIP



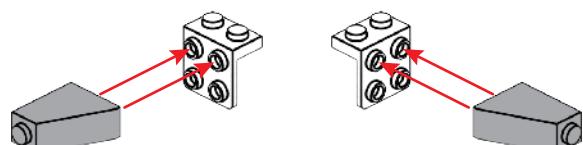
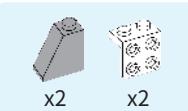
01



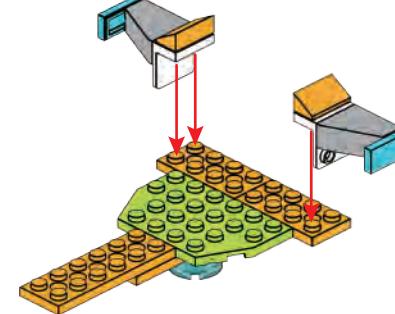
02



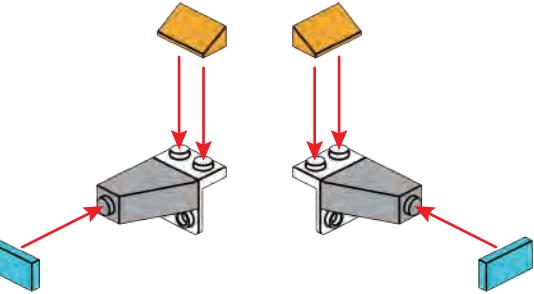
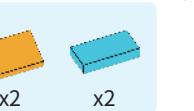
03



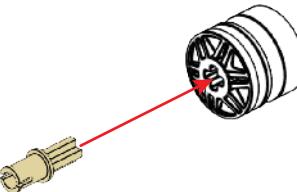
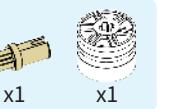
05

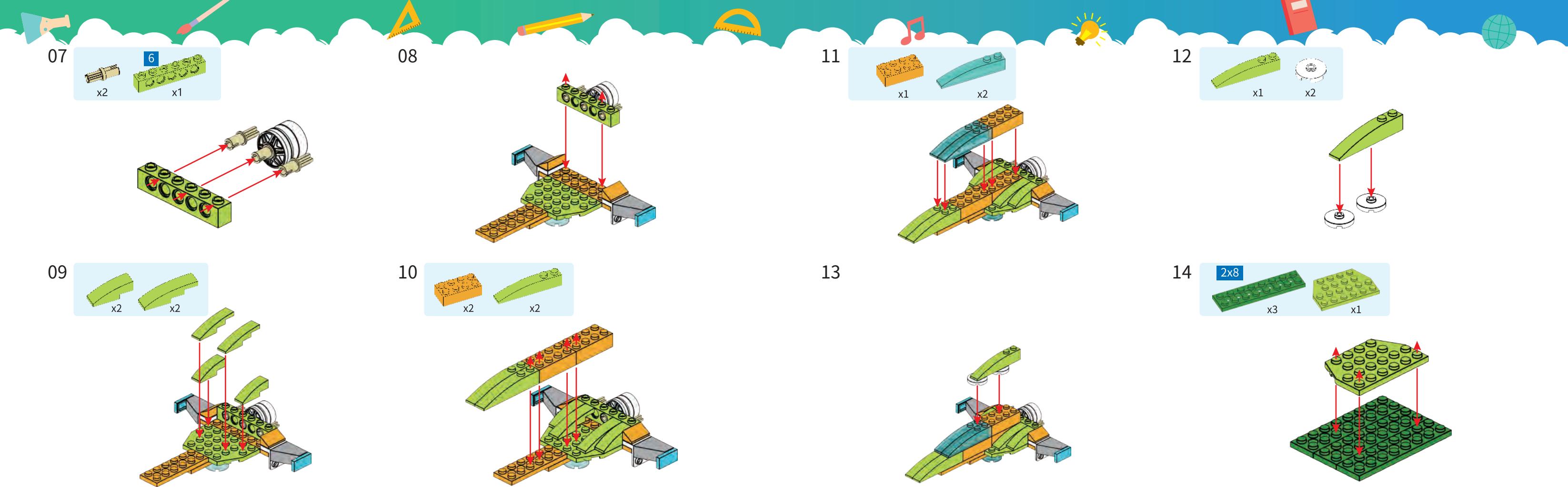


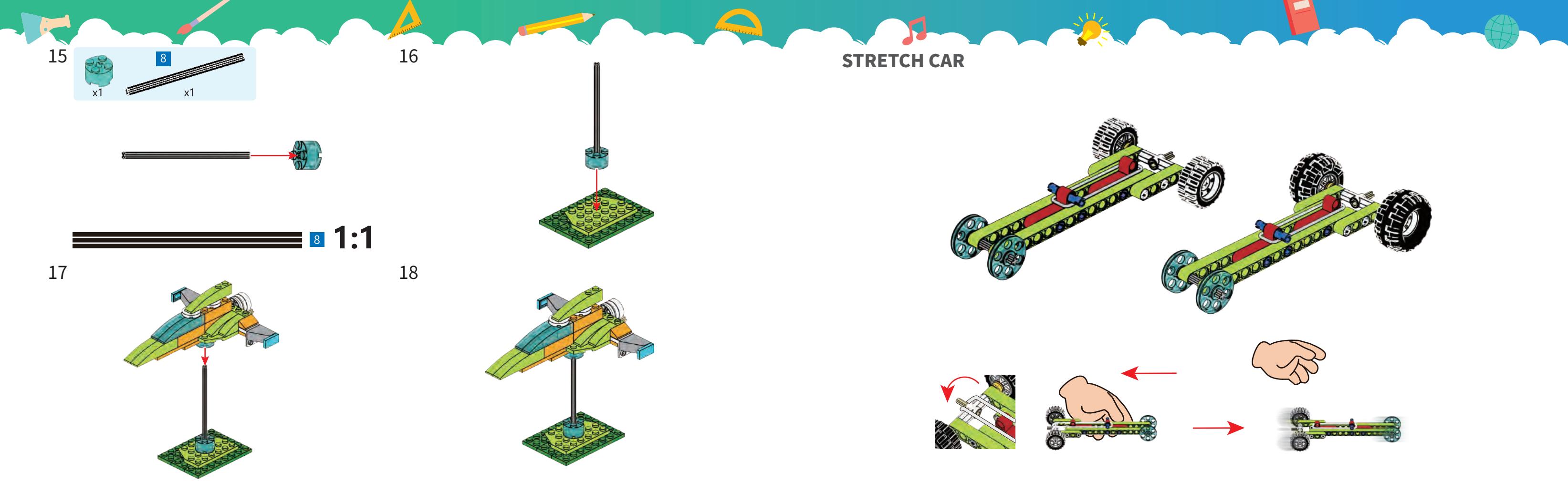
04

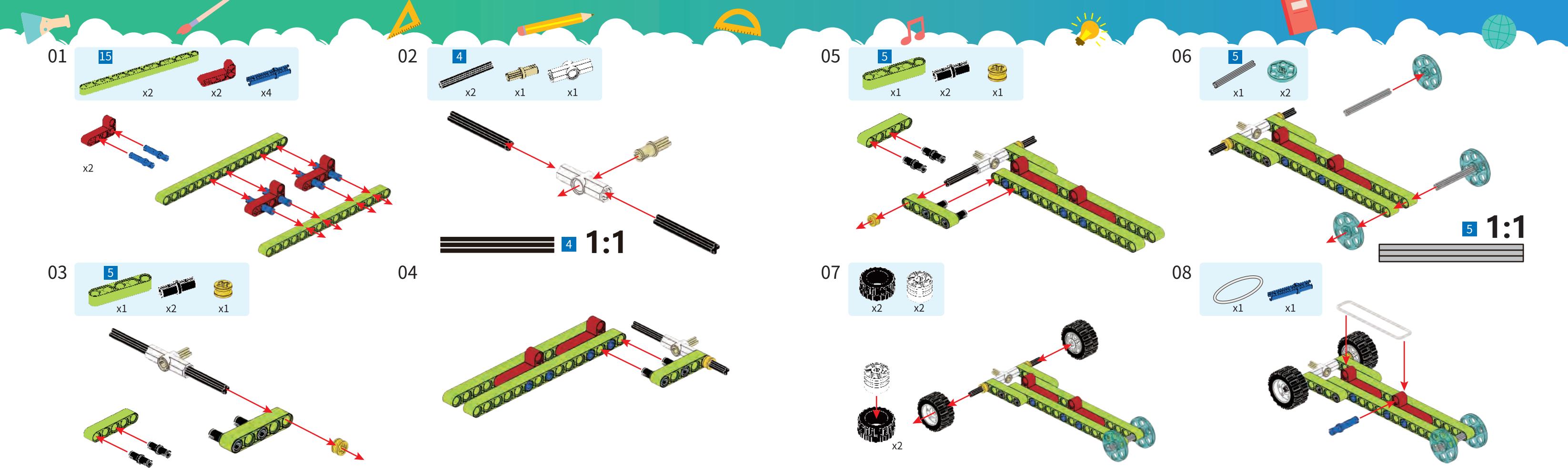


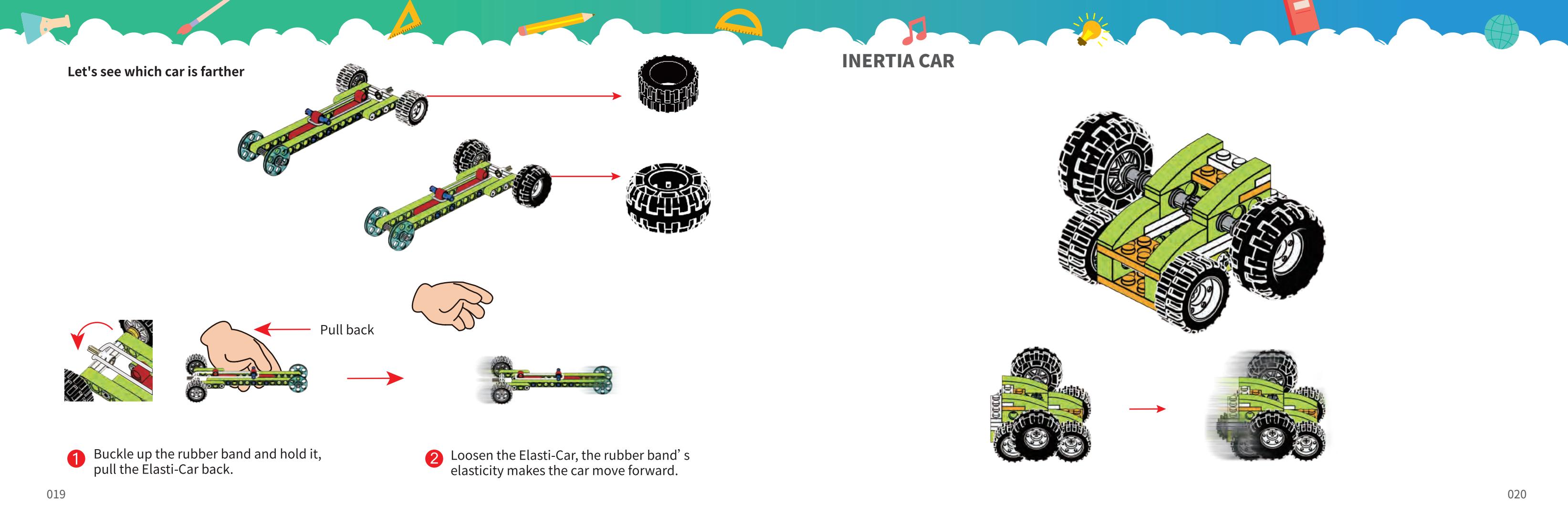
06



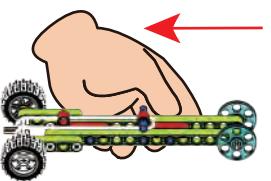
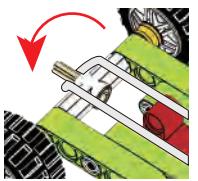




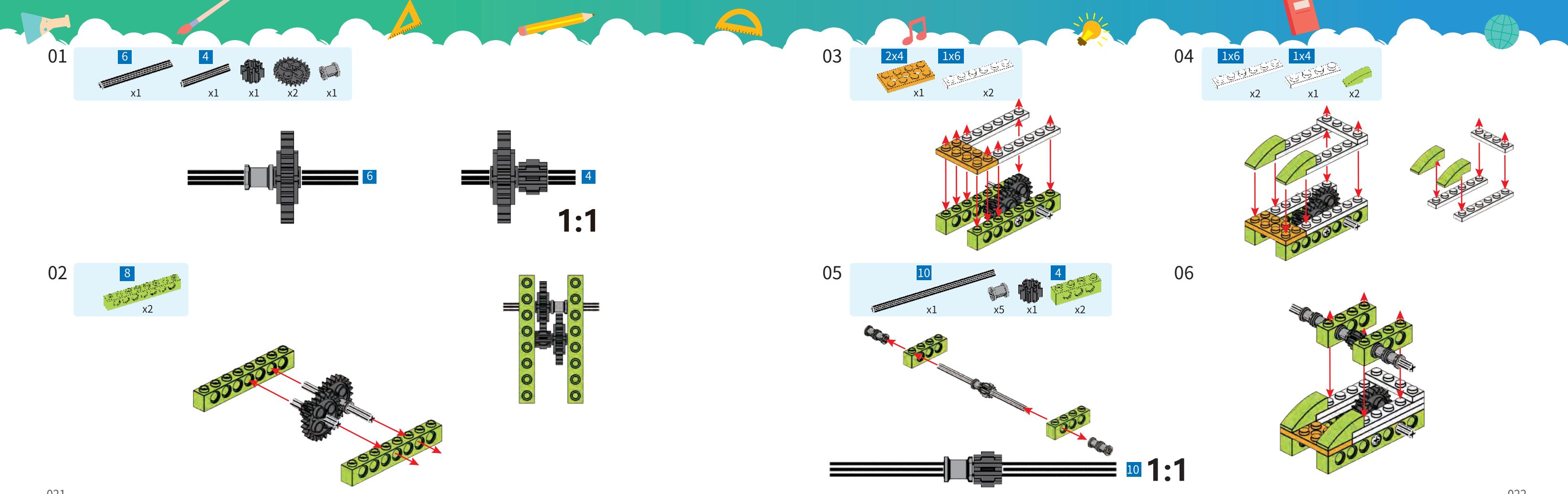


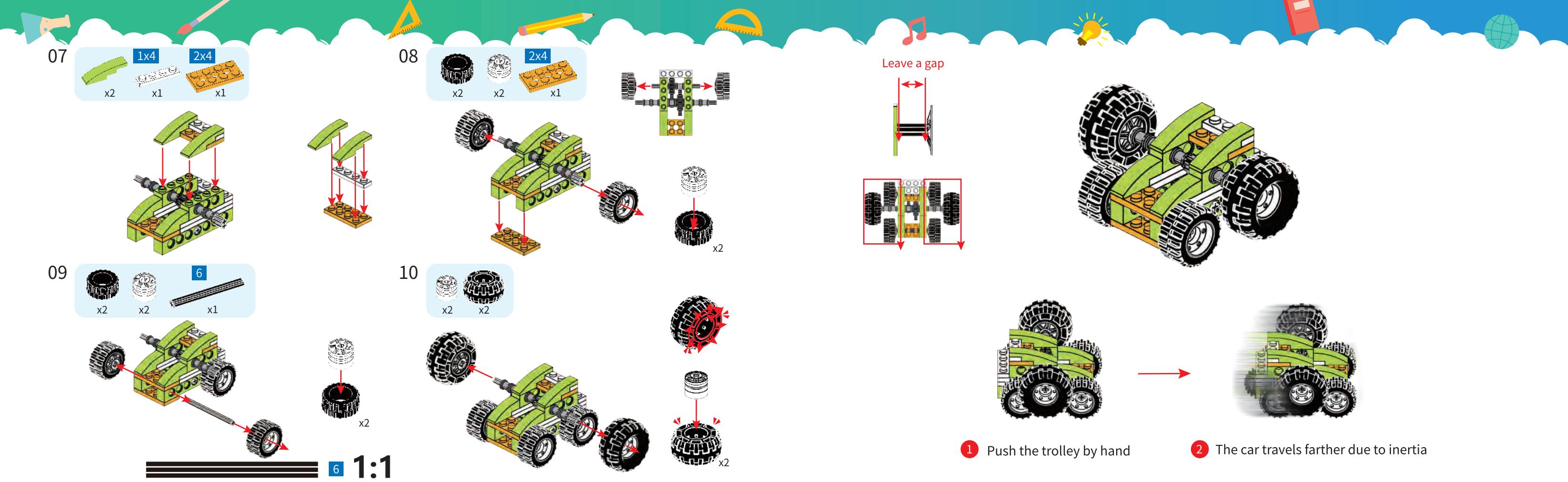


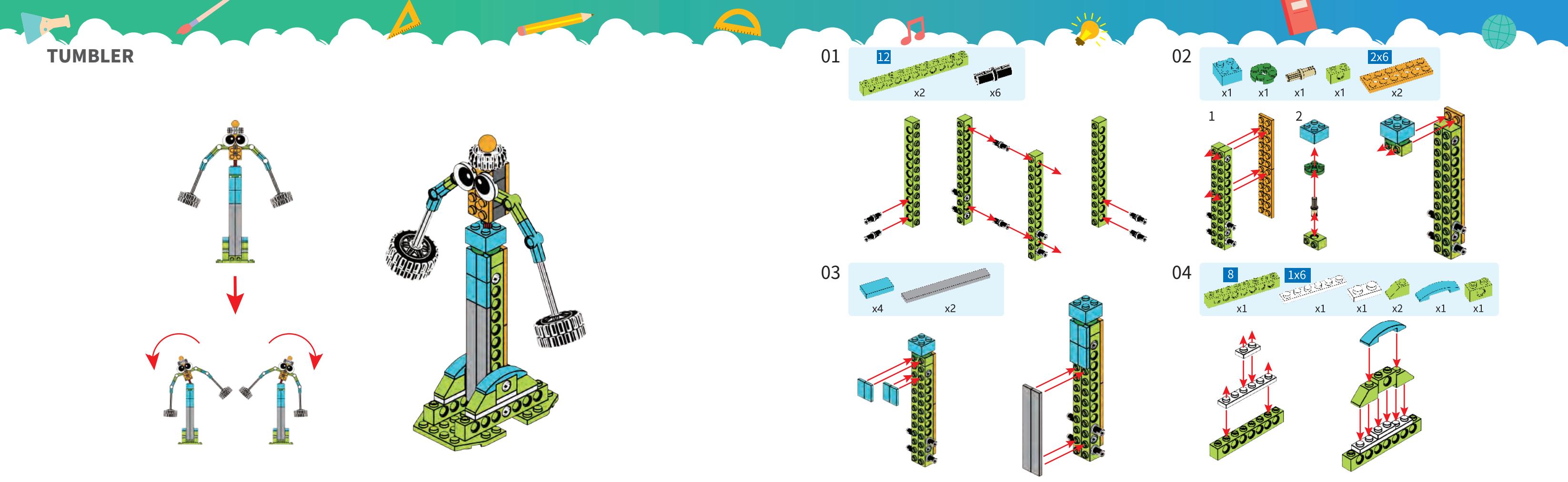
Let's see which car is farther

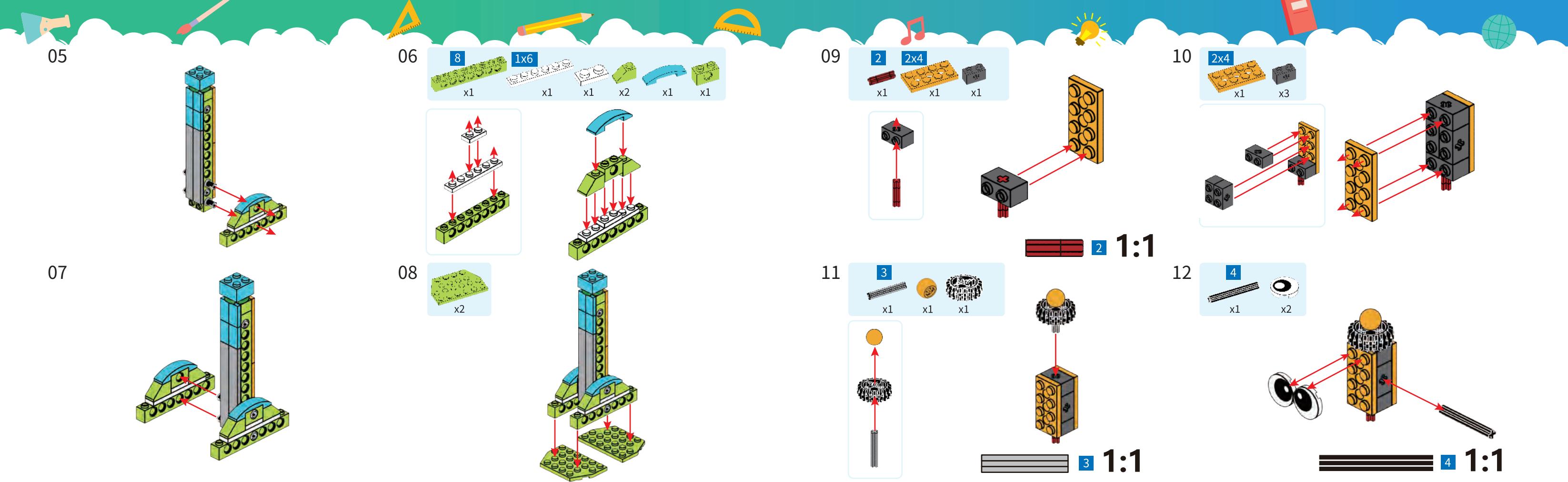


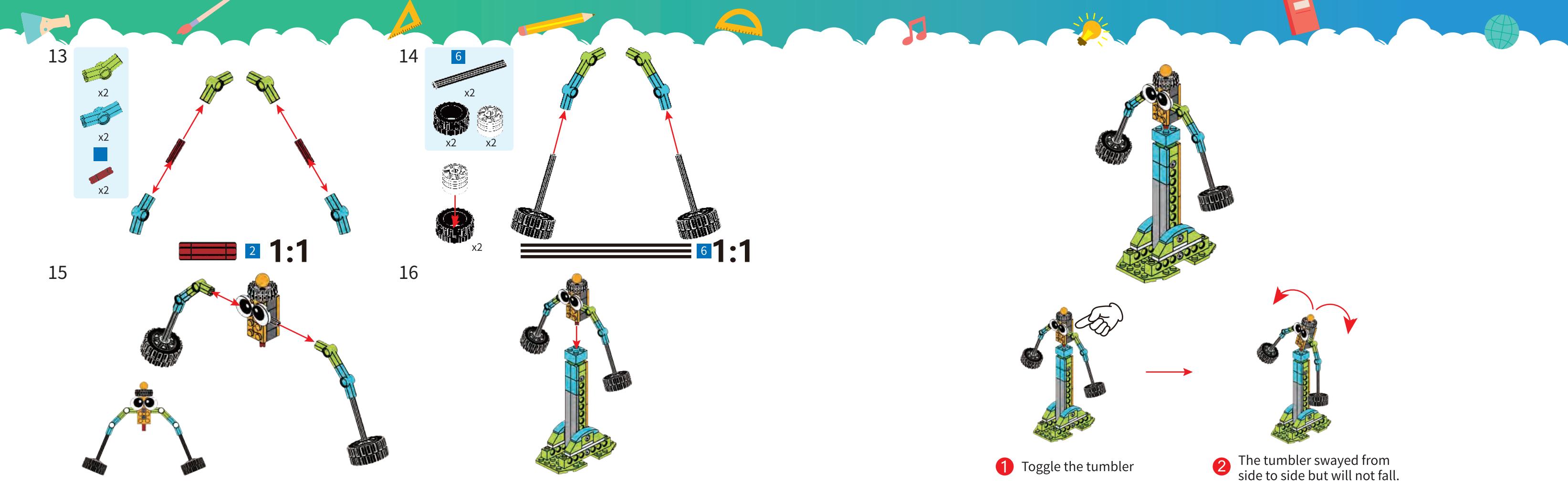
① Buckle up the rubber band and hold it, pull the Elasti-Car back.
② Loosen the Elasti-Car, the rubber band's elasticity makes the car move forward.

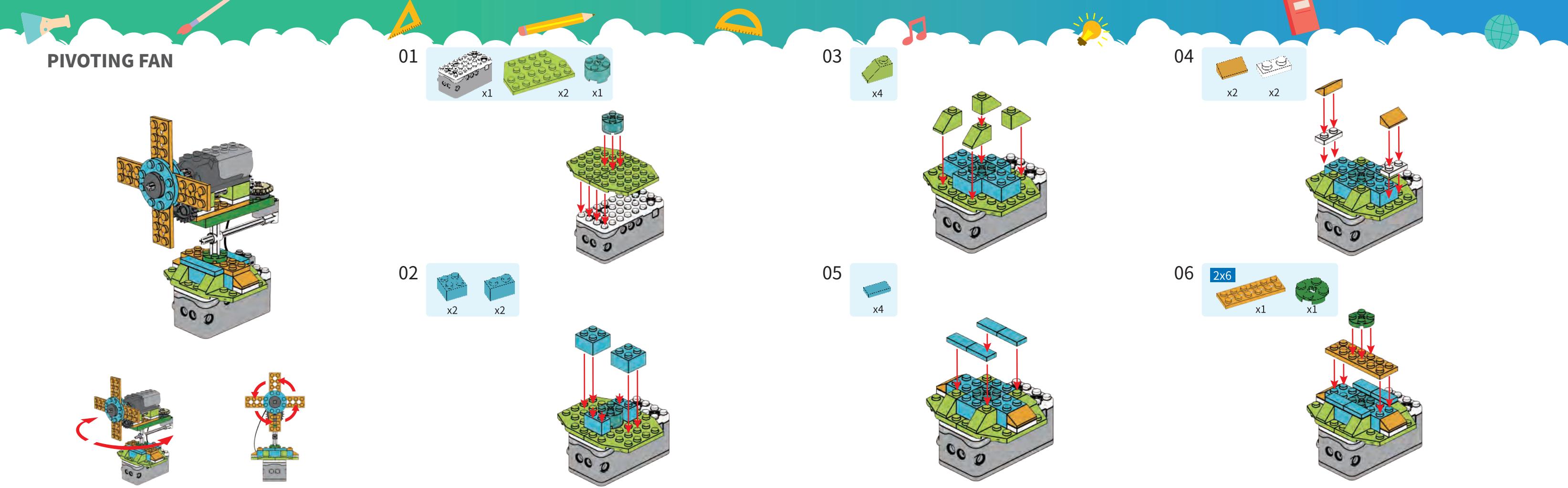


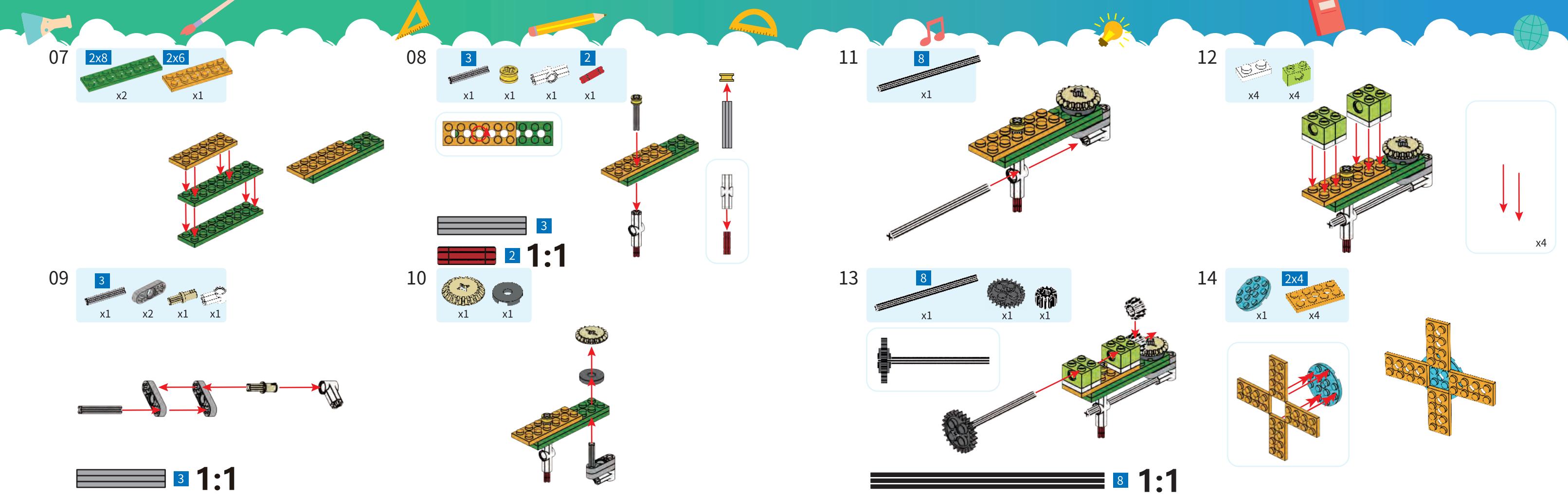


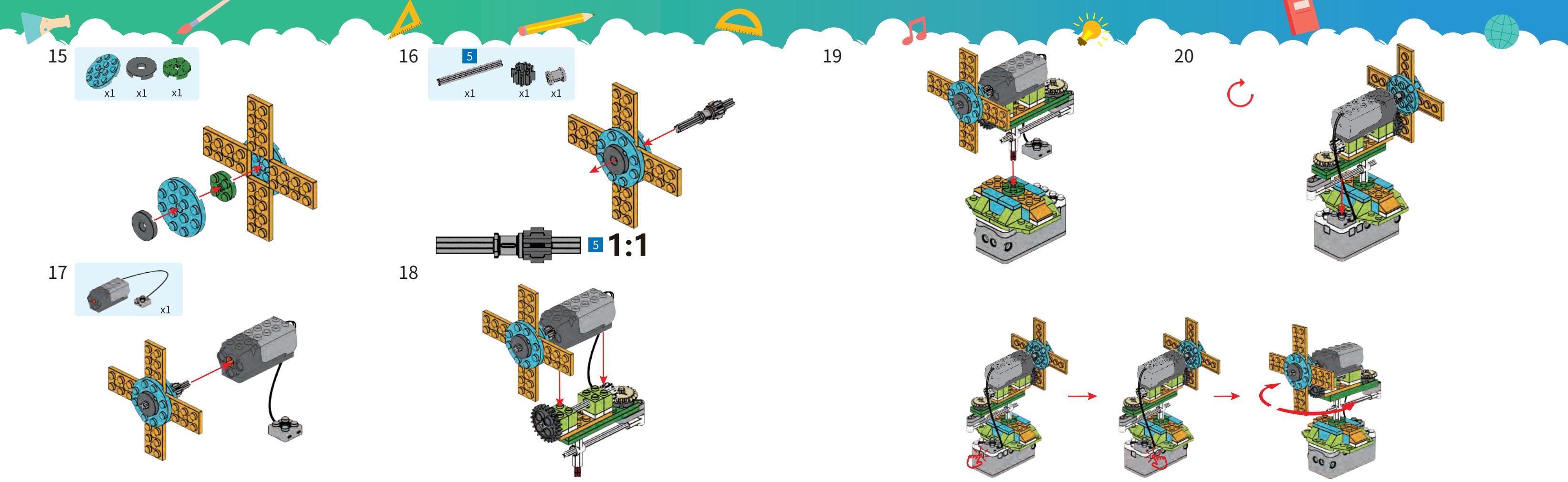












CHAPTER 2 : ROBOT PROGRAMMING

2.1 Graphic Programming

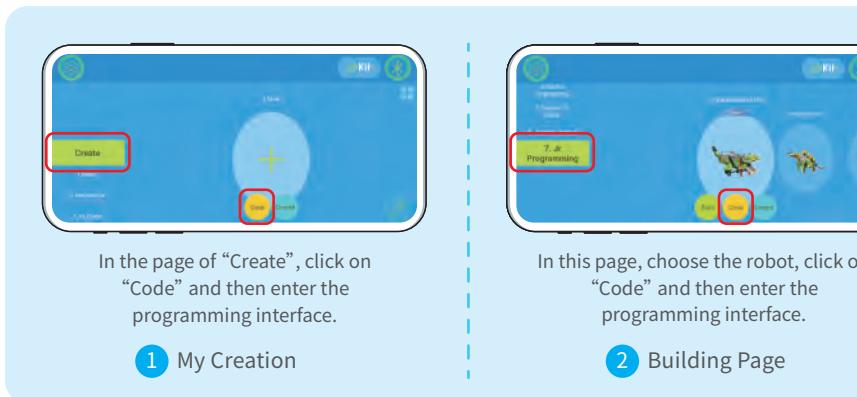
What is Makerzoid Graphic Programming?

In order to let people learn robot programming better, Makerzoid developed a graphical programming tool with the combination of Scratch 3.0, a programming tool by MIT. It changes the programming language into building block program modules. It does not need to write code but to drag the relevant building block program modules and stack them according to your ideas, so that the robot can perform the corresponding tasks according to your ideas.

How to enter the programming page

Method 1: Enter the APP, connect the APP Bluetooth to the host controller, click on “Create” or select the robot that needs to be programmed, click on the “Code” in the page to enter the programming page.

Method 2: Some robots contain official programming tutorial. You can choose official programming or my creation to make a program for your robot.



2.2 Introduction to the Programming Area

In the programming page, there are **Module area**, **Editing area**, **Menu**, **Data area** and **View area**.

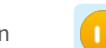
Module area:

Provide modules of different function to choose and use.

Menu:



Start button



Pause button



Save button



Function button (code, share and upload)



Code

Share

Upload

View the code of the program

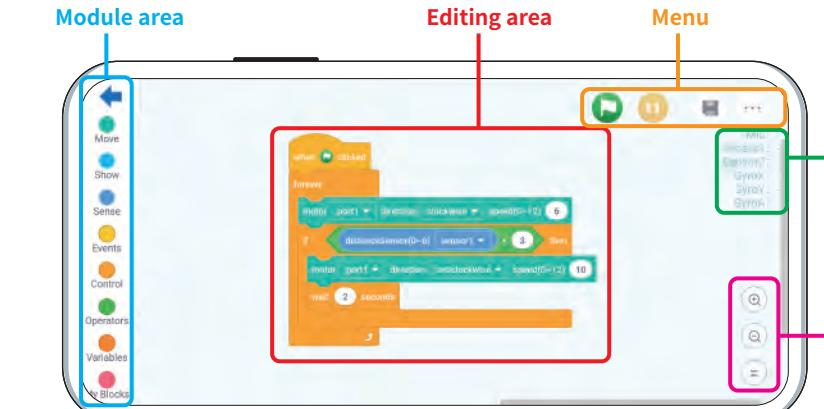
Share your program or ask for other's program

Upload the program to the host controller

Editing area:

Drag the modules you need here to make a executable script according to your ideas.

Module area



Editing area

Menu

Data area

View area

Data area:

Display the value of the sensor

Mic:	-	Microphone value
Sensor1:	-	Sensor value
Sensor2:	-	
GyroX:	-	
GyroY:	-	
GyroZ:	-	Gyro value

View area:

	Enlarge the programming area
	Reduce the programming area
	Programming area in the middle

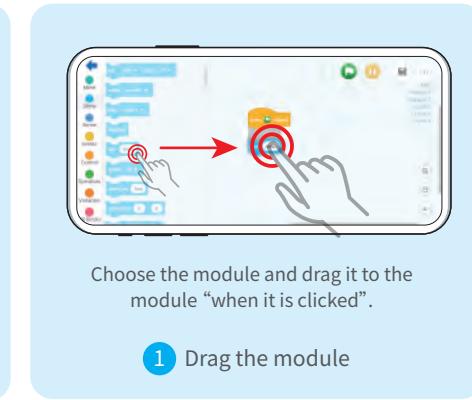


Video tutorials

2.3 Programming Tutorials



Video tutorials



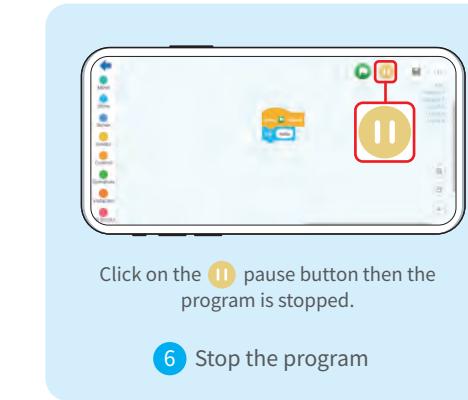
Choose the module and drag it to the module “when it is clicked”.

1 Drag the module



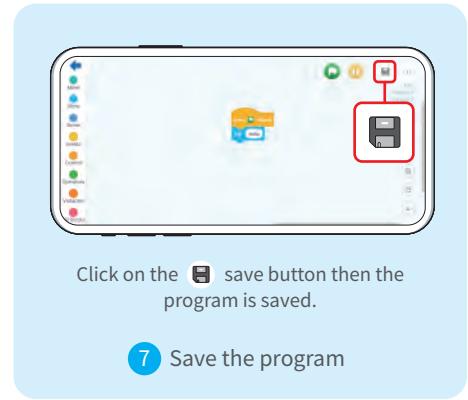
Drag the module not needed to the code area.

2 Delete the module



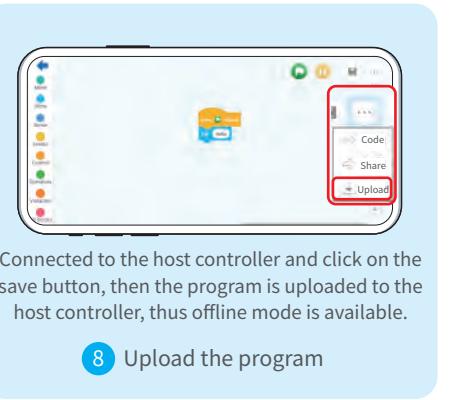
Click on the !! pause button then the program is stopped.

6 Stop the program



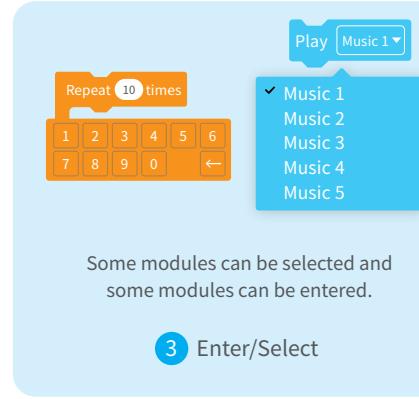
Click on the ⌂ save button then the program is saved.

7 Save the program



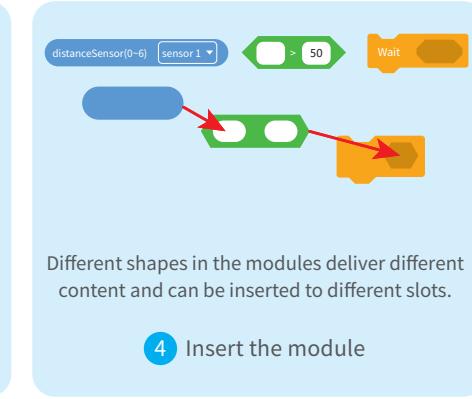
Connected to the host controller and click on the save button, then the program is uploaded to the host controller, thus offline mode is available.

8 Upload the program



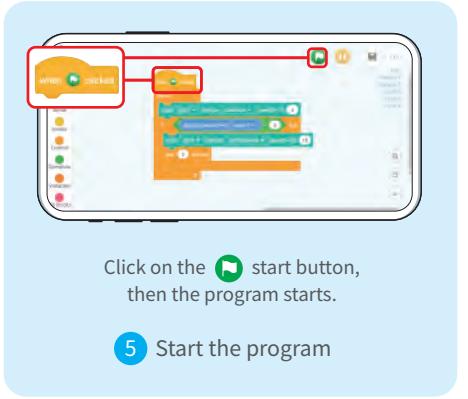
Some modules can be selected and some modules can be entered.

3 Enter>Select



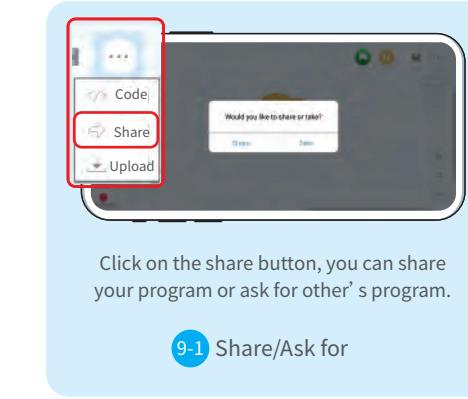
Different shapes in the modules deliver different content and can be inserted to different slots.

4 Insert the module



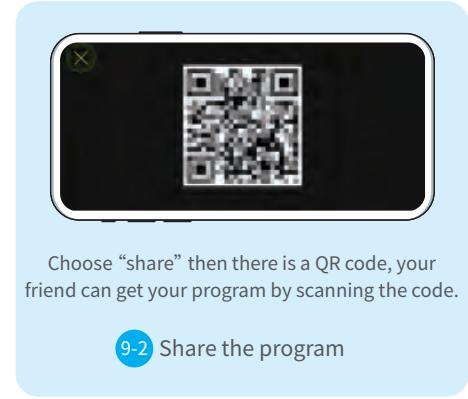
Click on the ⚡ start button, then the program starts.

5 Start the program



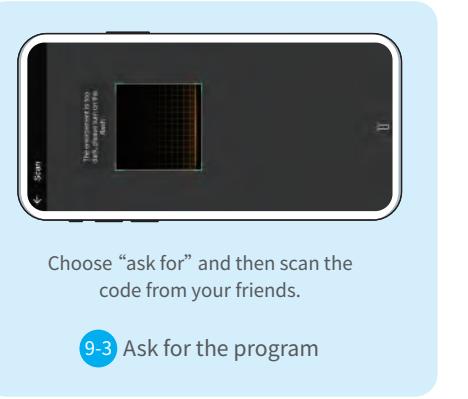
Click on the share button, you can share your program or ask for other's program.

9-1 Share/Ask for



Choose “share” then there is a QR code, your friend can get your program by scanning the code.

9-2 Share the program



Choose “ask for” and then scan the code from your friends.

9-3 Ask for the program

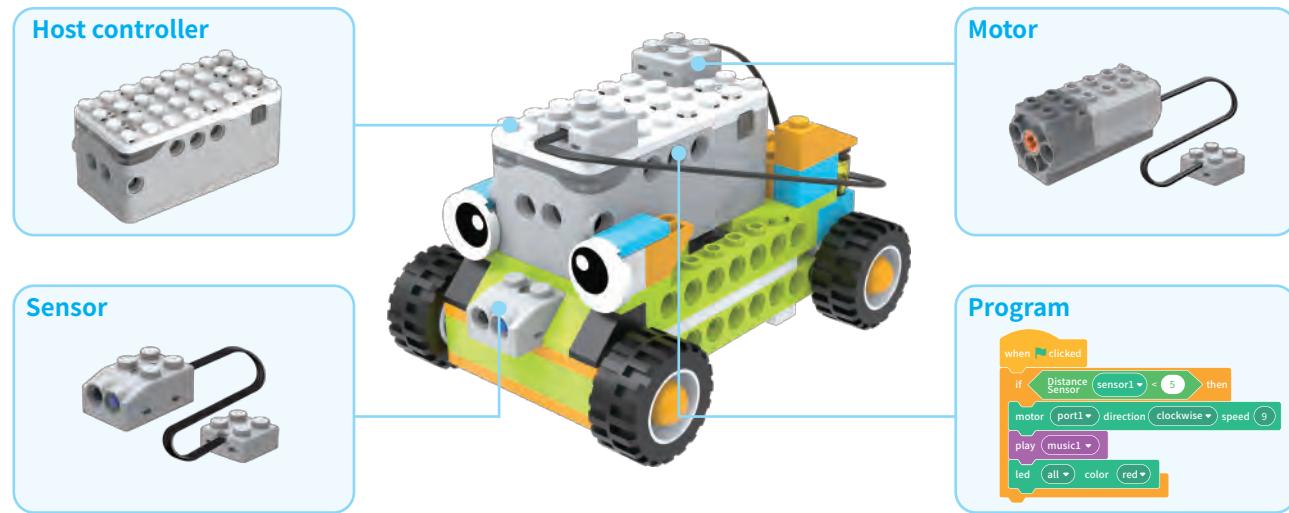


CHAPTER 3 : THE INTELLIGENT CAR

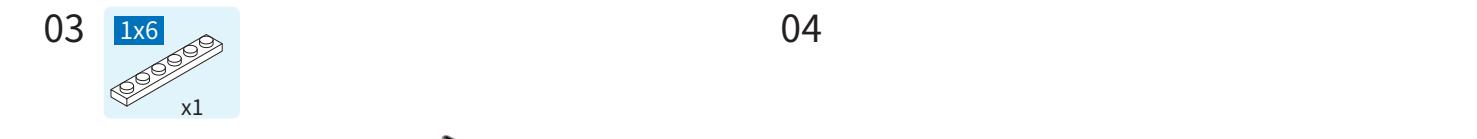
3.1 Build a Car; 3.2 Car Programming; 3.3 The Racing Car; 3.4 The Obedient Car; 3.5 The Obstacle Detecting Car;

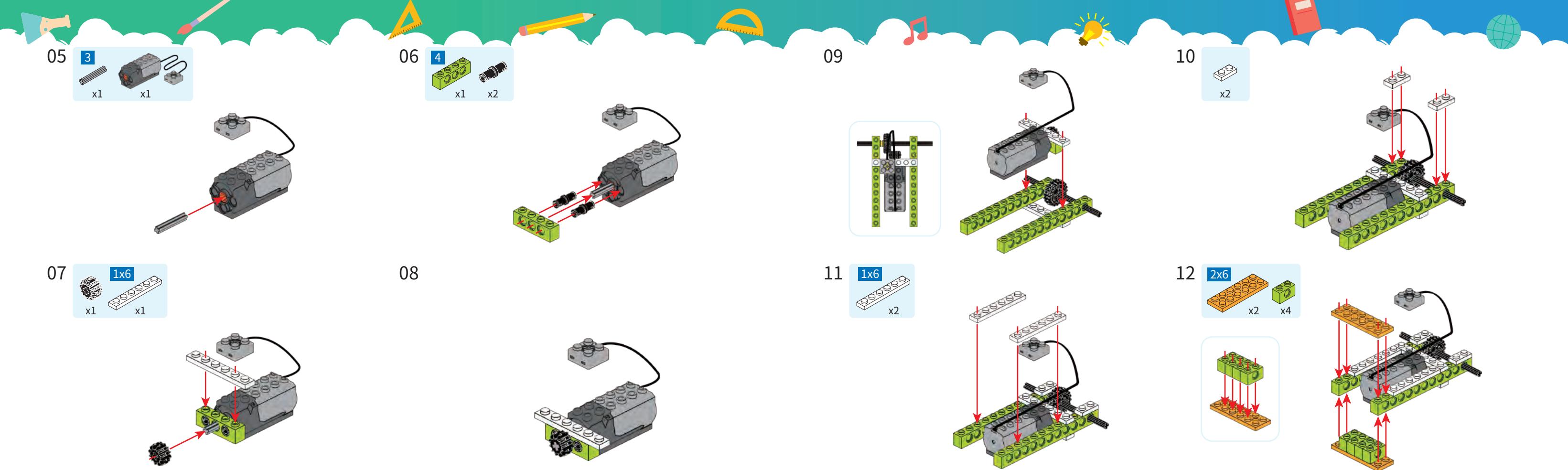
3.1 Build a Car

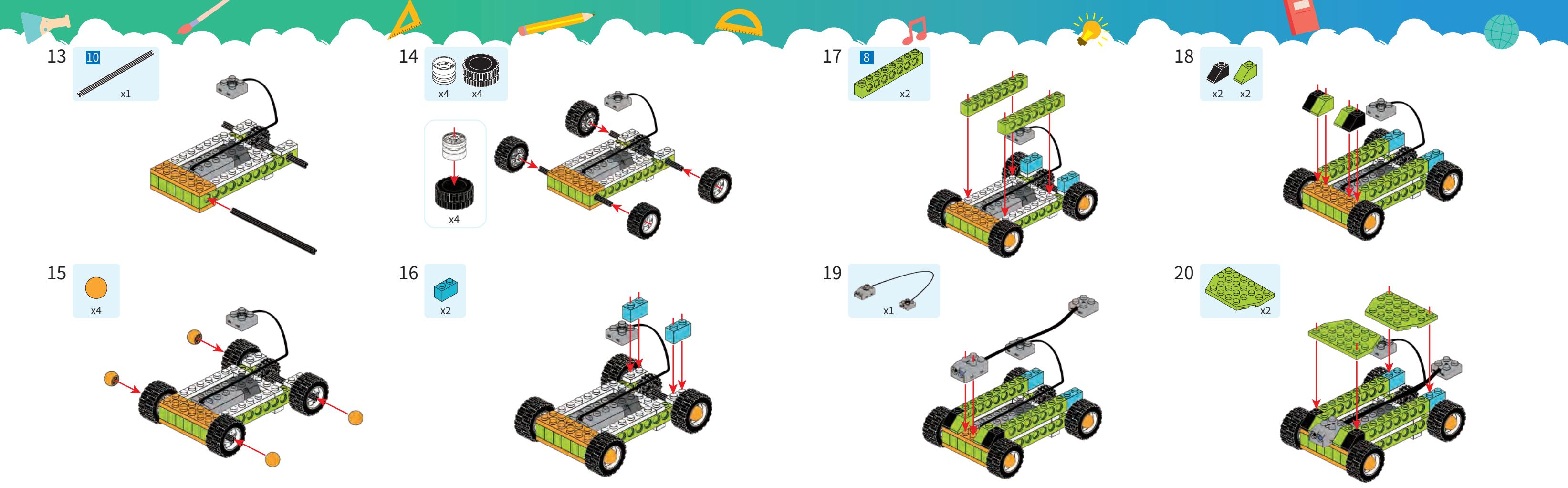
There is a magic car that can drive on its own and then automatically stops after a period of time. It is called the smart car, and it can move by adding a host controller, a motor and a sensor to the car and setting up a program.

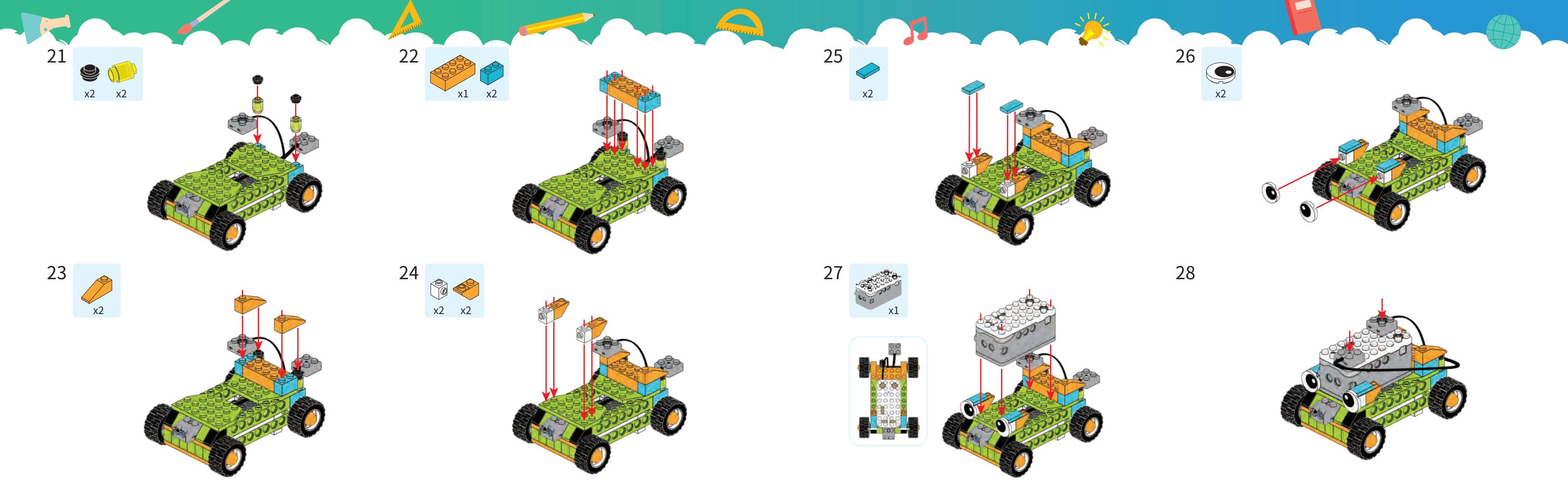


Let's build an intelligent car!









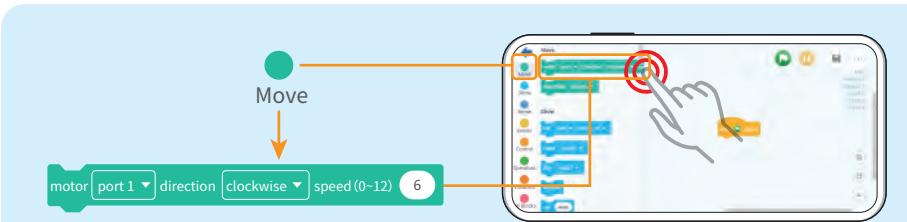
3.2 Car Programming

Intelligent car programming



Click on the “Code” and enter the program.

1 Enter the program



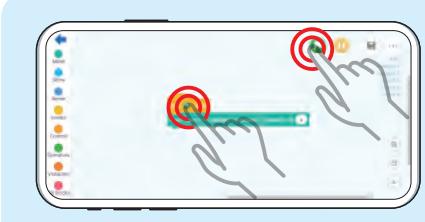
To make the car move, we should control the motor, so find the “Move” in the module area.

2 Choose the module



Long press the “Move” and drag it to the editing area.

3 Drag the module



Click on the start button then the car starts to move forward.

4 Start the program



Video tutorials

Think together

Setting up this program, the car keeps moving forward and won’t stop. How to make the car move forwards for some time and then stop?



Add an “wait” instruction to the car, find the “wait” module in the module area.

5 Choose the module



Long press the “wait” module and drag it to the editing area.

6 Drag the module



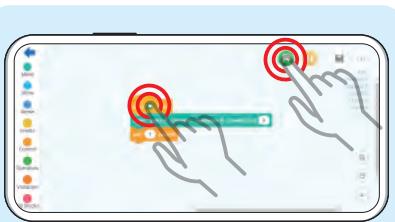
Find the “motorStop” in the module area.

8 Choose the module



Long press the “motorStop” module and drag it to the editing area.

9 Drag the module



Click on the start button, the car moves forward but it won’t stop.

7 Start the program



Click on the start button and, the car moves forward for one second and then stops.

10 Start the program

3.3 The Racing Car

Requirements

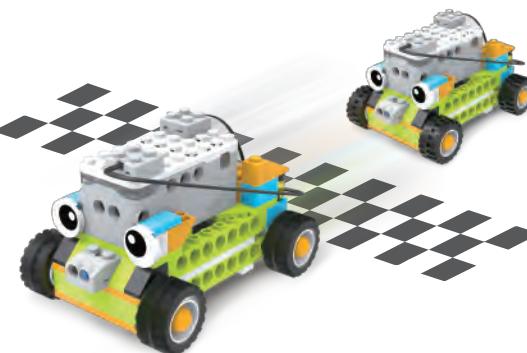
When the car is ready to move, the programming page displays the numbers 3, 2, 1, and then the car lights up in blue. After the lights are on, the car starts to move forward, and the car stops after a few seconds of moving forward, and wonderful music sounds.

Modules involve

showText Text led led1 color off
showText led

Play Music 1 stopPlay
Play stopPlay wait 1 seconds
 wait

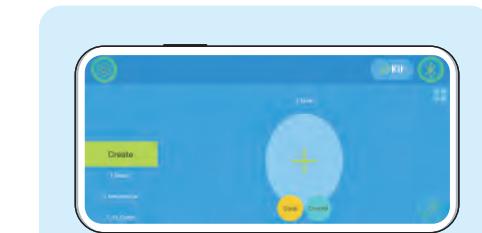
motor port1 direction clockwise speed (0-12) 6
motor
motorStop all ports
motorStop



Mind Map

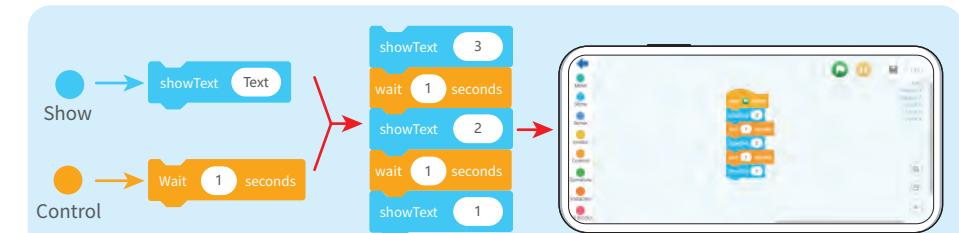


Start to write the program



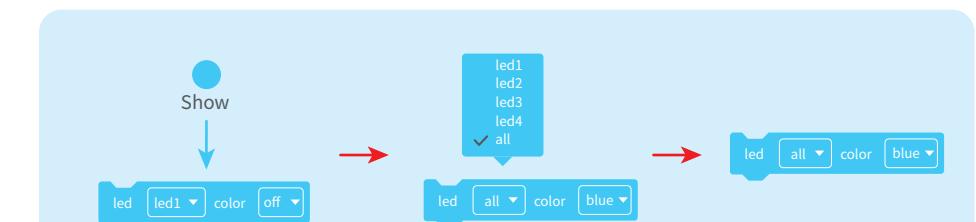
Click on the “Code” and enter the program.

1 Enter the program



To make the screen display “3,2,1”, put the “showText” in the editing area, modify the text to “3,2,1”, one second interval between every number, so drag “wait” to the editing area.

2 Edit the module



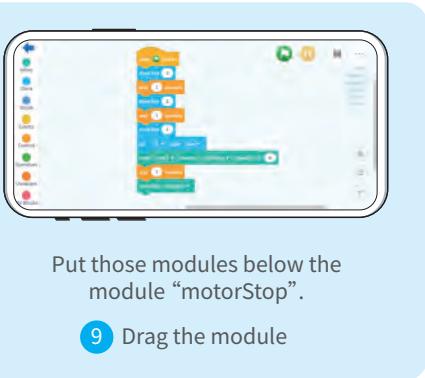
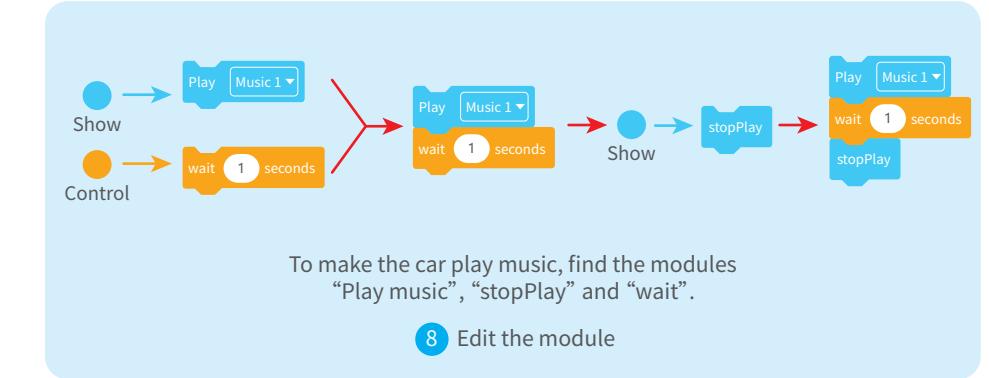
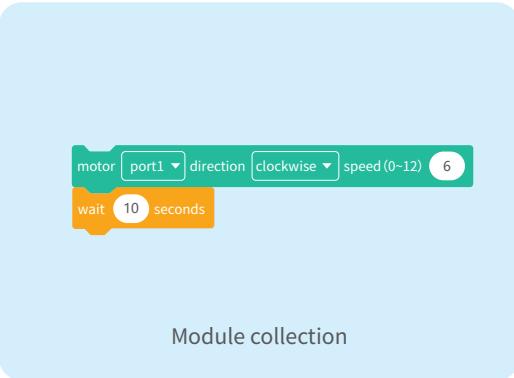
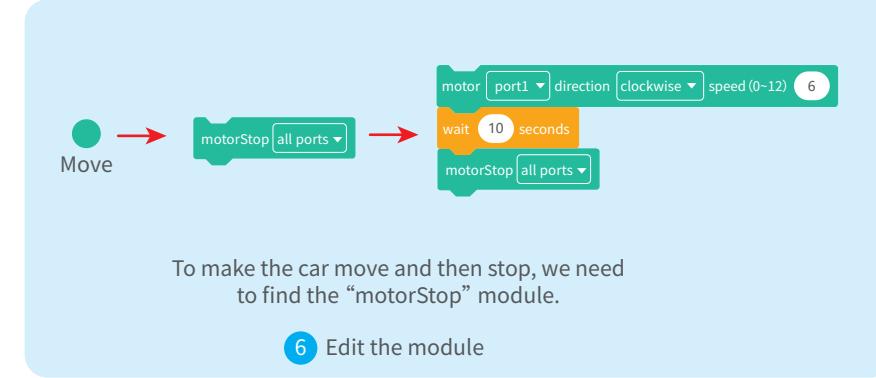
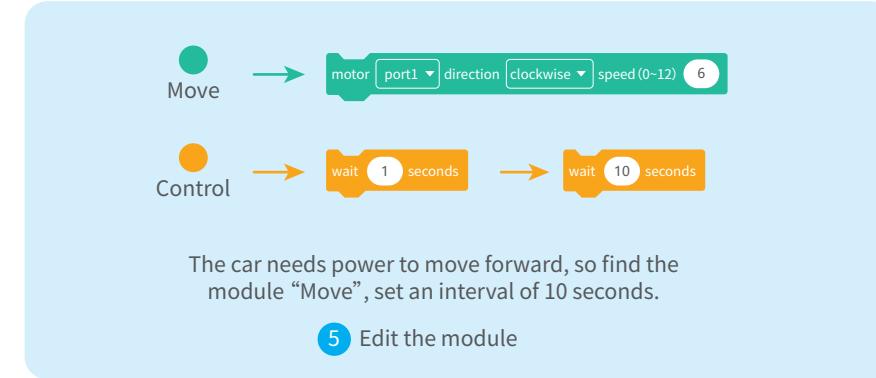
To make the car turn on all blue lights, find the “led” and select “all” and “blue”.

3 Edit the module



Long press the “led” and put it below “showText”.

4 Drag the module

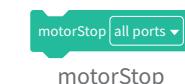
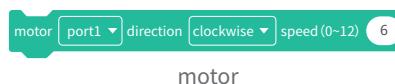


3.4 Detect Obstacles

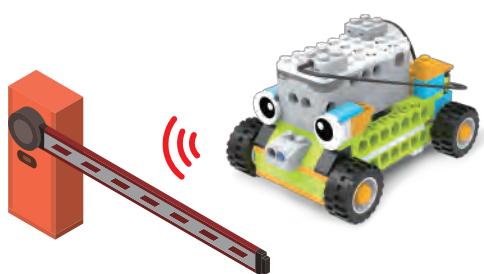
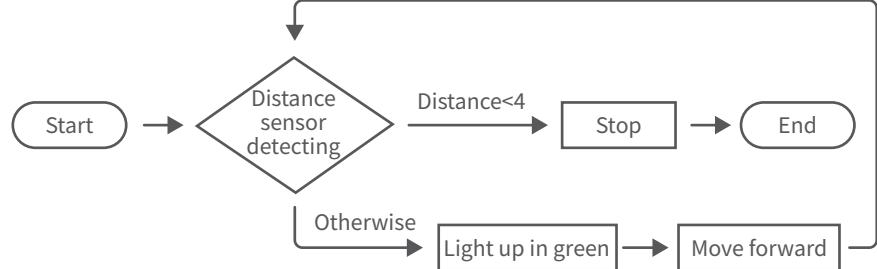
Judgement module

The "if, then, else" script in the control module means that we put forward a judgment. If the judgment is true, execute the corresponding instruction, otherwise execute other instructions.

Module involves

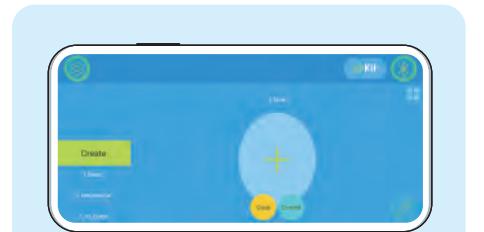


Mind Map



Video tutorials

Start to write the program



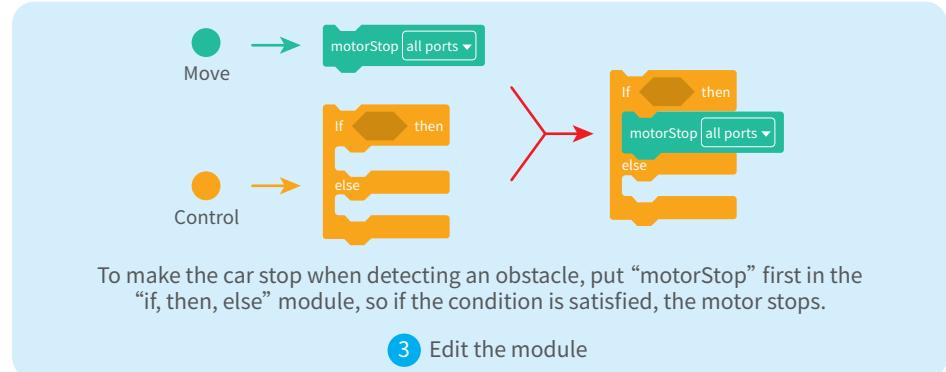
Click on the "Code" and enter the program.

1 Enter the program



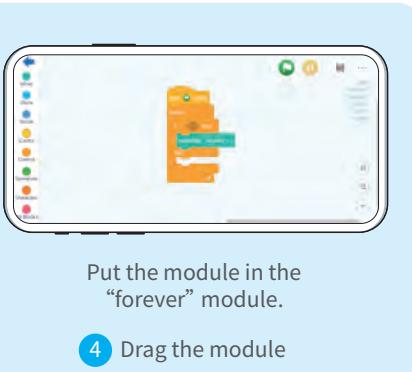
To make the car keep detecting if there's obstacle, we need to use the "forever" module. The program in the loop module will be executed repeatedly.

2 Edit the module



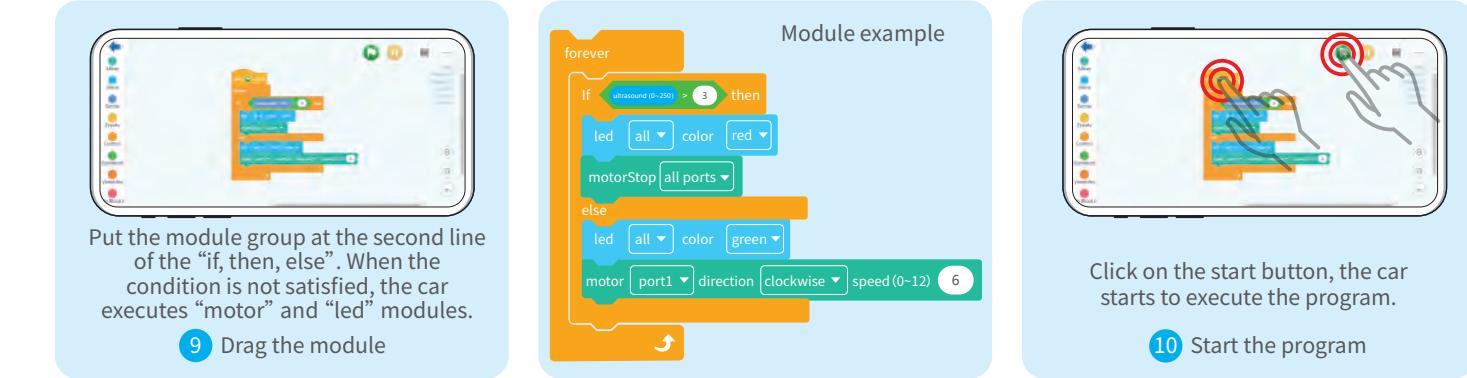
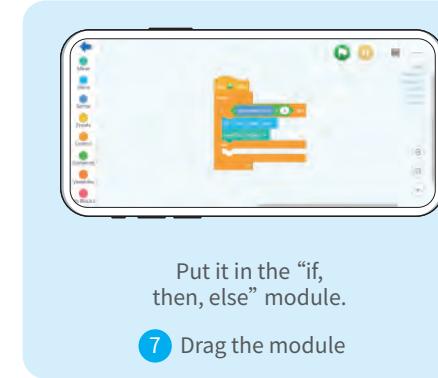
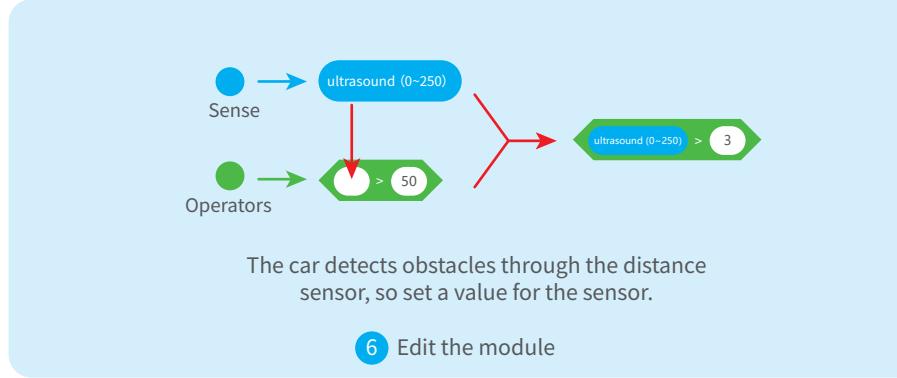
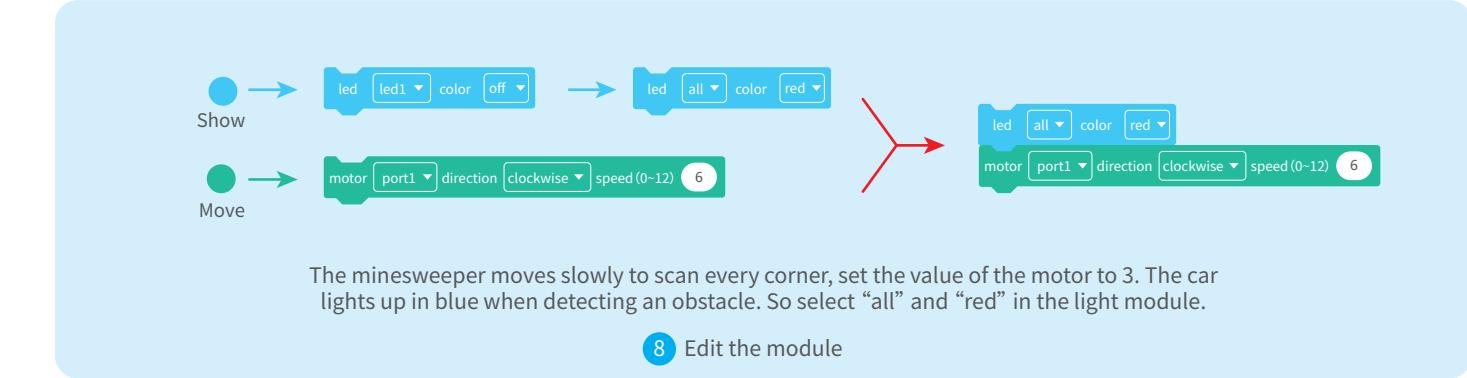
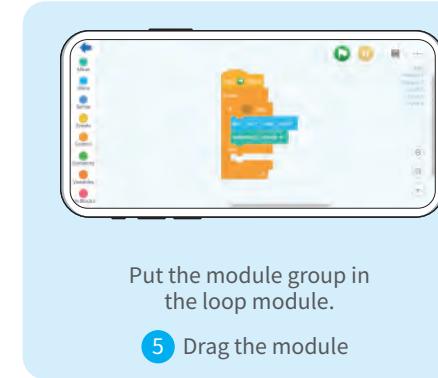
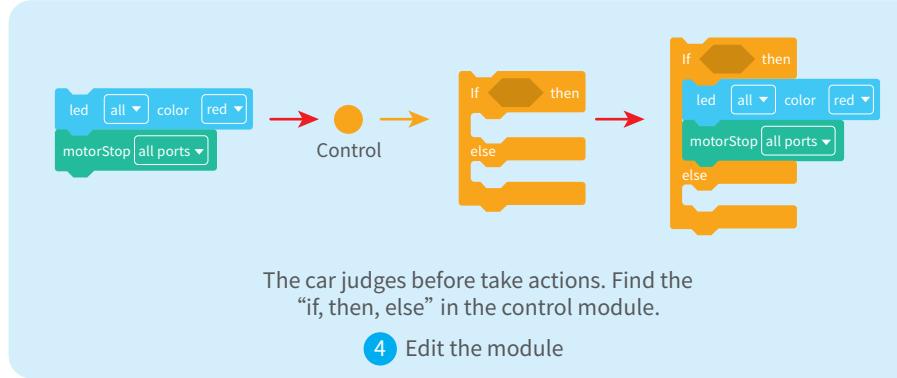
To make the car stop when detecting an obstacle, put "motorStop" first in the "if, then, else" module, so if the condition is satisfied, the motor stops.

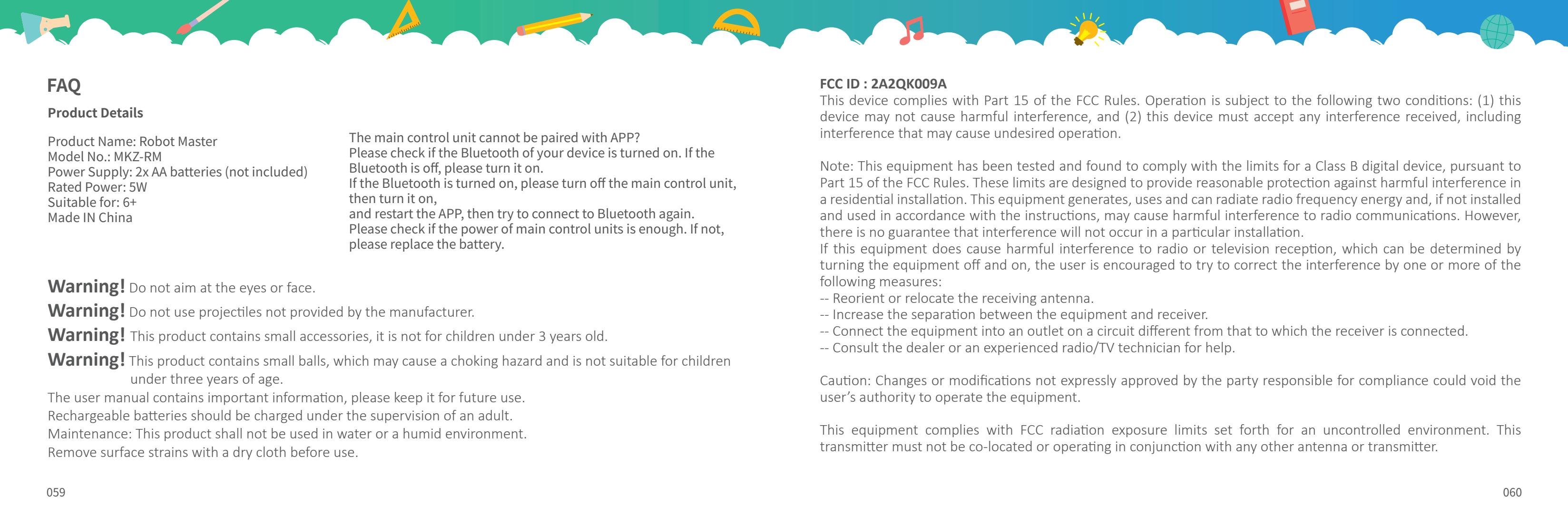
3 Edit the module



Put the module in the "forever" module.

4 Drag the module





FAQ

Product Details

Product Name: Robot Master

Model No.: MKZ-RM

Power Supply: 2x AA batteries (not included)

Rated Power: 5W

Suitable for: 6+

Made IN China

The main control unit cannot be paired with APP?

Please check if the Bluetooth of your device is turned on. If the Bluetooth is off, please turn it on.

If the Bluetooth is turned on, please turn off the main control unit, then turn it on,

and restart the APP, then try to connect to Bluetooth again.

Please check if the power of main control units is enough. If not, please replace the battery.

Warning! Do not aim at the eyes or face.

Warning! Do not use projectiles not provided by the manufacturer.

Warning! This product contains small accessories, it is not for children under 3 years old.

Warning! This product contains small balls, which may cause a choking hazard and is not suitable for children under three years of age.

The user manual contains important information, please keep it for future use.

Rechargeable batteries should be charged under the supervision of an adult.

Maintenance: This product shall not be used in water or a humid environment.

Remove surface strains with a dry cloth before use.

FCC ID : 2A2QK009A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.