



EXPERIMENTS

7335RR

REMOTE CONTROL MACHINES



INFRARED
REMOTE CONTROL

STEAM

8+
AGES

151
PIECES

20
MODELS



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FCC Statements:

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
- 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.

Safety Precautions

- Parents, this toy is recommended for children 8 years and older. To ensure that your child's play is both safe and fun, please review the operating instructions with your children. If toy in the presence of children under 3 years of age, adult supervision is recommended.
- Keep hands, hair and loose clothing away from the tires and the wheel hubs when power switch is turned ON.
- Remove battery from the toy when not in use.
- DO NOT operate your vehicle on street. Avoid hitting people, pets or home furnishings.
- Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Cautions:

- Non-rechargeable batteries are not to be recharged.
- Rechargeable batteries are to be removed before being charged.
- Rechargeable batteries are only to be charged under adult supervision.
- Different types of batteries or new and used batteries are not to be mixed.
- Only batteries of the same or equivalent type as recommended are to be used.
- Batteries are to be inserted with correct polarity.
- Exhausted batteries are to be removed from the toy.
- The supply terminals are not to be short-circuited.

Note:

- Parental guidance is recommended when installing or replacing batteries.
- New and alkaline batteries are recommended to use in this toy to obtain best and maximum performance.
- You are advised to replace with new batteries as soon as the function becomes impaired.
- Users should keep and retain this information for future reference.
- Users should keep strict accordance with the instruction manual while operation the product.

Care and Maintenance:

- Always remove batteries from the toy when it is not being used for a long period of time.
- Wipe the toy gently with a clean damp cloth.
- Keep the toy away from direct sunlight and/or direct heat.
- Do not submerge the toy into water that can damage the electronic assemblies.

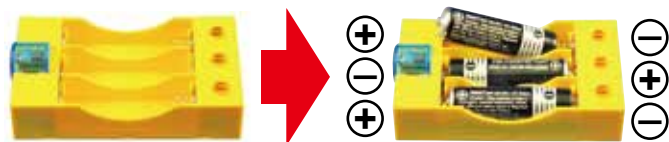


The crossed-out dustbin symbol indicates that batteries, rechargeable batteries, button cells, battery packs, etc. must not be put in the household waste. Batteries are harmful to health and the environment. Please help to protect the environment from health risks. If the toy is out of use, please use common household tool to break the product for built-in rechargeable battery operated toy or unscrew the battery door for replaceable battery operated toy, then take the battery out from the toy. Dispose of battery in accordance with your local battery recycling or disposal laws.

Waste Electrical and Electronic Equipment (WEEE)

When this appliance is out of use, please remove all batteries and dispose of them separately. Bring electrical appliances to the local collecting points for waste electrical and electronic equipment. Other components can be disposed of in domestic refuse.

• Receiver/Battery Holder

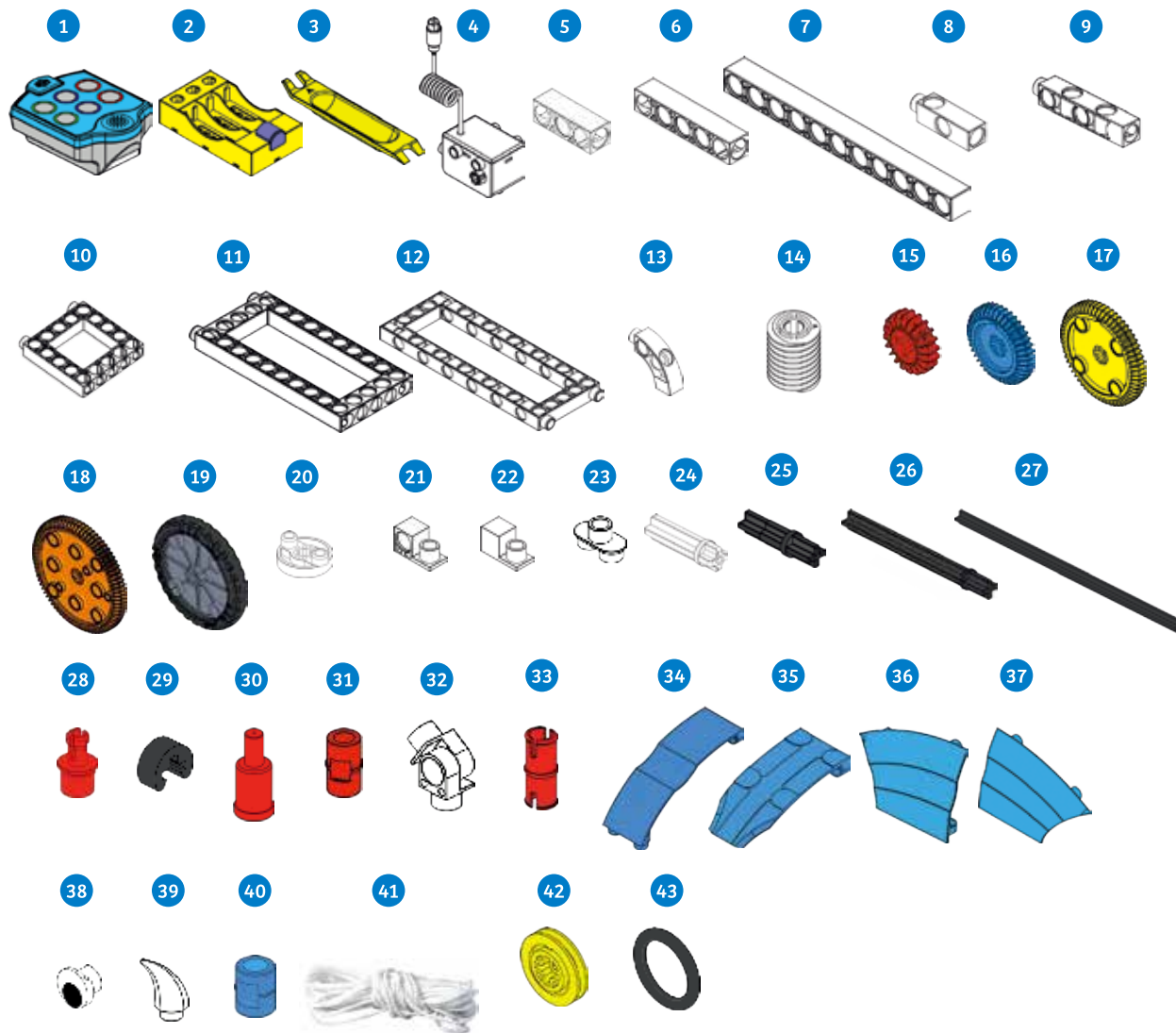


Insert three AA batteries (1.5 V) into the combination receiver/battery holder. The polarity of the batteries and the markings on the battery compartments should match.

• Remote Controller



1. Lightly press and slide the lid outward to open it.
2. Insert two AA batteries (1.5 V) and pay attention to the polarity of the batteries and the markings on the compartments.
3. Slide back the lid.



NO	PARTS NAME	PCS
1	REMOTE CONTROLLER	1
2	RECEIVER/BATTERY HOLDER	1
3	PEG/AXLE REMOVER	1
4	POWER PACK WITH WIRE CONNECTOR	3
5	3-HOLE ROD	3
6	5-HOLE ROD	6
7	ROD	8
8	3-HOLE DUAL ROD	4
9	DUAL ROD	6
10	SQUARE FRAME	4
11	SHORT FRAME	3
12	DUAL FRAME	3
13	BENDED ROD	2
14	WORM GEAR II	3
15	S GEAR	4
16	M GEAR	2
17	L GEAR	2
18	80T GEAR	1
19	RACING TIRE	4
20	ROD CONNECTOR	2
21	90 DEGREE CONVERTER-L	4
22	90 DEGREE CONVERTER-R	2
23	TWO-IN-ONE CONVERTER	6
24	MOTOR AXLE	4
25	S DR. AXLE 3 CM	2
26	7CM DR. AXLE	3
27	XL DR. AXLE 15 CM	1
28	AXLE	2
29	GEAR FIXING	2
30	CAM CONNECTOR	2
31	PEG	28
32	HINGE	2
33	AXLE CONNECTOR	10
34	SHELL HALF QUARTER CURVE	1
35	SHELL HALF CURVE	2
36	SHELL SIDE CURVE LEFT	1
37	SHELL SIDE CURVE RIGHT	1
38	EYE-2	2
39	HORN	2
40	EXTRA LOOSE PEG	8
41	STRING	1
42	S PULLEY	1
43	O RING S	1

This kit offers children a new experience with remote control toys. It incorporates a touch pad remote-controller and three geared motors into a set of building components. Children can use the building blocks to construct a series of machines, and then control them using the six capacitive sensors (touch pads) on the remote control. This kit allows children to create models and learn about electricity, physics, and mechanics in a hands-on way.

Fig. 1 shows you the electronic parts of this kit, which include:

- A. Remote Controller
- B. Receiver/Battery Holder
- C. Power Pack With Wire Connector

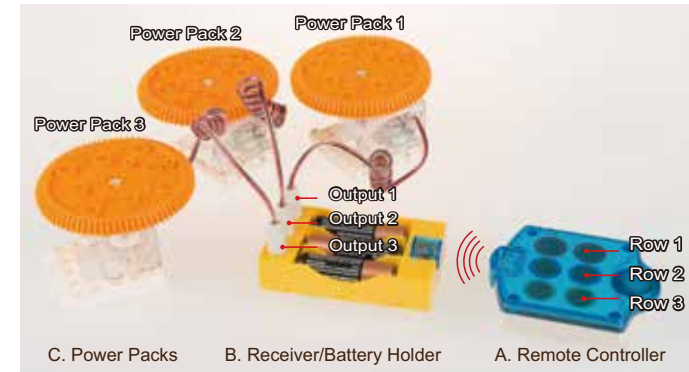


Fig. 1 The Remote-Control Machines system

A. REMOTE CONTROLLER

1. Operating Principle

When the user's finger makes contact with the touch pad on the remote controller, the capacitance will change. The driver IC (integrated circuit) of the touch pad determines the amount the capacitance has changed and converts it into coordinates (X, Y, θ angel). In this way, the touch pad is able to detect the movement of fingers. The touch pad is not only easy and flexible to use, but environmentally friendly because it reduces the electronic elements needed for assembly.

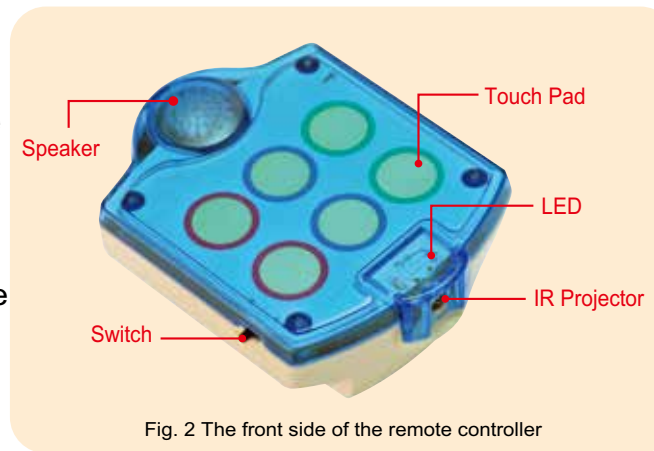


Fig. 2 The front side of the remote controller

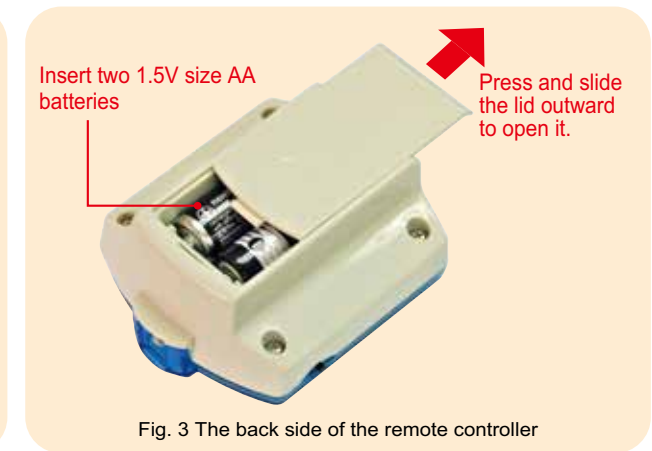


Fig. 3 The back side of the remote controller

2. IR Remote Control (Infrared Remote Control):

The remote controller uses an infrared beam to send control signals to the receiver. It is directional (the infrared beam has to be aimed toward the receiver) and has a short-distance range (about 20 feet, or 7 meters, in general).

The three sets of touch pads correspond to the three outputs on the receiver/battery holder from left to right. Each set of touch pads controls the rotation of the corresponding output motors, on turning them clockwise and the other counterclockwise. When the touch pad is touched and the signal received, the speaker and the LED will

The user can touch three touch pads (one in each set) at the same time so that the three corresponding output motors can all be activated at the same time. However, touching the two touch pads at the same set simultaneously won't cause any action because the motor cannot move forward and in reverse at the same time.

Two AA batteries (1.5V) are needed. Set the switch to OFF when not in use in order to save energy.

B. RECEIVER/BATTERY HOLDER

When the IR receiver receives a message from the remote controller, the built-in IC chip will judge which corresponding touch pads were touched and then convert the control message into the corresponding electrical outputs. Three AA batteries (1.5 V) are set in series in the receiver/battery holder. Each output gives a 3 V direct current.

This kit introduces children to the principles of wireless communications and remote control technology with this simple IR remote-control device that has three corresponding normal outputs. It instructs children to build specific models with different remote-control functions, and encourages them to design and build their own models using their creativity. The models can each incorporate up to three motors which can be installed in different ways to allow the models to move in six directions (that is, forward or backward, left or right, up or down).

When you finish playing with this kit, please remove one of the batteries from the receiver/battery holder because the receiver/battery holder will still consume some electricity even in a standby. This will save energy and keep it safe.

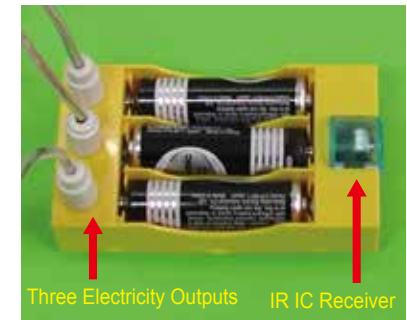


Fig. 4 Receiver/Battery Holder

C. GEARED MOTOR WITH WIRE CONNECTOR

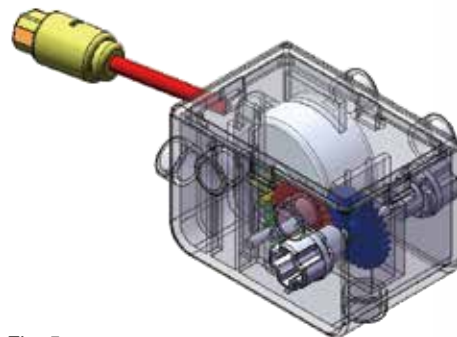


Fig. 5

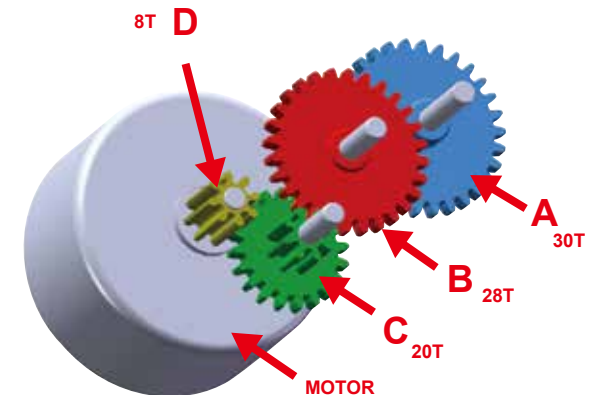
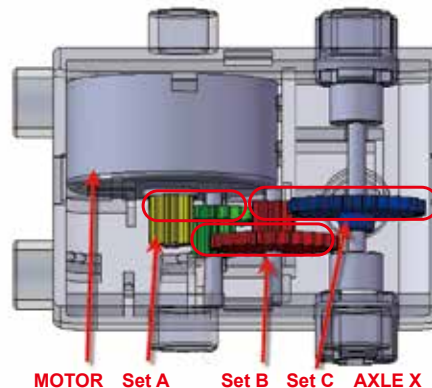


Fig. 6

The interior structure of the geared motor with wire connector is shown of Fig. 5 and Fig. 6. When the motor is activated, the power is transmitted from the motor to the gearbox, which contains three gear sets: Set A gives a gear ratio 20 to 8, Set B gives a gear ratio 28 to 8, and Set C gives a gear ratio 30 to 8. The overall gear ratio of the system is $20/8 \times 28/8 \times 30/8$; that is, 32.8125 to 1. In other words, the motor has to turn 32.8125 times to turn the axle X once. If the motor turns at 3200 rpm, the axle X in this system will turn at 100 rpm. In other words, the speed of the axle X will decrease by 32 times but the torque (turning force) will increase by 32 times.

Gears are wheels with teeth on them. The teeth, or cogs, of one gear mesh with the teeth of another gear to transmit force between them. A combination of two or more gears is called a transmission, or gear train. You can see transmissions with meshing gears inside old toys or old clocks. Gearboxes can be found inside the transmission system of cars, which combine meshing gears of different sizes. This allows the car's driver to easily change between different speeds.

Do you know how gears work? You can learn how gears work and why they are useful by reading this manual and building the models in this kit that use gears. The building blocks in this kit were designed based on the number ten and its multiples, including the size of the components, the distance between the holes, or the unique gears. This makes it easy to both assemble the gears and also conveniently calculate the gear ratio or change the rotary speed. Different from other gear designs that use the number seven or eight as their fundamental number, these gears were created to be perfect for teaching science to kids because they are easy to assemble and they make it easy to calculate gear ratios (explained below).

We recommend a gradual learning process using these gears, which begins with very basic assemblies to understand how each of the components fit together. After you build all of the models in this instruction book and understand how to use gear trains, you can put your unlimited creativity to work and design vehicles and machines on your own. Let your imagination guide you!

Now let's look closely at gears and how we use them. Find the gears in this kit. The wheels which have many tooth-shaped objects sticking out of their edges are gears. Two gears can mesh with each other using the teeth on the edges. When one gear rotates, the other one will be driven to rotate as well. The intermeshing teeth of the two gears transmit torque (turning force) and rotation.

The big gear has more teeth than the small gear. Despite the number of teeth or the size of the gears, all of the teeth on all of the gears in the same gear system must all be the same size. In simple gear trains, the driver and driven gears will rotate in opposite directions. When a third gear is inserted between the driver gear and driven gear, and makes them rotate in the same direction, it is called an idler gear.

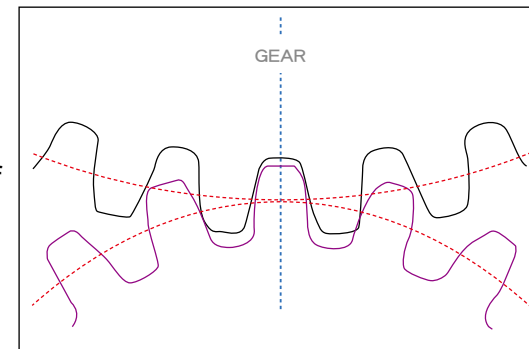


Fig. 7 The intermeshing of gears can effectively transmit force to cause rotation. The red circle represents the actual diameter of the transmission, which is called the pitch diameter. The special shape of the teeth allows for smooth intermeshing and transmits power along the pitch.

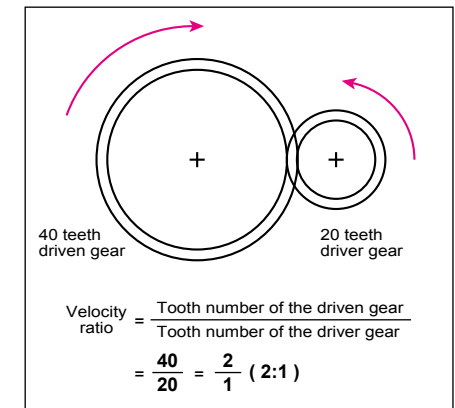


Fig. 8 Gear ratio calculation

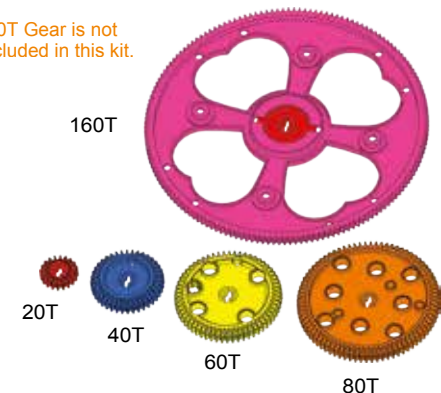


Fig. 9 Gigo Gears

The pitch diameter of the gears in this gear system is proportional to the number of gear teeth. In other words, the pitch diameter of the 20T gears is 20 millimeters while the pitch diameter of the 40 millimeters. Again, the pitch diameters are the imaginary circles between the meshed gear teeth as shown in Figure 11.

In Fig. 11, the distance between the centers of the two gears is calculated like this.

$$R1+R2= \frac{20\text{mm}}{2} + \frac{40\text{mm}}{2} = 30\text{mm}$$

Therefore you can easily place the two gears on a rod or frame so that they mesh together smoothly. The other sizes of gears are designed with the same elegantly simple concept, so that all of the gears can easily be assembled into working gear trains.

According to the instructions above, can you figure out how many holes there are between a 40T and a 60T gear when they are meshed?



Fig. 10 Gigo Gear

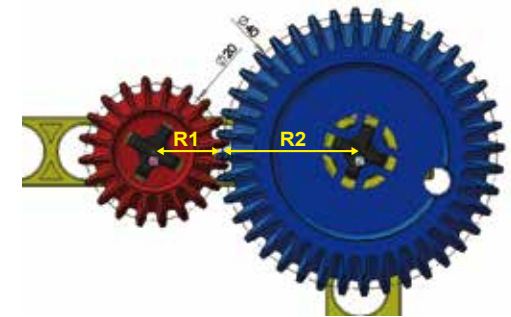


Fig. 11 The transmission between the pitches during the intermesh of two gears.

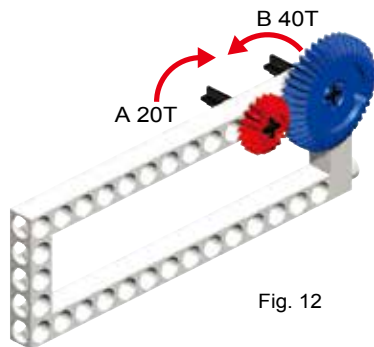


Fig. 12

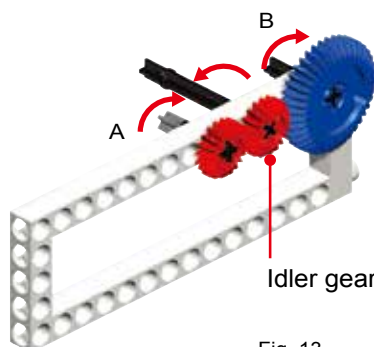


Fig. 13

UNDERSTANDING GEARS 1

1. Use a 20T gear, a 40T gear, and two small axles to assemble the structure show in Fig. 12.
2. How many times do you need to turn gear A to make gear B rotate once?
3. You will see that when a 20T gear drives a 40T gear, the gear ratio is 2:1,

$$\text{i.e. the gear ration= } \frac{\text{Tooth number of the driven gear}}{\text{Tooth number of the driver gear}} = \frac{40}{20} = \frac{2}{1} \quad (2:1)$$

4. You will also see that as the teeth of the two gears mesh together, the two gears rotate in opposite directions.

UNDERSTANDING GEARS 2

1. Use two 20T gears, one 40T gear, two small axles, and one medium axle to assemble the structure shown in Fig. 13.
2. How many times do you need to turn gear A to make gear B rotate once?
3. You will see that when a 20T gear drives a 40T gear, the gear ratio is 2:1, i.e. the gear ratio is the number of teeth on the driven gear divided by the number of teeth on the drive gear.
4. You will also see that as an idler gear is inserted in between the two gears A and B now rotate in the same direction.

If you were to insert two idler gears in between gears A and B instead of just one, in which direction would A and B rotate?

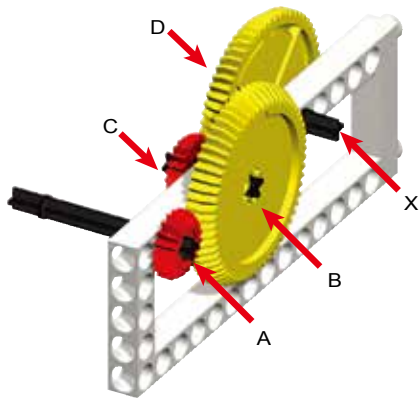


Fig. 14

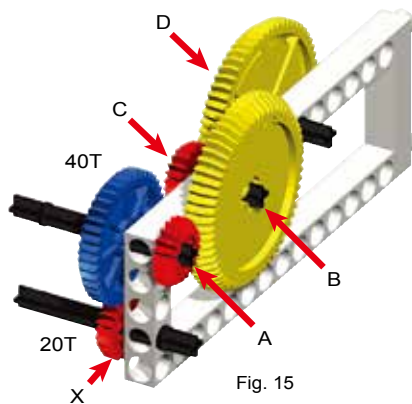


Fig. 15

UNDERSTANDING GEARS 3

1. Use two 20T gears, two 60T gears, two small axles, and one medium axle to assemble the structure in Fig. 14.
2. How many times do you need to turn gear A to make gear D rotate once?
3. You will see that the gear ratio for the 20T gear A to drive the 60T gear B is 3:1, while the gear ratio for 20T gear C to drive 60T gear D is 3:1.

Therefore the overall gear ratio = tooth no. of the driven gear/tooth no. of the driver gear = $\frac{60}{20} \times \frac{60}{20} = \frac{3}{1} \times \frac{3}{1} = \frac{9}{1}$ (9:1)

4. You will also see that when the axle of compound gears (B and C) is inserted, the first (A) and the last (D) gears rotate in the same direction.

When an additional 20T red-gear is added to the small axle at position X, why can't the gears rotate?

UNDERSTANDING GEARS 4

1. On the previous structure, add an additional 40T blue gear, a 20T red gear, and a medium axle to assemble the structure as shown in Fig. 15.
2. Can you calculate how many times the 20T gear at position X needs to turn in order to make gear D rotate once?
3. Turn it yourself, and count how many times it turns. Were your calculations correct?

UNDERSTANDING GEARS 5

Fig. 15 shows the gears meshing as bevel gears at right angles. The calculations of gear ratio and the principles of rotary directions are the same as with spur gears.

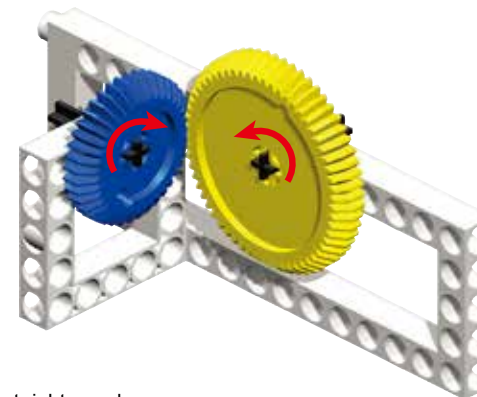
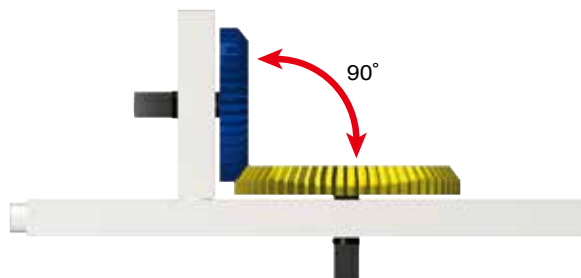


Fig. 16 Gigo gears mesh as bevel gears at right angels.

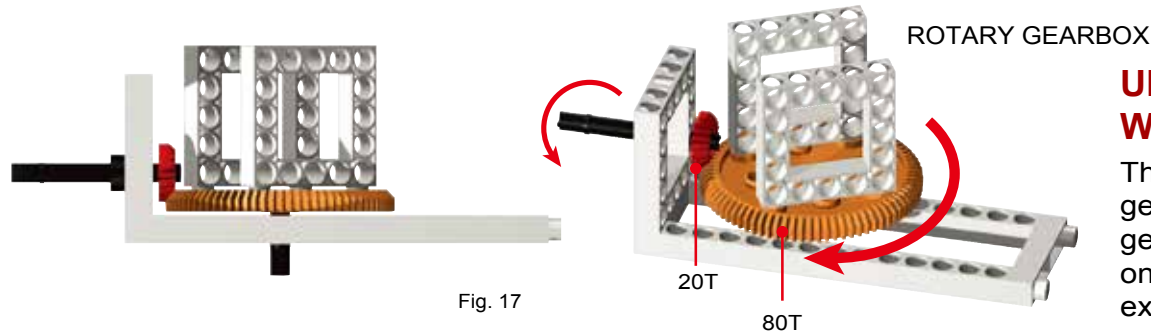


Fig. 17

Fig. 17 is another examples showing two gears meshing as beveled gears at a right angle. The 80T Gear with the built-in pitch holes, acts as a rotary stage here on which the frame structure can be built.

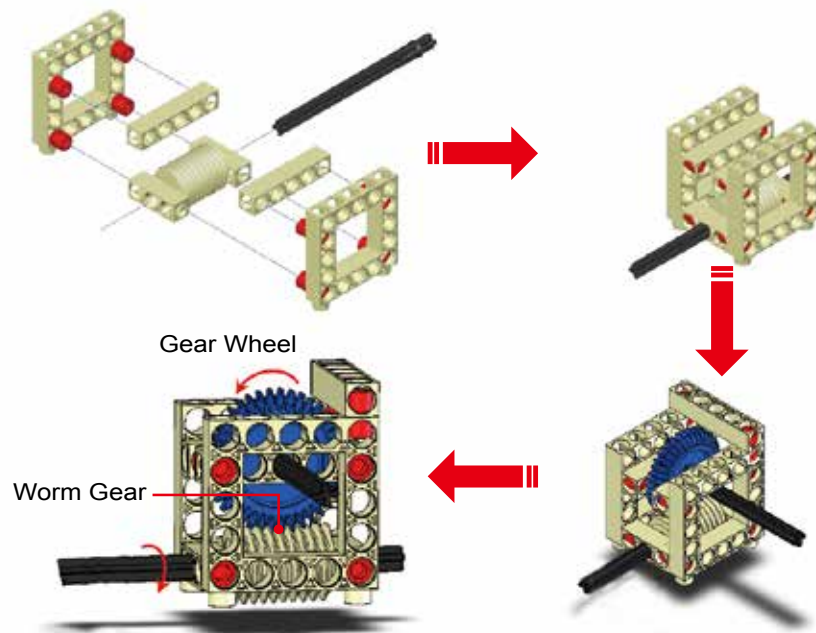


Fig. 18 Structure of a worm gearbox

UNDERSTANDING GEARS 6

Worm gears

The gears in this kit can combine in yet another way. A worm gear and gear wheel are combined together as a worm gearbox. As the worm gear rotates once, the gear wheel turns only a one-tooth distance. Take the 40-tooth blue gear as an example, the gear ratio would reach 40:1 to achieve a huge speed reduction and torque increase. When friction is not considered, the speed reduction reaches 40 times, and the torque increase 40 times. In addition, the structure of the worm gearbox also has another characteristic: the transmission can only be conducted from the worm gear to this characteristic; the worm gearbox can only be used for speed reduction and not for speeding up. For this reason, it is commonly used in the opening device for garage doors to prevent the possibility of the door dropping unexpectedly.

The examples below illustrate the assembly of the frames, gears, and axles. The gears are easy to install on the rods and frames in this kit, because the rods and frames have holes positioned in increments of ten millimeters. The pitch diameters are in multiples of 20 millimeters, and thus the distance between the center points of the gears is in multiples of ten millimeters.



Fig. 19



Fig. 20



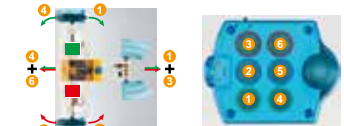
• Tips for Assembly

- ★ The wheels must be spaced 1 mm away from the frame so that the wheels can turn smoothly.
- ★ If the motor doesn't work, check to make sure the wire connector of the motor and the output of the receiver/battery holder are well connected, or that the batteries are not dead.



• How to Operate

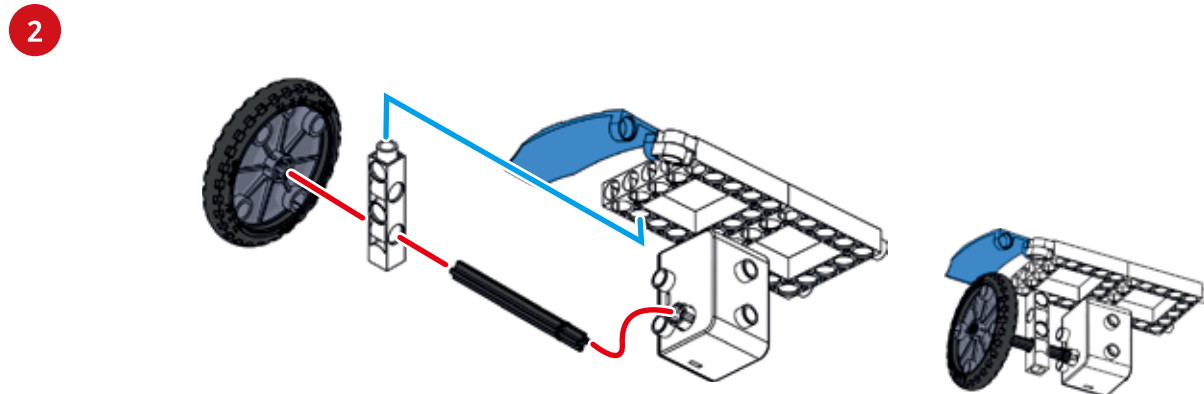
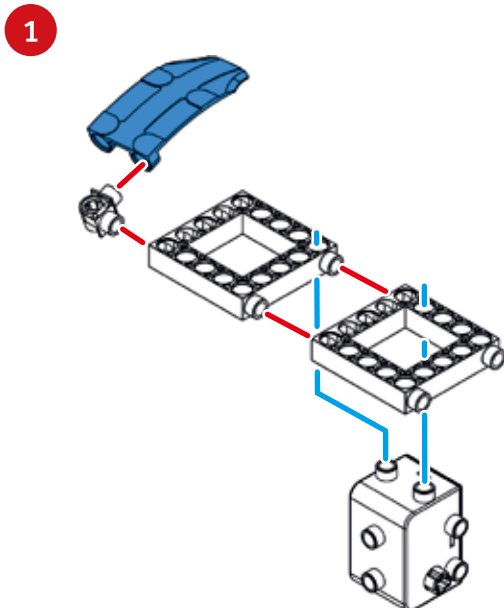
1. Turn on the switch on Remote Controller.
2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.
4. Touch the touch pad 1 and 6 or 3 and 4 at the same time to make the model run around.

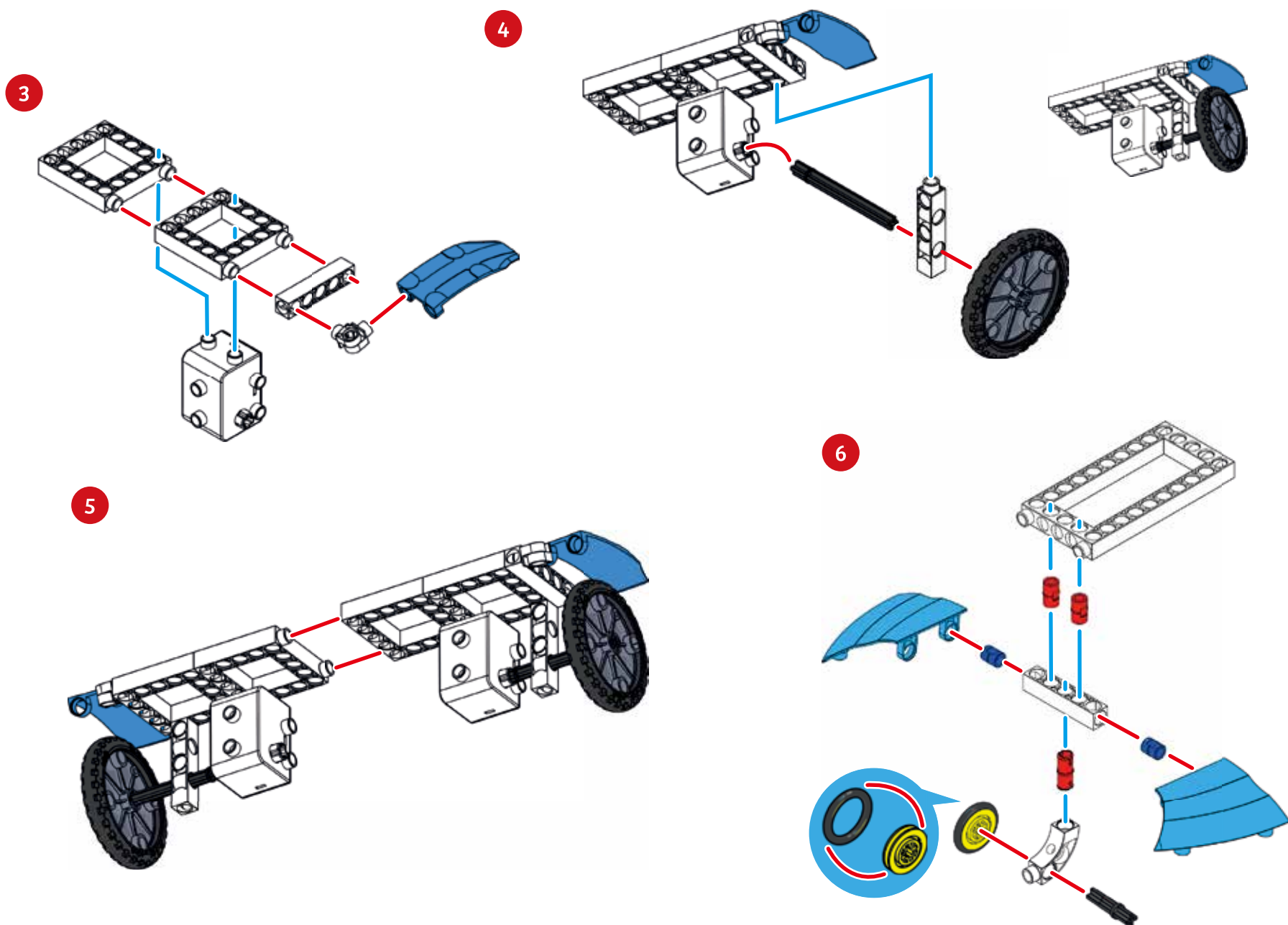


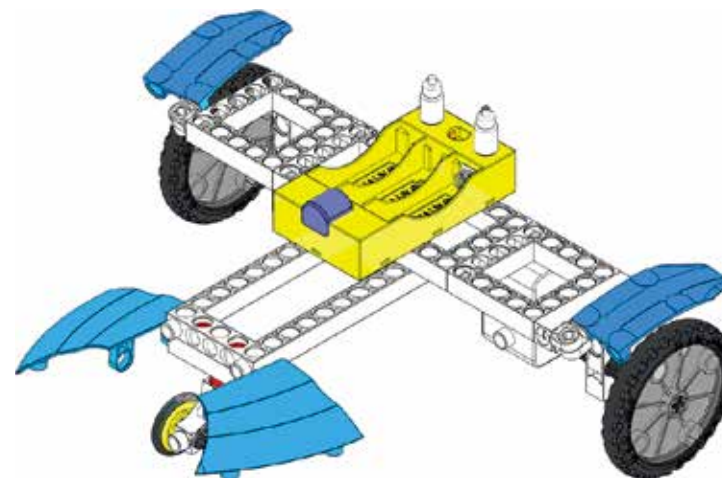
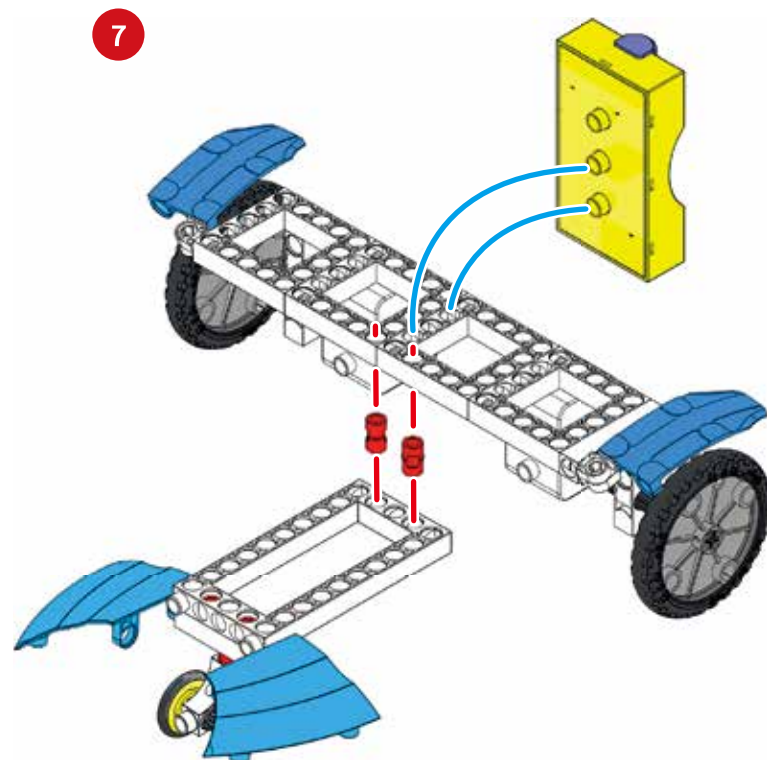
* We only show number 1 to 6 in the instruction manual, there shall be no number printed on the remote controller.

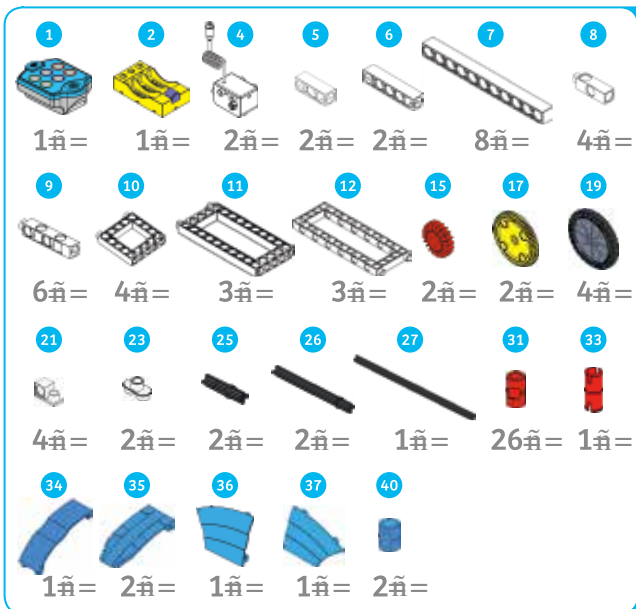
• Challenge

Set a start and an end point on the ground, and place books, cups or boxes as obstacles in between them. Compete with your friends to see who reach the goal in less time.









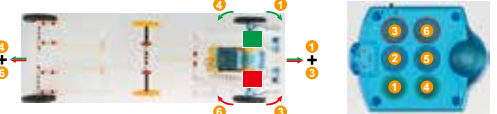
Tips for Assembly

- ★ The wheels must be spaced 1 mm away from the frame so that the wheels can turn smoothly.



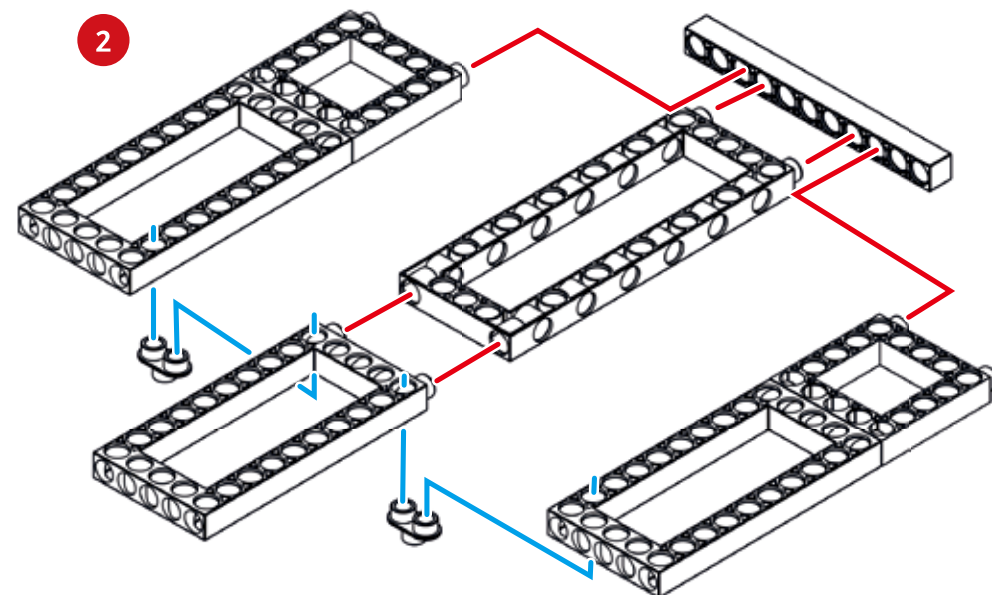
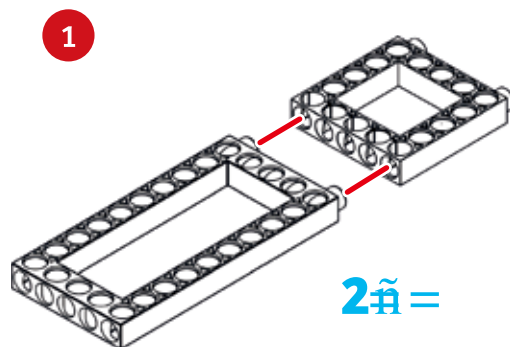
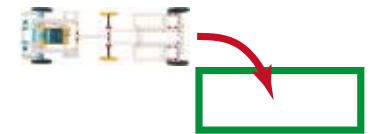
- **How to Operate**

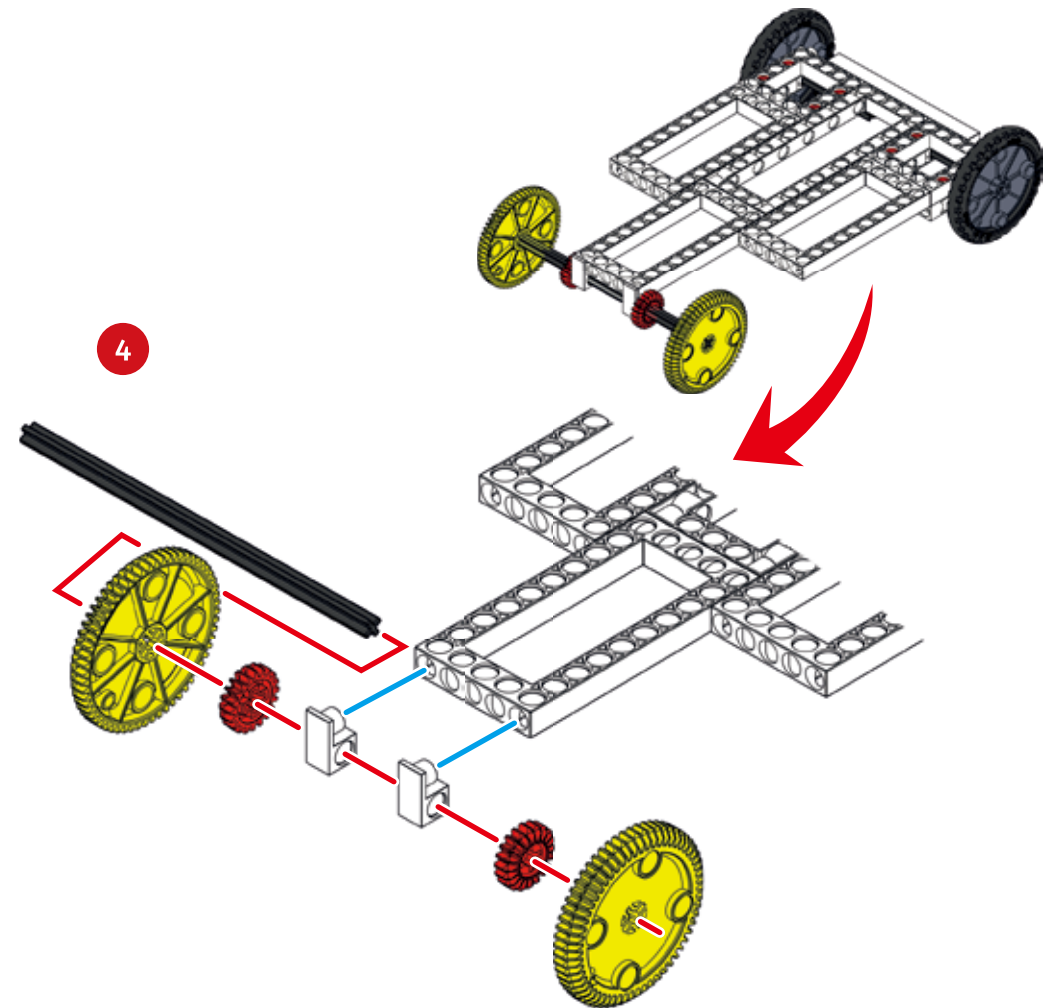
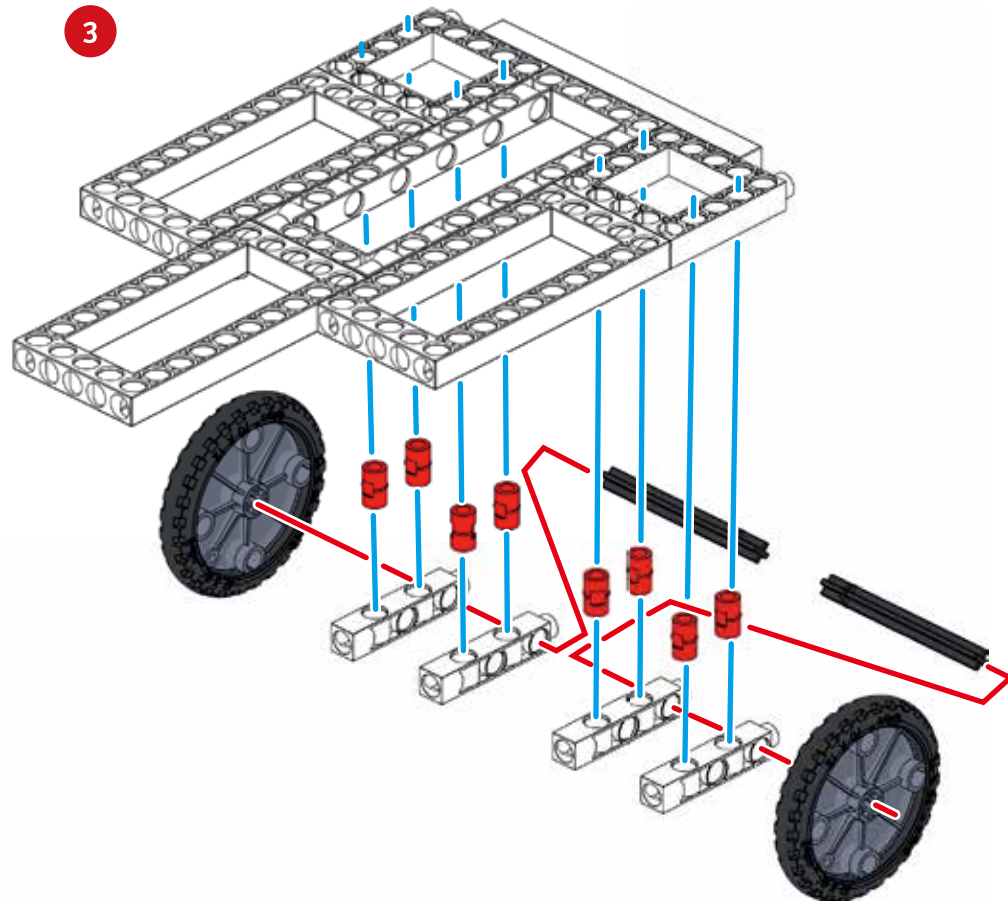
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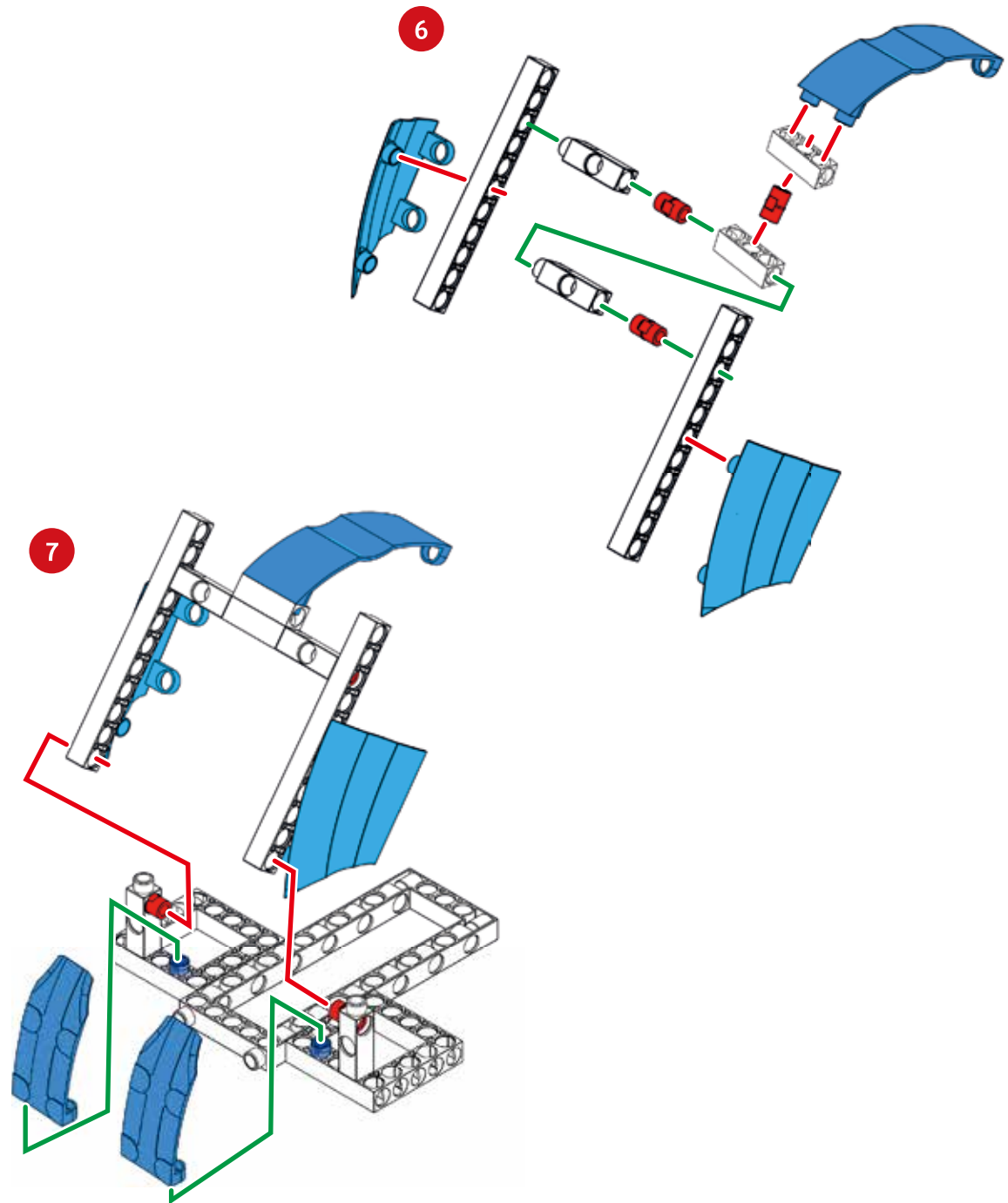
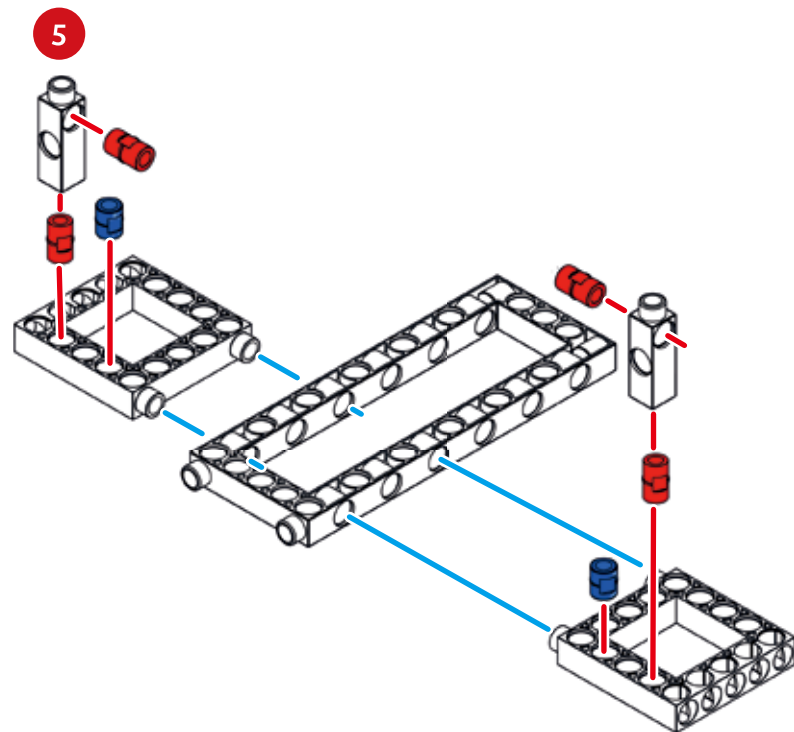


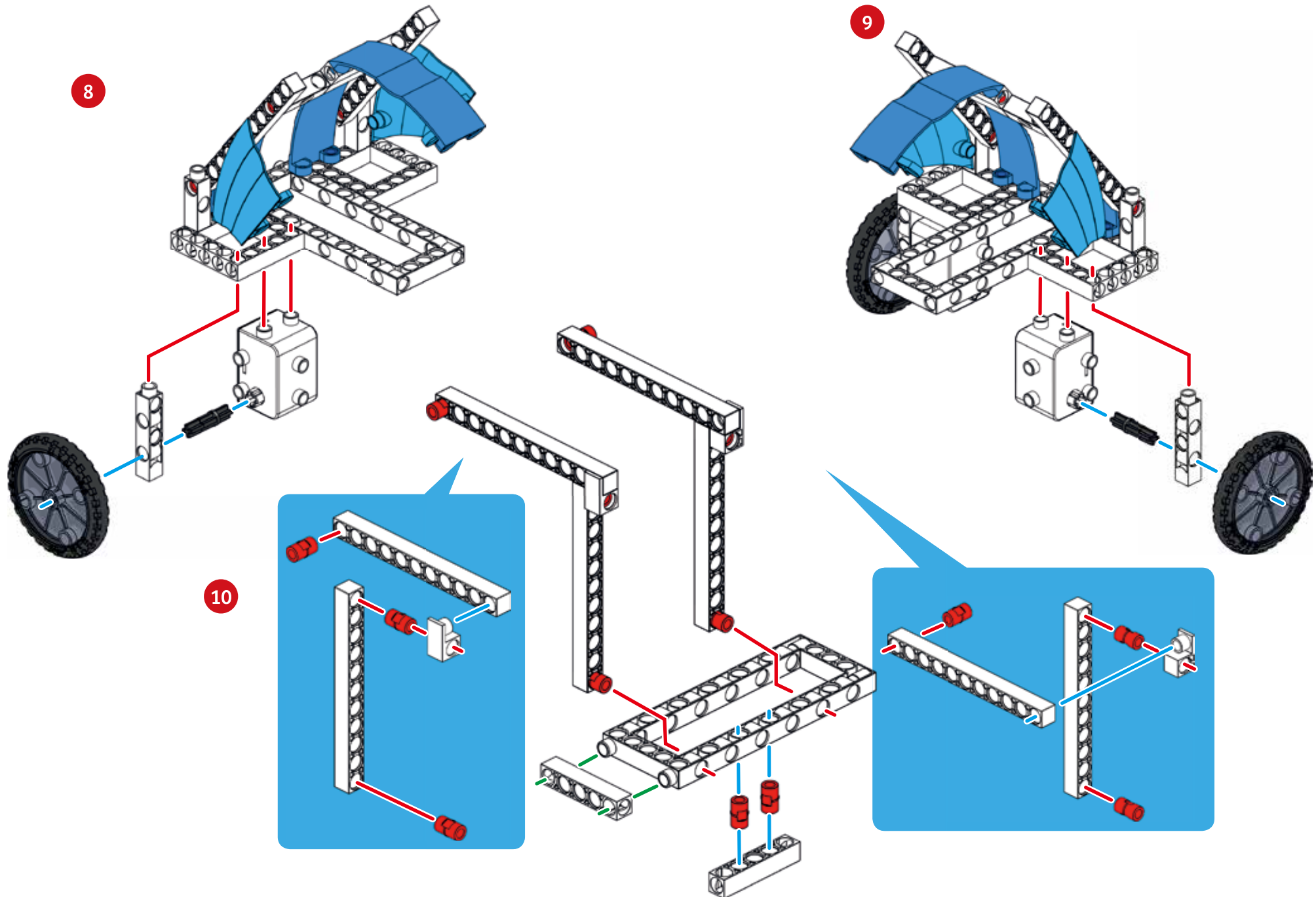
- **Challenge**

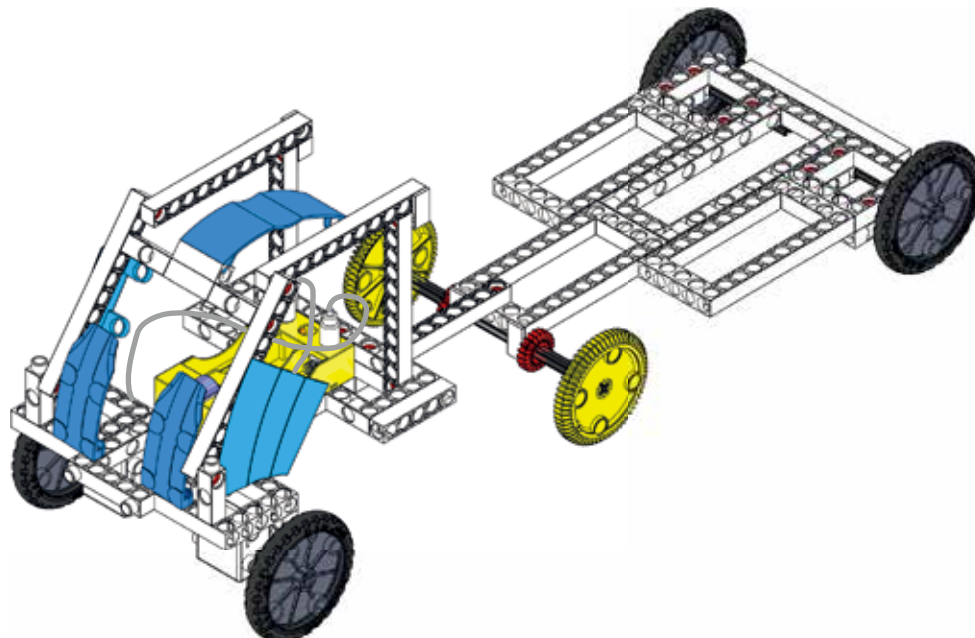
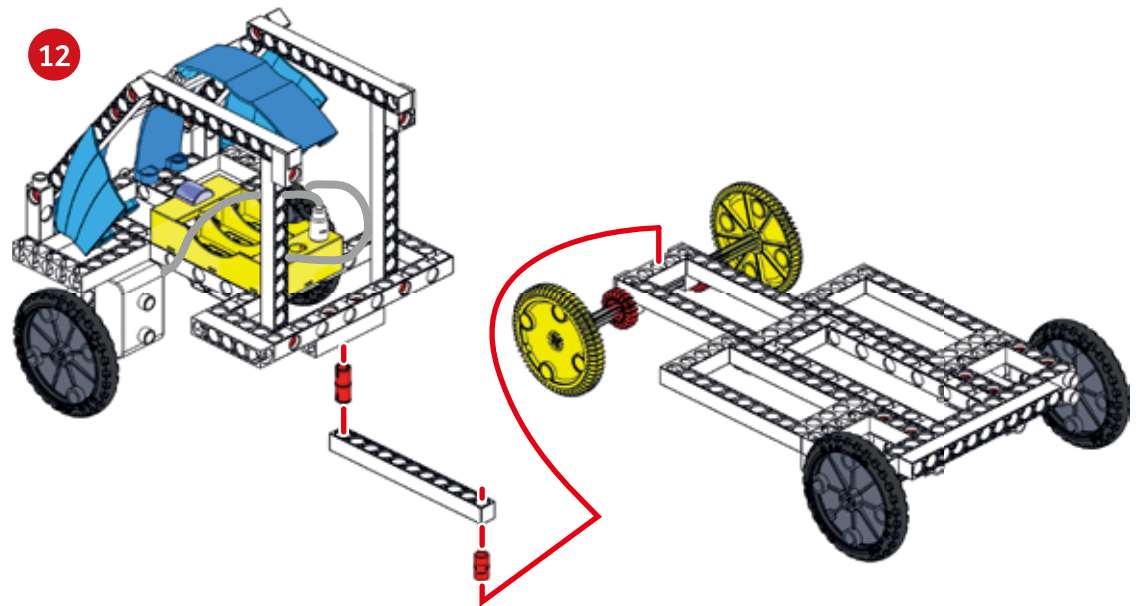
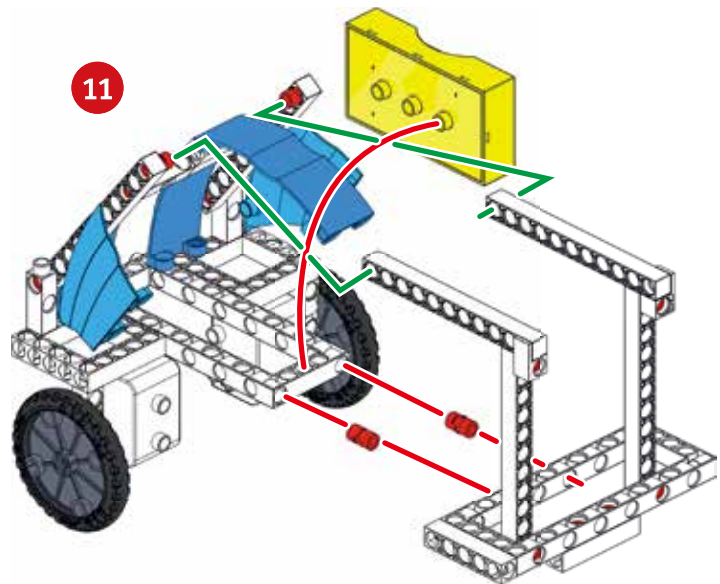
Design a parking space for your model and try to back your model into the parking spot.

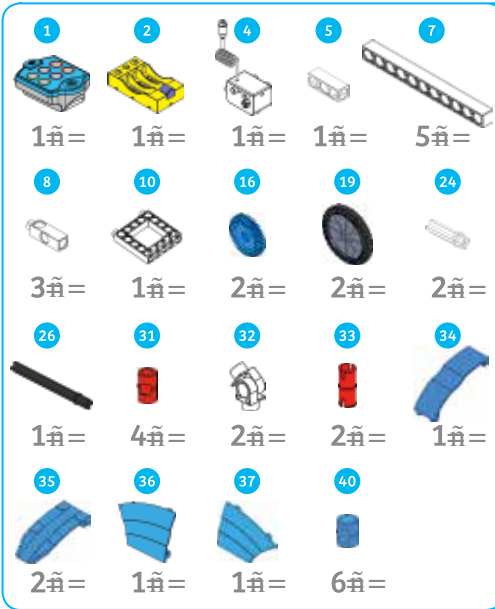










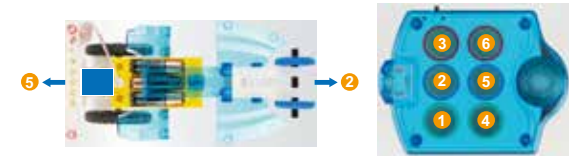


• Tips for Assembly

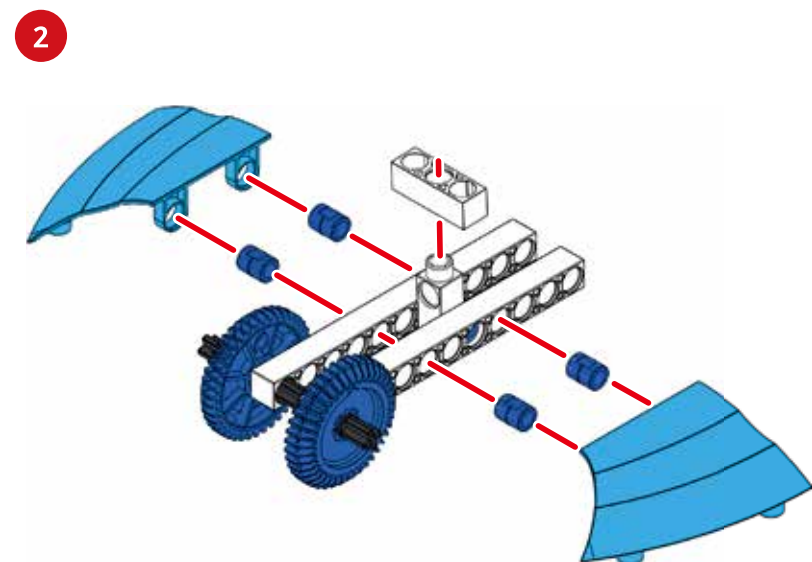
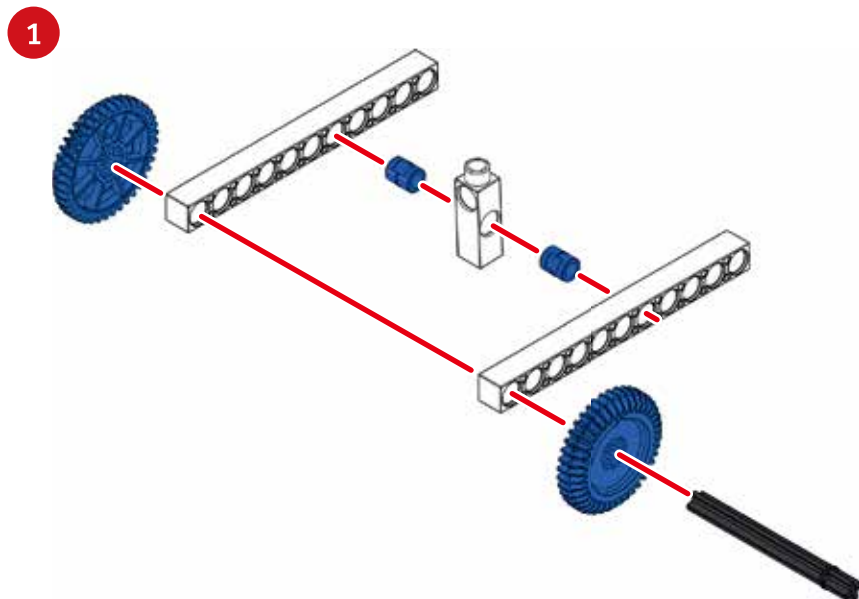
- ★ The wheels must be spaced 1 mm away from the frame so that the wheels can turn smoothly.

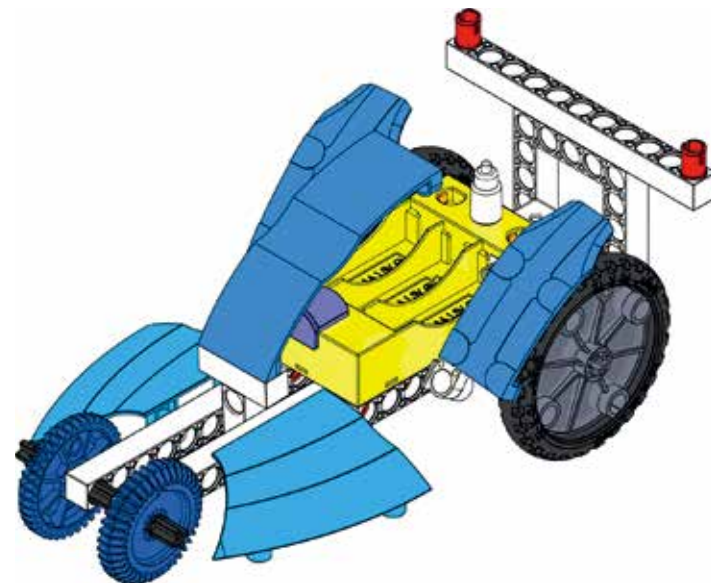
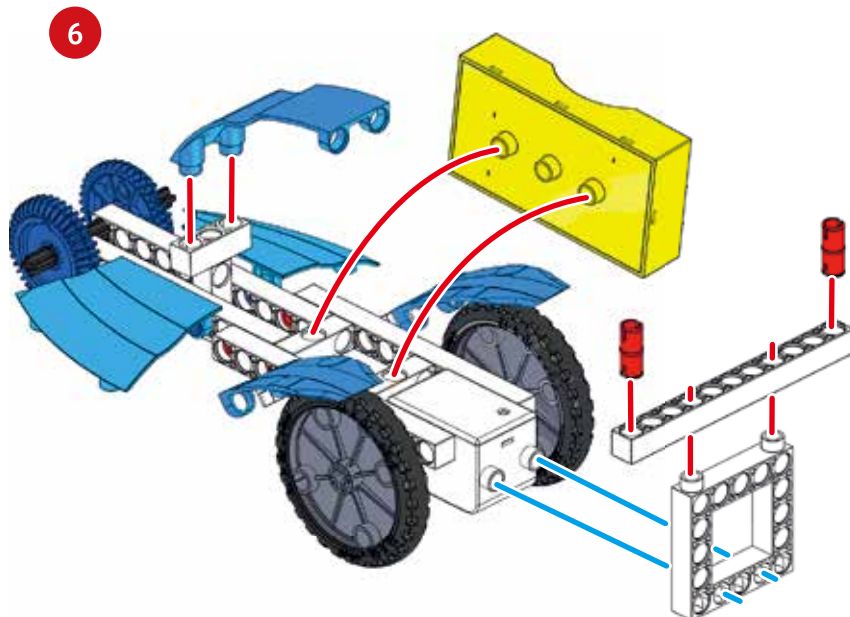
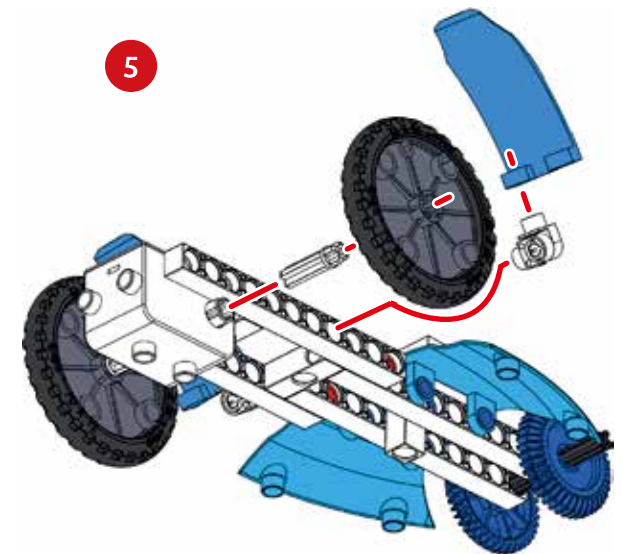
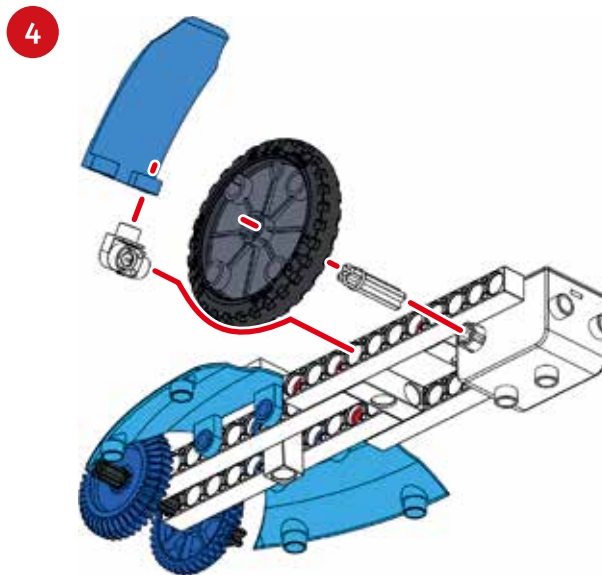
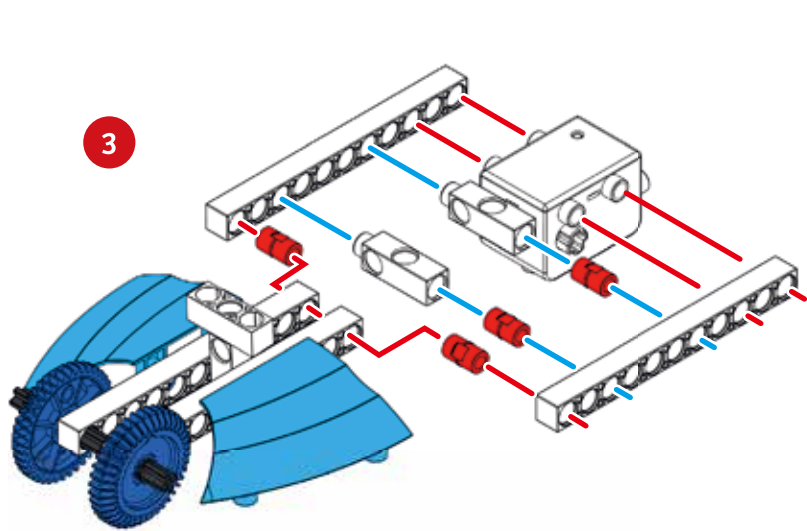


• How to Operate



1. Turn on the switch on the remote controller.
2. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.



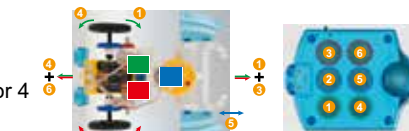




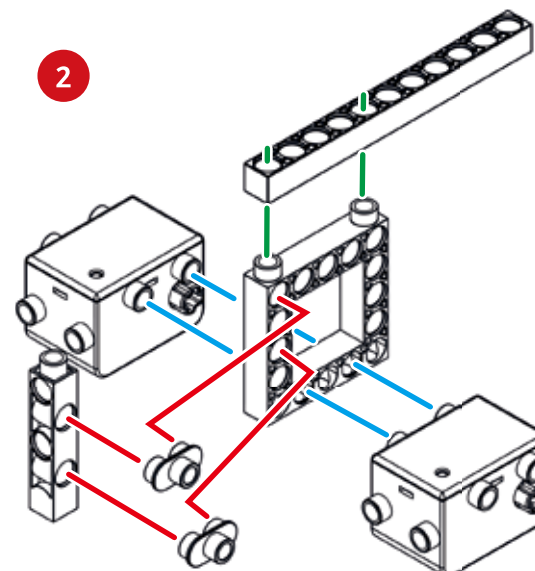
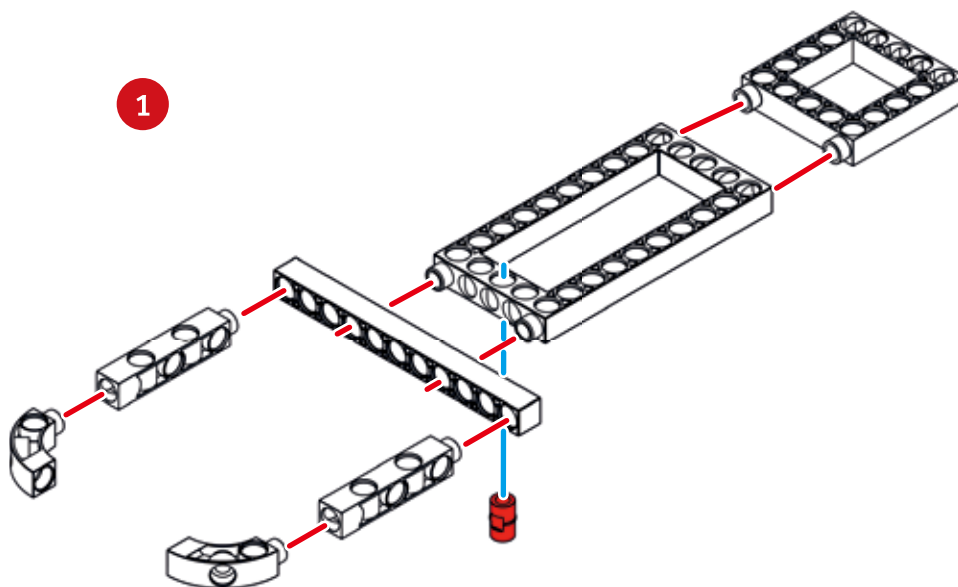
- ★ Make sure the red peg is in the frame, so the head of the model can move back and forth.

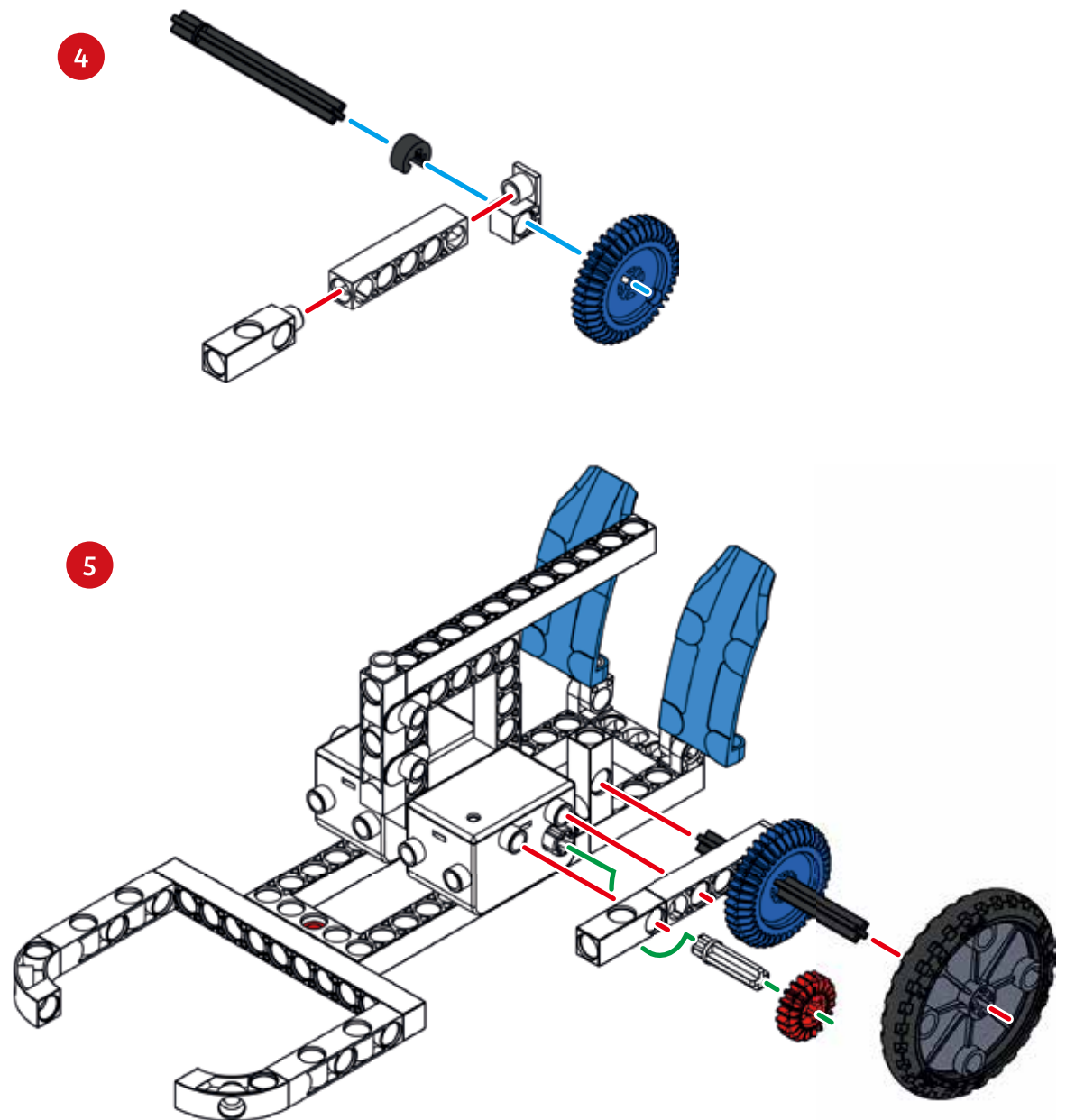


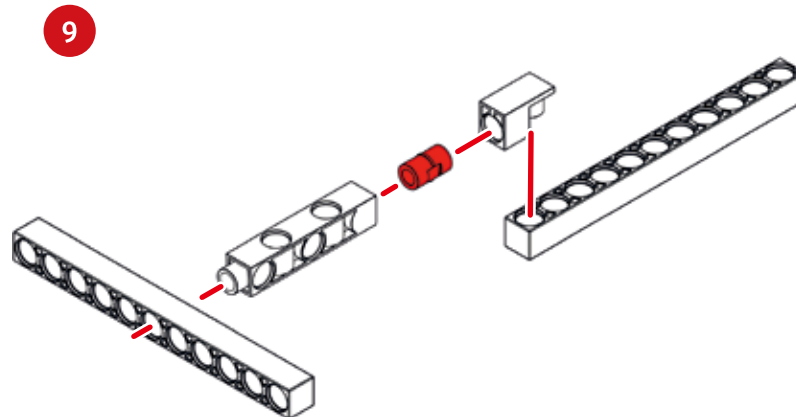
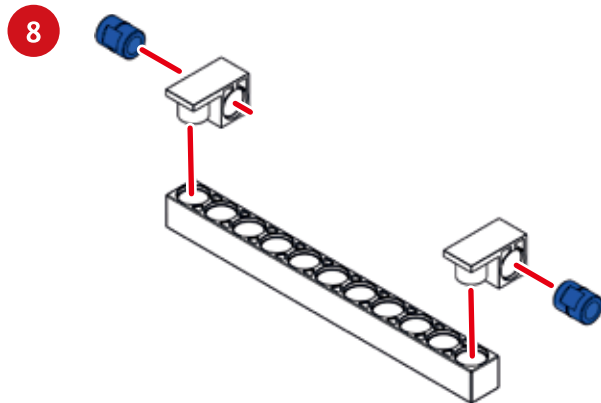
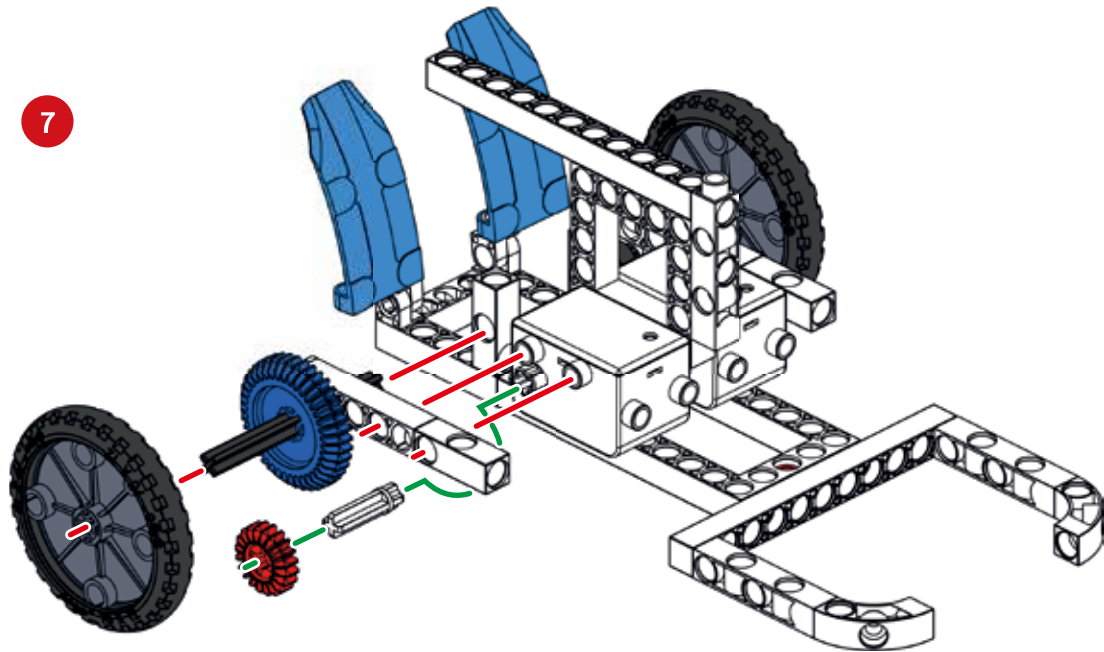
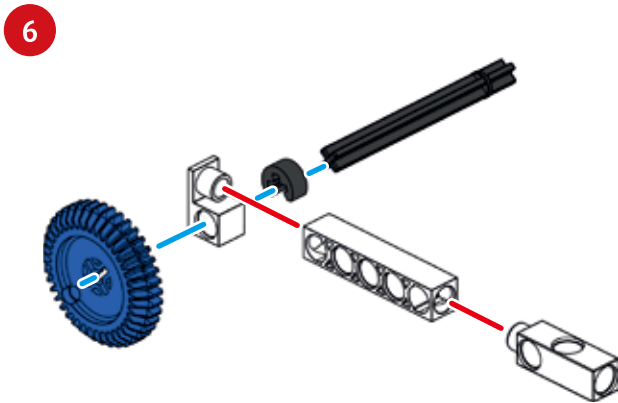
1. Turn on the switch on Remote Controller.
2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.
4. Touch the touch pad 1 and 6 or 3 and 4 at the same time to make the model run around.

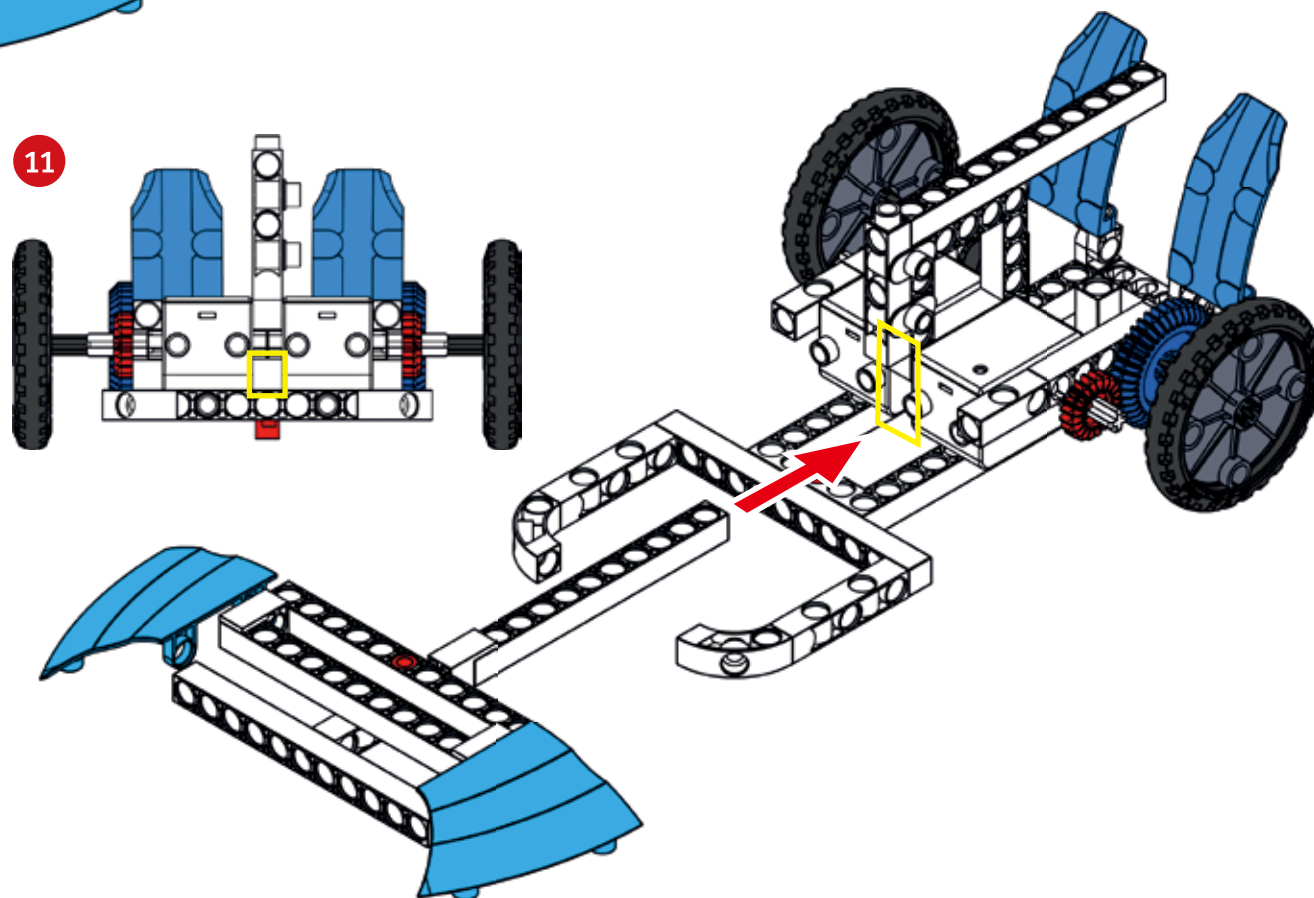
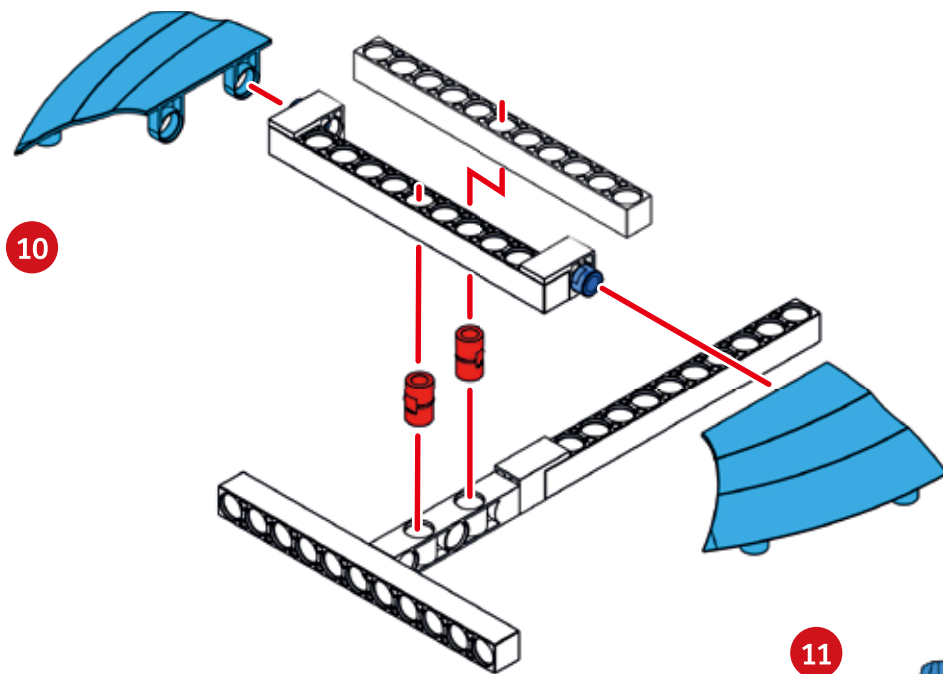


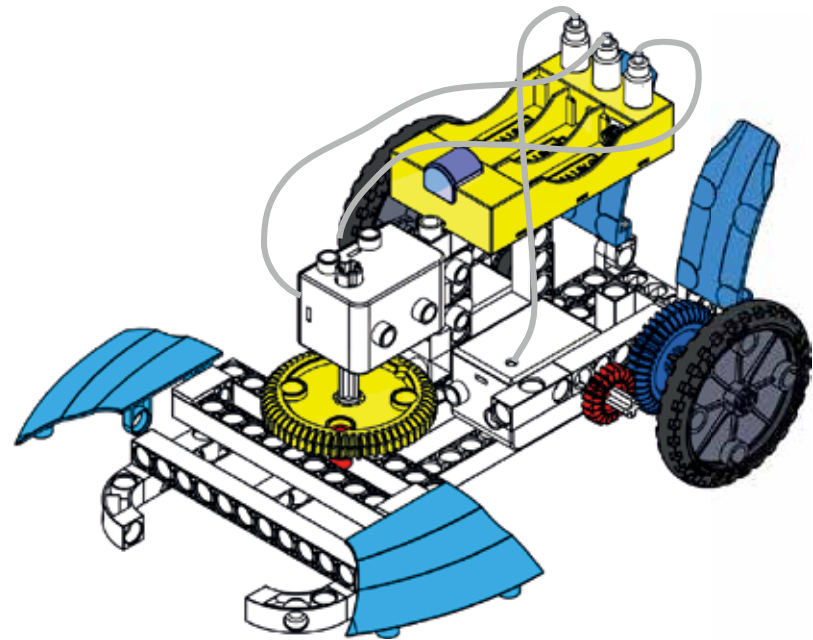
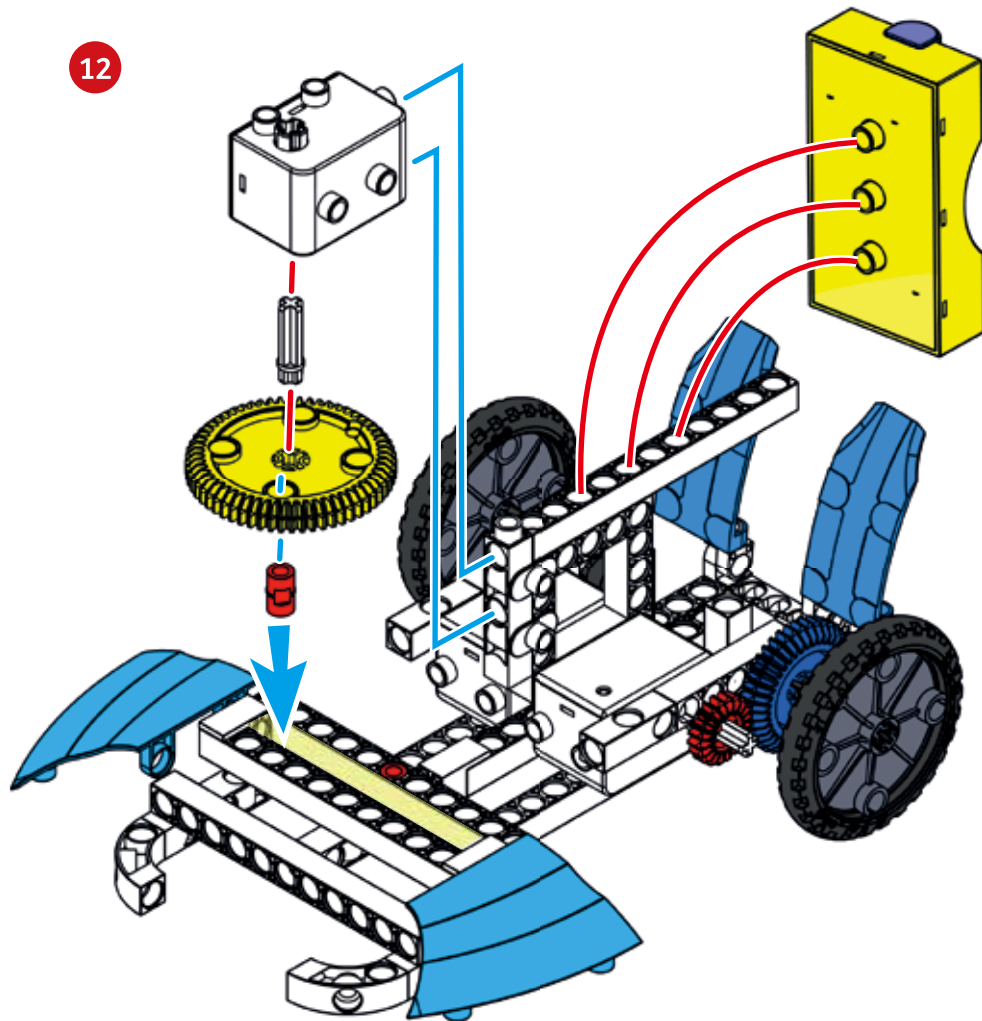
Spread the rest of Gigo components on the ground and try to sweep them all together by Ball Collecting Cart.

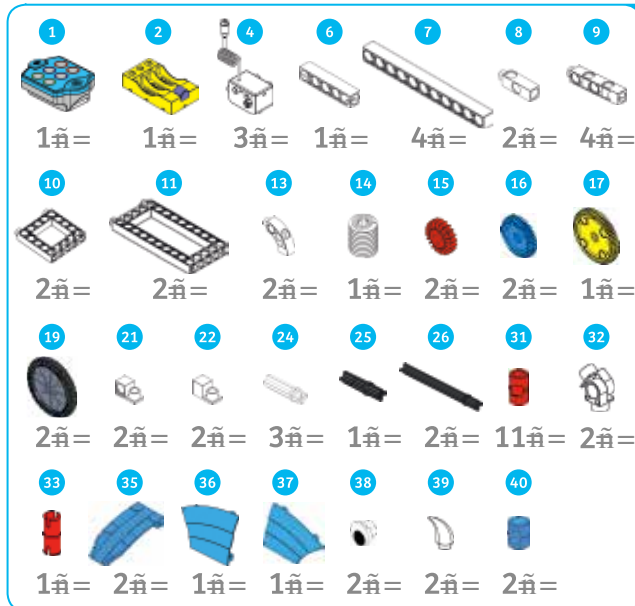






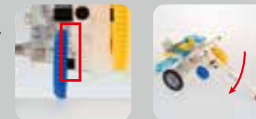






• Tips for Assembly

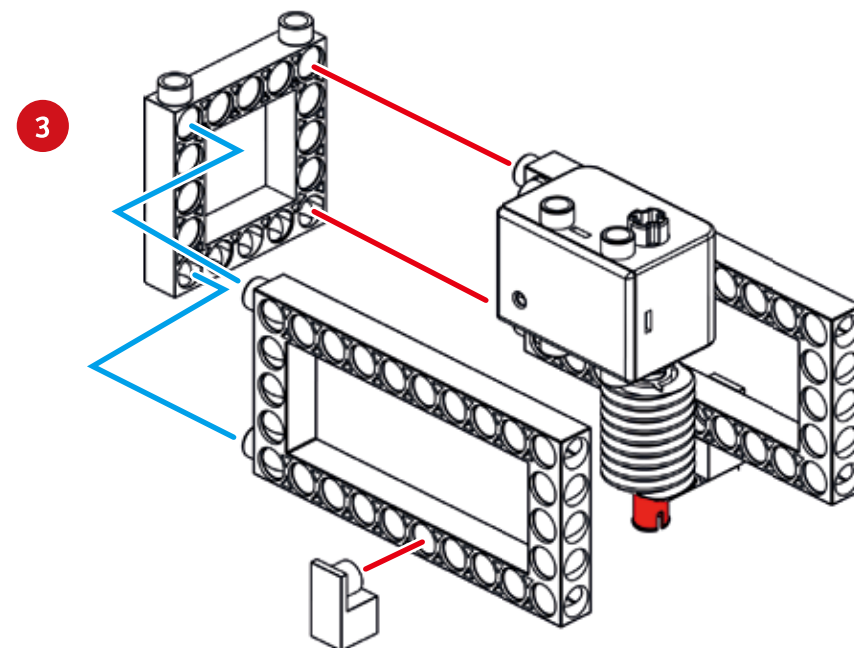
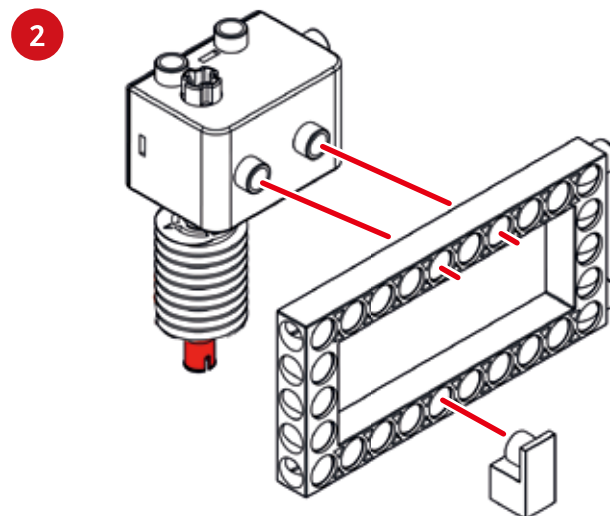
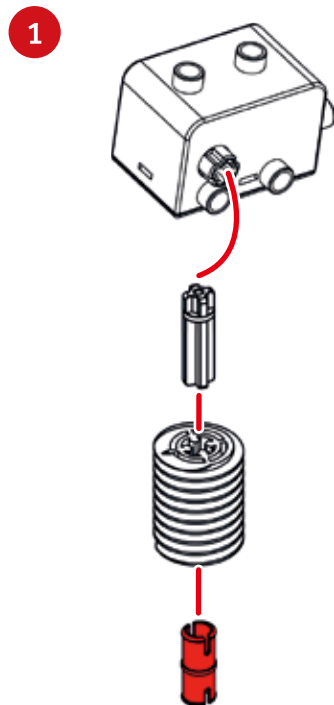
- ★ The wheels must be spaced 1 mm away from the frame so that the wheels can turn smoothly.
- ★ Roll the front pole down to transform the car into a racing trike.

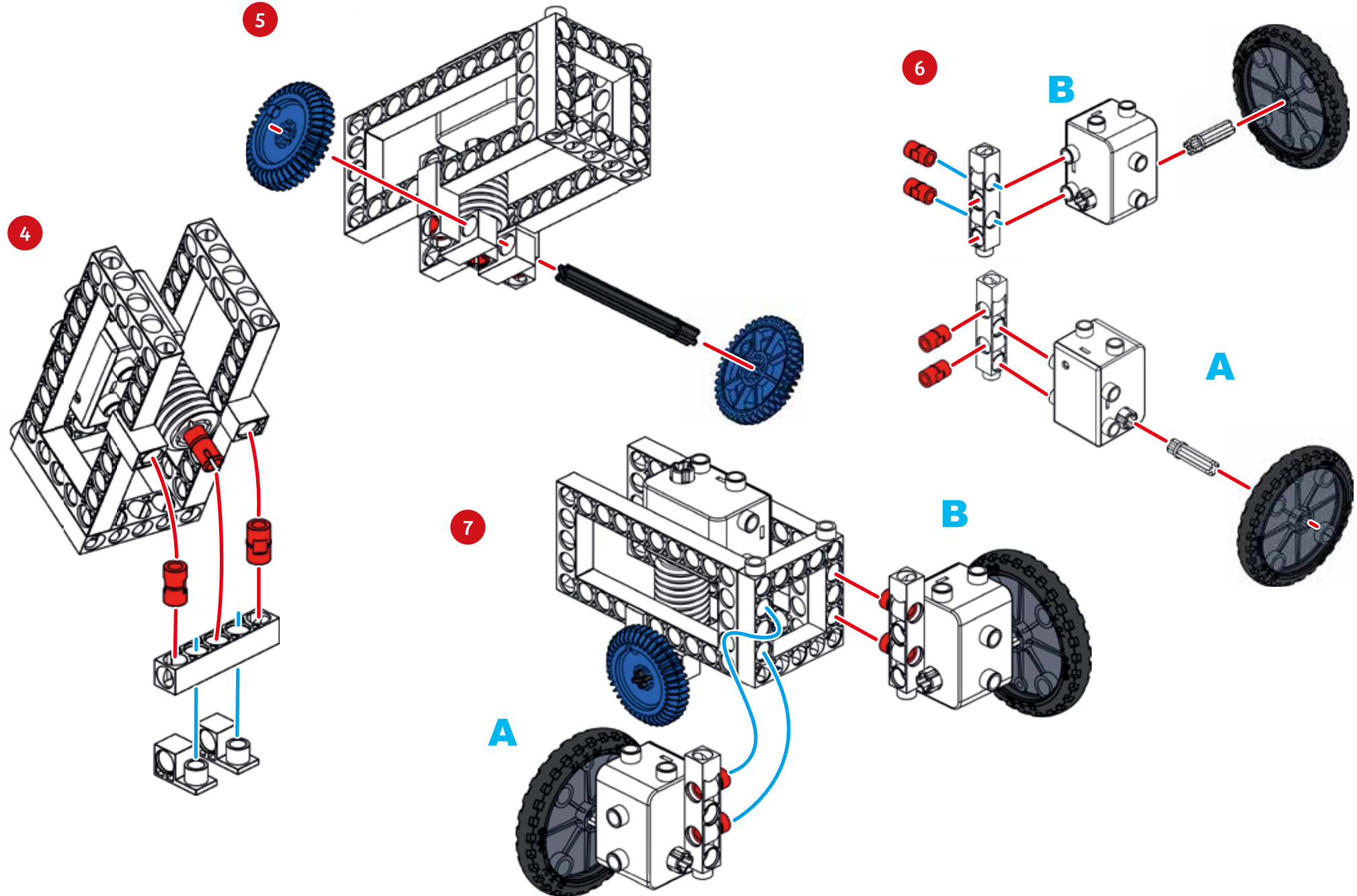


• How to Operate

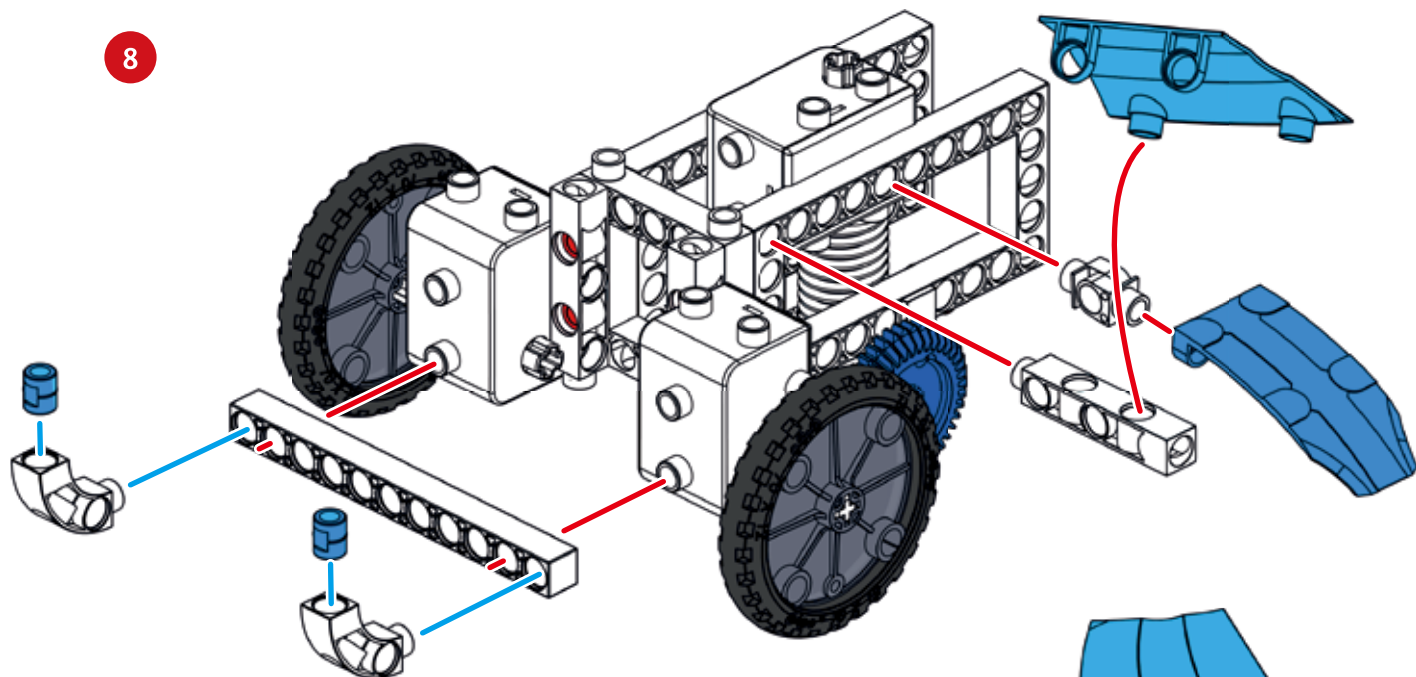


1. Turn on the switch on Remote Controller.
2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.
4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.

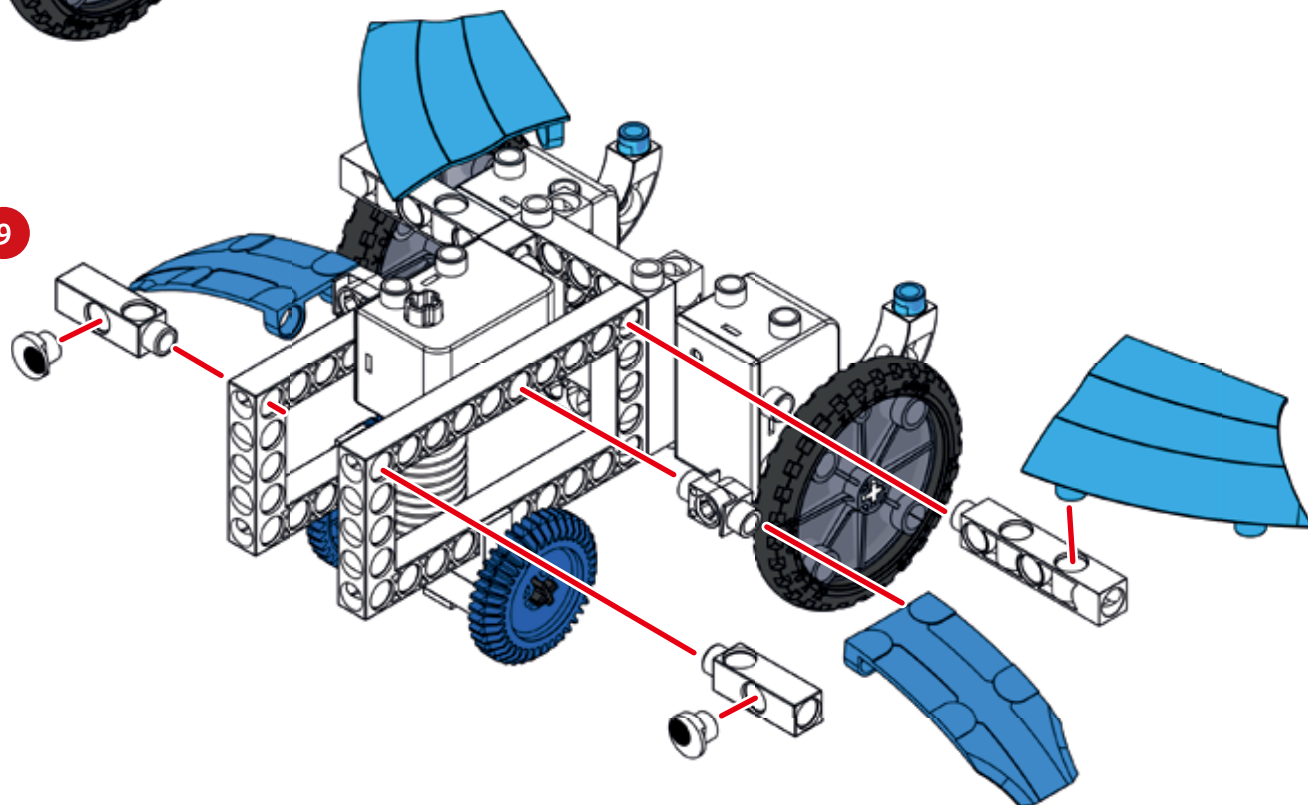




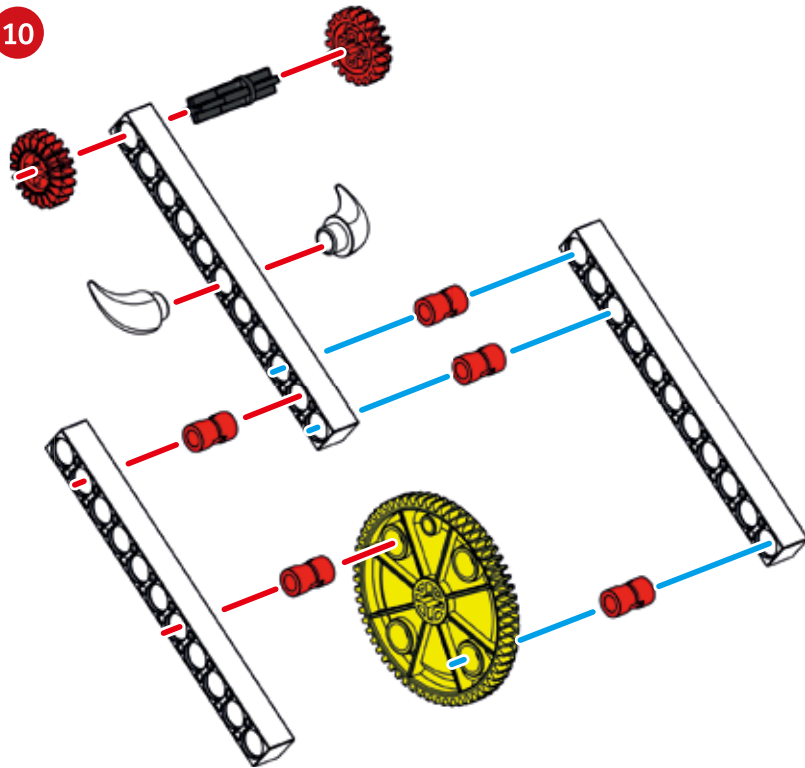
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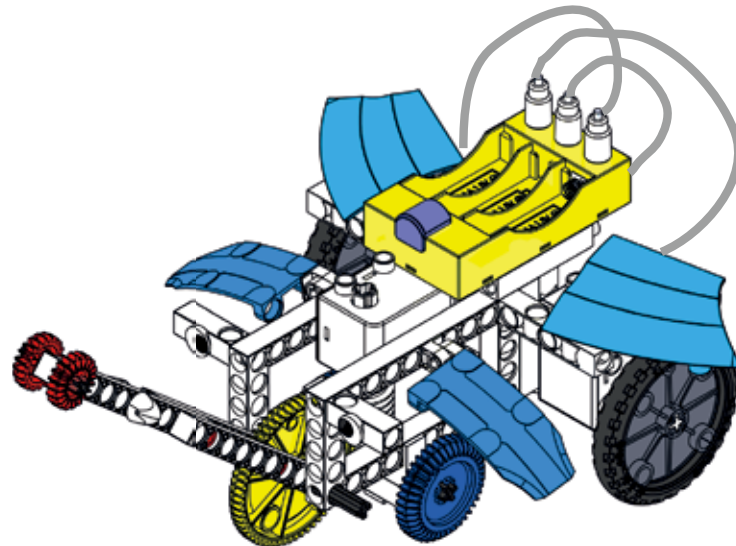
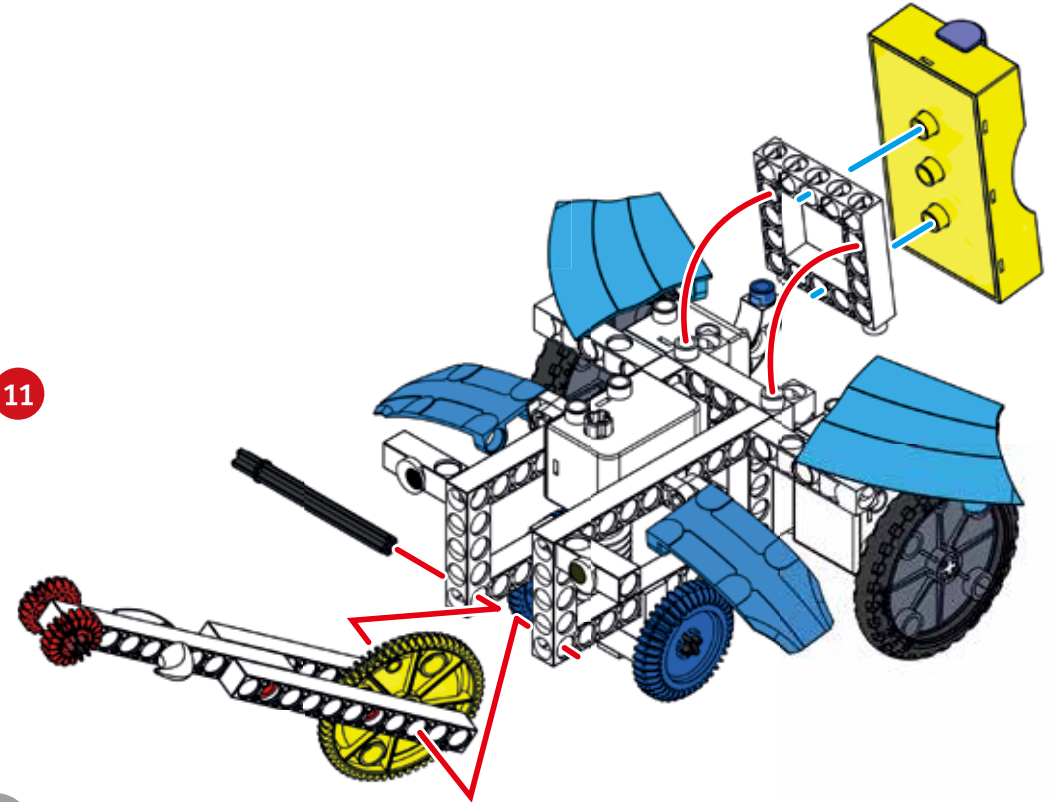
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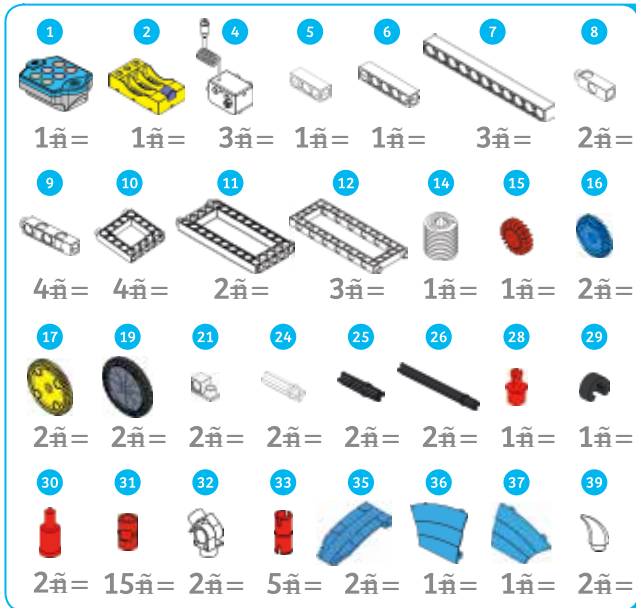


10



11





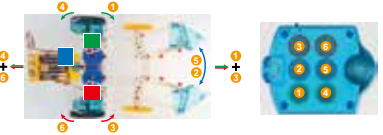
• Tips for Assembly

- ★ The gears must be spaced 1 mm away from the frame, so that the wheels can turn smoothly.
- ★ Keep rods in symmetry while assembling them on the model, so the clamp can hold the object firmly.



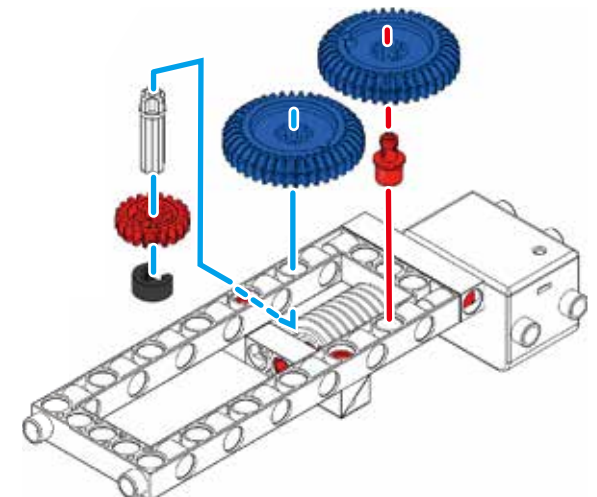
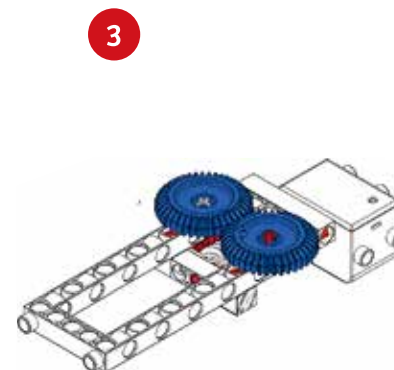
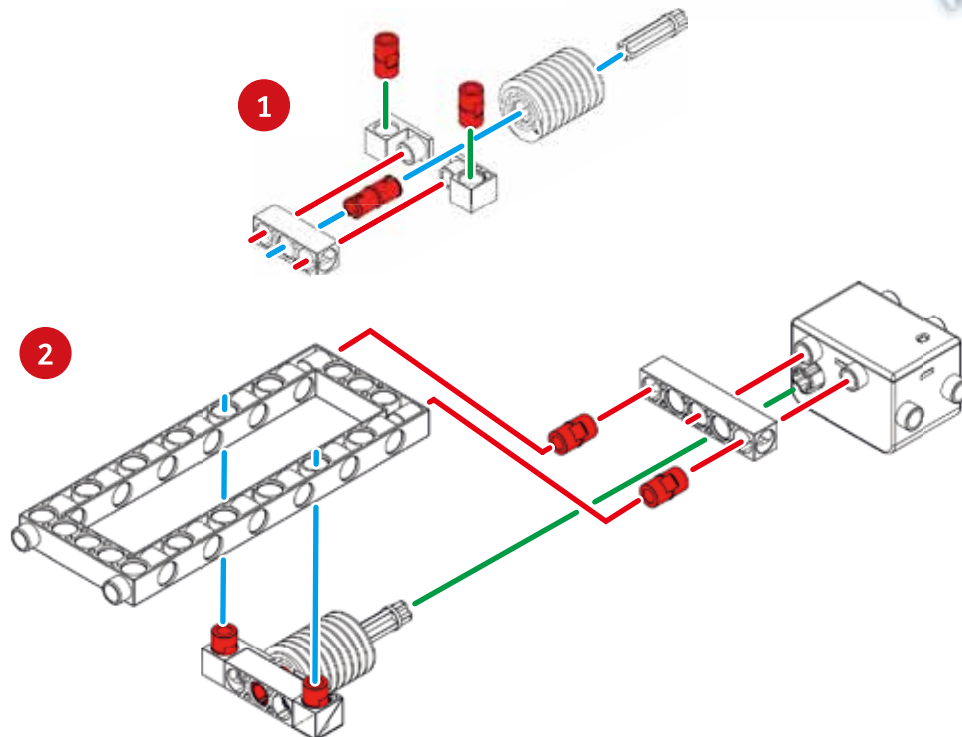
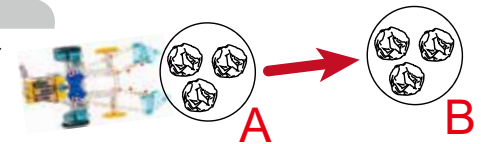
• How to Operate

1. Turn on the switch on Remote Controller.
2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.
4. Touch the touch pad 1 and 6 or 3 and 4 at the same time to make the model run around.

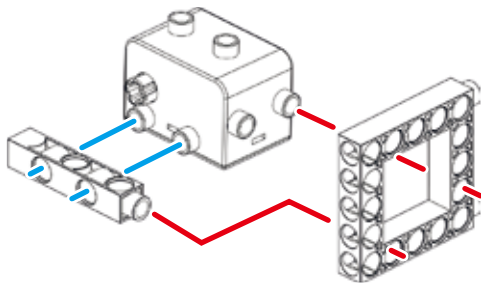


• Challenge

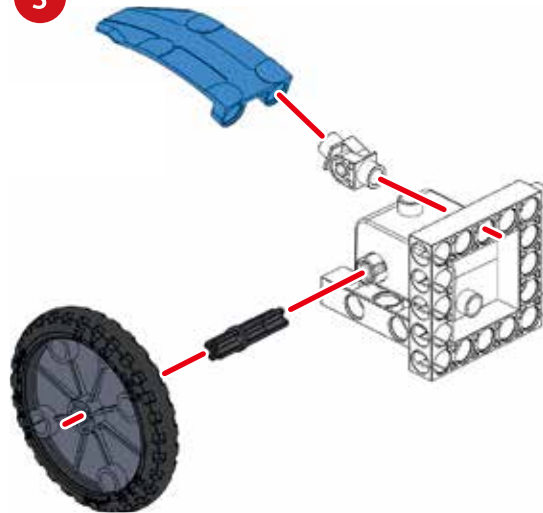
Make three paper balls and try to clamp them from position A to B.



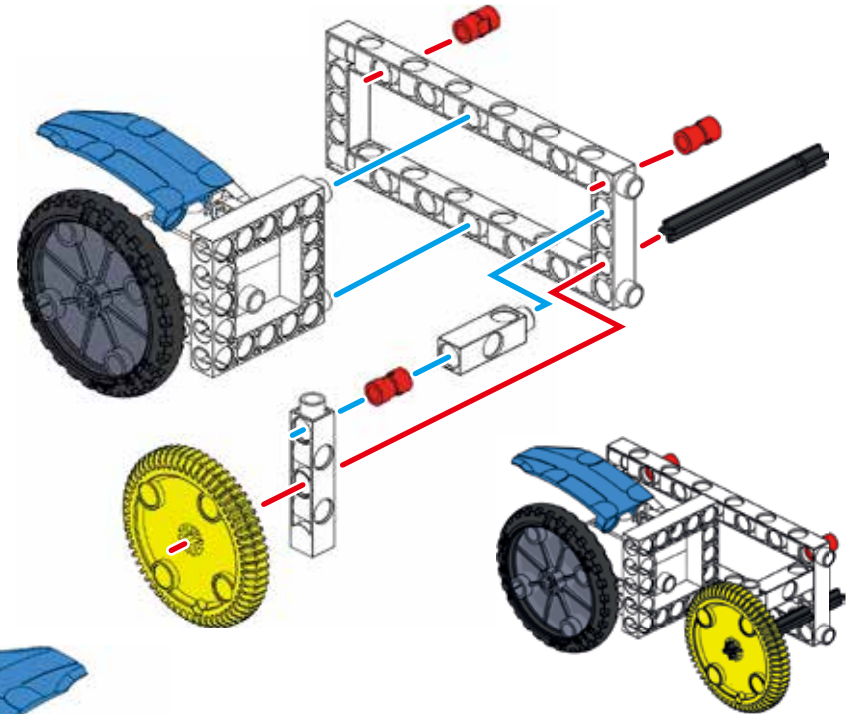
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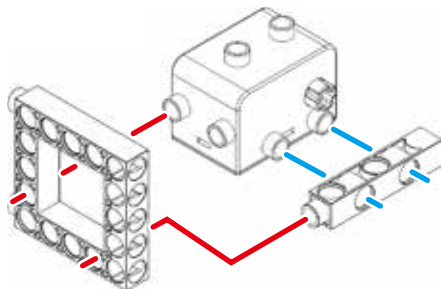
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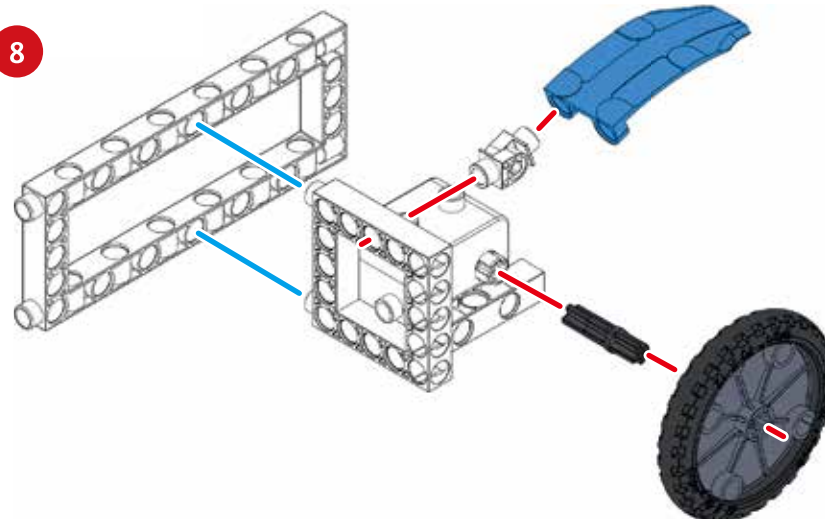
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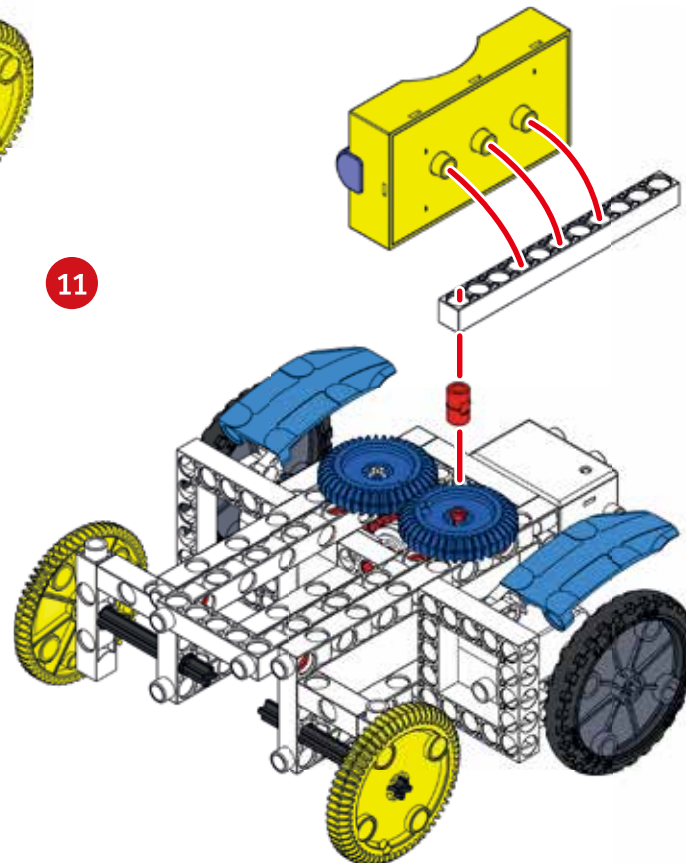
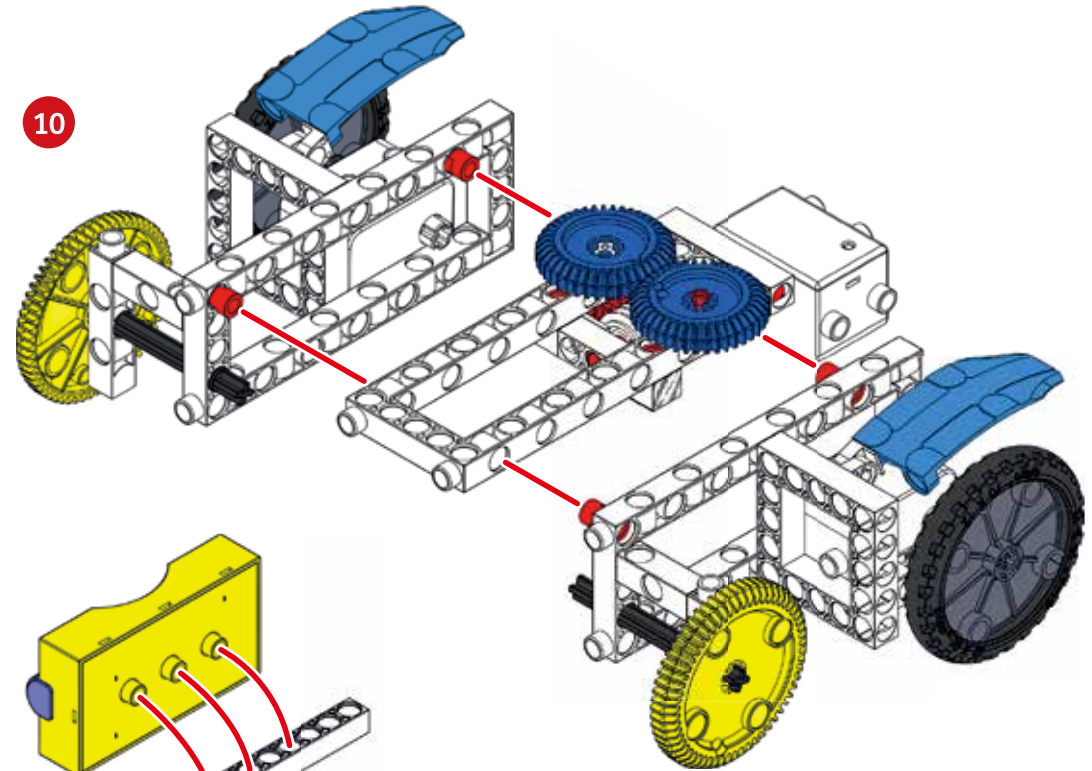
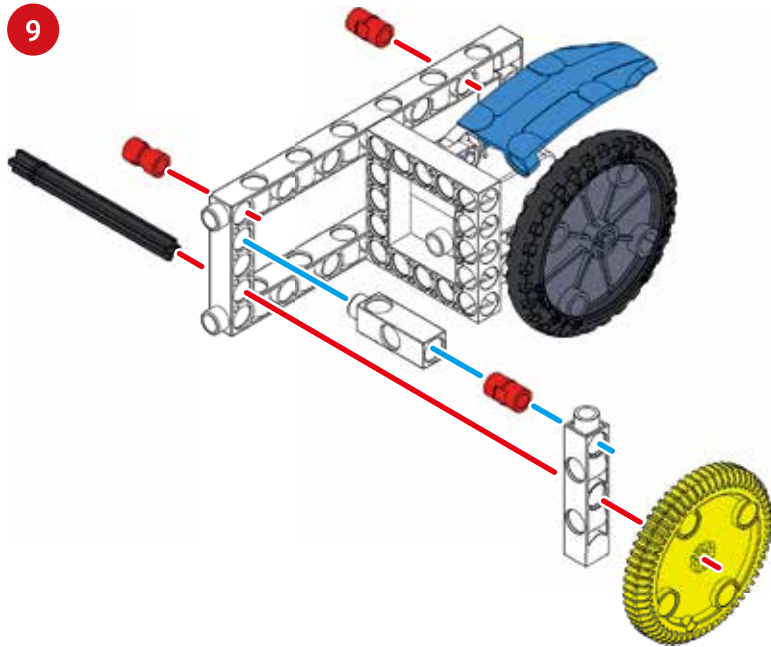


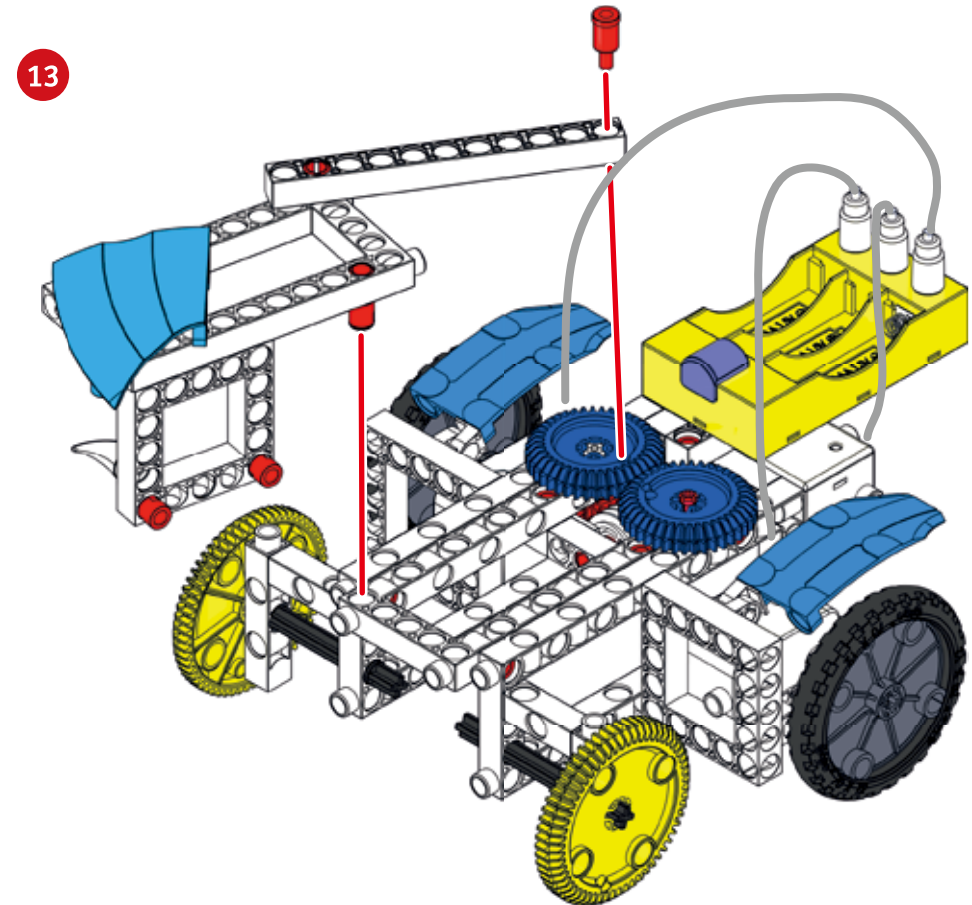
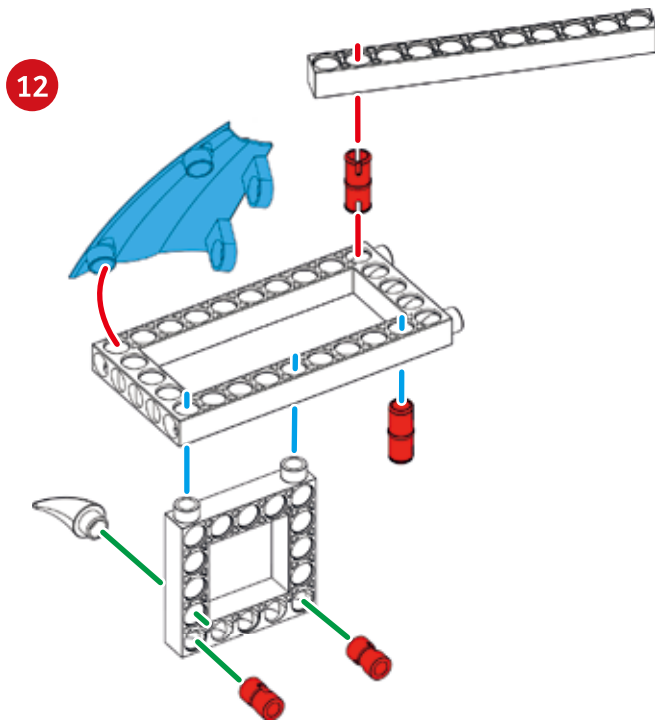
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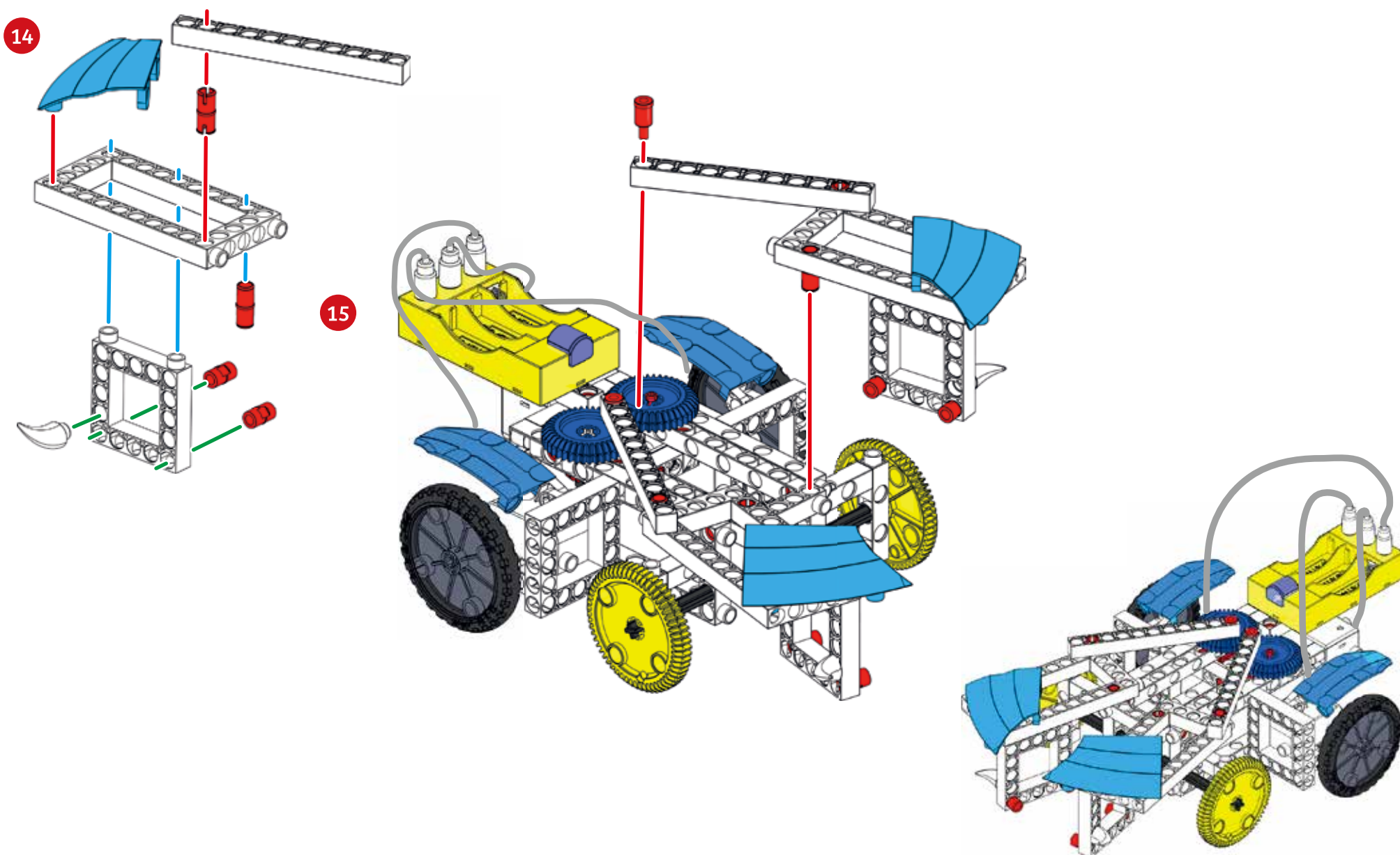


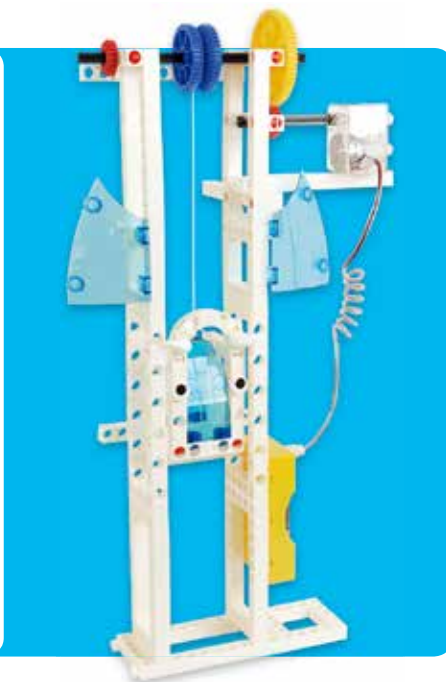
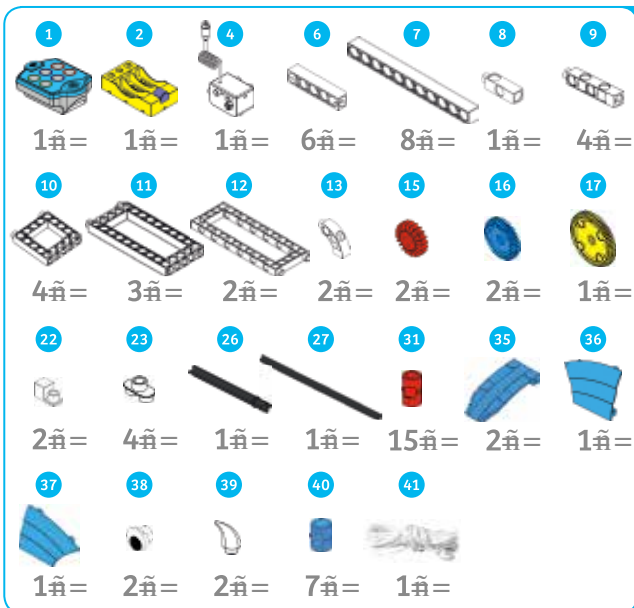
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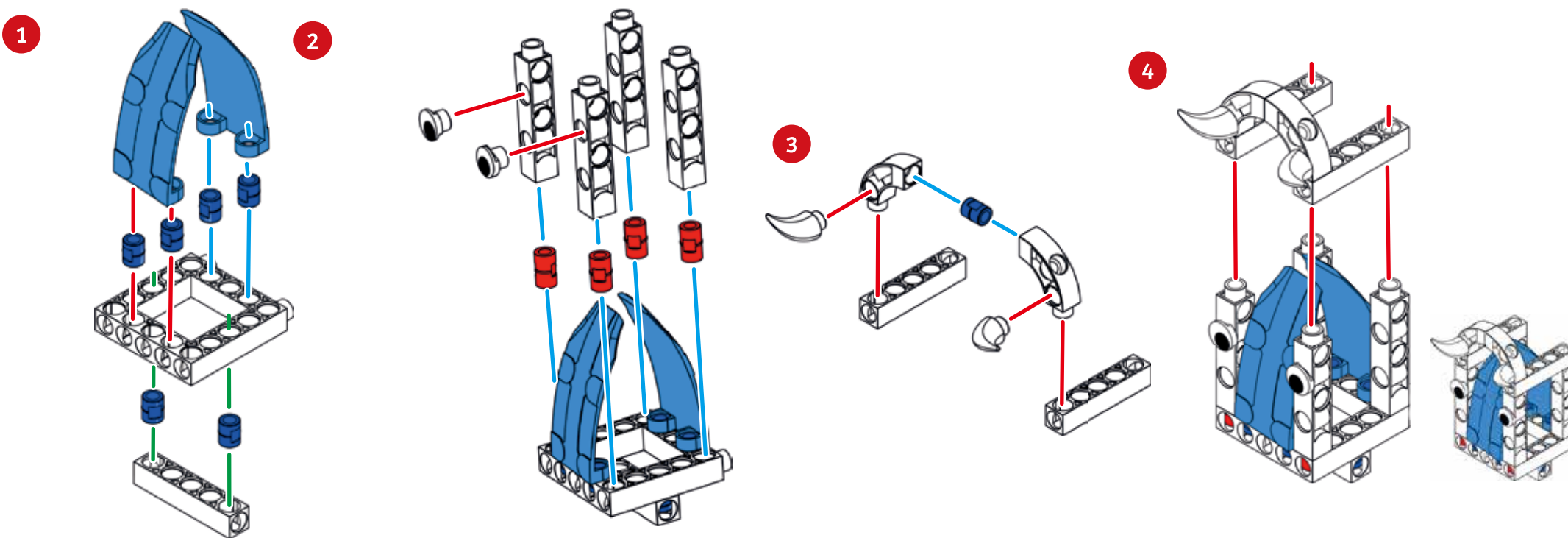
• Tips for Assembly

- ★ Please tie the string precisely so the elevator cab can move up and down smoothly.
- ★ Please tie the string firmly on the axle, and the wheels must be spaced 3 mm away from each other so the string can be rolled up.

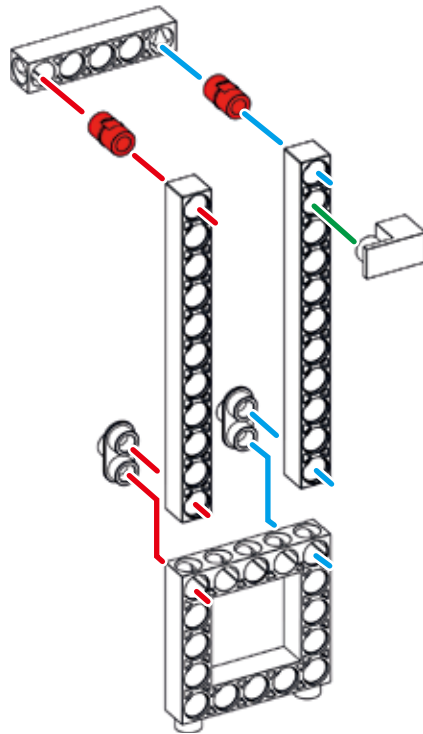


• How to Operate

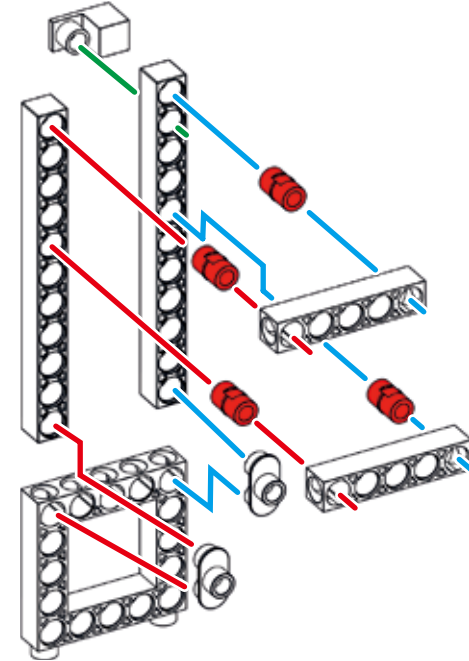
1. Turn on the switch on Remote Controller.
2. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.



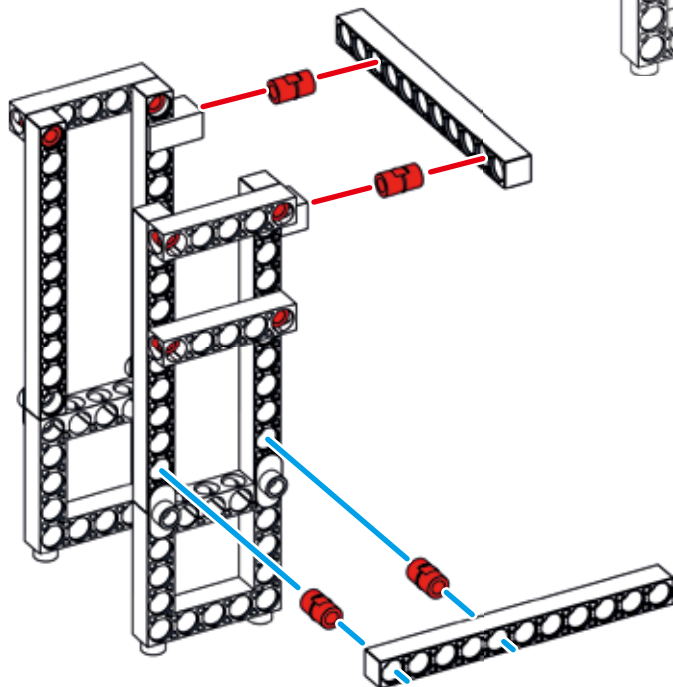
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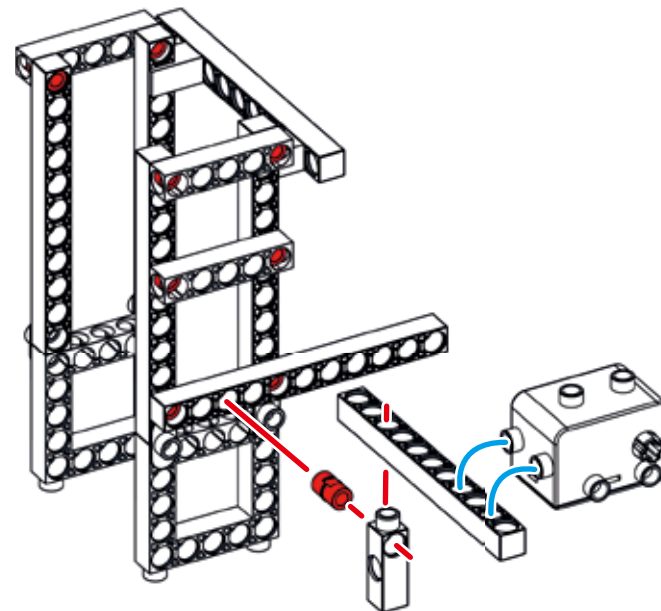
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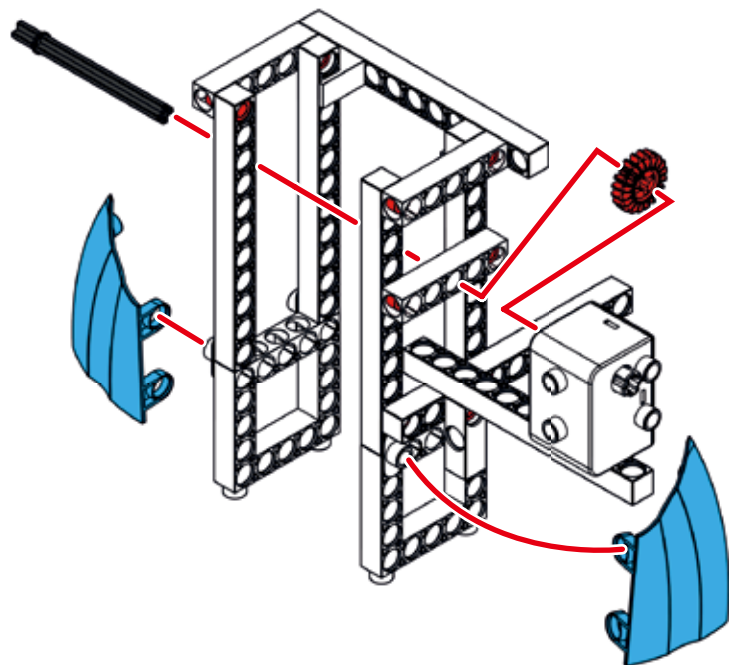
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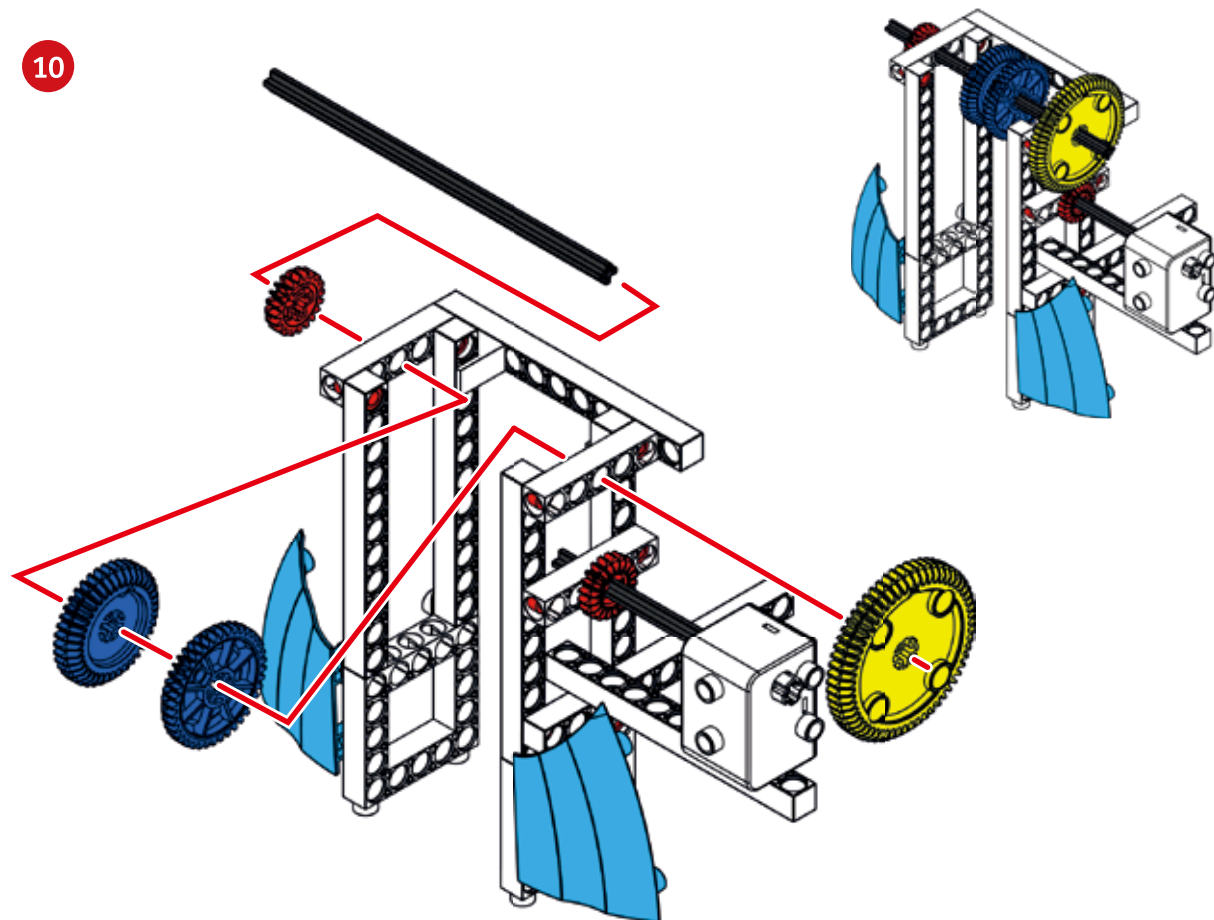
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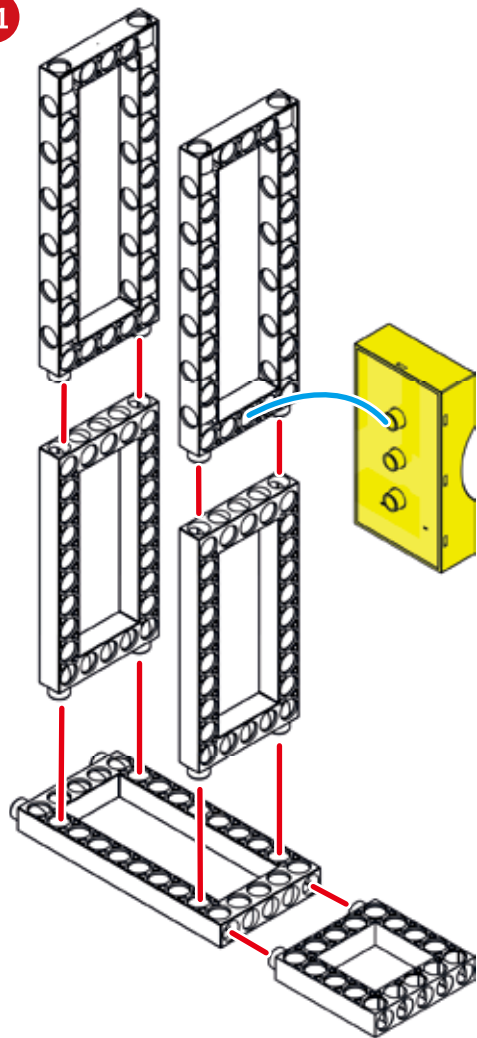
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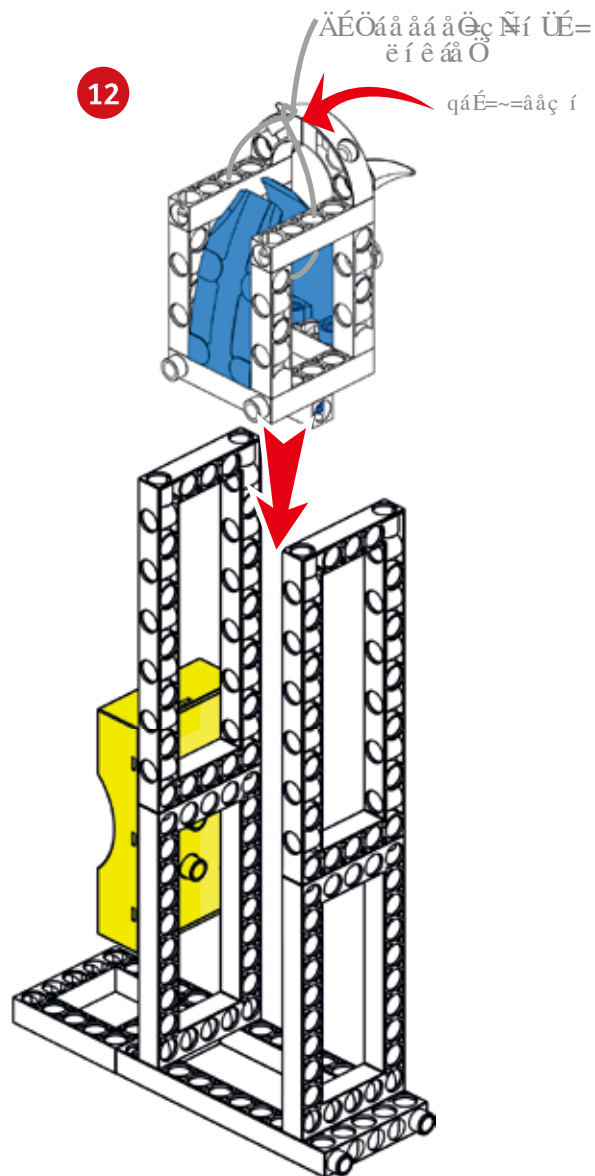
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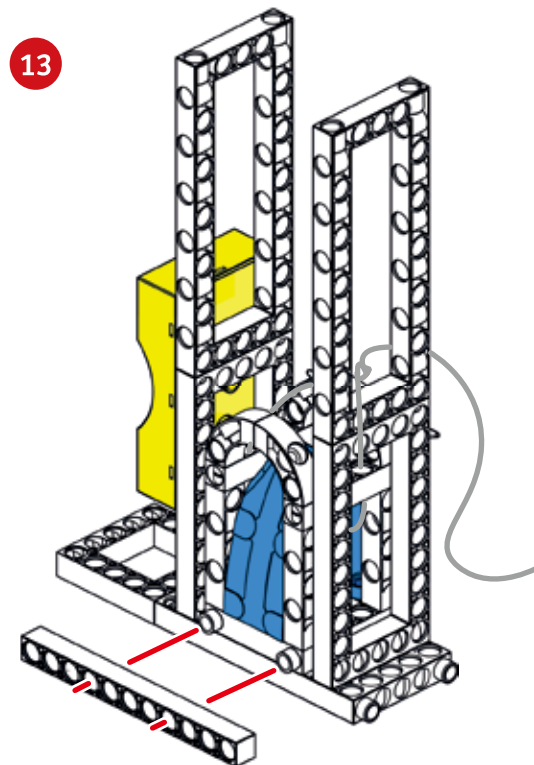
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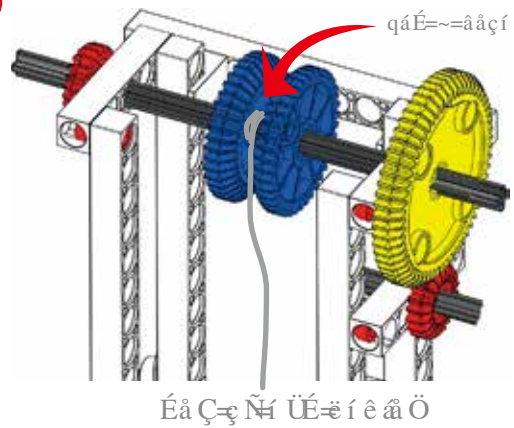
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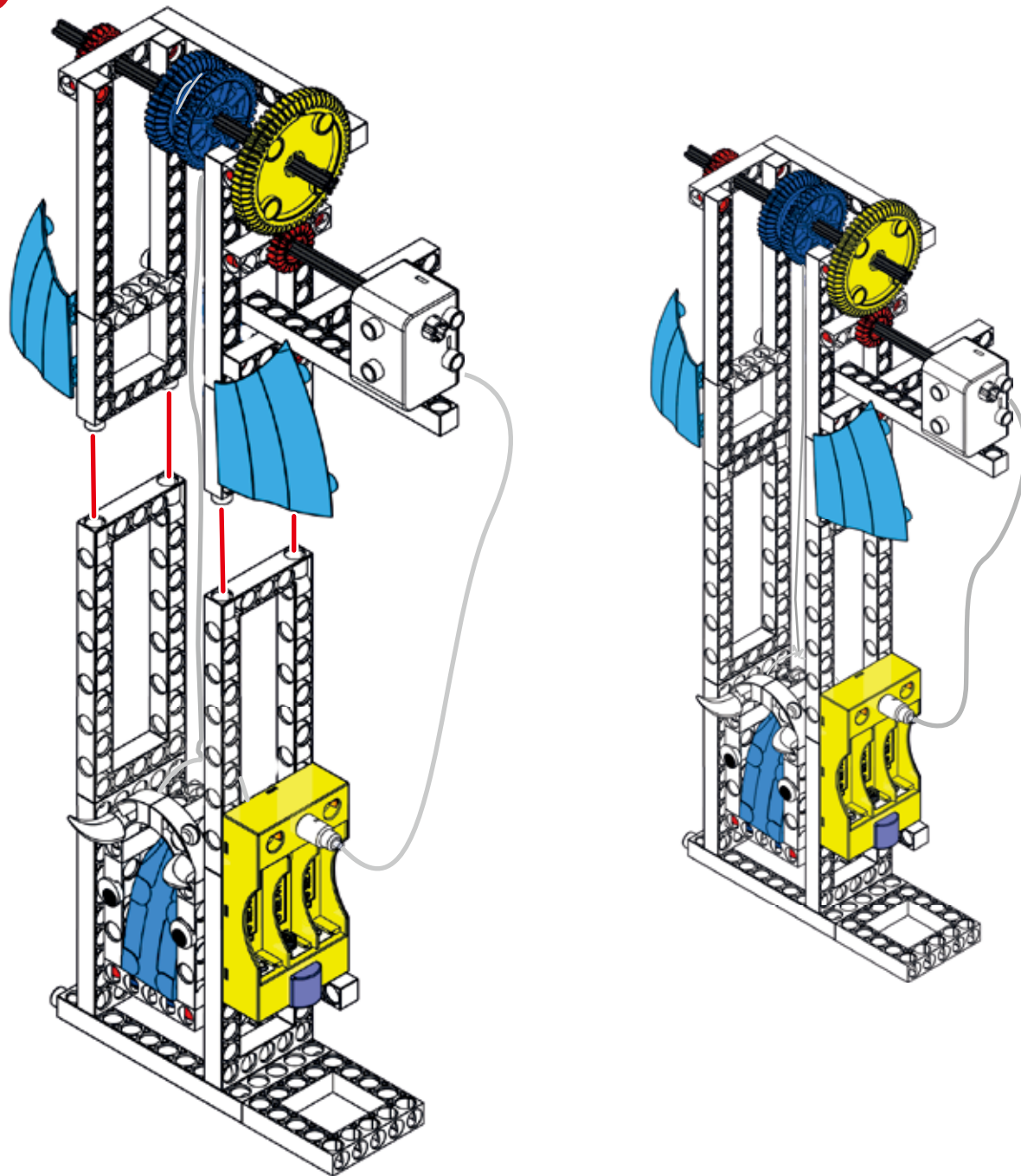
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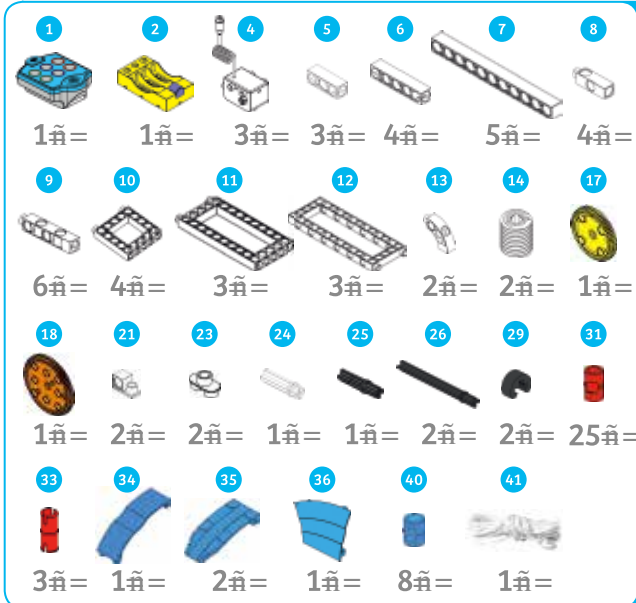


14



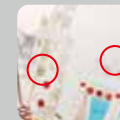
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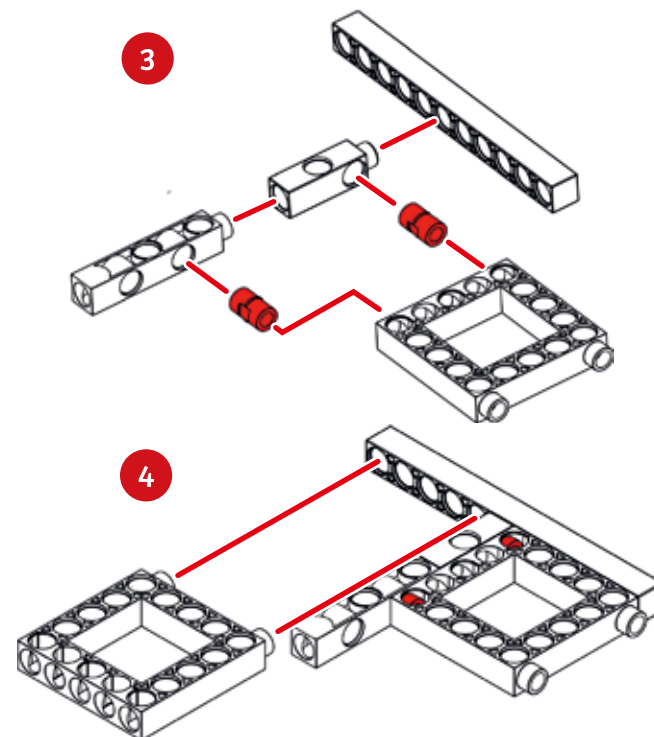
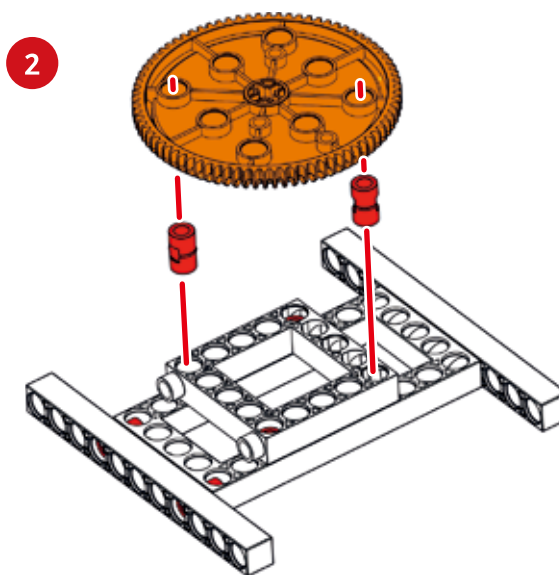
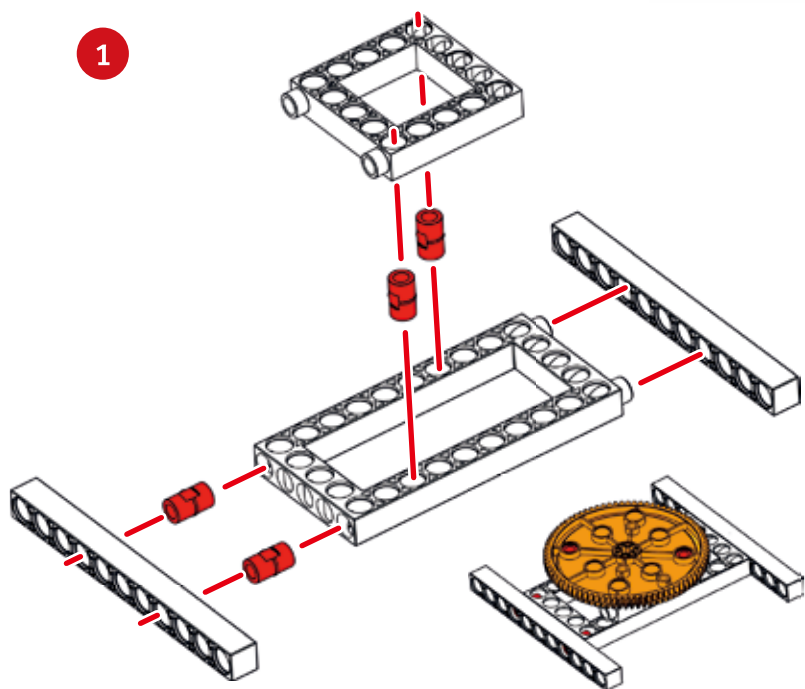
• Tips for Assembly

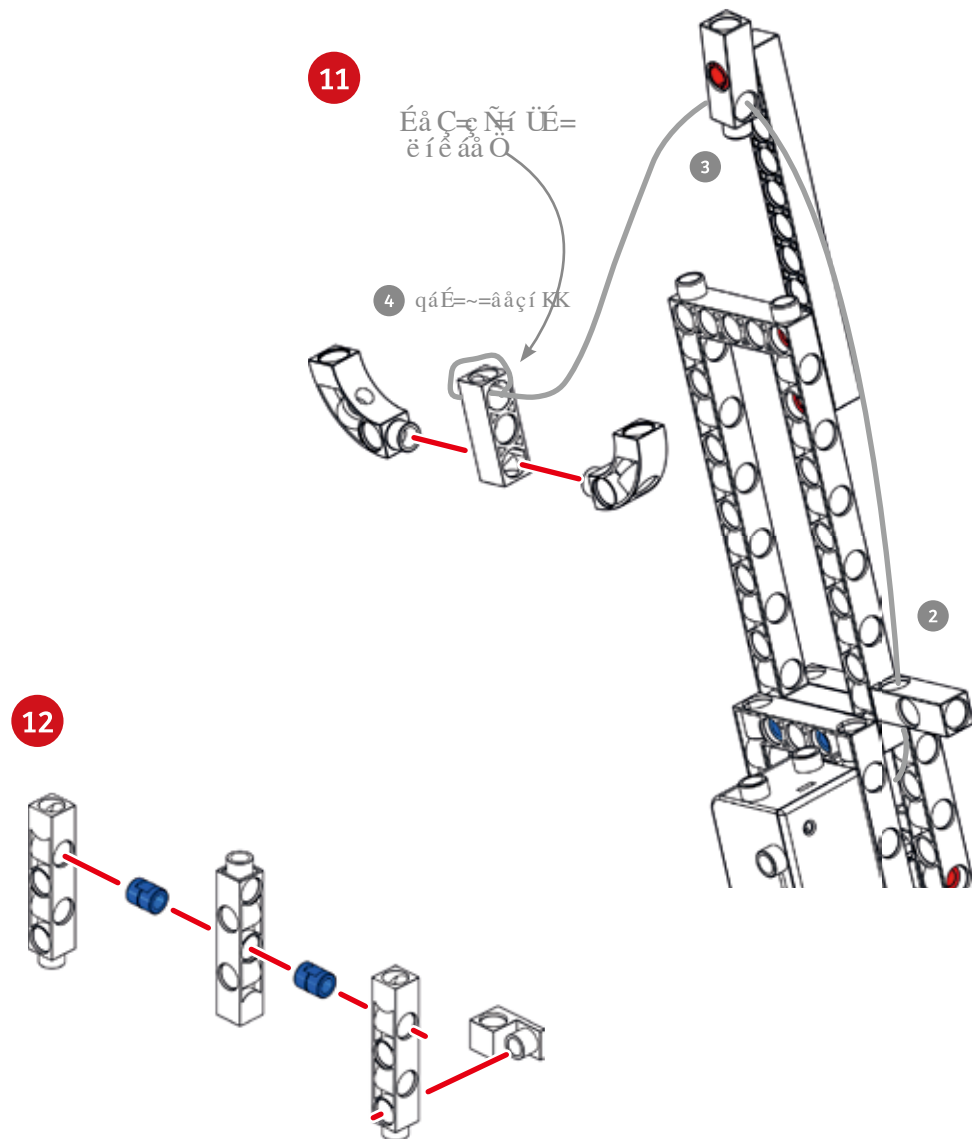
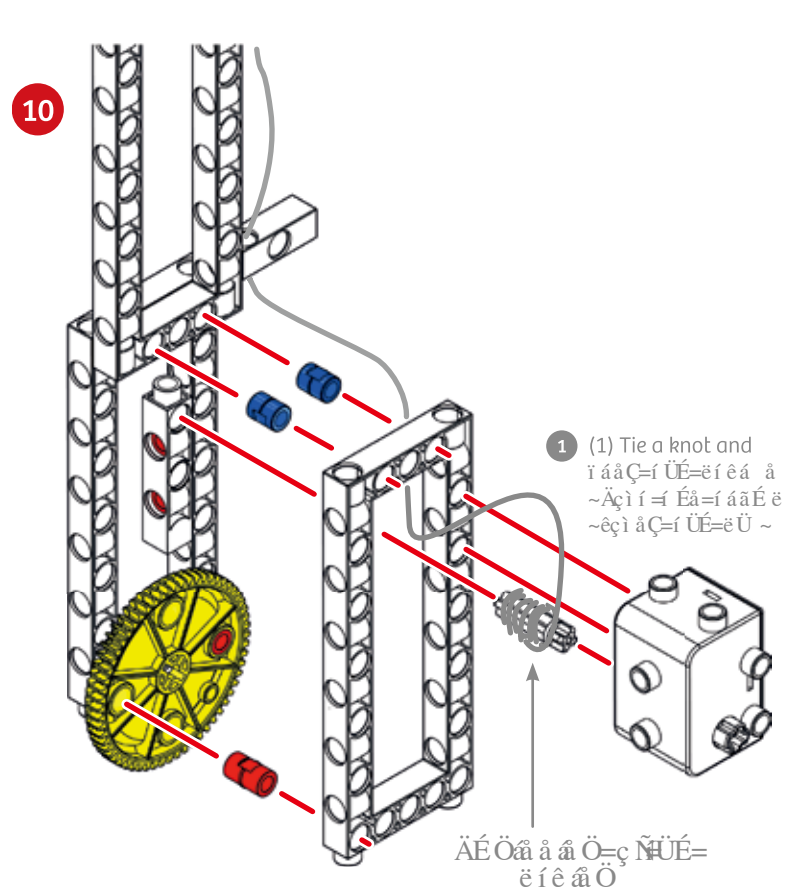
- ★ Tie up the string firmly so it can be rolled up by the axle.

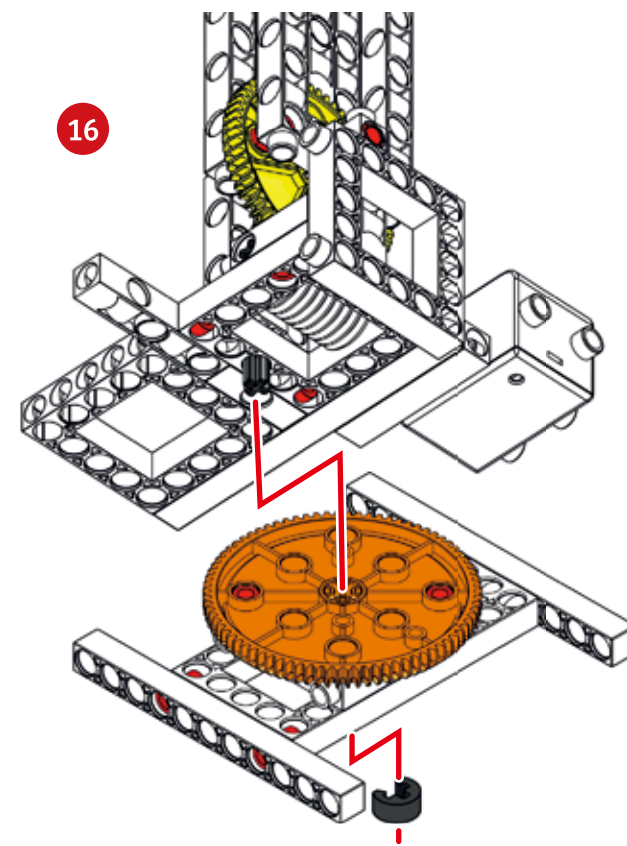
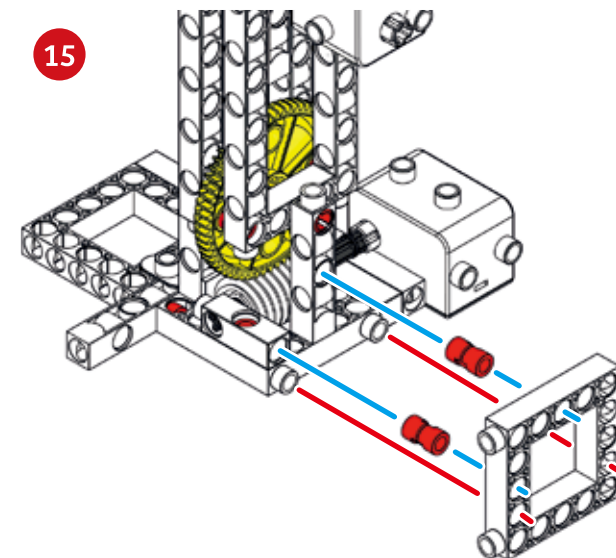
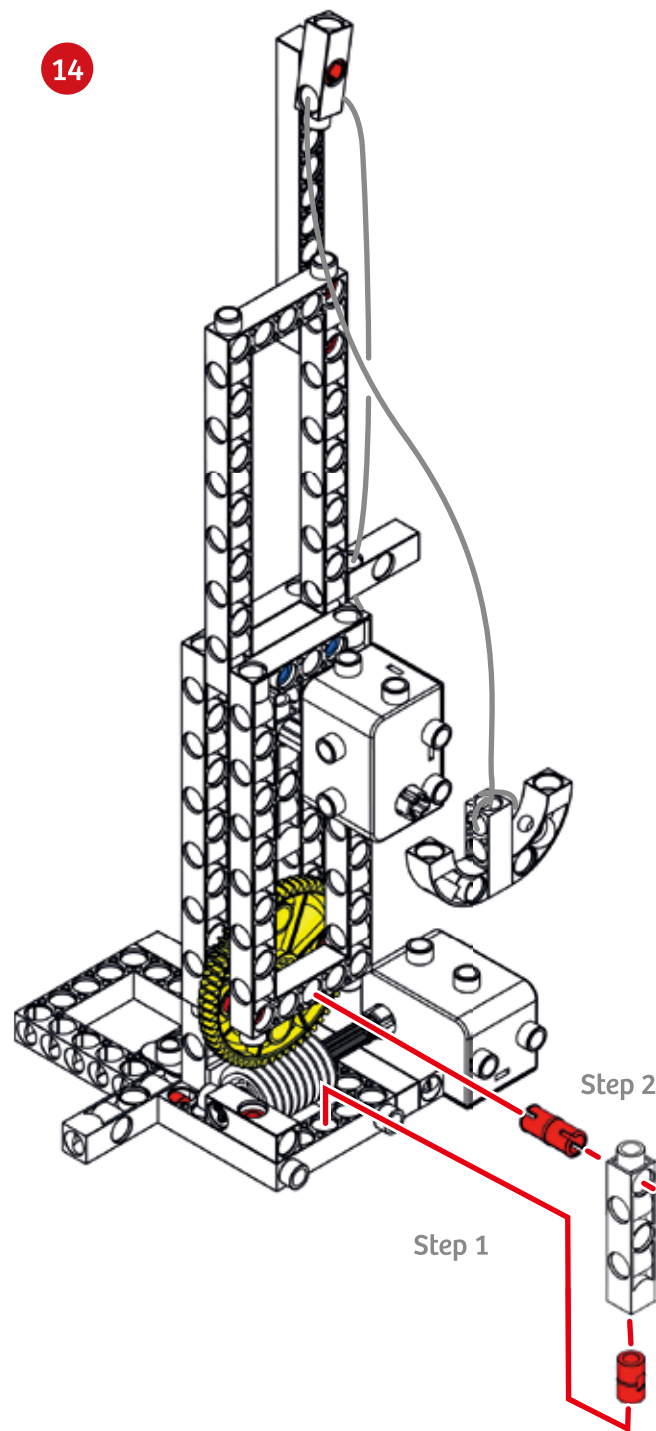
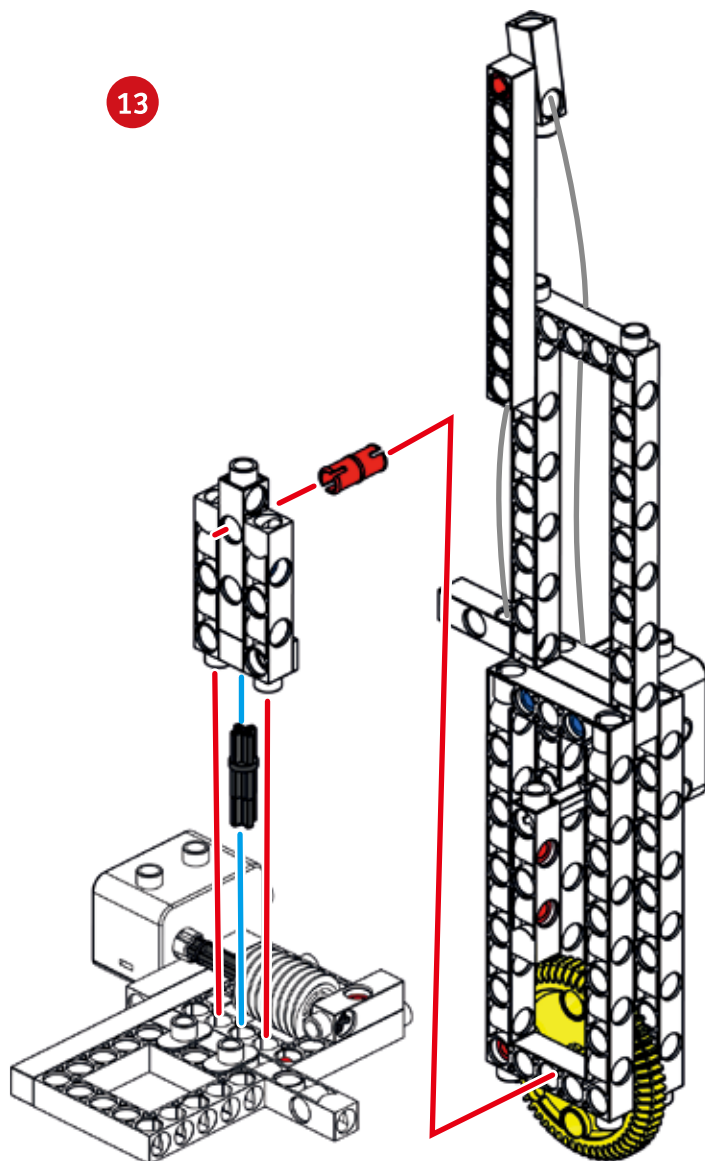


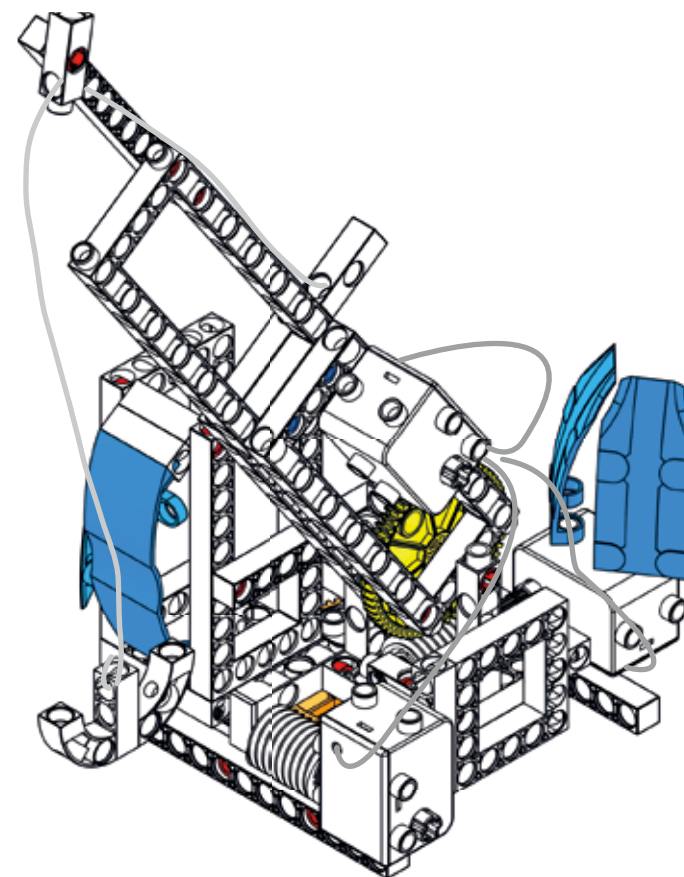
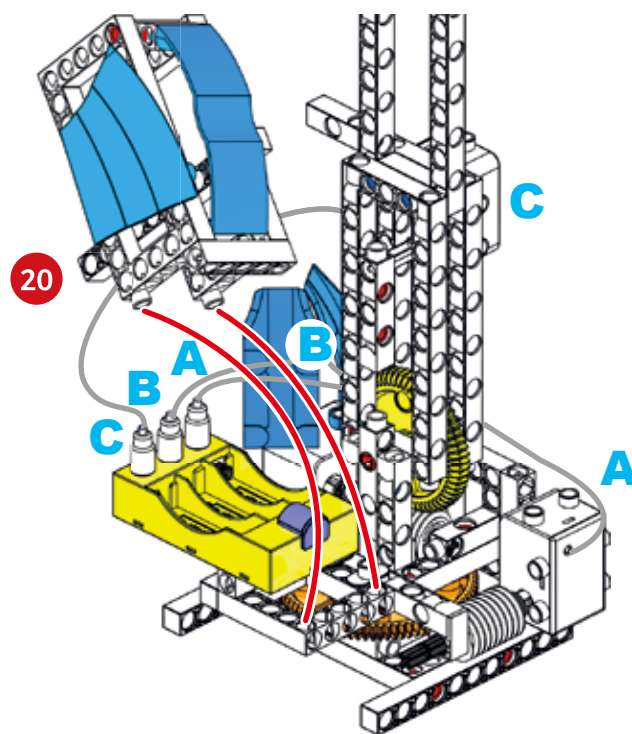
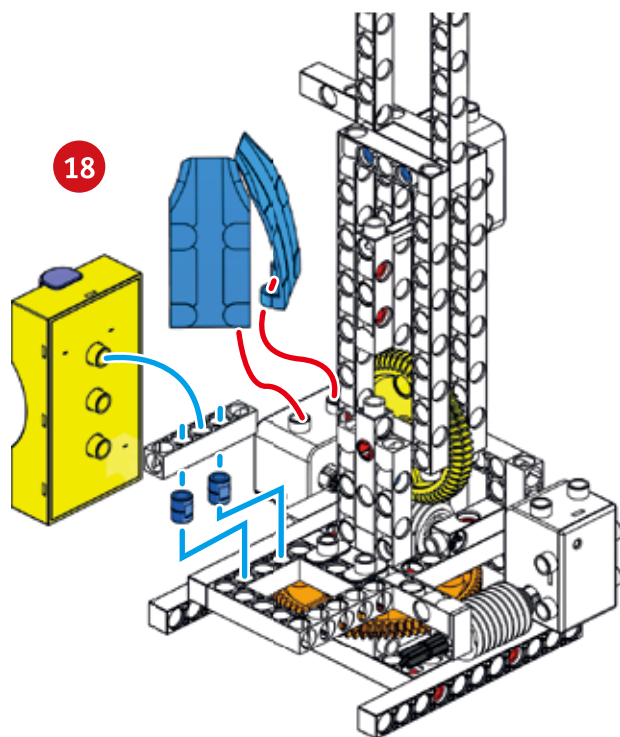
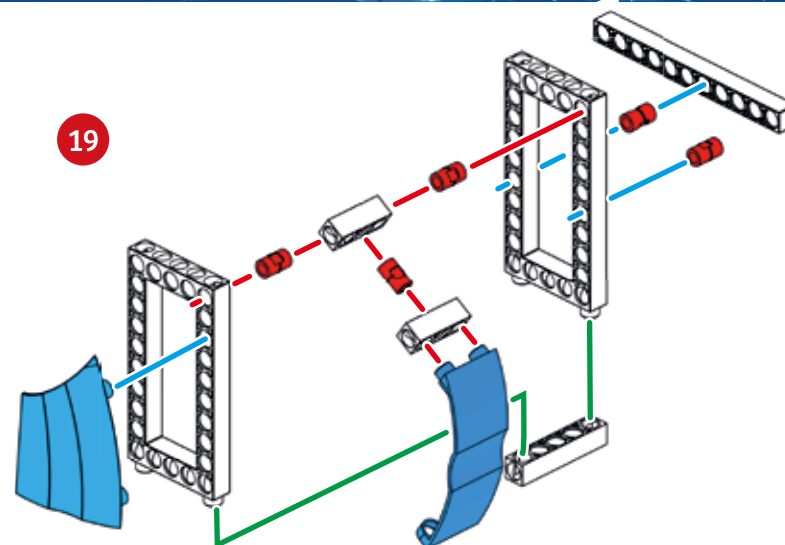
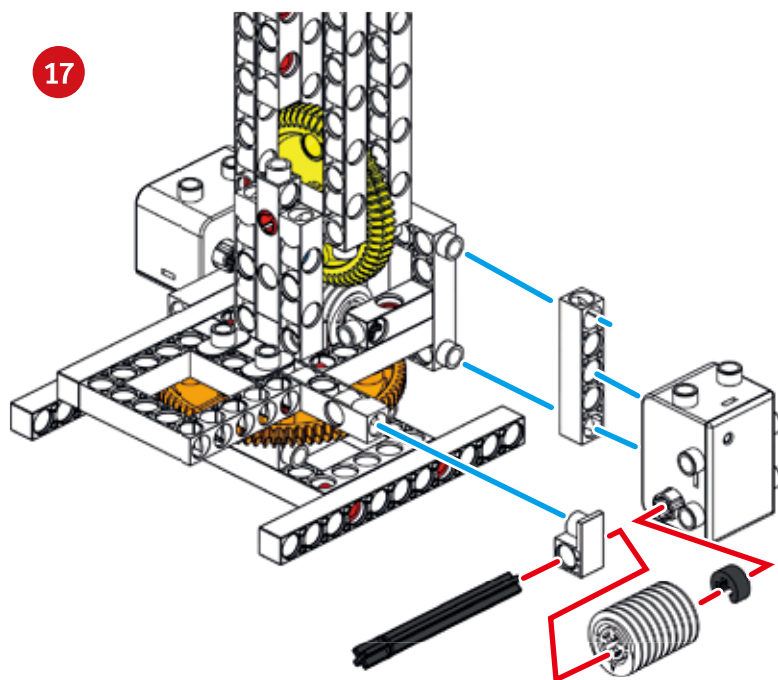
• How to Operate

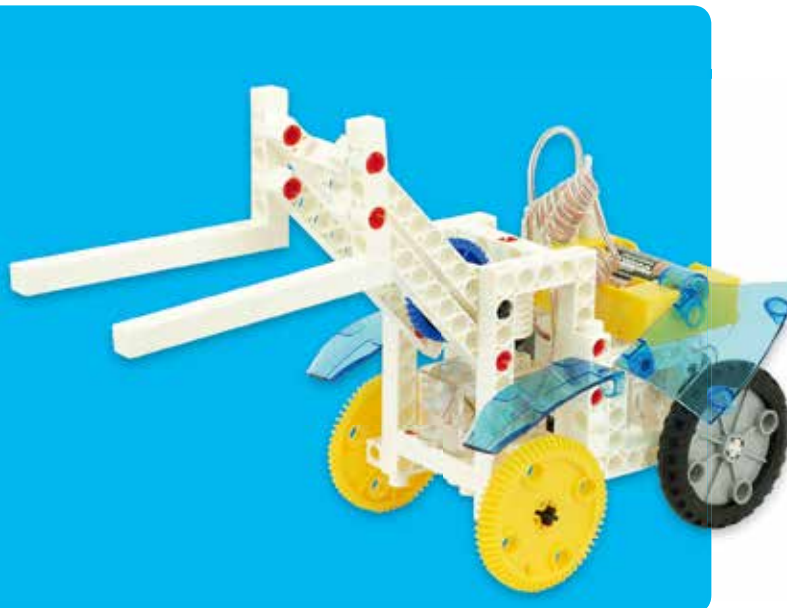
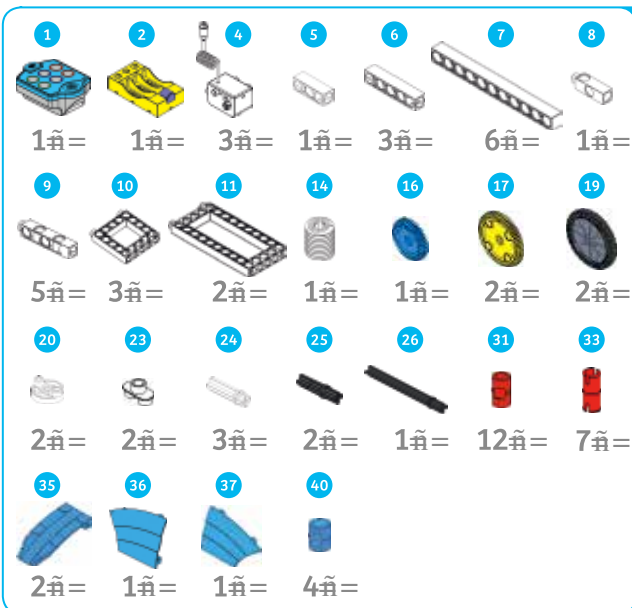
1. Turn on the switch on Remote Controller.
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4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.





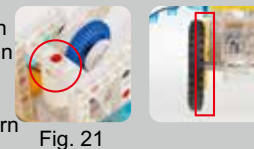






Tips for Assembly

- ★ Please keep the hole of the worm gear in this direction as Fig. 21 so that model can move smoothly.
- ★ The wheels must be spaced 1 mm away from the frame so that the wheels can turn smoothly.

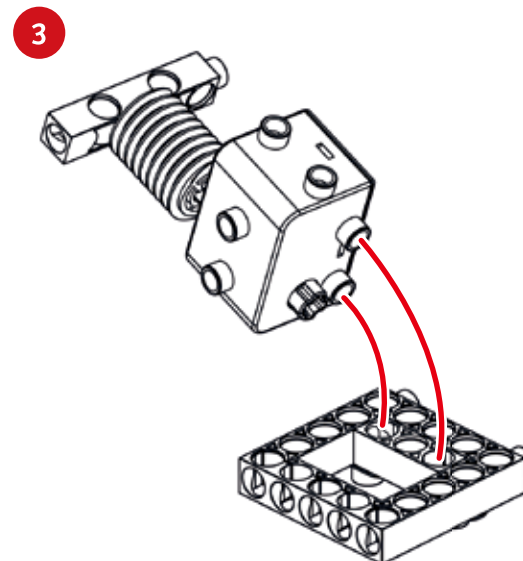
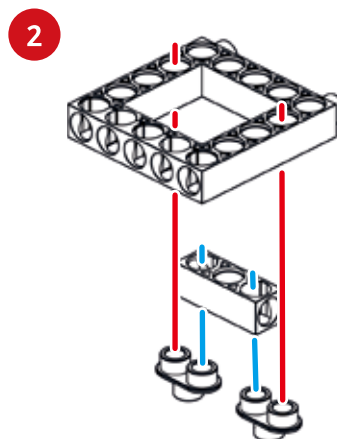
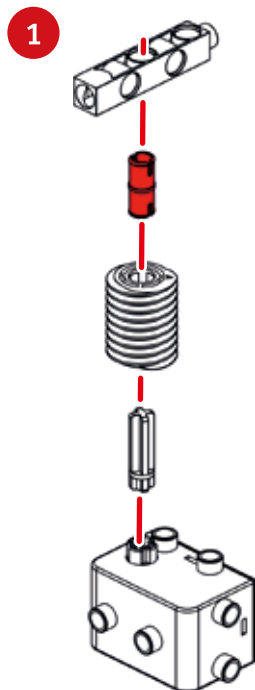
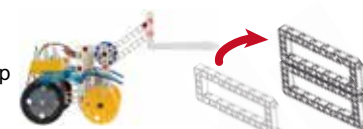


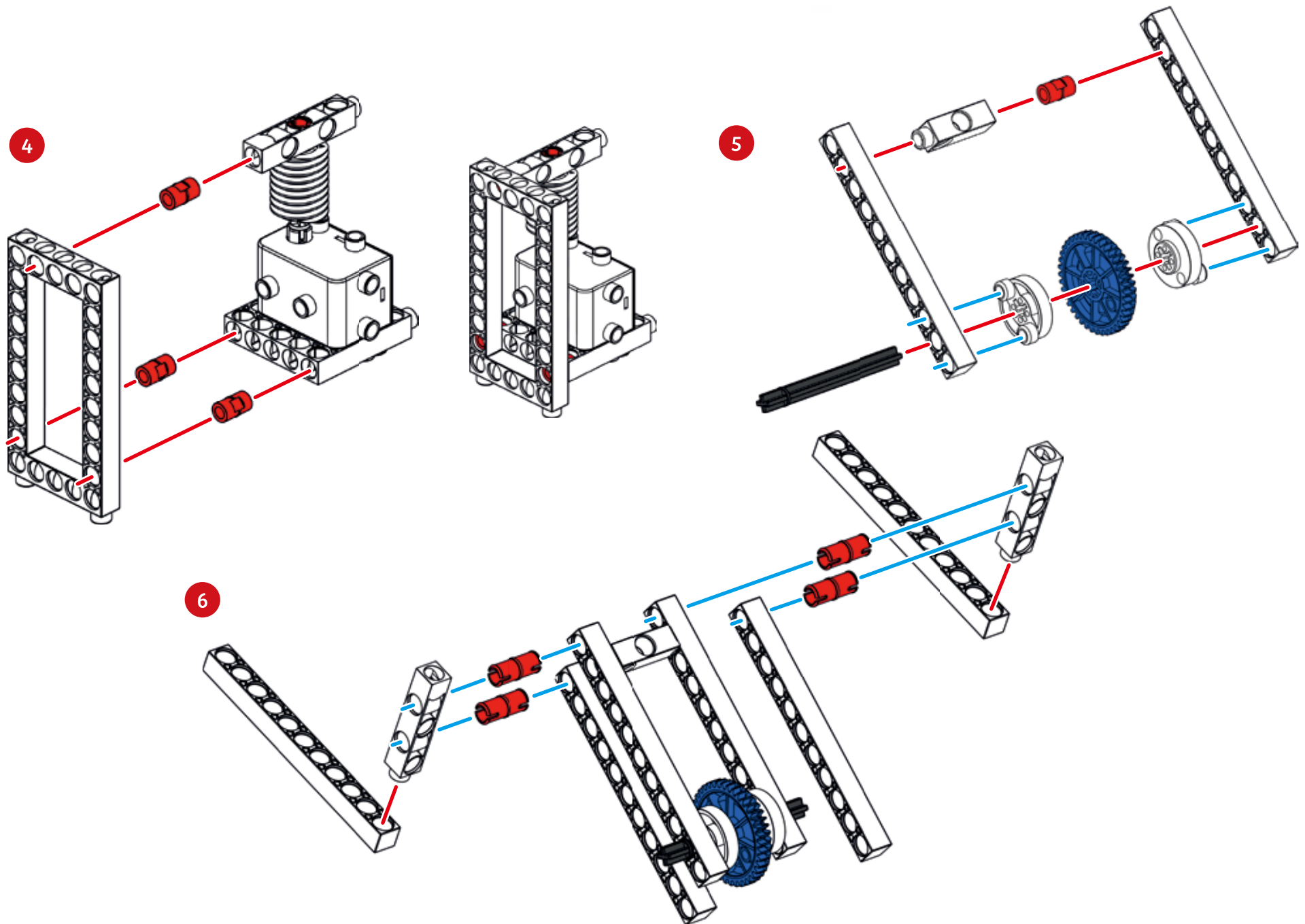
How to Operate

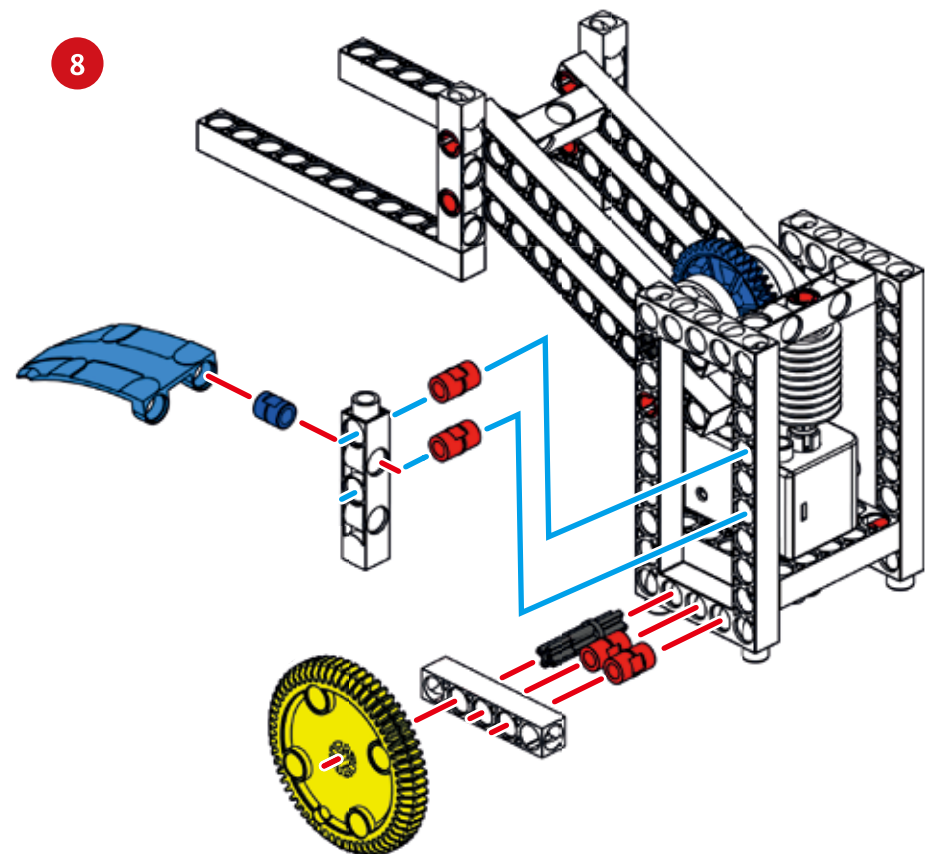
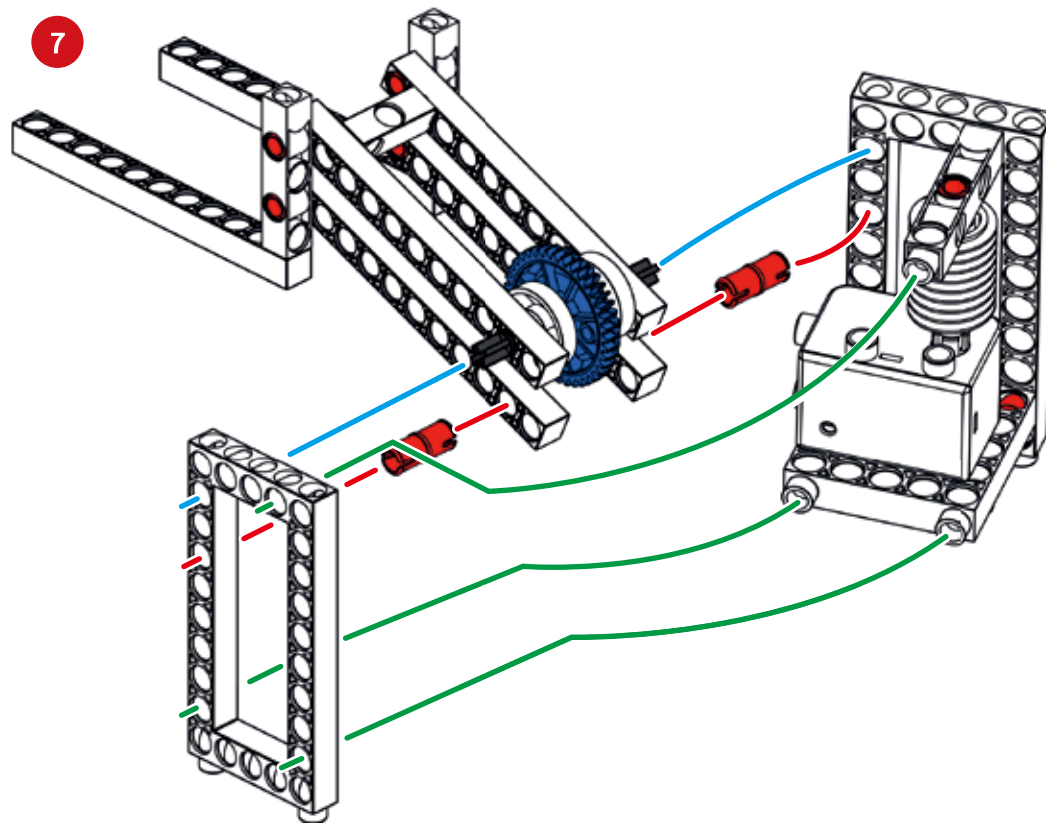
1. Turn on the switch on Remote Controller.
2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.
4. Touch the touch pad 1 and 6 or 3 and 4 at the same time to make the model run around.

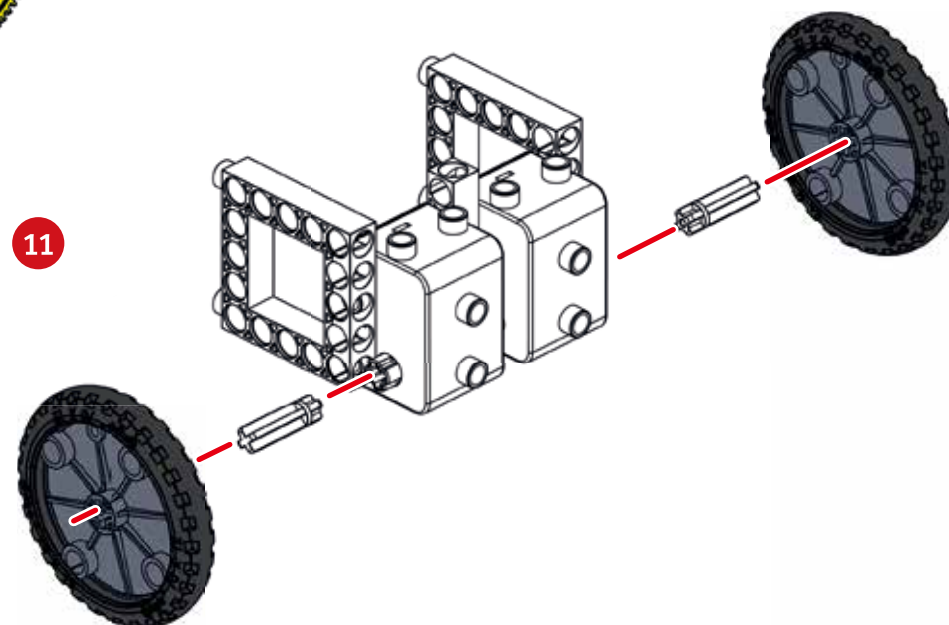
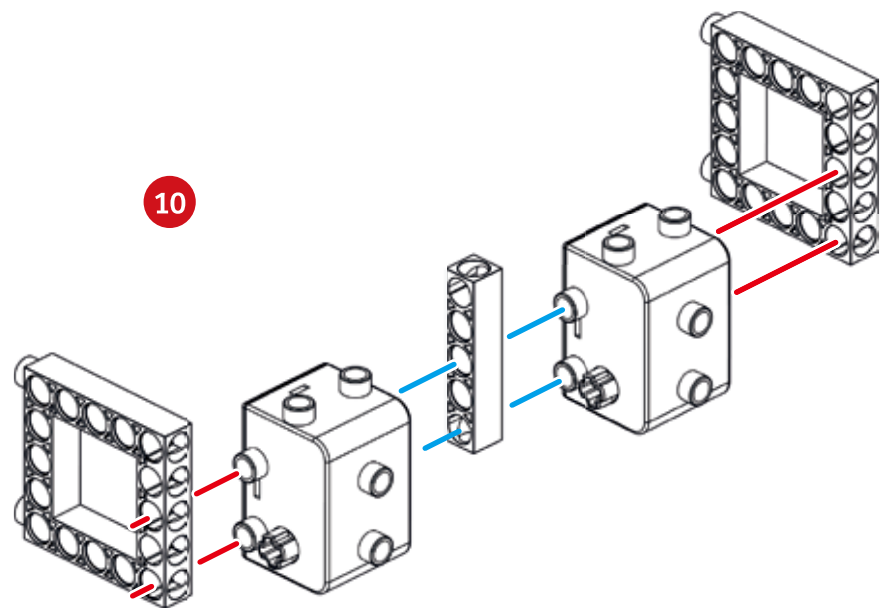
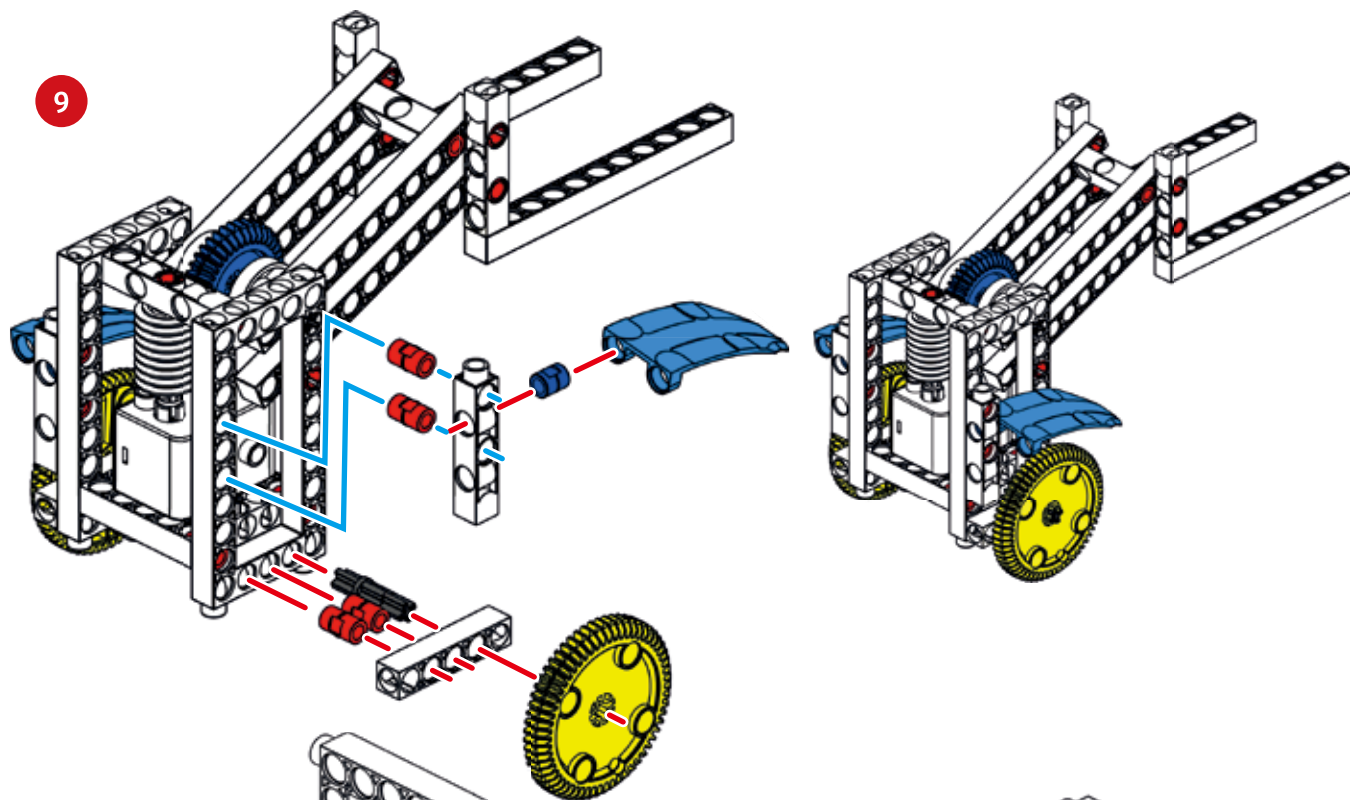
Challenge

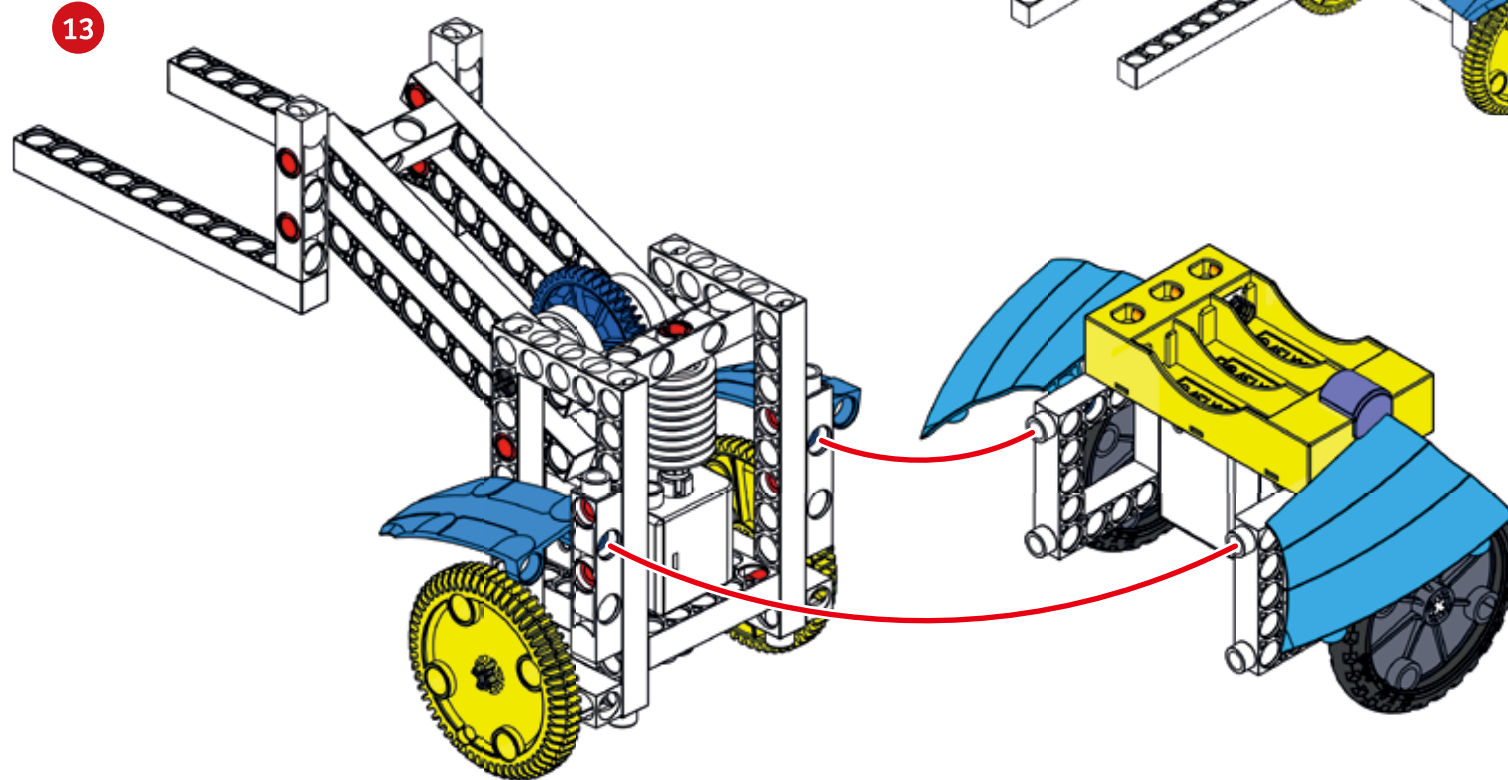
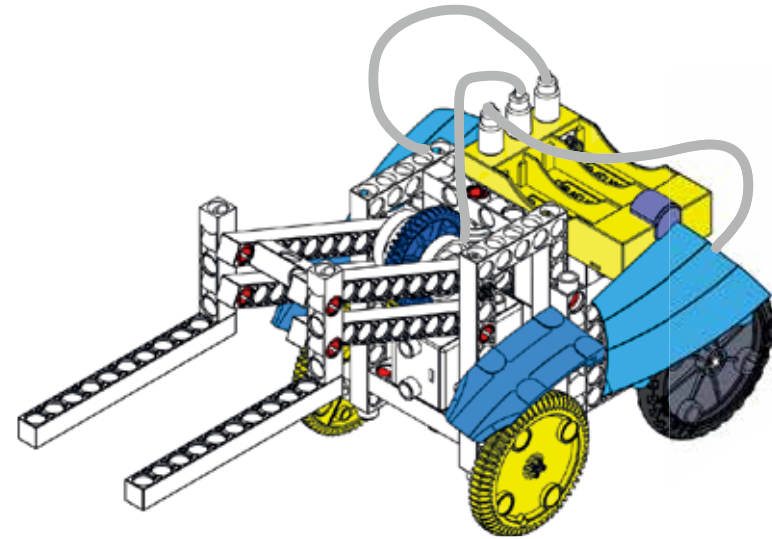
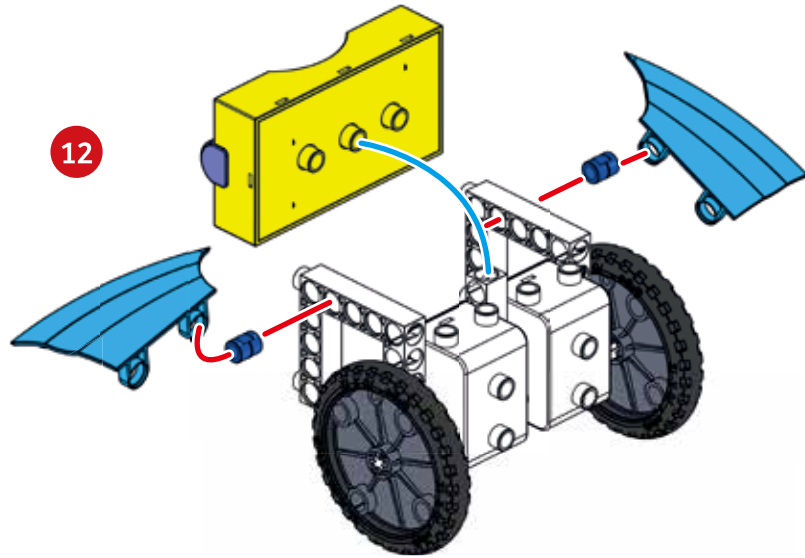
Sharpen your skill by piling up the remaining components in this shape.

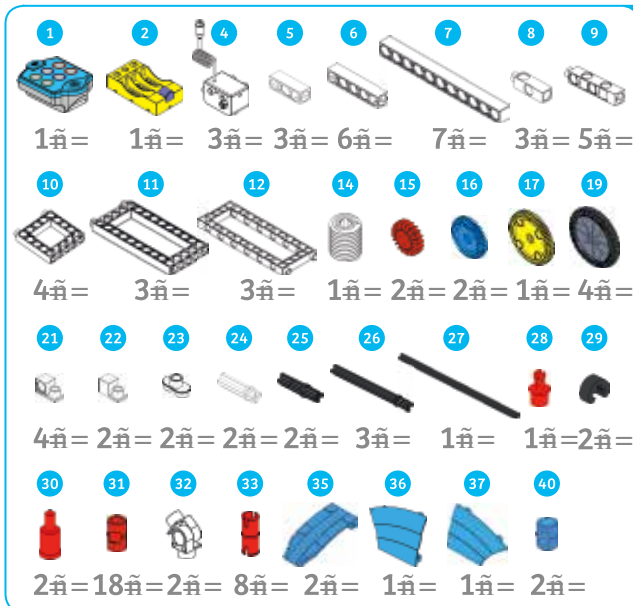












• Tips for Assembly

- ★ Please keep the hole of the worm gear in this direction as Fig. 22 so that model can move smoothly.
- ★ Please keep both Cam Connectors in symmetry so the model can move smoothly.



Fig. 22

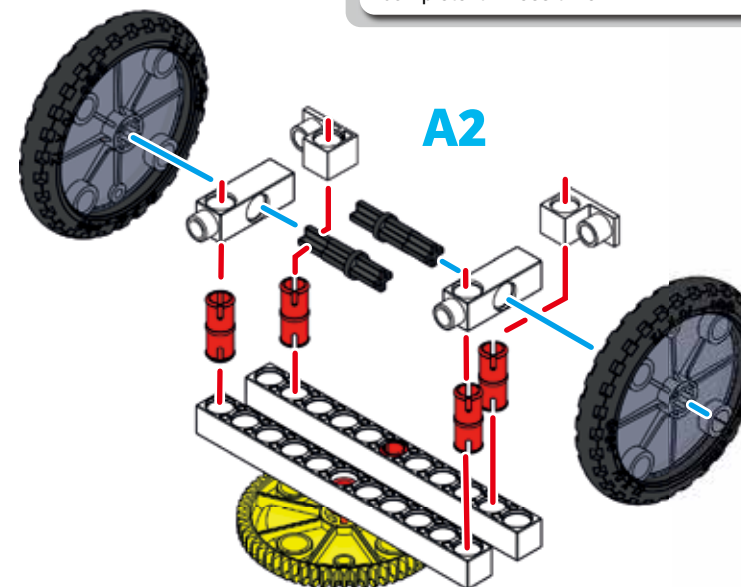
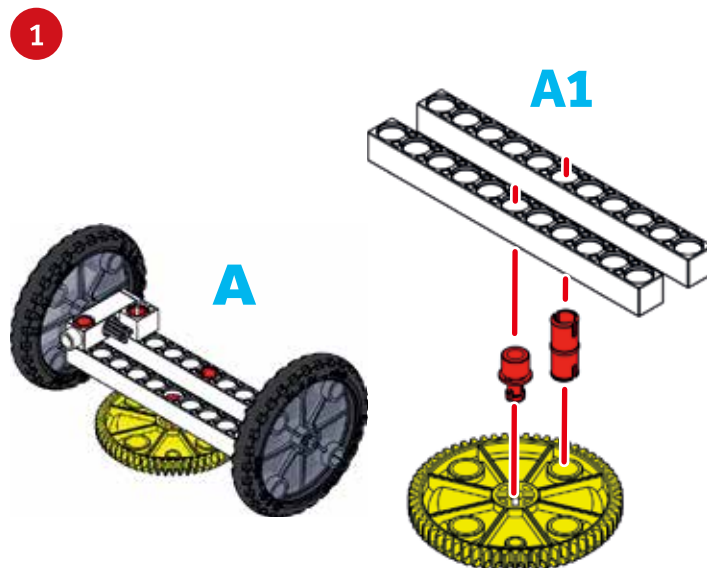
• How to Operate

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2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.
4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.



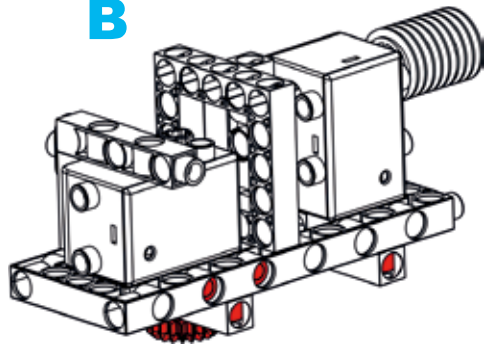
• Challenge

Place a A4 paper on the ground and try to park the car on it. Compete with your friends to see who will complete it in less time.

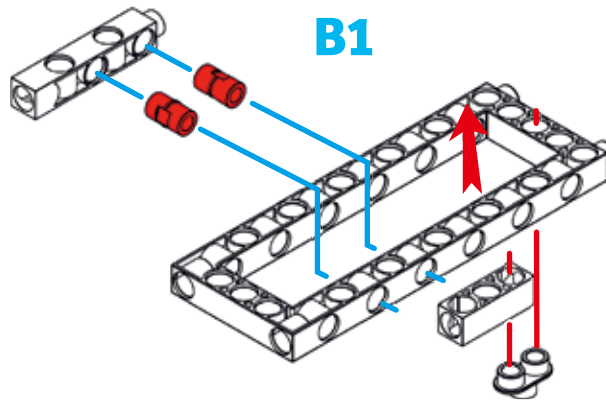


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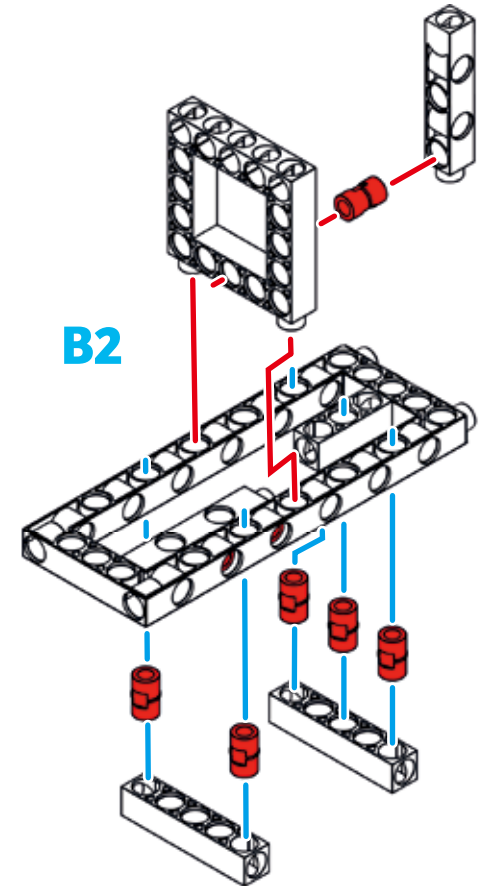
B



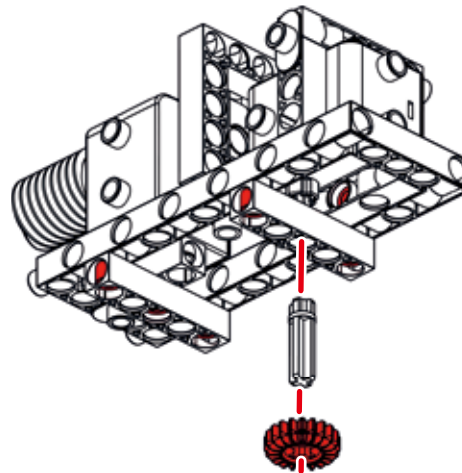
B1



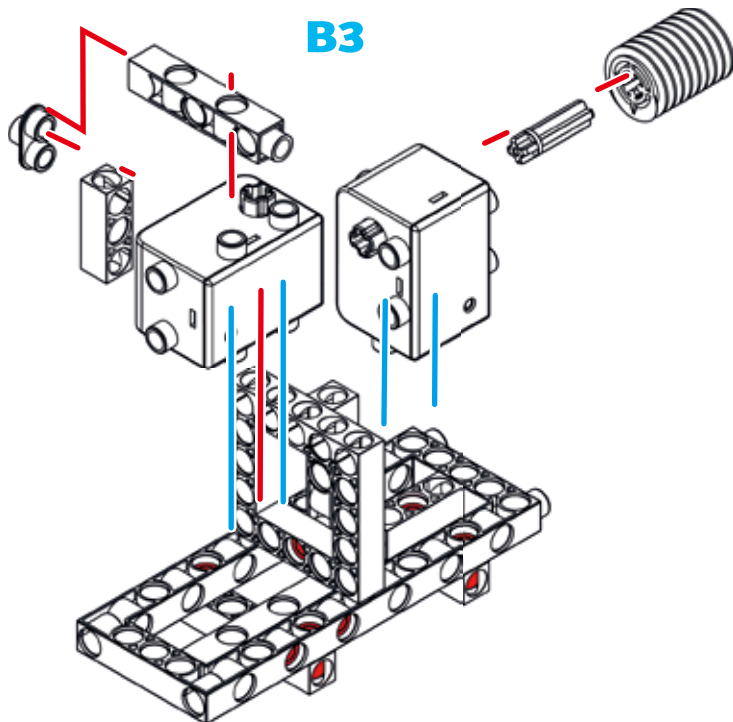
B2

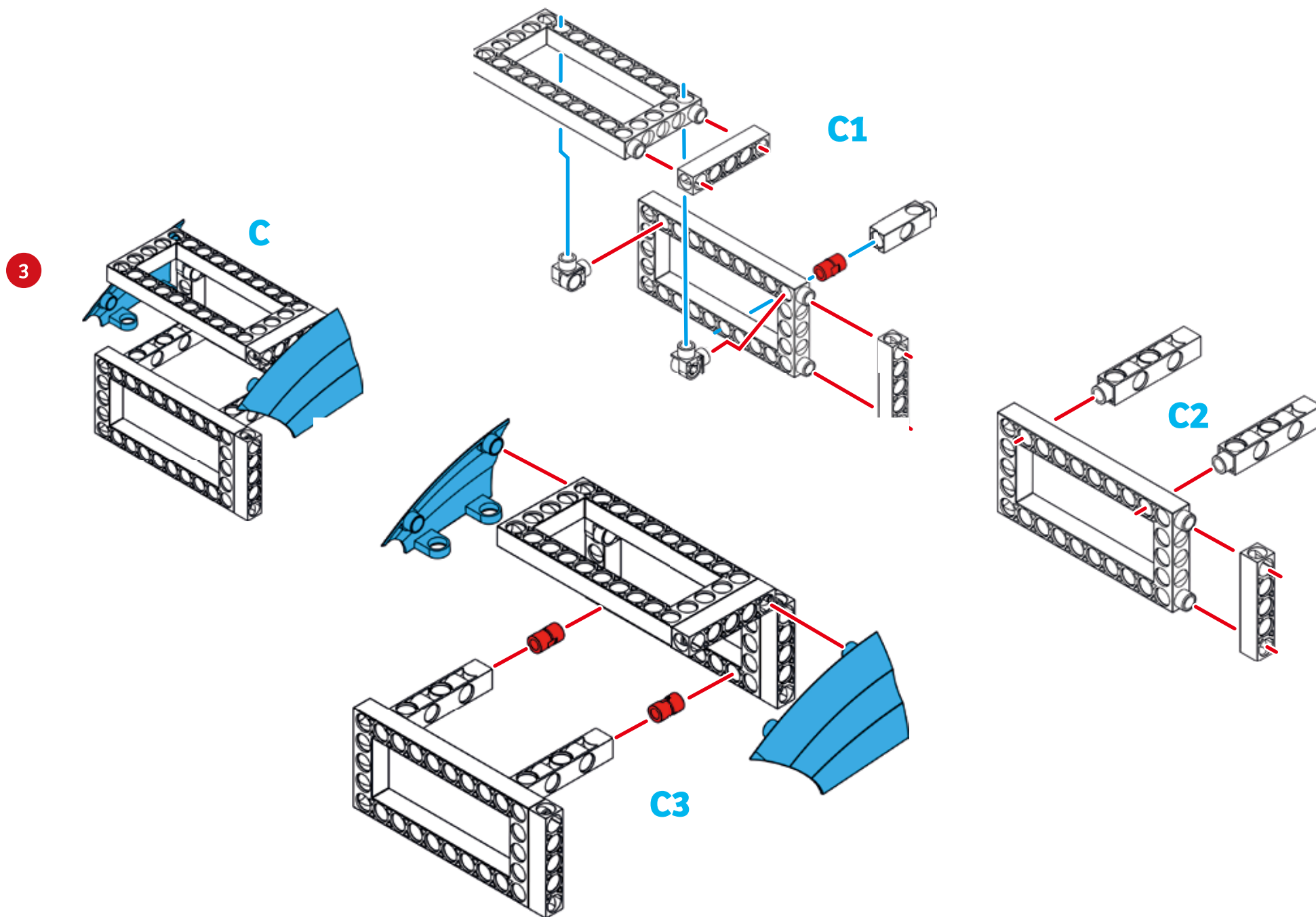


B4



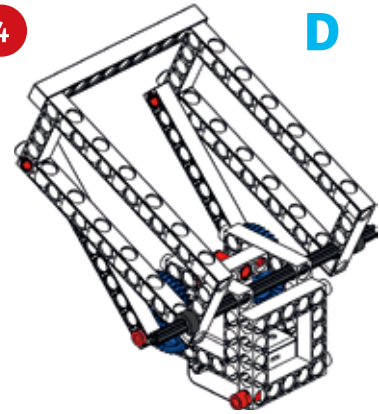
B3



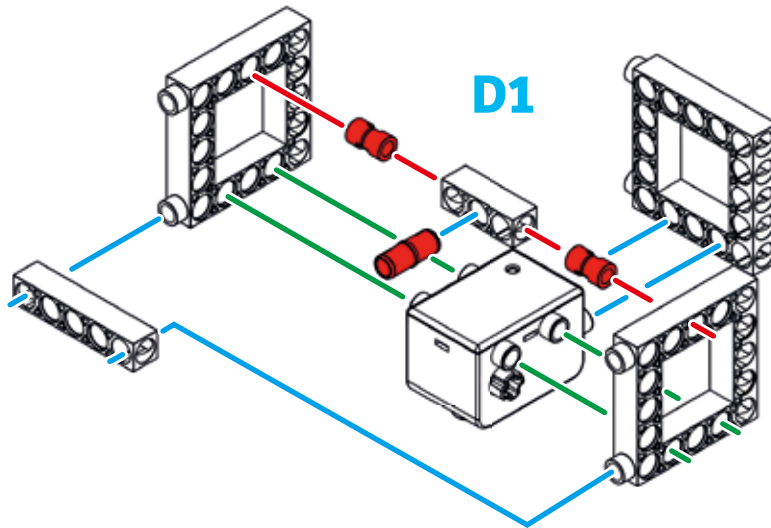


4

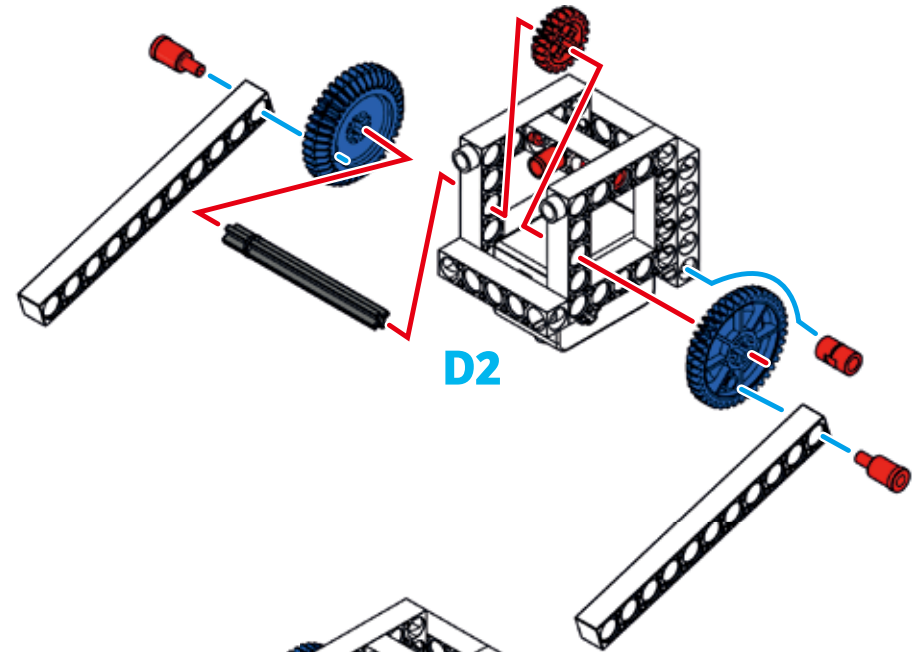
D



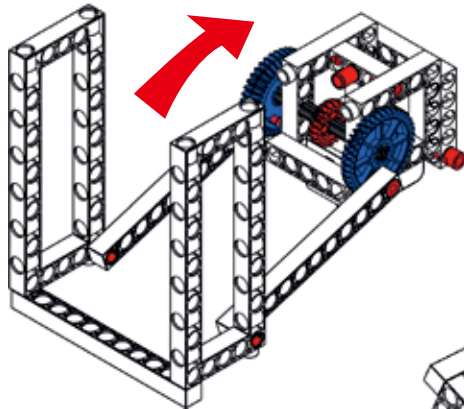
D1



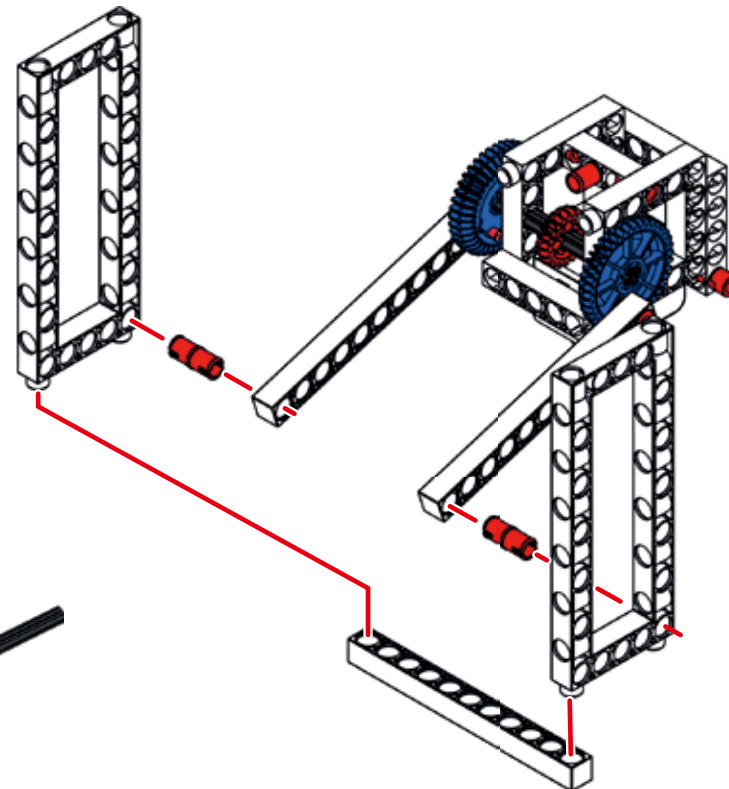
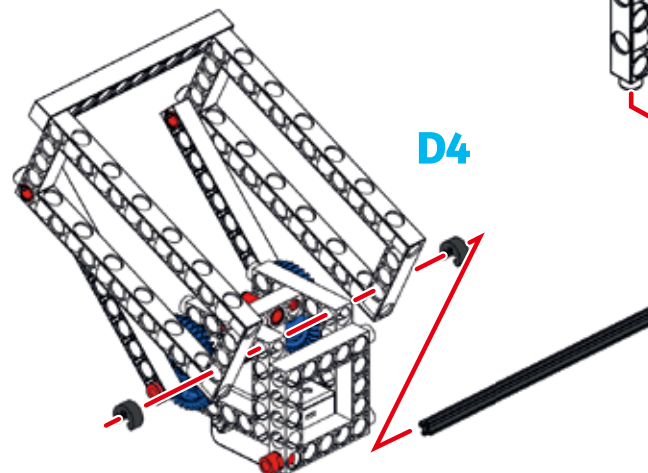
D2

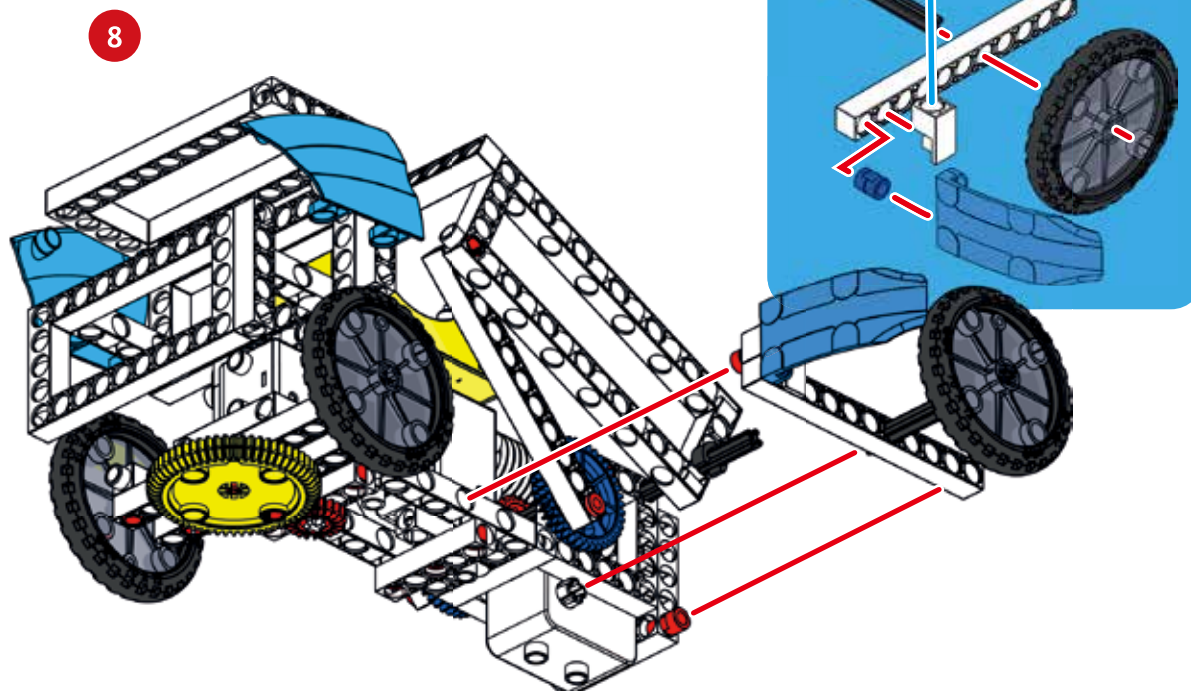
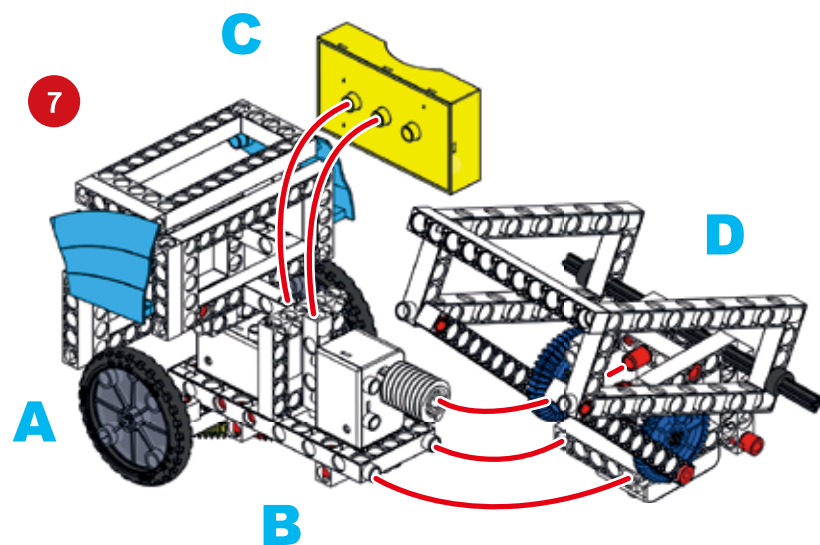
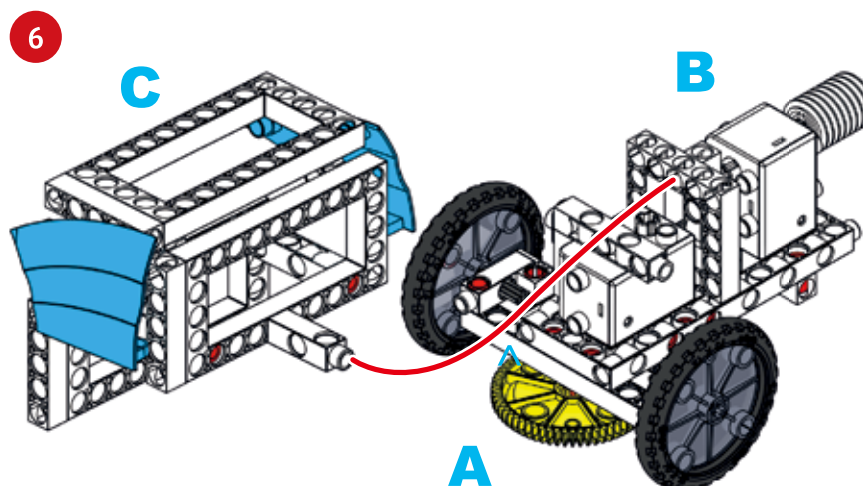
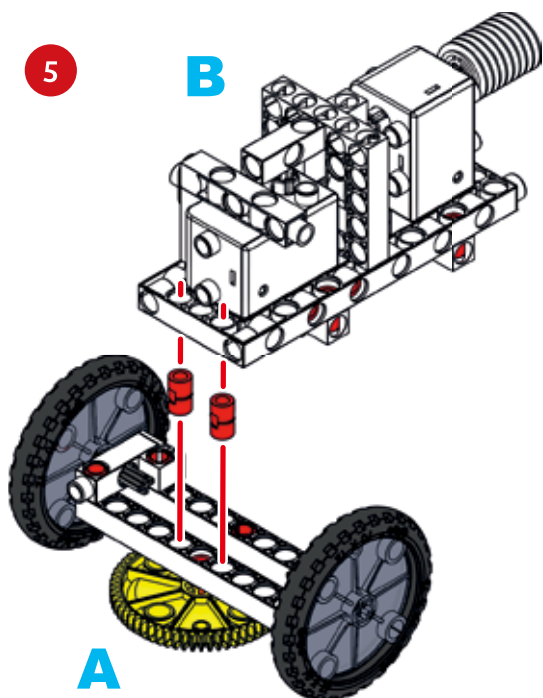


D3

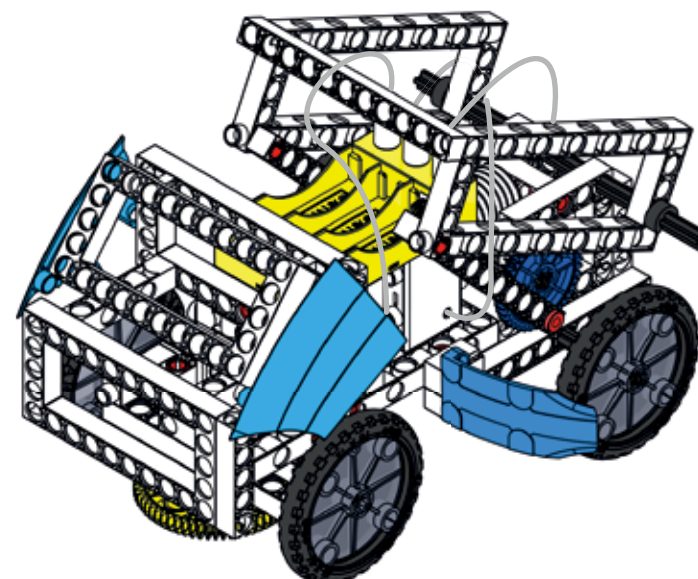
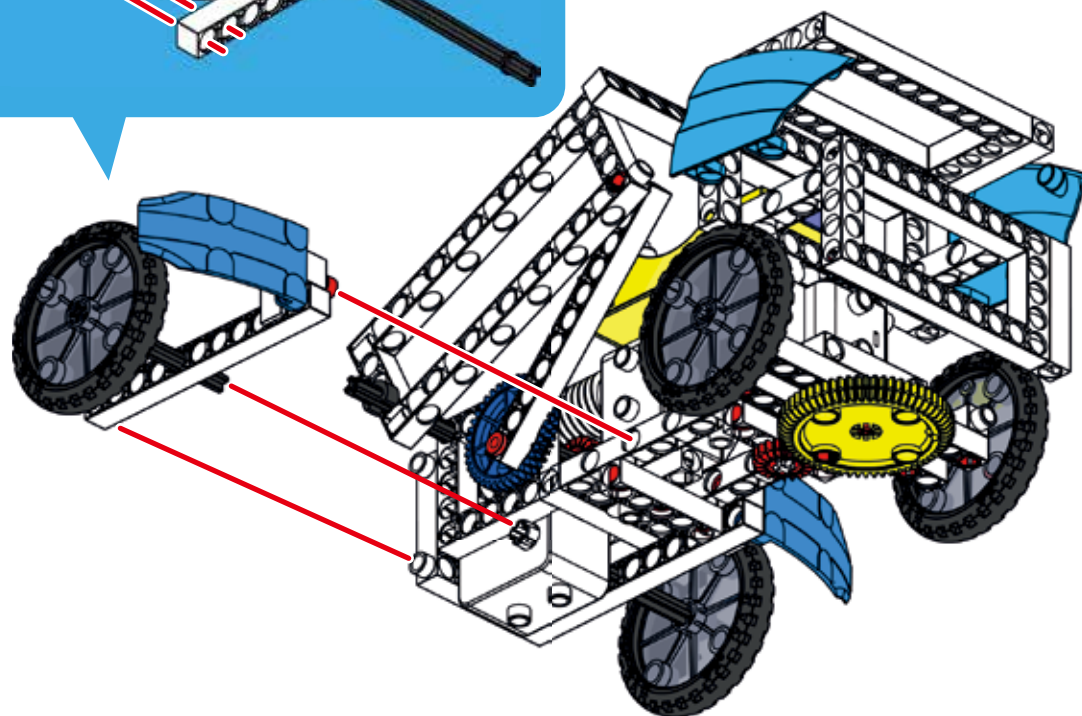
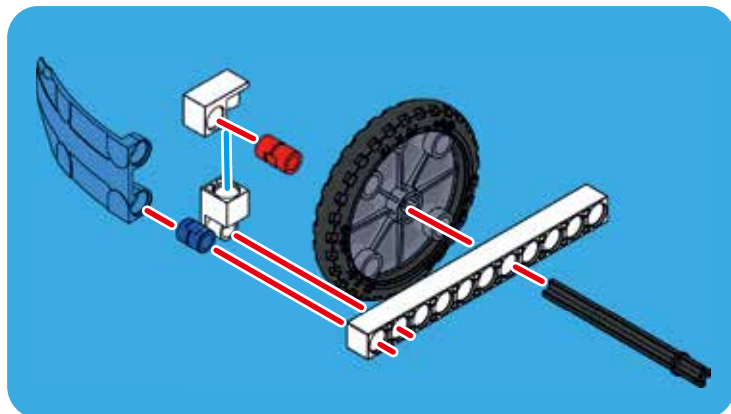


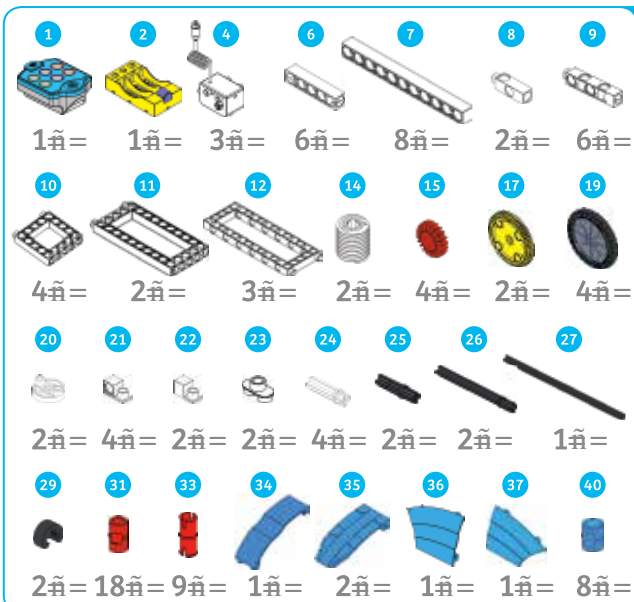
D4





9





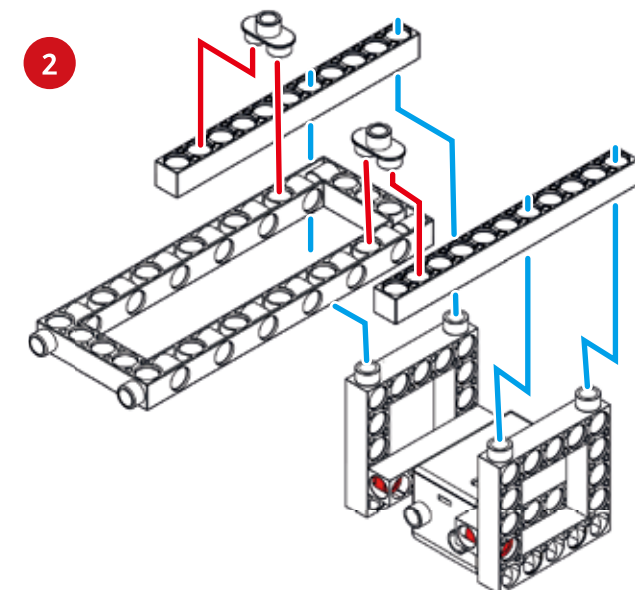
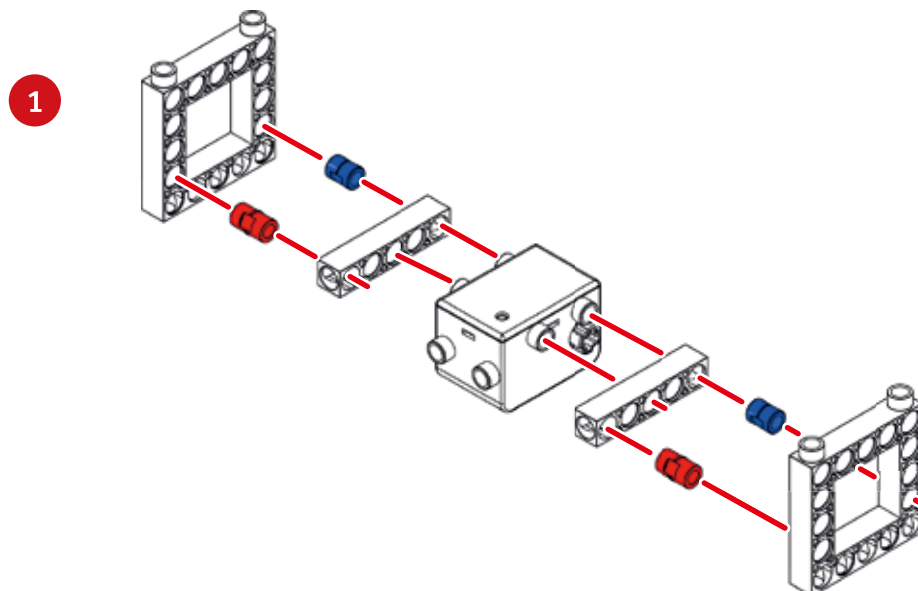
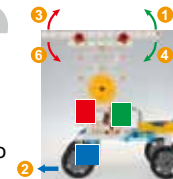
• Tips for Assembly

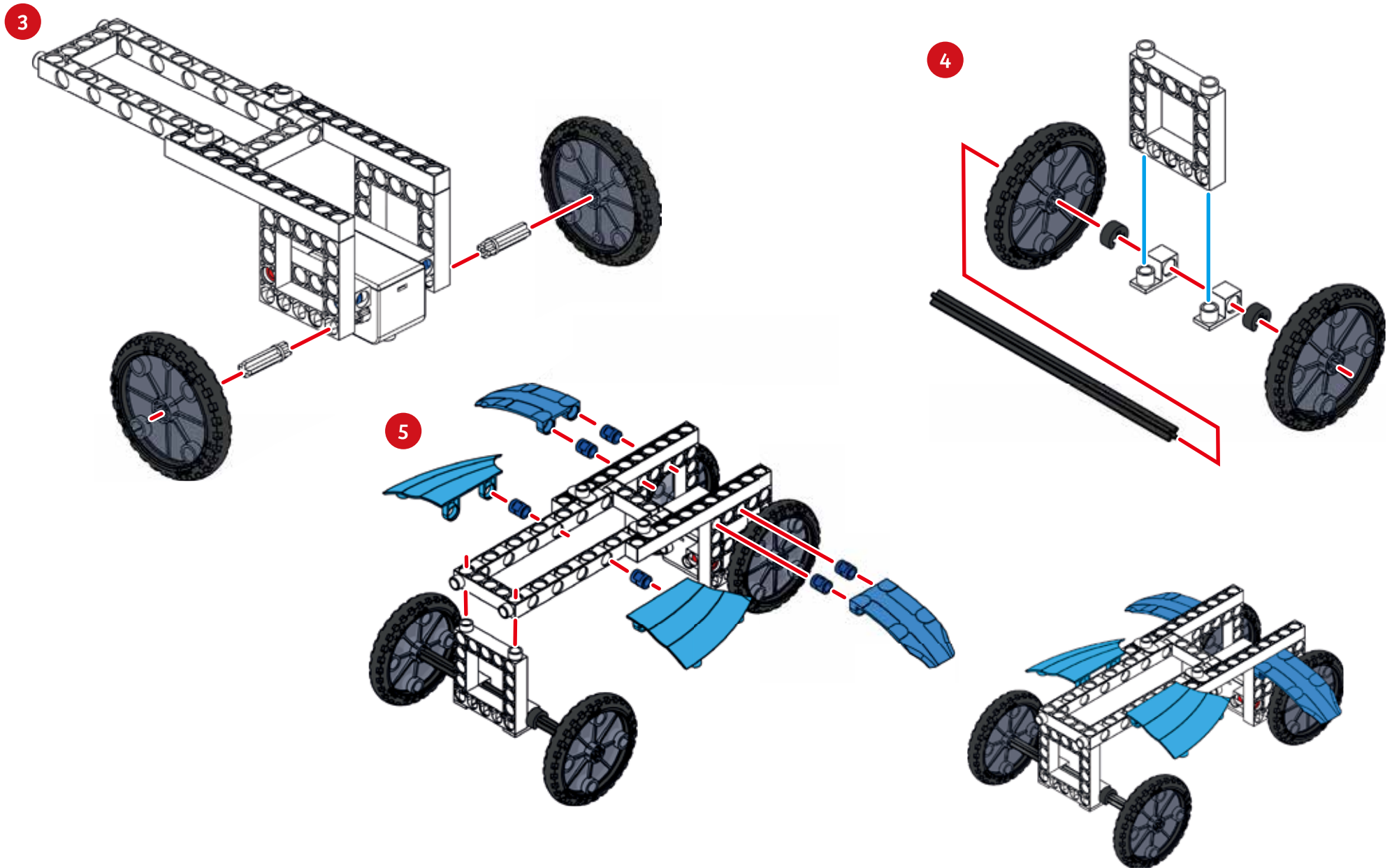
- ★ Note the corresponding connection points while assembling the rods so the model can move smoothly.



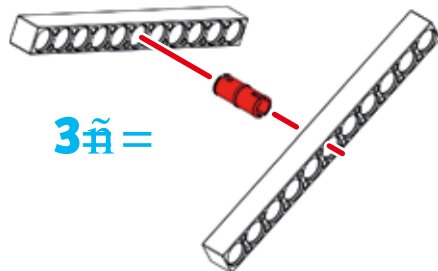
• How to Operate

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3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.
4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.

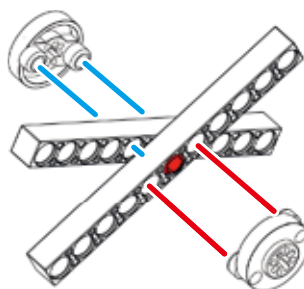




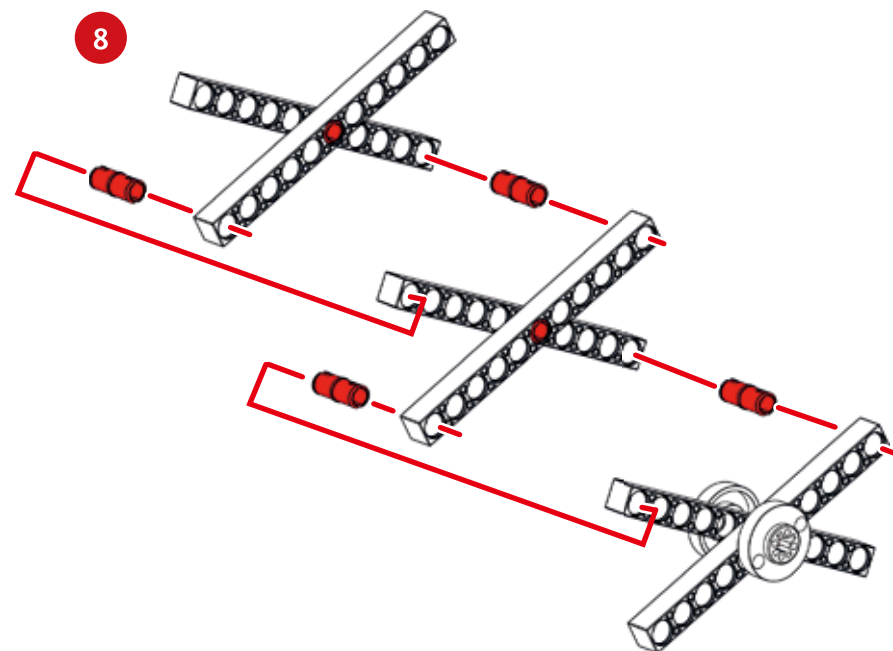
6

 $3\text{mm} =$ 

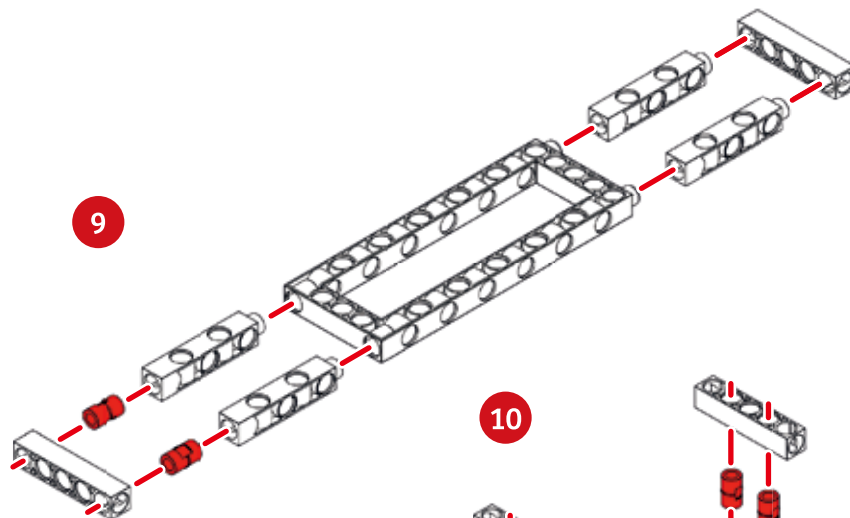
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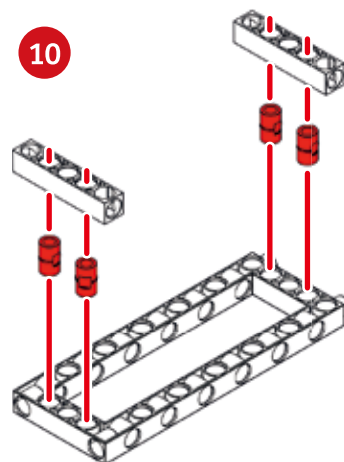
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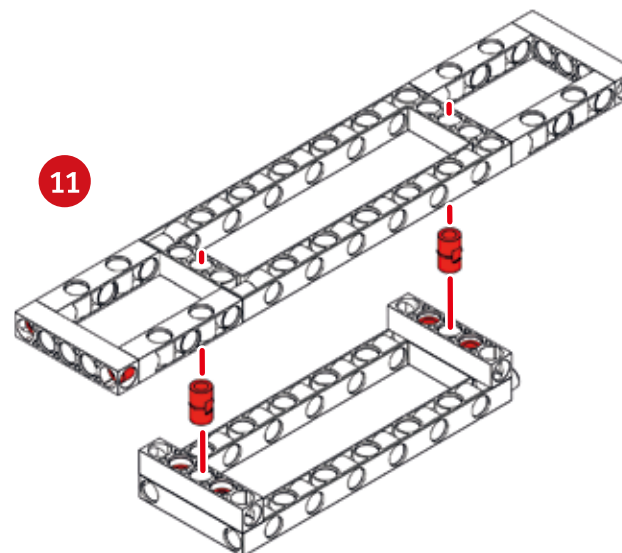
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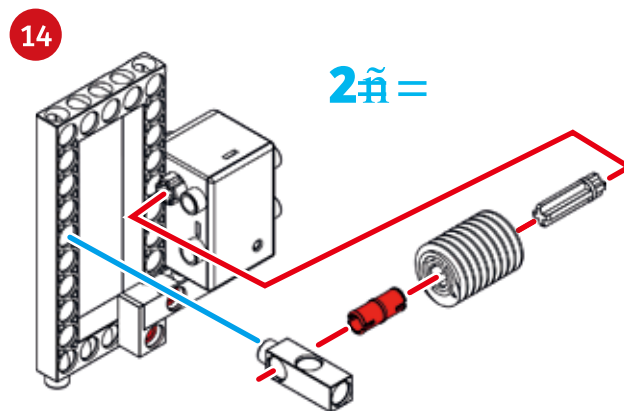
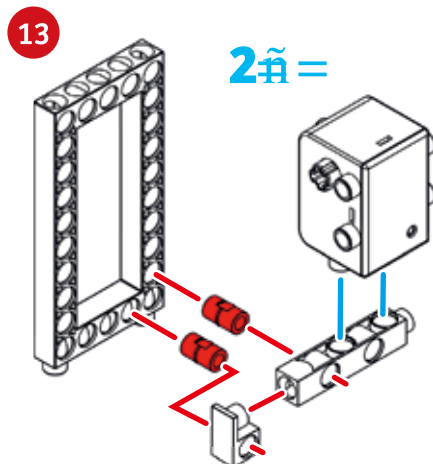
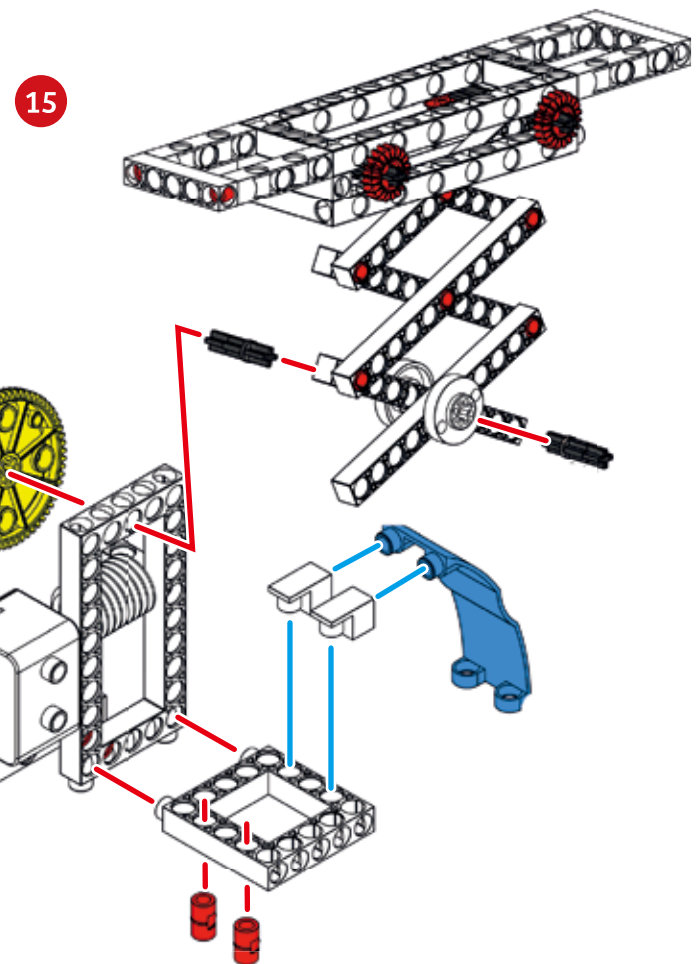
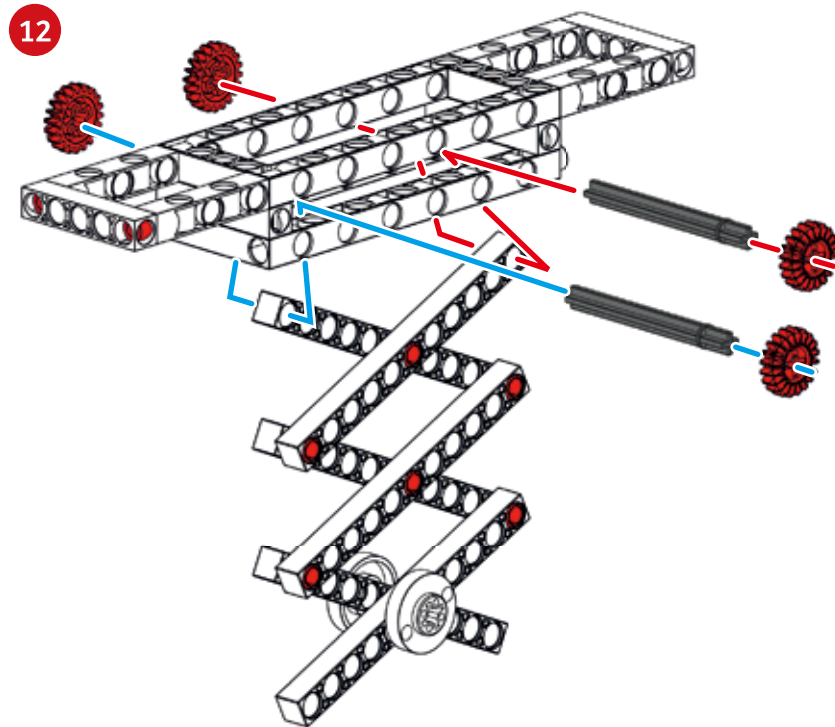


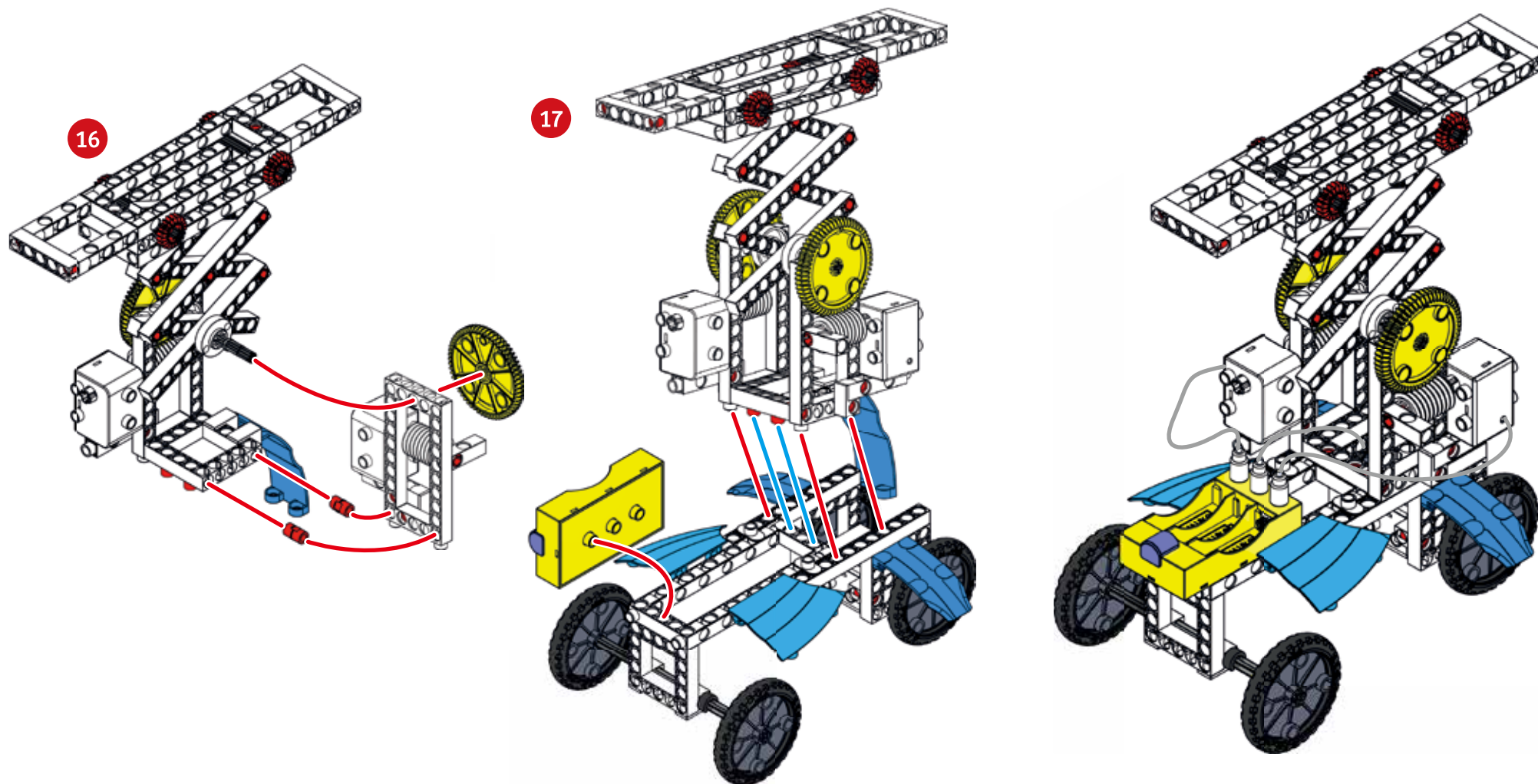
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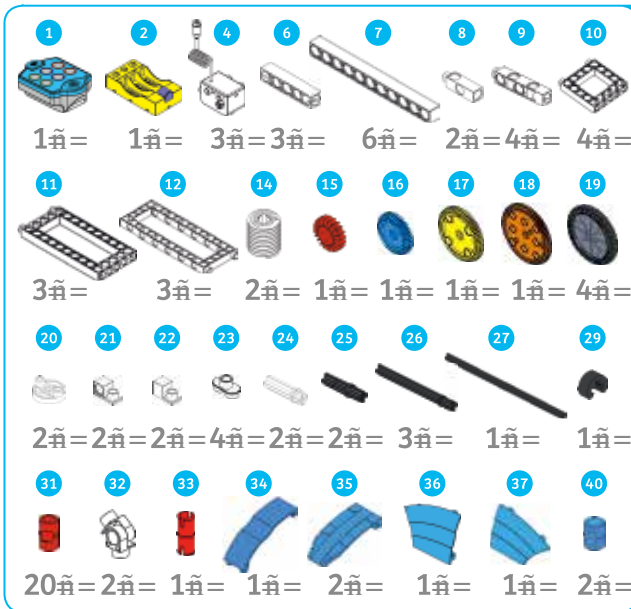


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• Tips for Assembly

- ★ The wheels must be spaced 1 mm away from the frame so that the wheels can turn smoothly.

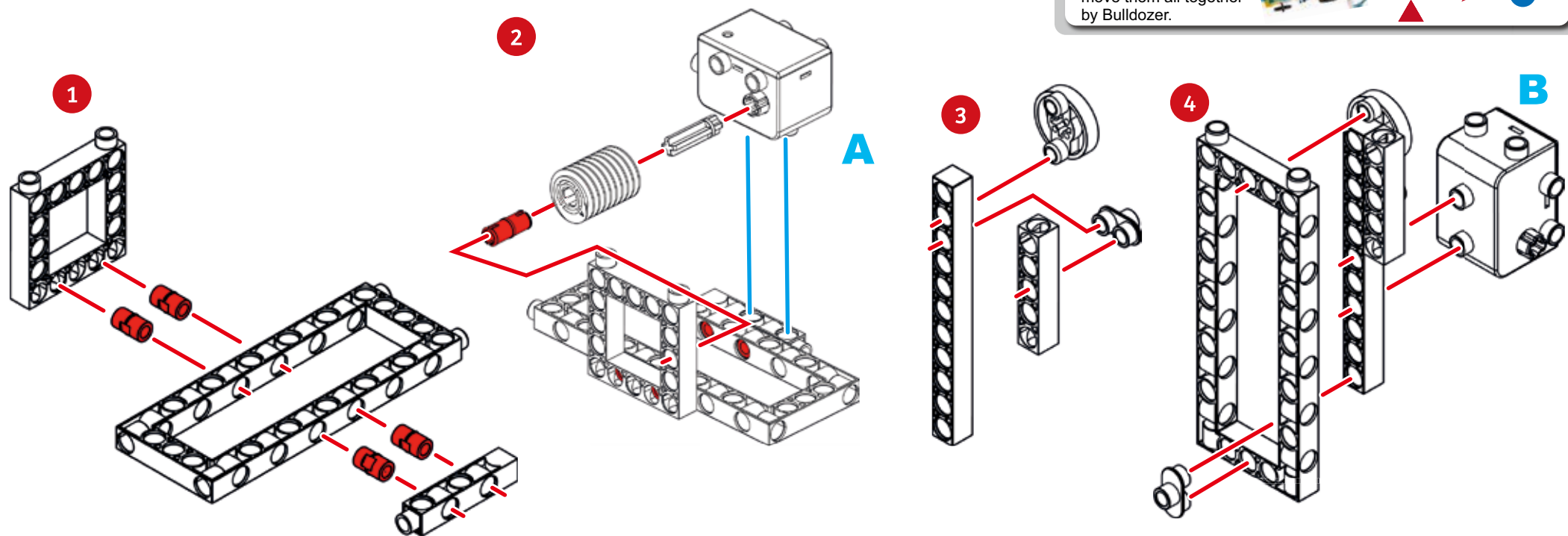


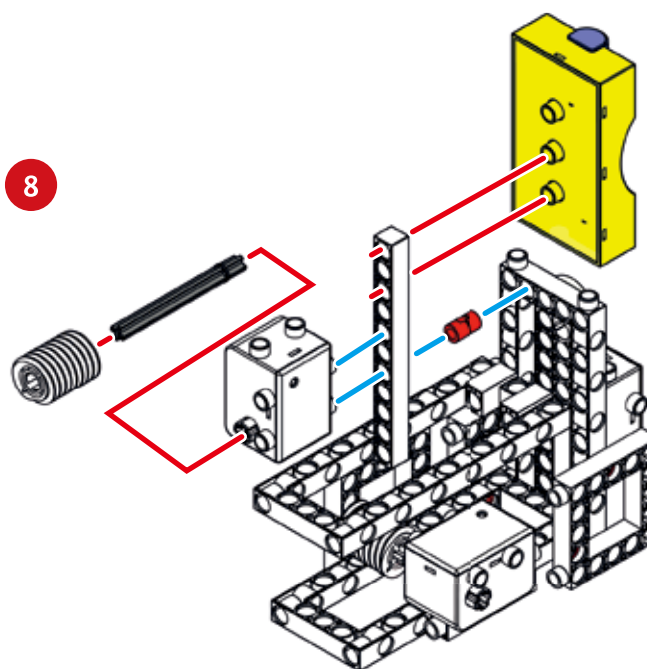
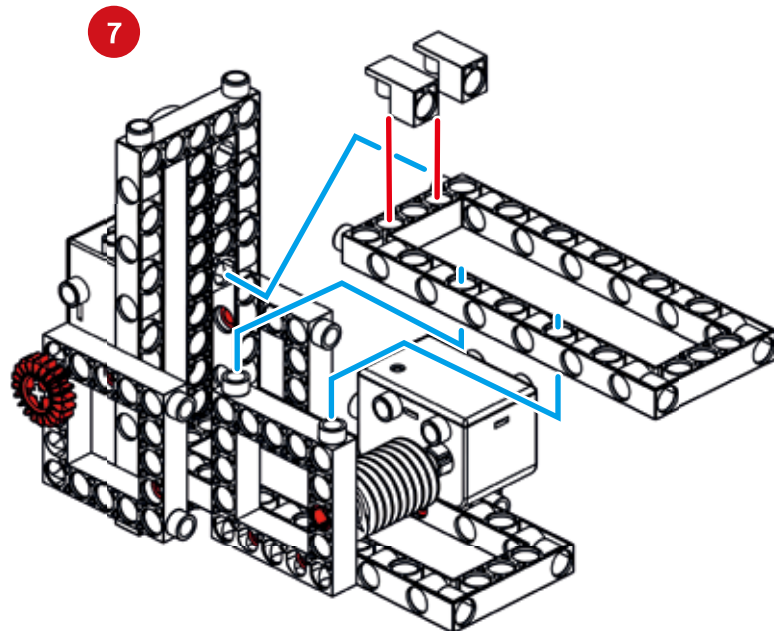
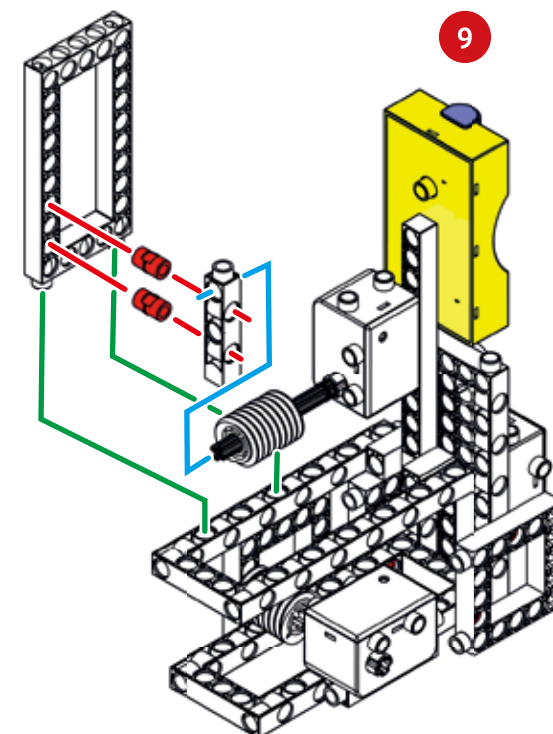
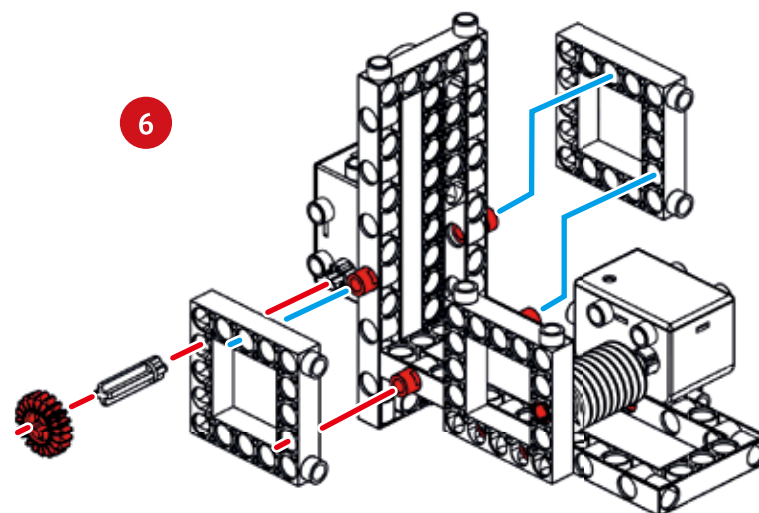
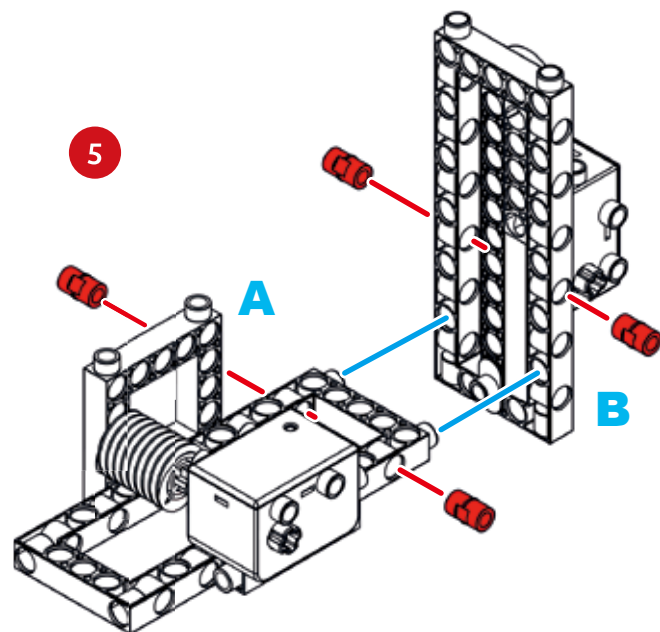
• How to Operate

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2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.
4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.

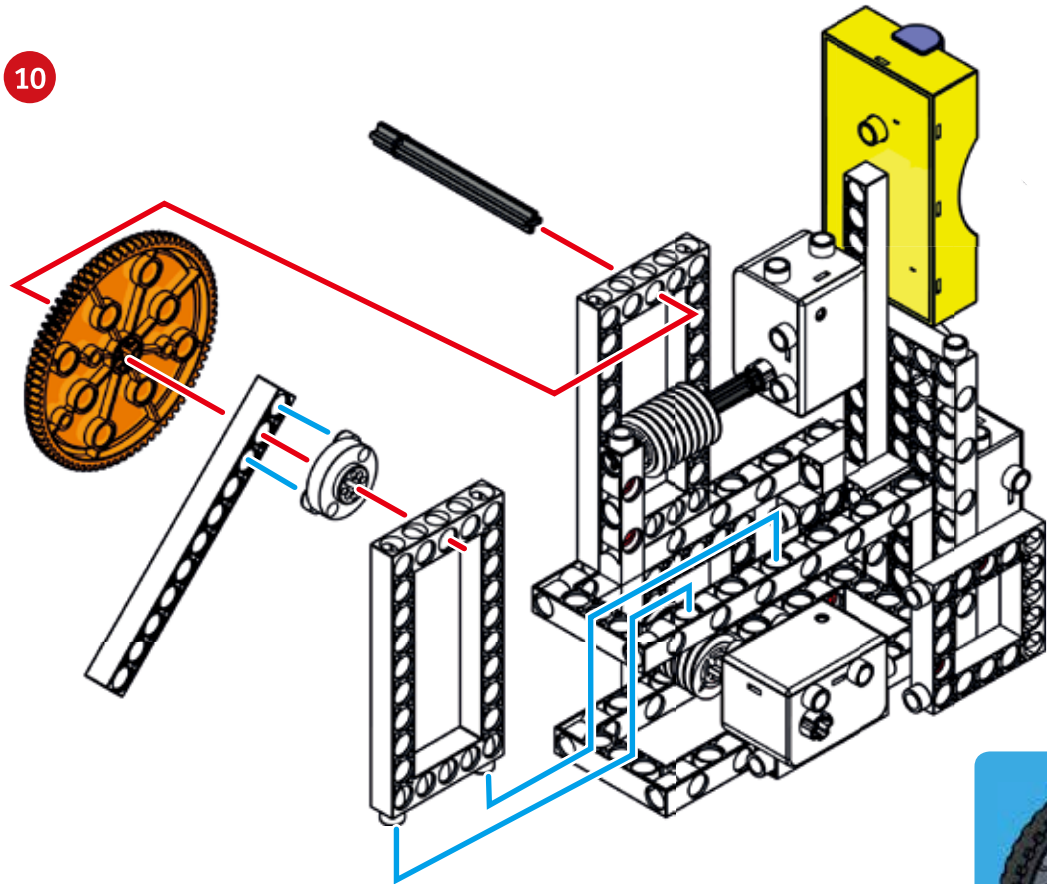
• Challenge

Spread the rest of Gigo components on the ground and try to move them all together by Bulldozer.

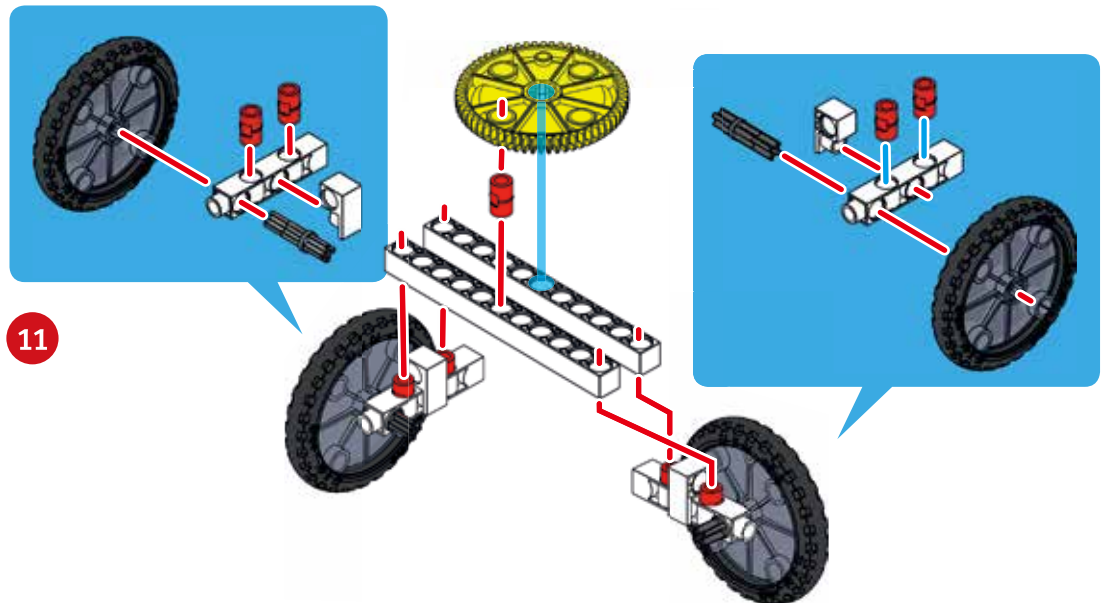


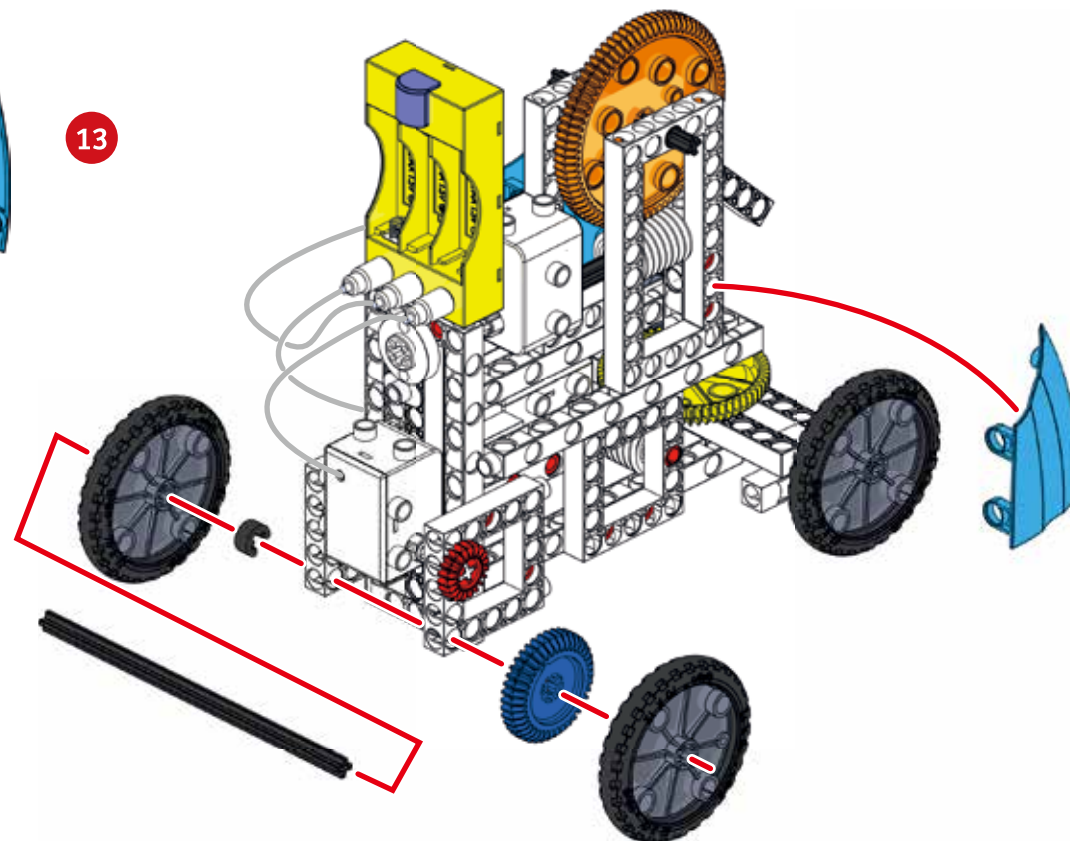
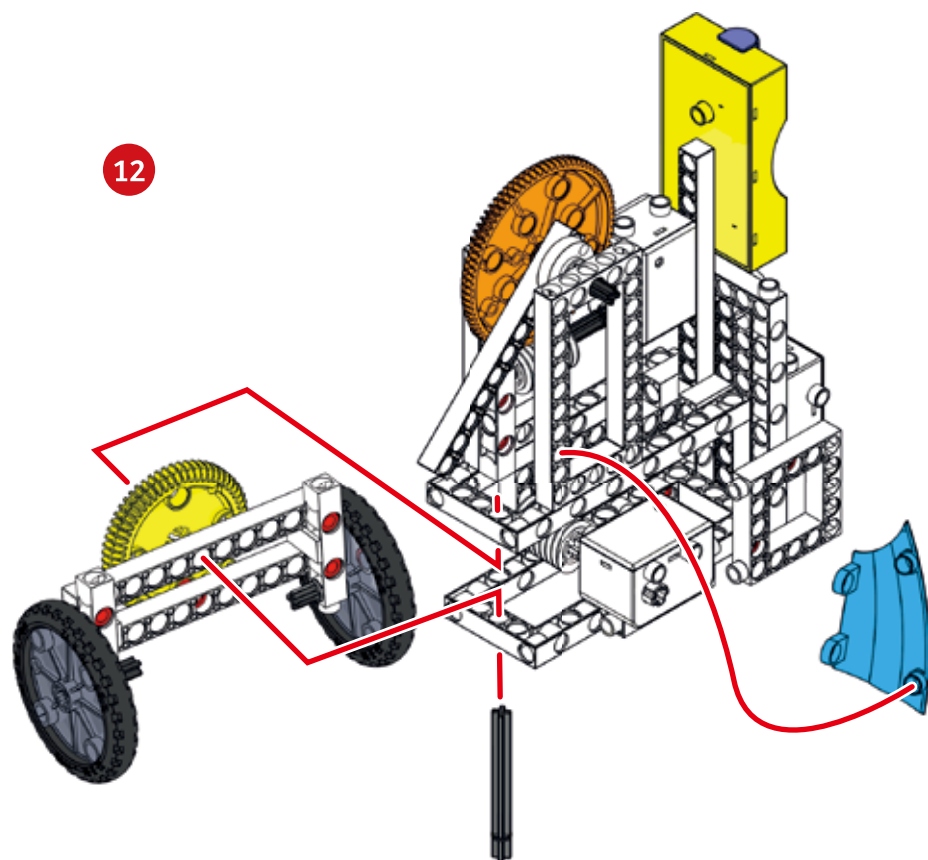


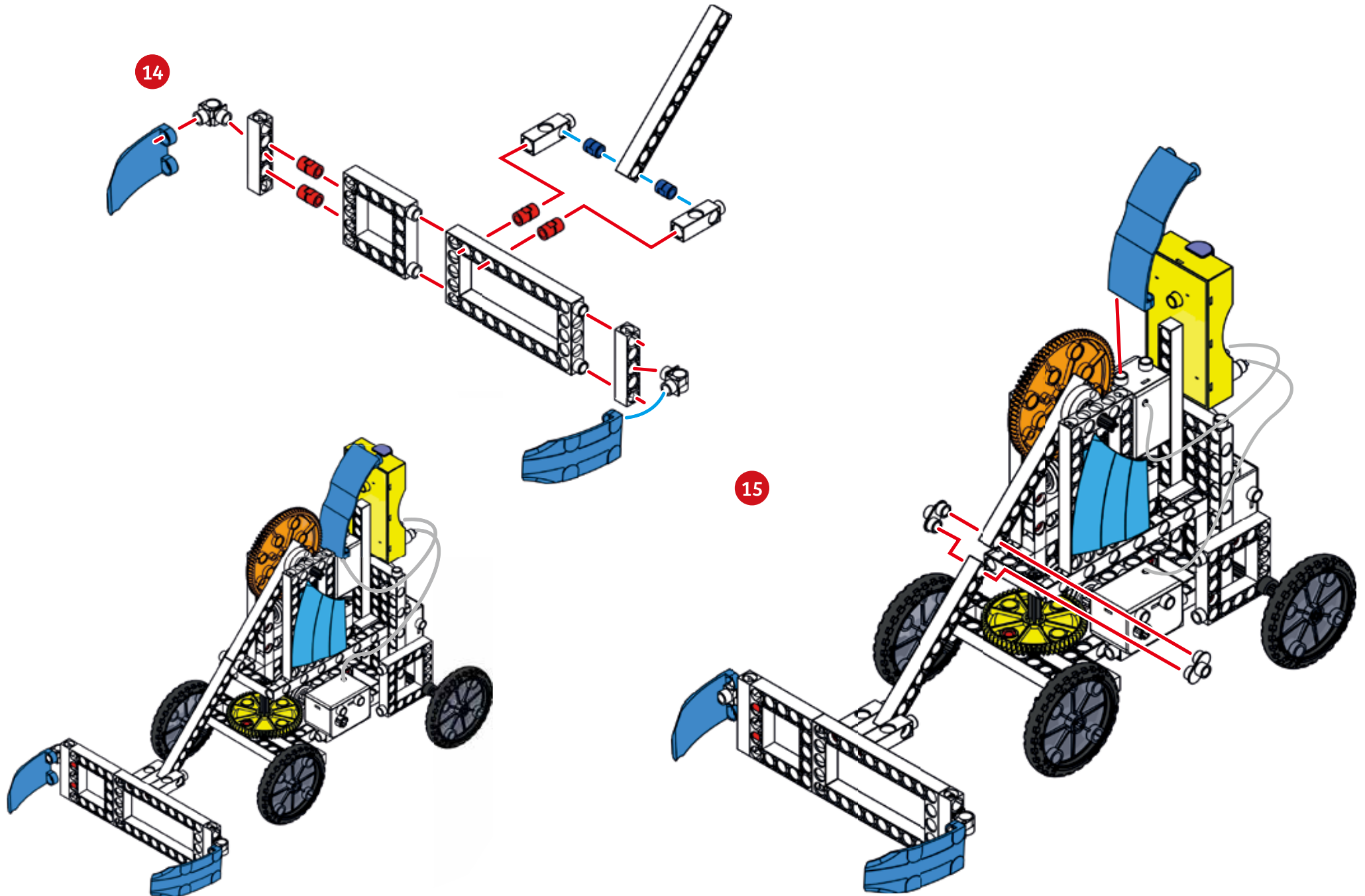
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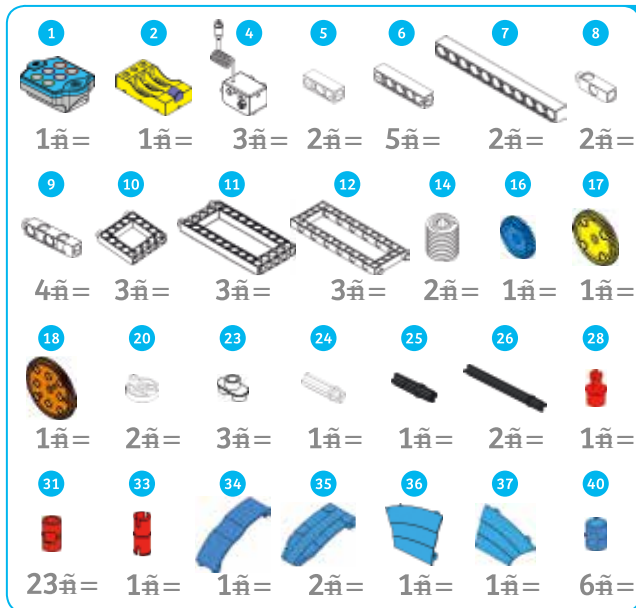


11









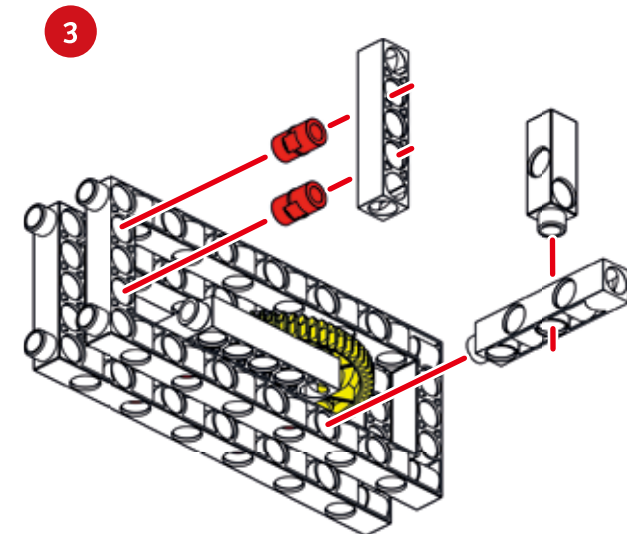
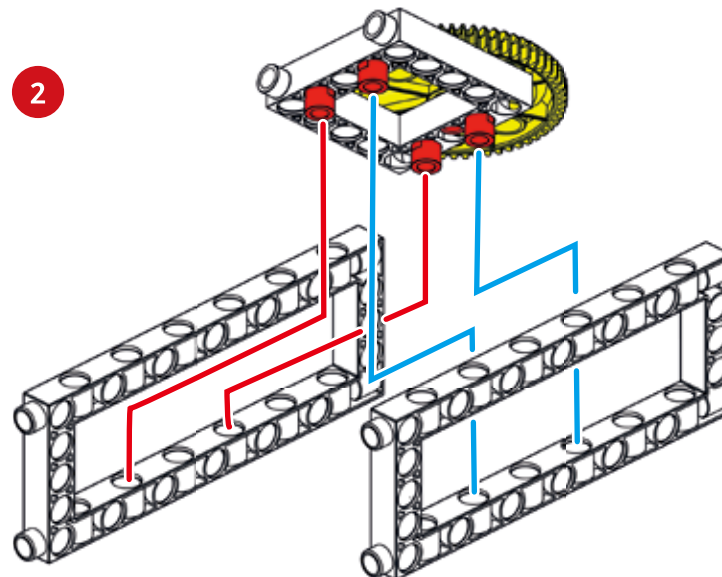
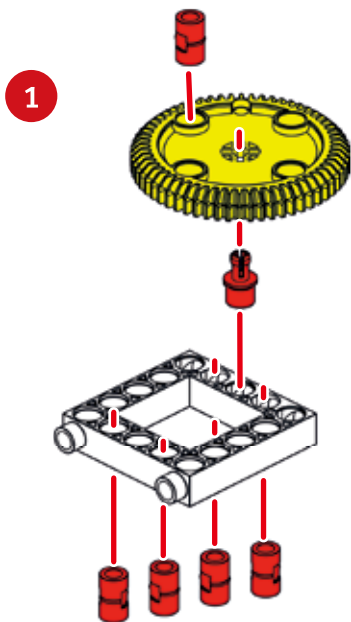
• Tips for Assembly

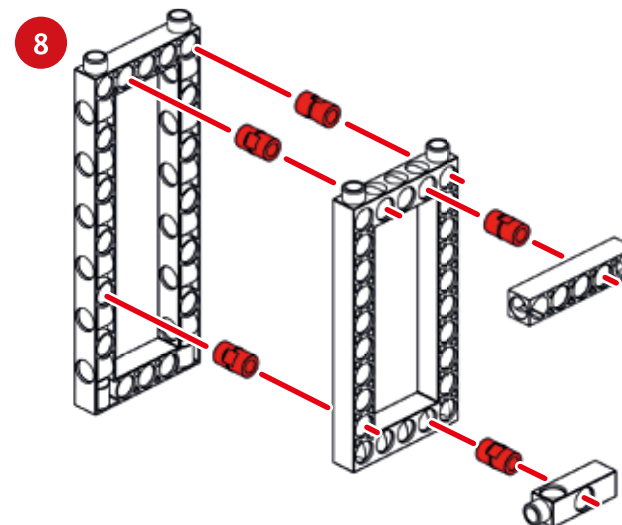
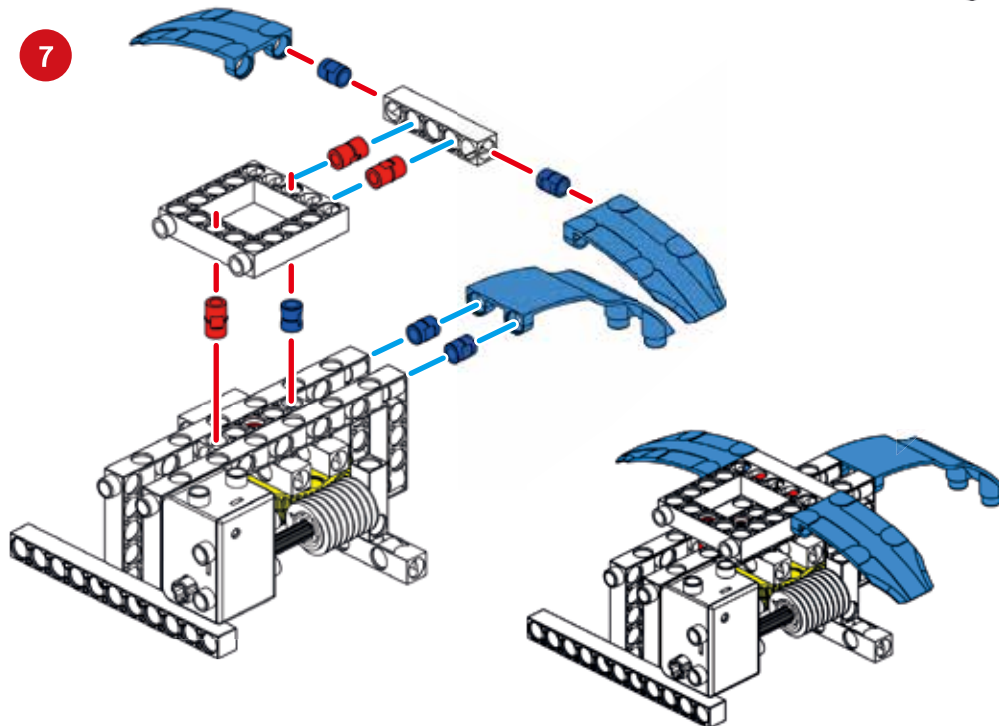
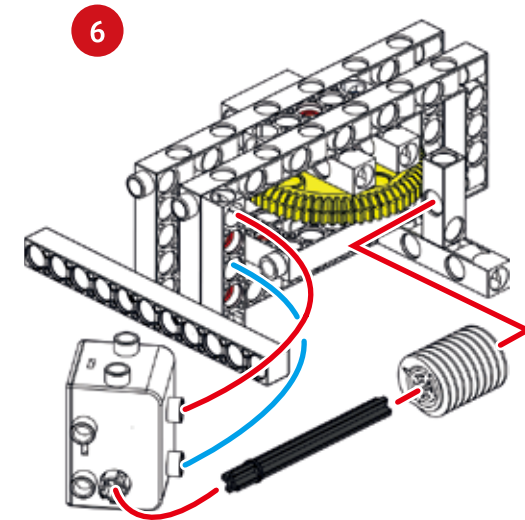
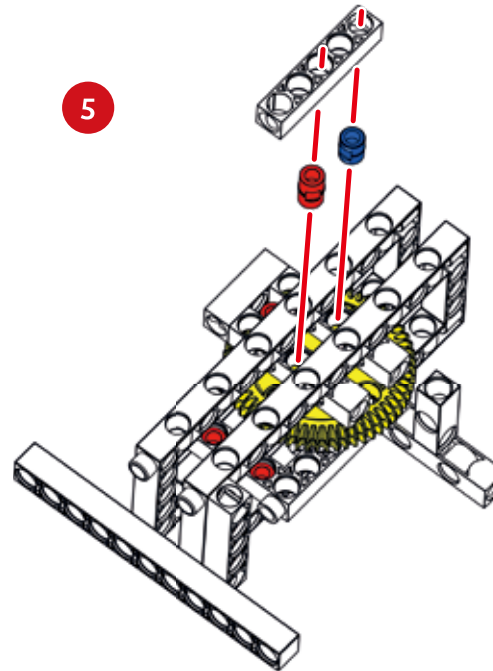
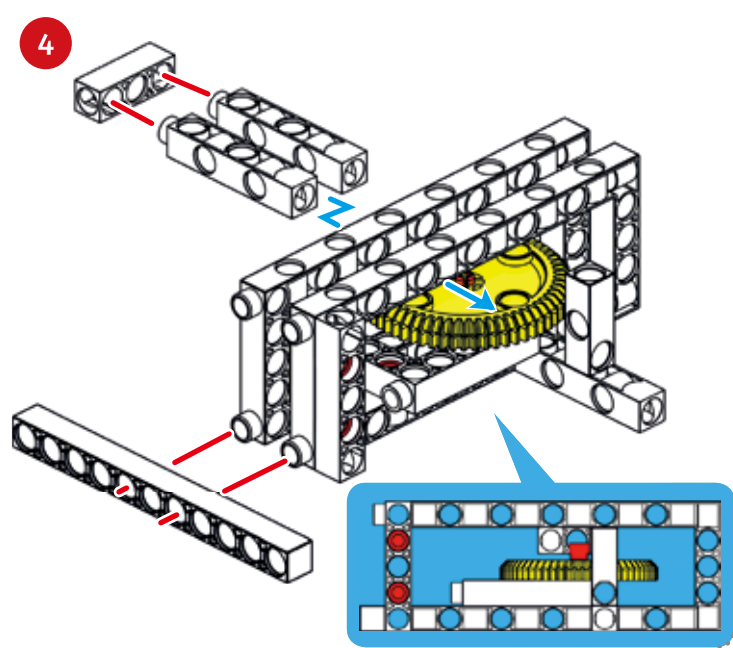
- ★ Make sure the red peg is in the frame, so the plate of the model can move back and forth.

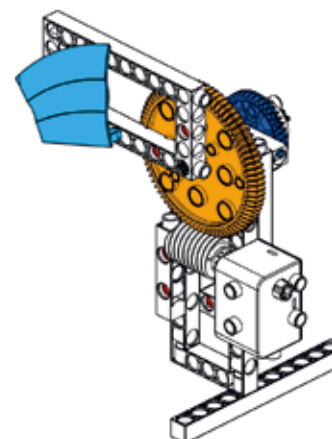
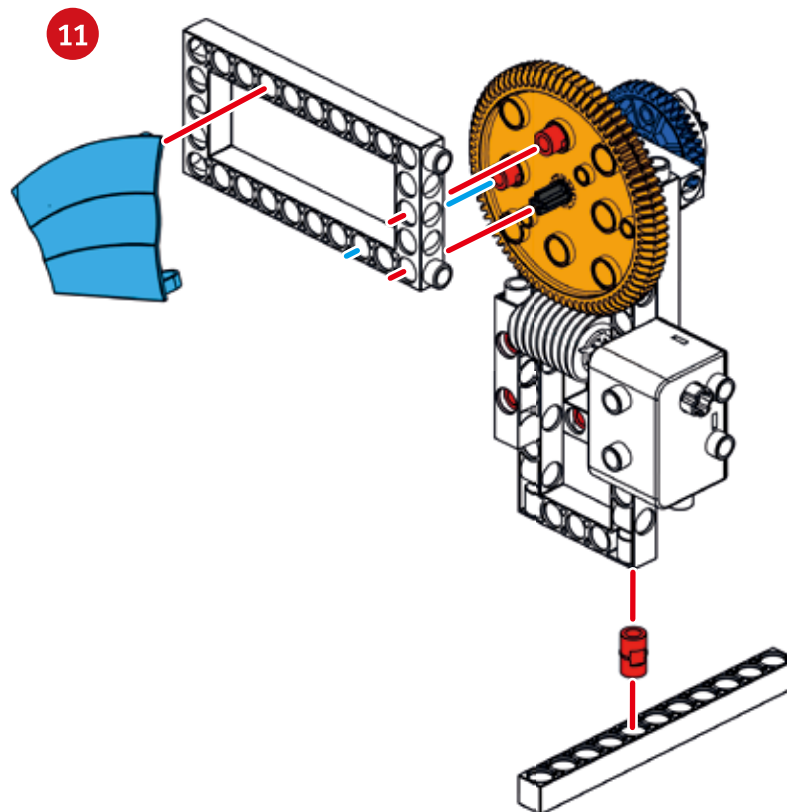
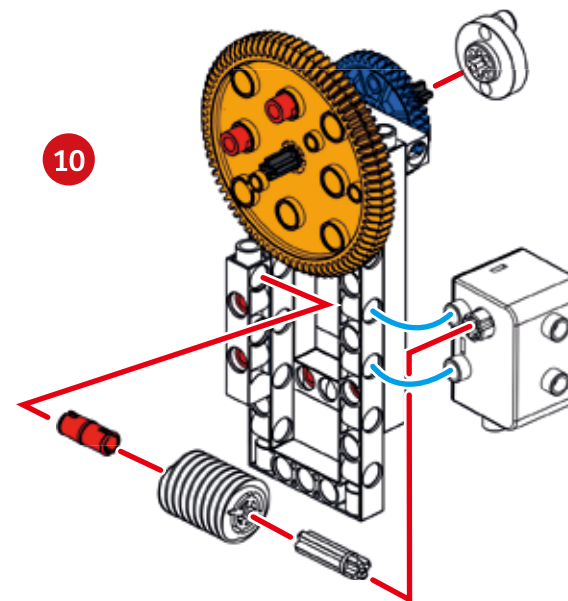
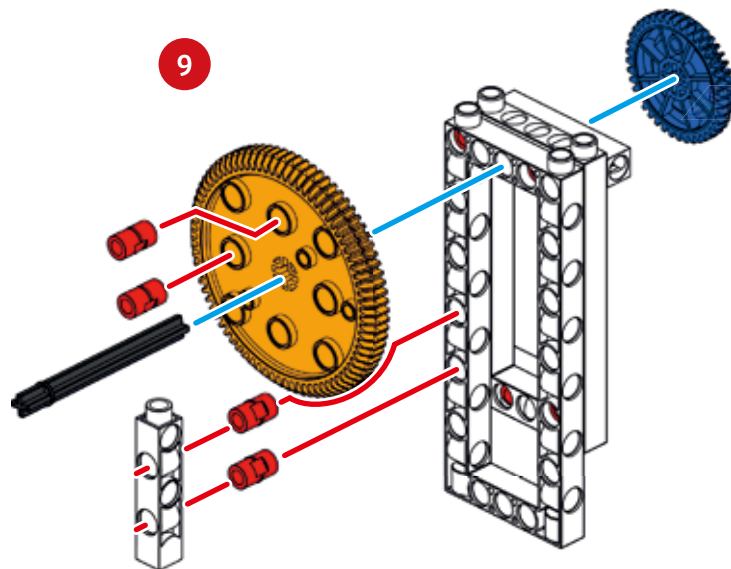


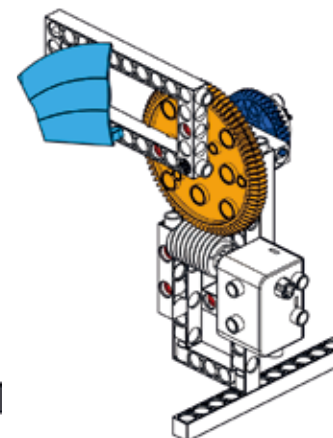
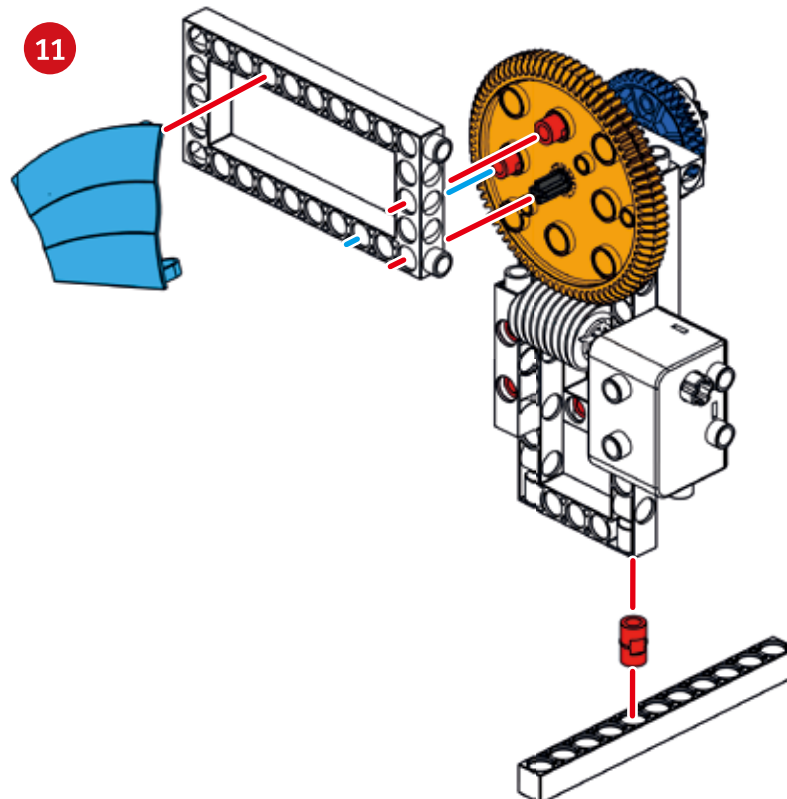
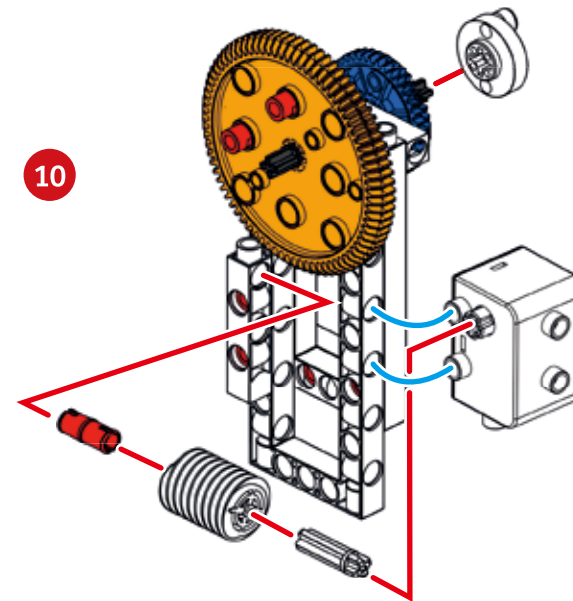
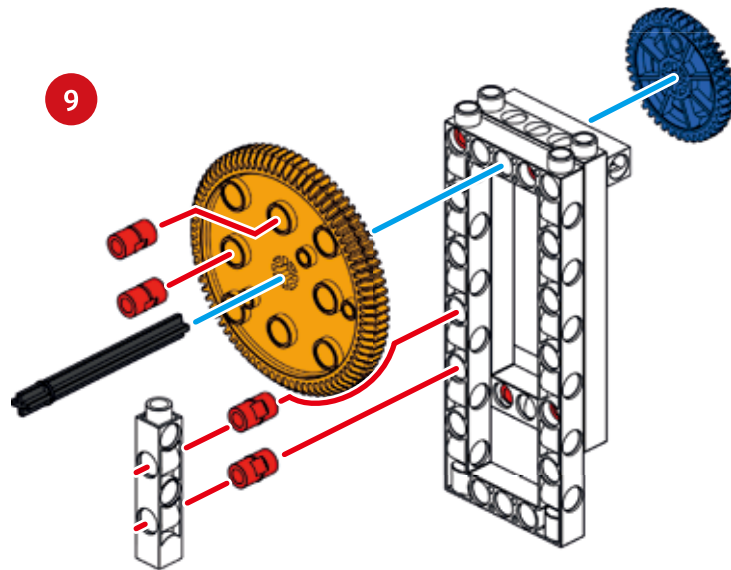
• How to Operate

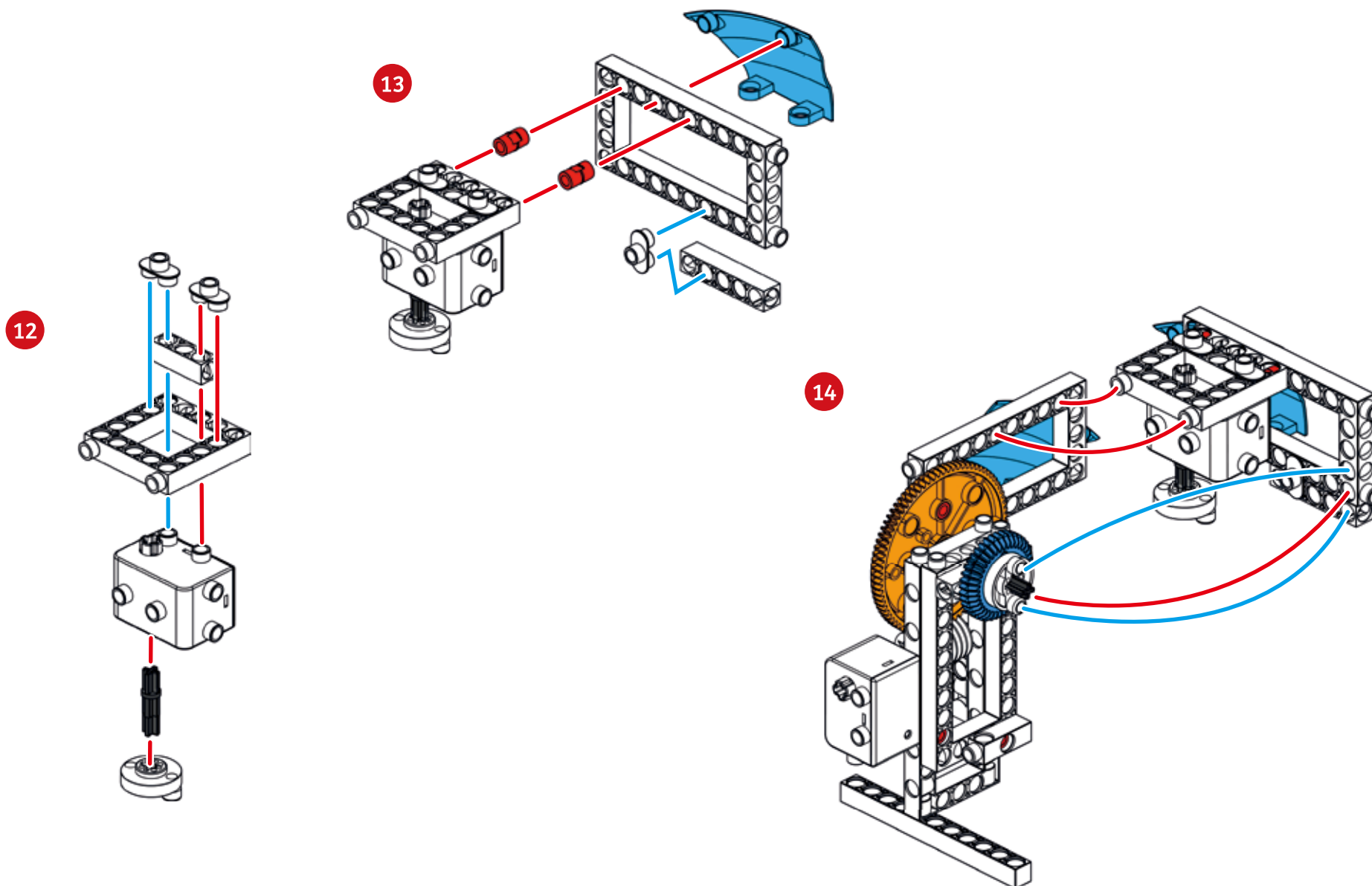
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2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activated the motor indicated in Green for back and forth motion.
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4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.



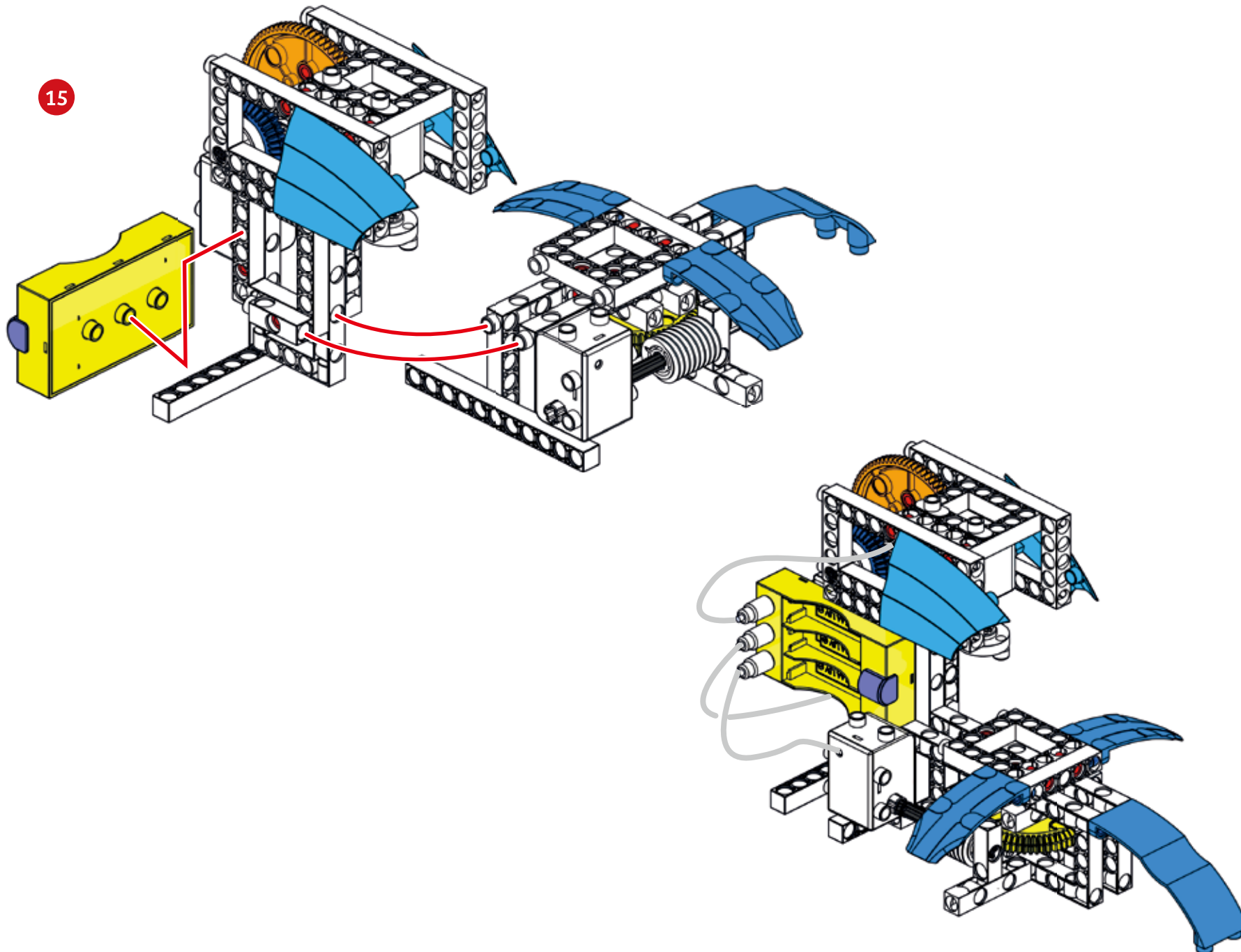


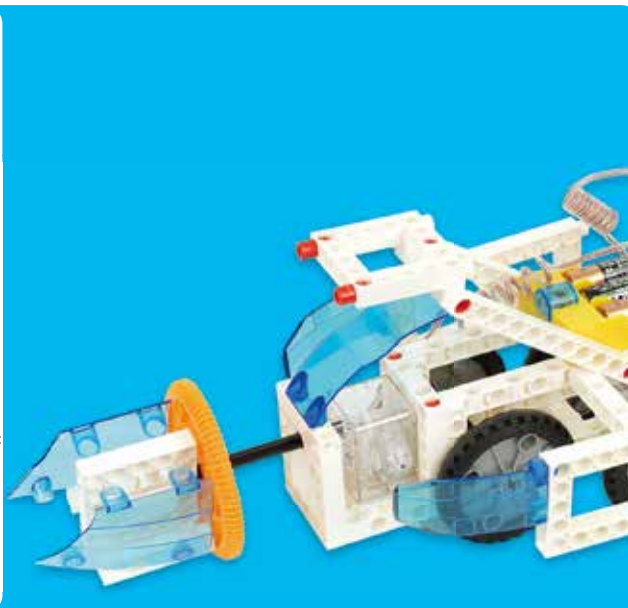
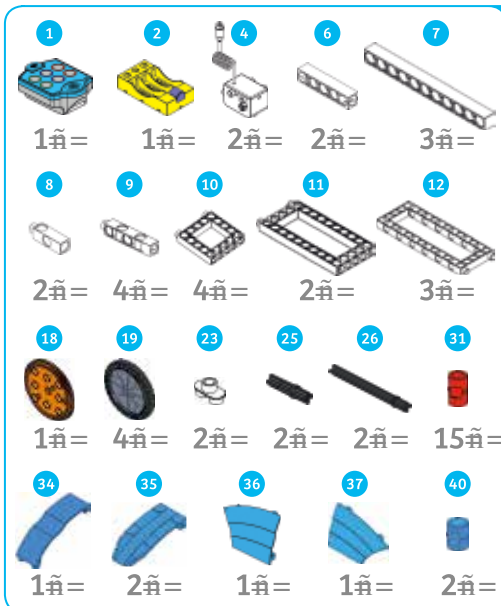






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• Tips for Assembly

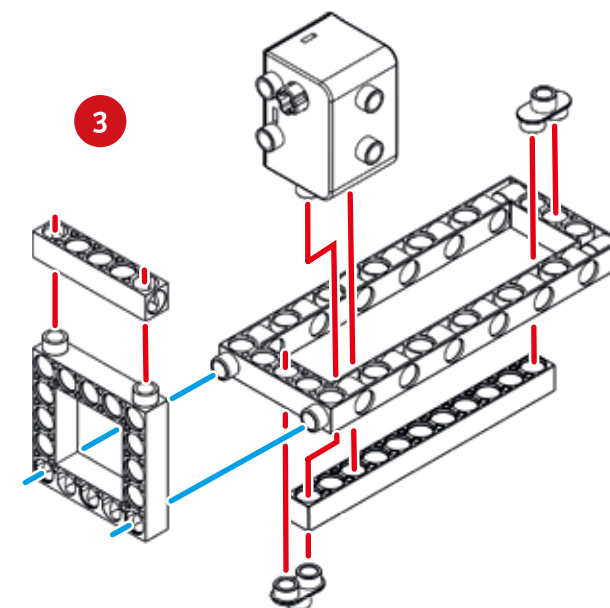
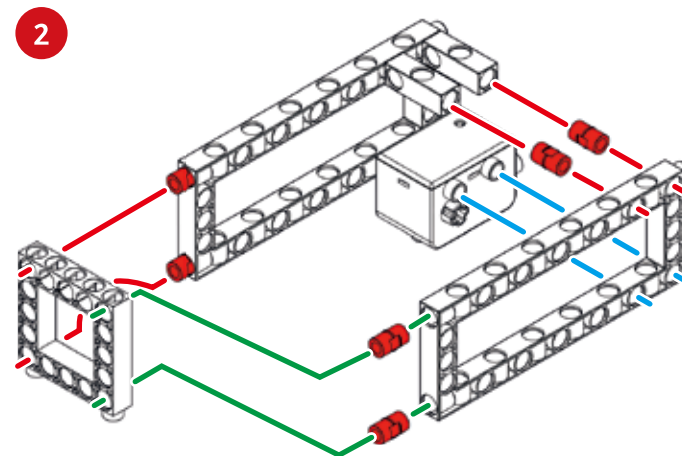
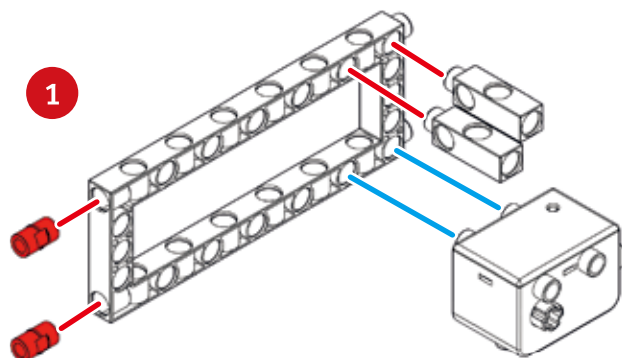
- ★ The wheels must be spaced 1 mm away from the frame so that the wheels can turn smoothly.

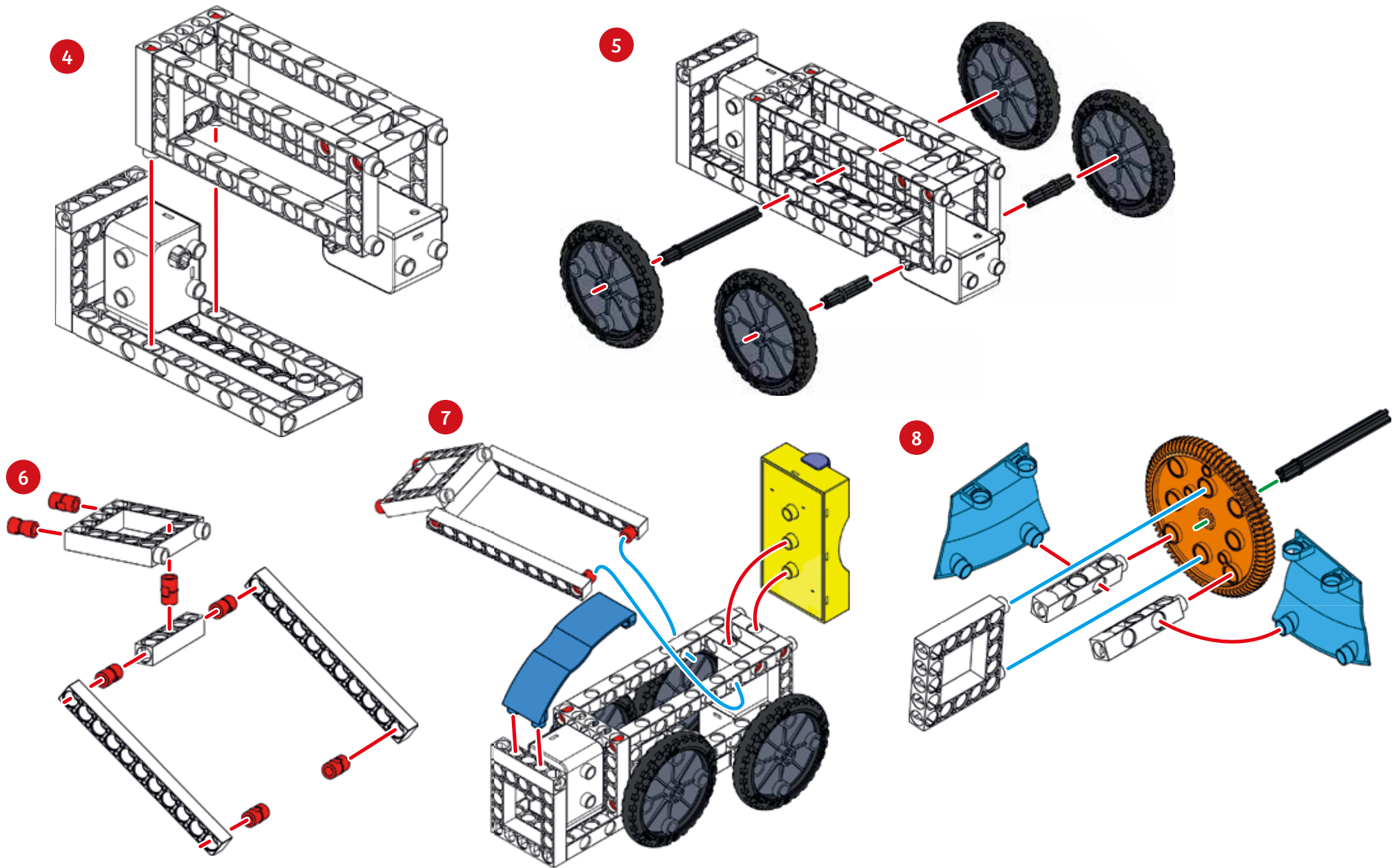


• How to Operate

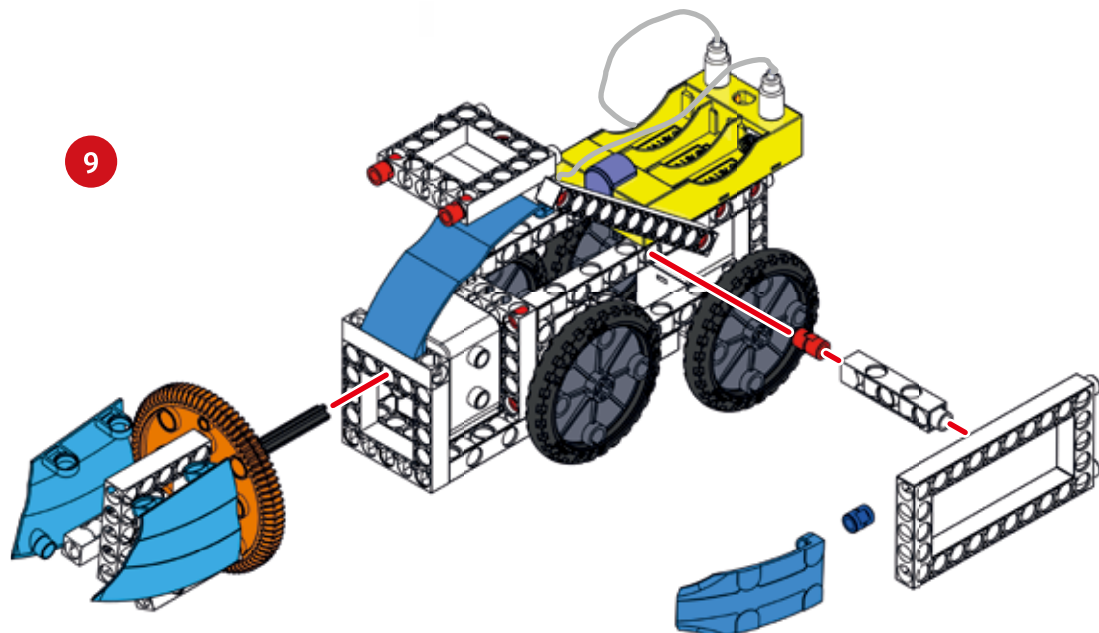


1. Turn on the switch on Remote Controller.
2. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Red for back and forth motion.

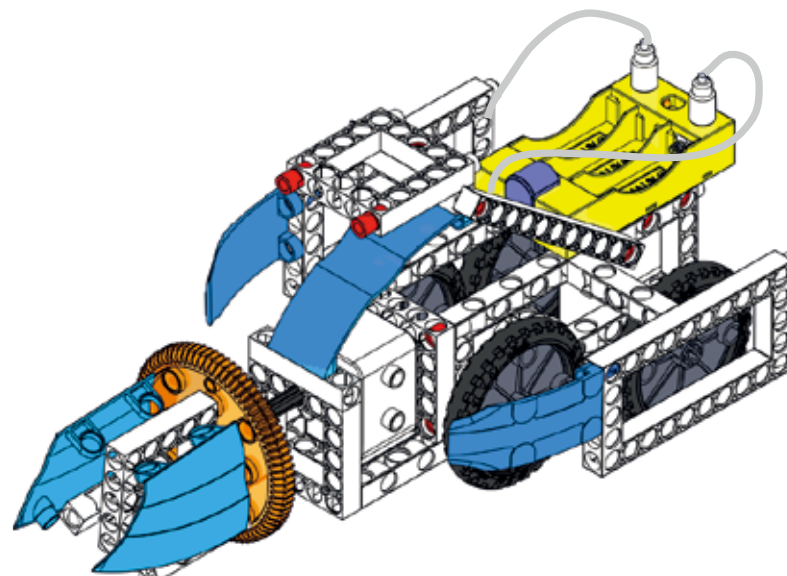
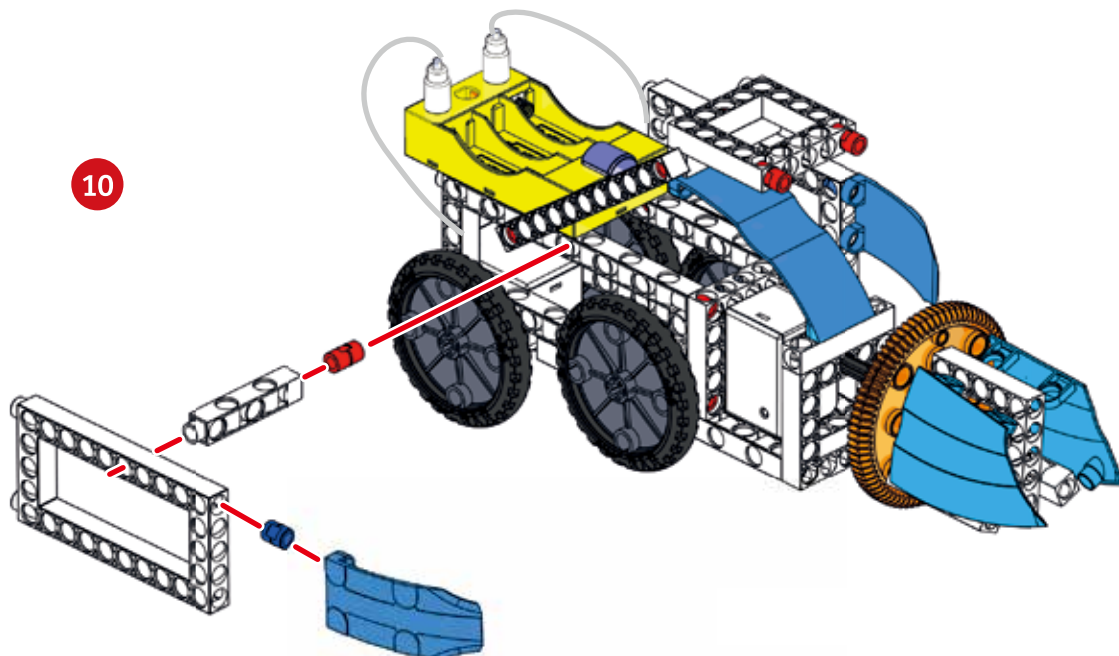


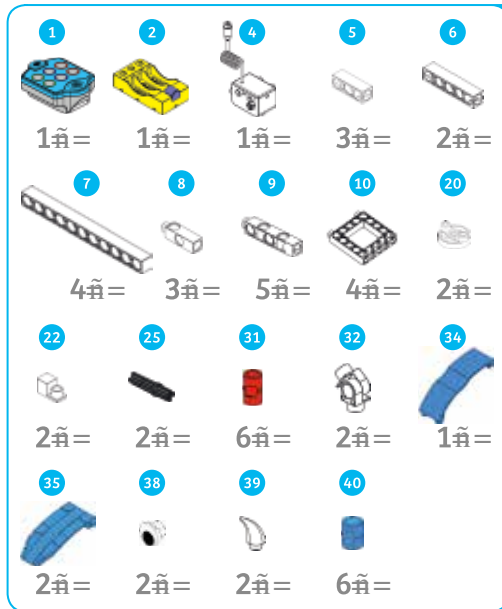


9



10





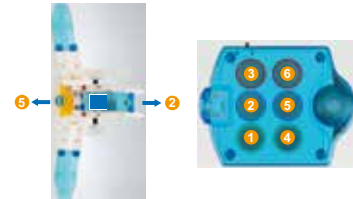
• Tips for Assembly

- ★ Keep rods in symmetry while assembling them on model, so the model can move forward.

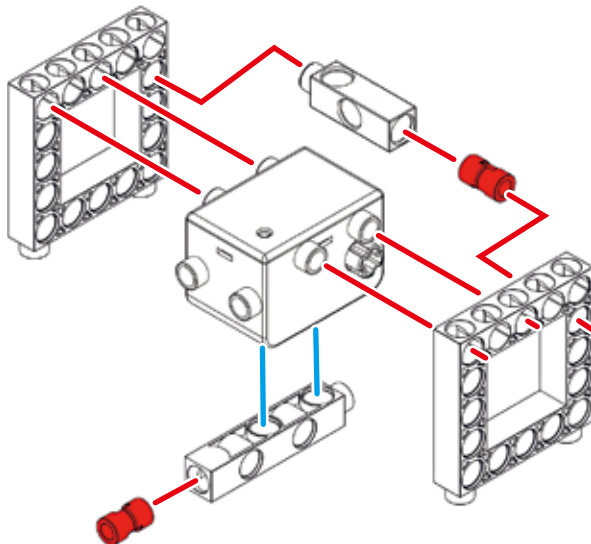


• How to Operate

1. Turn on the switch on Remote Controller.
2. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.

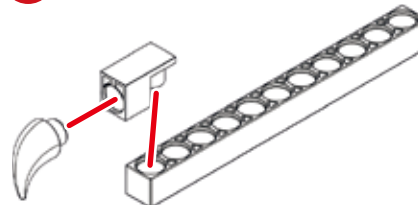


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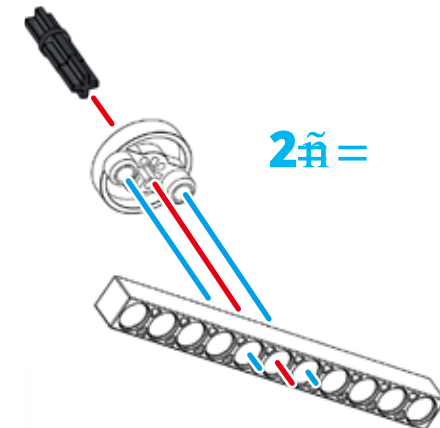
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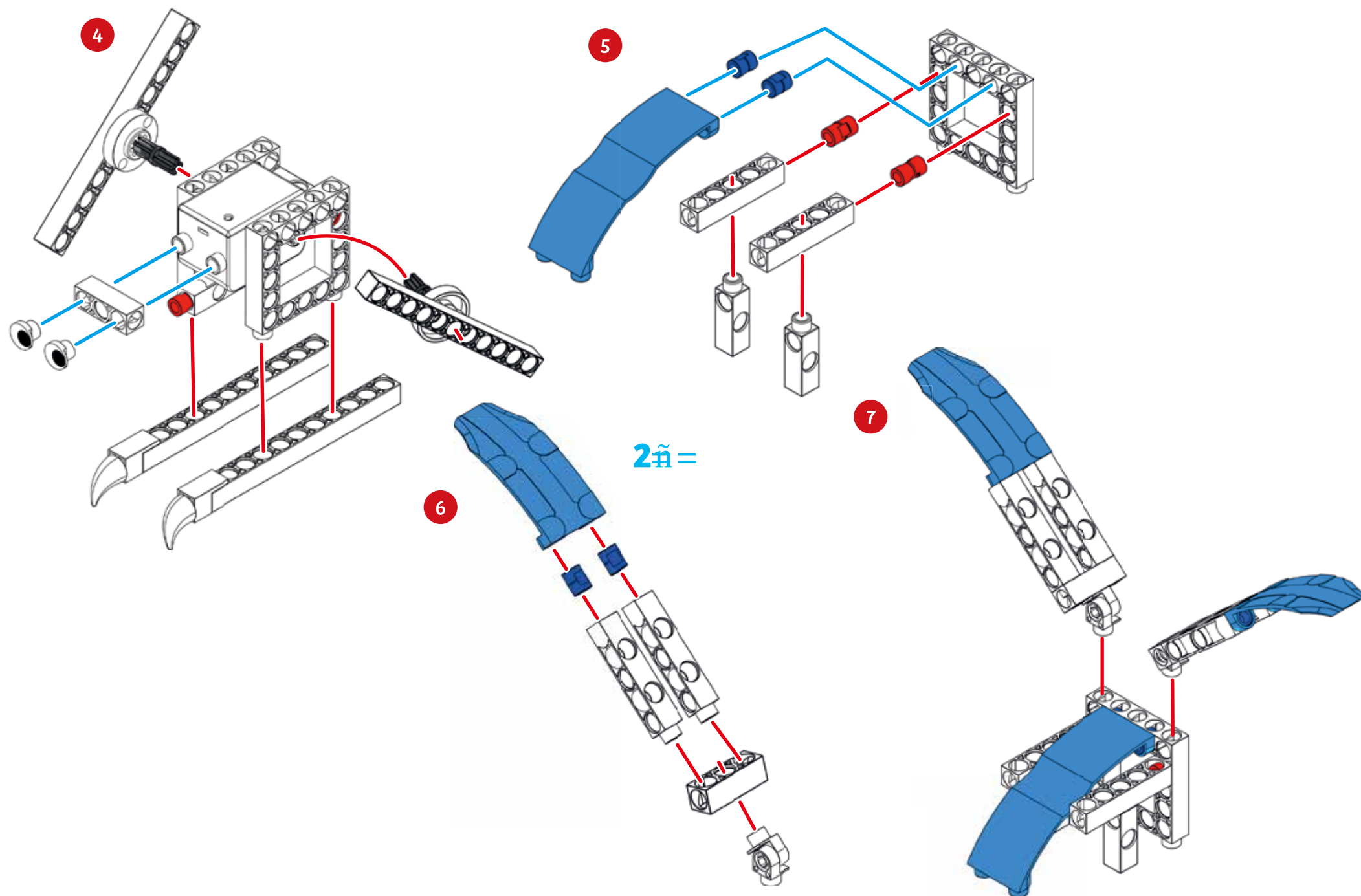
2ñ =

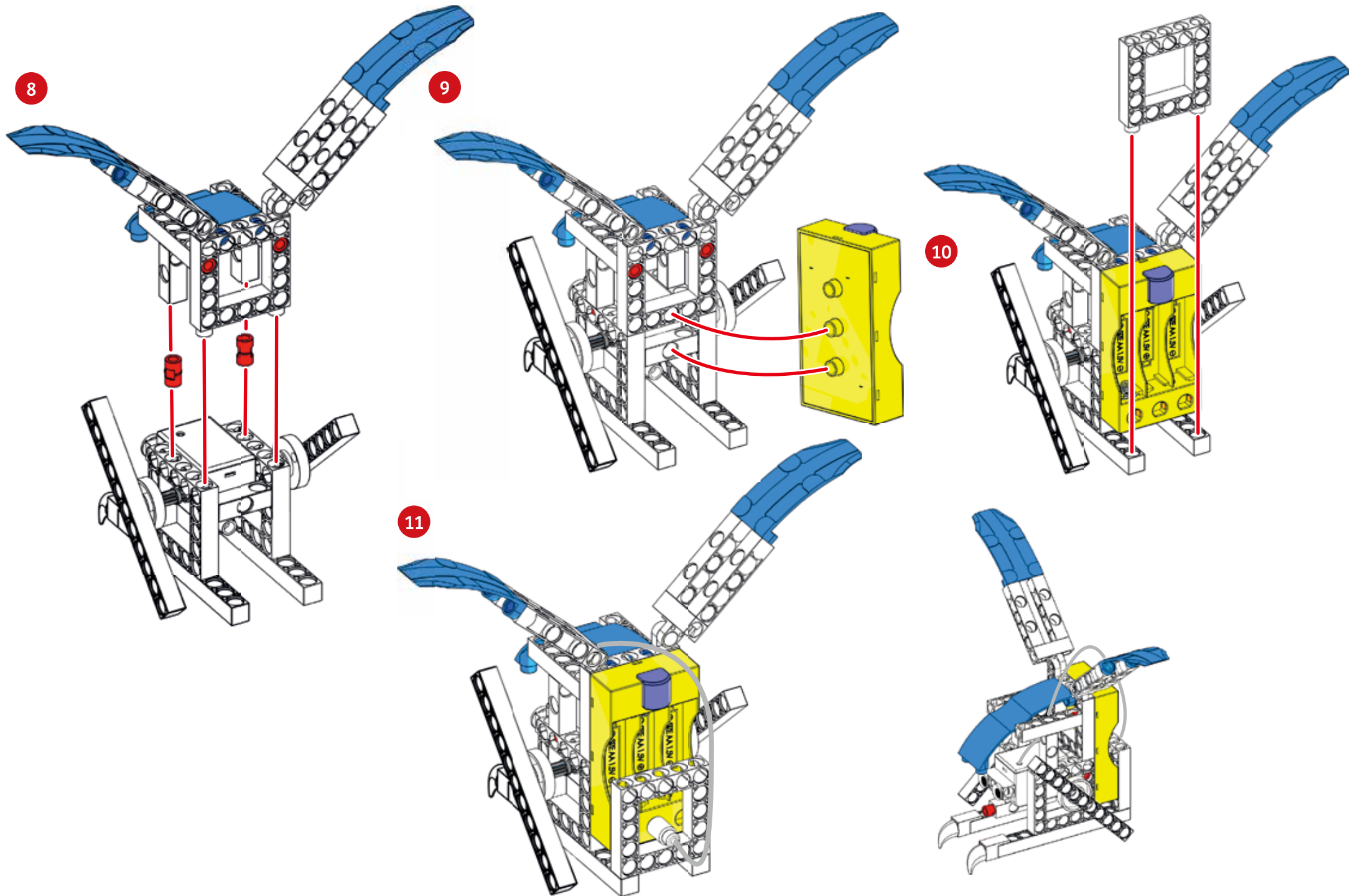


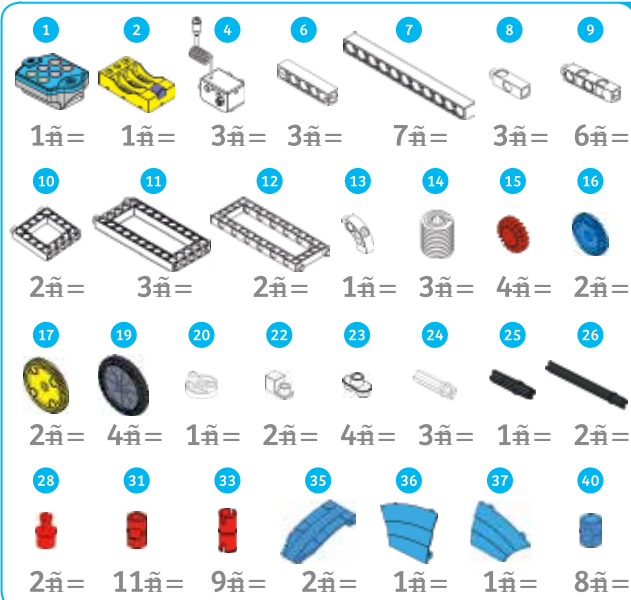
3

2ñ =









• Tips for Assembly

- ★ The wheels must be spaced 2 mm away from the motor axle so that the wheels can turn smoothly.



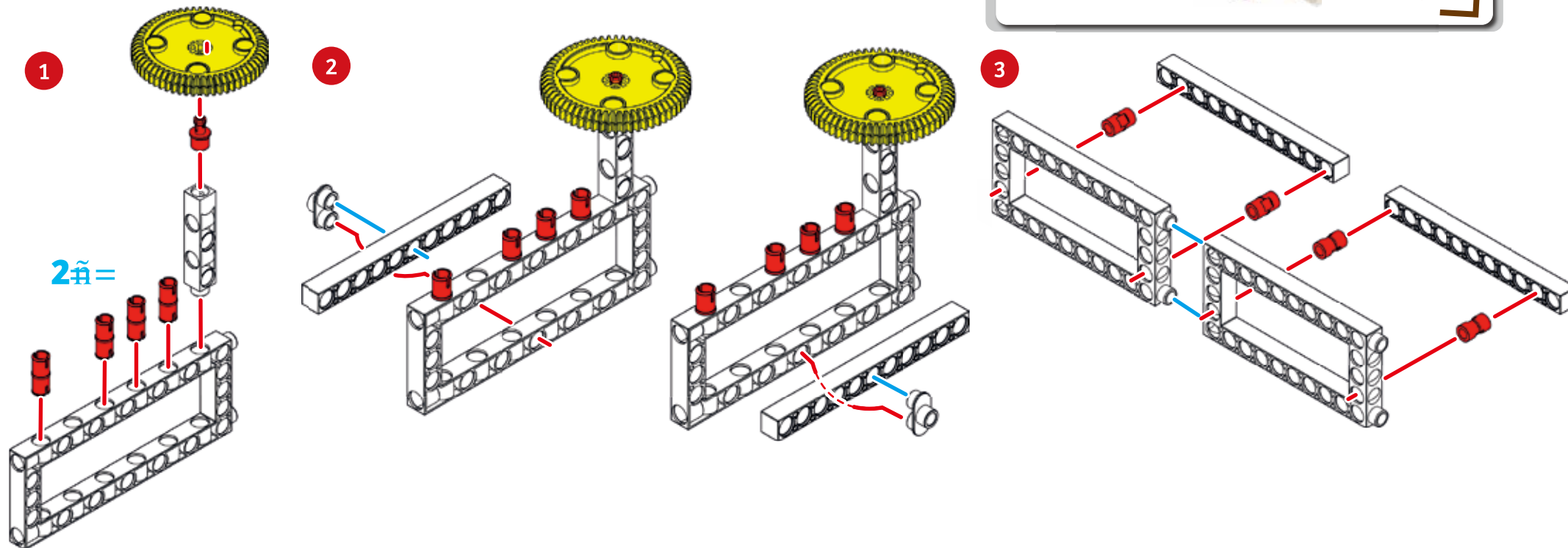
• How to Operate

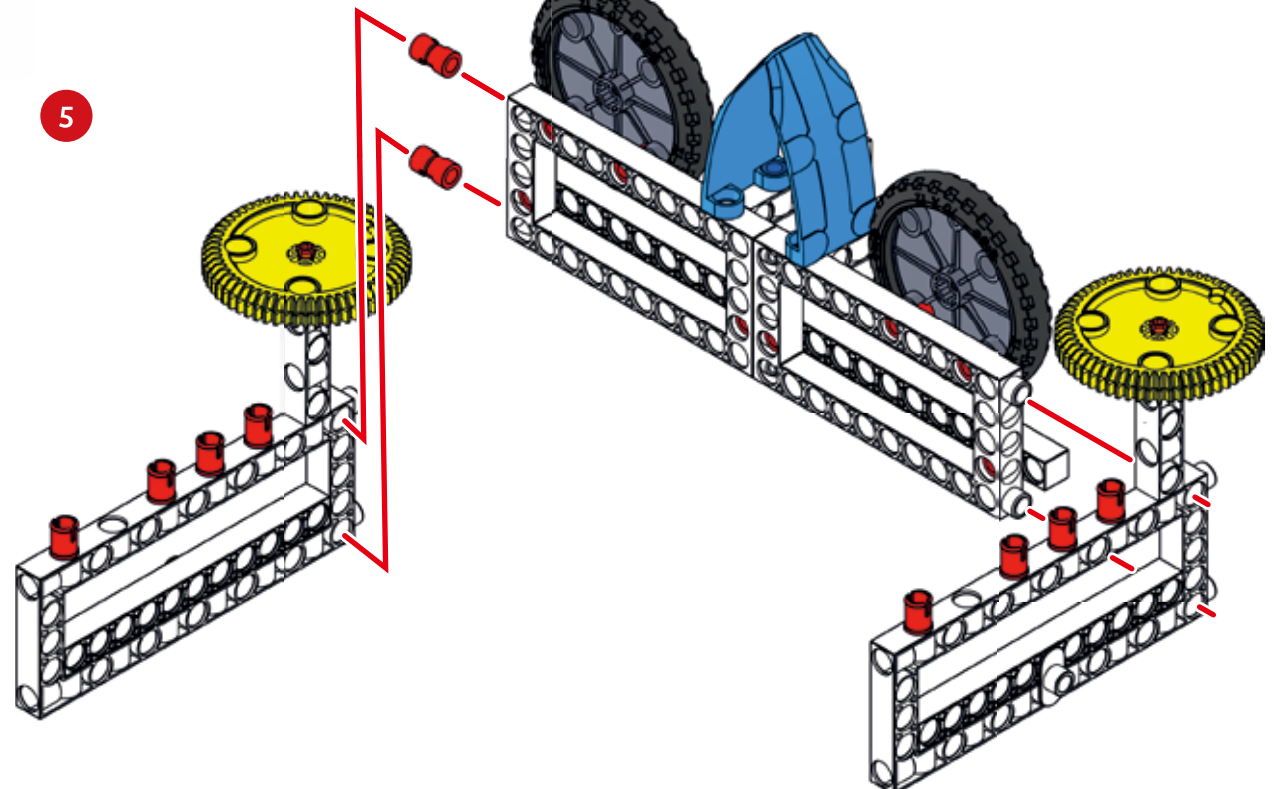
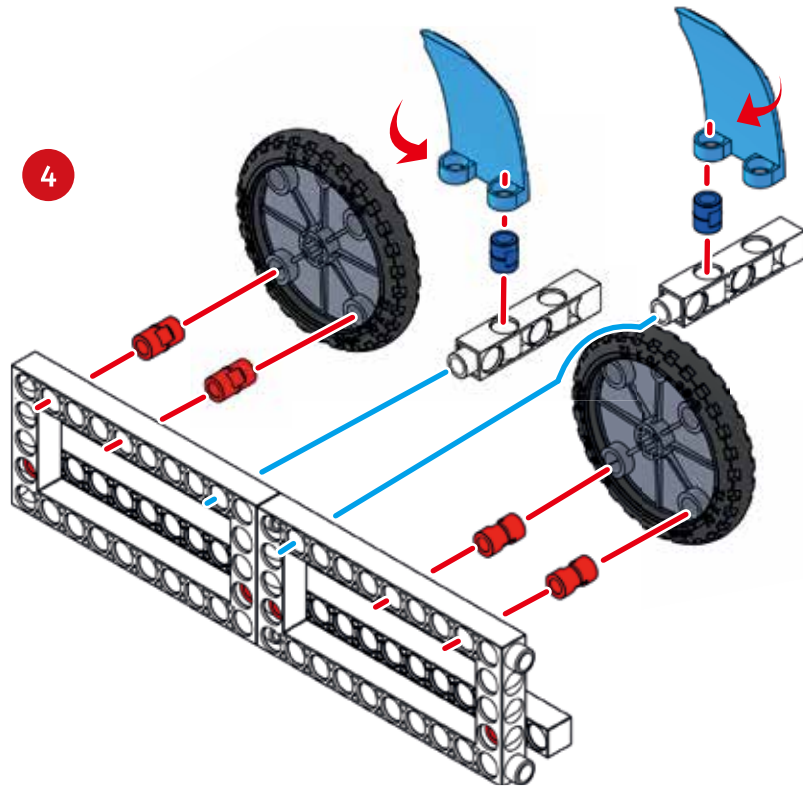
1. Turn on the switch on Remote Controller.
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4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.

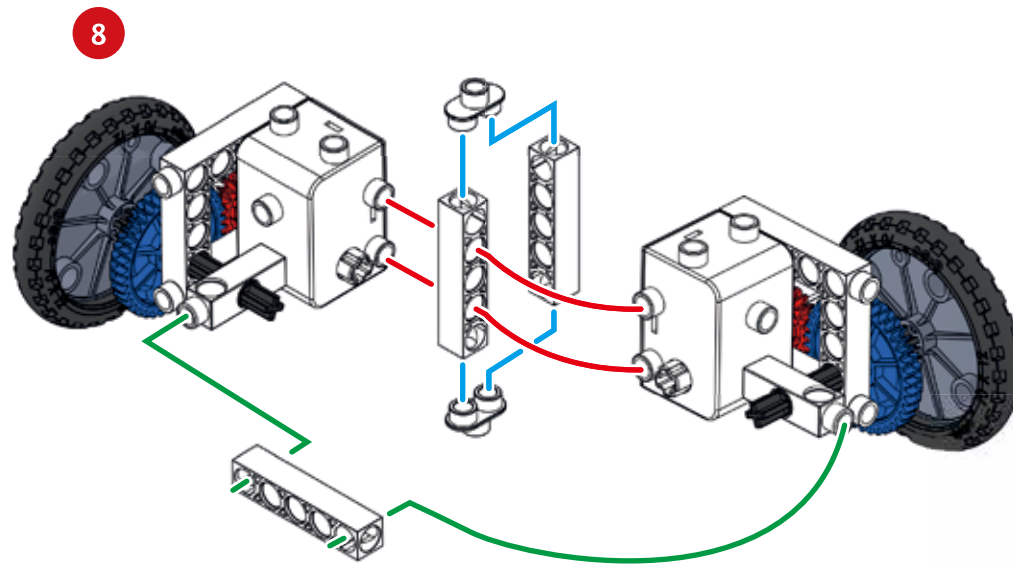
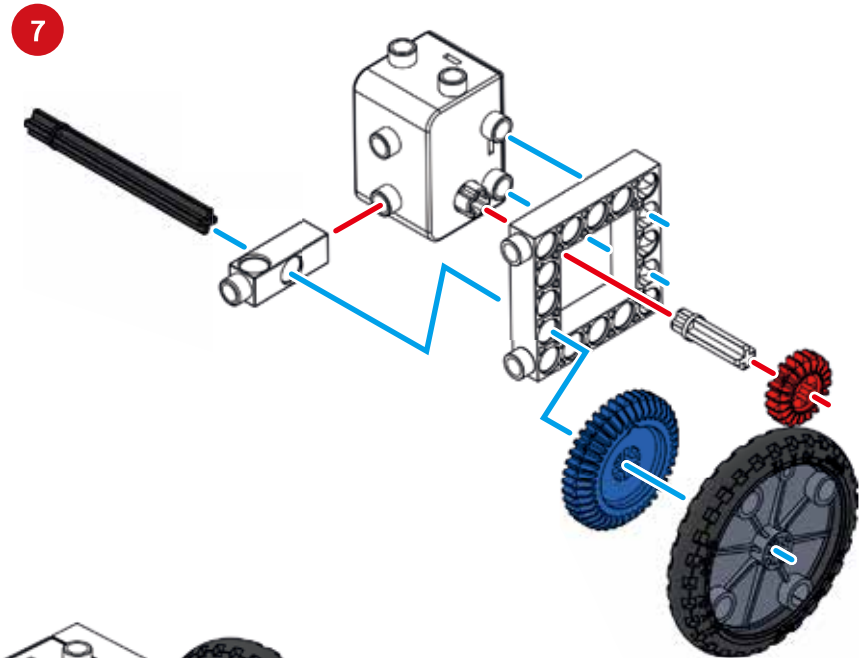
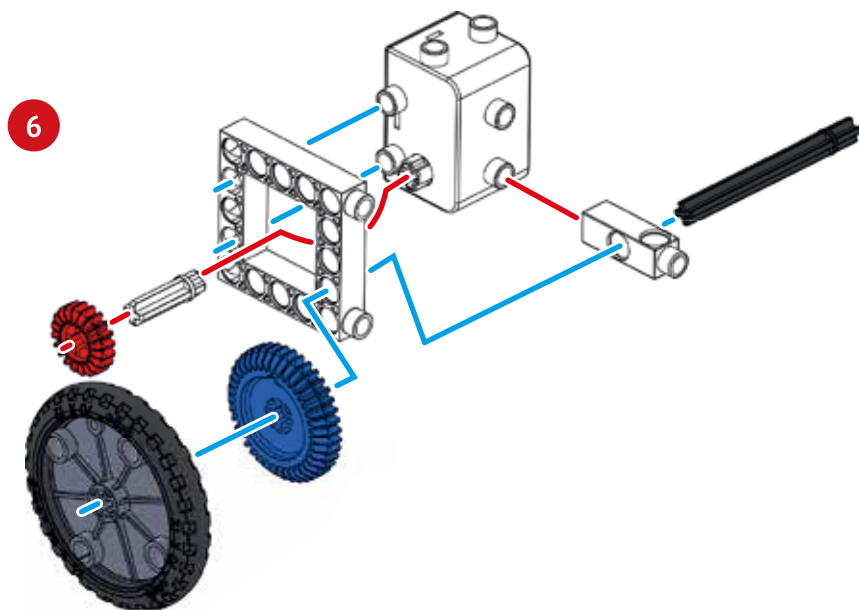


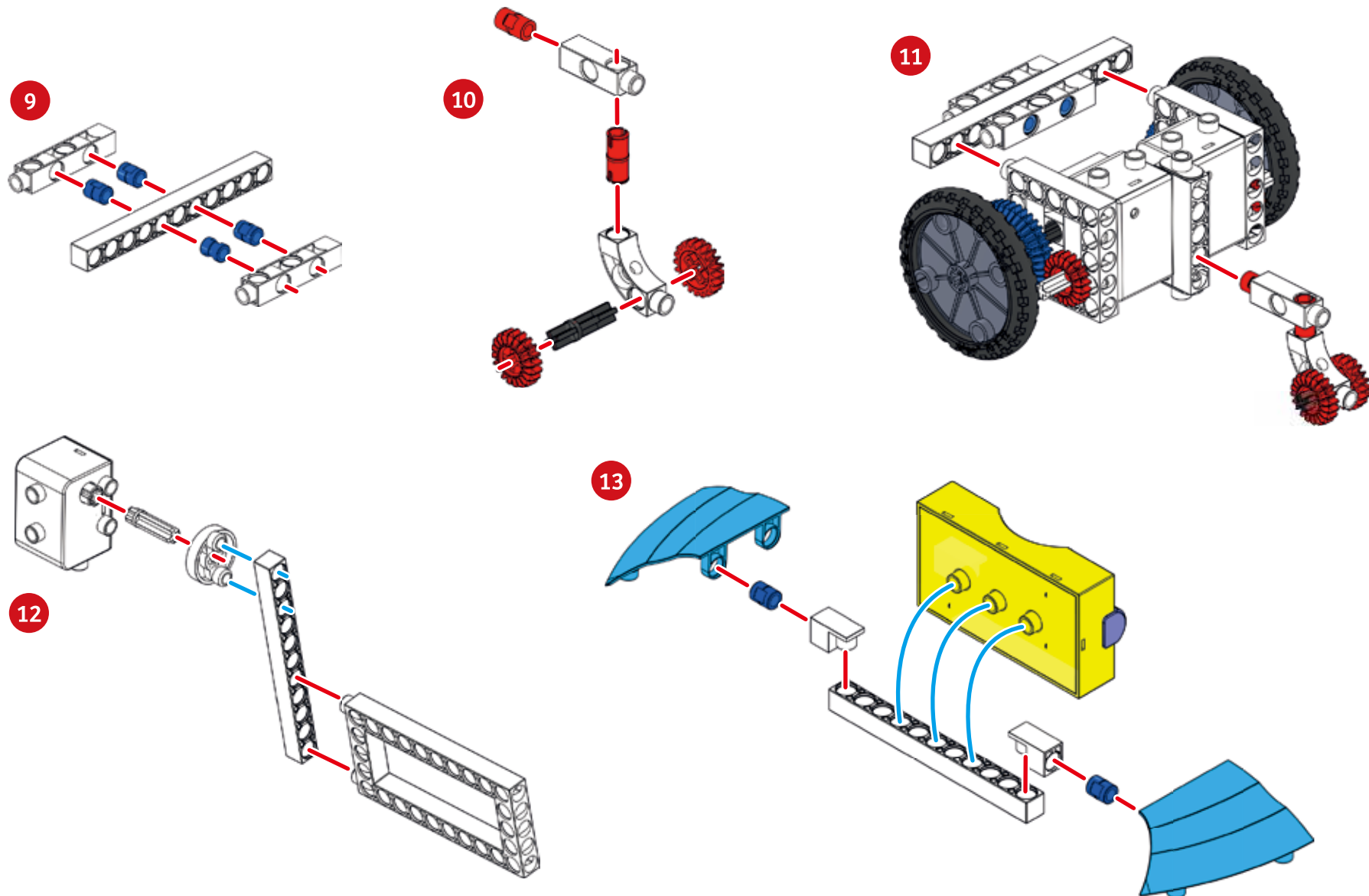
• Challenge

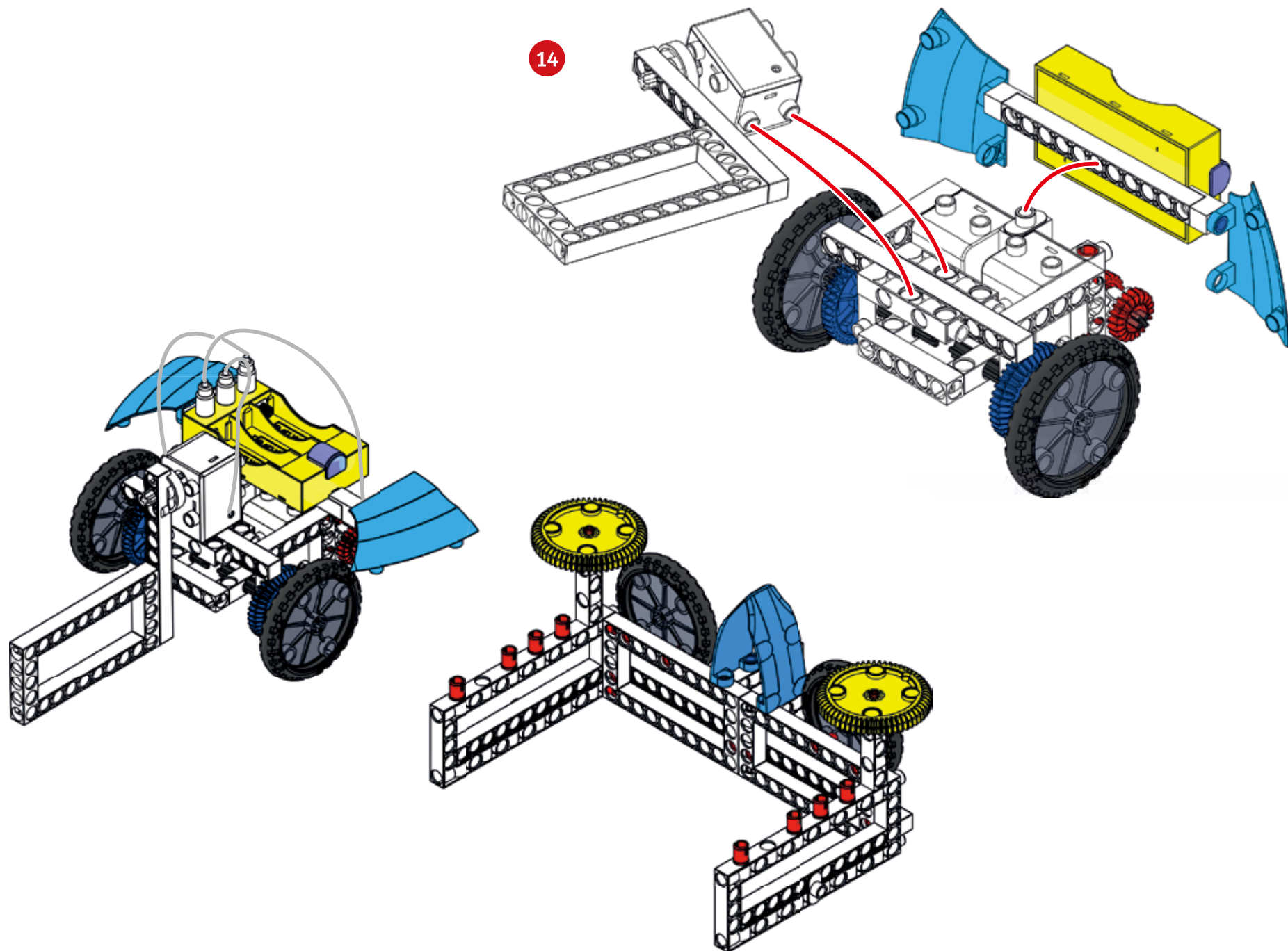
Try to hit the worm gear to score the goal.

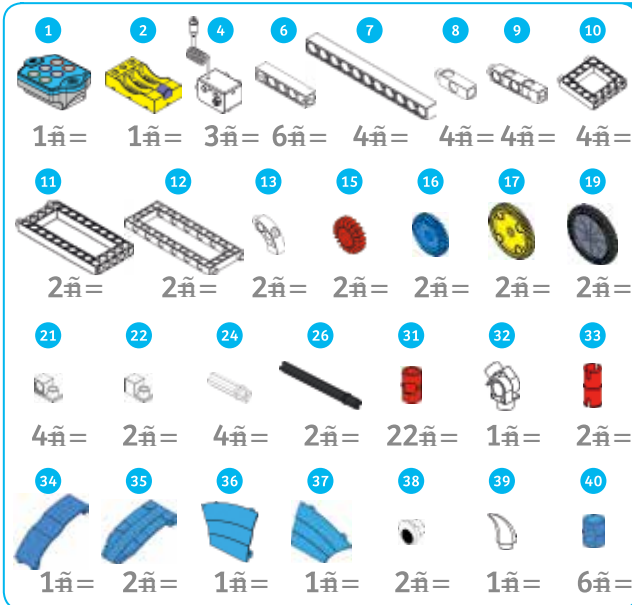










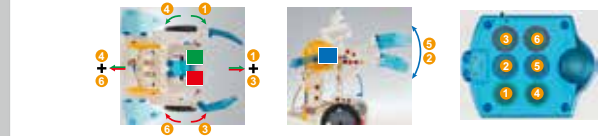


• Tips for Assembly

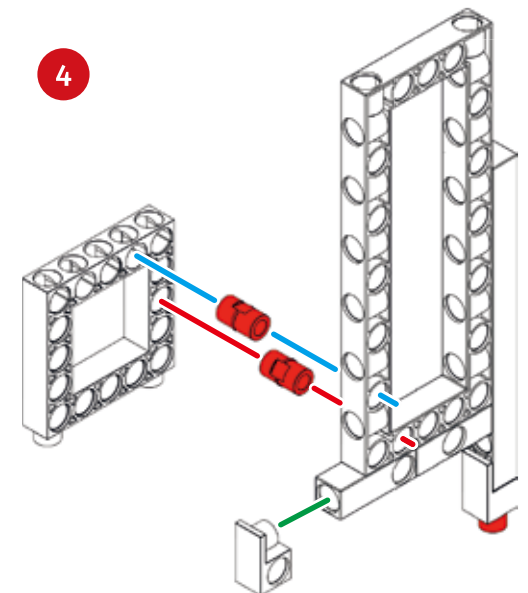
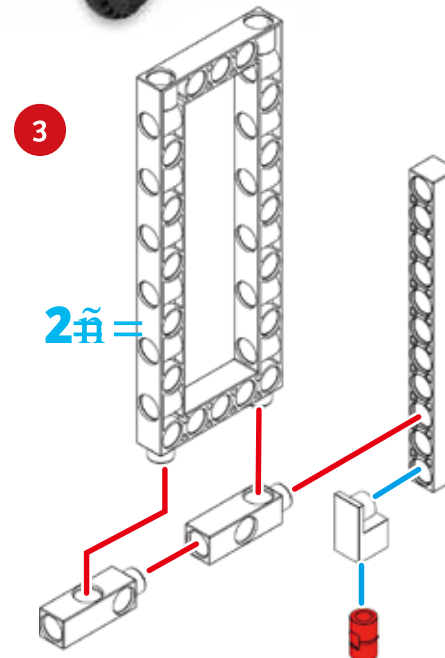
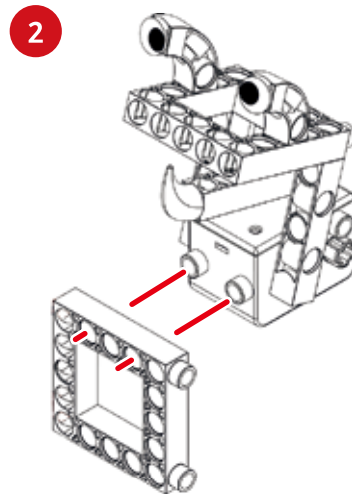
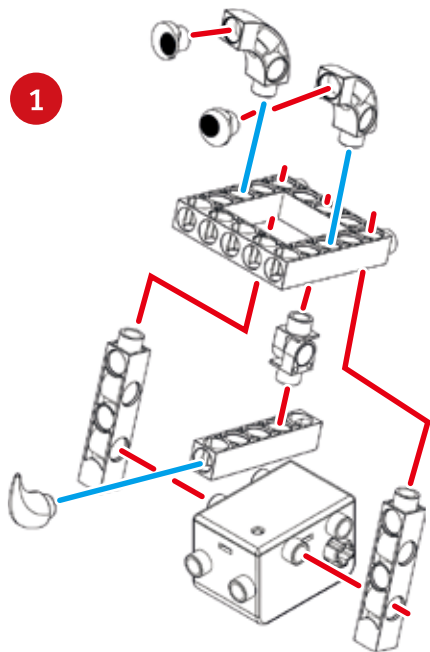
- ★ Make sure the red peg is in the frame, so the arm of the model can swing.

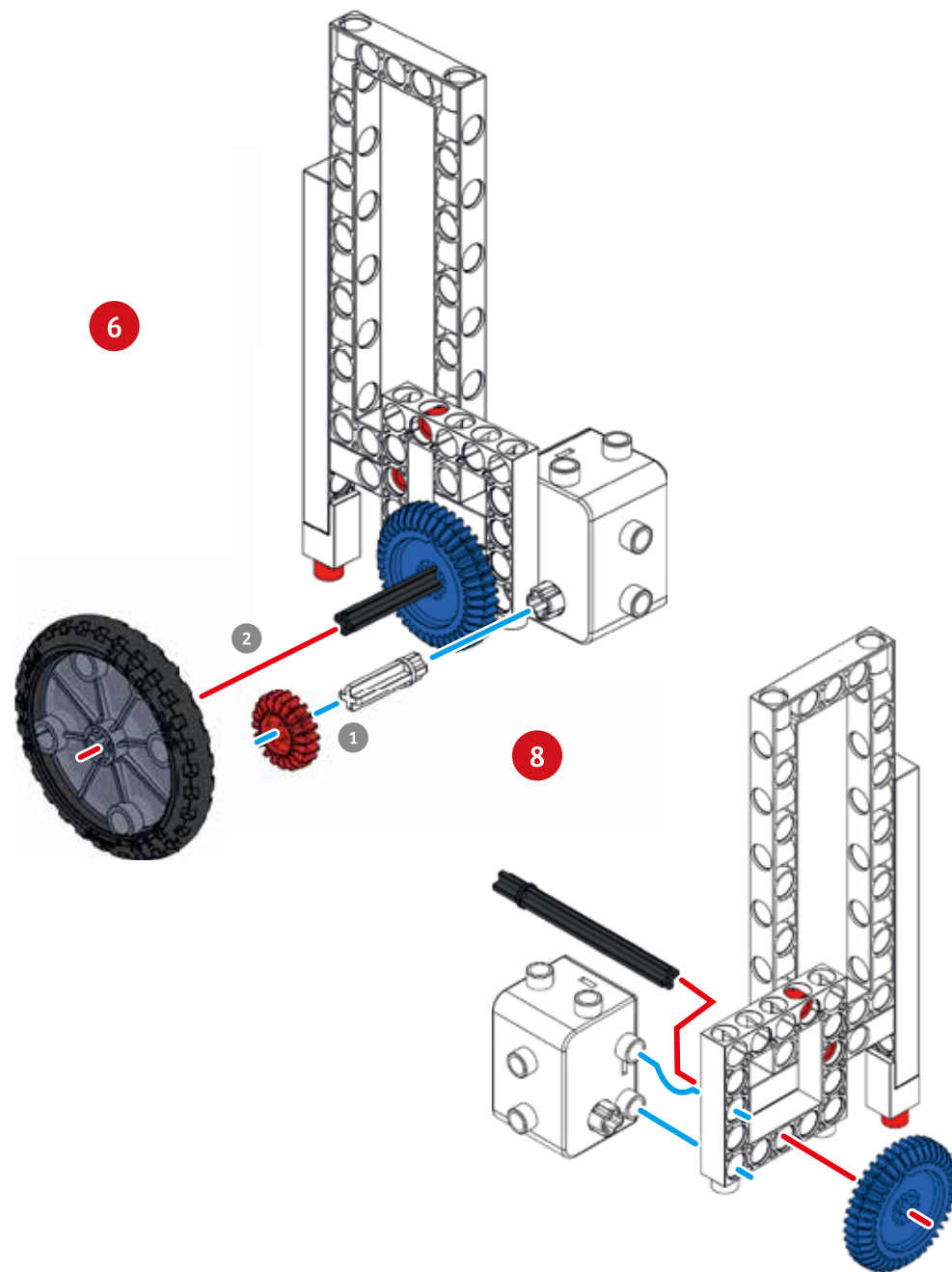
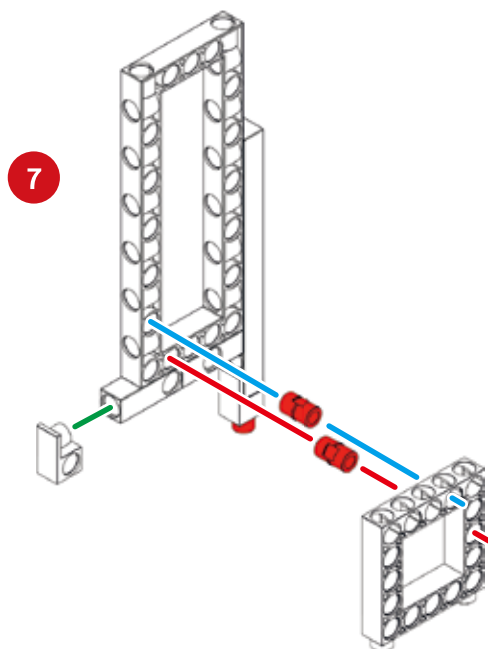
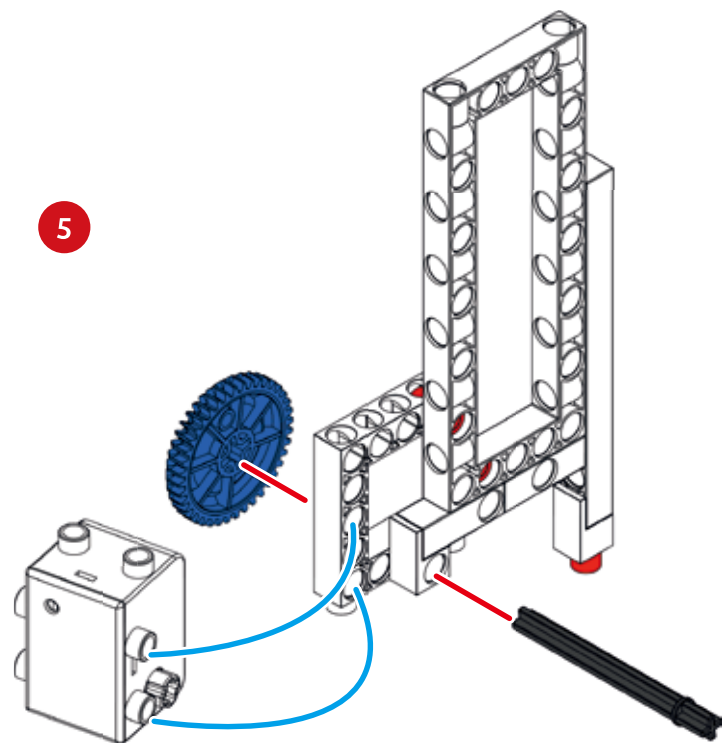


• How to Operate

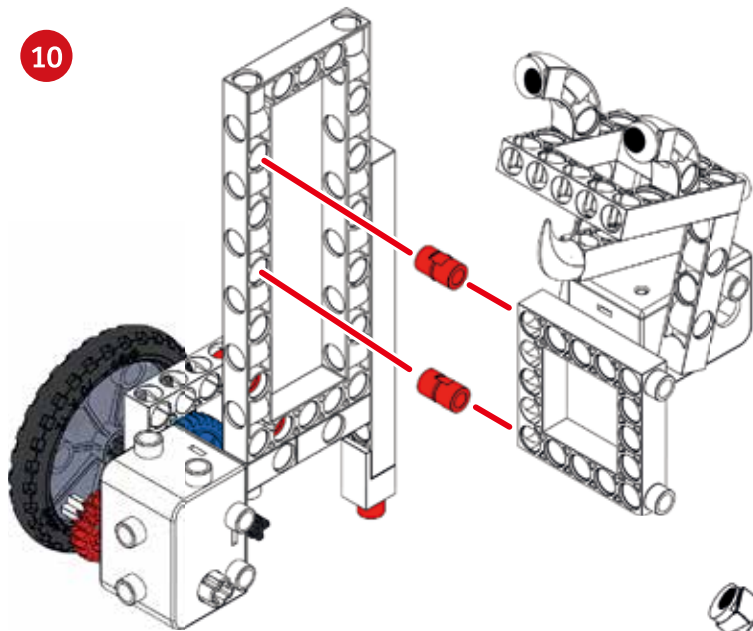


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4. Touch the touch pad 1 and 6 or 3 and 4 at the same time to make the model run around.

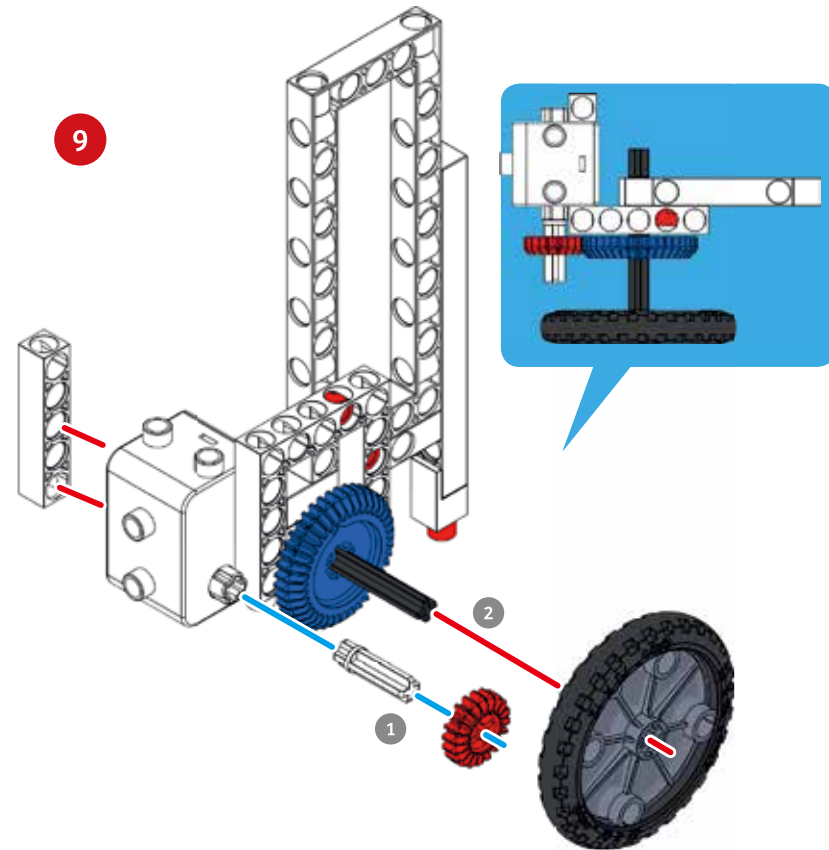




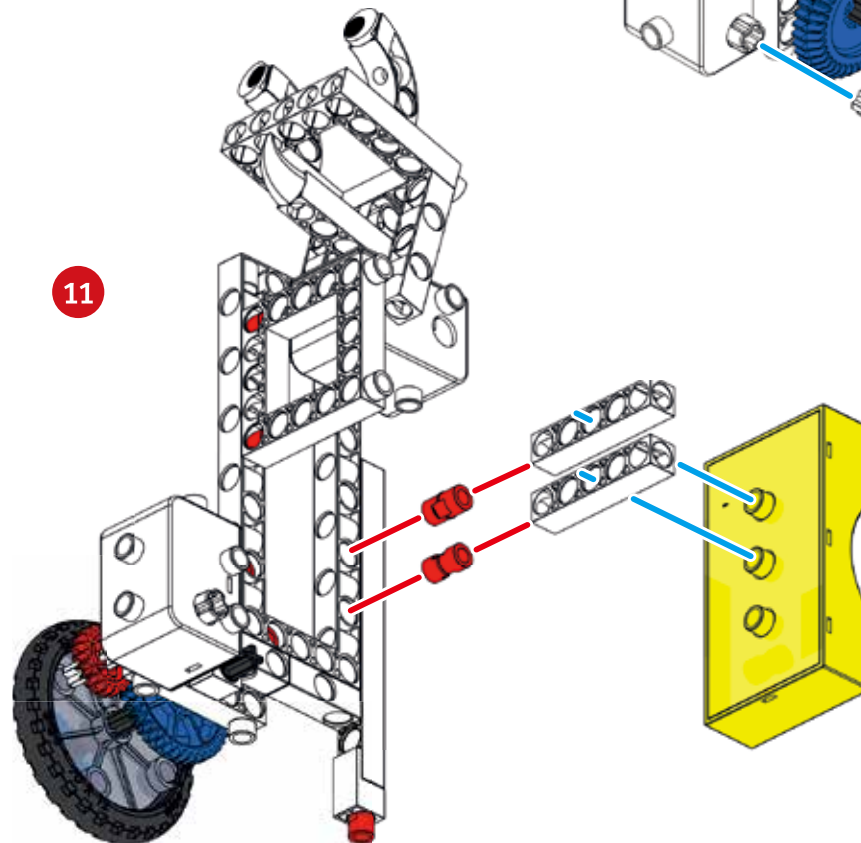
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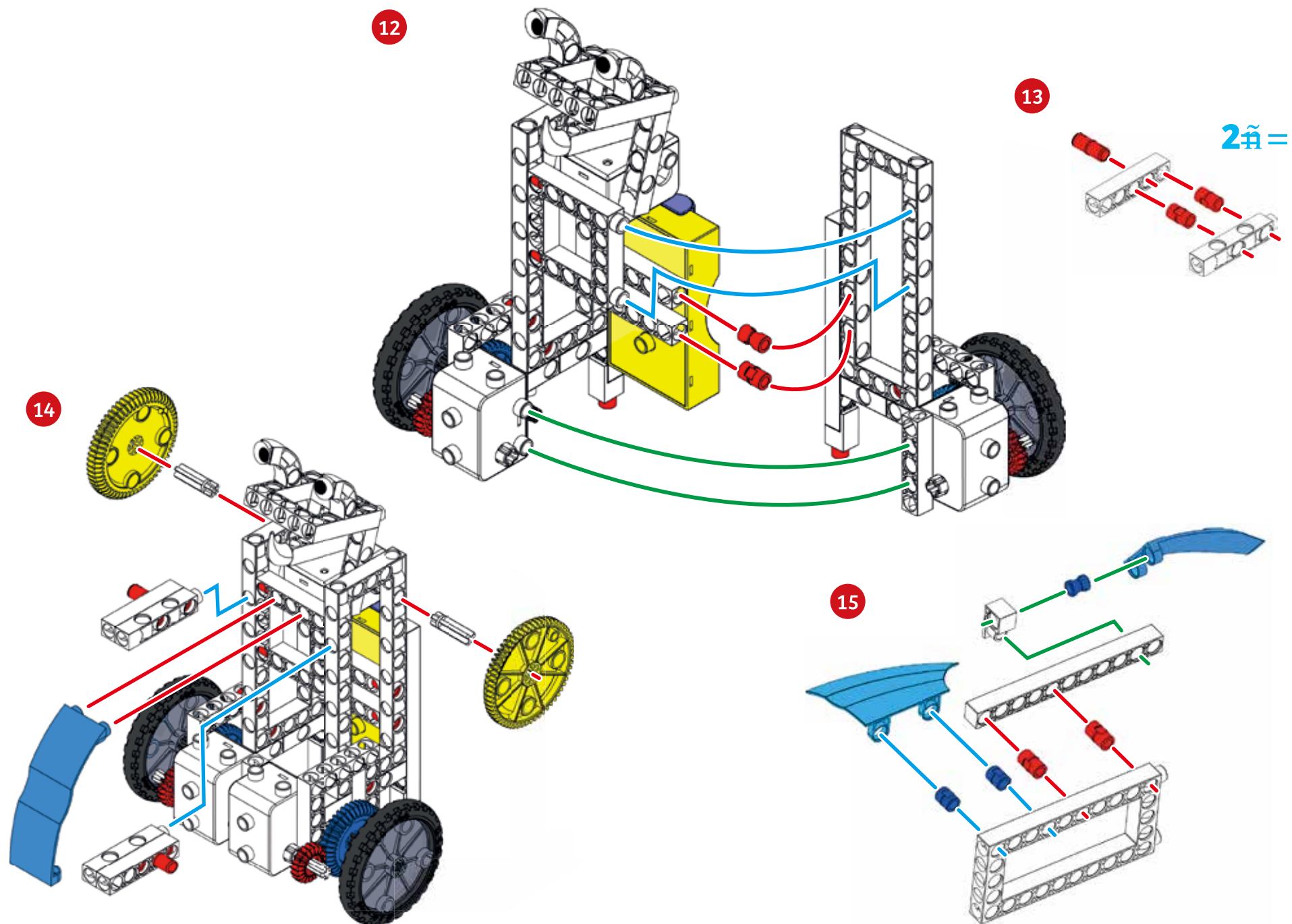


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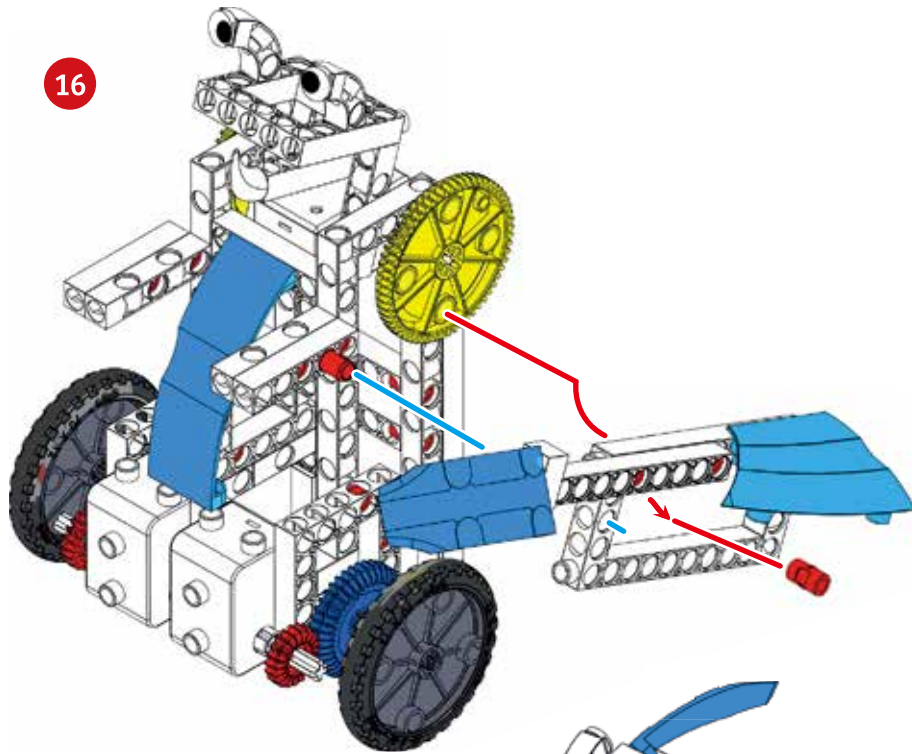


11

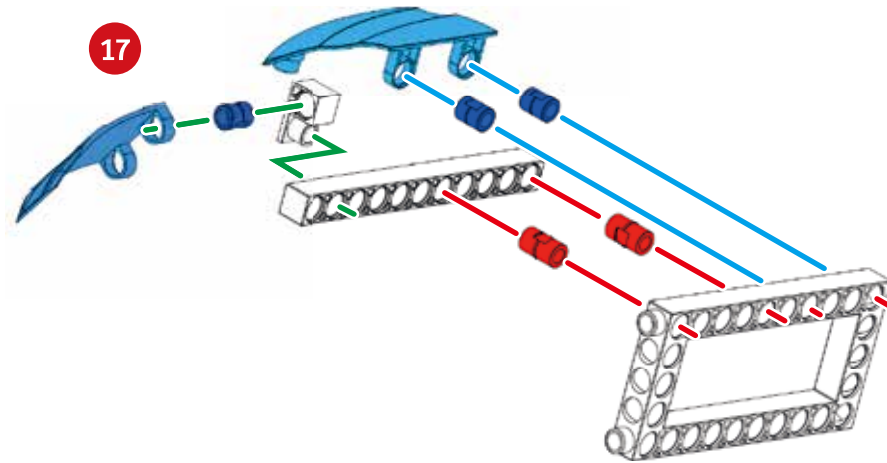




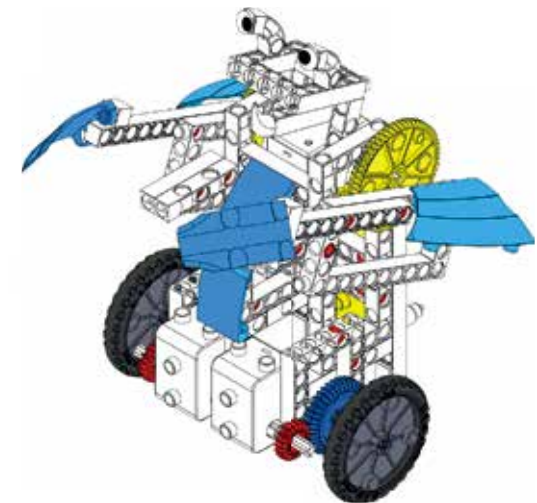
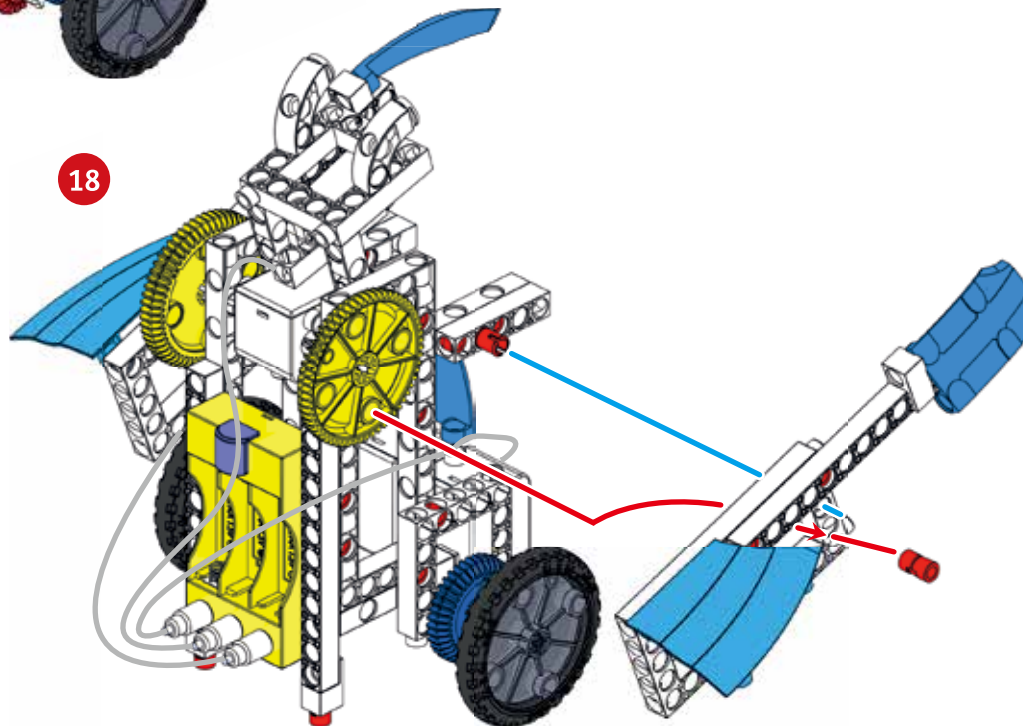
16



17



18





• Tips for Assembly

- ★ The wheels must be spaced 2 mm away from the motor axle so that the wheels can turn smoothly.



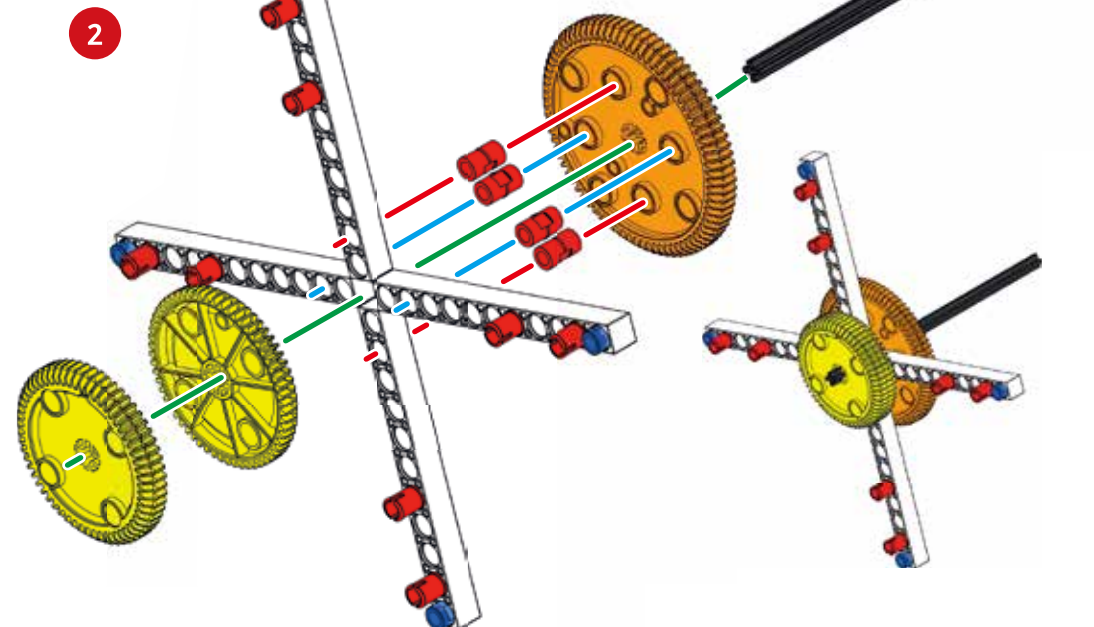
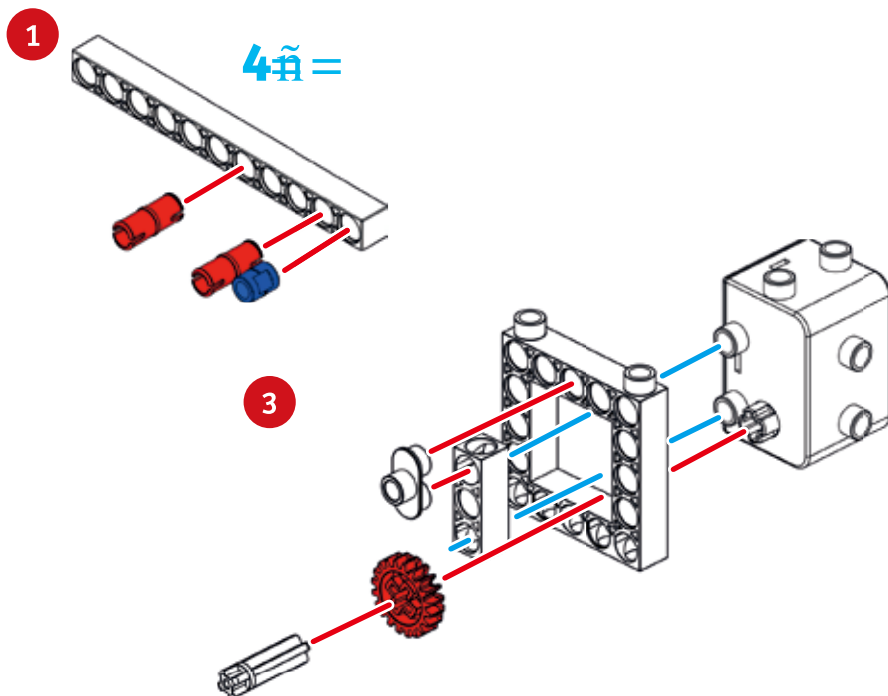
• How to Operate

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4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.

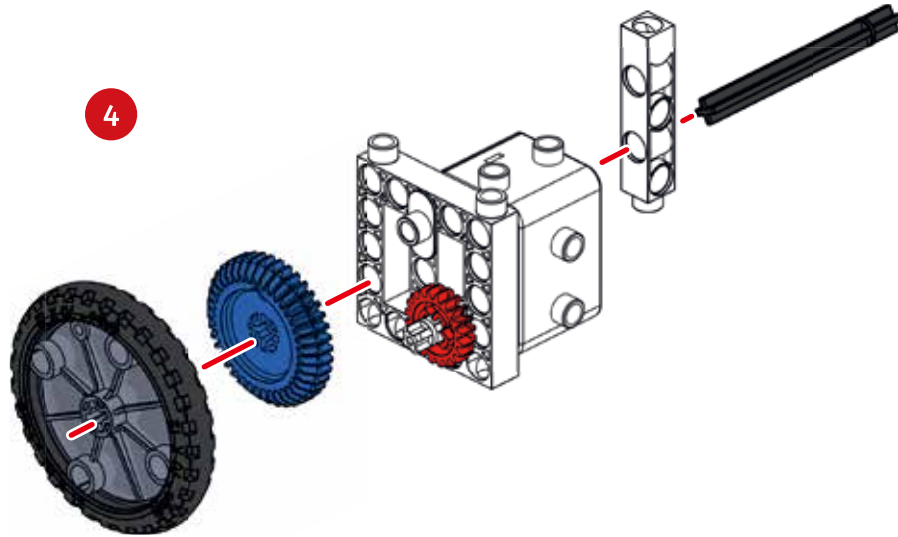


• Challenge

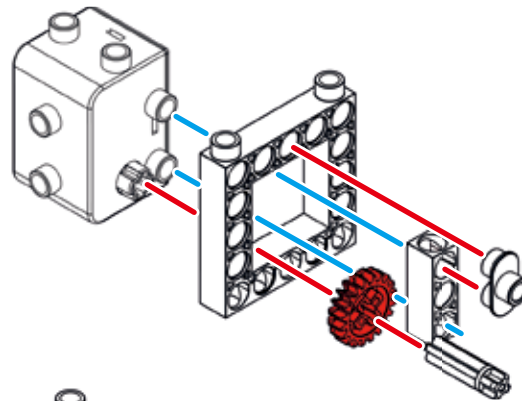
Please design an apron and back your aircraft into it.



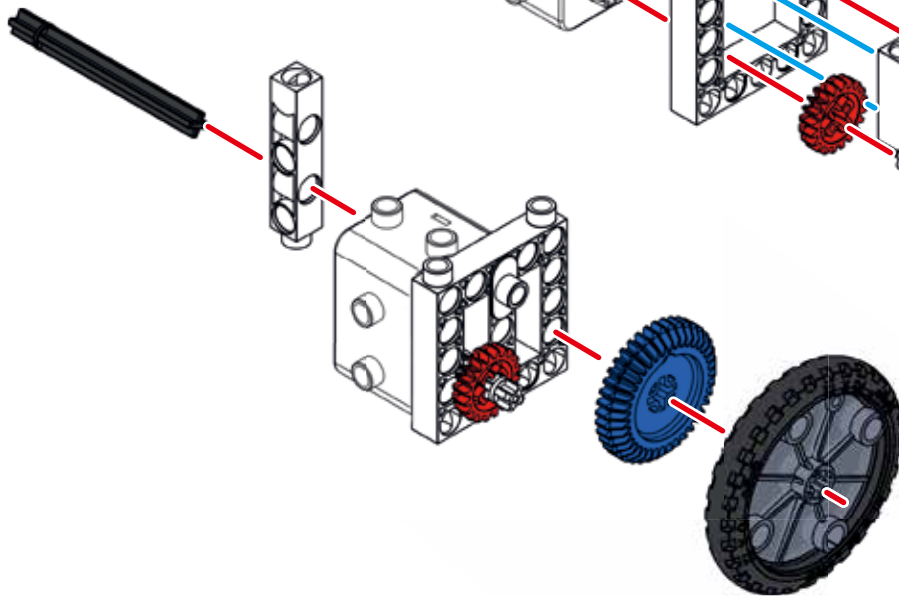
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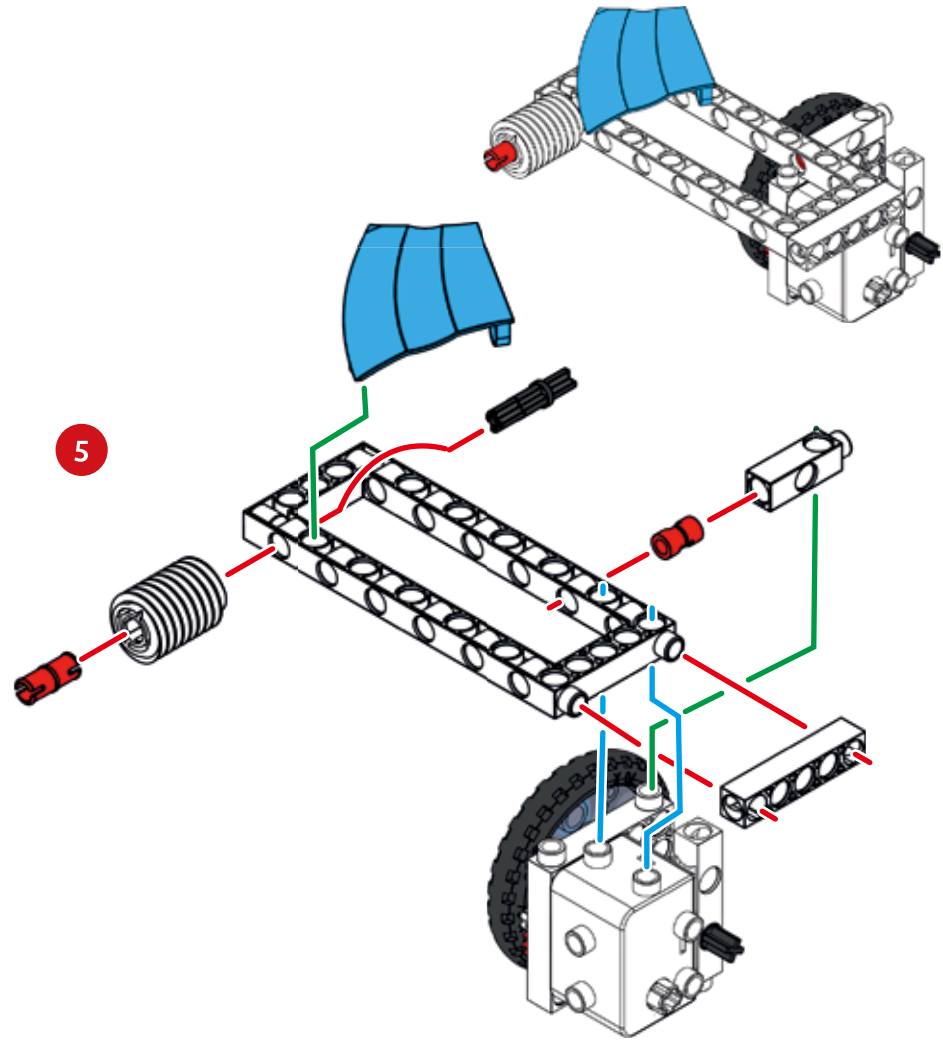
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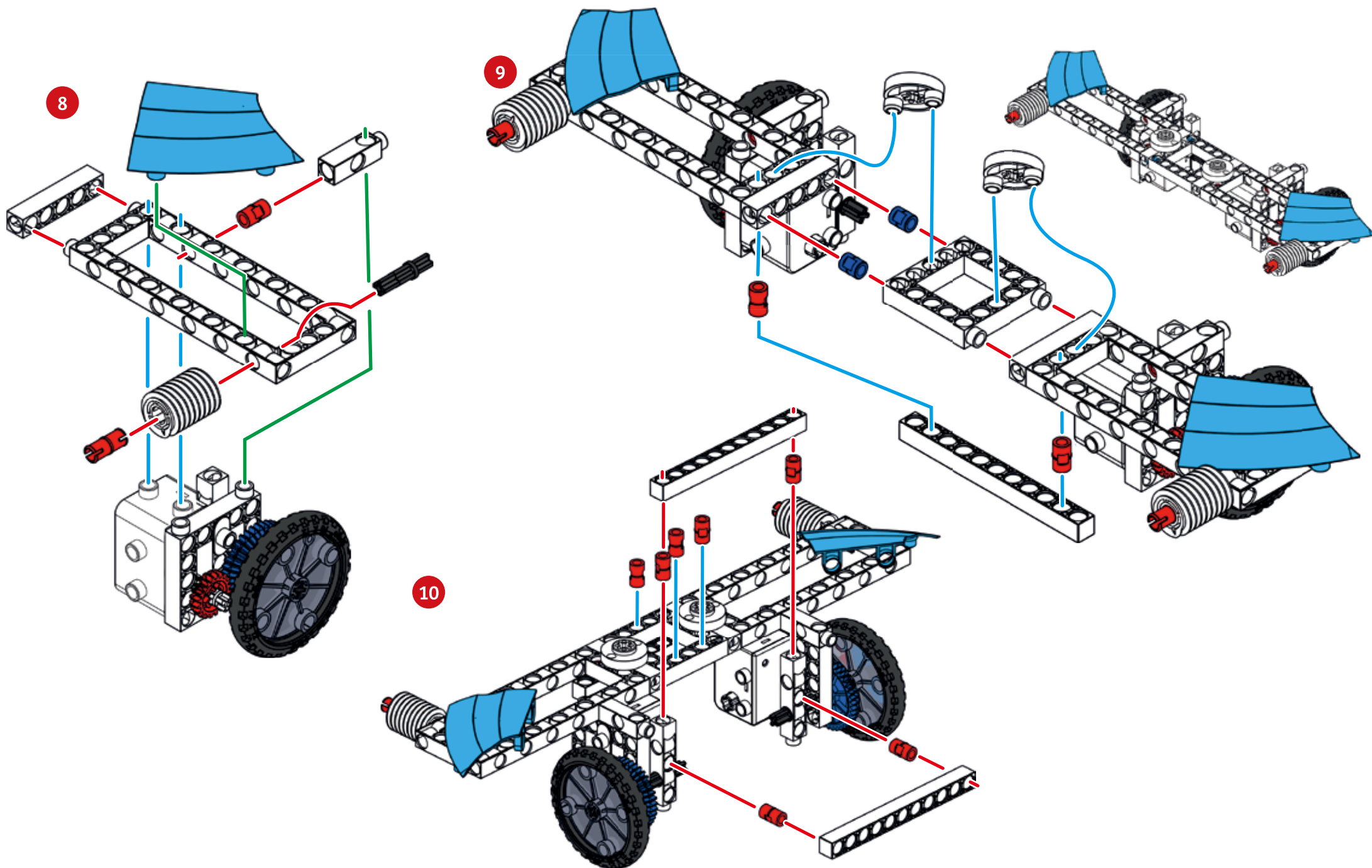


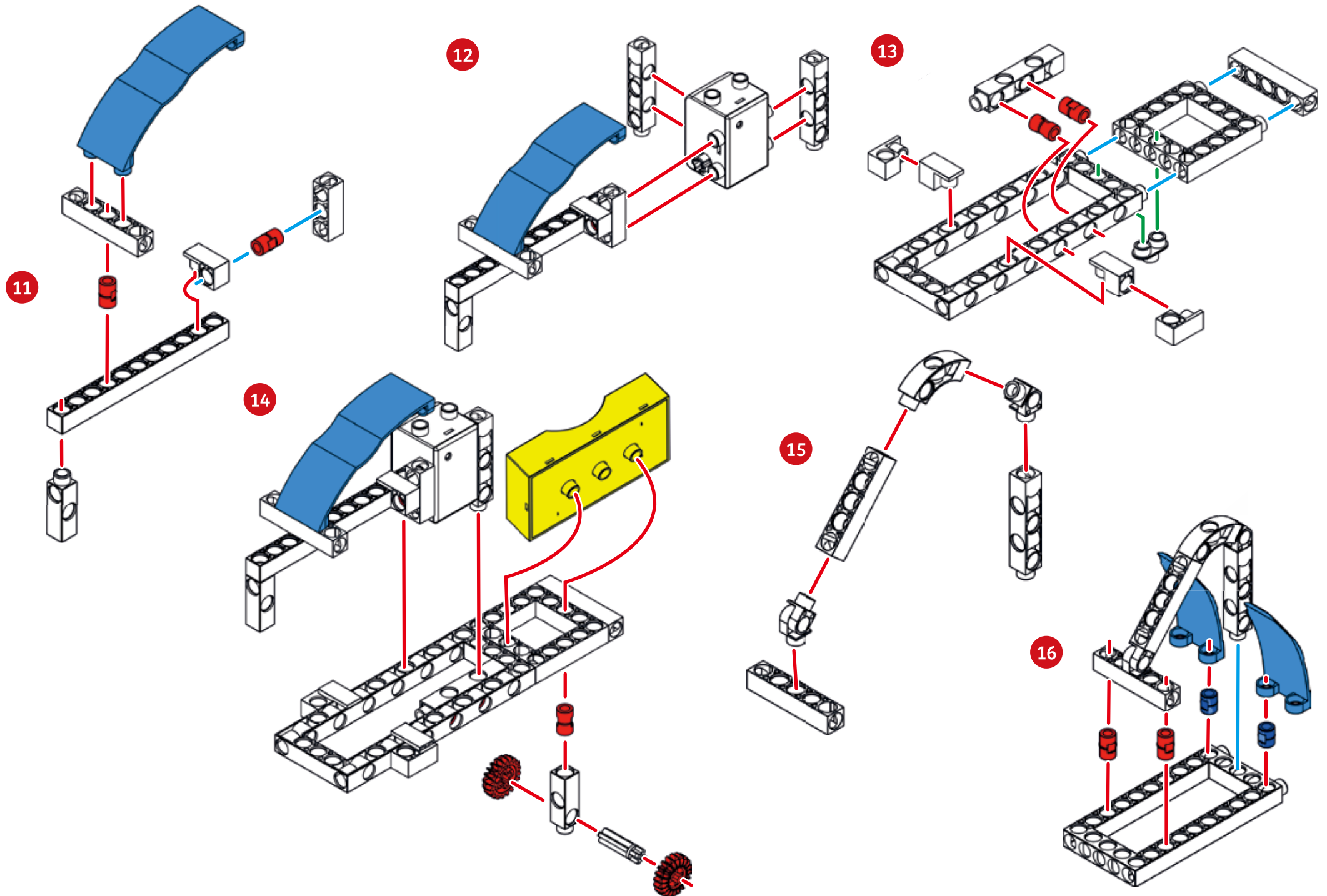
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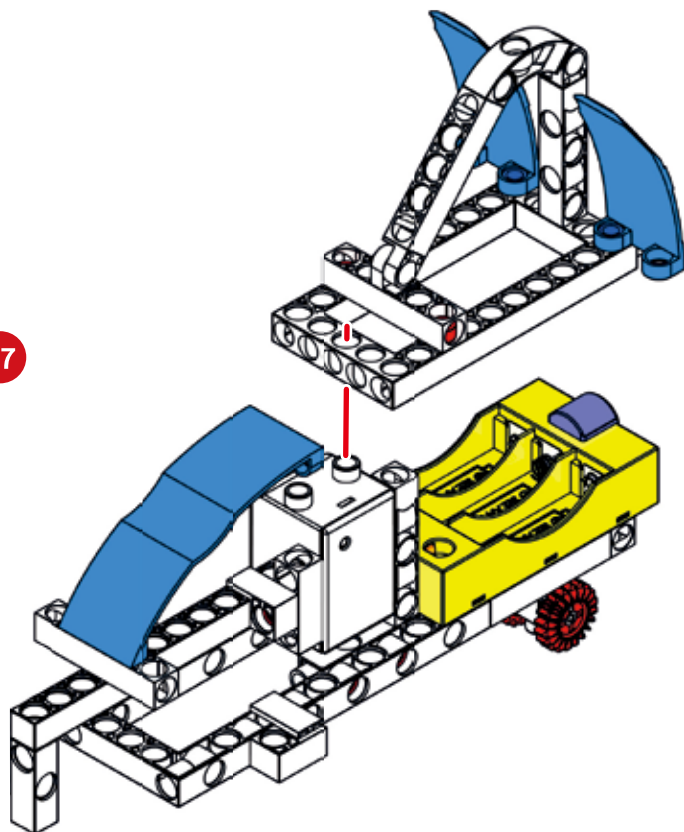
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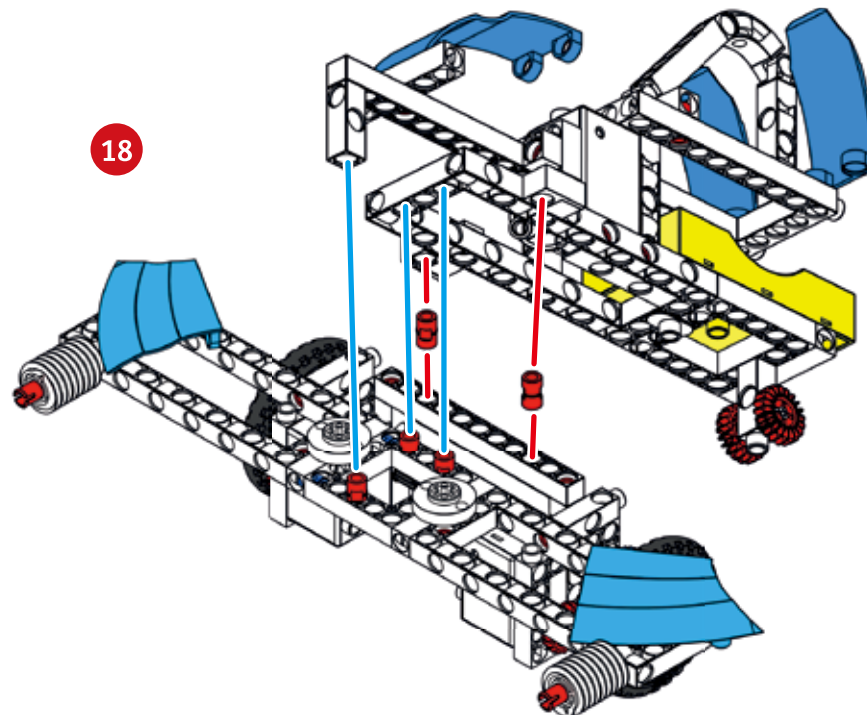




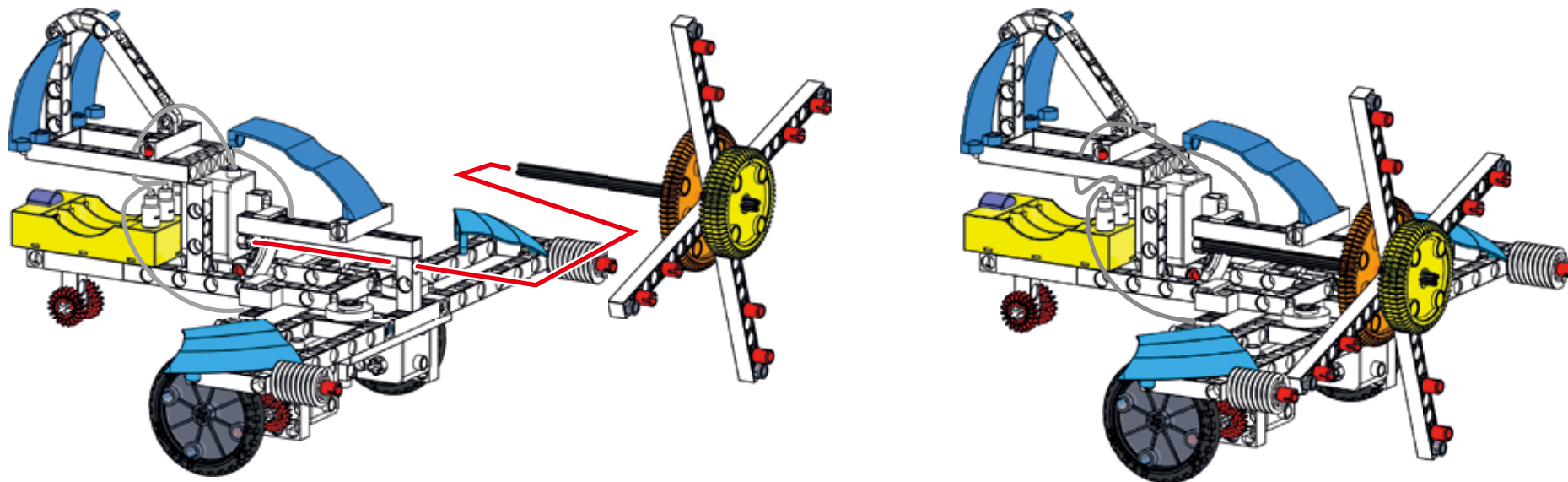
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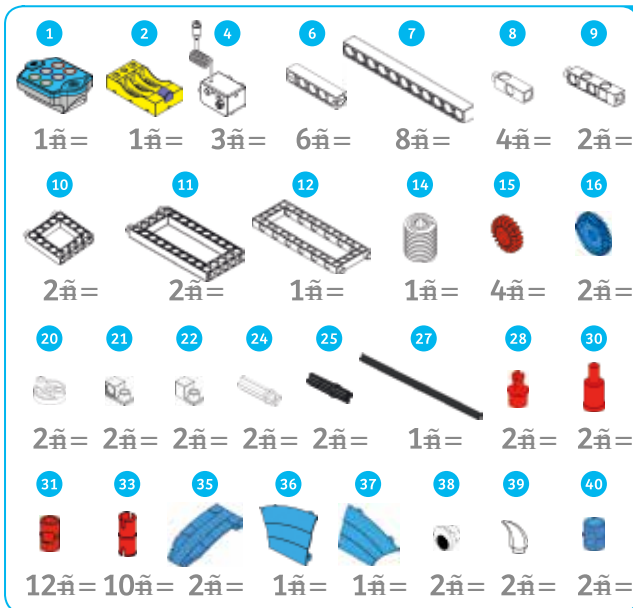


18



19





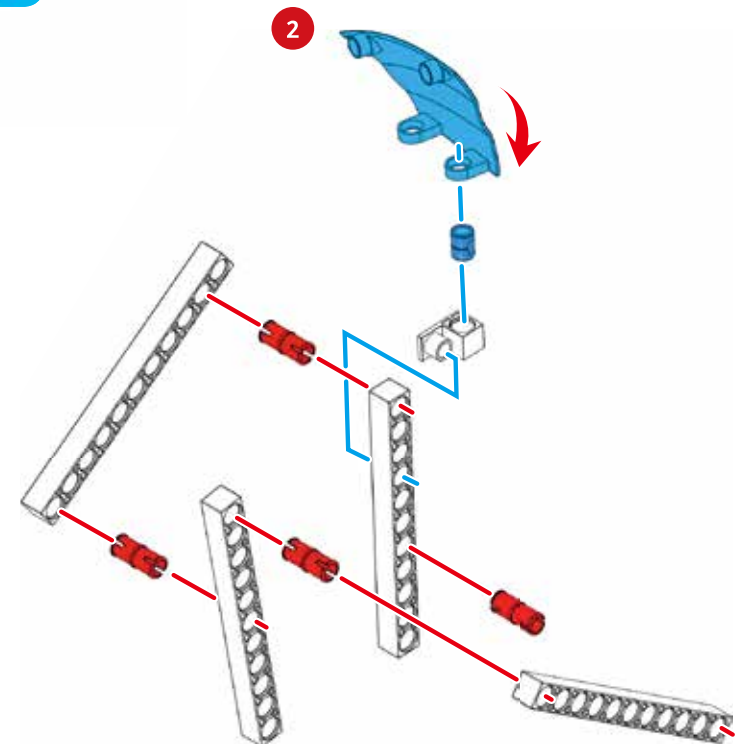
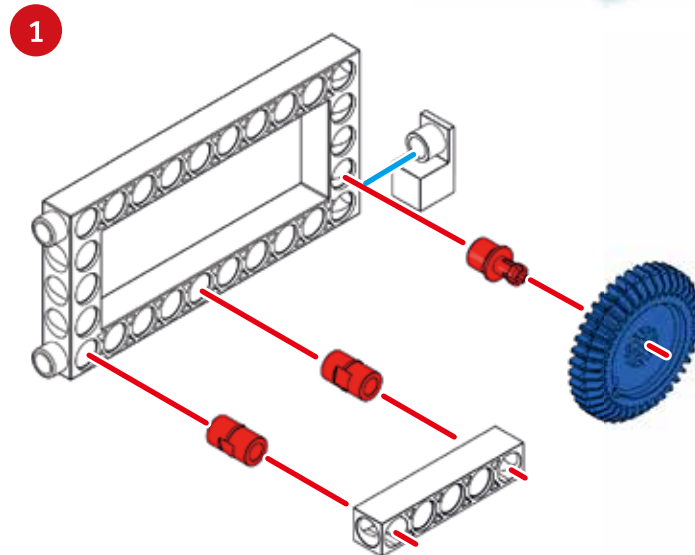
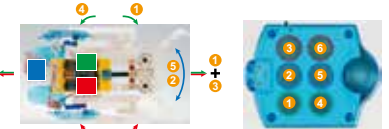
• Tips for Assembly

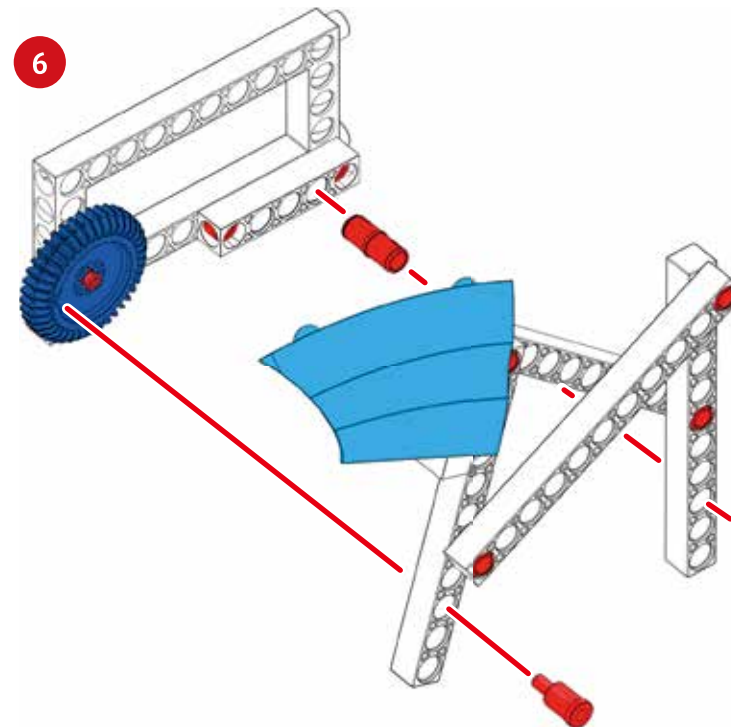
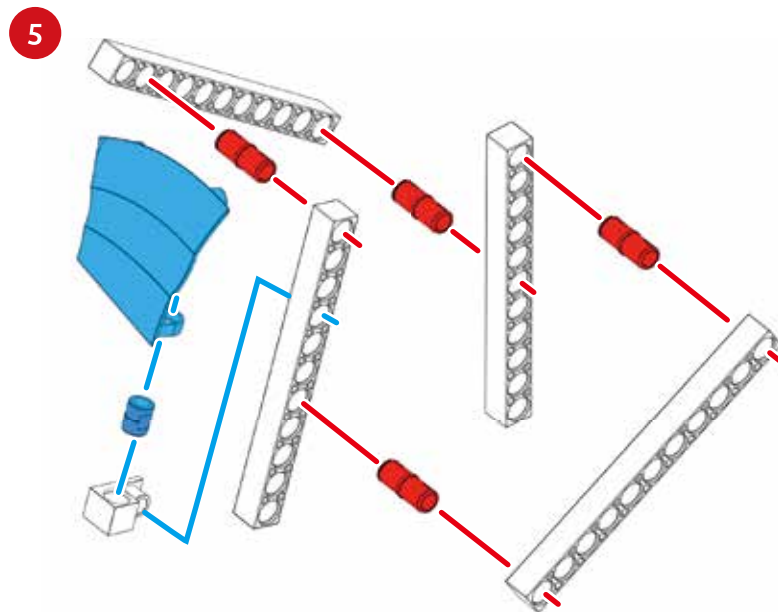
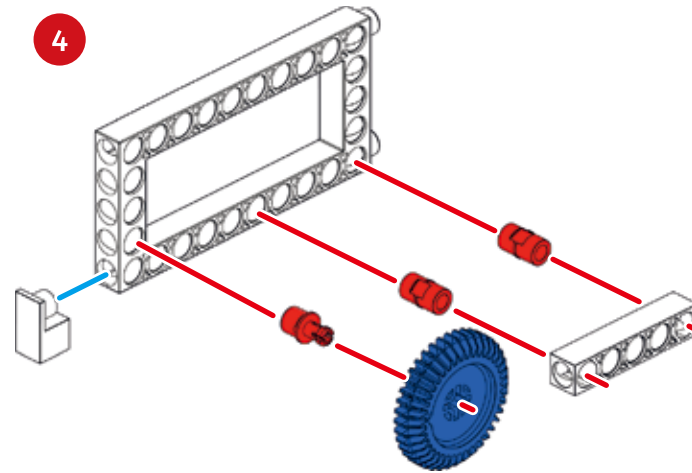
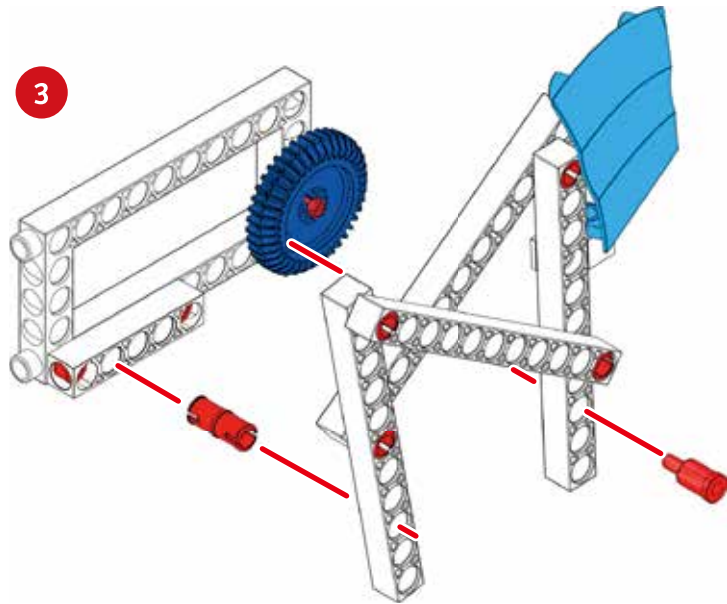
- ★ Jointed legs are built in three layers of rods. Those joints need to be fixed precisely, so the model can move smoothly.

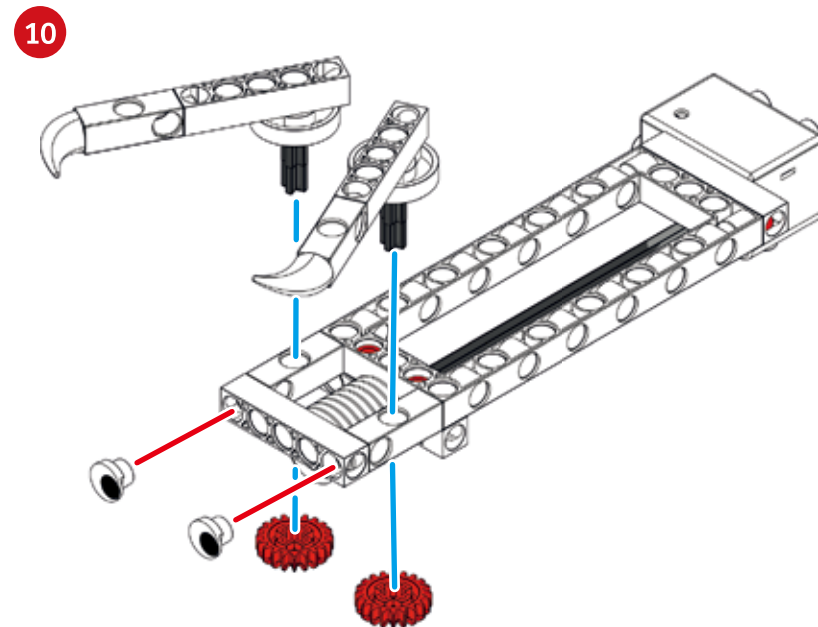
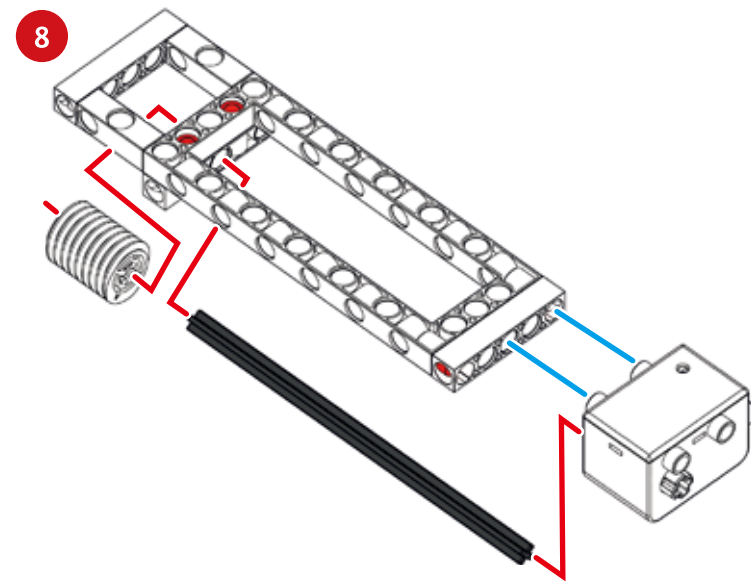
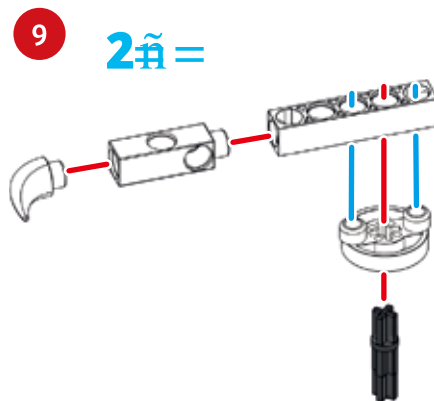
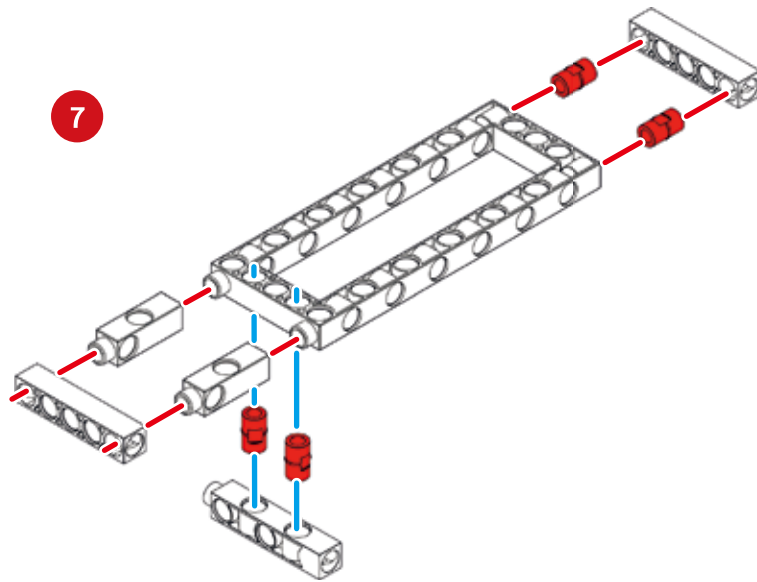


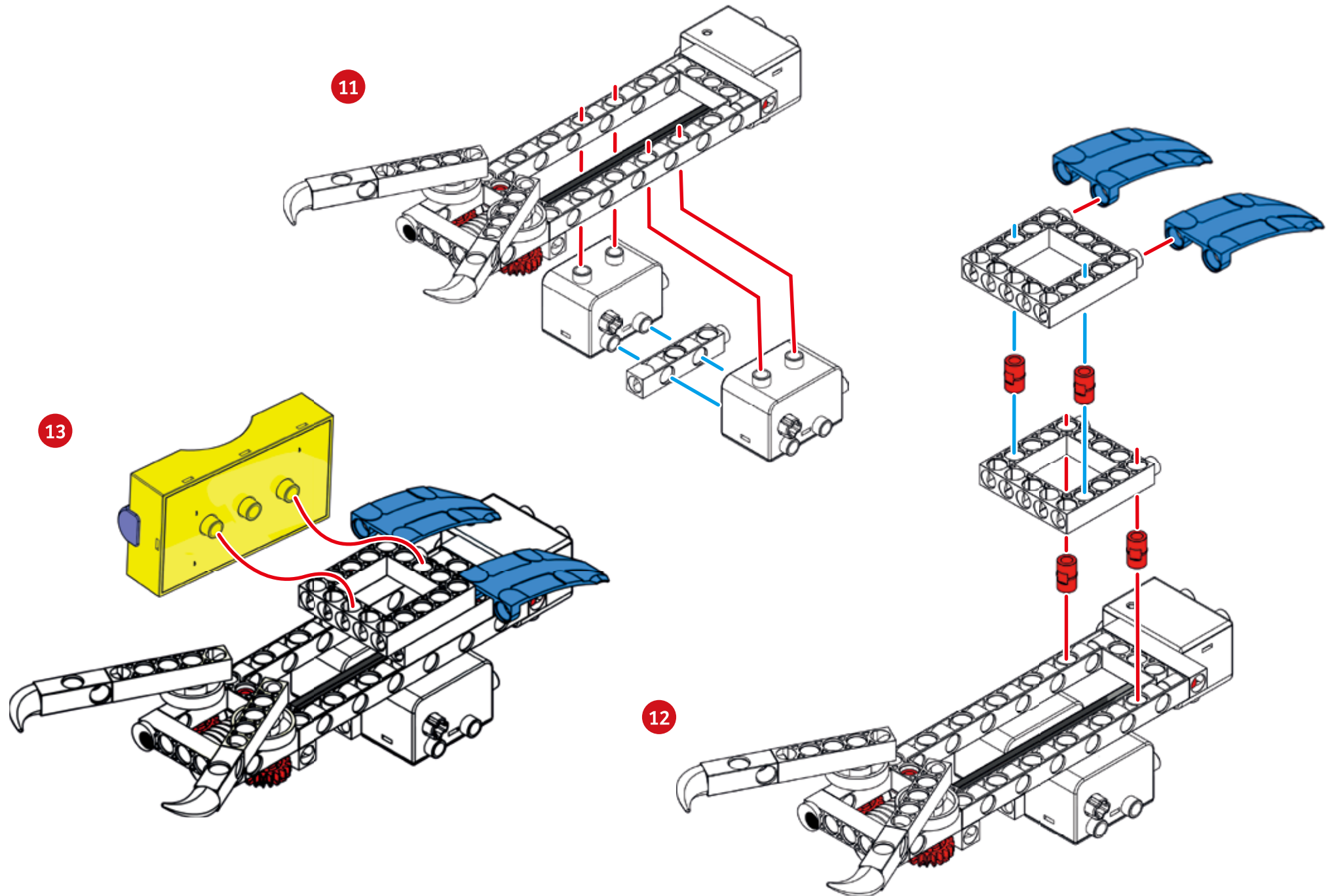
• How to Operate

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4. Touch the touch pad 1 and 6 or 3 and 4 at the same time to make the model run around.

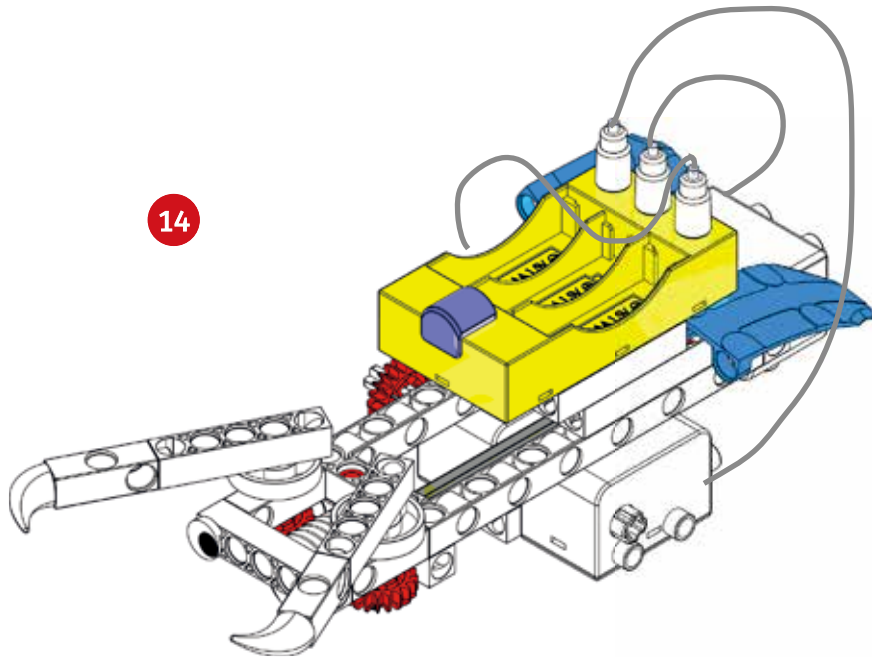




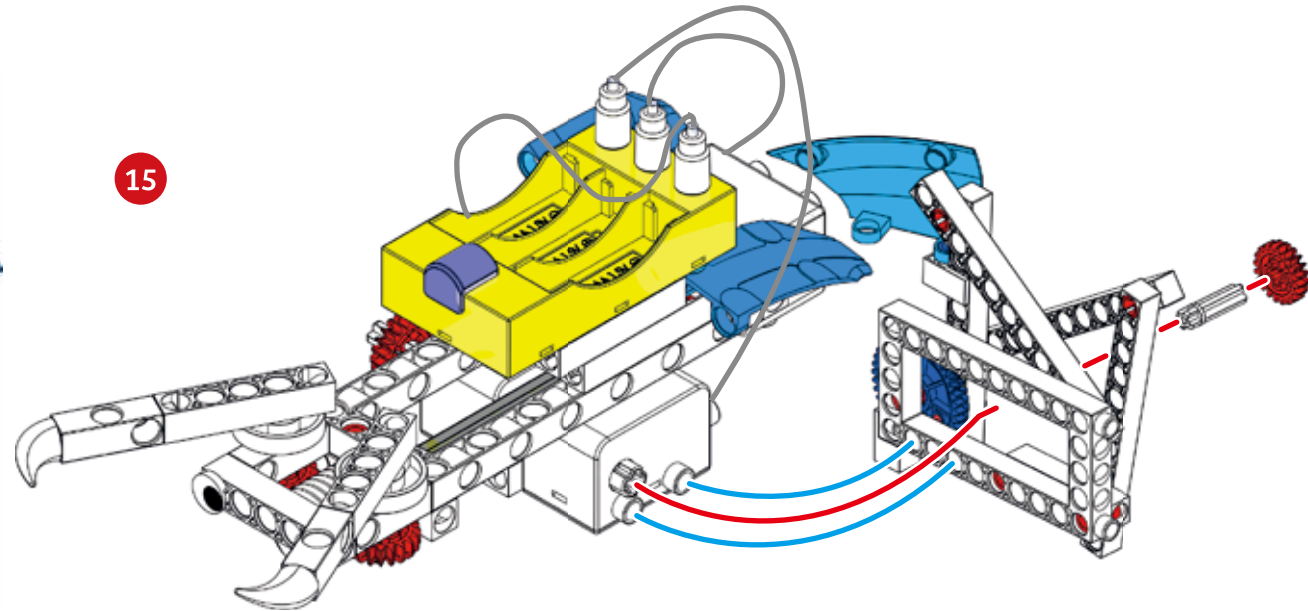




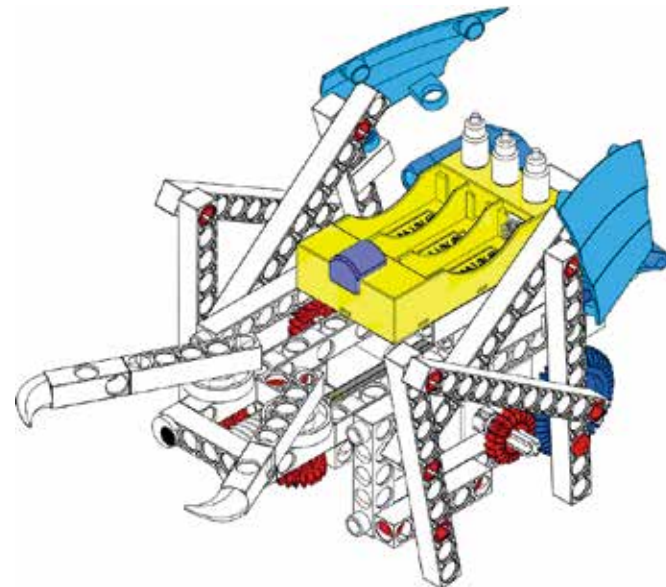
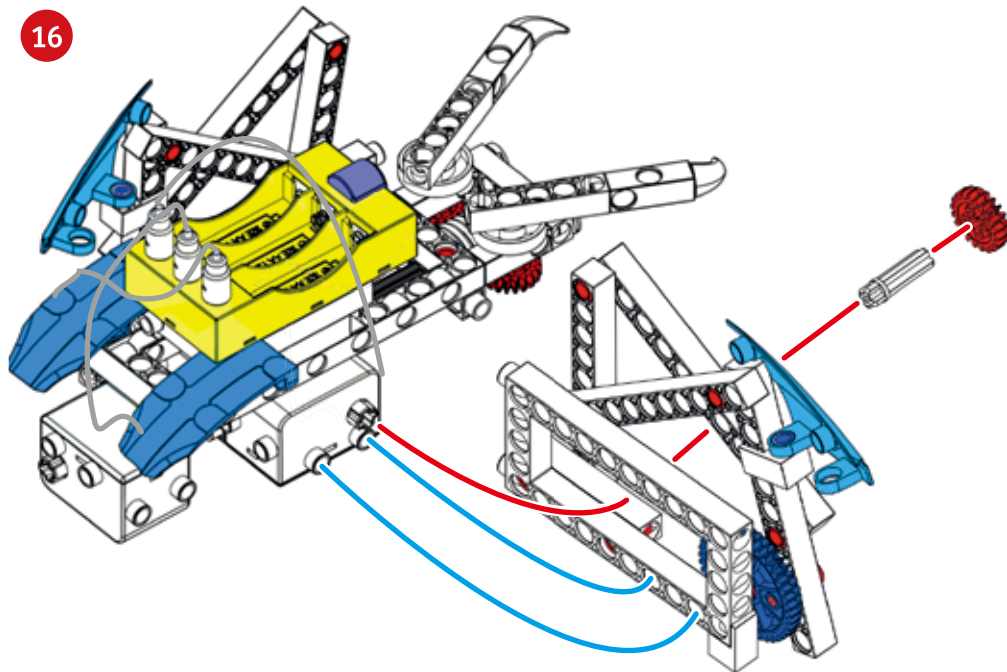
14

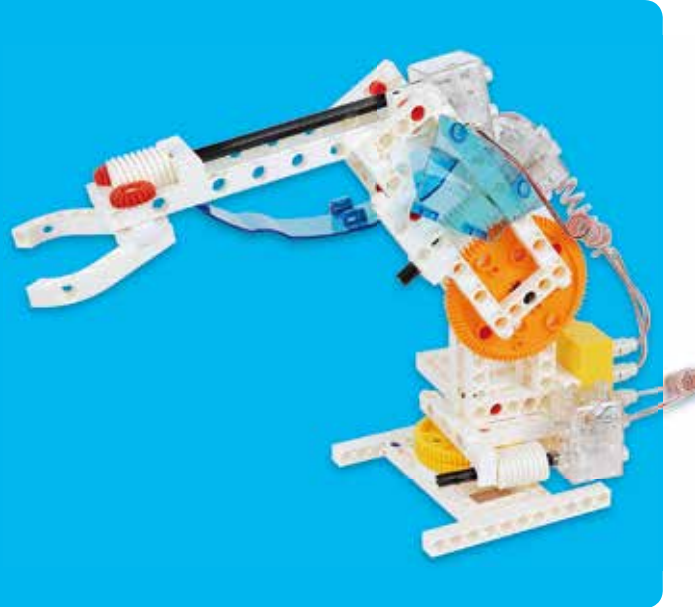
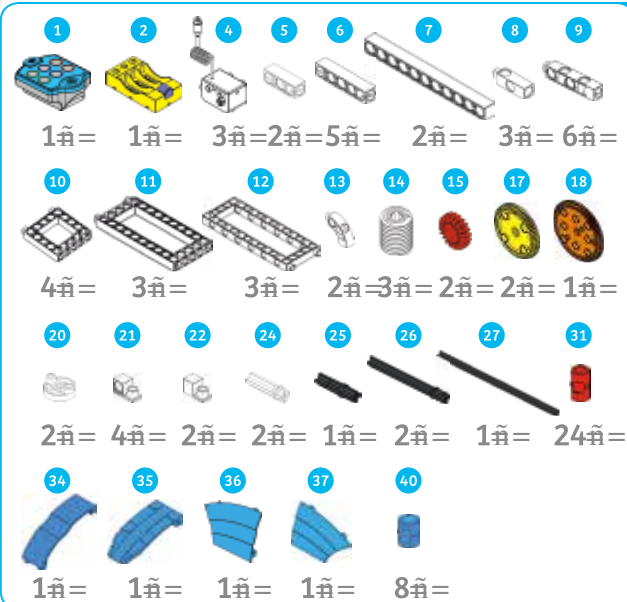


15



16





• Tips for Assembly

- ★ Please keep the hole of the worm gear in this direction as Fig. 23 so that model can move smoothly.



Fig. 23

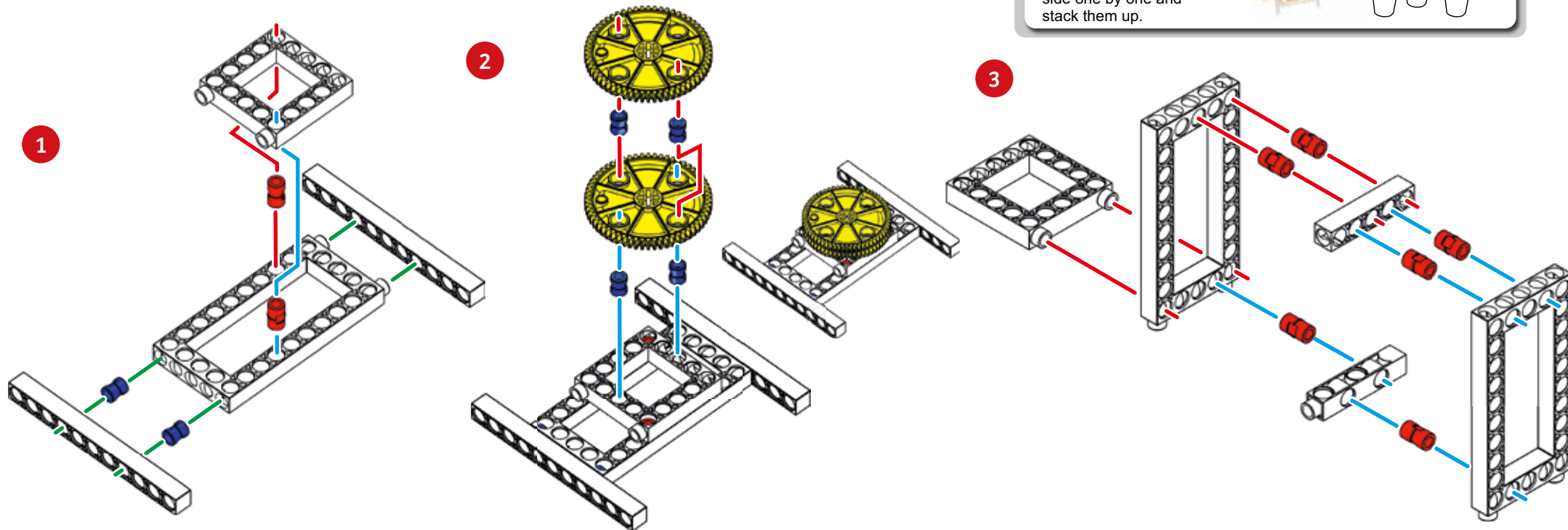
• How to Operate

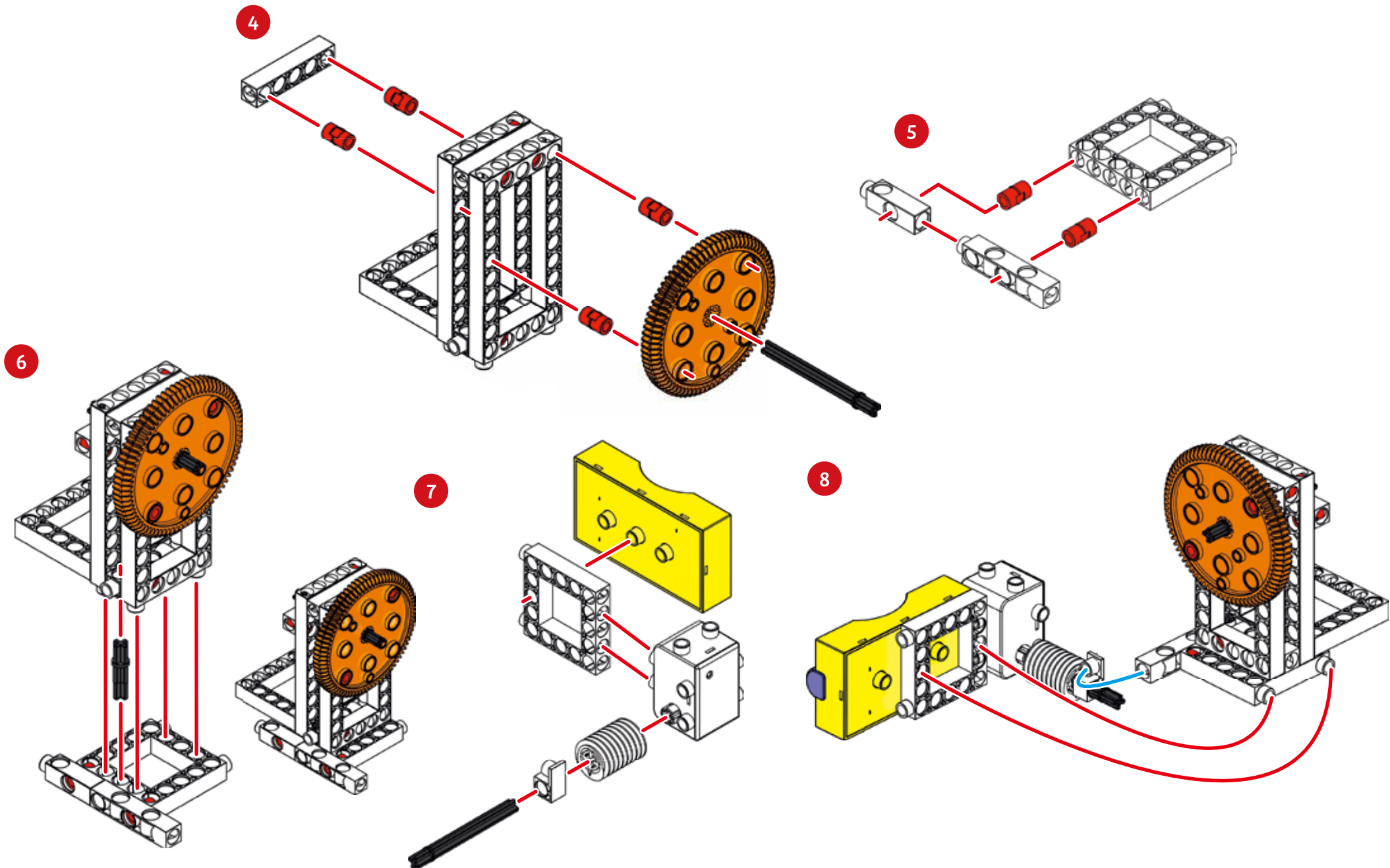
1. Turn on the switch on Remote Controller. Touch the touch pad 1 or 4 (in green ring) on the remote controller to activate the motor indicated in Green for back and forth motion.
2. the remote controller to activate the motor indicated in Red for back and forth motion.
3. Touch the touch pad 3 or 6 (in red ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.
4. Touch the touch pad 2 or 5 (in blue ring) on the remote controller to activate the motor indicated in Blue for back and forth motion.

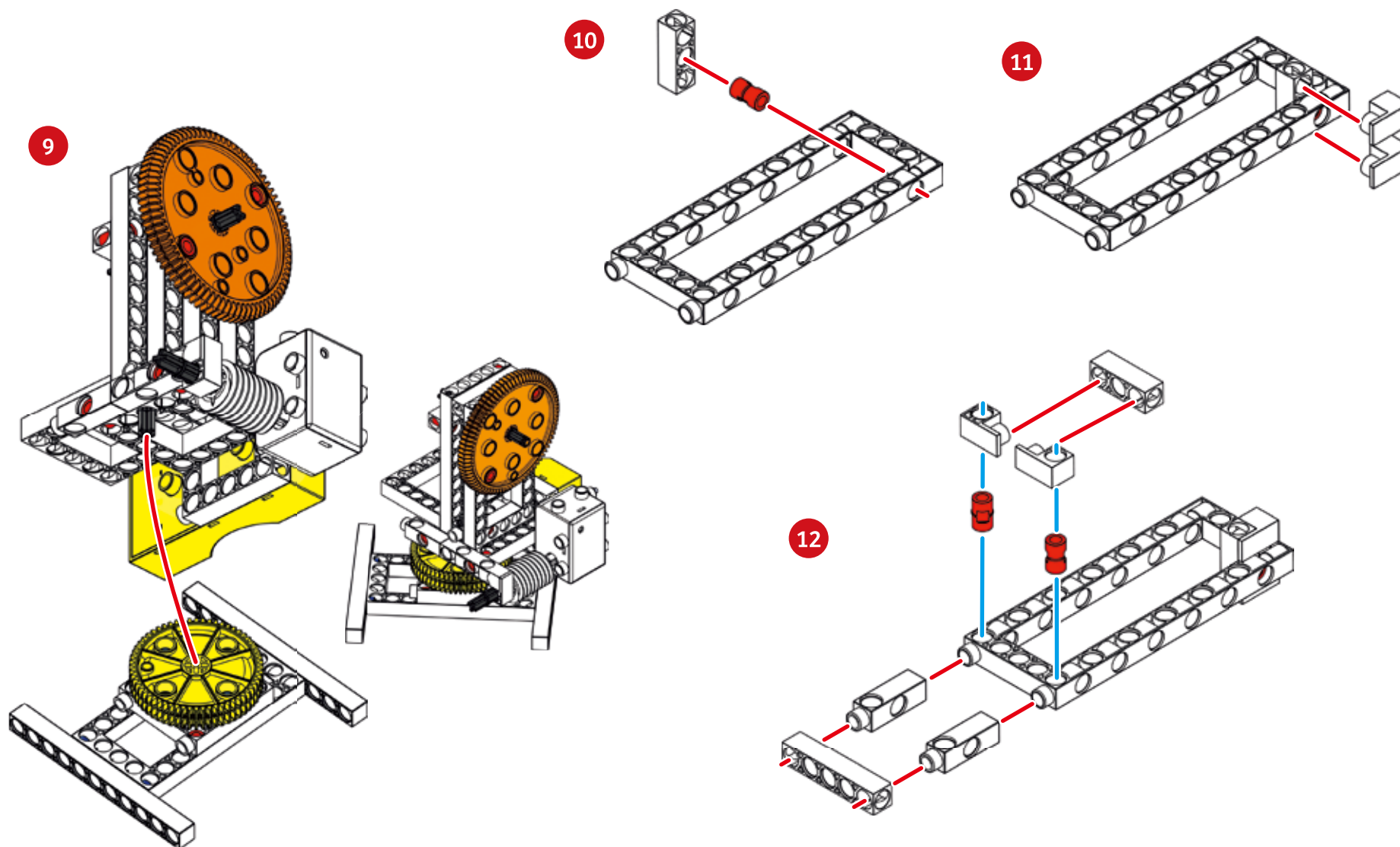


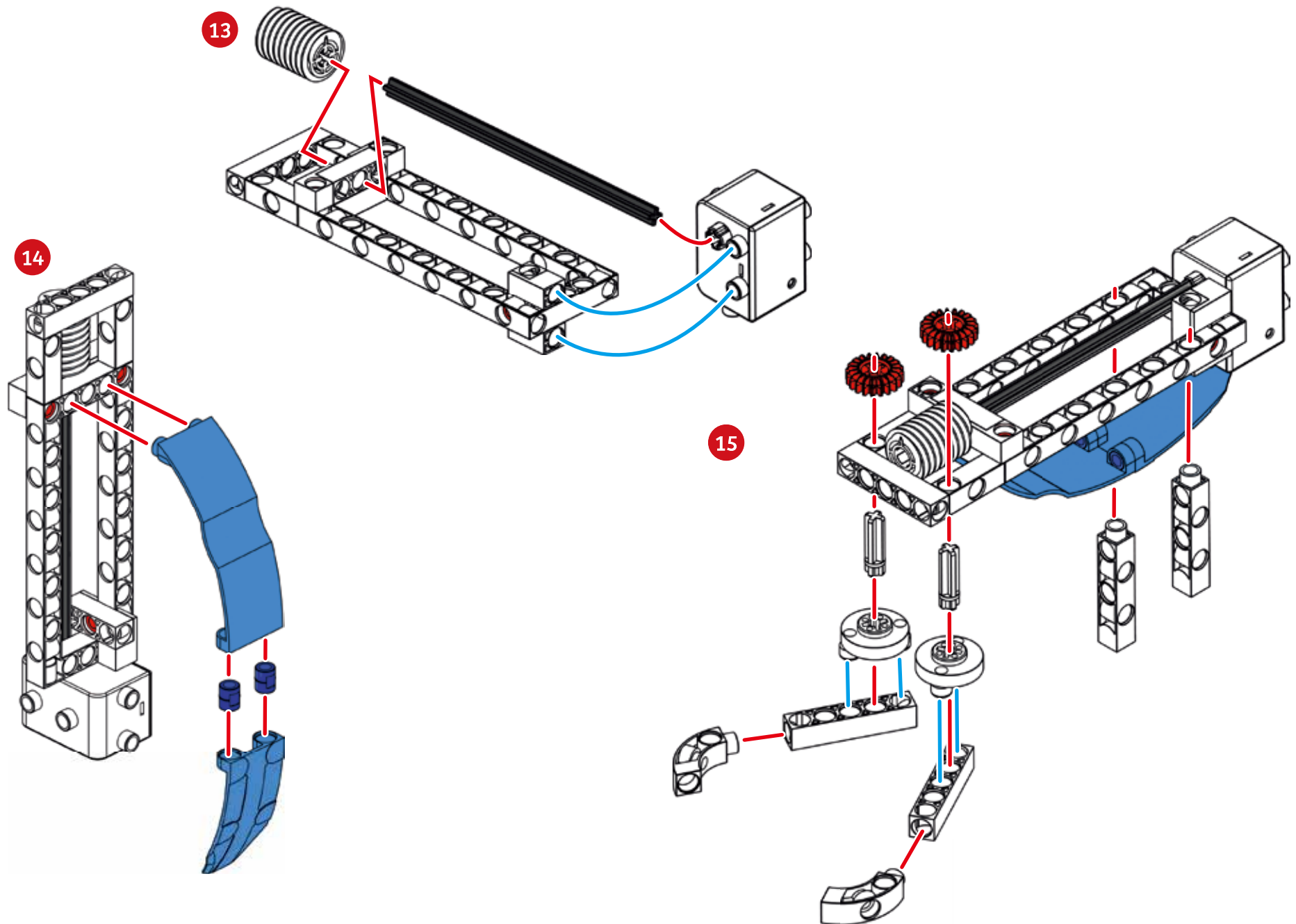
• Challenge

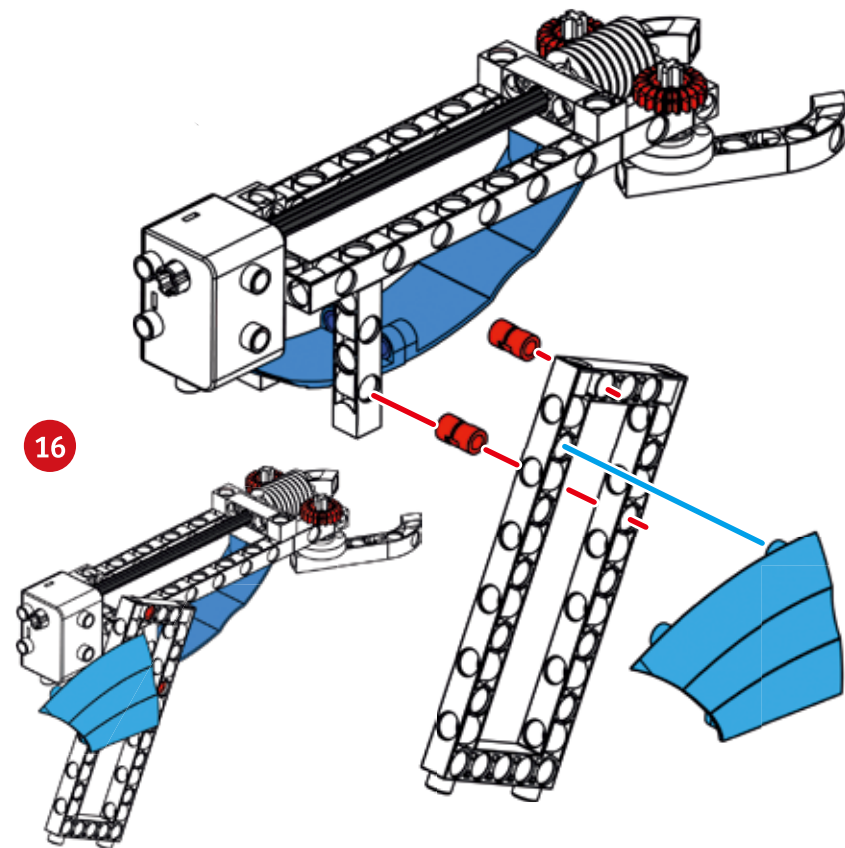
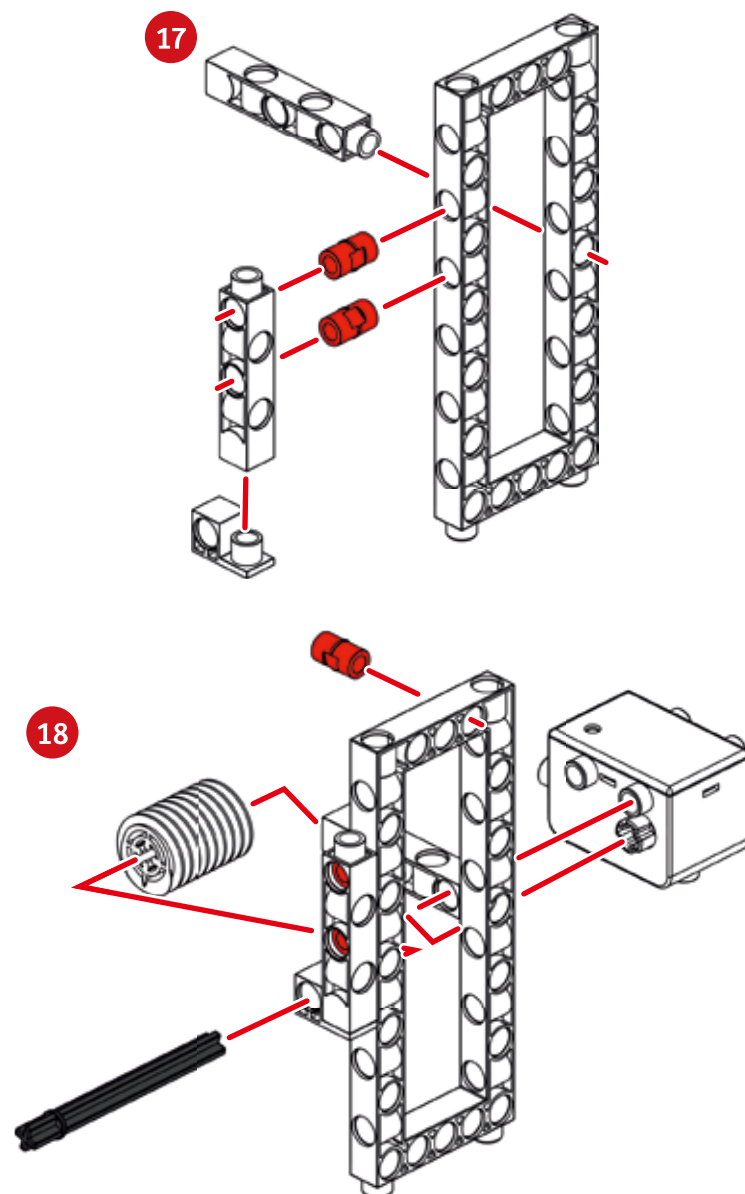
Place 5 paper cups on one side. Then try to move them to the other side one by one and stack them up.

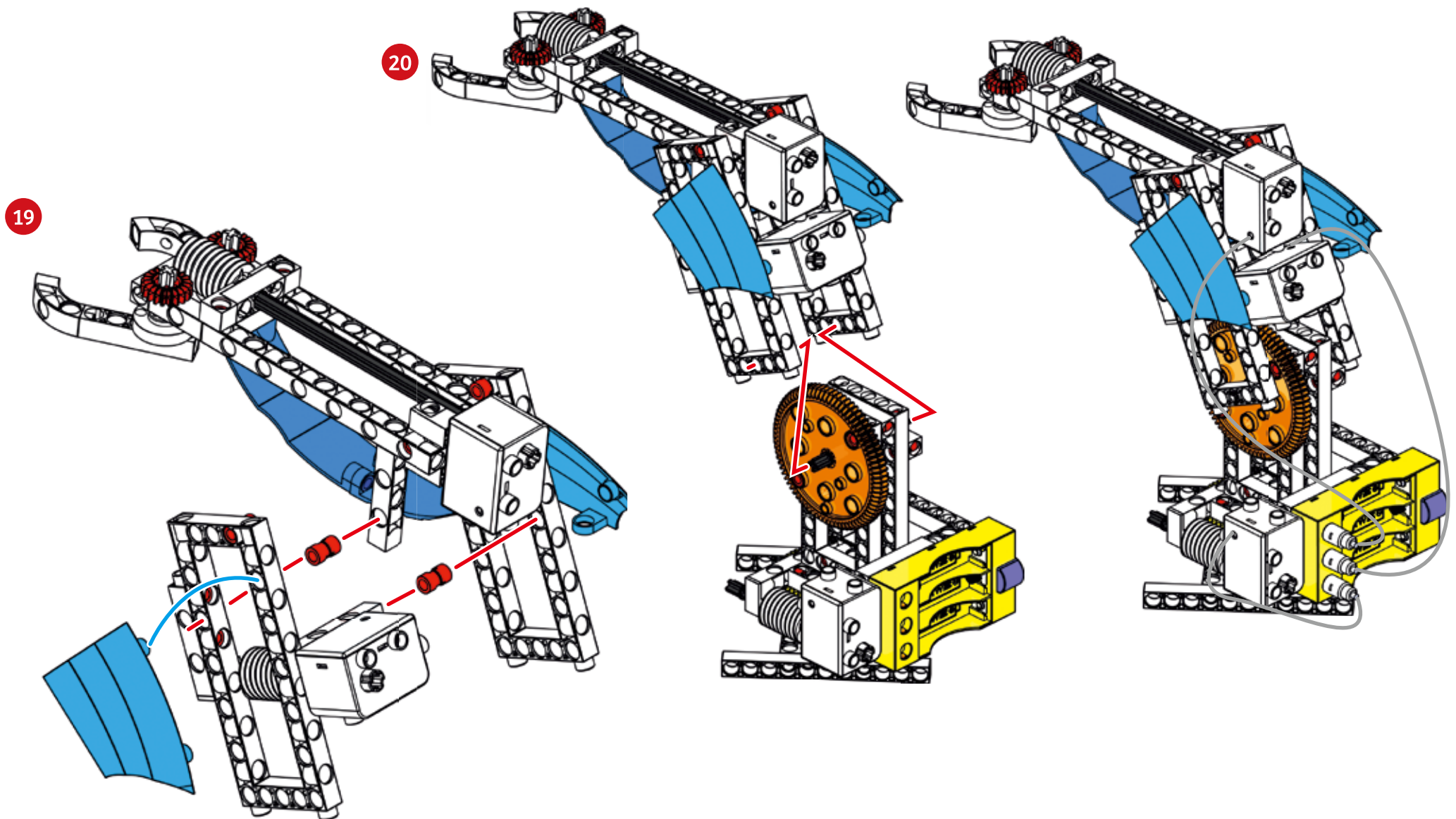












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