

# Blix

## DO-IT-YOURSELF MANUAL

- 1 Read all instructions carefully before constructing.
- 2 Place all the pieces used in a step on the side before starting.
- 3 Always re-check the construction after every step.



**MOTORISED  
GEARBOX**



**QUICK  
CONSTRUCTION**



**GEAR  
SYSTEM**



**2 WAY  
SWITCH**

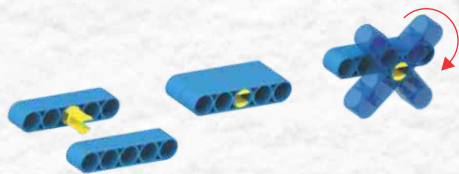
AGE  
**7-99**

MODELS  
**7**

PIECES  
**340+**



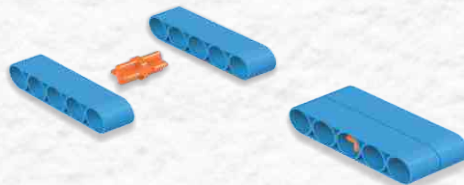
## How to construct



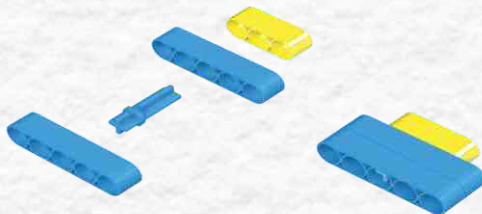
I - CL2 - Use this connector to loosely connect 2 pieces.



II - CT2 - Use this connector to attach 2 pieces.



III - CT3 - Use this connector to attach 3 pieces.



During assembly ensure position of collar is same as in the image in manual.

## How to dismantle

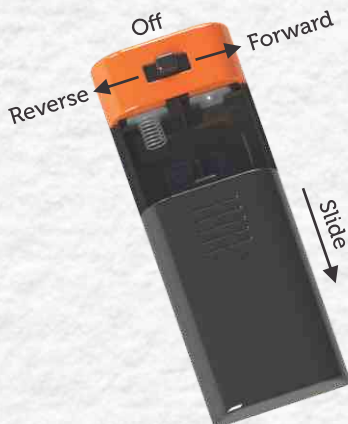
- Narrow edge to remove connectors
- Fit the tool into narrow side of connector collar



- Broad edge to split two pieces

## Important Information:

• How to remove and insert the batteries



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

# GEARS!

Reminds you of the gear stick near the driver in a car, doesn't it? Well why is that stick there? Have you noticed when it is used? Do you feel more speed when the gear goes up? And do you hear the engine growl when you don't change the gear in time? So why put such a clunky noisy device in a car!

Gears are all around us in most machines that we use daily like cars, watches, toys, printers etc. And they are a fascinating and integral part of our world today. In this set, we shall be using gears in a number of places to change speed, power, direction etc. Before we start building, let's understand a few applications of Gears!

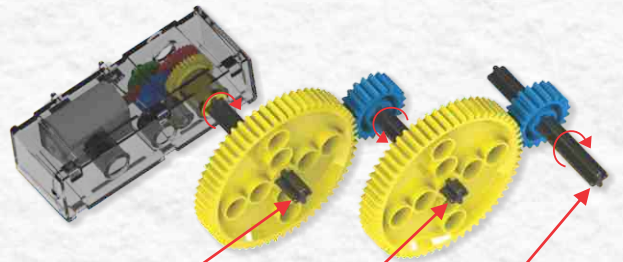
## 1. To Change Speed:

You must've noticed how gears in a car helps to change the speed. When the car starts, we select 1<sup>st</sup> gear to start moving, gradually increasing gears till the top gear for highest speed.

Calculations: 
$$\frac{\text{Teeth on big gear}}{\text{Teeth on small gear}} = \frac{\text{Speed of small gear}}{\text{Speed of big gear}}$$

Therefore: 
$$\frac{60}{20} = \frac{\text{Speed of small gear}}{\text{Speed of big gear}}$$

Therefore: Speed of small gear = 3X Speed of big gear

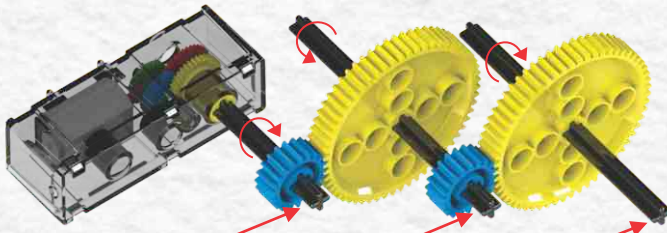


Speed - 60 R.P.M.

Speed - 180 R.P.M.

Speed - 540 R.P.M.

## 2. To change Torque (Power):



Speed - 60 R.P.M.

Speed - 20 R.P.M.

Speed - 6.7 R.P.M.

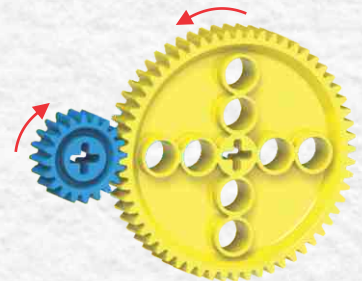
Torque is the twisting force that is required to move the car. In a car, the top gear doesn't have enough torque to rotate the wheels, hence we first have to shift over the lower gears, where torque is high.

Speed and power have a funny relationship when it comes to gears. If gears increase speed, power reduces and if gears reduce speed, power increases. And they always increase or decrease in the same ratio. If the gears are connected to reduce speed (by connecting the motor to the smaller gear), the power increases by three times.

So now we know that the 1<sup>st</sup> gear has more torque and less speed and the 5<sup>th</sup> gear has more speed and less torque.

## 3. Changing Direction of rotation:

There may be some applications where the direction of rotation is specified, but what if the motor runs in the opposite direction? Any 2 gears meshing together, rotate in opposite directions.



## 4. Changing Distance:



Speed - 60 R.P.M.

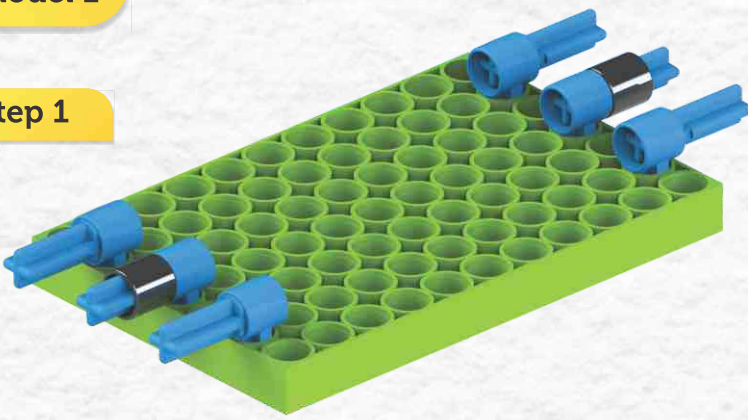
Speed - 60 R.P.M.

Many gears can be attached together in a straight line to increase distance between input axis and output axis. In such a case, only the size of the first and last gear affect the speed. The gears in the middle are thus called idler gears.

# Model 1



## Step 1



TW1 2 pcs.

CH2 6 pcs.

CT3 6 pcs.

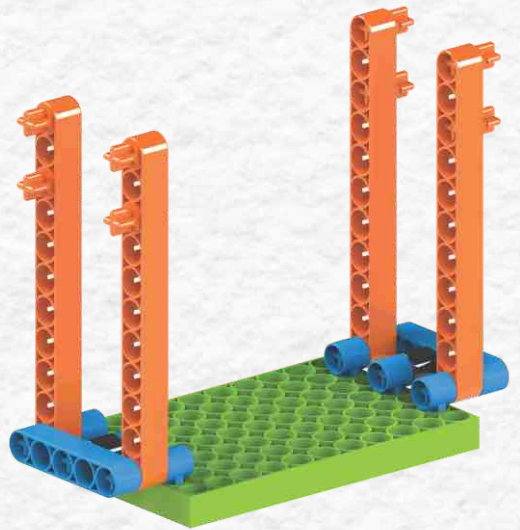
P7X11 1 pc.

## Step 2

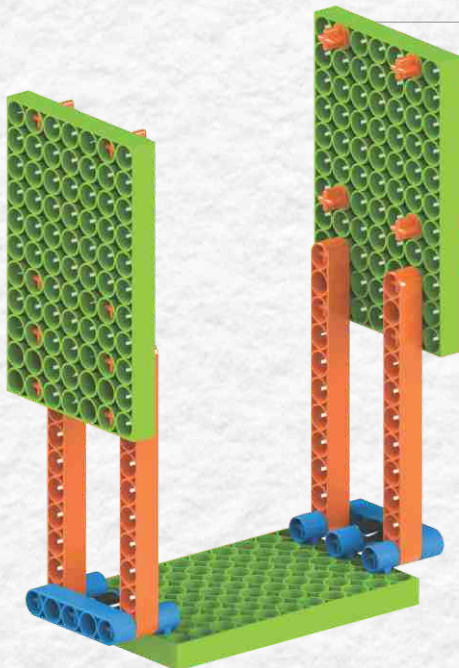
CT2 8 pcs.

P5 2 pcs.

P11 4 pcs.



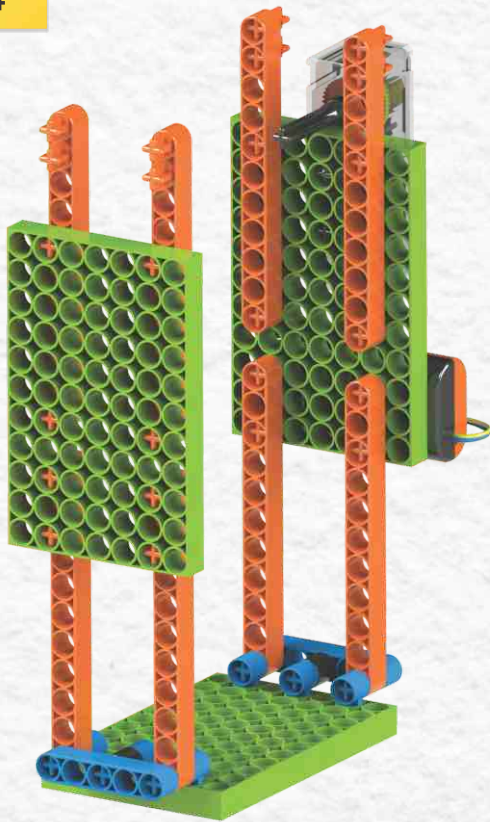
## Step 3



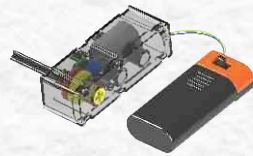
CT2 8 pcs.

P7X11 2 pcs.

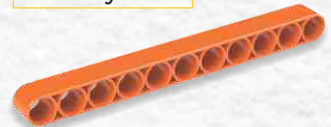
## Step 4



CT2 8 pcs.



Motor with  
Battery Box

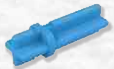


P11 4 pcs.

## Step 5



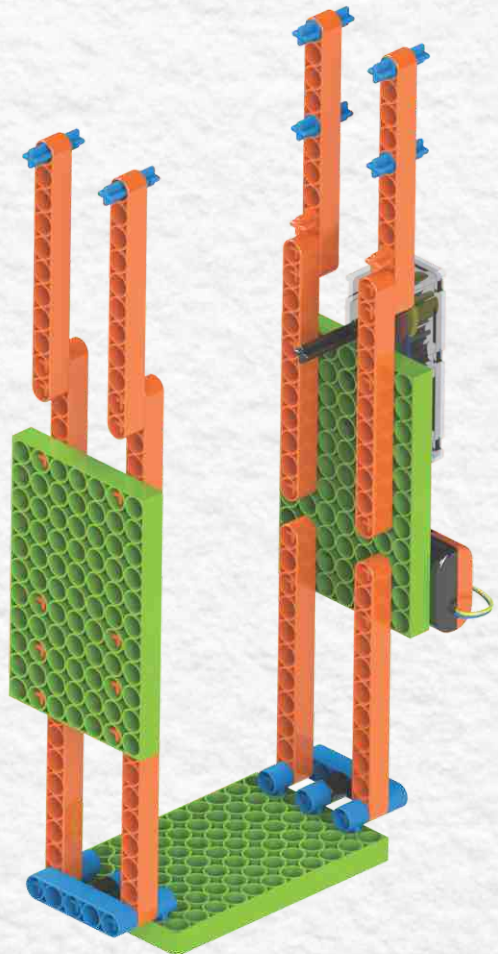
CT2 2 pcs.



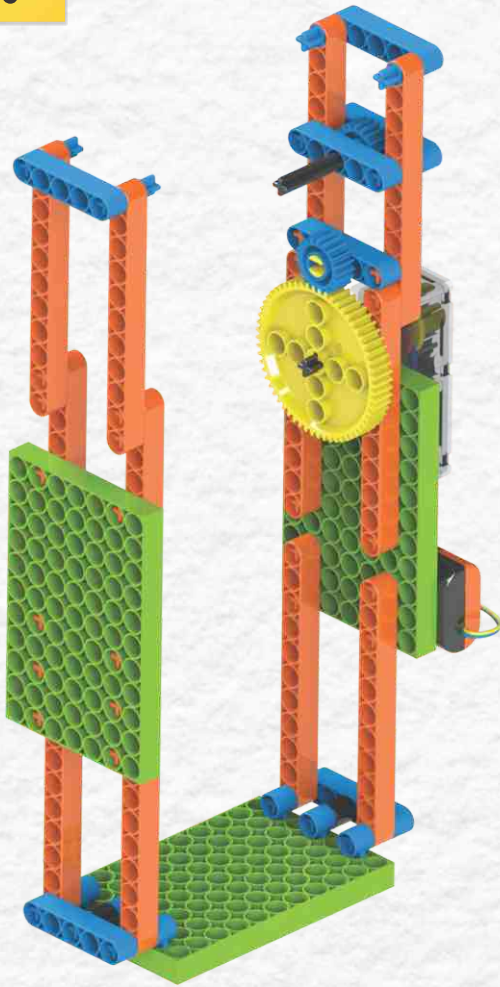
CT3 6 pcs.



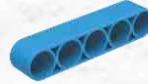
P11 4 pcs.



## Step 6



CL2 1 pc.



P5 5 pcs.



SH60 1 pc.



G(20) 1 pc.



G(20) Idler 1 pc.



G(60) 1 pc.

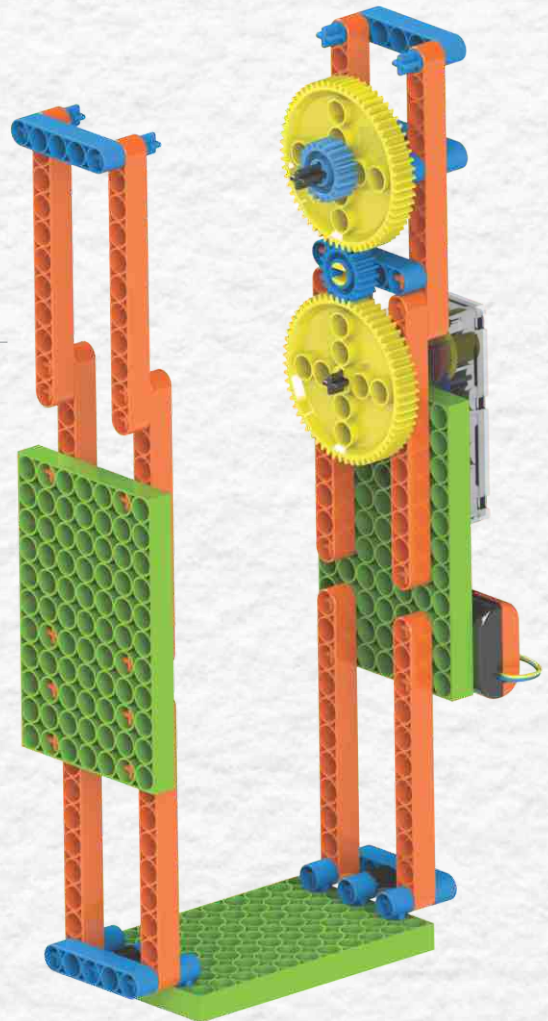
## Step 7



G(20) 1 pc.



G(60) 1 pc.

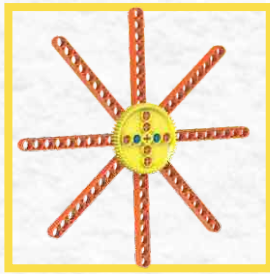


## Step 8

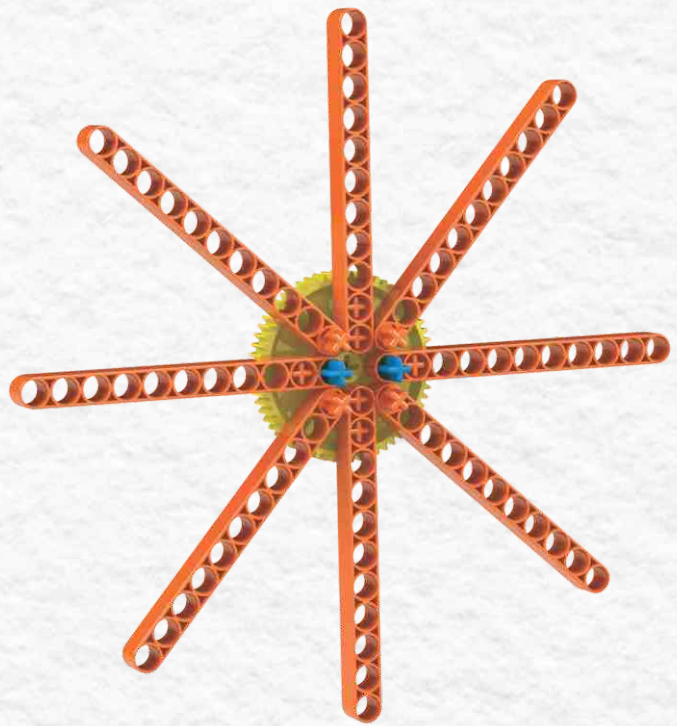
CT2 10 pcs.

CT3 2 pcs.

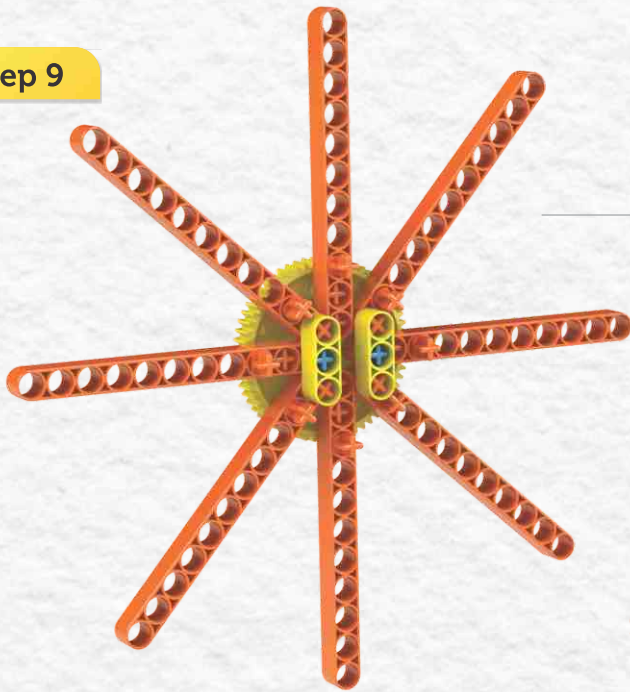
P11 8 pcs.



G(60) 1 pc.



## Step 9



CT2 8 pcs.

P3 2 pcs.

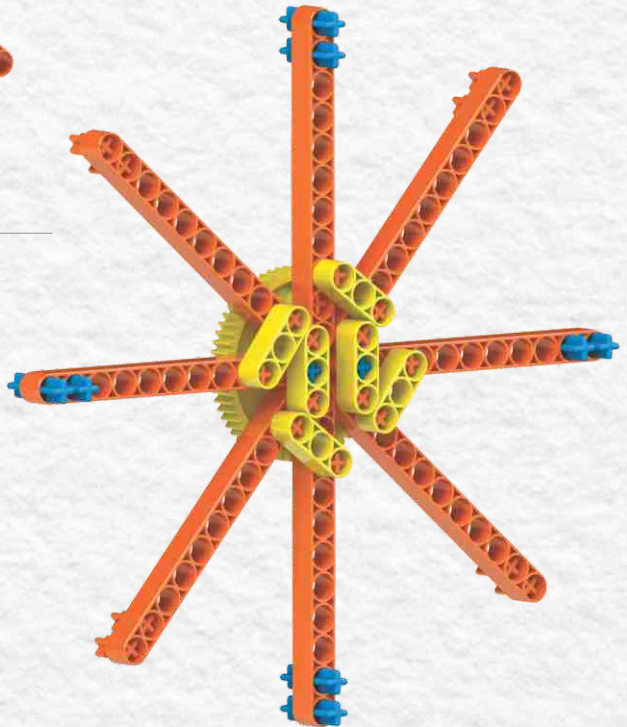


## Step 10

CT2 8 pcs.

CT3 8 pcs.

P3 4 pcs.



## Step 11

# Blix

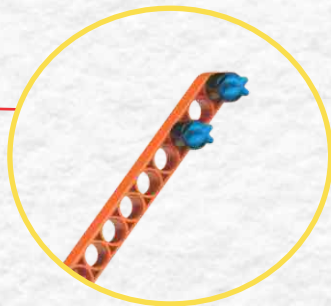
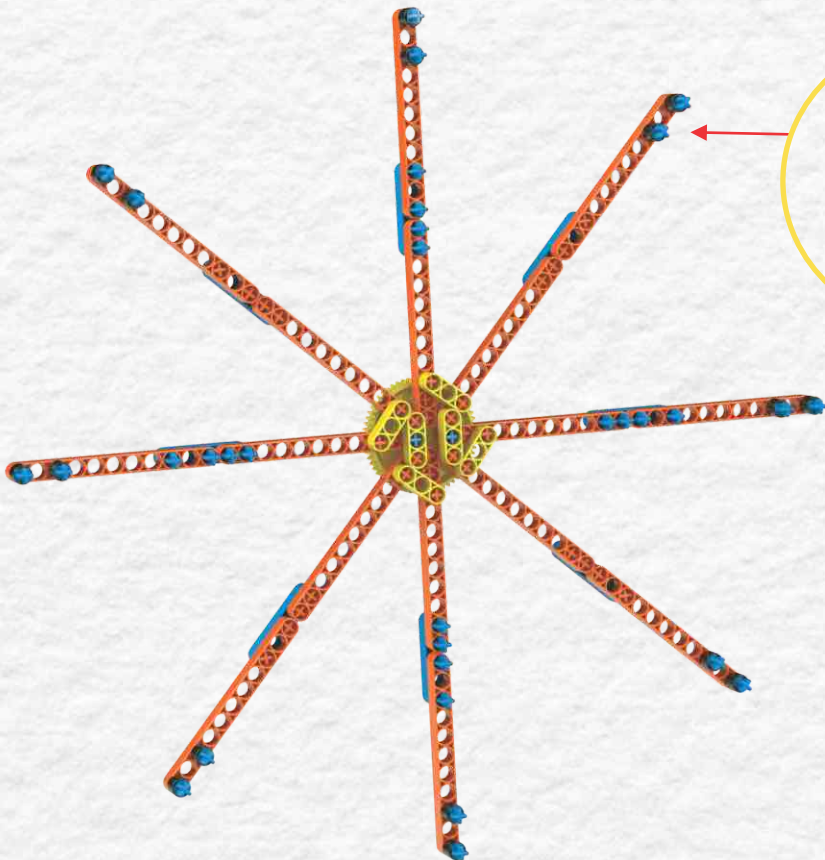
 CT2 8 pcs.

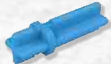
 CT3 8 pcs.

 P5 8 pcs.



## Step 12



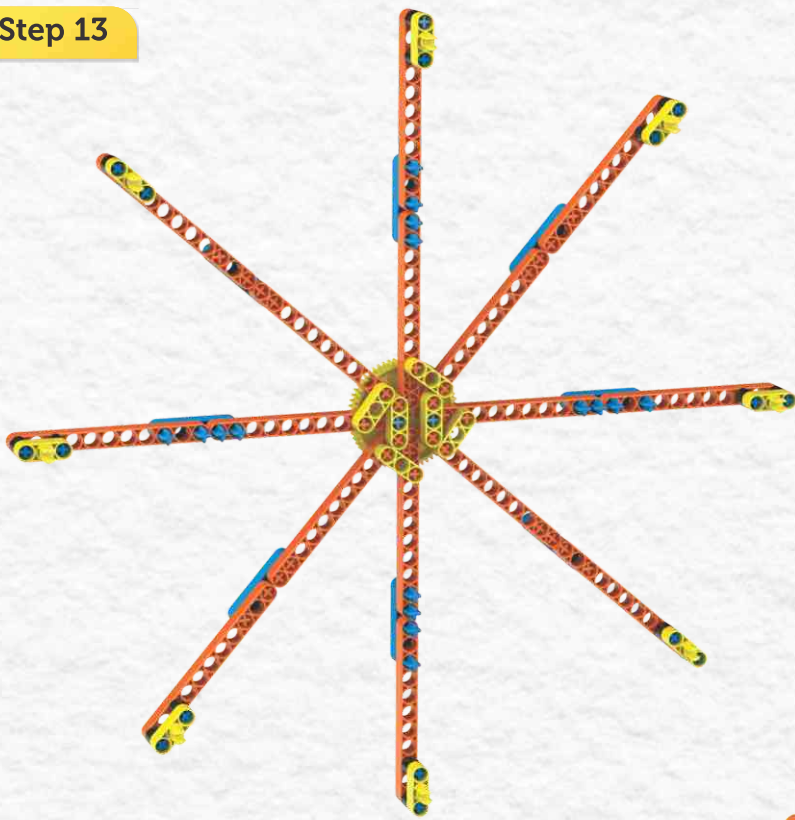
 CT3 16 pcs.

 TW1 16 pcs.

 P11 8 pcs.



### Step 13

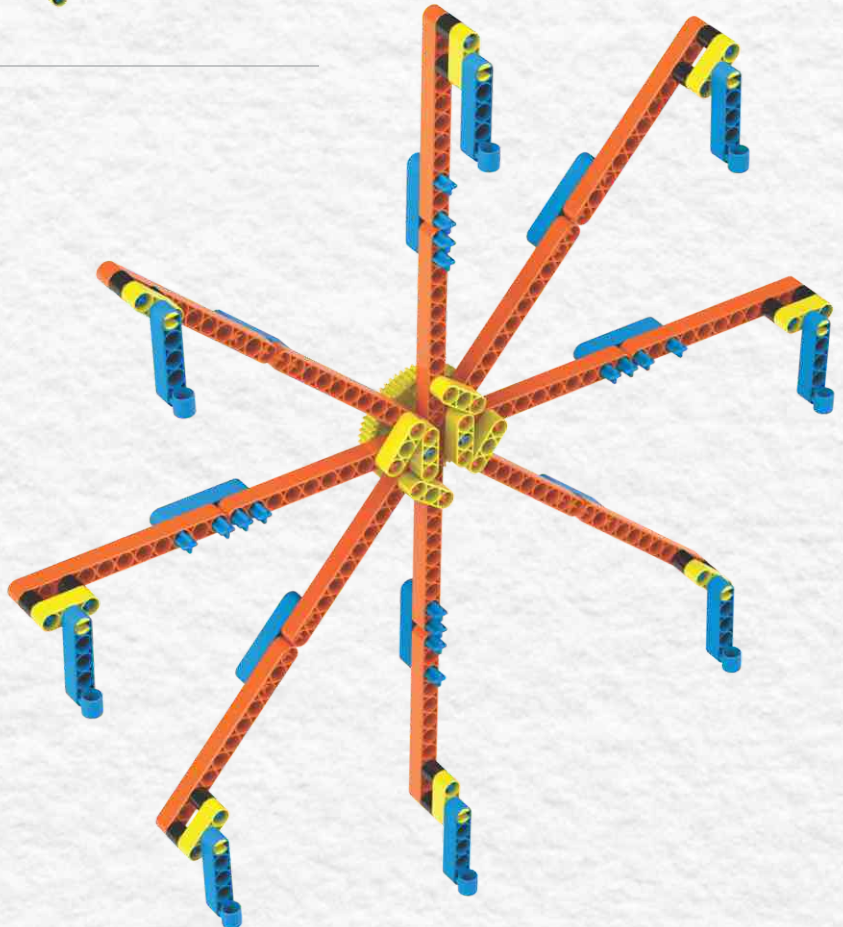


CL2 8 pcs.

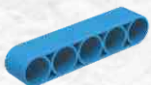


P3 8 pcs.

### Step 14



CH2 8 pcs.



P5 8 pcs.

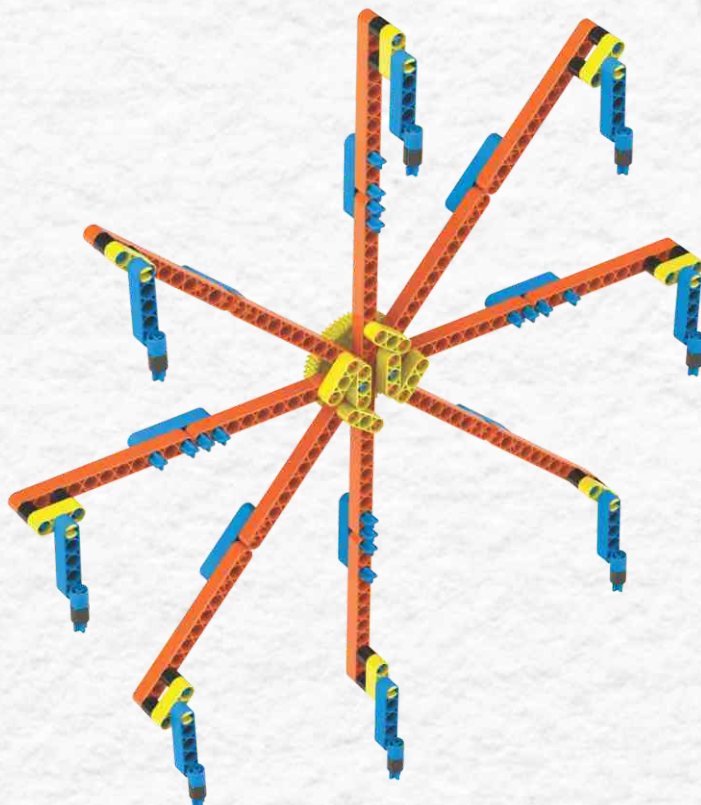
## Step 15



TW1 8 pcs.

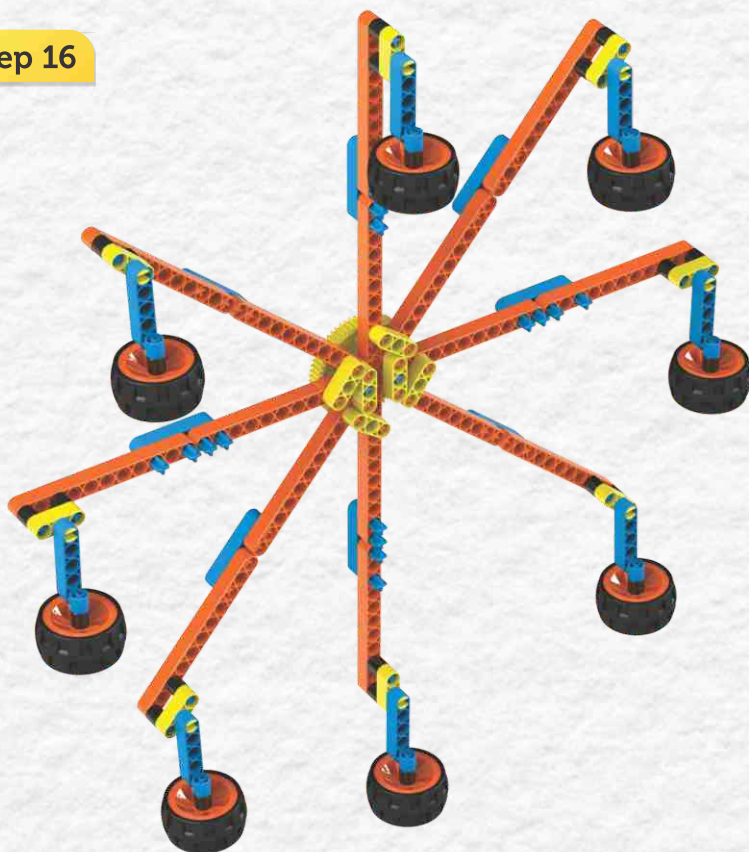


CT3 8 pcs.



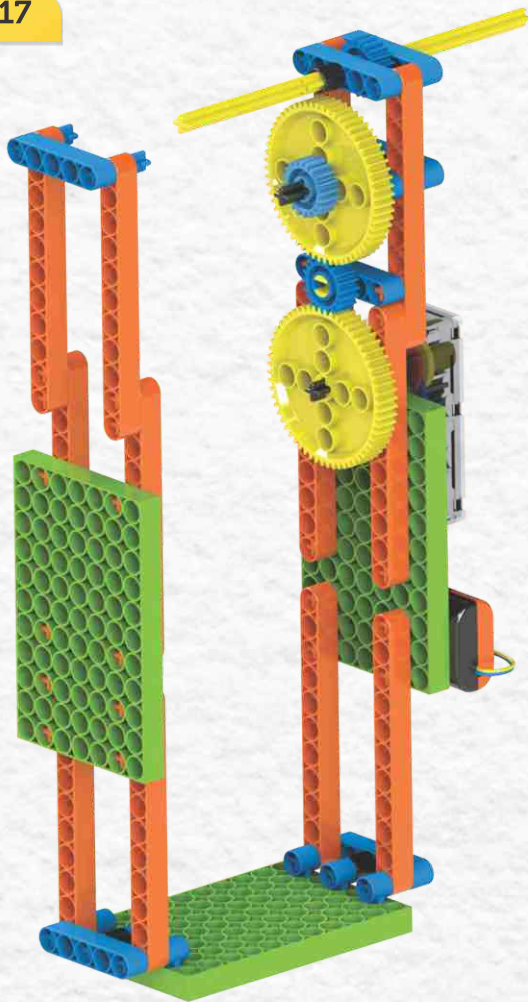
# Blix

## Step 16

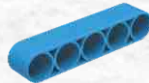


Wheels 8 pcs.

## Step 17



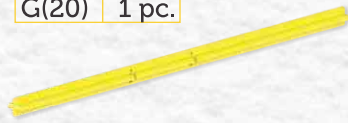
TW1 1 pc.



P5 1 pc.



G(20) 1 pc.



SH170 1 pc.

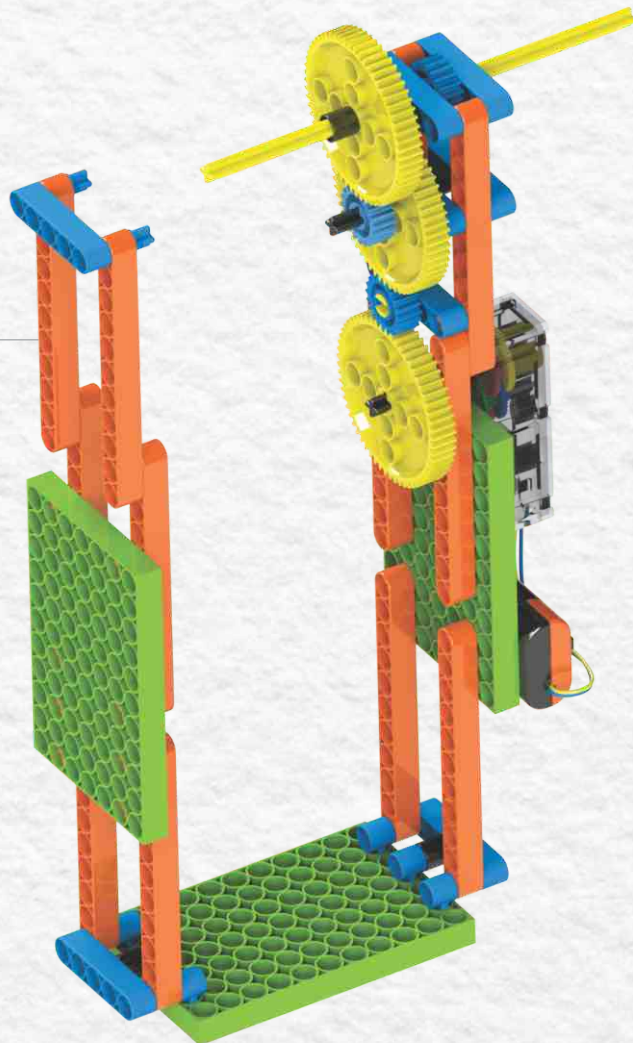
## Step 18



TW1 1 pc.



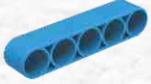
G(60) 1 pc.



# Step 19

Assembly of Step 18 and Step 16

TW1 7 pcs.

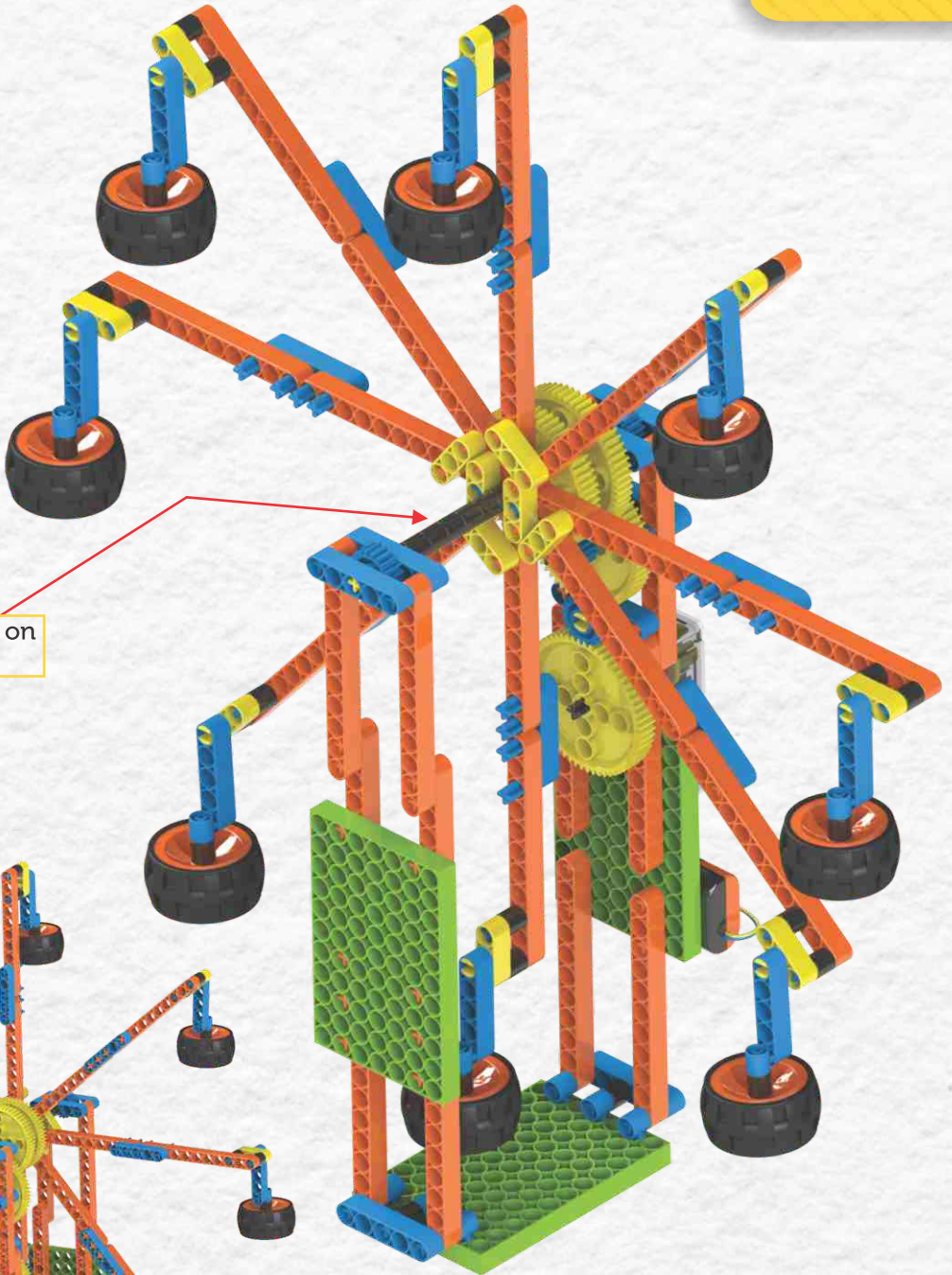


P5 1 pc.



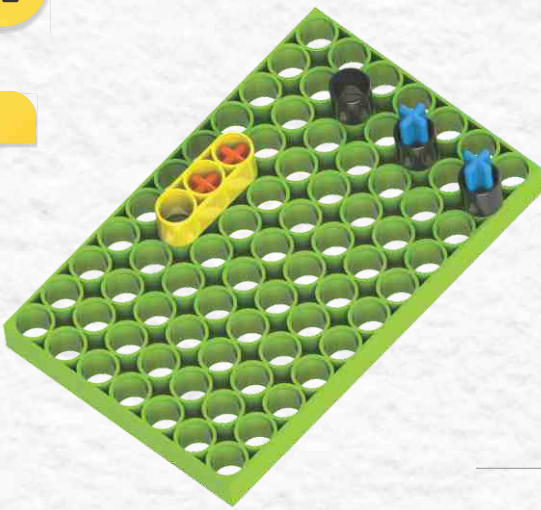
G(20) 1 pc.

Add 7 pcs. of TW1 on the shaft



# Model 2

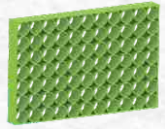
## Step 1



CT2 2 pcs.

P3 1 pc.

CT3 2 pcs.



TW1 3 pcs.

P7X11 1 pc.

## Step 2



P11 1 pc.



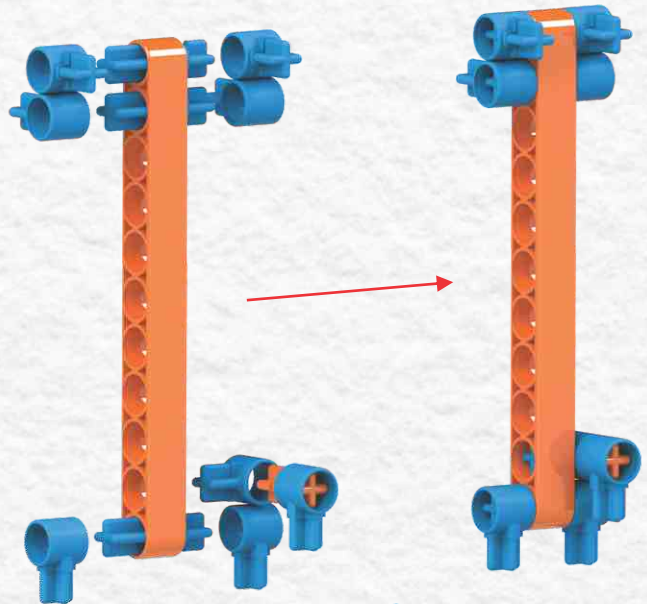
CT3 3 pcs.



CH2 8 pcs.



CT2 1 pc.

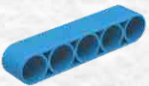


## Step 3

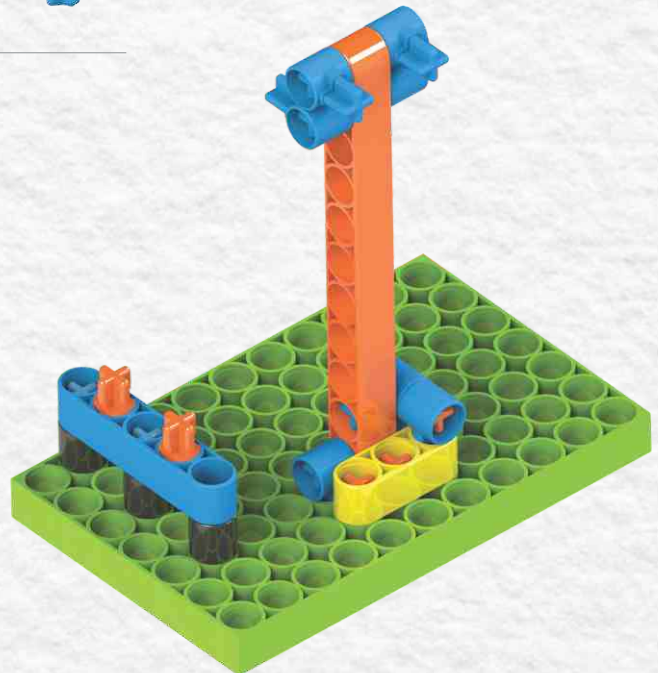
Assembly of Step 1 and Step 2



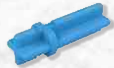
CT2 2 pcs.



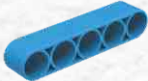
P5 1 pc.



## Step 4



CT3 6 pcs.



P5 1 pc.



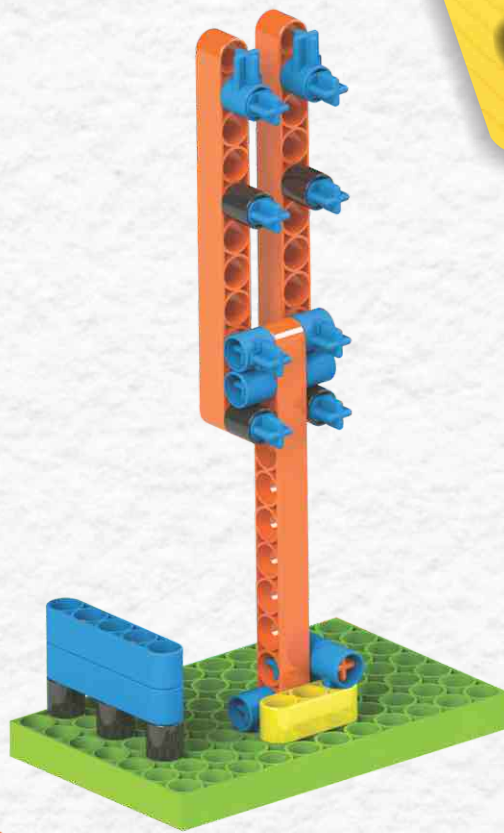
TW1 4 pcs.



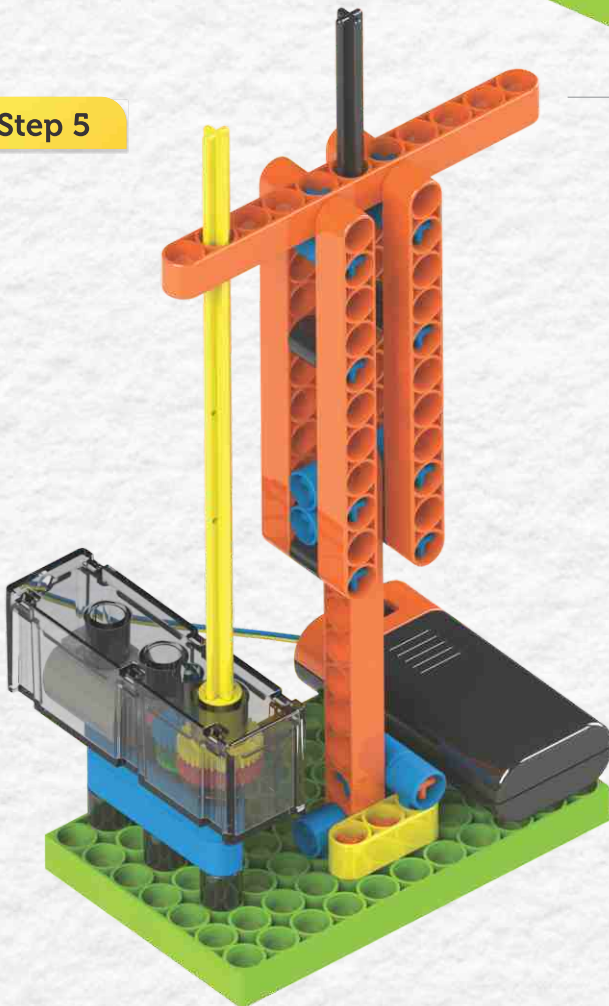
CH2 2 pcs.



P11 2 pcs.



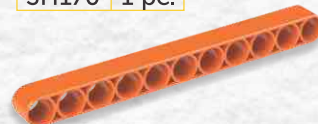
## Step 5



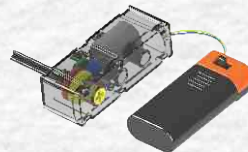
SH60 1 pc.



SH170 1 pc.



P11 3 pcs.



Motor with  
Battery Box

## Step 6



TW1 2 pcs.



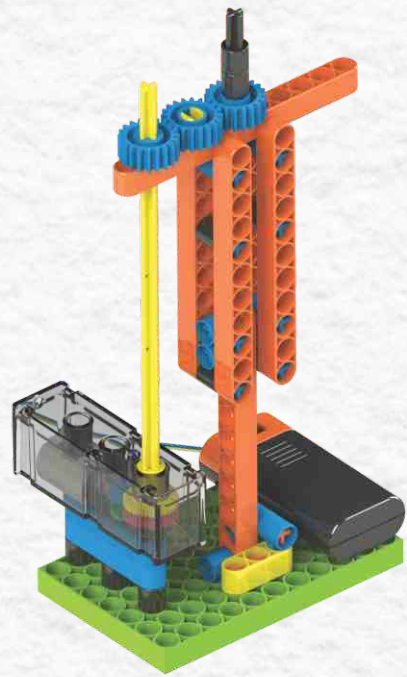
CL2 1 pc.



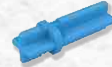
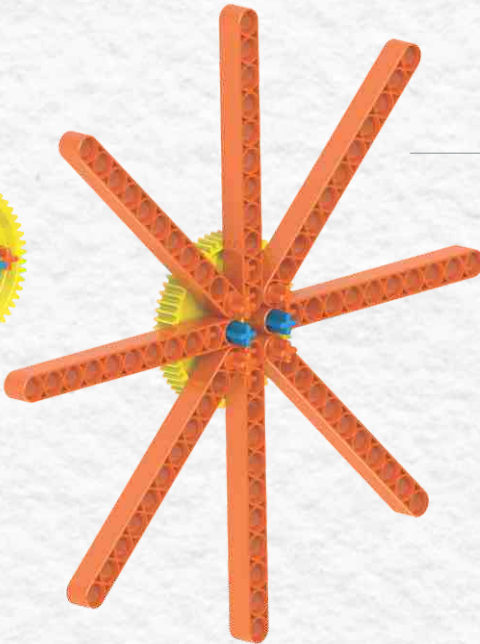
G(20) 2 pcs.



G(20) Idler 1 pc.



## Step 7



CT3 2 pcs.



CT2 10 pcs.



P11 8 pcs.



G(60) 1 pc.

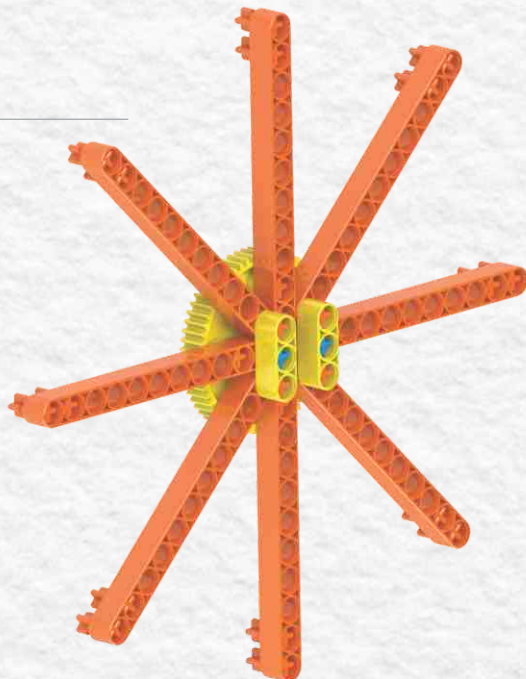
## Step 8



CT2 16 pcs.



P3 2 pcs.

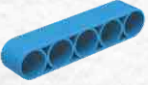


## Step 9

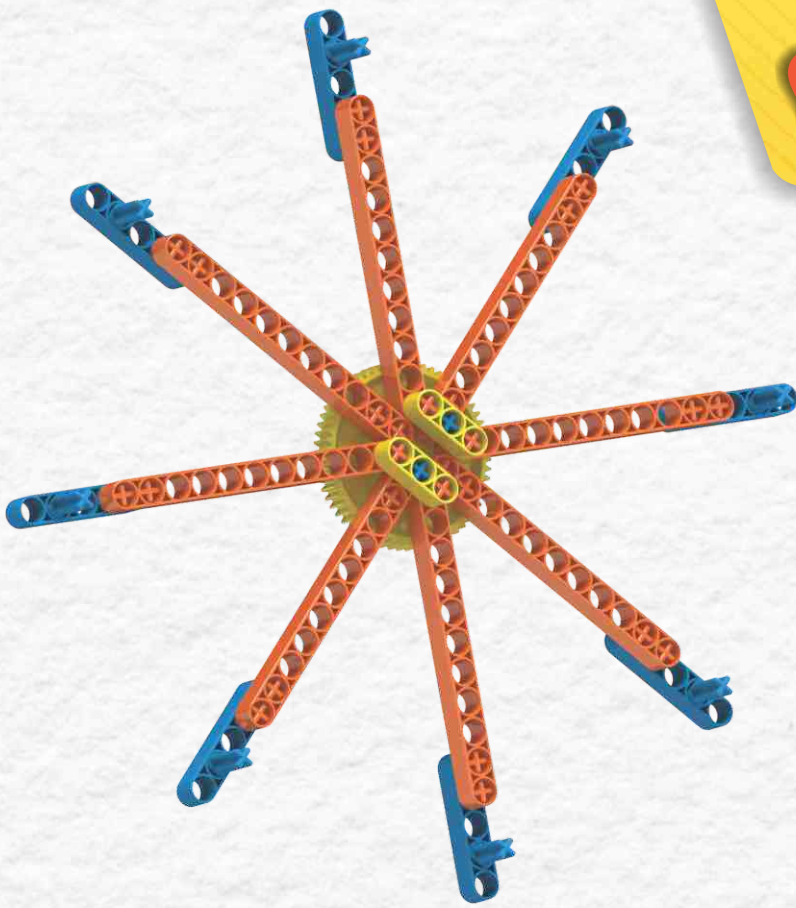
# Blix



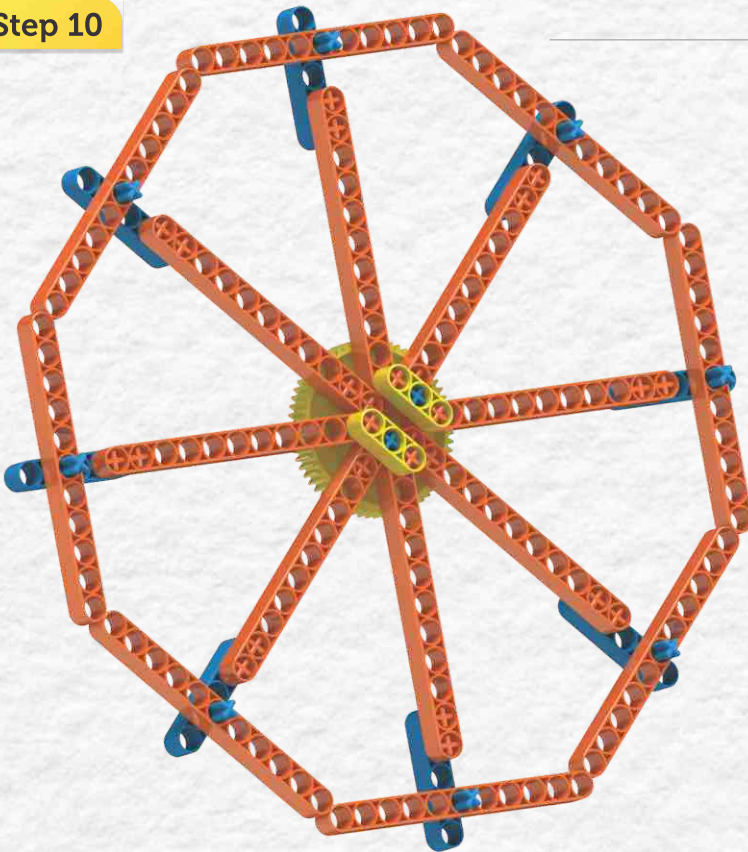
CT3 8 pcs.



P5 8 pcs.



## Step 10



P11 8 pcs.



## Step 11



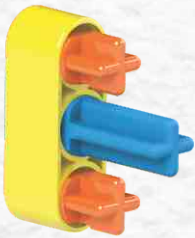
CT2 16 pcs.



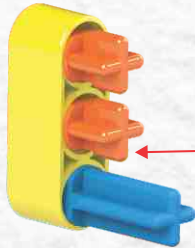
CT3 8 pcs.



P3 8 pcs.

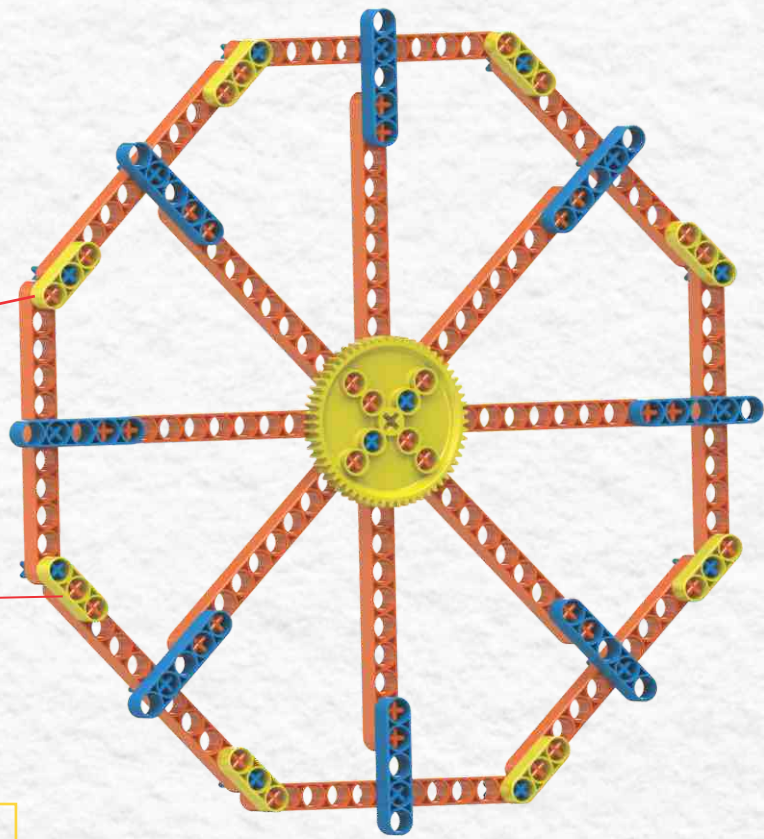


Make 4



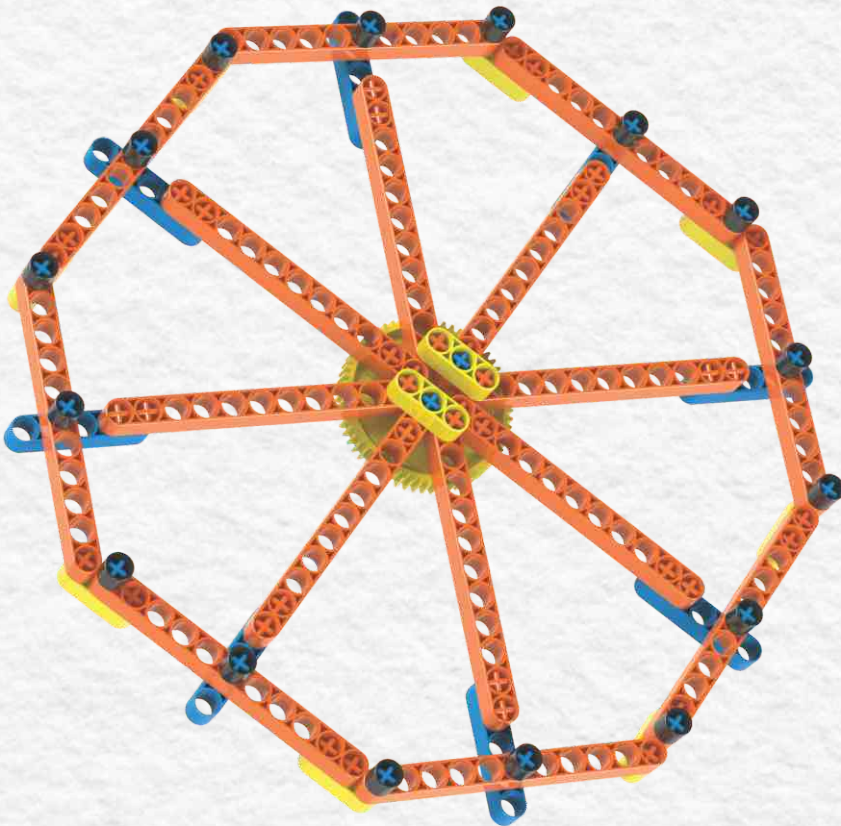
Make 4

Connect alternately with step 10



Backside view

## Step 12



TW1 16 pcs.

## Step 13

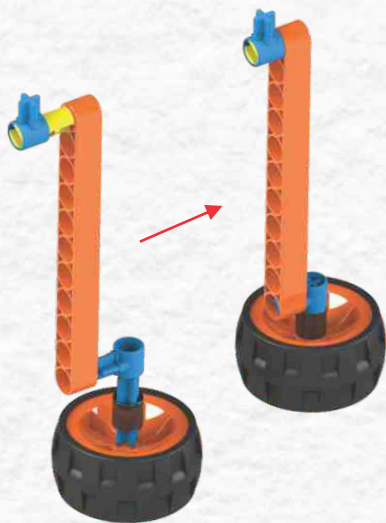
TW1 8 pcs.

CL2 8 pcs.

CT3 8 pcs.

CH2 16 pcs.

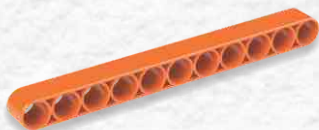
Make 8



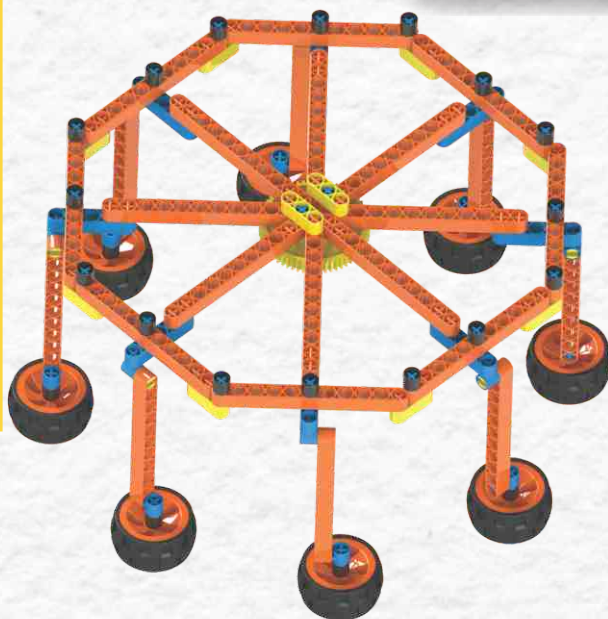
Connect with Step 12



Wheels 8 pcs.

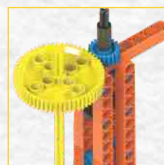


P11 8 pcs.



## Step 14

Assembly of Step 13 and Step 6



Now replace the gears as shown in figure in step 6 and see what happen! Is there any change in speed?

## Model 3

### Step 1



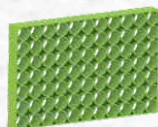
CH2 4 pcs.



CT2 8 pcs.



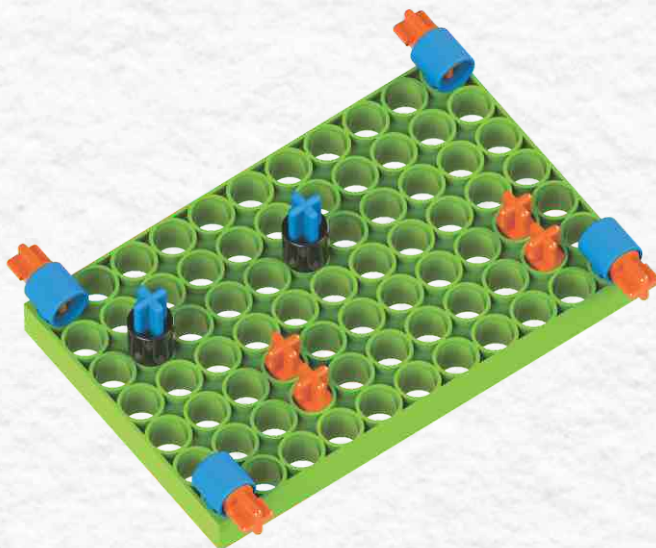
CT3 2 pcs.



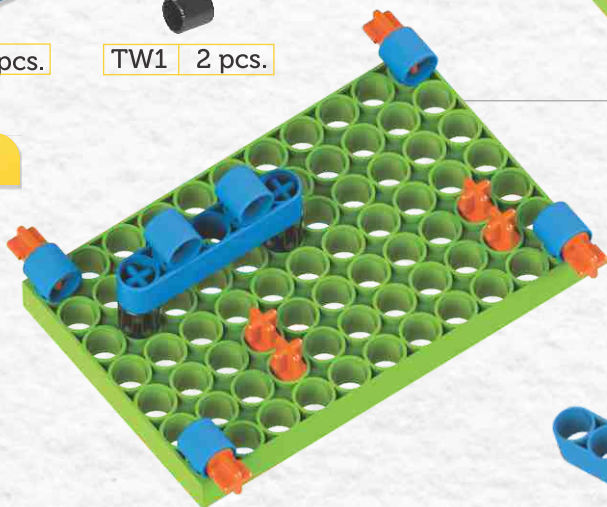
P7X11 1 pc.



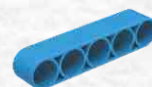
TW1 2 pcs.



### Step 2



CH2 2 pcs.

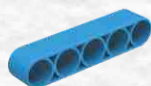


P5 1 pc.

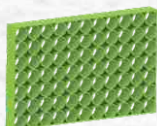
### Step 3



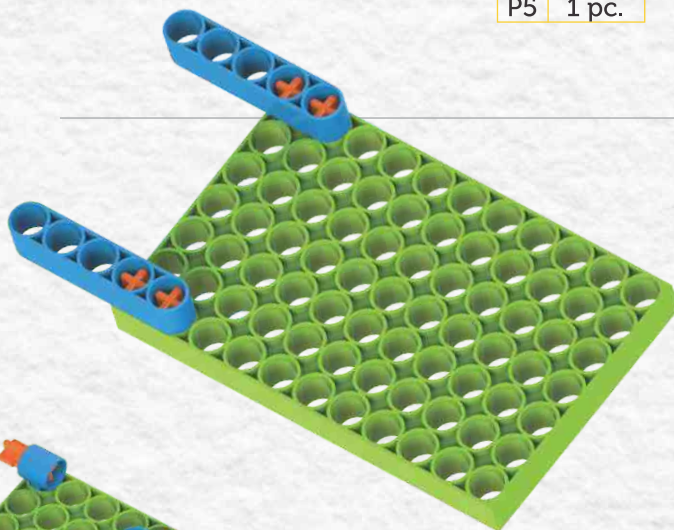
CT2 4 pcs.



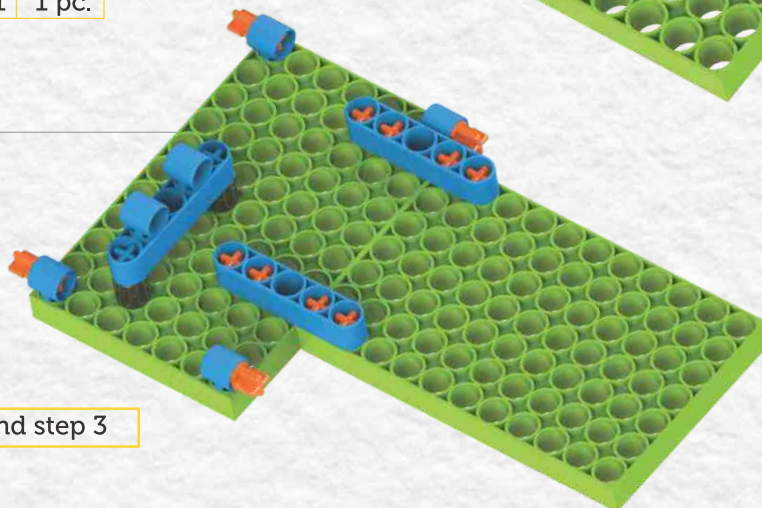
P5 2 pcs.



P7X11 1 pc.

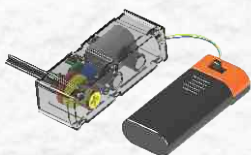


### Step 4



Assembly of step 2 and step 3

## Step 5



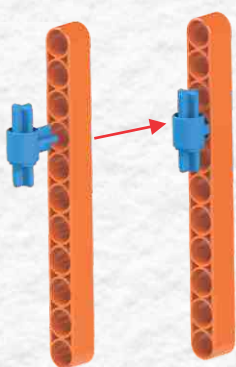
Motor with  
Battery Box



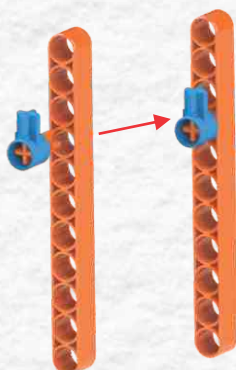
SH60 1 pc.



## Step 6



Make 1



Make 3



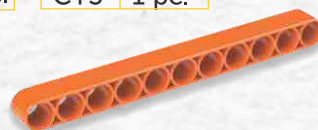
CH2 4 pcs.



CT3 1 pc.



CT2 3 pcs.



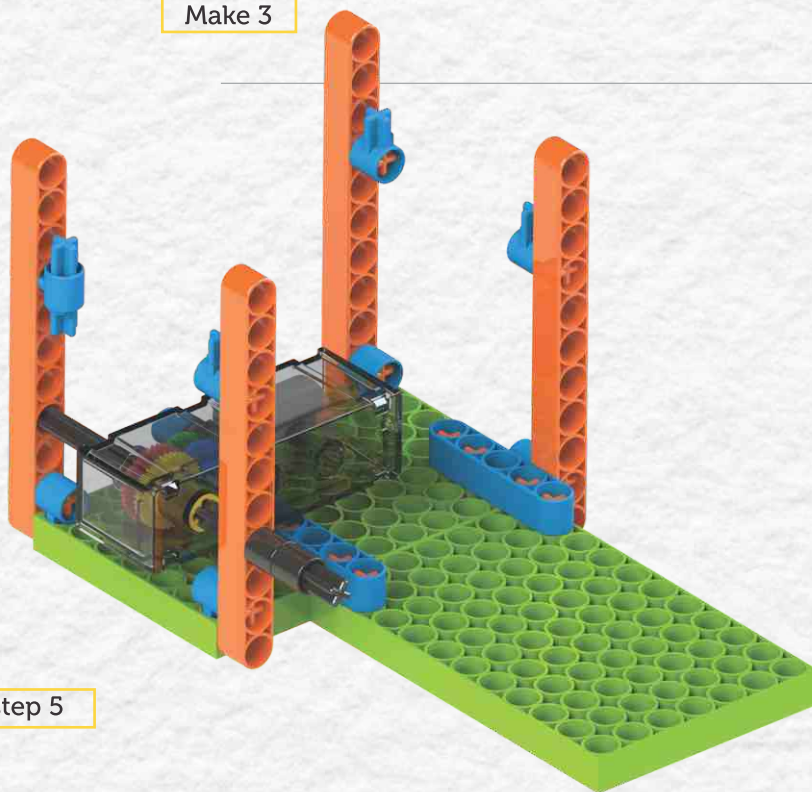
P11 4 pcs.

## Step 7



TW1 2 pcs.

Assembly of step 6 and step 5

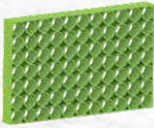


## Step 8

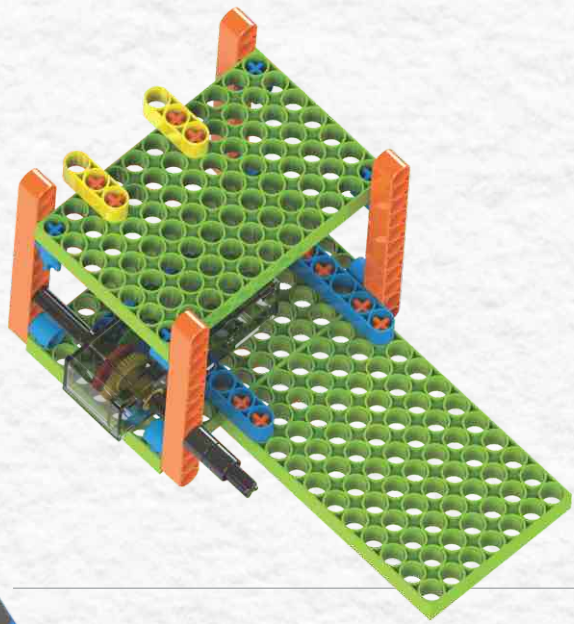
CT2 4 pcs.



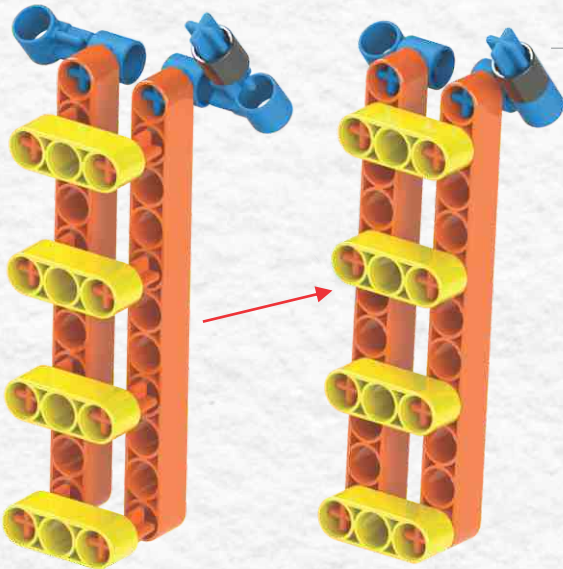
P3 2 pcs.



P7X11 1 pc.



## Step 9



CT2 8 pcs.

TW1 1 pc.

P3 4 pcs.

CH2 4 pcs.

CT3 1 pc.

P11 2 pcs.

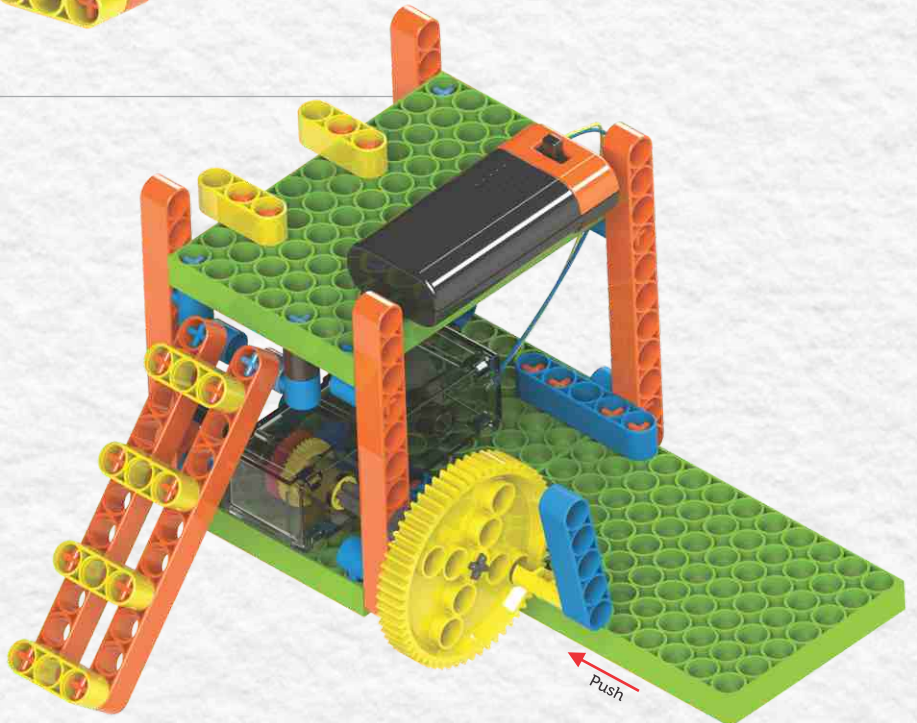
## Step 10

Assembly of step 9 and step 8

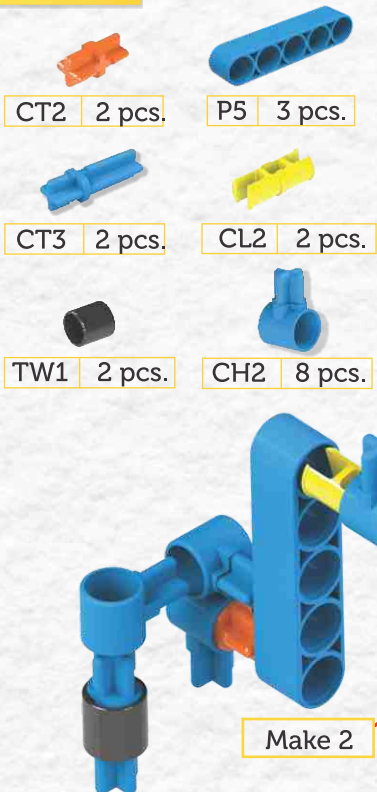
CL2 1 pc.

G(60) 1 pc.

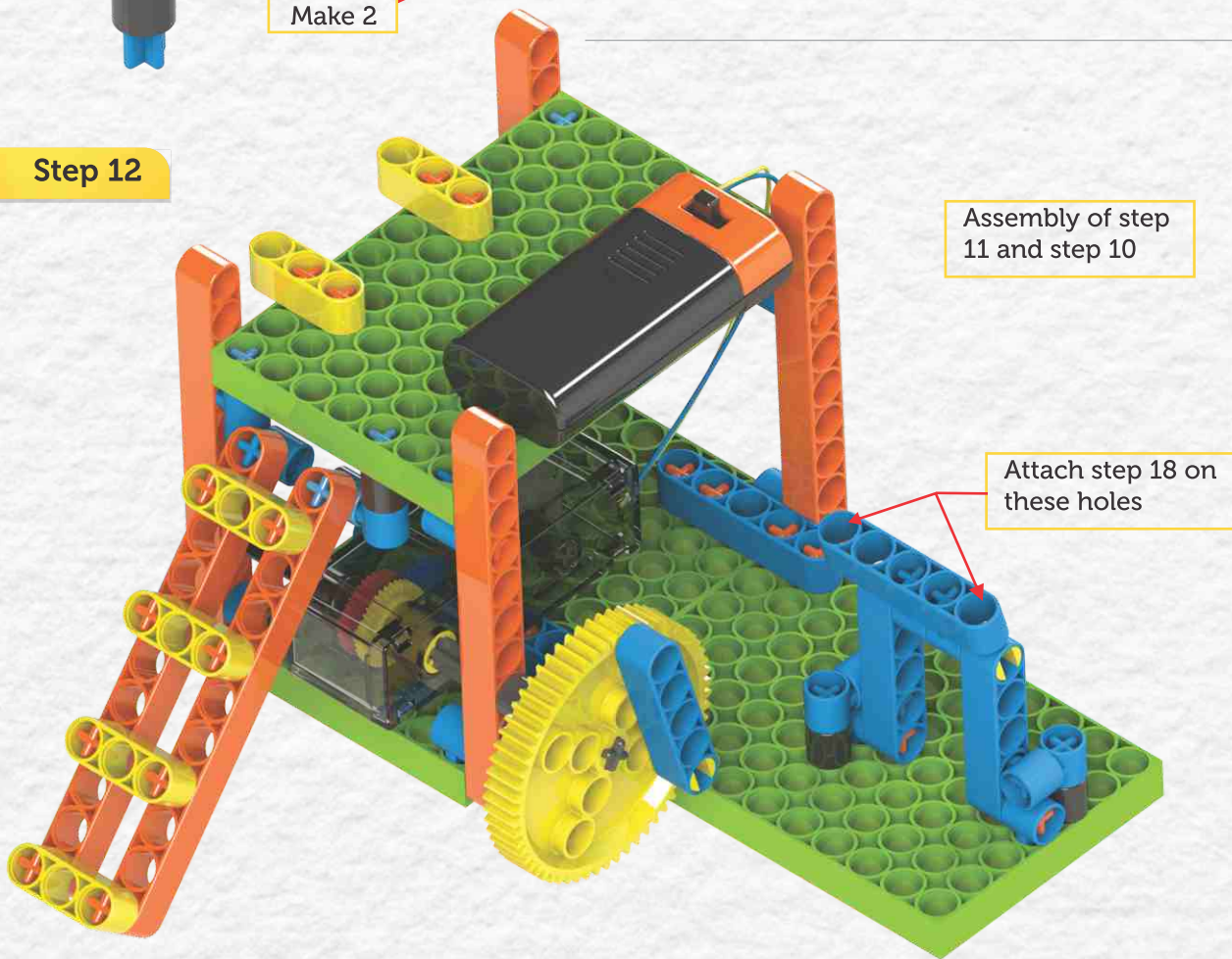
P5 1 pc.



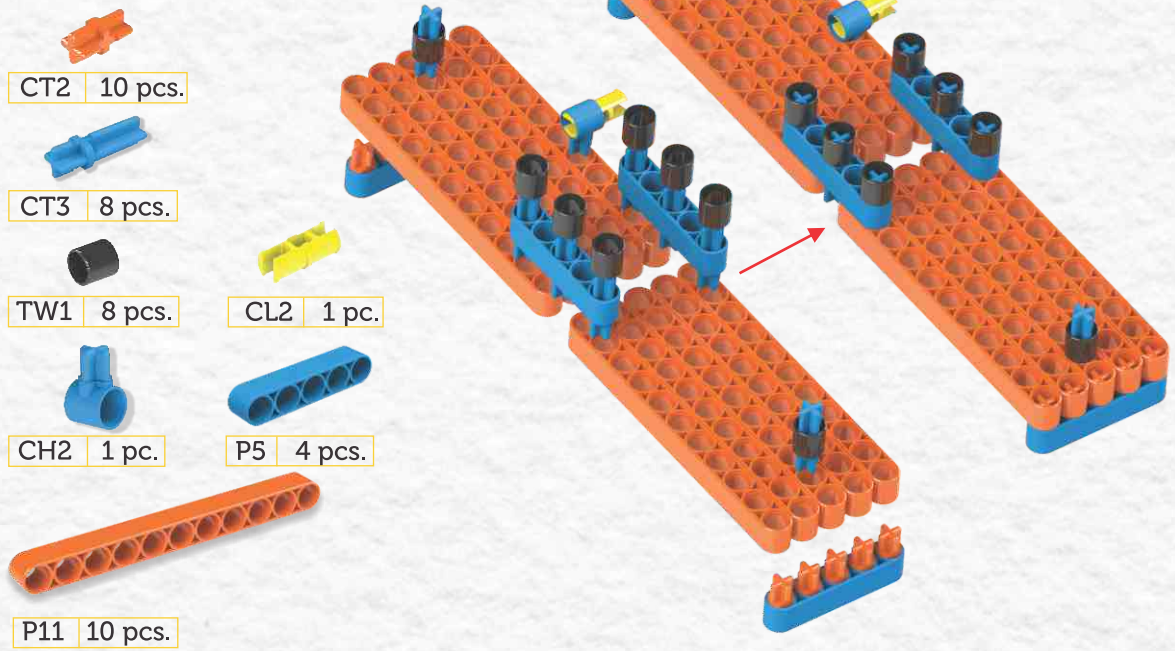
## Step 11



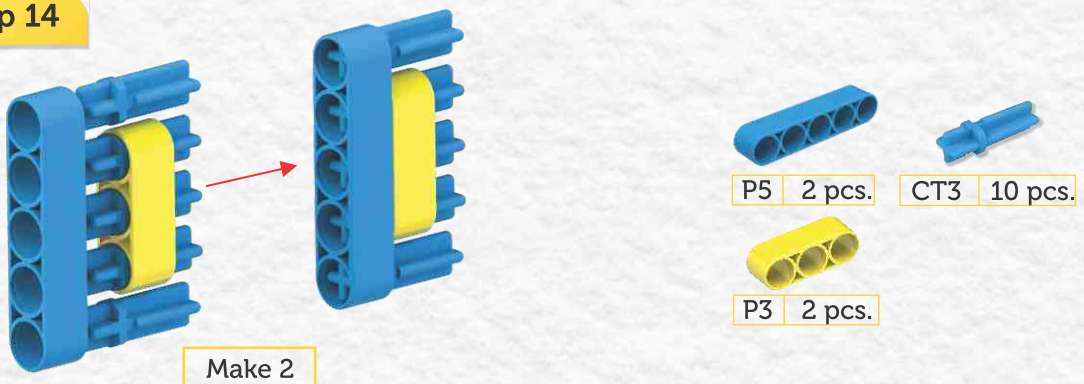
## Step 12



### Step 13

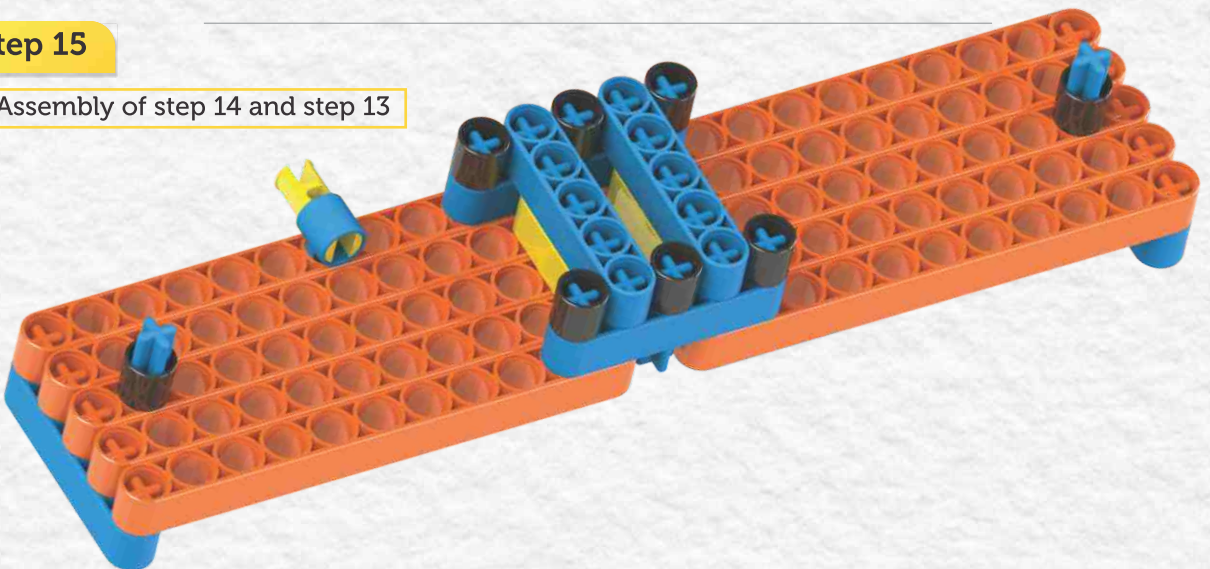


### Step 14



### Step 15

Assembly of step 14 and step 13



## Step 16

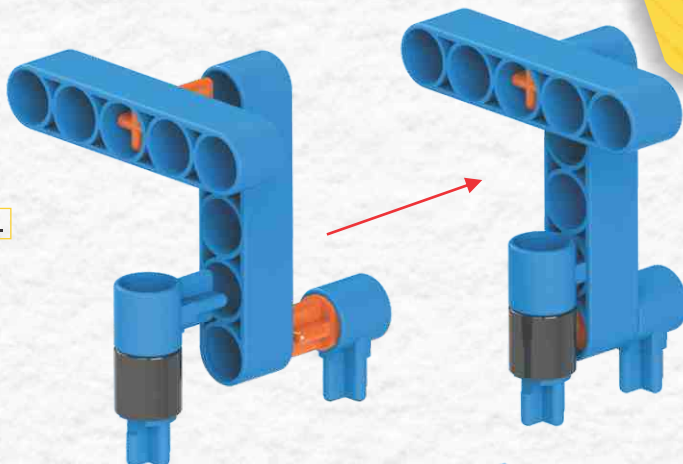
CT2 4 pcs.

CT3 2 pcs.

CH2 4 pcs.

TW1 2 pcs.

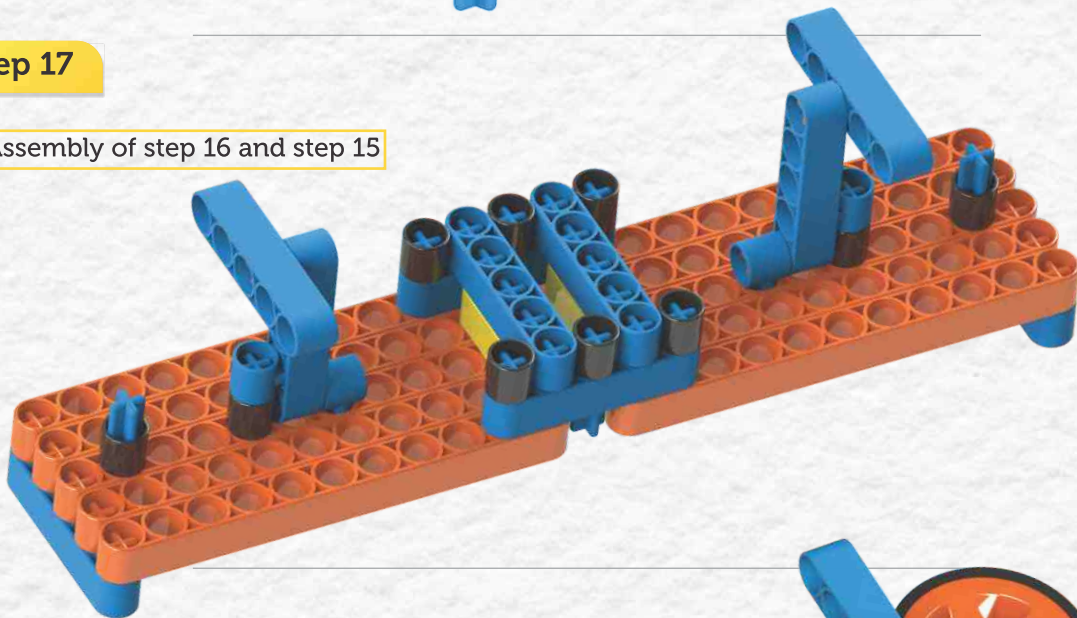
P5 4 pcs.



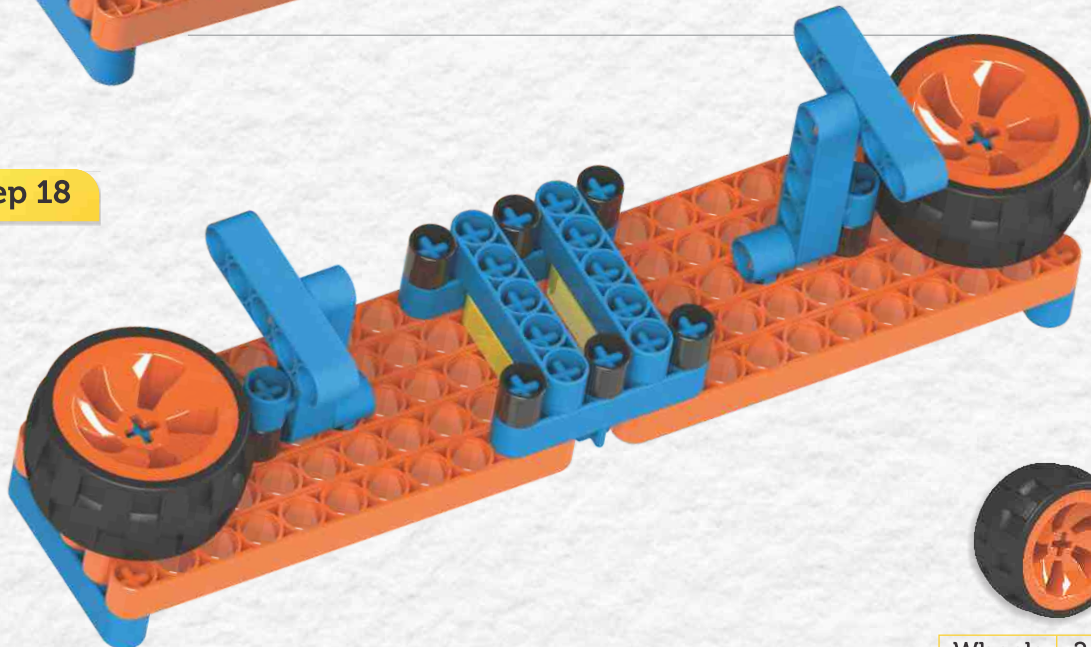
Make 2

## Step 17

Assembly of step 16 and step 15



## Step 18



Wheels 2 pcs.

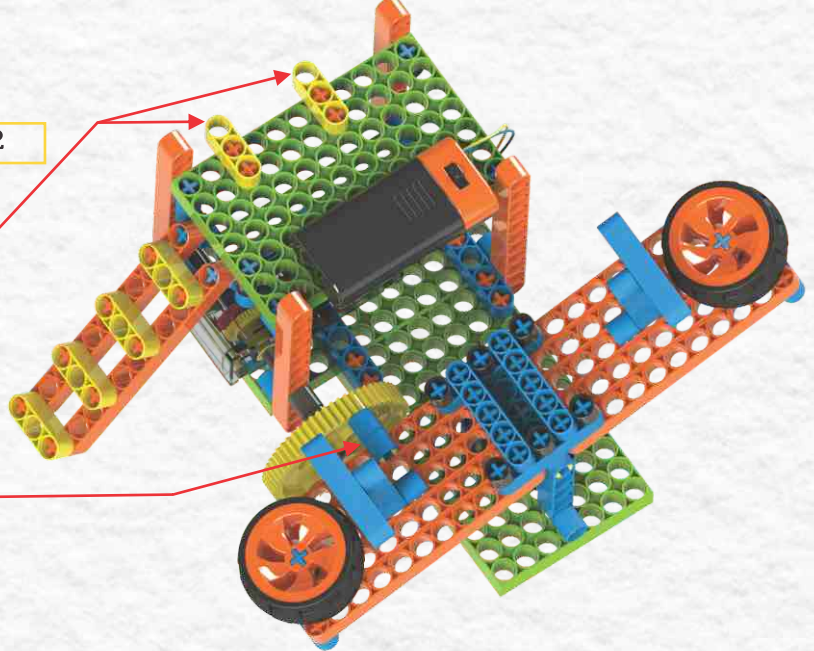


## Step 19

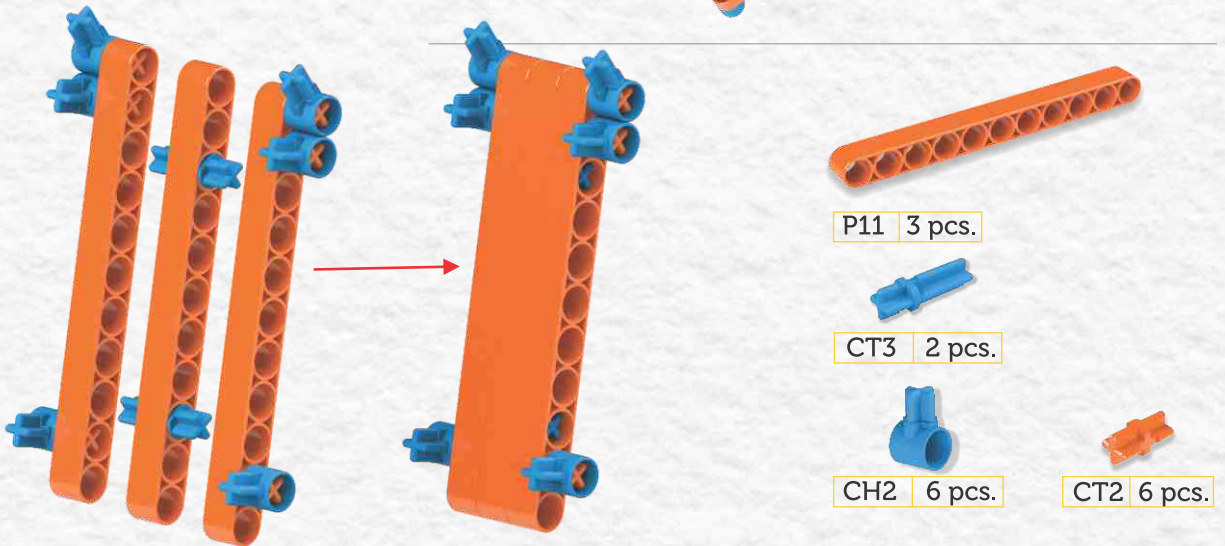
Assembly of step 18 and step 12

Attach step 22 on these holes

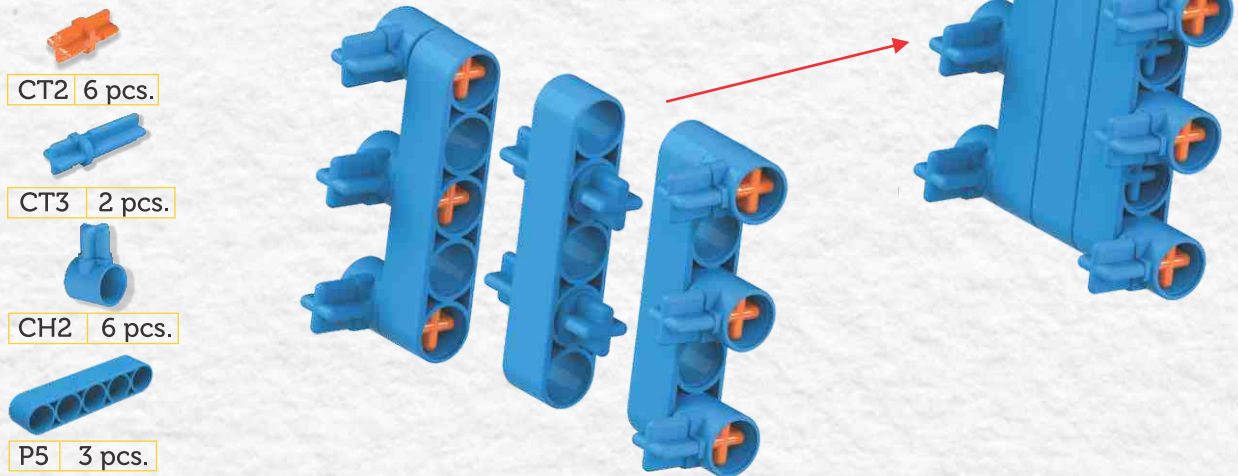
Connect CL2 with P5



## Step 20



## Step 21



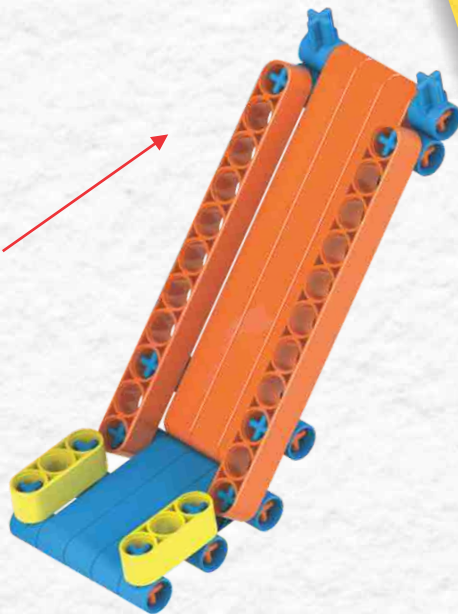
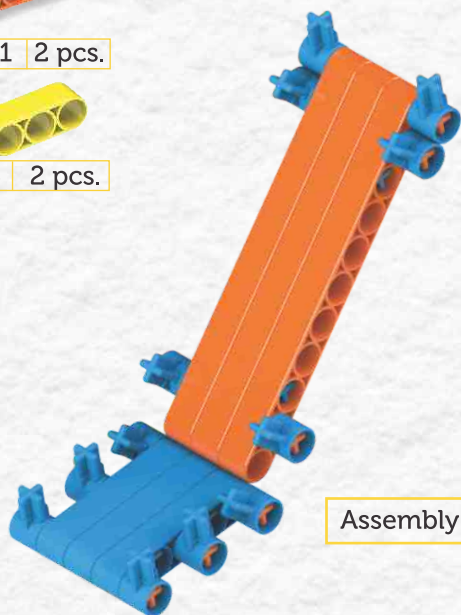
## Step 22



P11 2 pcs.



P3 2 pcs.



Assembly of step 21 and step 20

## Step 23



Assembly of step 22 and step 19

# Model 4

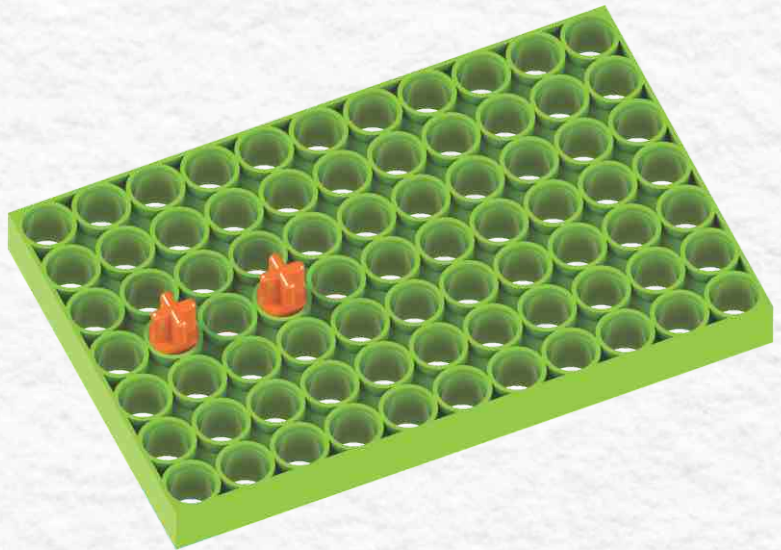
## Step 1



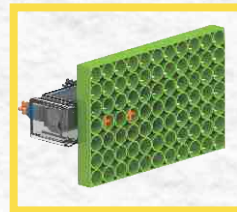
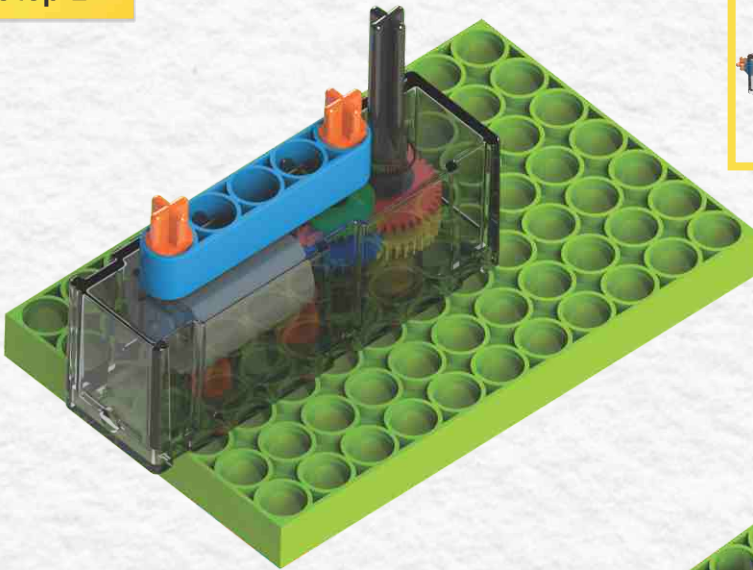
CT2 2 pcs.



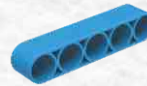
P7X11 1 pc.



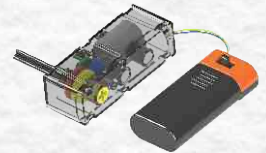
## Step 2



CT2 2 pcs.



P5 1 pc.



Motor with  
Battery Box

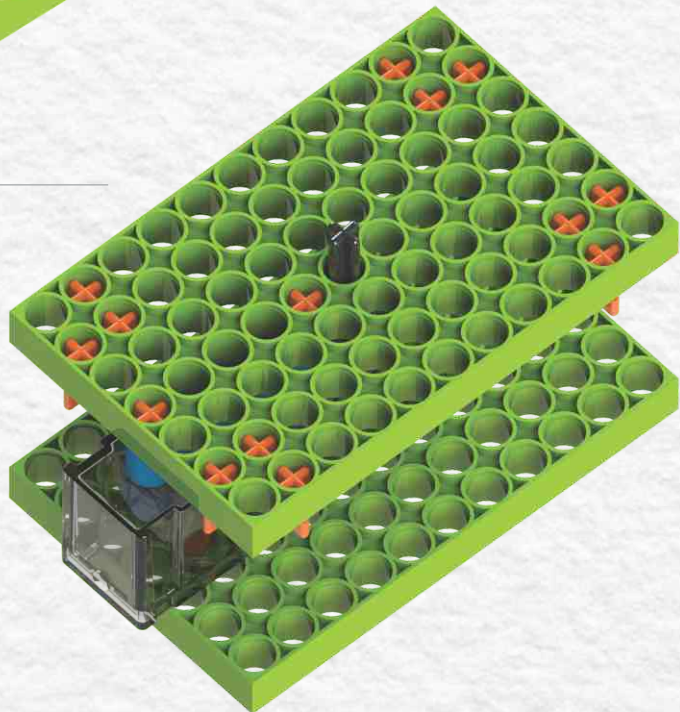
## Step 3



P7X11 1 pcs.



CT2 12 pcs.



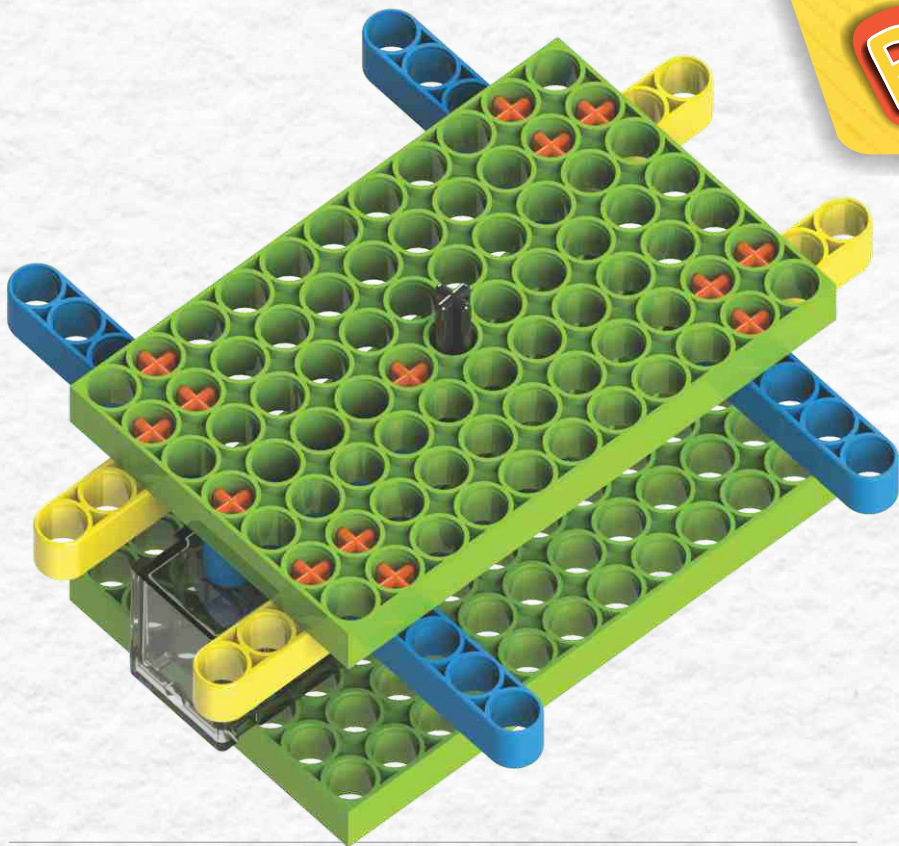
## Step 4



P3 4 pcs.



P5 4 pcs.



## Step 5

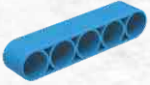


CT2 20 pcs.

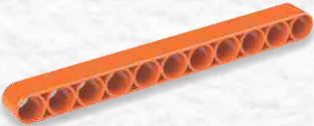
## Step 6



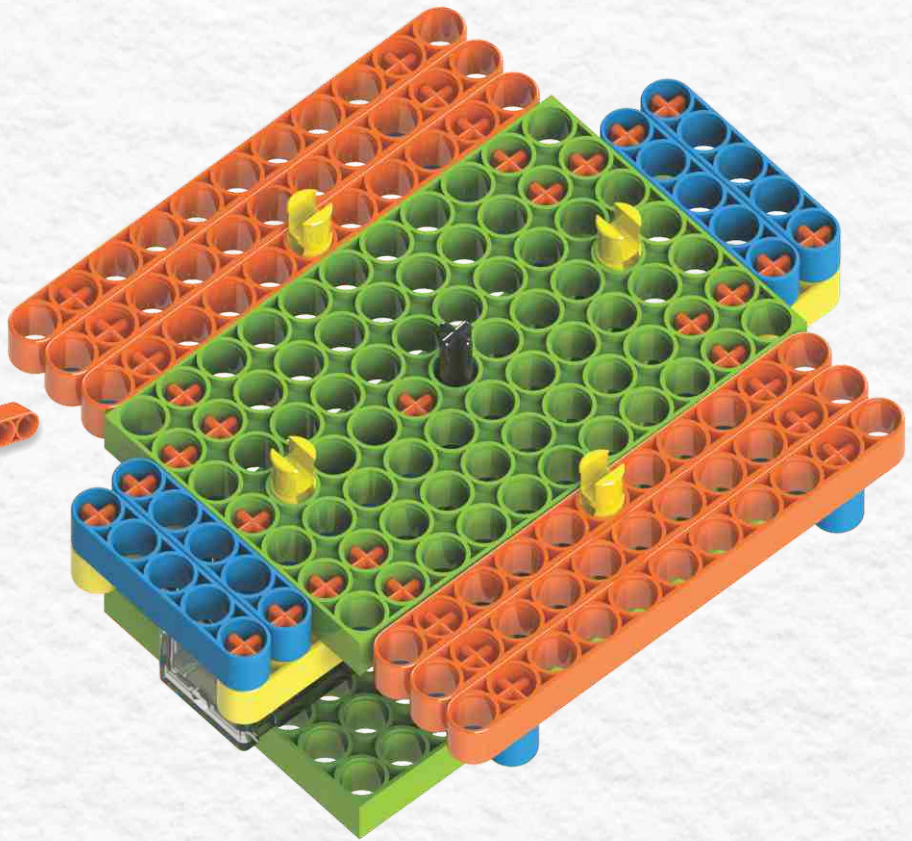
CL2 4 pcs.



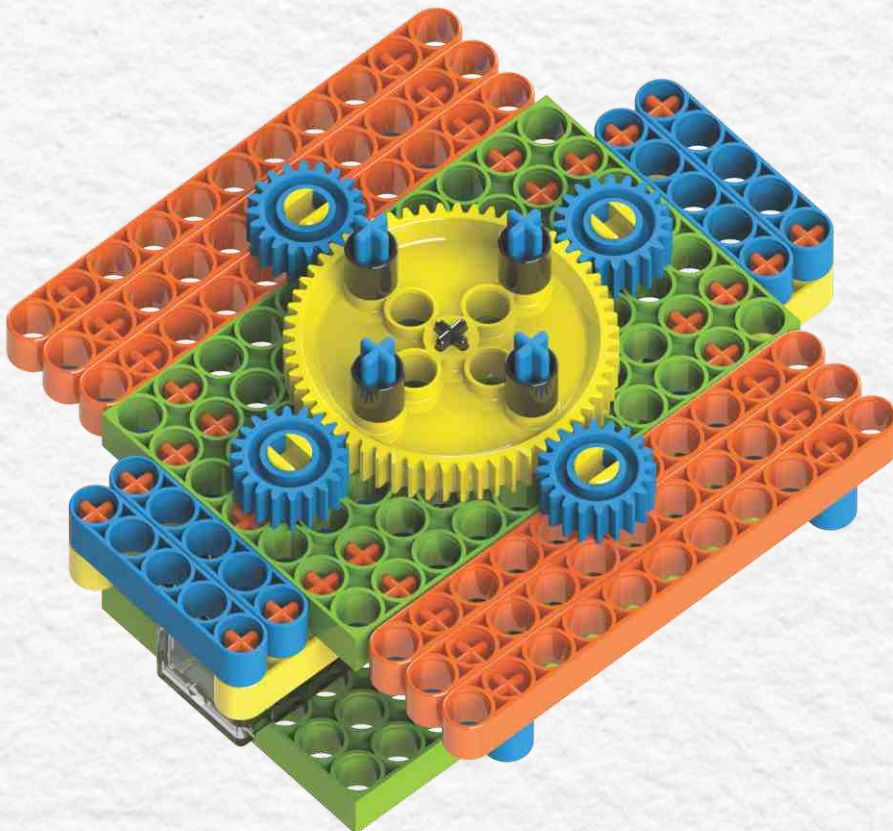
P5 4 pcs.



P11 6 pcs.



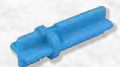
## Step 7



G(60) 1 pc.



G(20) Idler 4 pcs.



CT3 4 pcs.



TW1 4 pcs.

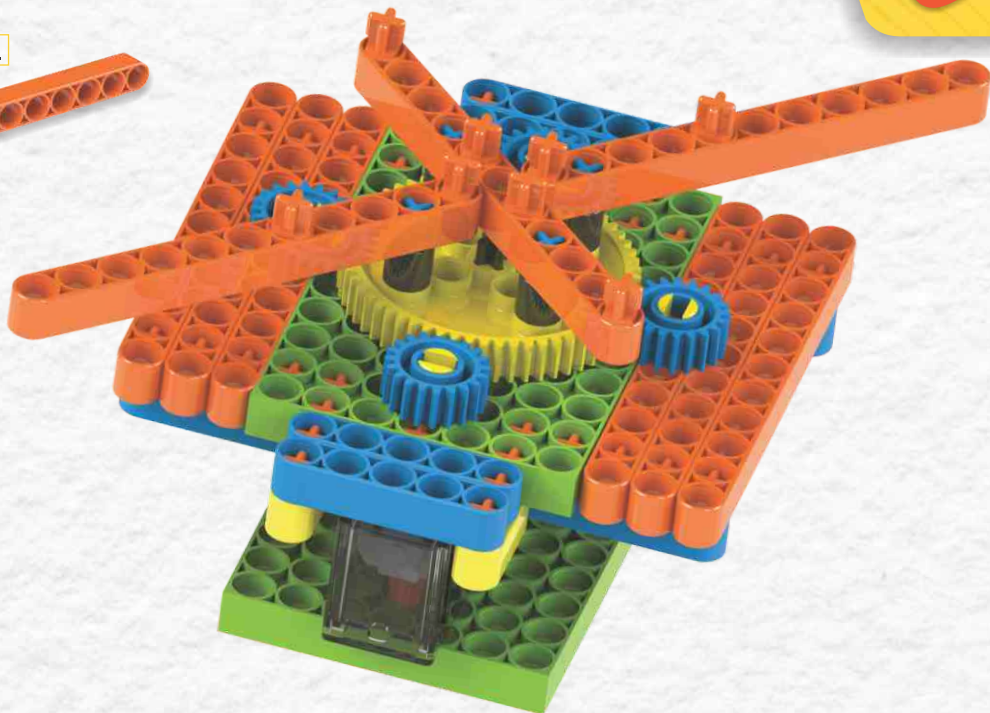
## Step 8



CT2 8 pcs.



P11 3 pcs.



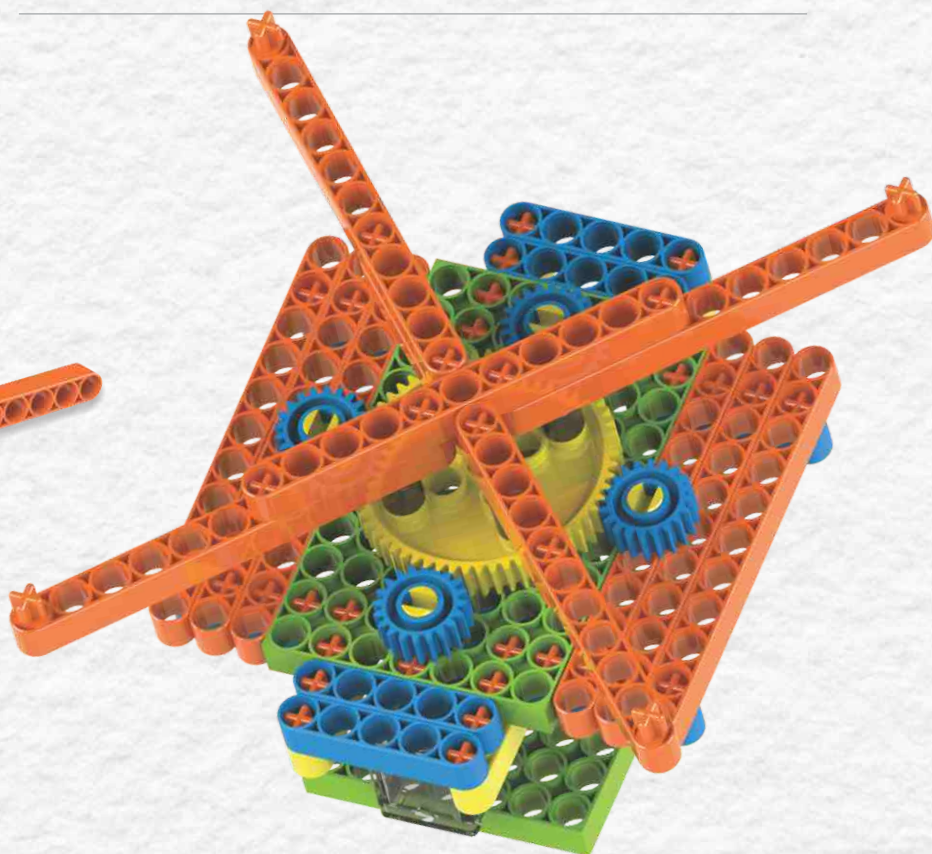
## Step 9



CT2 4 pcs.



P11 3 pcs.



## Step 10



CH2 2 pcs.



CT2 2 pcs.



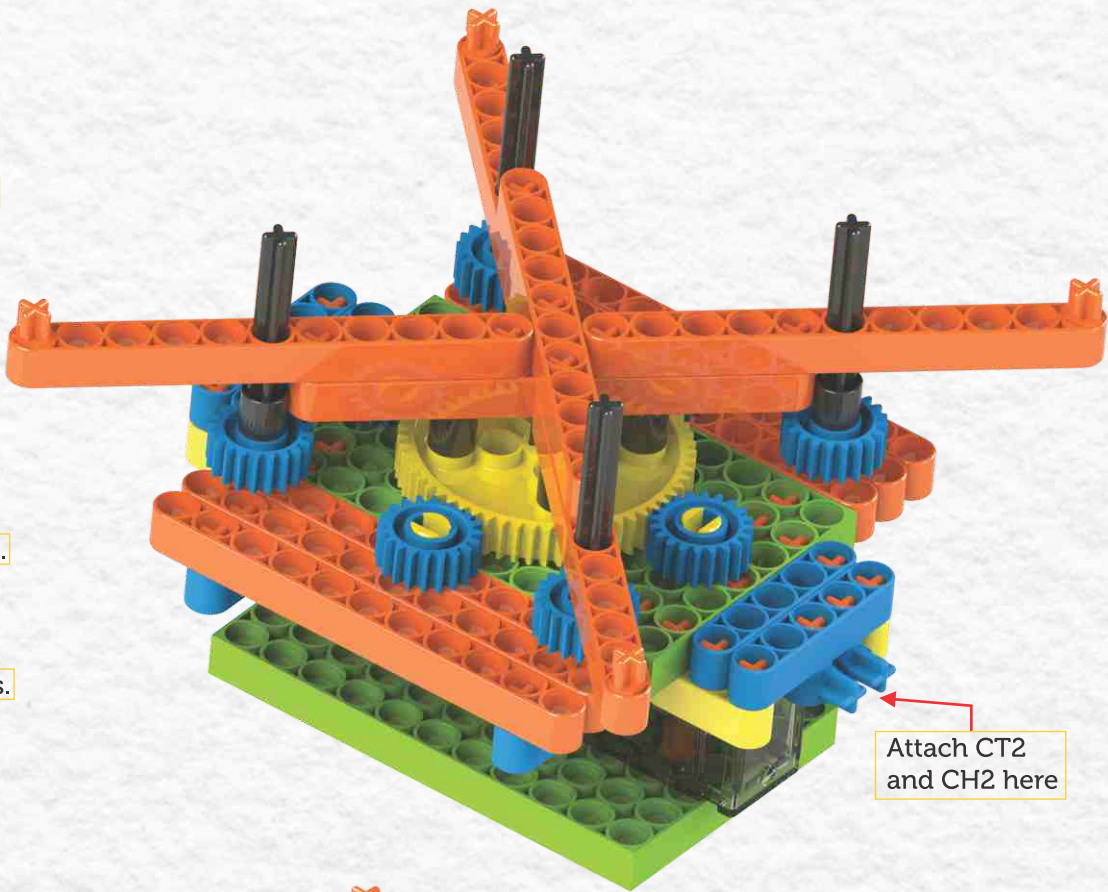
TW1 2 pcs.



SH60 4 pcs.

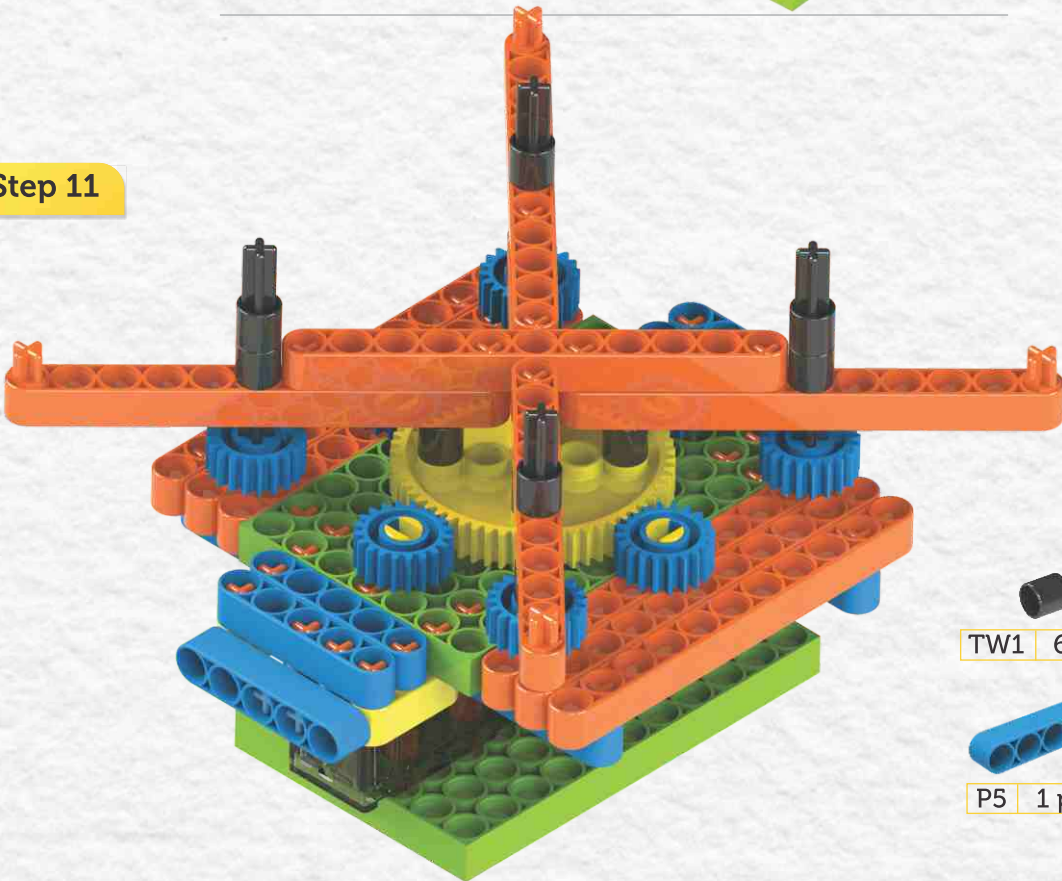


G(20) 4 pcs.

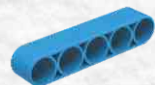


Attach CT2  
and CH2 here

## Step 11

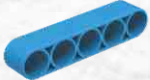


TW1 6 pcs.

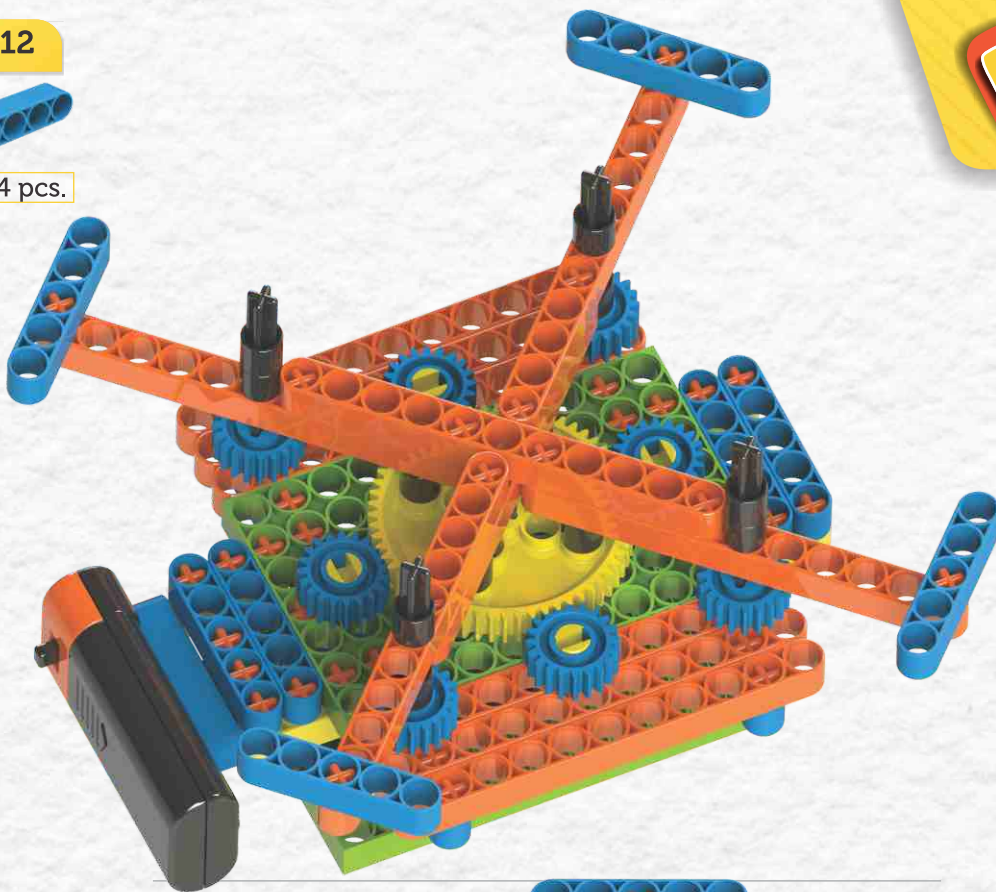


P5 1 pcs.

## Step 12



P5 4 pcs.

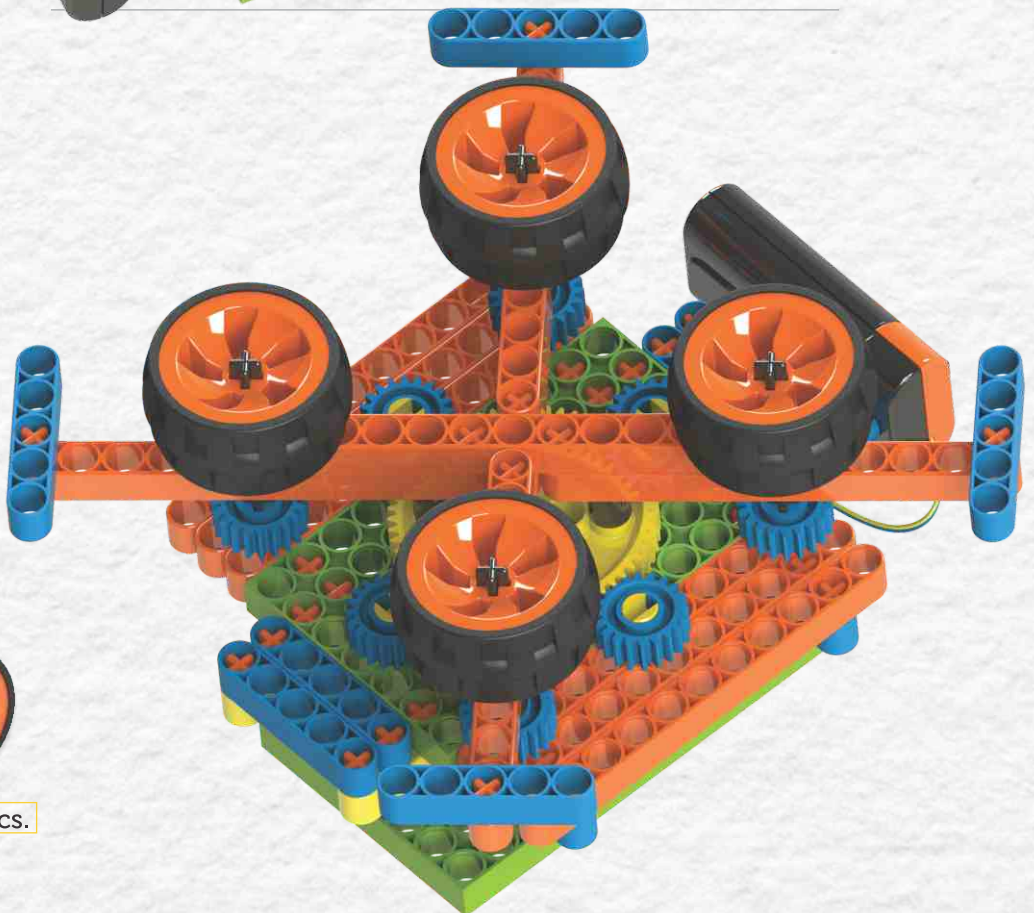


# Blix

## Step 13



Wheels 4 pcs.





# Model 5

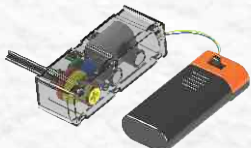
## Step 1



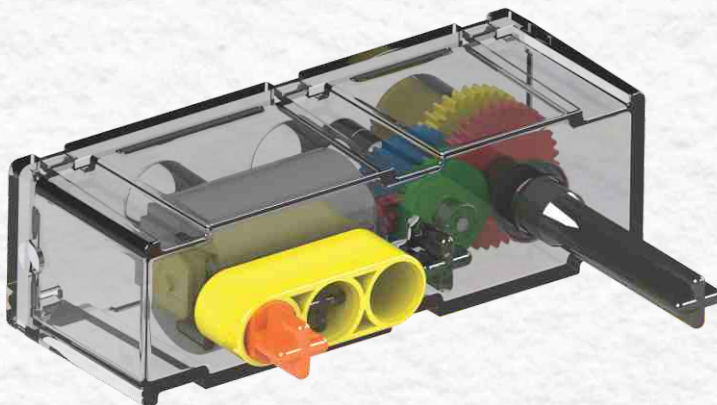
CT2 1 pc.



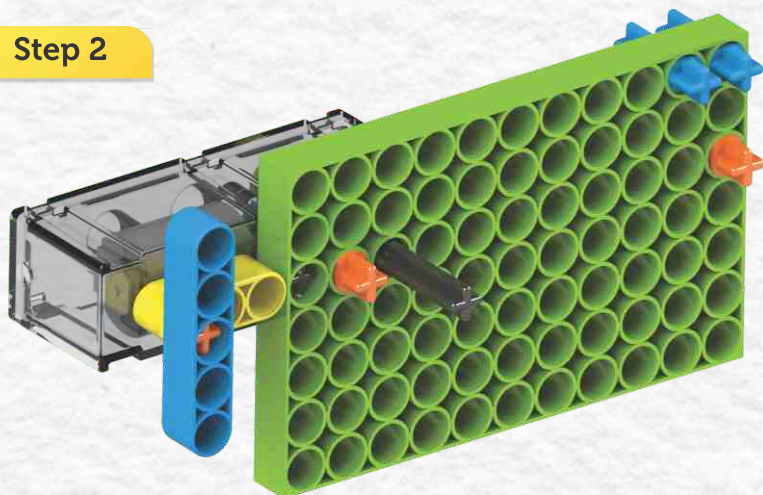
P3 1 pc.



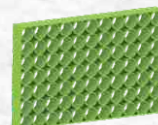
Motor with  
Battery Box



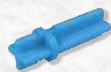
## Step 2



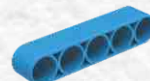
CT2 2 pcs.



P7X11 1 pc.



CT3 2 pcs.



P5 1 pc.

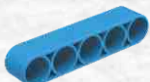
## Step 3



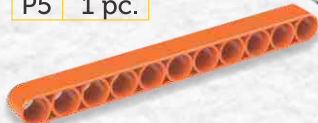
CL2 2 pcs.



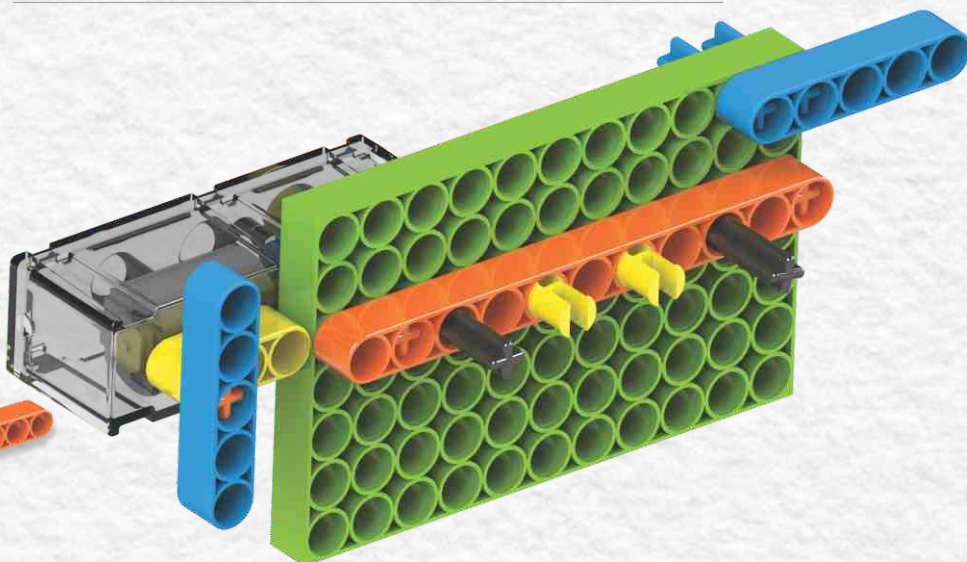
SH60 1 pc.



P5 1 pc.

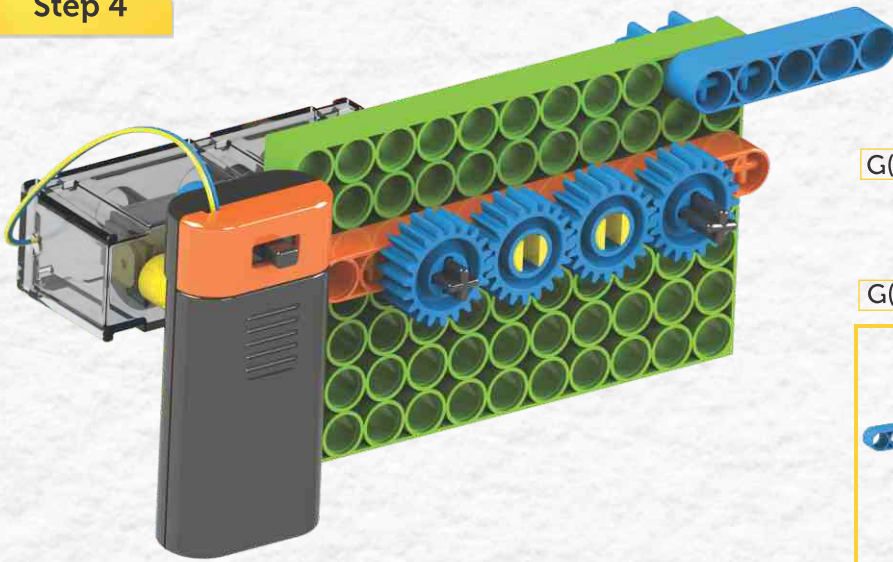


P11 1 pc.



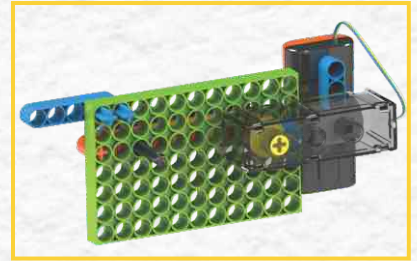
## Step 4

# Blix



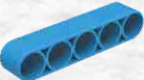


G(20) 2 pcs.

G(20) Idler 2 pcs.





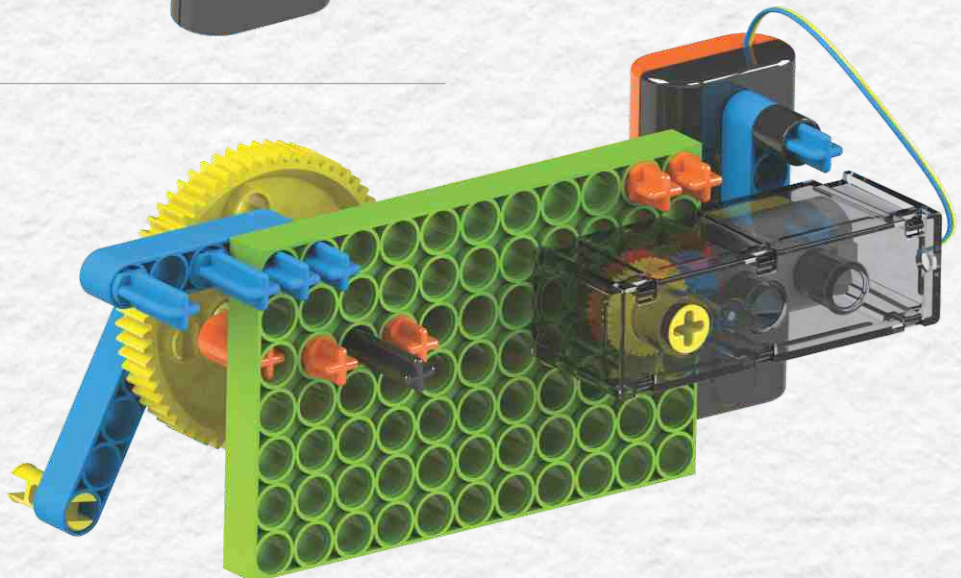
## Step 5

-  CL2 2 pcs.
-  G(60) 1 pc.
-  P5 1 pc.



## Step 6

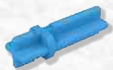
-  CT2 4 pcs.
-  CT3 3 pcs.
-  TW1 1 pc.



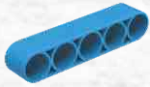
## Step 7



P3 1 pc.



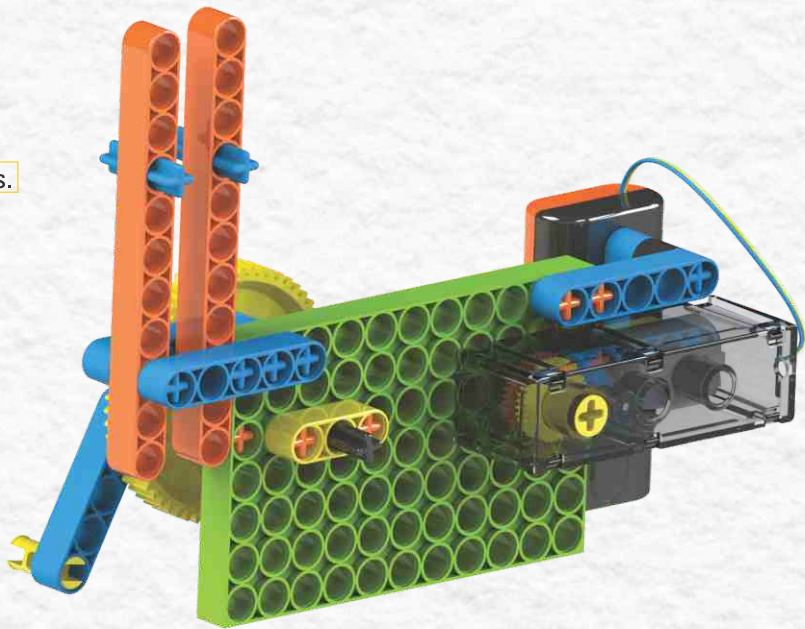
CT3 2 pcs.



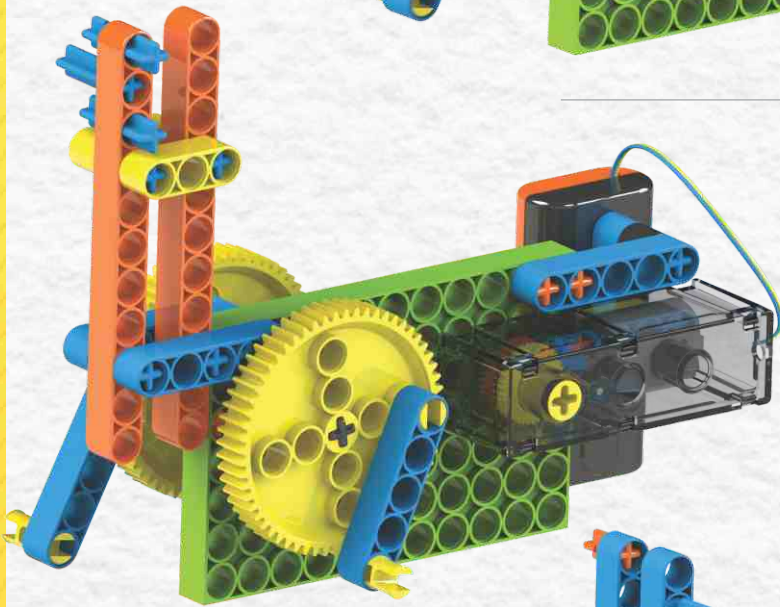
P5 2 pcs.



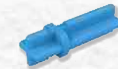
P11 2 pcs.



## Step 8



CL2 2 pcs.



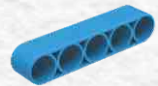
CT3 3 pcs.



P3 2 pcs.



G(60) 1 pc.



P5 1 pc.

## Step 9



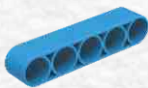
CT2 2 pcs.



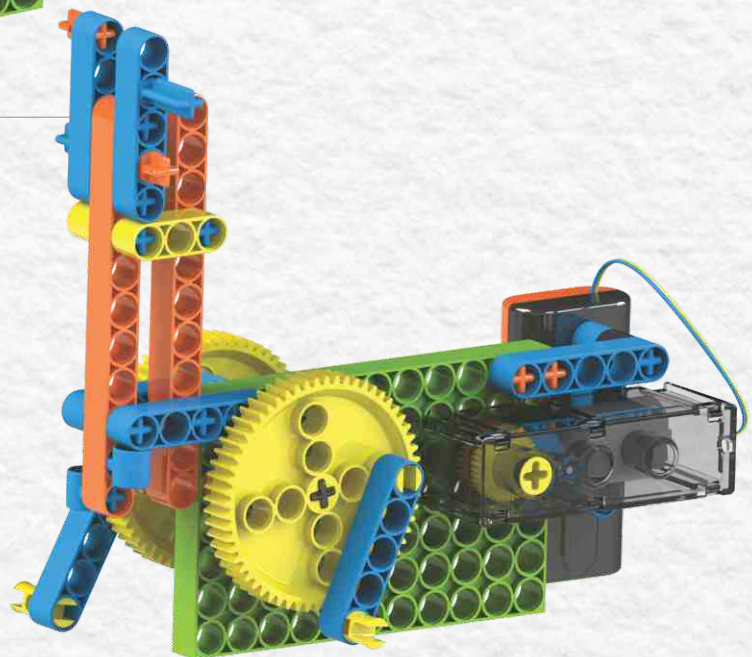
CT3 1 pc.



CH2 2 pcs.



P5 2 pcs.

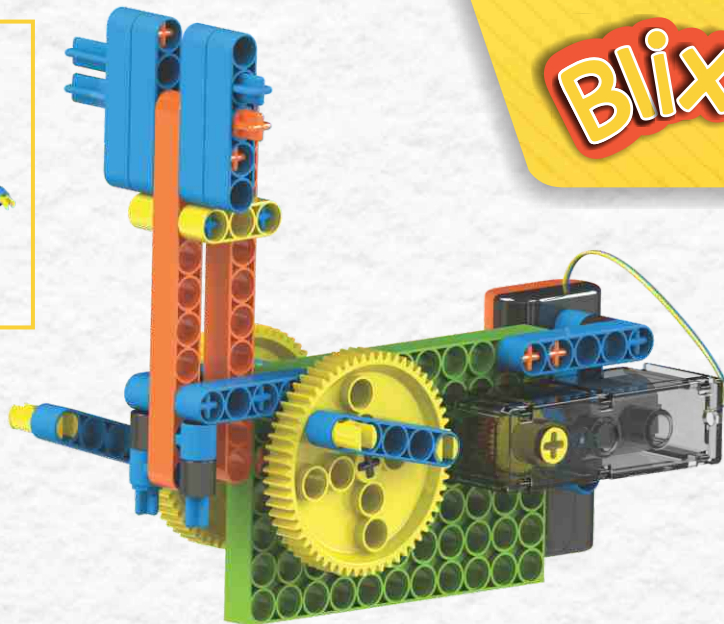


## Step 10

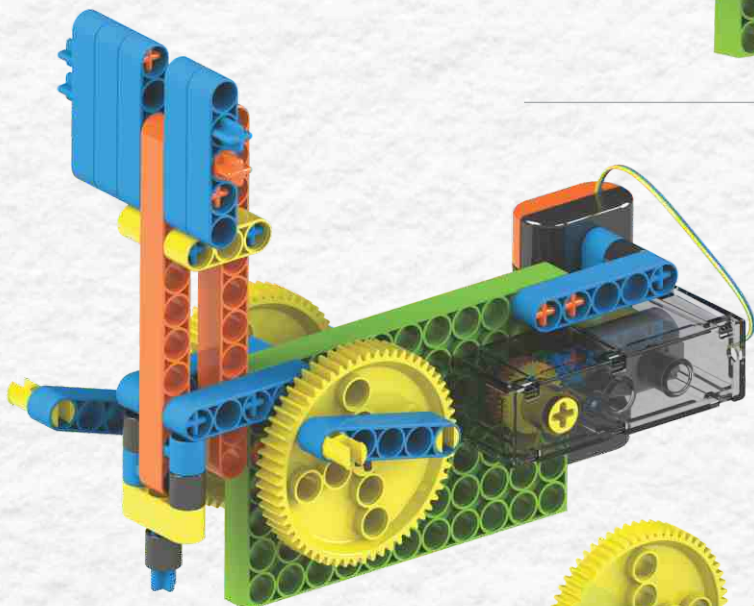
TW1 2 pcs.

CT2 1 pc.

CT3 4 pcs. P5 2 pcs.



## Step 11



TW1 1 pc.

CT3 1 pc.

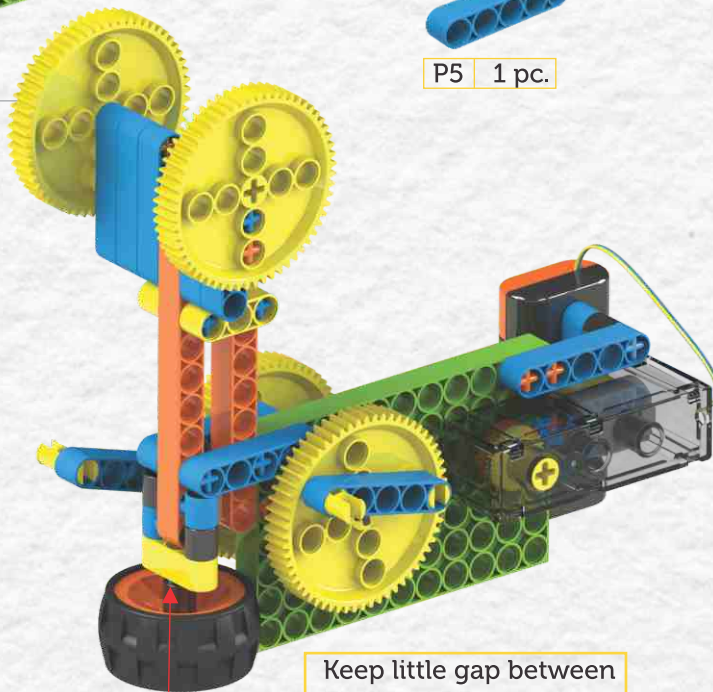
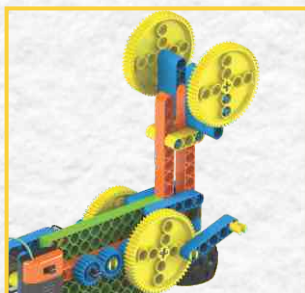
P3 1 pc.

P5 1 pc.

## Step 12

G(60) 2 pcs.

Wheels 1 pc.



Keep little gap between TW1 and P3

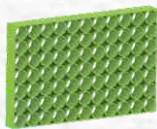
### Step 13



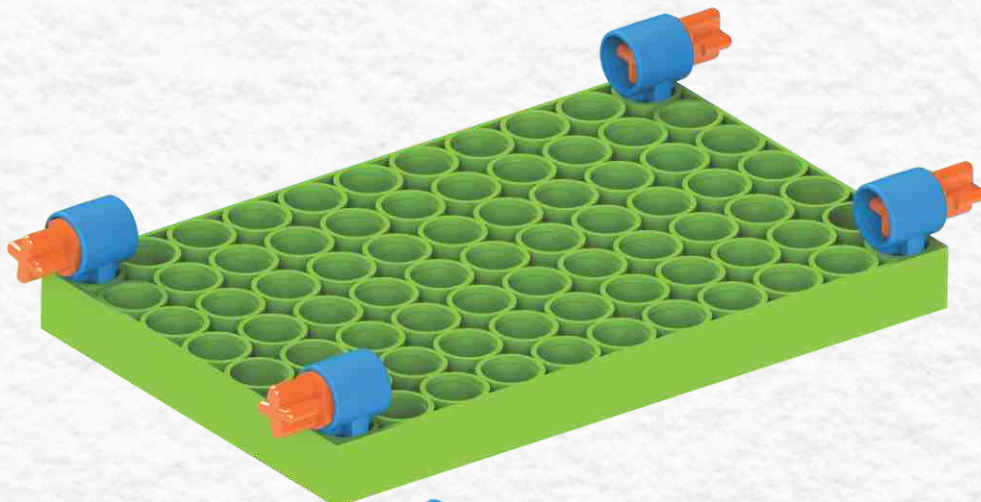
CT2 4 pcs.



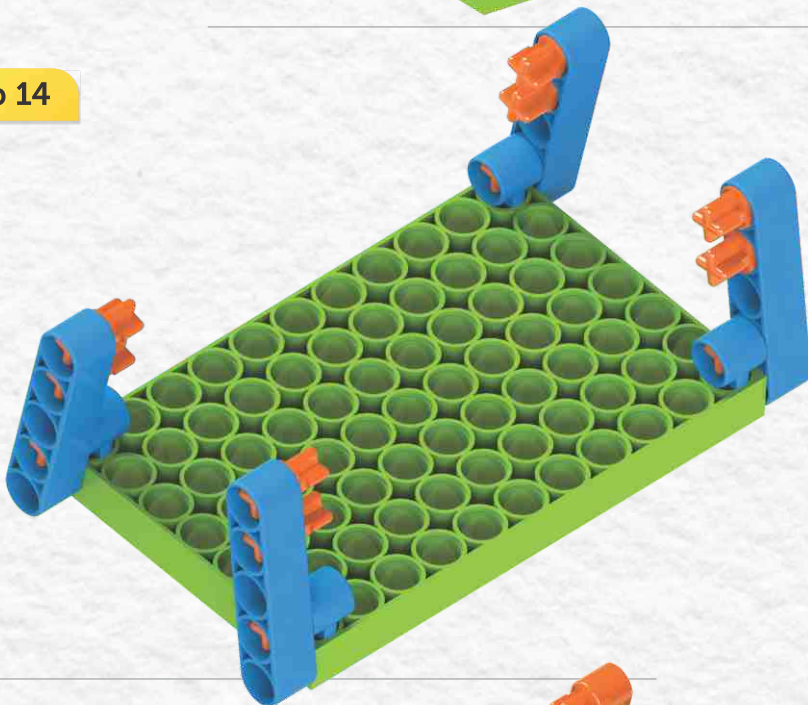
CH2 4 pcs.



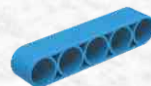
P7X11 1 pc.



### Step 14



CT2 8 pcs.

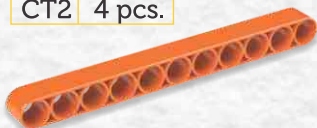


P5 4 pcs.

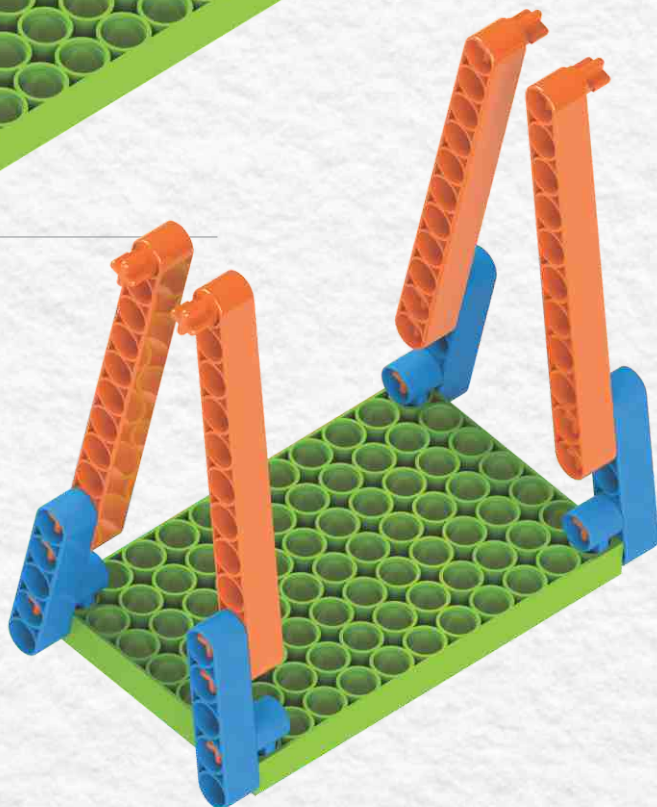
### Step 15



CT2 4 pcs.



P11 4 pcs.



## Step 16



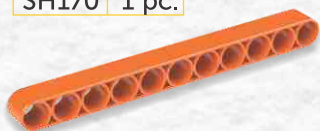
CH2 2 pcs.



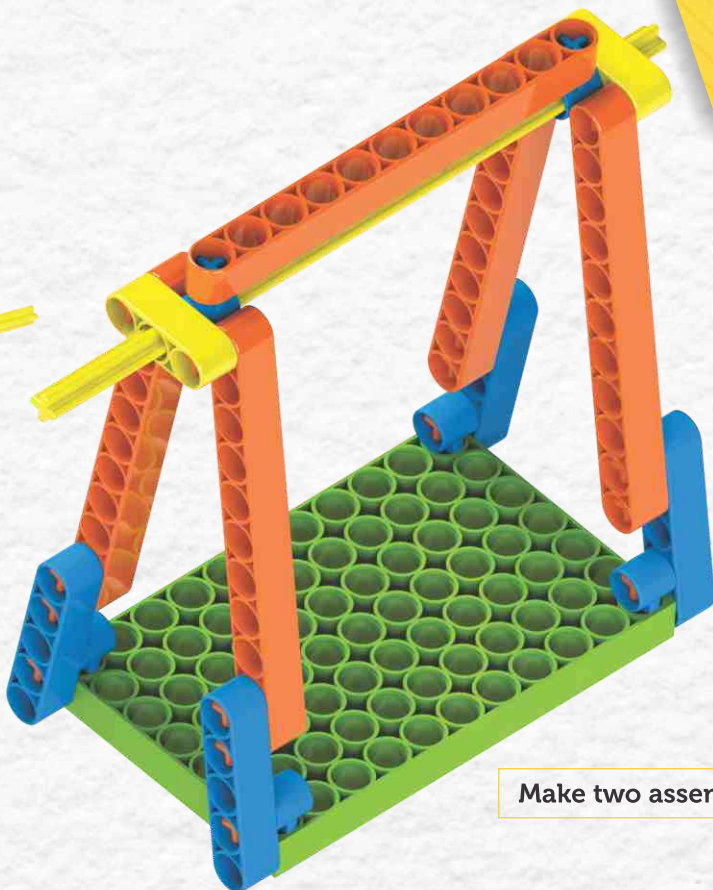
P3 2 pcs.



SH170 1 pc.



P11 1 pc.



Make two assemblies

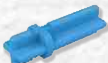
## Step 17



TW1 3 pcs.



CT2 1 pc.



CT3 3 pcs.



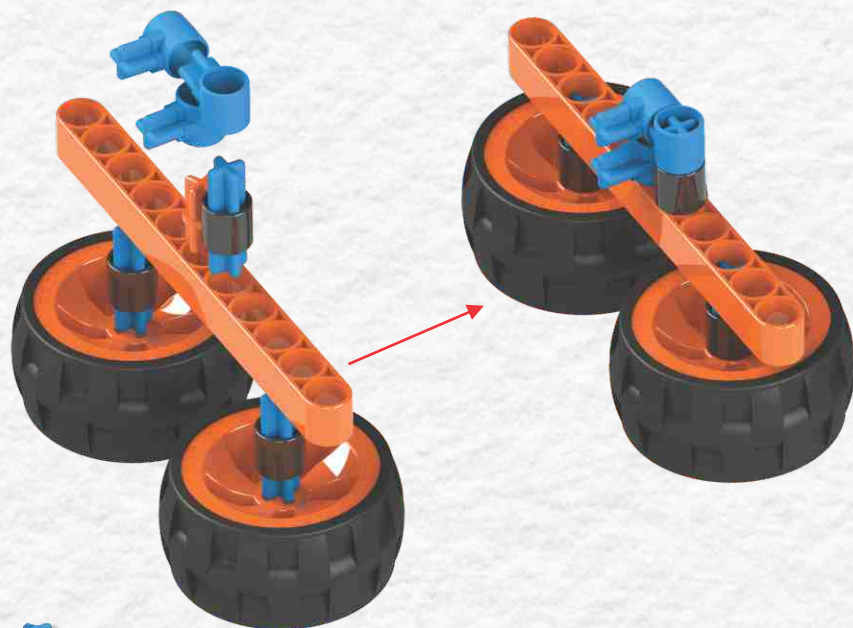
P11 1 pc.



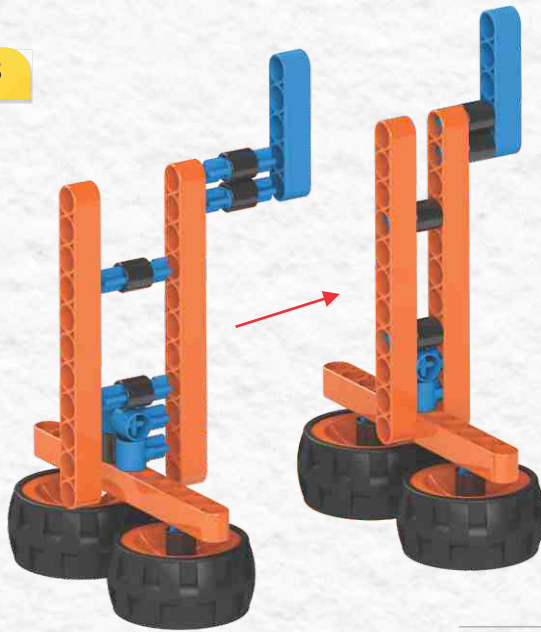
Wheels 2 pcs.



CH2 3 pcs.



## Step 18



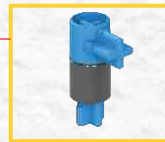
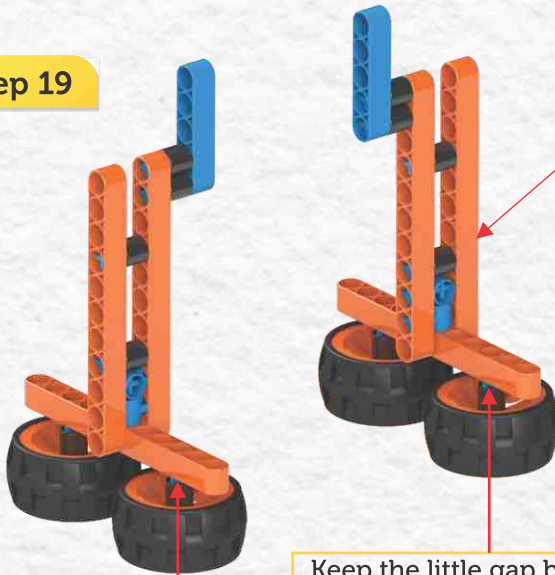
TW1 4 pcs.

CT3 4 pcs.

P5 1 pc.

P11 2 pcs.

## Step 19



Make step 18 but connect this piece on backside

Keep the little gap between TW1 and P11

## Step 20

Assembly Of Step 18 and Step 16



## Step 21

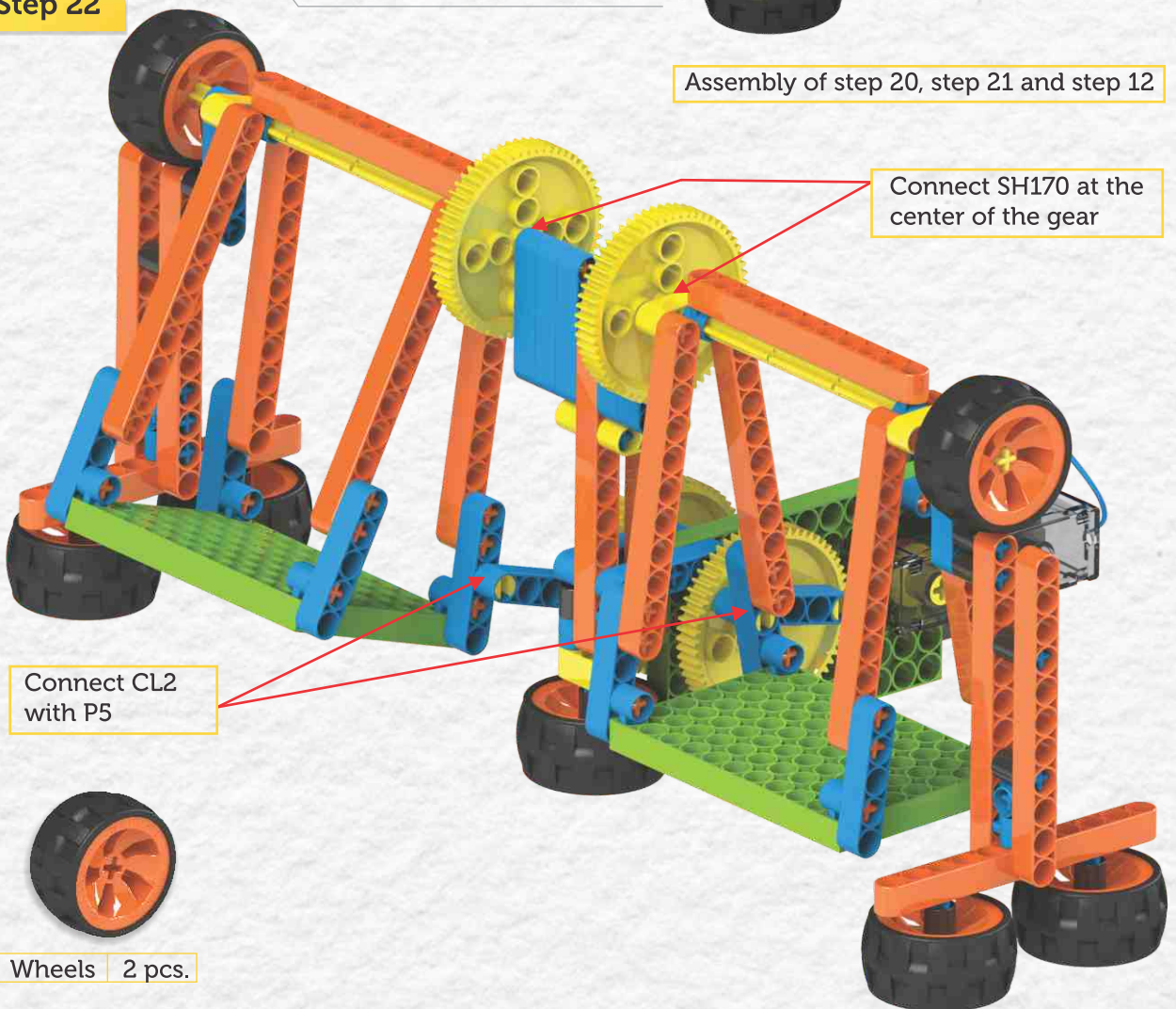
Assembly of step 19 and 16



# Blix

## Step 22

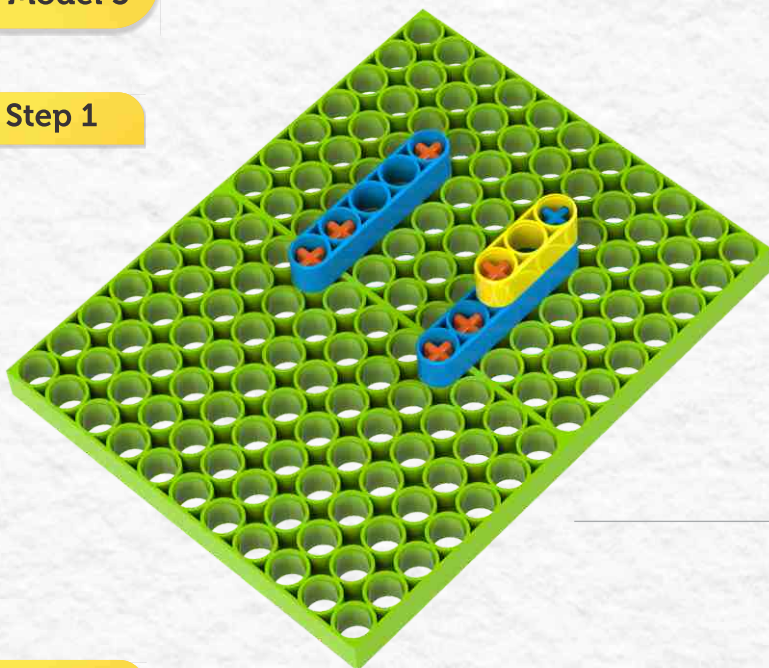
Assembly of step 20, step 21 and step 12





# Model 5

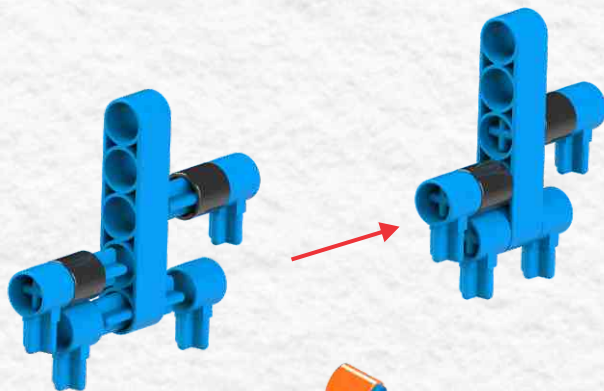
## Step 1



- CT2 6 pcs.
- P5 2 pcs.
- CT3 1 pc.
- P3 1 pc.
- P7X11 2 pcs.

## Step 2

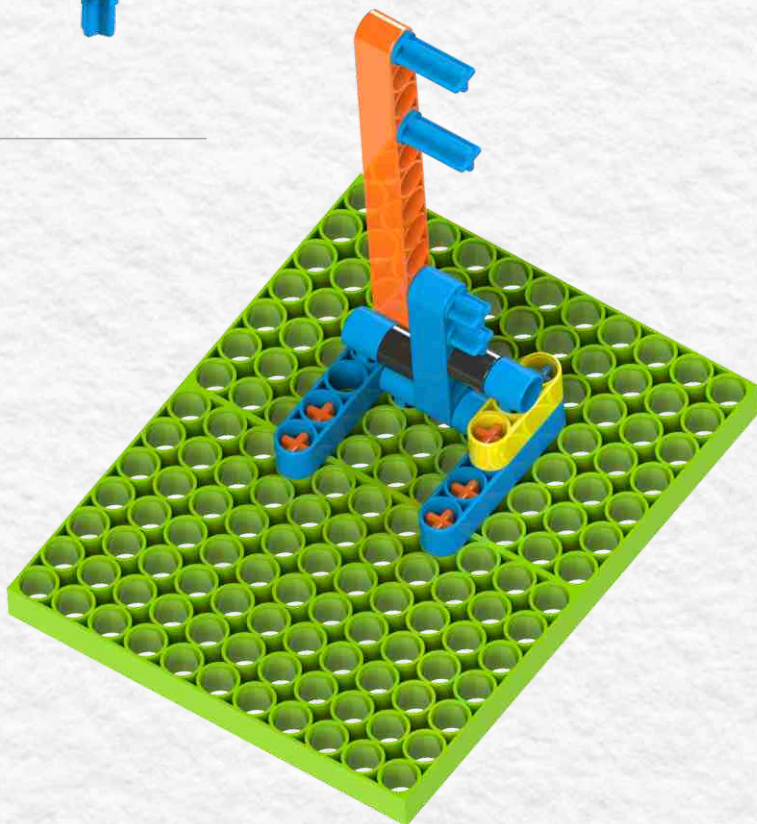
- CT3 3 pcs.
- P5 1 pc.
- CH2 4 pcs.
- TW1 2 pcs.



## Step 3

Assembly of step 1 and 2

- CT3 4 pcs.
- P11 1 pcs.



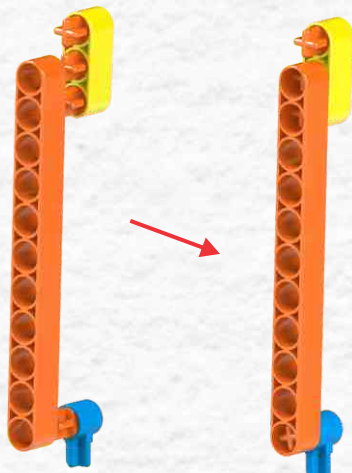
## Step 4

CT2 4 pcs.

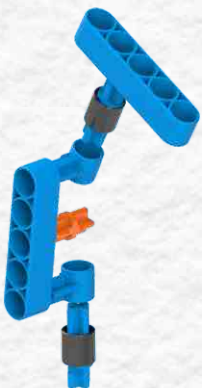
P3 1 pc.

CH2 1 pc.

P11 1 pc.



## Step 5



CT2 2 pcs.

CT3 2 pcs.

CH2 3 pcs.

TW1 2 pcs.

P5 3 pcs.

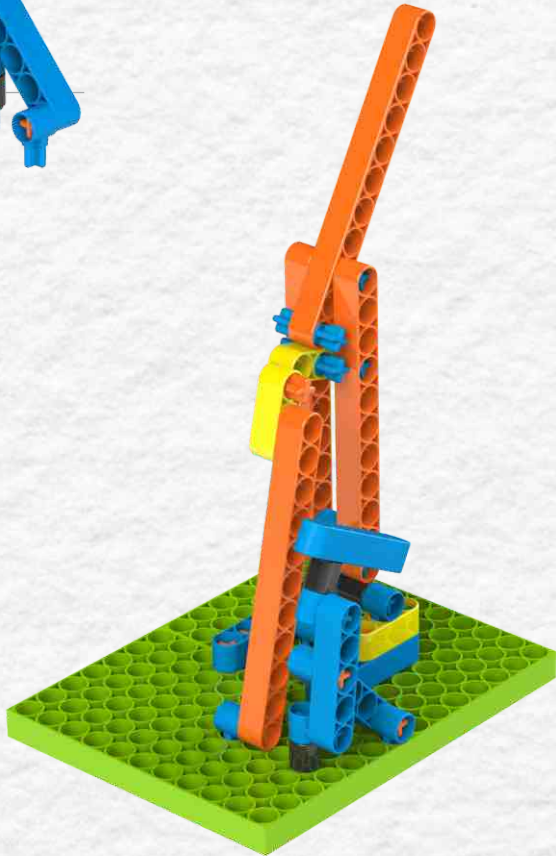
## Step 6

Assembly of step 4 and 5

P3 1 pc.

CT3 2 pcs.

P11 2 pcs.



## Step 7



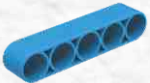
CT2 1 pc.



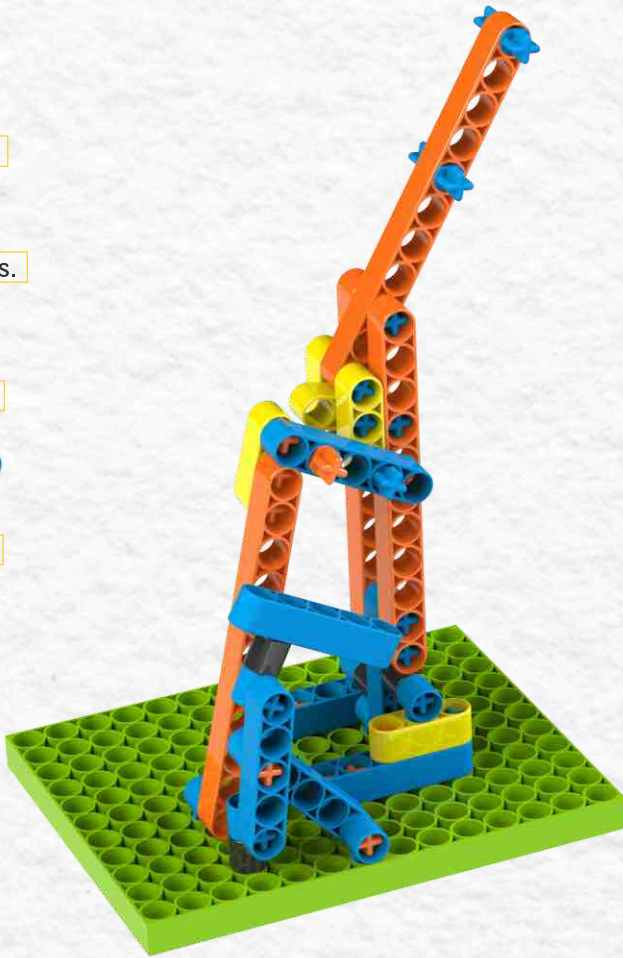
CT3 3 pcs.



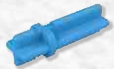
P3 2 pcs.



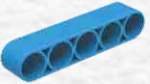
P5 1 pc.



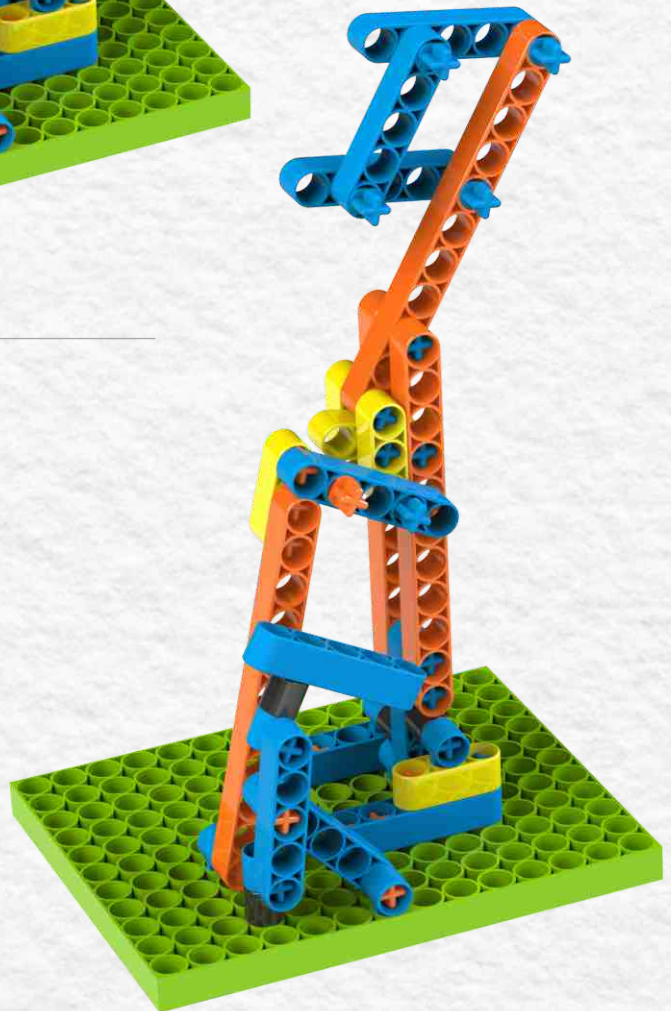
## Step 8



CT3 2 pcs.



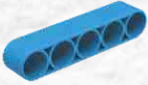
P5 3 pcs.



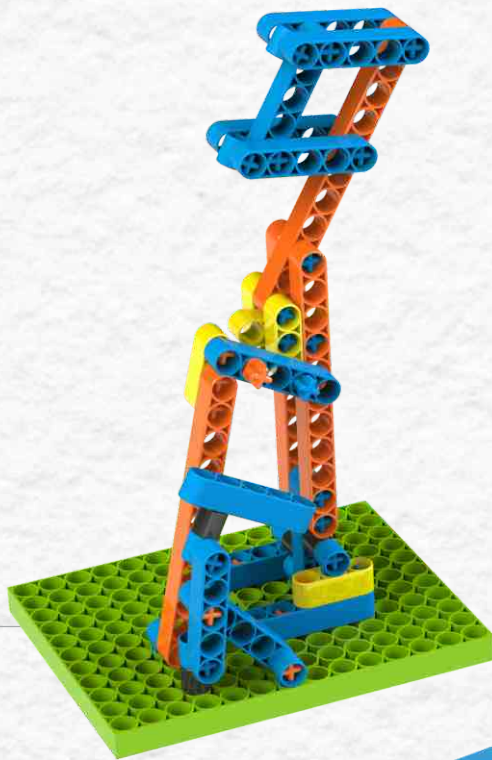
## Step 9



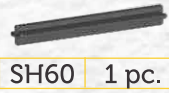
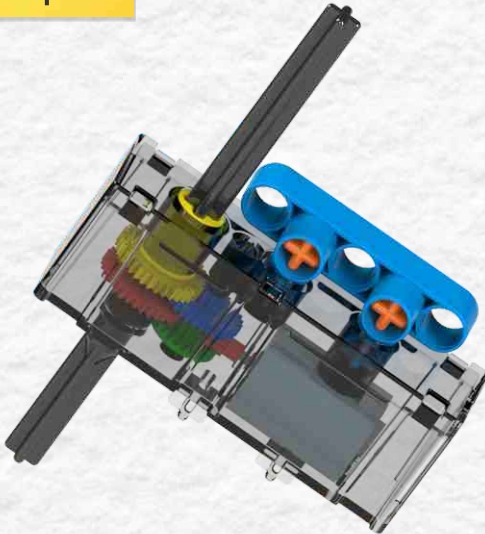
CH2 2 pcs.



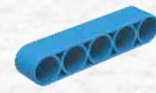
P5 2 pcs.



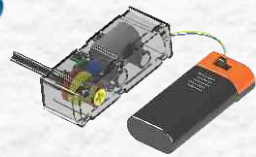
## Step 10



SH60 1 pc.



P5 1 pc.



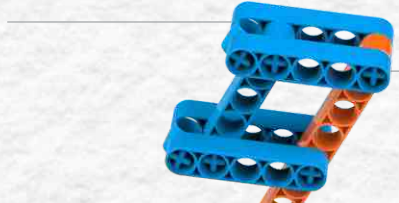
Motor with Battery Box



CT2 2 pcs.

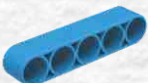


CH2 2 pcs.

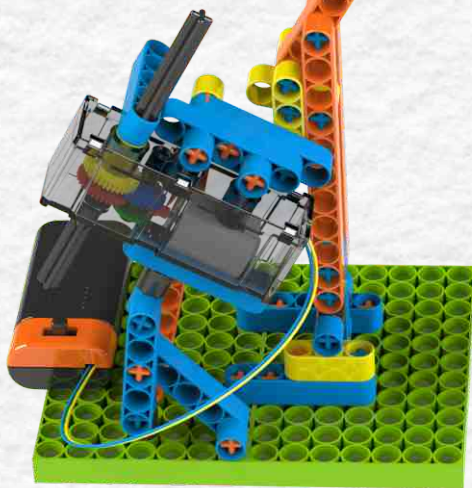


## Step 11

Assembly of step 9 and 10

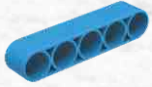


P5 1 pc.



## Step 12

TW1 7 pcs.



P5 1 pc.



G(20) 1 pc.



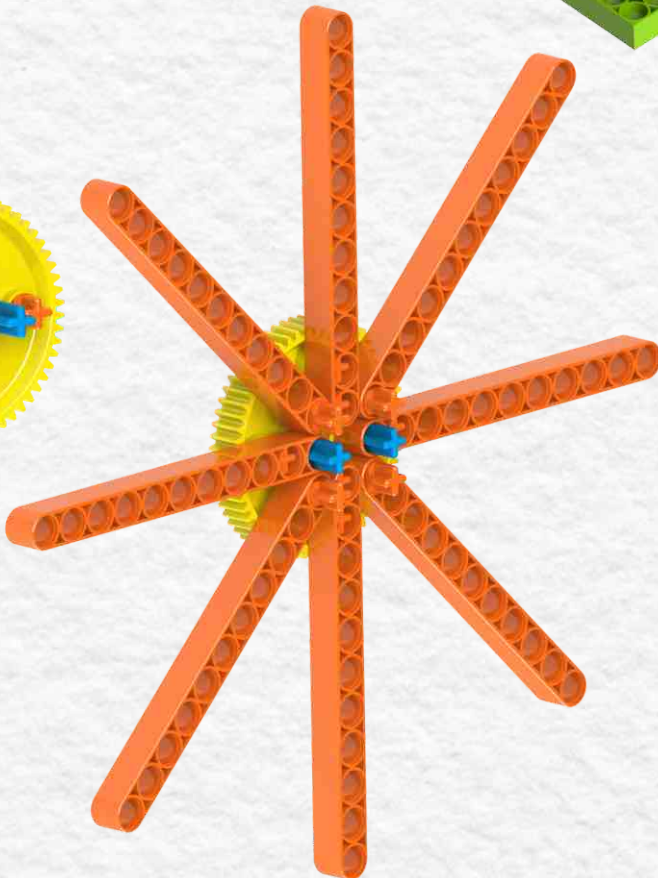
SH170 1 pc.



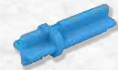
G(60) 1 pc.



## Step 13



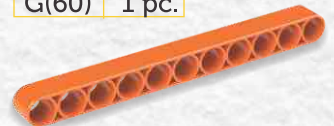
CT2 10 pcs.



CT3 2 pcs.



G(60) 1 pc.



P11 8 pcs.

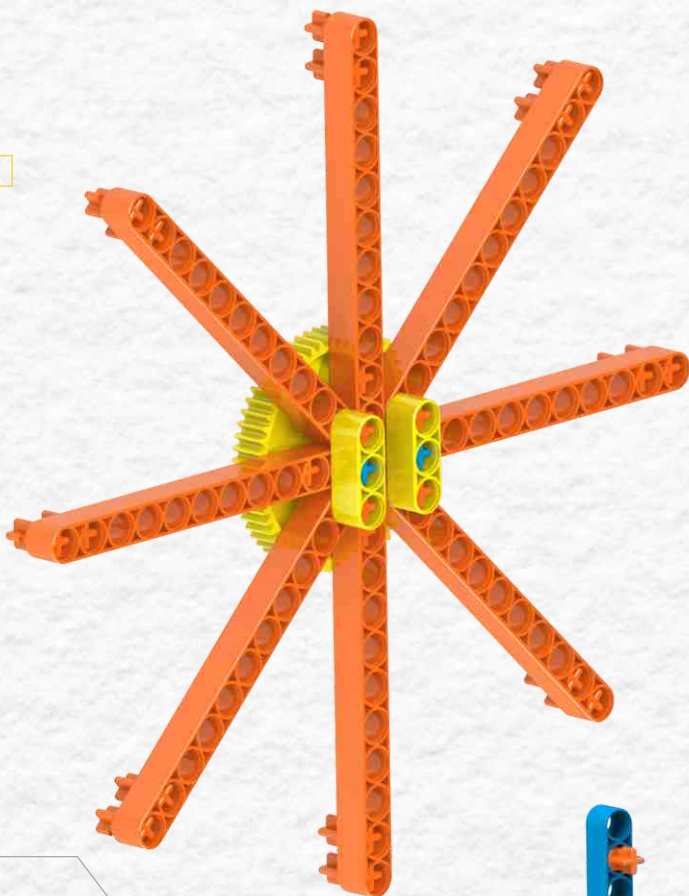
## Step 14



CT2 16 pcs.



P3 2 pcs.



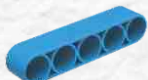
## Step 15



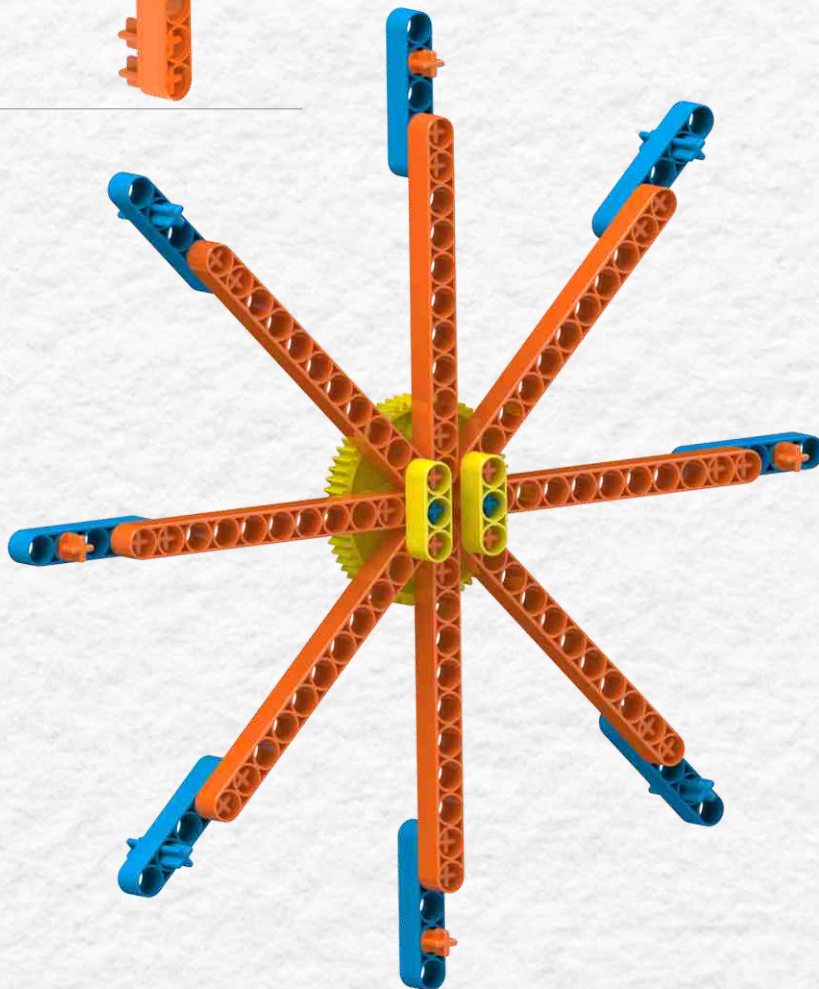
CT2 4 pcs.



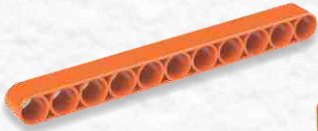
CT3 4 PCS.



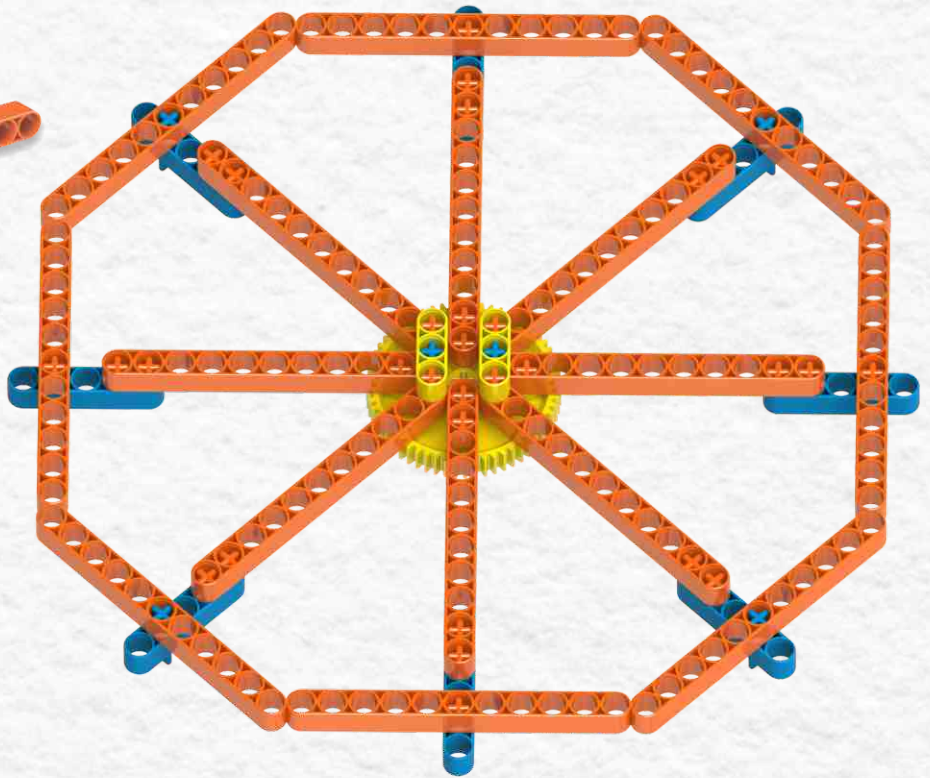
P5 8 pcs.



Step 16



P11 8 pcs.



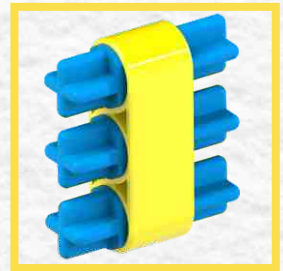
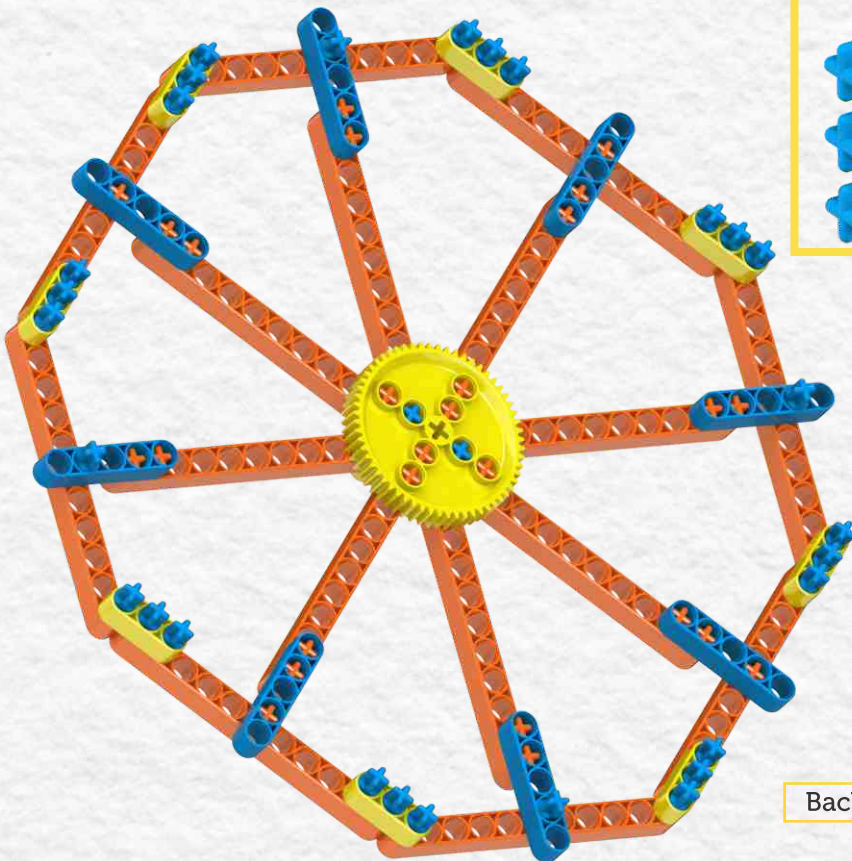
Step 17



CT3 24 pcs.



P3 8 pcs.



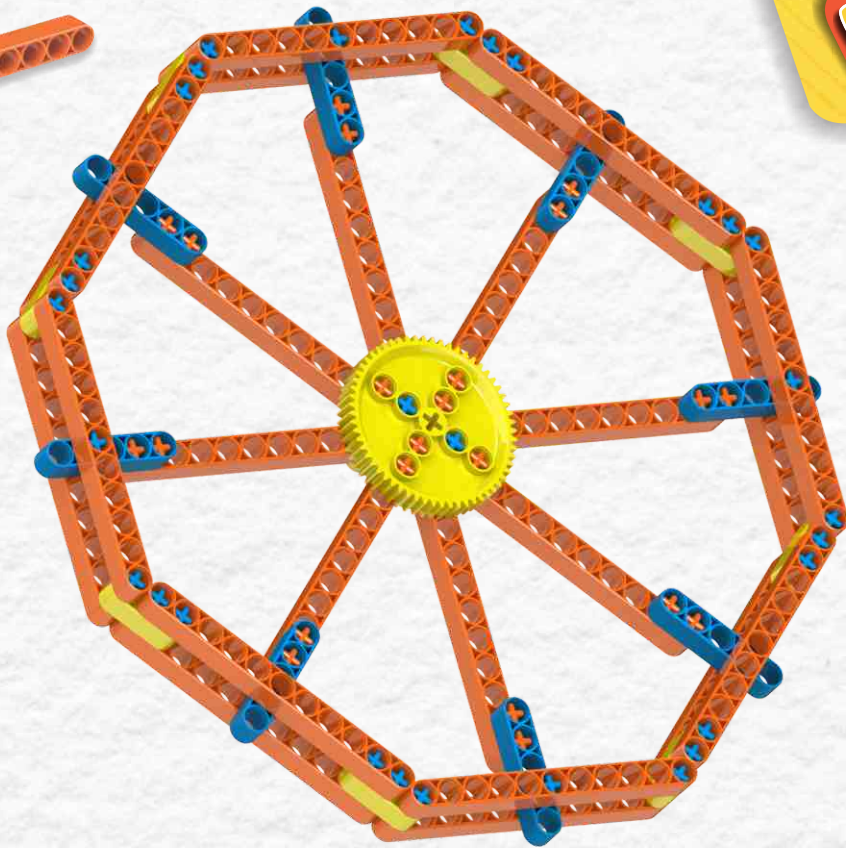
Make 8

Backside

## Step 18



P11 8 pcs.



# Blix

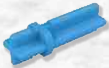
## Step 19



TW1 8 pcs.



CH2 16 pcs.



CT3 8 pcs.



CL2 8 pcs.



P3 8 pcs.



Wheels 8 pcs.



Make 8



## Step 20

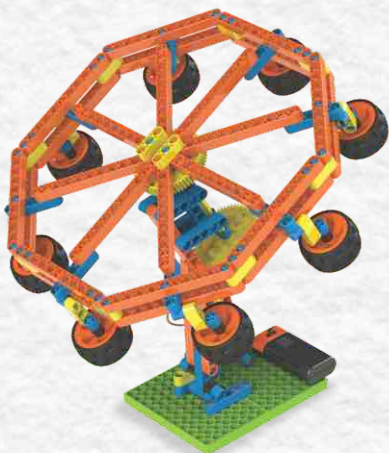
Assembly of step 18 and 19



## Step 21

Assembly of step 20 and 12

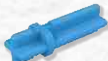
Attach step 20 on the yellow shaft



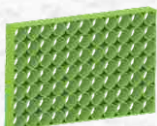
Step 1



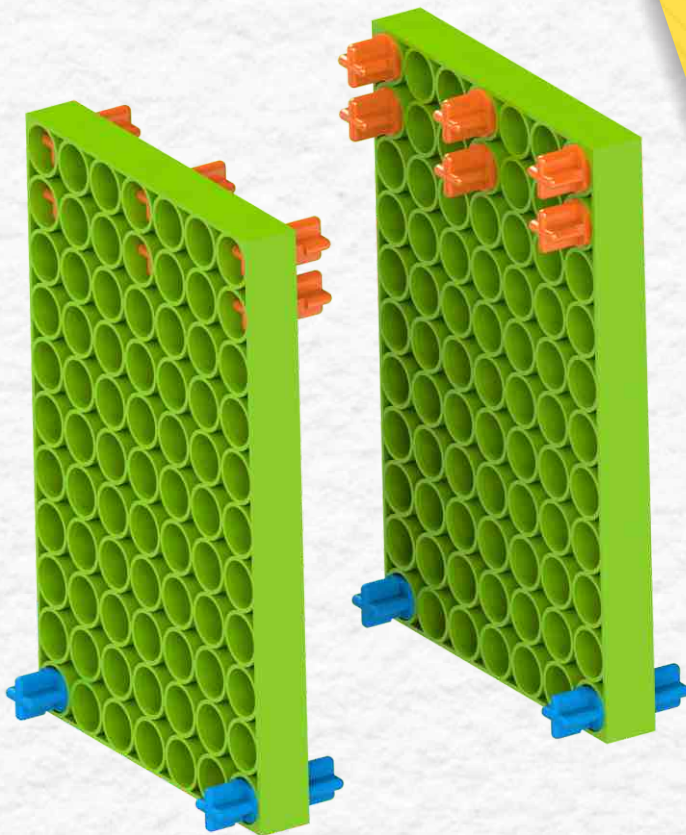
CT2 12 pcs.



CT3 4 pcs.



P7X11 2 pcs.



Step 2



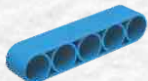
CT2 8 pcs.



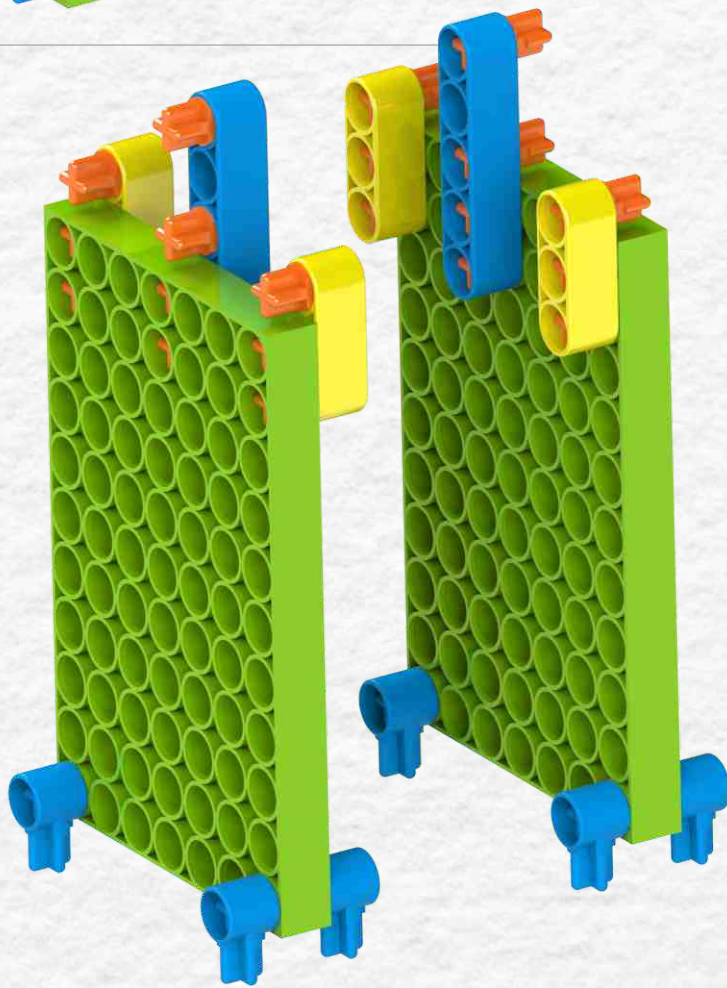
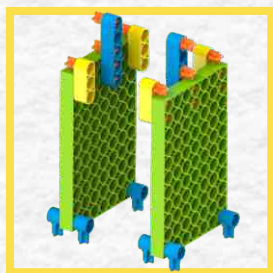
CH2 8 pcs.



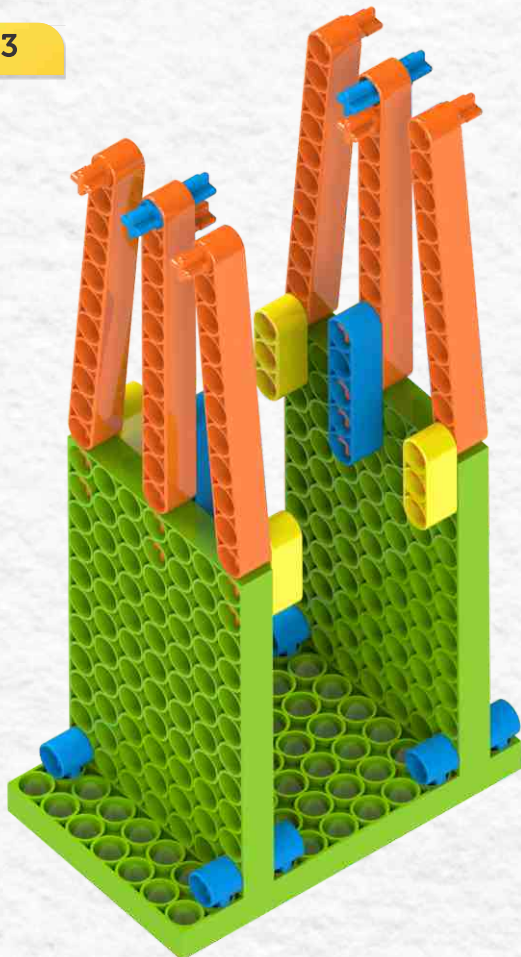
P3 4 pcs.



P5 2 pcs.



### Step 3



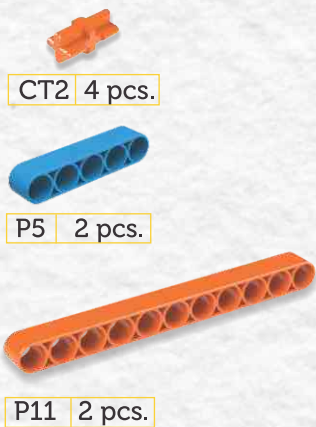
CT2 6 pcs.

CT3 2 pcs.

P7X11 1 pc.

P11 6 pcs.

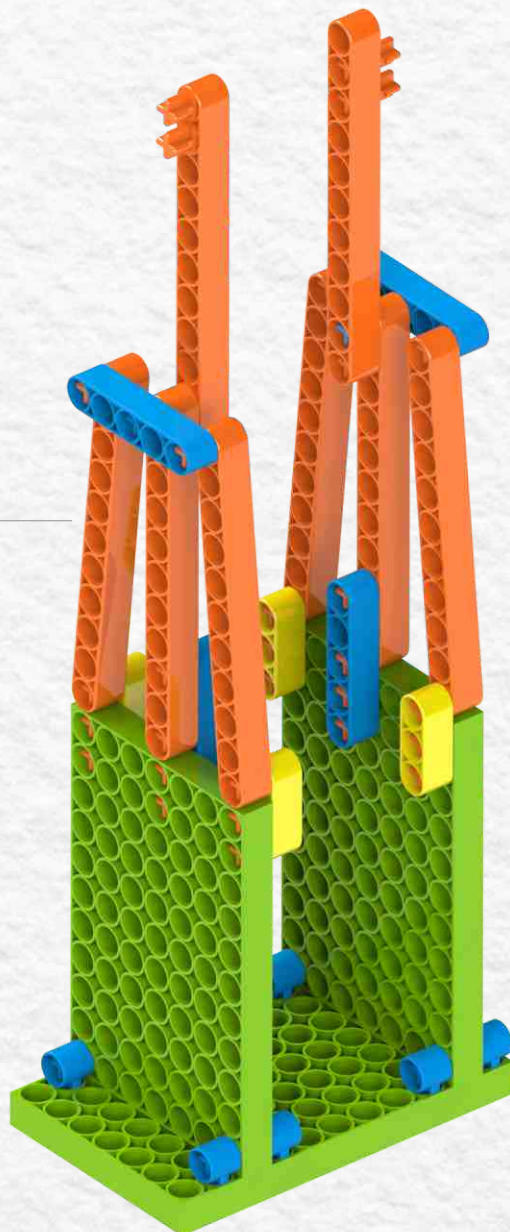
### Step 4



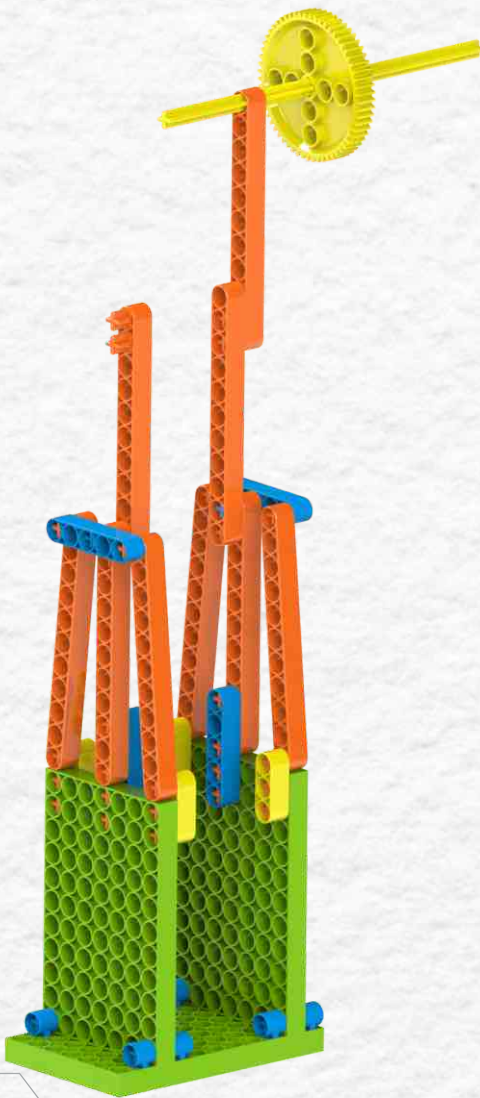
CT2 4 pcs.

P5 2 pcs.

P11 2 pcs.



## Step 5



G(60) 1 pc.



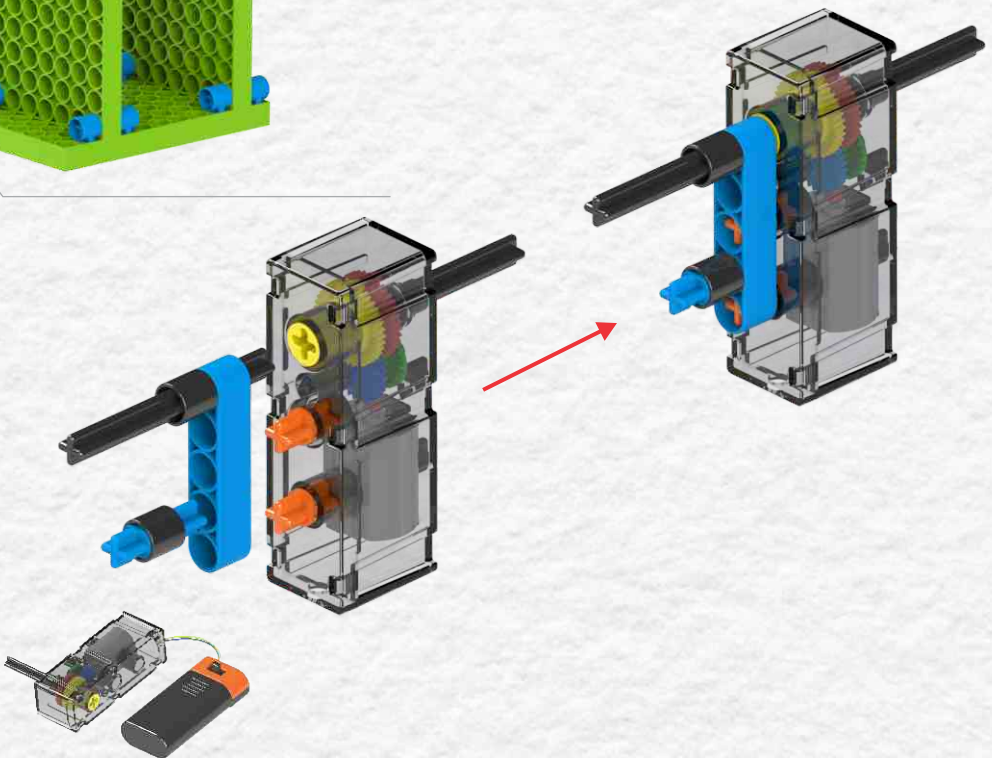
P11 1 pc.



SH170 1 pc.

# Blix

## Step 6



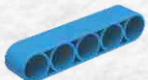
TW1 2 pcs.



CT2 2 pcs.



CT3 1 pc.



P5 1 pc.

Motor with  
Battery Box

## Step 7

Assembly of step 6 and 5



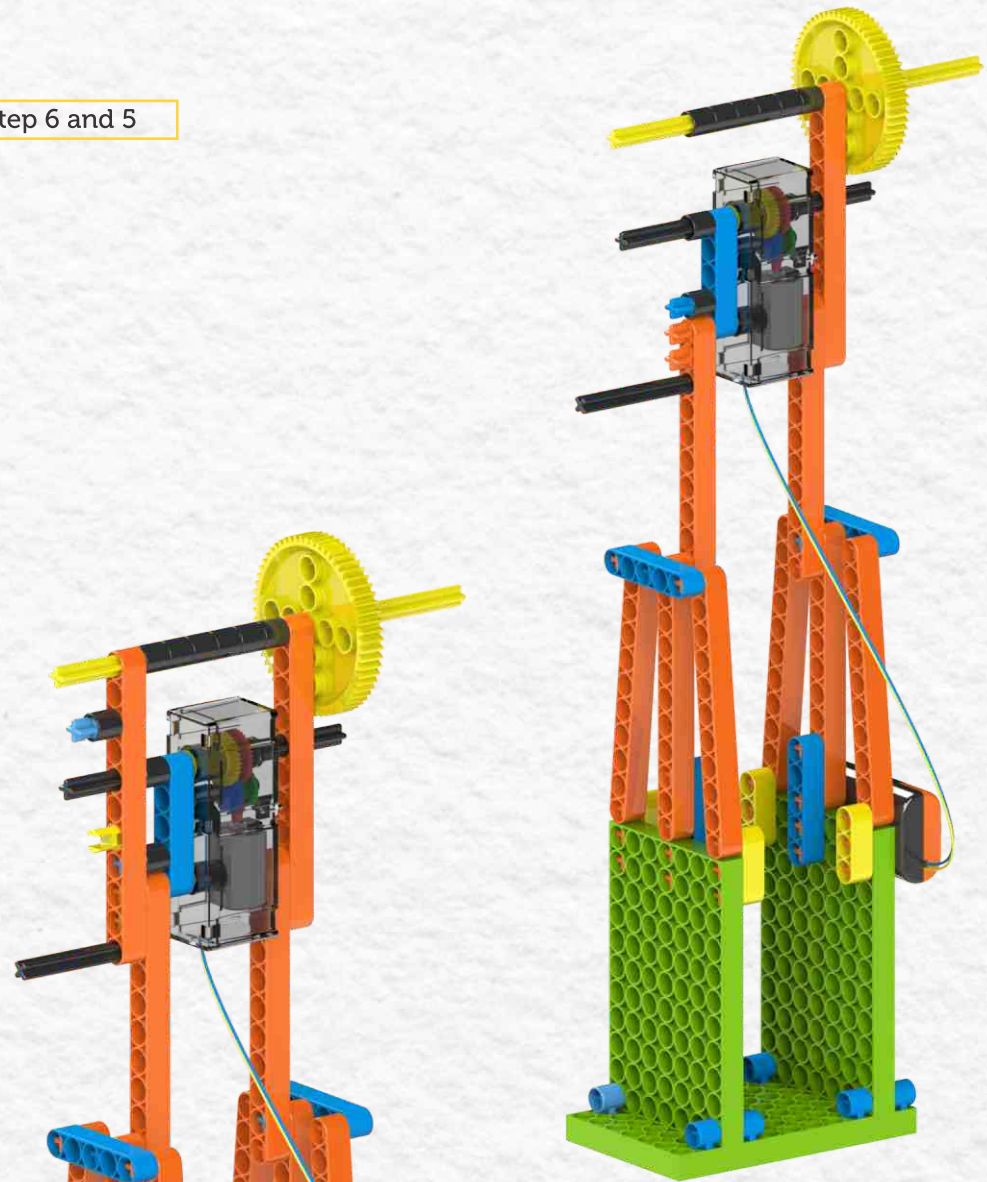
TW1 6 pcs.



G(60) 1 pc.



SH60 4 pcs.



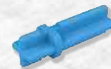
## Step 8



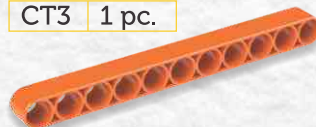
TW1 1 pc.



CL2 1 pc.



CT3 1 pc.



P11 1 pc.

## Step 9



G(20) 2 pcs.



G(20) Idler 1 pc.



G(60) 1 pc.

## Step 10

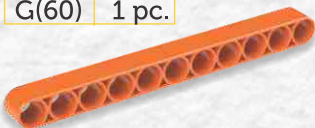
Attach final assembly here



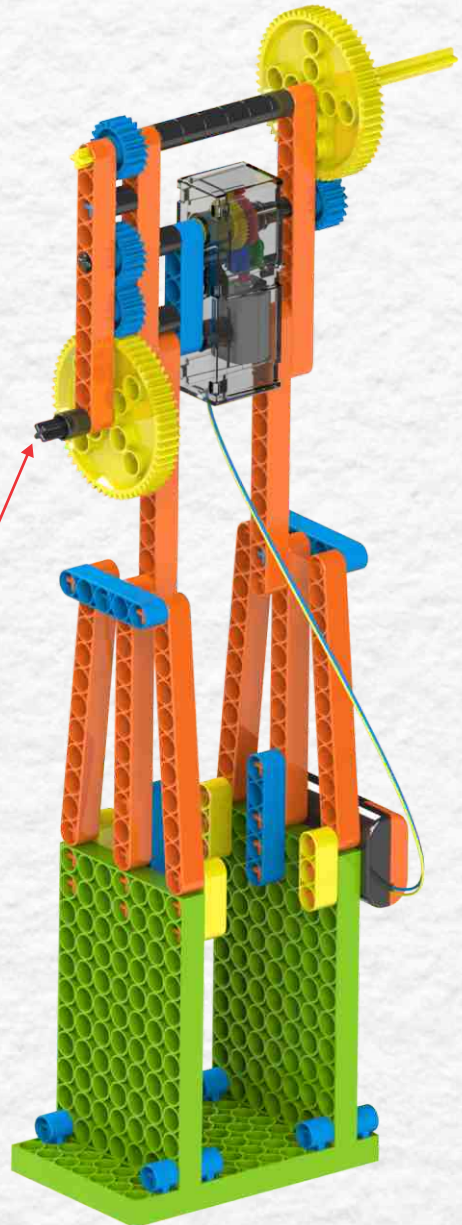
TW1 2 pcs.



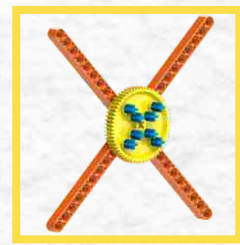
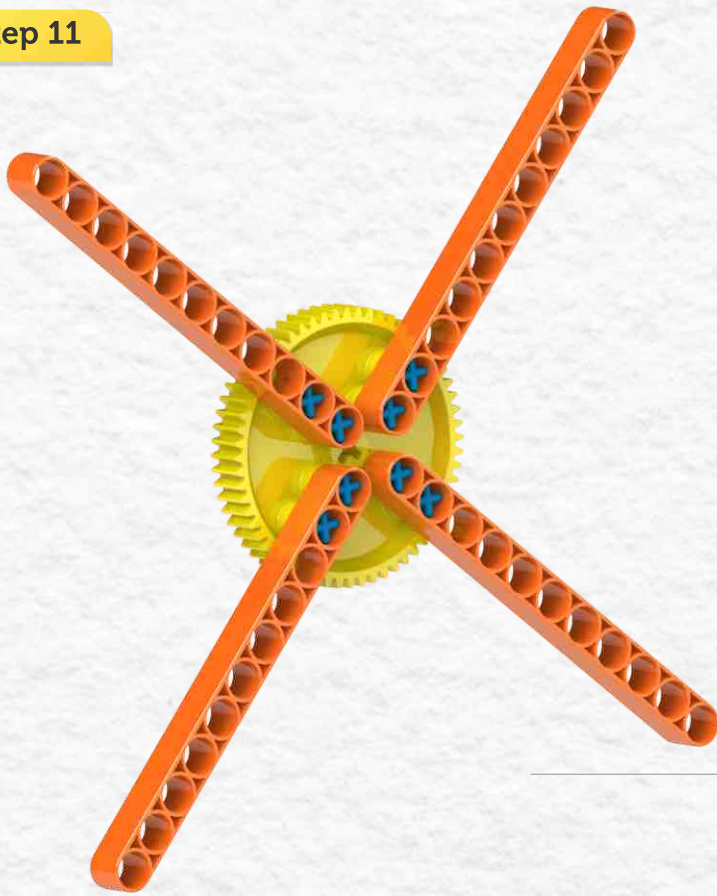
G(60) 1 pc.



P11 1 pc.



## Step 11



CT3 8 pcs.

G(60) 1 pc.

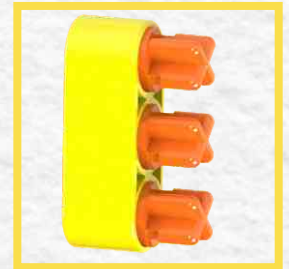
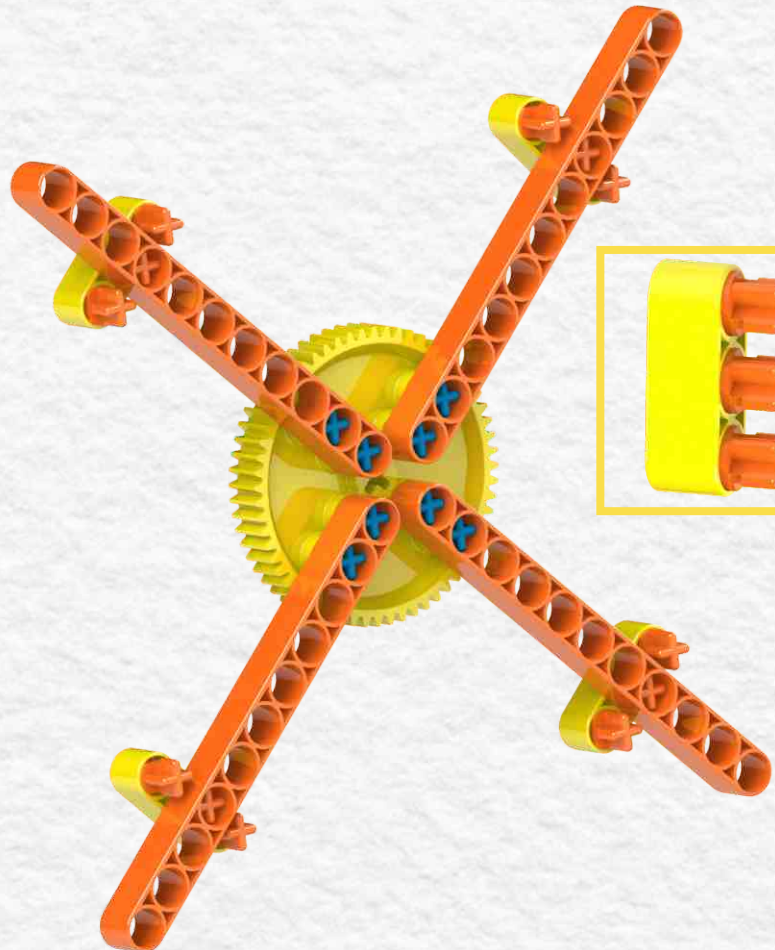
P11 4 pcs.

## Step 12

CT2 12 pcs.

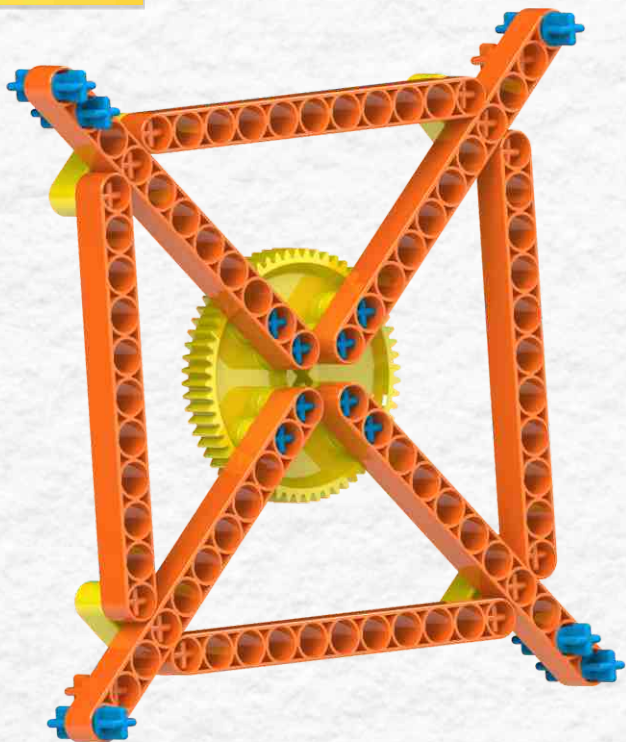
P3 4 pcs.

Attach with step 11



## Step 14

# Blix



CT2 2 pcs.

CT3 6 pcs.

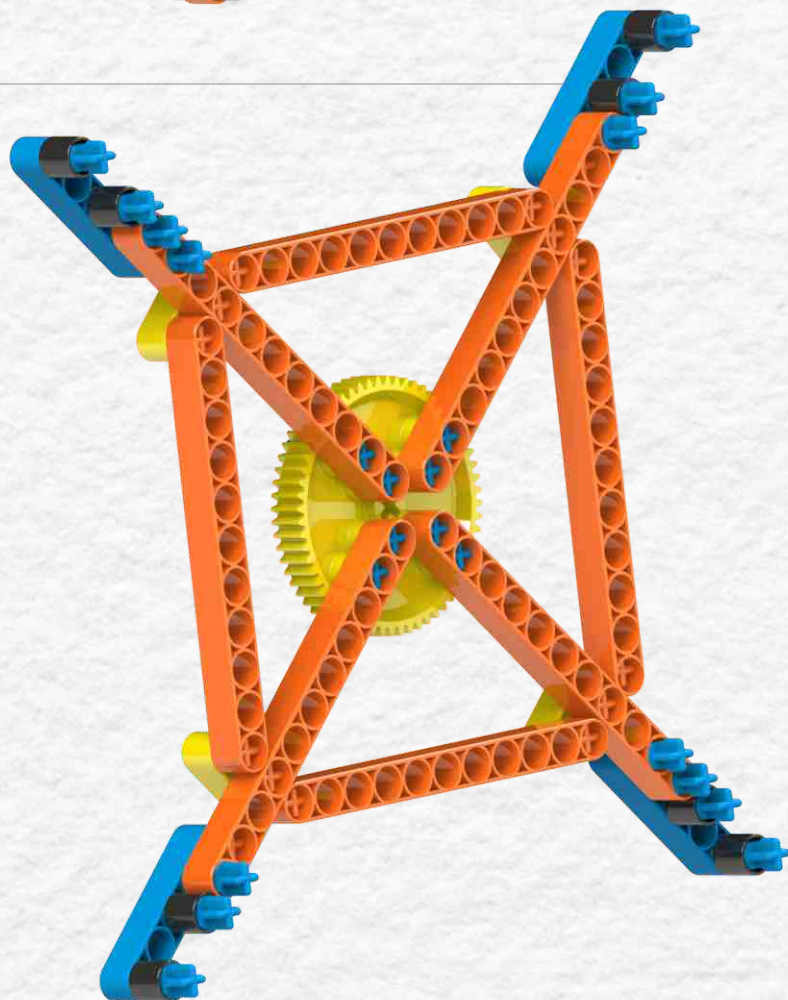
P11 4 pcs.

## Step 15

TW1 8 pcs.

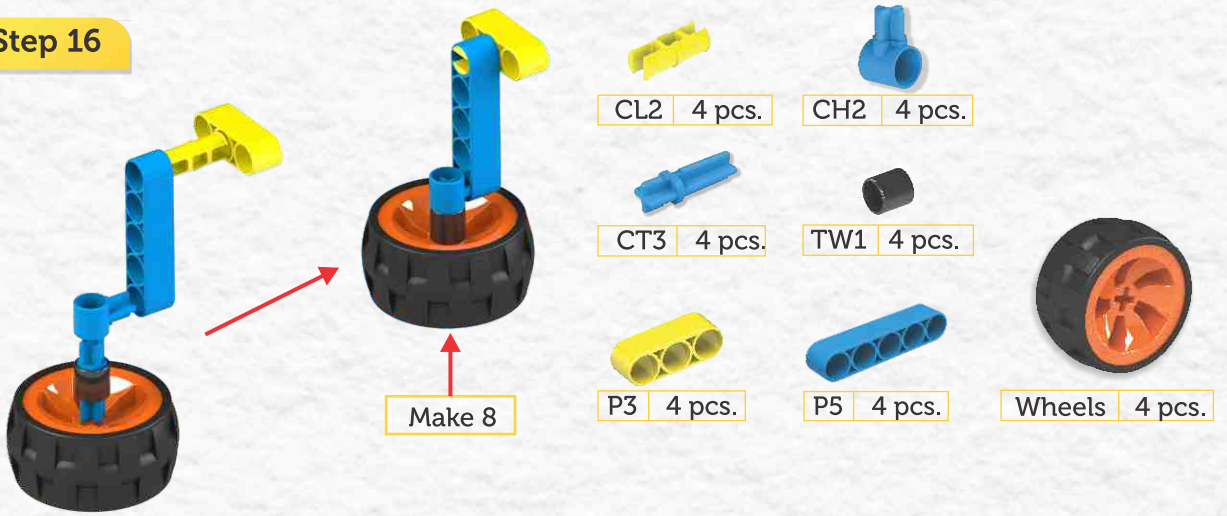
CT3 8 pcs.

P5 4 pcs.





## Step 16



## Step 17

Assembly of step 16 and 15

Make another same assembly



## Step 18

Assembly of step 17 and 10

# Blix



# Check out our other Blix Sets



## Blix CARS-1



## Blix CARS-2



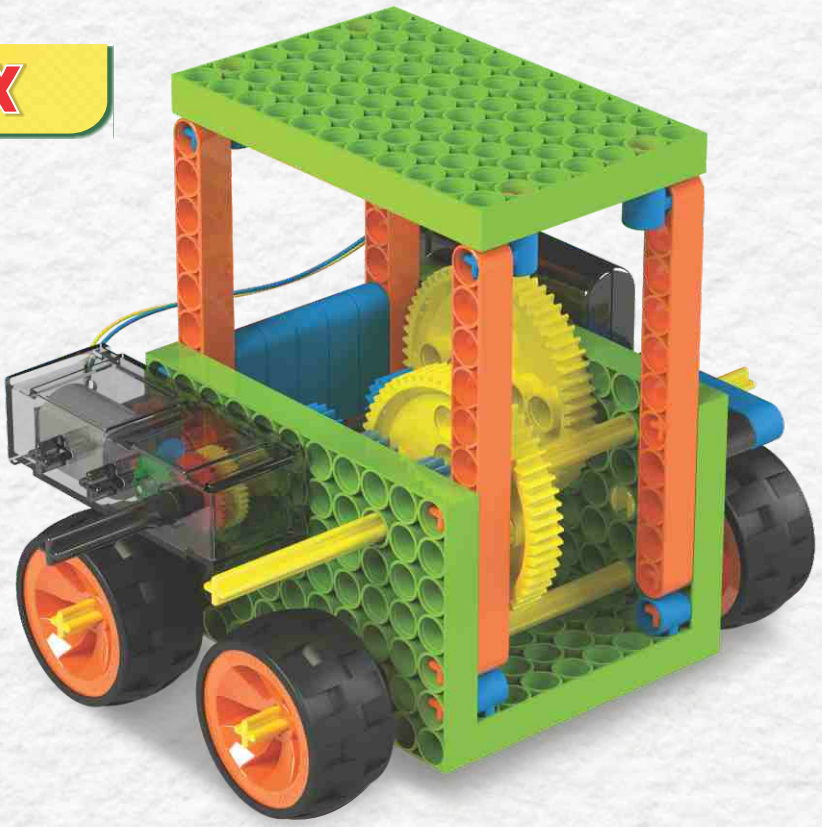
For detailed steps please visit [www.blix.in](http://www.blix.in)

# POWER SCREW

**Blix**



# GEAR BOX



Also From

**ZEPHYR**

More Than Just Play

MECHANIX - Robotix - 3



MECHANIX - Battle Station - Transporter



MECHANIX - Eiffel Tower



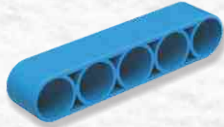
**MECHANIX**

# Blix

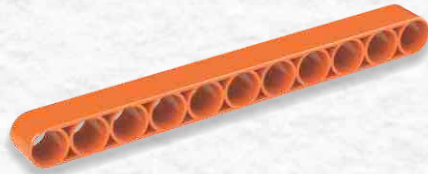
## AMUSEMENT PARK



P3 24 pcs.



P5 25 pcs.



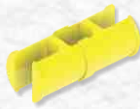
P11 30 pcs.



CT2 70 pcs.



CT3 65 pcs.



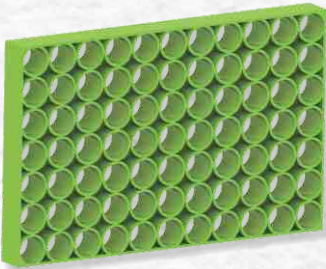
CL2 12 pcs.



CH2 45 pcs.



TW1 40 pcs.



P7X11 3 pcs.



G(60) 4 pcs.



G(20) 4 pcs.



G(20) Idler 4 pcs.



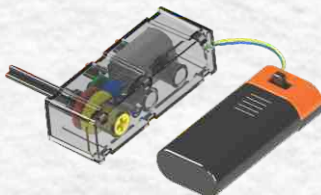
Wheels 8 pcs.



SH170 2 pcs.



SH60 4 pcs.



Motor With Battery  
Box 1pc.



Remover Tool 1 pc.