

**Warning**

- Please read the warnings on the batteries carefully before using.
- Do not mix and use different types of batteries (manganese, alkaline, rechargeable and so on), or old and new batteries. They can leak or rupture.
- Do not drop the batteries and handle with care.
- After the lesson, please make sure to take the batteries out.
- Do not look at the diode's light from the front.
- To avoid accidental swallowing, do not put small pieces in your mouth.
- Make sure to keep small parts in a box or a bag so you will not lose them.
- Make sure you read the manual before using anything.
- Make sure to move the product on a smooth, flat surface.

**Contents** \*Make sure there are no missing parts before use.

RoboWhale: 1    Planning sheet: 4  
 Sticker: 1  
 Adjustment bar: 1    Cones: 12    Course paper: 12

**Bit blocks**

Start block: 1	End block: 1
Forward block: 10	Backward block: 6
Left block (Right block): 12	Reverse side

**Need 2 AA alkaline batteries (sold separately).**

## Guide 1 How to put the batteries in

● Open the compartment cover on the back of RoboWhale and put the batteries in.

\*Pull the tab to open it.

[Sold separately] AA alkaline batteries

\*Make sure of the polarity connection and press the spring down before you close the compartment cover.

**After the lesson, please make sure to take the batteries out.**

## Guide 2 How to use RoboWhale and the course

**How to use RoboWhale**

Bucket, Block cover, Switch, Front

\*When you press the switch, the lamp inside will flash red light.

\*When the block cover comes off, close it like you see here.

\*Push the tab down and lift it to open the block cover.

When the block cover is open

**How to use the course**

- Spread the course paper and fold it along the lines.

- Put cones in the holes in the course paper to make the course.

Cone, Course Paper

## Guide 3 How to program!

**1 Plan (Make a plan)**

**A** Write forward, backward, left and right arrows on the plan sheet, to plan your instruction orders to RoboWhale.

\*It is OK to use the plan sheet.

\*The distance to move through one course paper is three to four forwards blocks.

\*Write different arrows for going "forward" and "backward".

Front ↑  
Back ↑

**B** Connect the bit blocks to match the arrows you wrote.

\*The start and end blocks must be connected.

\*For the start block, the side with the letter should be facing up.

- It is easier to connect the blocks if you put them on the desk and push them in from above.

- Put a sticker on the start block's side with the letter so you know which side it is.

Snap!

You can see detailed videos on how to proceed programming, or manuals and planning sheets on the Hakubun website. Access from the QR code on the right or the link (<https://hakubun-edu.com/bit-robot/>)

**2 Run (Move RoboWhale)**

**C** Set the connected bit blocks into RoboWhale and move it on the courses.

\*Hook the start block on the protruding part.

\*Turn off the switch while you set the blocks.

\*Press the switch gently.

\*Turn off the switch if it stops.

**3 Review (Finding problems)**

**D** If it does not work, compare the plan sheet with the bit blocks and reconnect them.

**4 Modify (Starting over)**

**E** Set the reviewed bit blocks into RoboWhale and try moving it again. Keep trying until it works!

See if you got your plan sheet wrong the first time!

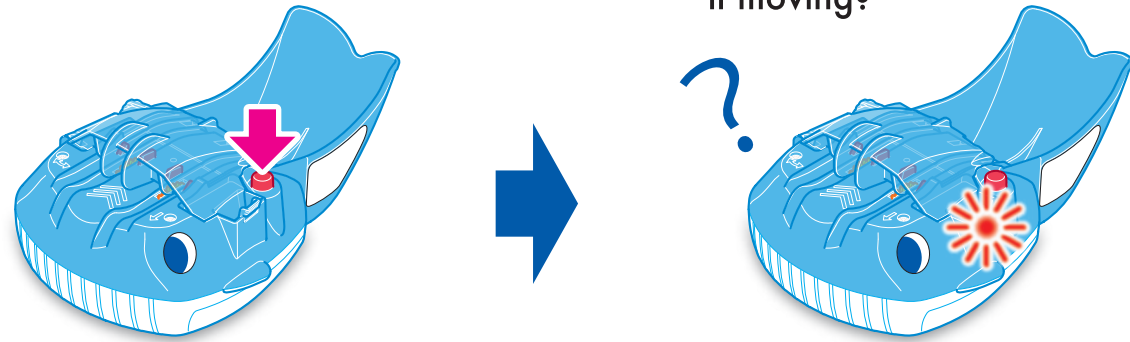
**Repeat 1, 2, 3, and 4 until you reach the goal!**



## Step 1 Move RoboWhale!

- Switch RoboWhale on.

- The lamp is on, but why isn't it moving?

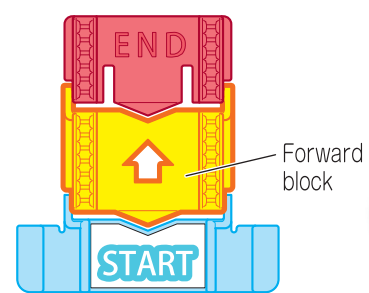


How can you make it move?

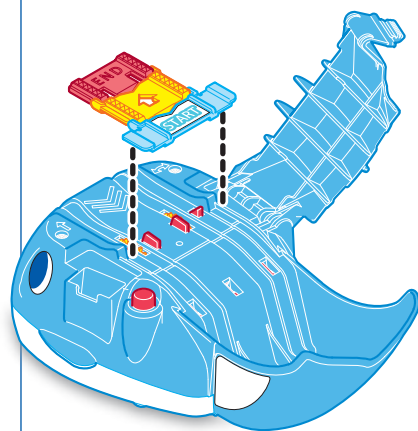
### Try giving instructions to RoboWhale and make it move!

Make sure to move RoboWhale is on a smooth, flat surface when moving.

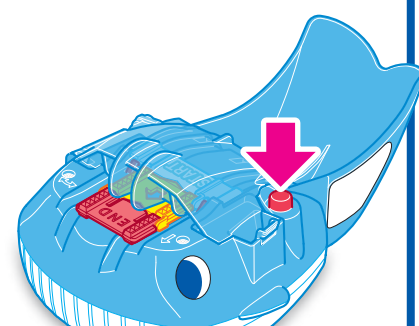
**A** Put one forward block between the start and end blocks.



**B** Set the bit blocks into RoboWhale.



**C** When you turn on the switch, does RoboWhale as the arrows on the bit blocks (your instruction)?



### Check other bit blocks' movement too!

Description of bit blocks	Forward block	Backward block	Left block	Right block
Moves forward one square	Moves backward one square	Turns left on the spot	Turns right on the spot	

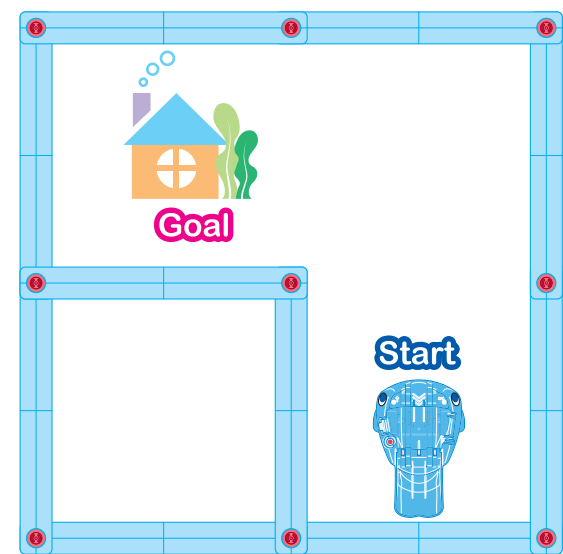
## Combine bit blocks and program!

## Step 2 Try programming!

**Guide 3** Try programming by seeing the reference "How to program!"

### Reach the goal!

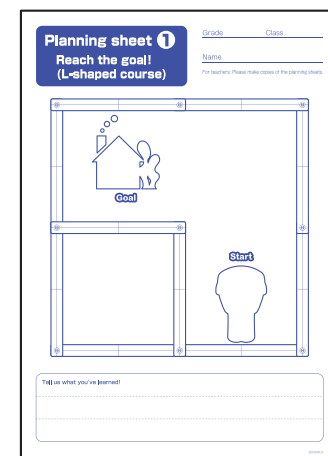
#### L-shaped course



\* Make a course as the image

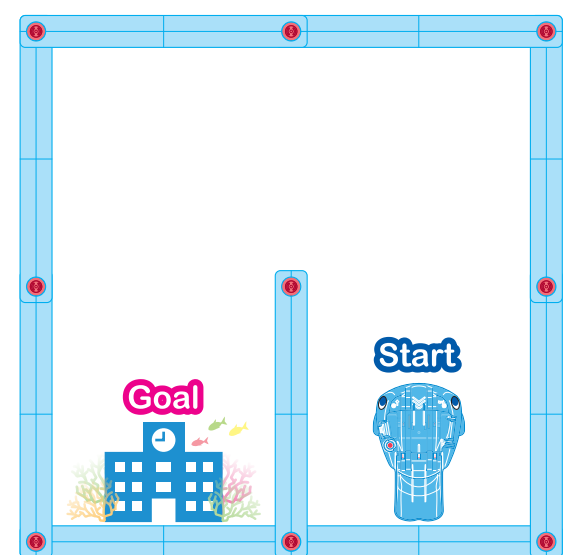
- Take RoboWhale to its friend's house!

Check the location of the start and goal!



\* Use planning sheet (1).

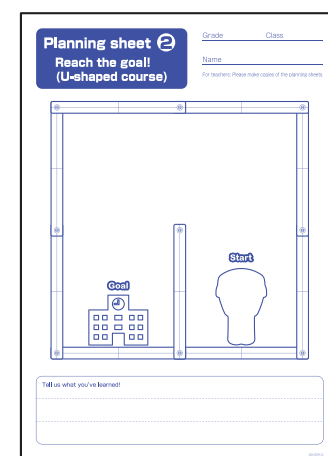
#### U-shaped course



\* Make a course that looks like this.

- Take RoboWhale to school!

Check the location of the start and goal!



\* Use planning sheet (2).

### Let's try!

- Once you can program the courses above, try the S-shaped course!

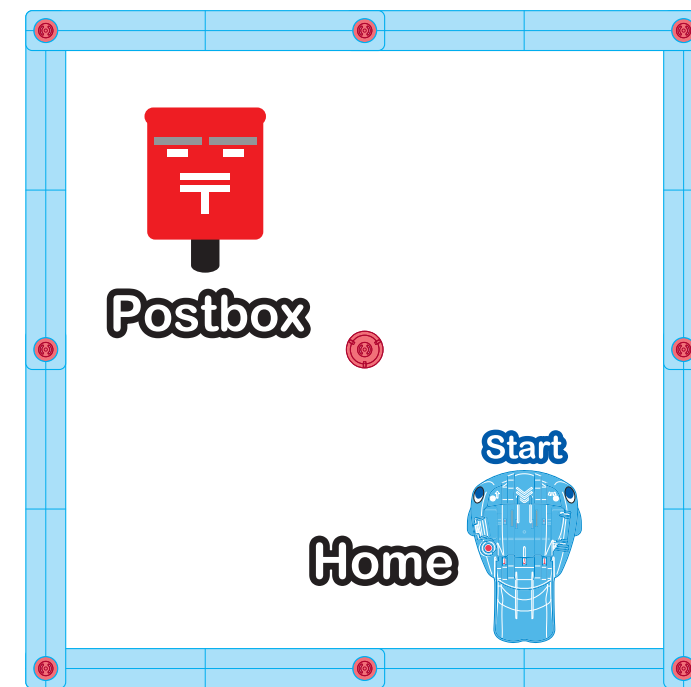
**To teachers** Get the S-shaped course planning sheets from the Hakubun website.

## Pass the checkpoint and go back to the start!

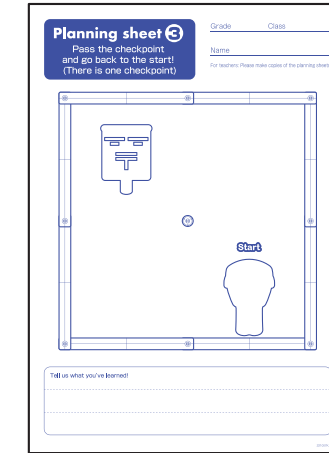
### There is one checkpoint

- Get RoboWhale to put a letter in the postbox and come home!

Check the location of the start and goal!

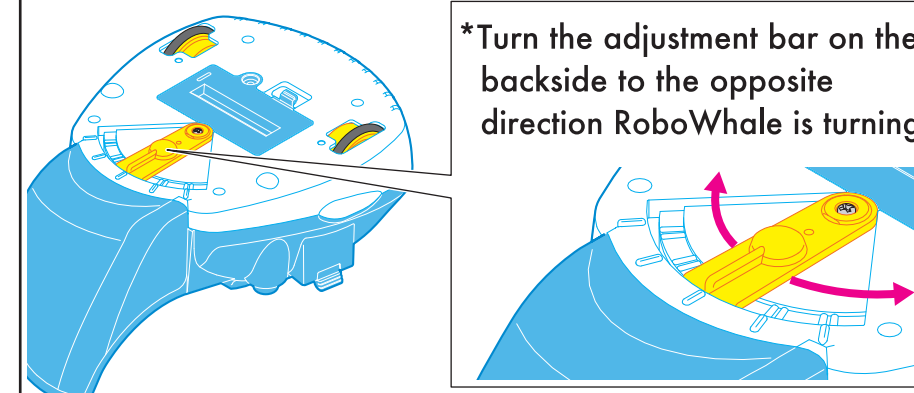


\* Make a course as the image.



\* Use planning sheet (3).

### If RoboWhale does not go straight



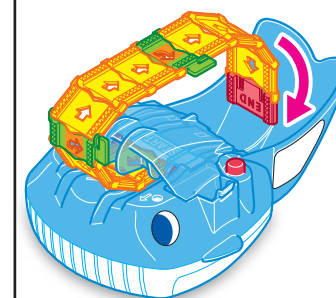
\* Turn the adjustment bar on the backside to the opposite direction RoboWhale is turning.

The effect of the adjustment will have difference between rough and smooth surfaces.

**To teachers** If the method above does not work, try the adjustment methods shown on a separate sheet.

### If the bit block is too long

\* Put it in the bucket on the back of RoboWhale.



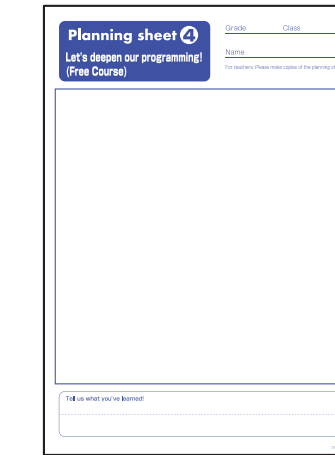
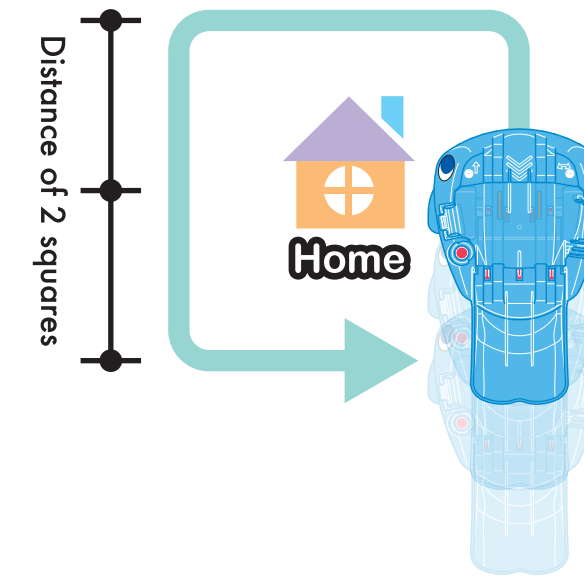
If the bit blocks get stuck, turn the switch off and start over.

## Try repeating the same movement!

### Square loop

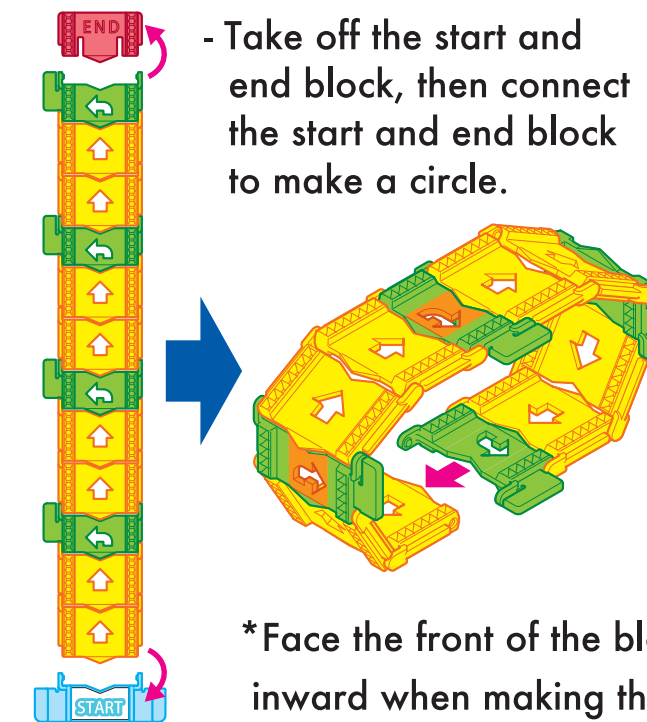
- Get RoboWhale to patrol around the house!

Check the location of RoboWhale and its home!



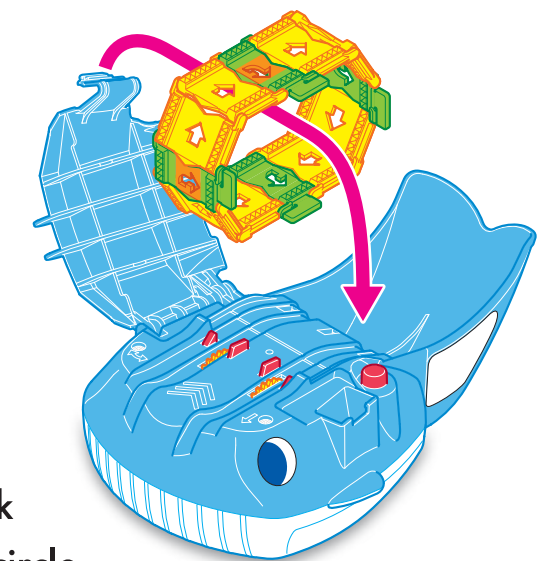
\* Use planning sheet (4).

### How to repeat (loop)



- Take off the start and end block, then connect the start and end block to make a circle.

- Watch where bit blocks are facing carefully when setting.

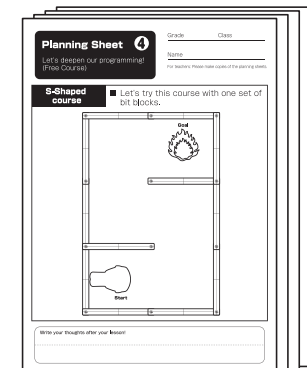


\* Face the front of the block inward when making the circle.

### Learn more about programming!

You can see more courses and example answers such as higher difficulty level courses, and free courses you can make your own from the QR code on the bottom right, or the website link below.

<https://hakubun-edu.com/bit-robot/>



After the lesson, please make sure to take the batteries out.