

FIRST® LEGO® League Challenge BIOGLOW™ Building Instructions

Mission 15: Biocentric Architecture

This build is 193 pieces, and 89 building steps.

Welcome to text-based instructions from Bricks for the Blind. Before you start building, here are some terms we'll be using:

- In Front of/Front: towards you.
- Behind/Back: away from you.
- Up: towards the ceiling.
- Down: towards the floor.
- Stud: the bump on a LEGO brick. Example: A 2x1 brick has two studs on it.
- Vertically: going from front to behind.
- Horizontally: going from left to right.
- Upright: pointing up towards the ceiling.
- That one/ppp: previously placed piece.
- Plate: piece with studs.
- Tile: smooth piece without studs (unless otherwise specified)
- Symmetrically: a mirror image. Example: If you place a 2x1 brick with technic connector on the front wall at the right, connector to the front, and then place another such piece symmetrically on the back wall, at the right, the technic connector of the second piece should point to the back, since it will be placed symmetrically.
- Centered-vertically: even amount of space in front of and behind the piece
- Centered-horizontally: even amount of space left and right of the piece.
- Row: studs lined up horizontally (left to right/side to side).
- Column: studs lined up upright or vertically (top to bottom/back to front).
- Standing upright: the piece is perpendicular to the ground, like a wall.
- Lying flat: the piece is parallel to the ground, like a piece of toast which fell off the table.
- Anti-stud: the portion of a piece which accepts studs, like the bottom of a plate.
- Jumper plate: a 1x2 plate with a single stud on top, or a 1x3 plate with only two studs on top.

For builders with low vision, or a sighted building partner who may want to follow along with the printed visual instructions that come with each set. As low vision users may benefit from viewing the instructions on a personal device where they can zoom in on content and use assistive technologies to enhance the visuals.

A note on LEGO Technic™ part names. These parts are somewhat different from regular LEGO bricks. I'll include some definitions in case the builder or helper is not familiar with LEGO Technic™.

Axles - An axle is a connector which has an X shaped cross-section. Because their cross section is not round, anything connected to an axle using an axle-hole will rotate with that axle. Axles are longer than they are wide, and the length of an axle corresponds with how many bricks long it is. Aka a 3L axle is three bricks long. Axles come in a variety of lengths, with a 2L axle being the shortest available. They may be combined with pins, or have circular stops on them. A stop prevents the axle from sliding through an axle-hole at a specific point on the axle.

Pins - A pin is a connector which has a circular cross section and a flanged notch out of one or both ends. This flanged notch allows them to click into bricks with a pin-hole. Pins come with and without friction ridges, which are small bumps on the pin which prevent them from rotating freely. For standard pins, black is a high friction pin, and gray is a low friction pin. A standard length pin is two brick lengths long, with a stop in the middle. This prevents a brick from being pushed from one side of the pin to the other. A 1L pin is one brick long and still retains the stop, however it also includes a hollow stud at the other end. A 3L pin is three bricks long, and only contains a stop at one side, allowing two bricks to be pushed onto the other side of the pin. Pins may also have one side which is an axle.

Lifarms - A lifarm is a basic structural element, similar to a brick or a plate, but usually without any studs. It is a beam with rounded ends and with holes in it, with the same spacing as the studs on a LEGO brick. lifarms come in a variety of lengths, including a 1x1 lifarm which looks like a cylinder. Thick lifarms are as wide as a LEGO brick, and thin lifarms are half as wide as a LEGO brick, but not the same thickness as a LEGO plate! The holes in a lifarm arm may accept axles or pins. They also come in a variety of shapes, including tees, els and triangles.

Gears - A gear is a functional element. They are typically discs with teeth on the outside, there are also worm gears which look like a spiraling cylinder! Gears connected by axles transmit or even transform rotational motion!

Axle and Pin Connectors - These elements are typically smaller than lifarms, and are used to connect some combination of pins or axles. They might have pins or axles, as well as axle or pin-holes. They have a lot of different angle combinations! The simplest just connects two axles or pins together in a straight line.

Bushes/Bushings - LEGO Technic™ uses bushes largely as spacers, but they also can reduce friction between rotating parts, or can form useful elements such as handles. Bushes are typically light gray, generally cylindrical, and have an axle-hole running through the middle. They have a flange at the front and back to make them easier to pull on and off.

Sorting Instructions:

This LEGO set comes in the bags labeled 22-24 and some large pieces from bag 0. Sort the pieces into groups as described below. Note that where there are multiple colors of the same brick in a step, the colors will be split across two groups to make telling the difference easier for the builder! LEGO includes a few spare parts in case you lose something. Set these into their own group away from the rest, in case you need them later.

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Group A contains all of the black 2L pins from this bag. These pins have friction ridges.

Group B contains all of the blue 3L pins from this bag. These pins have friction ridges.

Group C contains all of the blue 2L axle/pin combos from this bag. These pins have friction ridges.

Bag 22 (8 groups of bricks)

Sub-Build: Frame

Group 1 contains the pieces for steps 1-4. Include a dark gray 11x15 hollow frame from bag 0.

Main Build

Group 2 contains the pieces for steps 5-9. Include a white 6x12 plate from bag 0.

Group 3 contains the pieces for steps 10-19, not including the two green 1x1 round plates with a flower petal pattern from step 13. Include a white 6x12 plate from bag 0.

Group 4 contains the two green 1x1 round plates with a flower petal pattern from step 13.

Group 5 contains the pieces for steps 20-28, not including the green and olive green 2L pin connectors from steps 24 and 25.

Group 6 contains the olive green 2L pin connector from steps 24 and 25.

Group 7 contains the green 2L pin connectors from step 24.

Group 8 contains the pieces for steps 29-36.

Bag 23 (3 groups of bricks)

Group 9 contains the pieces for steps 37-41.

Group 10 contains the pieces for steps 42-44.

Group 11 contains the pieces for steps 45-53.

Bag 24 (4 groups of bricks)

Group 12 contains the pieces for steps 54-62

Group 13 contains the pieces for steps 63-71.

Group 14 contains the pieces for steps 72-81. Include a lime green 7x11 hollow frame from bag 0.

Group 15 contains the pieces for steps 82-89. Include a lime green 7x11 hollow frame from bag 0.

Building Instructions:

Groups A, B, C and 1. You will use the pins from groups A, B and C throughout the build.

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Sub-Build: Frame

1.1. Let's start by building a frame. Place a dark gray 11x15 hollow frame, laying flat and horizontally, in front of you.

1.2. Push a black 2L pin from group A, from the left, into the back hole on the left side of the previous piece. Repeat symmetrically on the right side.

2. Skip one hole in front of the left piece from the previous piece and push a black 2L pin from group A, from the left, into the hollow frame. There will be two free holes on the left side of the hollow frame in front of this piece. Repeat symmetrically on the right side.

3.1. Place a black 3L thick liftarm, vertically with the holes facing left and right, in front of you.

3.2. Push a black 2L pin from group A, from the left, into the front and back holes on the left side of the previous piece.

3.3. Repeat steps 3.1-3.2.

3.4. Push the pins on the left side of one of the assemblies we just made, from the right, into the front two holes on the right side of the left liftarm on the hollow frame. You'll push this in from inside the frame. Repeat symmetrically on the right side with the other 3L thick liftarm.

4. Push the bottom corner holes on the right side of a black 5x7 hollow frame, upright and vertically with the 7L liftarms at the front and back, onto the two pins on the left side of the hollow frame. Repeat symmetrically on the right side.

Group 2.

Main Build: Building

5.1. Next, we'll make a building with some plants in it! Maybe it's a greenhouse! Set the frame aside for now. Place a white 1x12 plate, horizontally, in front of you. This is the start of the floor.

5.2. Place the back row of a tan 2x2 corner brick, with the corner at the back left so the studs form a braille letter F, on the previous piece so the left sides are even. The front left stud will overhang.

6. Place the back left corner of a white 6x12 plate, horizontally, under the previous piece. The left and right sides should be even with the 1x12 plate.

7.1. Next, we'll build some grass and a small stream. Place a transparent blue 1x2 tile, vertically, in front of the right stud of the 2x2 corner brick. This will be on the second column from the left on the floor and there will be four free studs in front of it.

7.2. Place a transparent blue 1x1 quarter circle tile, with the flat sides at the back and right, in front of the previous piece.

7.3. Place a green 2x2 tile with a single stud to the right of the previous piece so the front sides are even.

7.4. Place a transparent blue 1x1 quarter circle tile, with the flat sides at the left and front, behind the previous piece and to the right of the transparent blue 1x2 tile.

8.1. Place a green 2x2 tile with a single stud in front of the first tile with a single stud. There will be one free row in front of this piece.

8.2. Place a green 2x2 tile with a single stud to the right of each of the two 2x2 tiles with single studs so they form a 4x4 square with four studs.

9.1.1. Place a green 1x2 brick with a hole, horizontally, on the back row of the 2x2 corner brick that's on the back left corner.

9.1.2. Place a dark tan 1x2 plate, horizontally, on the previous piece.

9.2.1. Place a green 1x1 plate with a triangle hanging down from one side, with the triangle on the left, on the left stud of the previous piece.

9.2.2. Place a tan 1x1 round plate to the right of the previous piece.

Group 3.

10.1. Place a green 1x1 round brick on the leftmost column in front of the 2x2 corner brick.

10.2. Place a tan 1x8 brick, vertically, in front of the previous piece. The front four studs will overhang.

11.1. Now we'll make a couple of windows! Assemble a window by attaching a transparent clear 1x2x2 window pane into a black 1x2x2 window frame. Find the lip in the frame and rotate the frame so that the window is horizontal with the lip at the front. Push the window pane into the frame from the front until it clicks.

11.2. Repeat the previous step.

11.3. Place one window, vertically with the pane on the left, on the leftmost column and in front of the 1x2 brick with a hole. Place the other in front of the first.

12.1. Next, we'll start adding some plants! Find the square of 2x2 tiles with single studs. Place a green 1x1 round plate with three leaves on one side, with the leaves pointing to the back, on the stud of the back left piece we just found.

12.2. Push the short bar of a pink flower bud into the hollow stud of the previous piece.

12.3. Place a yellow 1x1 round plate with a flower petal pattern on the stud of the front right 2x2 tile with a single stud.

Group 4 contains the green 1x1 round plates with a flower petal pattern from the next two steps.

13.1.1. Next, we'll build a taller plant! Find a green flower petal piece. This looks like a dish with pointed corners that stick up. Place this in front of you.

13.1.2. Place a green 1x1 round plate with a flower petal pattern from group 4 on the previous piece.

- 13.2.1. Place a green flower petal piece on the previous piece, keeping the points in a line.
- 13.2.2. Place a green 1x1 round plate with a flower petal pattern from group 4 on the previous piece.
- 13.3.1. Place a green flower petal piece on the previous piece, keeping the points in a line.
- 13.3.2. Push the short bar of a red flower with a short bar on one side into the hollow stud of the previous piece.
- 13.4. Place the tall plant on the stud of the back right 2x2 tile with a single stud.
- 14.1.1. Now we'll make another plant. Place a 1x1 round plate with three leaves, with the leaves pointing to the back, in front of you.
- 14.1.2. Place another 1x1 round plate with three leaves, with the leaves pointing to the front left on the first.
- 14.2. Place a third 1x1 round plate with three leaves, with the leaves pointing to the front right, on the second.
- 14.3. Push the short bar of a bar with six plant stems into the hollow stud of the previous piece.
- 14.4. Push the hollow anti-stud of three yellow 1x1 round plates with a flower petal pattern, and three green 1x1 round plates with a flower petal pattern from group 4, onto the stems of the previous piece. Alternate between green and yellow.
- 14.5. Place this plant on the stud of the front left 2x2 tile with a single stud.
15. Place the left column of a white 6x12 plate, horizontally, under the overhanging 1x8 brick and in front of the rest of the floor.
16. Place a tan 1x3 brick, vertically, on the leftmost column in front of the front 1x2x2 window. Place another on the first.
17. Place a tan 2x2 corner brick, with the corner at the front left so the studs form a braille letter H, on the front left corner of the floor. The left column will be in front of the 1x8 brick.
- 18.1. Let's make a couple more windows! Assemble a window by attaching a transparent clear 1x2x2 window pane into a black 1x2x2 window frame. Find the lip in the frame and rotate the frame so that the window is horizontal with the lip at the front. Push the window pane into the frame from the front until it clicks.
- 18.2. Repeat the previous step.
- 18.3. Place one window, vertically with the pane on the left, on the leftmost column and in front of the stack of 1x3 bricks. Place the other in front of the first.
- 19.1.1. Place a green 1x2 brick with a hole, horizontally, in front of the front piece from the previous step so the left sides are even.
- 19.1.2. Place a dark tan 1x2 plate, horizontally, on the previous piece.
- 19.2.1. Place a yellow 1x1 plate with a triangle hanging down from one side, with the triangle on the left, on the left stud of the previous piece.
- 19.2.2. Place a tan 1x1 round plate to the right of the previous piece.

Group 5.

20.1. Next, we'll build a crank assembly. Set the building aside for now. Find a black 3x3 thin quarter circle liftarm. This looks like a 3x3 L-shaped liftarm with a curved section connecting the two legs so it forms a quarter circle. Place this piece, upright and vertically, in front of you with the corner at the back on the bottom. The curved section should be at the front.

20.2. Push the axle side of a white 3L axle pin combo with a 2L axle side, horizontally with the axle side on the left, from the right into the corner hole of the previous piece. Push it all the way in so it extends about 1L on each side.

21.1. Now we'll make a small assembly. Place a light gray 2L thick liftarm, horizontally with the holes facing up and down, in front of you.

21.2. Push the long side of a tan 1L pin with a 1/2L pin on one side, with the 1/2L pin on top, from the top into the right hole of the previous piece.

21.3. Rotate the small assembly so it's upright with the 1/2L pin in the top hole on the right. Slide the bottom hole of the 2L liftarm onto the axle that's extending from the 3x3 quarter circle liftarm. Push it all the way to the right.

22. Push a yellow 5L axle, from the left, into the top hole of the 3x3 quarter circle liftarm. Push the axle in until its right side is even with the right side of the 3x3 quarter circle liftarm.

23.1.1. Now we'll build a crank handle. Place a blue 2L axle/pin combo from group C, horizontally with the axle side on the right, in front of you.

23.1.2. Push the axle hole of a red ball, from the right, onto the axle of the previous piece.

23.2.1. Push the right hole of a red 2L pin connector, horizontally, from the left onto the pin side of the axle/pin combo.

23.2.2. Find a black 3L thin liftarm with a pin on one side and a thick axle hole on the other. Rotate it so it's vertical with the pin side at the back on the right. Push the pin into the left hole on the previous piece.

23.3. Slide the front axle hole of the previous piece, from the left, onto the 5L axle that's in the top hole of the quarter circle liftarm. Push the crank handle assembly all the way to the right.

Group 6 contains the olive 2L pin connectors for the next two steps. Group 7 contains the green 2L pin connector for the next step.

24.1.1. We'll make a small assembly. Place an olive 2L pin connector from group 6, horizontally with the holes facing left and right, in front of you.

24.1.2. Push a black 2L pin from group A, from the left into the previous piece.

24.2. Push the right hole of a green 2L pin connector from group 7, horizontally with the holes facing left and right, from the left onto the previous piece.

24.3. Push the long side of a tan 1L pin with a 1/2L pin on one side, with the 1/2L pin on the left, from the left into the left hole of the previous piece. Repeat symmetrically on the other side of the assembly.

24.4. Push the right pin on the small assembly, from the left, into the hole in front of the 2L liftarm on the bottom row of the 3x3 quarter circle liftarm.

25.1.1. Next we'll make another small assembly. Place an olive 2L pin connector from group 6, horizontally with the holes facing left and right, in front of you.

25.1.2. Push the pin side of a white 3L axle pin combo with a 2L axle side, with the axle side on the right, from the right into the right hole of the previous piece.

25.2.1. Slide a lime green 1L liftarm, from the right, over the axle side of the previous piece. Slide it all the way to the left.

25.2.2. Push a pink thin bushing, from the right, onto the right side of the white 3L axle/pin combo. Push it all the way to the left until it touches the previous piece. The right side of the axle pin combo should extend 1/2L to the right.

25.3. Push the right side of the axle/pin combo, from the left, into the front axle hole on the bottom row of the 3x3 quarter circle liftarm.

26.1.1. Next, we'll make another small assembly. Place a black 3L thick liftarm, vertically with the holes facing up and down, in front of you.

26.1.2. Push a blue 3L pin from group B, with the stop ring near the bottom, from the top, into the middle hole of the previous piece so it extends 2L above it.

26.2. Push the center hole of a black 3L thick liftarm, vertically with the holes facing up and down, onto the top of the previous piece. Push it all the way down so it touches the first liftarm. Push another over the first two so the pin is completely covered.

26.3. Rotate the assembly we just made so it's upright and horizontal with the holes facing left and right. Slide the top hole onto the left side of the 5L axle. Push it all the way to the right. The 5L axle should extend about 1/2L to the left.

27.1.1. Now we'll close off the other end of the crank assembly. Place a blue 2L axle/pin combo from group C, with the axle side on the left, in front of you.

27.1.2. Push a pink thin bushing, from the left, onto the axle side of the previous piece. Push it all the way to the right.

27.2.1. Place a black 3x3 thin quarter circle liftarm, upright and vertically, in front of you with the corner at the back on the bottom. The curved section should be at the front.

27.2.2. Push the left side of the axle/pin combo, from the right, into the front hole on the bottom row of the previous piece.

27.3. Push the pin on the right side of the small assembly we just made, from the left, into the left hole of the 2L pin connector that's at the bottom of the rest of the crank assembly, near the front. The top hole of the small assembly should attach to the top axle on the rest of the assembly. This will enclose all of the 3L liftarms.

28. Push the axle side of a white 3L axle pin combo with a 2L axle side, horizontally with the axle side on the right, from the left into the corner hole of the left 3x3 quarter circle liftarm. Push it all the way in so it extends about 1L to the left.

Group 8.

29. Push the back hole of a tan 1x2 brick with two holes, vertically, from the left onto the left side of the previous piece. Repeat symmetrically on the right side.

30. Now we'll add the crank to the building. Place the building, vertically with the wall at the back, in front of you. Rotate the crank assembly so it's horizontal with the crank handle on the left. Place the previous two pieces, vertically, on the front two rows of the building so the left one is on the leftmost column.

31.1. Place a tan 1x4 plate, horizontally, to the right of the crank assembly and on the front row of the building.

31.2. Place the front row of a tan 2x2 corner brick, with the corner at the front right so the studs form a braille letter J, to the right of the previous piece. The front right corner should be even with the front right corner of the building.

32.1. Now we'll make windows for this wall! Assemble a window by attaching a transparent clear 1x2x2 window pane into a black 1x2x2 window frame. Find the lip in the frame and rotate the frame so that the window is horizontal with the lip at the front. Push the window pane into the frame from the front until it clicks.

32.2. Repeat the previous step.

32.3. Place one window, horizontally with the pane at the front, to the left of the front row of the 2x2 corner brick that's on the front right corner of the building. This window goes on a 1x4 plate. Place the other window to the left of the first.

33.1. Place a green 1x1 round brick to the left of the left window. Place another to the right of the right window.

33.2. Place a green 1x1 plate with a triangle hanging down from one side, with the triangle at the front, on each of the previous two pieces.

34.1. Place a green 1x2 brick with a hole, vertically, to the right of the right piece from the previous step so the front sides are even. This piece will go on a 2x2 corner brick.

34.2. Place a dark tan 1x2 plate, vertically, on the previous piece.

35.1. Place a tan 1x1 round plate on the back stud of the previous piece.

35.2. Place the rightmost stud of a green 1x3 plate, horizontally, in front of the previous piece. This piece will be on the front wall of the building.

35.3. Place a tan 1x4 plate, horizontally, to the left of the previous piece.

36.1.1. Place a green 1x2 brick with a hole, vertically, to the left of the crank assembly and even with the front of the building. This piece will go on a 1x2 brick with two holes.

36.1.2. Place a dark tan 1x2 plate, vertically, on the previous piece.

36.2.1. Place a tan 1x1 round plate on the back stud of the previous piece.

36.2.2. Place a green 1x1 plate with a triangle hanging down from one side, with the triangle at the front, in front of the previous piece.

Bag 23.

Group 9.

37.1. Let's keep working on the building! Place it in front of you so the crank handle is at the front left. There should be walls at the front and back. Place a green 1x2 brick with a hole, vertically, on the back two studs of the rightmost column.

37.2. Place a dark tan 1x2 plate, vertically, on the previous piece.

38.1. Place a tan 1x8 brick, horizontally, on the back wall to the left of the previous piece.

38.2. Place a tan 1x6 tile, horizontally, on the previous piece so there is one free stud to the right of it.

39.1. Place a green 1x2 brick with a hole, vertically, on the front two studs of the leftmost column.

39.2. Place a tan 1x8 brick, horizontally, on the front wall to the right of the previous piece. The left five studs will be over the crank assembly and won't actually connect to anything.

39.3. Place a tan 1x3 brick, horizontally, to the right of the previous piece.

39.4. Place the front stud of a green 1x2 brick with a hole, vertically, to the right of the previous piece.

40.1. Place a dark tan 1x2 plate, vertically, on the previous piece.

40.2. Place a tan 1x1 round plate on the second stud from the front on the leftmost column of the building. This piece will go on a 1x2 brick with a hole.

40.3. Place the leftmost stud of a tan 1x6 plate, horizontally, in front of the previous piece.

41.1.1. Next, we'll make a couple of rails. Place a tan 1x12 plate, vertically, in front of you.

41.1.2. Place a tan 1x4 brick with a slot on one side, vertically with the slot on the right, on the back four studs of the previous piece.

41.2. Place two more tan 1x4 bricks with a slot, vertically with the slots on the right, in front of the first so the 1x12 plate is completely covered.

41.3. Repeat steps 41.1.1-41.2.

41.4. Place the front stud of one rail, vertically with the slot on the right, on the rightmost stud of the 1x6 plate on the front wall. The back stud will be to the left of a 1x6 tile.

41.5. Place the other rail assembly, vertically with the slot on the left, on the rightmost column of the building.

Group 10.

42.1. Next, we'll build a sliding assembly. Set the building aside for now. Place a tan 1x4 plate, vertically, in front of you.

42.2. Place a red 1x6 plate, vertically and centered vertically, on the previous piece so the front and back studs overhang.

43. Place the rightmost stud of a dark gray 1x10 plate, horizontally, under the front overhanging stud of the previous piece. Repeat symmetrically on the back side.

44.1. Place a black 1x2 plate with a rail on one side, horizontally with the rail at the front, on the front piece from the previous step and to the left of the 1x6 plate. Repeat symmetrically on the back side.

44.2. Place a black 1x8 plate with a rail on one side, horizontally with the rail at the front, to the left of the front piece from the previous step. The leftmost stud will overhang. Repeat symmetrically on the back side.

Group 11.

45. Place a tan 1x6 plate, vertically, under the leftmost overhanging studs of the previous two pieces.

46. Place a dark tan 1x2 plate, vertically and centered vertically, on the previous piece.

47.1. Place a red 1x4 tile, vertically and centered vertically, on the rightmost column of the sliding assembly.

47.2. Place a red 1x6 tile, horizontally, in front of the previous piece so the right sides are even. Repeat symmetrically on the back side.

47.3. Place a black 6x6 tile to the left of the previous two pieces. The leftmost column will overhang.

48. Rotate the build towards you. Place a black 2x4 brick, vertically and centered vertically, under the rightmost two columns of the previous piece.

49. Rotate the build away from you, with the crank at the front left. Rotate the sliding assembly 90 degrees counterclockwise so the rails are on the left and right and the 6x6 tile is at the front. Slide the rails into the two slots that are on the top of the building, near the right side.

50.1. Push the sliding assembly back so it's not over the front wall. Place a green 1x2 brick with a hole, horizontally, on the front wall and to the left of the right rail.

50.2. Push a red 1L pin with a stud on one side, with the stud at the front, into the hole of the previous piece.

50.3. Place a green 1x4 brick, horizontally, to the left of the 1x2 brick with a hole from step 50.1. It should be to the right of the left rail.

51. Place a tan 1x6 tile, horizontally, on the previous piece so the left sides are even.

52.1. Place a tan 1x8 brick, horizontally, on the front wall of the building so the right sides are even. This piece will go over the previous piece and attach to the rails.

52.2. Place a green 1x4 brick, vertically, behind both the leftmost and rightmost studs of the previous piece. These pieces will go on the two rails.

52.3. Place a tan 1x8 brick, horizontally, behind the previous two pieces.

53.1. Place the back row of a lime green 6x8 plate, horizontally, on the previous piece.

53.2. Place a lime green 1x2 slope tile, vertically with the tall side on the right, on the leftmost column of the previous piece so the front sides are even. Place two more behind the first.

Bag 24.

Group 13.

54.1. Let's make another window! Assemble a window by attaching a transparent clear 1x2x2 window pane into a black 1x2x2 window frame. Find the lip in the frame and rotate the frame so that the window is horizontal with the lip at the front. Push the window pane into the frame from the front until it clicks.

54.2. Place the building back in front of you, with the crank at the front left. Place the window we just made, horizontally with the pane at the back, on the back wall so there are two free studs to the left of it.

55.1. Place a green 1x1 round brick to the left of the previous piece.

55.2. Place a dark tan 1x2 plate, vertically, on the front two studs on the leftmost column of the building. The front stud of this piece will attach to the front wall.

56.1.1. Place a green 1x2 brick with a hole, vertically, on the back two studs on the leftmost column of the building. The back stud of this piece will attach to the back wall.

56.1.2. Place a dark tan 1x2 plate, vertically, on the previous piece.

56.2.1. Place a tan 1x1 round plate on the front stud of the previous piece.

56.2.2. Place a green 1x1 plate with a triangle hanging down from one side, with the triangle at the back, behind the previous piece.

57. Place a tan 1x12 brick, vertically, to the right of the previous two pieces so the front side is even with the front side of the building. Skip two studs to the right and place another. There should be a window between these two pieces on the back wall.

58.1. Place a green 1x2 brick with a hole, horizontally, on the front wall between the previous two pieces.

58.2. Push a red 1L pin with a stud on one side, with the stud at the front, into the hole of the previous piece.

59. Place a tan 4x6 plate, vertically, on the two 1x12 bricks from step 57 so the front side is even with the front side of the building. Place another behind the first. It will cover the two 1x12 bricks.

60.1. Place a tan 1x12 brick, vertically, to the left of the previous two pieces.

60.2. Place a green 1x1 round plate with a flower petal pattern on the front stud of the previous piece.

61.1. Stack two dark tan 1x2 plates and place the stack, horizontally, on the second row from the front so there is one free stud to the left of it.

61.2. Place the back stud of a green 1x1 tile with a 1x1 slope tile on one side, vertically with the slope tile at the front, on the left stud of the previous piece. Place another to the right of the first. The front stud of the left piece will be to the right of a 1x1 round plate with a flower petal pattern.

62.1.1. Now, we'll make a bird's nest that goes on top of the building. Place a tan 4x4 round plate in front of you.

62.1.2. Place a gold 1x1 round plate with three leaves on one side, with the leaves pointing to the back right, on the second column from the right so there's one free stud behind it.

62.2.1. Place another gold 1x1 round plate with three leaves on one side symmetrically in front of the first.

62.2.2. Repeat the previous two pieces symmetrically on the left side of the nest.

62.3. Place a light nougat 1x1 dome on the front right 1x1 round plate with three leaves.

62.4.1. Push the short bar of a gold short bar with three claws on it, with the claws pointing to the back left, into the hollow stud of the 1x1 round plate with leaves that's behind the previous piece.

62.4.2. Push the short bar of another gold short bar with three claws on it, with the claws pointing to the front left, into the hollow stud of the 1x1 round plate with leaves that's to the left of the previous piece.

62.4.3. Push the short bar of another gold short bar with three claws on it, with the claws pointing to the front right, into the hollow stud of the 1x1 round plate with leaves that's in front of the previous piece.

62.5. Place the nest on the left four columns of the building so there are five free rows behind it.

Group 13.

63.1. Place a green 1x1 round plate with a flower petal pattern on the leftmost column of the building so there are four free studs behind it.

63.2. Place a blue bird to the right of the previous piece.

64.1. Next, we'll build a hinged assembly. Set the building aside. Place a black 4x10 plate, upside down and horizontally, in front of you.

64.2. Place a red 1x2 plate with a pin hole on one end, upside down and horizontally with the hole on the right side, on the back row of the previous piece so the hole overhangs to the right.

65.1. Place a light gray 2x2 plate, upside down, in front of the previous piece so the left sides are even.

65.2. Place a red 1x2 plate with a pin hole on one end, upside down and horizontally with the hole on the right side, in front of the previous piece so the left sides are even.

66. Place a black 2x4 plate, upside down and vertically, on the previous four pieces.

67.1.1. Now we'll make a hinge. Place a light gray 2x4 plate with a pin hole sticking up from one end, horizontally with the hole on the right, in front of you. This piece has two columns of two studs.

67.1.2. Push a light gray 2L pin, from the front, into the front side of the hole on the previous piece. This piece does not have friction ridges and will spin freely.

67.2. Find a light gray 2x3 plate with a pin hole hanging down from one side. Push the pin hole, with the plate upside down and horizontal with the pin on the left, from the front onto the previous piece.

67.3. The hinge should be seven studs long. Fold the left side of the hinge over onto the right.

67.4. Repeat steps 67.1.1-67.4.

67.5. Place one hinge, with the hinge on the left, on the left three columns of the hinged assembly so the front sides are even. This is attached to the anti-studs. Place the other hinge behind the first.

68.1. Find the pin holes near the right end of the hinge assembly. Push a light gray 2L pin, from the front, into the front pin hole. This piece does not have friction ridges and will spin freely.

68.2. Push the rightmost hole of a light gray 3x5 L-shaped liftarm, with the 5L liftarm horizontally on top pointing to the right and the 3L liftarm upright on the left pointing down, from the front onto the previous piece.

69.1.1. Now we'll make a handle for the hinged assembly. Place a red 3L axle connector, vertically, in front of you.

69.1.2. Push the axle side of a blue 2L axle/pin combo from group C, from the back, into the back hole of the previous piece.

69.1.3. Push a light gray 3L axle, from the front, into the front hole of the 3L axle connector.

69.2. Push a red thick bushing, from the front, onto the previous piece. Push it back until it touches the 3L axle connector.

69.3. Push the axle hole of a red ball onto the axle on the front side of the handle.

69.4. Flip the hinged assembly over so it's horizontal and right side up with the hinged plates on the left. Find the hole on the right end of the assembly. Push the pin on the back side of the handle, from the front, into the front side of this pin hole.

70. Place a blue bird on the front right corner of the hinged assembly.

71. Place the building vertically with the building crank on the right near the front, in front of you. Place the bottom hinge plates on the left four columns of the building so the front sides are even. You may need to hinge the rest of the assembly up so it doesn't interfere with the rest of the building.

Group 13.

72. Rotate the building 90 degrees clockwise so the hinged assembly is vertically on the left. Find the two studs that are on the front wall of the building. Push the short bar of a green short bar with three claws on it, with the claws pointing down, into each of these hollow studs.

73.1. Now we'll add some plants to the platform of studs that's on the front right side of the building. There are seven columns of six studs. Place a green 1x1 round plate with three leaves on one side, with the leaves pointing to the right, on the third stud from the front on the leftmost of these columns.

73.2. Place a green 1x1 round plate with three leaves on one side, with the leaves pointing to the back, on the second stud from the front on the fourth column from the right. Place another, with the leaves pointing to the front, behind this piece. There should be one free stud behind the back piece.

73.3. Place a yellow 1x1 round plate with a flower petal pattern on the front piece from the previous step.

73.4. Place a green 1x1 round plate with three leaves on one side, with the leaves pointing to the right, on the third stud from the front on the second column from the right.

73.5. Place a yellow 1x1 round plate with a flower petal pattern on the previous piece.

74.1. Now we'll make an assembly that goes on the end of the building. Set the building aside for now. Find a lime green 7x11 hollow frame. This looks like two 11L liftarms connected by two 5L liftarms on the ends, forming an open rectangle. Place this horizontally and upright in front of you, with the 7L sides upright on the left and right.

74.2. Push a black 2L pin from group A, from the back, into the third hole from the left and the bottom right hole on the bottom liftarm of the previous piece.

75. Push a green 1L liftarm, from the back, onto each of the pins on the back side of the hollow frame.

76.1.1. Next, we'll add a small assembly on top of the hollow frame. Place a light gray 1x2 brick with two pins on one side, horizontally with the pins at the front, in front of you.

76.1.2. Place a yellow 1x2 tile, horizontally, on the previous piece.

76.2. Find a lime green 3L axle and pin connector with two perpendicular pin holes. This looks like a 3L liftarm, except that the hole on one end is an axle hole that is perpendicular to the two pin holes. Push the pin holes of this piece, horizontally with the axle hole at the right facing up and down, on the pins of the previous piece.

76.3. Push a brown 5L axle with a stop on one side, with the stop on top, from the top into the rightmost axle hole on the top side of the previous piece.

76.4. Slide the axle, from the top, through the second hole from the right on top of the hollow frame. The 1x2 brick with tile should be at the back and the assembly should be free to rotate away from you.

77. Push a red thick bushing, from the bottom, onto the bottom side of the axle. Push it all the way up until it touches the top liftarm of the hollow frame, but don't push it too hard! We want the axle to be able to spin.

78.1. Push the axle side of a green 2L liftarm with one axle and one pin hole, horizontally with the axle hole on the right facing up and down, onto the bottom side of the axle. Push it up until it touches the previous piece.

78.2. Push the top side of a brown 2L axle connector, from the bottom, onto the axle so it touches the previous piece.

79. Push a brown 3L axle with a stop on one side, with the stop at the bottom, from the bottom into the second hole from the right on the bottom liftarm of the hollow frame. The top side will attach to the bottom hole of the previous piece.

80. Push a black 2L pin from group A, from the front, into the second and third holes from the top on the front side of the left and right liftarms of the hollow frame. You'll place a total of four pieces in this step.

81. Place the building in front of you so the hinged assembly is horizontally at the front. The crank handle and hinged assembly handle should be on the right. There will be four holes on the front side of the building, two on each of the short walls on the left and right sides. Rotate the end assembly 180 degrees so the four pins from the previous step are at the back and so the 1x2 brick with a tile is on top. Push the pins into the holes on the front side of the building.

Group 14.

82.1. Next, we'll make another assembly for the other end of the building. Set the building aside for now. Place a lime green 7x11 hollow frame, horizontally and upright in front of you, with the 7L sides upright on the left and right.

82.2. Push a black 2L pin from group A, from the back, into the third hole from the right and the bottom left hole on the bottom liftarm of the previous piece.

83. Push a green 1L liftarm, from the back, onto each of the pins on the back side of the hollow frame.

84.1.1. Next, we'll add a small assembly on top of the hollow frame. Place a light gray 1x2 brick with two pins on one side, horizontally with the pins at the front, in front of you.

84.1.2. Place a yellow 1x2 tile, horizontally, on the previous piece.

84.2. Push the pin holes of a lime green 3L axle and pin connector with two perpendicular pin holes, horizontally with the axle hole at the left facing up and down, on the pins of the previous piece.

84.3. Push a brown 5L axle with a stop on one side, with the stop on top, from the top into the leftmost axle hole on the top side of the previous piece.

84.4. Slide the axle, from the top, through the second hole from the left on top of the hollow frame. The 1x2 brick with tile should be at the back and the assembly should be free to rotate away from you.

85. Push a red thick bushing, from the bottom, onto the bottom side of the axle. Push it all the way up until it touches the top lifarm of the hollow frame, but don't push it too hard! We want the axle to be able to spin.

86.1. Push the axle side of a green 2L lifarm with one axle and one pin hole, horizontally with the axle hole on the left facing up and down, onto the bottom side of the axle. Push it up until it touches the previous piece.

86.2. Push the top side of a brown 2L axle connector, from the bottom, onto the axle so it touches the previous piece.

87. Push a brown 3L axle with a stop on one side, with the stop at the bottom, from the bottom into the second hole from the left on the bottom lifarm of the hollow frame. The top side will attach to the bottom hole of the previous piece.

88. Push a black 2L pin from group A, from the front, into the second and third holes from the top on the front side of the left and right lifarms of the hollow frame. You'll place a total of four pieces in this step.

89. Place the building in front of you so the hinged assembly is horizontally at the back. The crank handle and hinged assembly handle should be on the left near the back. There will be four holes on the front side of the building, two on each of the short walls on the left and right sides. Rotate the end assembly 180 degrees so the four pins from the previous step are at the back and so the 1x2 brick with a tile is on top. Push the pins into the holes on the front side of the building. You do not need to combine the two parts of this build.

Congratulations! Now this build is complete!

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