

FIRST® LEGO® League Challenge SUBMERGEDSM Building Instructions

Build 5: Shipwreck Forward

This build is 172 pieces, and 85 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.

A note on LEGO Technic™ part names. These parts are somewhat different from regular LEGO bricks. Here are 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.

Lift-arms - A lift-arm 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. lift-arms come in a variety of lengths, including a 1x1 lift-arm which looks like a cylinder. Thick lift-arms are as wide as a LEGO brick, and thin lift-arms are half as wide as a LEGO brick, but not the same thickness as a LEGO plate! The holes in a lift-arm arm may accept axles or pins. They also come in a variety of shapes, including tees, ells 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 lift-arms 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.

Technic™ Bricks and Plates – There are also regular bricks and plates that are adapted for use with Technic™ elements. Technic™ bricks have holes for either pins or axles on the sides and are only one brick wide. One of the most common of these is a 1x2 brick with a single pin hole. Most often, these bricks have pin holes, not axle holes. Technic™ plates have holes on the flat surface between the studs and are a minimum of two bricks wide. The holes in these plates can accept pins, or can allow an axle to pass through and still spin.

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.

Sorting the pieces:

This LEGO set comes in the bags labeled 9-11. Additional pieces are in the unlabeled bag. 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.

Build 5 (13 groups of bricks)

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.

Group 1 contains the pieces for steps 1-6. This includes a black 7x11 hollow frame from the unlabeled bag.

Group 2 contains the pieces for steps 7-11.

Group 3 contains the pieces for steps 12-19.

Group 4 contains the pieces for steps 20-26.

Group 5 contains the pieces for steps 27-33.

Group 6 contains the pieces for steps 34-48.

Group 7 contains the pieces for steps 49-58. This includes two black axle and pin connectors #5 from steps 59 and 62.

Group 8 contains the pieces for step 59-67.

Group 9 contains the pieces for steps 68-71.
Group 10 contains the pieces for steps 72-76.
Group 11 contains the pieces for steps 77-81.
Group 12 contains the pieces for steps 82-85.

Building Instructions:

A note for sighted helpers: We've re-ordered some steps in this build to make it easier to build for blind builders. For re-ordered steps, first you'll see the step number, and then a number in parentheses, which is the step number in the visual instructions. For example, 2 (4) means that step 2 in the text-based instructions is step 4 in the visual instructions.

Main build.

Open bags 9-11:

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

1.1. We're building the front part of a shipwreck. The wreck is so old the wood has turned black! A large, jagged rock sticks up from the middle of the build, and an angler fish is hiding in the wreckage. We'll start by building the angler fish's hiding spot. Find a dark gray 3x11 panel. This piece has three pin holes on each short end, seven pin holes on each long side, and four pin holes on the top and bottom. One side is flat, and one side has a gap between the two long rows of pin holes. Place this piece, horizontally with the flat side at the bottom, in front of you.

1.2. Push two black 2L pins from group A, from the front into the two rightmost front-facing holes of the previous piece.

2. Push two black 2L pins from group A, from the front into the leftmost and third from the left front-facing holes of the 3x11 panel.

3.1. Push a black 2L pin from group A, down into the front right top-facing hole of the 3x11 panel.

3.2. Push a tan 3L pin, with the stop ring at the bottom, down into the back right top-facing hole of the 3x11 panel. This pin does not have friction ridges so it should spin easily.

3.3. Push a light gray 2L pin down into the back left top-facing hole of the 3x11 panel. This pin does not have friction ridges so it should spin easily.

4. Push a black 5L liftarm, horizontally with the holes facing forward, from the front onto the right pair of pins on the front side of the 3x11 panel. The left two holes of the liftarm go on the two pins. Push another black 5L liftarm, in the same orientation, onto the left pair of pins. The rightmost hole of the liftarm goes on the right pin.

5.1. Place a black 2L liftarm with one axle hole and one pin hole in front of you, vertically with the holes facing left and right with the axle hole at the front.

5.2. Push a blue 2L axle/pin combo from group C, with the axle at the right, from the left into the axle hole on the left side of the previous piece.

5.3. Push a black 2L pin from group A, from the right into the back right-facing hole of the 2L liftarm.

5.4. Keeping it vertical, rotate this piece so the previous piece is at the back and pointing up. There is also a pin pointing down from the front hole of the liftarm, which is the 2L axle/pin combo from step 5.2. Push this pin down into the front left top-facing hole on the 3x11 panel.

5.5. Push a black 3L liftarm, vertically with the hole facing up, down onto the two top-facing pins on the right side of the 3x11 panel.

5.6. Push a black 2L pin from group A, down into the middle top-facing hole of the 3L liftarm.

6.1. Find a black 7x11 hollow frame. This looks like two 11L liftarms connected by two 5L liftarms, forming an open rectangle. Place this piece, horizontally and lying flat, in front of you.

6.2. Push two black 2L pins from group A, down into the back left and back right corner holes of the previous piece.

6.3. Push a dark gray 11L liftarm, horizontally with the holes facing up, down onto the two pins from the previous step.

6.4. Rotate this assembly 90 degrees towards you so it is standing upright with the 11L liftarm at the front on the top. Push it down onto the front two top-facing pins on the first assembly. The left and right sides of this assembly should be even with the left and right sides of the 3x11 panel. There should now be two pins pointing up behind the upright hollow frame.

Open group 2.

7. Now we'll make the mechanism which allows the angler fish to rush out of its hiding place to grab its prey. Keeping the base flat on the table, rotate the hiding place 180 degrees. The pins pointing up should now be in front of the hollow frame. Push the leftmost hole of a black 9L liftarm, horizontal with the holes facing up, from the top onto the right pin in front of the hollow frame. This is the first linkage.

NOTE: The next steps are out of order to the printed visual instructions. The number in parentheses indicates the step in the visual booklet. The order was changed because it makes the building much easier to follow in text.

8.1. (14.1) Find a yellow 1x11.5 bent liftarm. This looks like a 7L liftarm and a perpendicular 3L liftarm connected by a 45 degree angled liftarm. The angled portion of the liftarm has an oval shaped hole on it. Place this in front of you, with the 7L part horizontally at the back pointing left and the 3L part vertically on the right pointing forward. This will be the handle which you can move to have the angler fish swim out of the hiding place.

8.2. (14.2) Push a blue 2L axle/pin combo from group C, with the axle at the bottom, down into the frontmost axle hole on the 3L liftarm on the right of the previous piece.

9. (15.) Push a black 2L pin from group A, down into the third hole from the front on the 3L liftarm of the bent liftarm. There should be one hole between this pin and the previous piece.

10. (16.) Push a black 9L liftarm, vertically with the holes facing up, from the top onto the two pins on the right side of the bent liftarm. It should be centered on the pins, so there should be 3 free holes at the front and back of the liftarm. This 9L liftarm is the fourth linkage of the mechanism.

11. (17.) Push a light gray 2L pin down into the front hole of the previous piece. This pin does not have friction ridges so it should spin easily.

12. (18.) Keeping the handle pointing horizontally and on the left, push the back hole of the 9L liftarm down onto the left pin in front of the hollow frame on the hiding place. This is the second linkage.

13.1.(12.1) Now we'll build the third linkage, which connects the first two. Place a black 5L liftarm, horizontally with the holes facing up, in front of you.

13.2.(12.2) Push a black 1L pin with a ball on one side, with the ball on top, from the top into the middle hole of the previous piece.

13.3.(12.3) Push a light gray 2L pin down into the rightmost hole of the 5L liftarm. This pin does not have friction ridges so it should spin easily.

13.4. (12.4.) Push a tan 3L pin, with the stop ring at the bottom down into the leftmost hole of the 5L liftarm. It should stick up 2L above the 5L liftarm. This pin does not have friction ridges so it should spin easily.

13.5. (12.5.) Push a black 1L liftarm down over the previous piece, pushing it all the way down until it touches the 5L liftarm. This is the third linkage of this mechanism.

13.6 (12.6.) Keeping the third linkage horizontal, with the 3L pin with the 1L liftarm at the left, push the leftmost pin up through the second free hole from the front on the second linkage. Rotate the second linkage, so it points forward and find the third hole from the front of this 9L liftarm. Push the left pin of the third liftarm, from the bottom into this hole so the third linkage extends to the right. This linkage should be at the bottom level of the build and rest on the table.

13.7. Rotate the first linkage so it points towards the front. Find the third hole from the front, and push the right pin of the third linkage, from the bottom into this hole. Now the first and second linkages should be connected by the third. If you move the handle they should move left and right.

14.1. (7.1) Now we will make a fourth linkage. Place a black 5L liftarm, horizontally with the holes facing up, in front of you.

14.2. (7.2.) Push a blue 3L pin from group B, with the stop ring at the bottom, down into the second hole from the right on top of the previous piece.

14.3. (7.3.) Push a black 3L axle/pin combo which has a 2L axle and a 1L pin, with the pin side at the bottom, down into the hole to the left of the previous piece.

15. (8.) Push a blue 3L liftarm, horizontally with the holes facing up, down onto the previous two pieces so its right side is even with the right side of the 5L liftarm.

16. (9.) Push two black 3L thin liftarms, horizontally with the holes facing up, one after the other, down on top of the exposed pin and axle above the previous piece. When both pieces are in place, the top of this assembly should have no pins or axles visible.

17. (10.) Push a light gray 2L pin down into the leftmost top-facing hole of the 5L liftarm. This pin does not have friction ridges so it should spin easily.

18. (11.) Move the handle so the first linkage, which is the right one, points forward. Find the front hole on this linkage and push the pin from the previous step, from the bottom into it. This connection does not have friction ridges so it will flop around. That's OK.

NOTE: All steps are back in visual booklet order now.

19. Move the handle so the second linkage, which is attached to the handle, points forward and then find the pin on the front of it. Push the back hole of a black 5L liftarm, which is vertical with the holes facing up, from the top onto the pin we just found. This is the fifth linkage. This connection does not have friction ridges so it will flop around. That's OK for now.

Open group 4.

20.1. There are now two floppy linkages at the front of the build. We'll build the tail of the angler fish now, which we'll use to connect these two linkages. Place a dark tan 3L axle, with a stud at one end, with the stud at the left, in front of you.

20.2. Find an axle connector with a 2L axle on one side. This looks like a 2L axle which has a perpendicular bushing at one end. With the 2L axle at the front, slide the bushing of this piece, from the right over the axle of the previous piece.

20.3. Place a lime green 1x1 slope tile, sideways with the thick side at the back and the anti-stud on the right, onto the stud at the left of this assembly.

20.4. Now, rotate the two floppy linkages so they point to the front and so their front holes of both linkages are in line with each other.

20.5. Take the angler fish's tail and rotate it so the slope tile is at the top, and the 2L axle from the axle connector is at the front. Push the bottom axle down into the two holes which are inline on the two linkages. The easiest way to line this up might be to slide the axle into the front hole of the 5L liftarm, then wiggle the axle until it drops into the hole below it. Now, if you move the handle counterclockwise, the tail should rotate clockwise back towards the 7x11 hollow frame.

21.1. Place a black 3x5 H-shaped liftarm, lying flat and horizontally so it looks like an H, in front of you.

21.2. Push two black 2L pins from group A, down into the back holes on the left and right sides of the previous piece.

21.3. Push two blue 3L pins from group B, with the stop rings at the back, from the front into the left and right front-facing holes on the horizontal part of the H-shaped liftarm.

21.4. Push a black 3L liftarm, horizontally with the holes facing forward, from the front onto the pins from the previous step.

21.5. Push a black 5L liftarm, horizontally with the holes facing forward, from the front onto the pins extending in front of the previous piece. Push it on so that the left side on the 5L liftarm is even with the left side of the 3L liftarm from the previous step.

21.6. Push a light gray 2L pin, from the front, into the rightmost hole of the previous piece. This pin does not have friction ridges so it should spin easily. Push these all the way in so they extend 2L to the front.

21.7. Push the left hole of a yellow 2L liftarm, horizontally with the holes facing forward, from the front onto the pin from the previous step.

21.8. Rotate this assembly so it is standing upright with the previous piece at the front on the bottom. There should be two pins facing the right. Push these two pins into the top and bottom holes facing left on the left side of the 7x11 hollow frame. When you move the handle for the angler fish, it should make the 2L liftarm twirl.

22.1. Place a black 3x5 L-shaped liftarm, lying flat with the short leg vertically on the left and the long leg horizontally at the front and pointing to the right, in front of you.

22.2. Push two black 2L pins from group A, down into the back left and front right holes of the previous piece.

22.3. Push a black 2L pin from group A, up into the hole to the left of the right pin from the previous step.

22.4. Rotate this assembly so the first two pins are at the back, the long side of the L is horizontally on the top pointing to the right, and the short side is upright at the left pointing down. Push it, from the front, onto the front of the 7x11 hollow frame so that the right side is even with the right side of the hollow frame, and the bottom side is even with the bottom side.

23.1. Find a black axle and pin connector #1. This piece has a 1L axle connector on one side, and a perpendicular pin hole on the other. Place this in front of you, with the axle connector at the front and the pin hole at the back facing up.

23.2. Find a red 3L axle/pin combo. This has a 2L pin side and a 1L axle side. Push this, with the axle side at the back, from the front into the axle connector of the previous piece.

23.3. Push a black 2L pin from group A, down into the hole on top of the axle and pin connector.

23.4. Keeping the red 3L axle/pin combo facing forwards, push the previous piece up through the center hole on the top row of the 7x11 hollow frame.

24.1. Push the leftmost hole of a black 9L liftarm, horizontally with the holes at the front, from the front onto the previous piece. Don't push it all the way yet.

24.2. Locate the front-facing pin on the 3x5 L-shaped liftarm on the lower right side of the 7x11 hollow frame. Angle the 9L liftarm so that it lines up with this pin. Now push it back so it connects to both pins. This might be difficult. It helps to wiggle the assembly and liftarm a little bit. This liftarm will be diagonal, sloping down to the right.

24.3. Push a black 2L pin from group A, from the front into the third hole from the left on the previous piece.

25. Find a black panel fairing small, smooth, short, side A. This piece has one smooth, curve side and one hollow side. It has an L-shaped pattern of four holes on one side, and no holes on the opposite side. It has two holes on one long side, and one perpendicular through hole on the opposite side. If you stand it up on the L-shaped hole pattern, with the smooth side at the back, the left side is taller than the right. Push this piece, with the L-shaped hole pattern at the back and the smooth side on top, from the front onto the two front-facing pins on the 9L liftarm. It should go on at an angle.

26.1. Now we'll make a sail. This forms the roof of the angler fish's hiding place. Place a black 8L bar with a pin on one side and a stop ring on the other, vertically with the stop ring at the front, in front of you.

26.2. Clip a white 6x4 flag, with the clips on the right, onto the previous piece.

26.3. Push the pin at the back of the bar, from the front, into the third front-facing hole from the left on the top row of the 7x11 hollow frame. The sail should point to the left.

Open group 5

27.1. Now we'll complete the angler fish! Set the hiding place aside for now. Place a black 2x2 round brick in front of you.

27.2. Find two lime green 1x2 slopes with a cut out. These look like a 1x1 plate with a 1x1 slope tile on one side. Place one, with the slope at the left, on the back left stud of the previous piece so it overhangs by one stud. Place the other symmetrically on the right. These will be the angler fish's fins.

28.1. Place a black 1x2 brick, horizontally, on the previous two pieces.

28.2. Place a black 1x2 brick with a horizontal bar on one long side, with the bar at the front, in front of the previous piece.

29. Place two glow in the dark 1x1 round tiles on the previous piece. These will be the angler fish's eyes, which glow in the dark!

30.1. Place a white 1x2 plate with three teeth on one side, horizontally with the teeth at the front, behind the previous piece. These are the angler fish's teeth!

30.2. Make the fish's big chin by placing a black 1x2 slope tile horizontally, with the thick side at the front, on the previous piece.

31. Rotate the angler fish so its chin is on the left and at the bottom. Find a black 1L bar with a clip on one side. With the clip at the bottom and the flat sides at the front and back, attach the clip, centered vertically, onto the bar to the right of its eyes. This is the base of the lure the fish uses to catch its prey!

32.1. Find a black 3L bar with a clip on one end and a hollow stud on the other. Place this in front of you with the stud pointing up on the left, and the clip on the right.

32.2. Find a transparent green short bar with a bulb cover. This piece has a very short bar on one side, and a domed cylinder on the other. With the bar on the bottom, push this piece down through the hollow stud of the previous piece. This is the lure.

32.3. Now rotate the lure 180 degrees towards you so the domed cylinder points down. Attach the clip of the previous piece to the bar on the top of the angler fish. The transparent green lure should hang above and in front of the angler fish's eyes.

33. Set the hiding place in front of you, with the 7x11 hollow frame vertically at the right and the handle at the back. Rotate the handle clockwise so the axle of the angler fish's tail sticks out and points to the left. Keeping its jaw at the left and the lure on top, push the center hole on the right of the anglerfish, from the left, onto the axle on the tail assembly. Once that's done, move the handle so you can see if the angler fish can go in and out of his hiding spot!

Open group 6.

34.1. Now we will build the pile of rocks in the center of the shipwreck. Set the hiding place aside for now. First comes the base the rocks sit on. Find a dark gray 3x3x1 square liftarm. This piece is shaped like a square with five holes forming a cross on the flat sides. Two sides are rounded, and the other two sides have two holes each. Place this piece, lying flat with the rounded sides on the left and right, in front of you.

34.2. Push two black 2L pins from group A, from the front onto the left and right holes on the front of the previous piece.

35. Find a dark gray 3x7 panel. This piece has three pin holes on each short end, three pin holes on each long side, and four pin holes on the top and bottom. One side is flat, and one side has a gap between the two long rows of pin holes. Push this piece, vertically with the flat side on the bottom, from the front onto the pins from the previous step.

36. Push four black 2L pins from group A, down into the four holes on top of the previous piece.

37. Push a black 5x7 hollow frame, horizontally, centered horizontally, and lying flat, down onto the previous pieces.

38. Find a light gray 3L pin with a bushing on one side. This looks like a 2L pin with no stop rings and a thick cylinder on one side. This cylinder has an axle hole through the center and is identical to a bushing. Push this piece, with the bushing at the left, from the left into the rearmost hole on the left side of the previous piece. Only push it in until it is even with the right side of its hole. Repeat this symmetrically on the right side.

39.1. Now we'll build some of the big rocks. Set the rock base aside. Place a dark gray 11L liftarm, horizontally with the holes facing forward, in front of you.

39.2. Push two blue 3L pins from group B, with the stop rings at the front, from the front into the left and right front-facing holes on the previous piece. Push them all the way until they extend 1L to the front and back.

40. Push a dark gray 11L liftarm, horizontally with the holes facing forward, onto the front side of the pins from the previous step. Repeat this symmetrically on the back side.

41. Push two black 2L pins from group A, from the front into the third holes from both the left and right sides of the front 11L liftarm.

42. Push a dark gray 11L liftarm, horizontally with the holes facing forward, onto the two pins from the previous step so that it is offset one hole to the right from the liftarms behind it.

43. Push a black 2L pin from group A, from the front into the third hole from the right on the front of the previous piece.

44. Keeping the assembly lying flat, rotate it 180 degrees so the previous piece is at the back. Push two black 2L pins from group A, from the front into the third holes from both the left and right sides of the front 11L liftarm.

45. Push a dark gray 11L liftarm, horizontally with the holes facing forward, onto the two pins from the previous step so that it is offset one hole to the left from the liftarms behind it.

46. Push two black 2L pins from group A, from the front into the third holes from both the left and right sides of the previous piece.

47.1. Place the rock base in front of you so that the 5x7 hollow frame is horizontal on top of the 3x7 panel, with the 3x3x1 square liftarm at the back. The square liftarm has a cross shaped pattern of holes when viewed from the top. Now, rotate the rock assembly we just made so that it is standing upright with the flat sides at the front and back. The two 11L outside liftarms should extend down. The side with two pins on it should be on the left. Put the rock down into the inside of the 5x7 hollow frame so it touches the back row of the hollow frame. The two offset 11L liftarms should be on either side of the 3x7 panel.

47.2. Find the two light gray 3L pins with a bushing on one side which are on the sides of the hollow frame. Push these in so they connect the rock base to the rock assembly.

48.1. Push a light gray 3L pin with a bush on one side, with the bushing on the right, from the right through the bottom hole of the right offset liftarm, pushing it all the way through until the bushing touches the liftarm. This hole is below the 5x7 hollow frame and this pin will connect the rock to the base.

48.2. Push a blue 3L pin from group B, with the stop ring at the left, from the left through the bottom hole of the left offset liftarm, pushing it all the way through until the stop ring touches the liftarm. This hole is below the 5x7 hollow frame and this pin will connect the rock to the base.

Open group 7.

49.1. Now we'll build another rock assembly. Set the rock base aside for now. Find a dark gray 3x6 bent liftarm. This looks like a 6L liftarm and 3L liftarm connected at a 135 degree angle. It looks kind of like a hockey stick. The holes at each end are axle holes. Place this in front of you so the 6L liftarm is horizontal and the 3L liftarm points up and to the right.

49.2. Push a blue 3L pin from group B, with the stop ring at the back, from the front into the third hole from the left on the previous piece.

50. Push a light gray 3L liftarm, horizontal with the holes at the front, onto the previous piece so its left side is even with the left side of the bent liftarm.

51. Push a dark gray 3x6 bent liftarm, with the 6L liftarm horizontal and the 3L liftarm pointing up and to the right, from the front onto the pin on the front of the assembly so its left side is even with the left side of the assembly.

52.1. Push two black 2L pins from group A, from the front into the second and fifth holes from the left on the front bent liftarm. Repeat these two pins symmetrically on the back bent liftarm.

52.2. Place a white 1x1 round plate with a flower petal pattern, with the stud facing away from you, into the third hole from the right on the front liftarm. From now on I'll refer to this as a 1x1 flower plate.

53. Push a dark gray 11L liftarm, horizontal with the holes at the front, from the front onto the front two pins of the assembly so the rightmost hole of the liftarm is on the right pin. Repeat this symmetrically on the back side of the assembly.

54. Push a light gray 5L axle, vertically from the front into the fifth hole from the right on the front 11L liftarm. You may need to spin this liftarm to get it to go through the axle holes of the two bent liftarms!

55. Push a black 2L pin from group A, from the front into the hole to the left of the previous piece. Repeat this symmetrically on the back side.

56.1. Now place the rock base assembly in front of you so the 5x7 hollow frame is vertical and lying flat, with the first rock wall standing upright on the right. Now, take the second rock assembly and rotate it so it is standing up, with the bent liftarms at the top pointing up and to the left. The flower plate should be on the front bent liftarm. Slide this down into the hollow frame immediately to the left of the first rock assembly. Push a light gray 3L pin with a bush on one side, with the bushing at the front, from the front through the bottom hole of the front liftarm of the second rock assembly, pushing it all the way in. This hole is below the 5x7 hollow frame and this pin will connect the rock to the base.

56.2. Push a red 3L axle/pin combo, with the axle side at the back through the bottom hole of the back liftarm, pushing it all the way in. This hole is below the 5x7 hollow frame and this pin will connect the rock to the base.

57. You should be able to rotate the second rock assembly counterclockwise. Find the two pins on the front side of the first and second rock assemblies. Push a black 5L liftarm, with the holes at the front, from the front onto these two pins, rotating the second rock assembly until the two end holes of the liftarm can connect. Repeat this symmetrically on the back side.

58.1. Push a light green flower plate, with the stud at the back, into the second hole from the right on the front liftarm from the previous step. Push two more into the two holes on the front of the first rock assembly which are right above the front liftarm from the previous step.

58.2. Push a dark gray 1L pin with a hollow stud on one side, with the hollow stud on top, down into the front right corner hole of the 5x7 hollow frame on the rock base.

58.3. Find a dark green seaweed frond. This has four individual fronds pointing upwards, and a short bar at the bottom. Push the short bar of this piece, with the fronds pointing up, down into the hollow stud of the previous piece. You should have two pieces left over when you're done with this group. They are two black axle and pin connectors #5. Keep these two separate from the rest of the next group so you can differentiate between these and the light gray axle and pin connectors #4 in the next group.

Open group 8.

59.1. Now we will start building the front, or bow, of the ship. Set the combined rock assembly aside for now. Take one of the black axle and pin connectors #5 you had leftover. This piece has two 1L axle connectors which form an angle slightly greater than 90 degrees, and a perpendicular pin hole between them. Place this piece, with one axle connector facing left and the other facing to the back right, in front of you.

59.2. Push a yellow 3L axle, from the left, into the left axle connector of the previous piece.

60. Push the back hole of a black 2L liftarm with one axle hole and one pin hole, vertically with the axle hole at the back and the holes facing left and right, from the left on the previous piece. Push it all the way until it touches the axle and pin connector.

61. Find a light gray axle and pin connector #4. This piece has two 1L axle connectors which form an angle slightly less than 180 degrees, and a perpendicular pin hole between them. Push the right axle connector of this piece, with the pin hole facing forward, one axle connector facing right and the other facing up to the left, from the left onto the axle.

62.1. Place the other black axle and pin connector #5, with one axle connector facing left and the other facing to the front right, in front of you.

62.2. Push a yellow 3L axle, from the left, into the left axle connector of the previous piece.

62.3. Find the 2L liftarm on the bow assembly. Slide the axle, from the right through the front hole of the 2L liftarm.

62.4. Push the right axle connector of a light gray axle and pin connector #4, with the pin hole facing forward, one axle connector facing right and the other facing up to the left, from the left onto the axle. The previous four pieces are not held in place by an axle hole, so they can rotate freely.

63. Push two black 2L pins from group A, down into the two holes on top of the two axle and pin connectors on the right side of the assembly.

64.1. Find a black piece that looks like a 2x2 U-shaped liftarm with a thick 2L liftarm forming the base of the U, and two thin 1L liftarms forming the arms of the U. Place this piece in front of you, lying flat with the arms of the U on the right.

64.2. Push a red 2L axle, from the front, into the axle hole on the front arm of the previous piece. Only push it in a little bit so it does not stick out into the gap between the arms.

64.3. Find a blue axle connector with an axle hole. This piece has a 1L axle connector on one side, and a perpendicular axle hole on the other. If you were to push axles through both holes they would form a T with the axle connector making the stem. Place the perpendicular axle hole of this piece, with the other axle connector pointing to the right, between the two arms of the U-shaped liftarm. Another way to say this is that the top of the T is at the left between the arms of the U-shaped liftarm, and the stem of the T points to the right. Then push the 2L axle all the way in so it connects this piece to the U-shaped liftarm.

64.5. Now, push this assembly, with the blue axle connector pointing to the right, down onto the two pins on top of the bow of the ship.

65. Push two red 2L axles, from the left, into the two axle connectors which point up and to the left on the left side of the assembly.

66. Place the rock assembly in front of you, with the two bent liftarms from the second rock assembly pointing towards the front. The frond of seaweed should be on the back right. Find the two bushings on the bottom of the right side of this assembly. Rotate the bow assembly so the two axles from the previous step are at the left and parallel with the ground. Push this assembly, from the right, into the two axle holes on these bushings. Note that these bushings can spin in the holes, and you may need to turn them with an axle to make them line up with the two axles on the bow.

67. Place the hiding place in front of you, with the 7x11 hollow plate vertically at the right. Find the gap between the two 5L liftarms on the bottom right of this assembly. On the bottom left side of the rock assembly, there is a pin and an axle. Push these into the gap to connect the rocks to the hiding place.

Open group 9.

68.1. Now we'll build the captain of the shipwreck! He's found a comfy seat behind a piece of coral. Set the rest of the shipwreck aside for now. Find a pink coral frond. This looks kind of like a letter Y with a number of extra arms poking off of it. If you lay it flat on the table, it will have three studs facing up and three facing down. There is also one stud on one arm of the Y shape. Rotate the coral frond so that the short bar is at the bottom and the three studs face away from you. The arm with the top stud should be on the left.

68.2. Push the hollow stud of a dark gray 1L pin with a hollow stud on one side, with the hollow stud on top, up onto the short bar on the bottom of the previous piece.

69. Push a light yellow 1x1 flower plate, with the stud facing away from you, onto the rightmost anti-stud on the front side of the coral frond.

70.1. Now we will build the skeleton captain! He must have been down here a long time since he's just a skeleton with a hat! His torso has five bars on it, two for the legs, two for the arms, and one for the head. Keeping the bar for the head on top, attach one skeleton leg onto each of the leg bars, which are at the bottom of the torso. The leg clips have clips on top and anti-stud at the bottom. One side of the bottom has grooves on it, these are the toes of the foot. These should be at the front.

70.2. Attach the arms to the two arm pegs. The arms each have two clips attached by a bar which is bent where an elbow should be. Attach these so the elbow points to the back.

70.3. Push the head down on top of the bar on top of the torso. You might need a sighted friend to help you make sure the face is at the front.

70.4. Complete the captain by putting his hat on his head so it is widest left-to-right. The hat has a hole for a feather, which should be on the right.

70.5. Bend the captain's legs so he's in a sitting position. Attach his right foot, your left, to the bottom stud on the back side of the coral.

71. Place the shipwreck in front of you with the bow at the left and the hiding place on the right. Find the 3x3x1 square liftarm which is lying flat in front of the rock wall in the middle of the ship. Remember that this piece has a cross shaped pattern of holes on top of it. Push the combined coral/captain assembly, with the captain on the back right, down into the right hole on the cross pattern.

Open group 10.

72.1. Now we will make the sides of the bow. Set the rest of the shipwreck aside for now. Find a black panel fairing small, smooth, short, side A. This piece has one smooth, curved side and one hollow side. It has a 2x3 L-shaped pattern of holes on one side, and no holes on the opposite side. It has two holes on one long side, and one perpendicular through hole on the opposite side. If you stand it up on the L-shaped hole pattern, with the smooth side at the back, the left side is taller than the right. This is the smaller of the two fairings in this group. Place this piece, with the flat side down and the L-shaped hole pattern at the left, in front of you.

72.2. Push two black 2L pins from group A, from the left into front and corner holes of the L-shaped hole pattern on the previous piece.

73.1. Push a dark gray 1L pin with a hollow stud on one side, with the hollow stud at the back, from the back into the left hole on the pair of holes on the back side of the fairing.

73.2. Find a brown flower stem with a bar holder, bar and three stems. This has a short bar attached to a hollow thick cylinder. There are three thin bars sticking out of the hollow cylinder at different angles. The hollow cylinder is a bar holder. Push this piece, with the short bar at the front, from the back into the hollow stud of the previous piece.

74. Find a black panel fairing #18, large, smooth, Side B. This piece has one smooth, curved side and one hollow side. This has a 2x5 L-shaped pattern of holes on one side and no holes on the opposite side. It has three holes on one long side, and one perpendicular through hole on the opposite side. If you stand it up on the L-shaped hole pattern, with the smooth side at the back, the right side is taller than the left. This is the larger of the two fairings in this group. Rotate this piece so the smooth side is at the bottom with the L-shaped hole pattern at the right. Attach the L-shaped hole pattern to the pins on the left side of the small fairing, making sure that the front edges of the two fairings are even.

75.1. Place a light gray 4L thin liftarm horizontally in front of you with the holes facing forward. The left and right holes of this piece are axle holes.

75.2. Push a blue 2L axle/pin combo from group C, with the axle at the front, from the back into the right axle hole of the previous piece. Push it all the way forward.

75.3. Find a black 3L axle/pin combo. This has a 2L axle side and a 1L pin side. Push this, with the axle side at the front, from the back into the axle hole on the left side of the thin liftarm. Push it all the way forward.

75.4. Push a light gray 4L thin liftarm, horizontally with the holes facing forward, from the front onto the last two axles. Push it all the way back until it touches the other thin liftarm. Only the left axle should extend past the thin liftarms.

75.5. Rotate this assembly so the pins face down and the longest axle is at the left. Push it down into the two top-facing holes on the two fairings.

76. Place the shipwreck in front of you with the bow at the left and the hiding place on the right. At the very left end of the ship there are three axle connectors, all pointing up and to the left. One points towards the front, one points towards the back, and the middle one points up and to the left. We will put the part we just created on the back one. Rotate the two fairings so the two thin liftarms are horizontal at the bottom and the smooth sides of the fairings are at the back. Find the axle that extends to the front and connect it to the back axle connector on the shipwreck. You will need to rotate the fairings counterclockwise until the axle lines up correctly with the axle connector. In the end, they should point up and to the left like the center axle connector.

Open group 11.

77.1. Now we will build the ship's figurehead, which is a mermaid! Set the shipwreck aside for now. Place a dark tan 1x2 plate with a bar on one long side, vertically with the bar on the right, in front of you.

77.2. Find a light brown bar holder with a clip on one side. This looks like a clip which is attached to a short, hollow cylinder. The hollow cylinder is a bar holder. Attach the clip side of this piece, with the bar holder on the right, centered vertically on the bar of the previous piece.

78. Push a black 6L bar with a stop ring, with the stop ring on the left, from the right into the bar holder of the previous piece.

79.1. Find a sand green mermaid tail. This piece has two studs on top, two anti-stud on the bottom, and a tail on one side near the bottom. Place this, with the tail at the back, vertically on the 1x2 plate with a bar on one side.

79.2. Push a black torso, with the elbows on the arms pointing to the right, onto the previous piece.

80.1. Push a black head down onto the bar on top of the torso. The mermaid's head is solid black and does not have any face, so orientation is not important. Creepy!

80.2. Push the long black hair piece, with the long part of the hair on the right, down onto the head.

81. Place the shipwreck in front of you with the bow at the left and the hiding place on the right. Find the middle axle connector on the left side of the shipwreck which points up and to the left, but not towards the front. Rotate the figurehead so the mermaid is on the left and the bar is on the right. Push the bar into the axle connector. Now, rotate the plate that the mermaid is on so she is standing almost straight up, but leaned back to the right slightly.

Open group 12

82.1. Now we will make the other side of the bow. Set the rest of the shipwreck aside for now. Find a black panel fairing small, smooth, short, side B. This piece has one smooth, curved side and one hollow side. It has a 2x3 L-shaped pattern of holes on one side, and no holes on the opposite side. It has two holes on one long side, and one perpendicular through hole on the opposite side. If you stand it up on the L-shaped hole pattern, with the smooth side at the back, the right side is taller than the left. This is the smaller of the two fairings in this group. Place this piece, with the flat side down and the L-shaped hole pattern at the right, in front of you.

82.2. Push two black 2L pins from group A, from the right into front and corner holes of the L-shaped hole pattern on the previous piece.

83. Find a black panel fairing #18, large, smooth, Side A. This piece has one smooth, curved side and one hollow side. This has a 2x5 L-shaped pattern of holes on one side and no holes on the opposite side. It has three holes on one long side, and one perpendicular through hole on the opposite side. If you stand it up on the L-shaped hole pattern, with the smooth side at the back, the left side is taller than the right. This is the larger of the two fairings in this group. Rotate this piece so the smooth side is at the bottom with the L-shaped hole pattern at the left. Attach the L-shaped hole pattern to the pins on the right side of the small fairing, making sure that the front edges of the two fairings are even.

84.1. Place a light gray 4L thin liftarm horizontally in front of you with the holes facing forward. The left and right holes of this piece are axle holes.

84.2. Push a blue 2L axle/pin combo from group C, with the axle at the front, from the back into the left axle hole of the previous piece. Push it all the way forward.

84.3. Find a black 3L axle/pin combo. This has a 2L axle side and a 1L pin side. Push this, with the axle side at the front, from the back into the axle hole on the right side of the thin liftarm. Push it all the way forward.

84.4. Push light gray 4L thin liftarm, horizontally with the holes facing forward, from the front onto the last two axles. Push it all the way back until it touches the other thin liftarm. Only the right axle should extend past the thin liftarms.

84.5. Rotate this assembly so the pins face down and the longest axle is at the right. Push it down into the two top-facing holes on the two fairings.

85. Place the shipwreck in front of you with the bow at the left and the hiding place on the right. Only one axle connector on the left side of the ship should be free, and it should point up, left, and forward. Rotate the two fairings so the two thin liftarms are horizontal at the bottom and the smooth sides of the fairings are at the front. Find the axle that extends to the back and connect it to the axle connector on the shipwreck. You will need to rotate the fairings counterclockwise until the axle lines up correctly with the axle connector.

Congratulations! Now this build is complete!

Thank you so much for building this set!

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