

FIRST® LEGO® League Challenge SUBMERGEDSM Building Instructions

Build 3: Shark

This build is 132 pieces, and 66 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 Instructions:

This LEGO set comes in the bags labeled 5-7. 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 3 (12 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.

Main build:

Group 1 contains the pieces for steps 1-10 of the main build. This includes the black 7x11 hollow frame from the unlabeled bag..

Group 2 contains the pieces for steps 11-18.

Group 3 contains the pieces for steps 19-29.

Group 4 contains the pieces for steps 30-38.

Group 5 contains the pieces for steps 39-44. This includes a yellow 13L liftarm from the unlabeled bag..

Group 6 contains the pieces for steps 45-52.

Group 7 contains the pieces for steps 53-63, and includes the light gray 2x3 right slope plate from step 64.

Group 8 contains the pieces for steps 64-66.

Building Instructions:

Main Build 1: Sea Cave

Open bags 5-7.

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

1. We will start by building the base of a sea cave. 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 in front of you.

2.1. Place two dark gray 5L liftarms vertically in front of you with the holes facing the left and right.

2.2. Push two black 2L pins from group A, from the left into the front and back holes on the left side of each of the pieces from the previous step. You'll use a total of four pins in this step.

2.3. Keeping the pins on the left, push one assembly from the left into the holes in the left column of the 7x11 hollow frame. You'll be pushing this from inside the hollow frame. Repeat this symmetrically with the other assembly from the previous step.

3. Find the five holes on the back side of the 7x11 hollow frame. Push four black 2L pins from group A, from the back into the right four of these holes.

4.1. Place a dark gray 5L liftarm, horizontally with the holes at the front, in front of you.

4.2. Push two black 2L pins from group A, from the back into the middle and rightmost holes of the previous piece.

4.3. Keeping the pins at the back, push this assembly from the back onto the right two pins on the back side of the 7x11 hollow frame so that the right side of the 5L liftarm is even with the right side of the hollow frame.

5. Find two dark gray 3x3x1 square liftarms. These pieces are shaped like squares with five holes forming a cross on the flat sides. Two sides are rounded, and the other two sides have two holes each. Push one, laying flat with the rounded sides on the left and right, from the back onto the right two pins on the back of the 5L liftarm. Push another, in the same orientation, on the remaining two pins on the back side of the 7x11 hollow frame.

6. Push two black 2L pins from group A, from the top into the left and right holes on the left square liftarm from the previous step. Push two more black 2L pins down into the front and back holes on the right square liftarm from the previous step.

7.1. Push two black 2L pins from group A, from the top into the front and back corner holes on the top side of the right column of the 7x11 hollow frame.

7.2. Push a blue 3L pin from group B, with the stop at the bottom, from the top into the hole on top of the 7x11 hollow frame that is in front of the rear pin from the previous step.

8. Find a dark gray 3x7 bent liftarm. This looks like a 7L 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. Orient this so the 7L liftarm is vertical and the 3L liftarm points forward and to the right. Push it down onto the front two pins on the rightmost column of the 7x11 hollow frame, leaving the back hole free. The free hole is an axle hole. The back of this piece should be right in front of a 2L pin pointing up from the hollow frame.

9. Find a dark gray 2x3 U-shaped liftarm. This looks like two parallel 2L liftarms connected by a 1L liftarm whose pin hole is perpendicular to the holes on the 2L liftarms. Push the front holes of this piece, with the U opening at the front, from the top onto the two pins pointing up on the left 3x3x1 square liftarm. The back of this piece should be even with the back of the 3x3x1 square liftarm.

10.1. Push the left holes of a dark gray 3x3 U-shaped liftarm, with the U opening at the left, from the top onto the two pins pointing up on the right 3x3x1 square liftarm. The right side of this piece should be even with the right side of the 3x3x1 square liftarm.

10.2. Push a black 2L pin from group A, from the top into the front right corner hole of the previous piece.

Open group 2.

11.1. Now we will build a cliff wall. Set the cliff base aside for now. Find a dark gray 5x11 tapered panel. This piece has one side with three holes, one with seven, and one with five. The other side is at an angle so the piece looks like a right triangle when viewed from the front. There are four pin holes and the top and bottom, one near each corner. Place this piece, laying flat with the seven-hole side at the front and the three hole side at the right, in front of you.

11.2. Push two black 2L pins from group A, from the front into the leftmost and rightmost holes of the seven holes on the front of the previous piece.

12. 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 top, onto the two pins from the previous step. Its left and right sides should be even with the left and right sides of the 5x11 tapered panel.

13. Push two black 2L pins from group A, from the top into the front and third from the front holes on the left row of top-facing holes on the cliff.

14. Push two black 2L pins from group A, from the front into the rightmost and fourth from the right holes on the front of the cliff.

15. Now rotate the cliff so it stands upright with the flat side of the 3x11 panel at the back and the 5x11 tapered panel at the right. The three-hole side of the tapered panel should be at the top. Find a light gray 1L pin with a perpendicular pin hole on one side. This looks like a 1L pin which has a hollow cylinder on one side which is perpendicular to the pin. The hollow cylinder is a pin hole. Push this, with the pin at the back and the hole facing up, from the front into the second hole from the right on the bottom row of front-facing holes.

16. Now we'll place the cliff wall on the cliff base. Place the cliff base in front of you, with the two 3x3 square liftarms at the back and the bent liftarm pointing to the front right. Find the three pins facing upwards on the right column of the base. We'll mount the cliff wall on the middle one of these. Keeping the narrow side of the tapered panel at the top, rotate the cliff wall so the flat side of the 3x11 panel is on the right at the back. There should be two pins facing to the back and the previous piece should extend to the left. Push the pin hole of the previous piece down onto the pin on the base we identified. For now, the wall is not locked into place and can rotate.

17. Keeping the base flat on the table, rotate it 90 degrees clockwise so the cliff wall is at the front. 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 looks identical to a bushing, and has an axle hole through the center. Push this piece, with the pin side at the back, from the front into the hole between the two pins on the front side of the cliff wall.

18. Keeping the base flat on the table, rotate the cliff 180 degrees so the cliff wall is at the back. Find the two pins pointing upwards on the row in front of the cliff wall. The left one is on a U-shaped liftarm, and the right one is on the bent liftarm. Push a dark gray 5x11 tapered panel, standing upright with the seven-hole side at the bottom and the three-hole side at the right, from the top onto these two pins. The left pin should go into the leftmost of the seven holes on the bottom of the 5x11 tapered panel and the left side of this panel should be even with the left side of the U-shaped liftarm below it.

Open group 3.

19.1. Now we will start building another cliff wall. Set the rest of the cliff assembly aside for now. Place a dark gray 3L liftarm, vertically with the holes facing left and right, in front of you.

19.2. Push two blue 3L pins from group B, with the stop rings at the left, from the left through the back two holes of the previous piece. Push them all the way through until they extend 1L to the left and right.

20. Find a dark gray 3x7 panel. This looks like a shorter version of the 3x11 panel, but with only 3 holes on each of the long sides. Push this piece, horizontally with the flat side at the bottom, from the right onto the two pins from the previous step.

21.1. Push a black 2L pin from group A, from the front, into the rightmost front-facing hole on the front side of the previous piece.

21.2. Push a red 1L pin with a stud on one side, with the stud at the front, from the front into the leftmost front-facing hole on the front side of the 3x7 panel.

22.1. 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 left pin hole of this piece, horizontal with the pin holes at the front and the axle hole at the right, from the front onto the longer front-facing pin on the 3x7 panel.

22.2. Push a blue 2L axle/pin combo from group C, with the axle pointing down, from the top into the axle hole of the previous piece. The pin side of this piece has friction ridges so it should not spin easily.

23. Rotate the small cliff wall assembly so that it is horizontal and standing upright, with the lime green 3L axle and pin connector at the top on the right. The four pin holes on the 3x7 panel should be at the front. Push two black 2L pins from group 1, from the front, into the bottom two front-facing holes on the panel.

24.1. Place a green 1x1 round plate with three large leaves, with the leaves on the right, onto the stud on the top of the 3x7 panel.

24.1. Place a white 1x1 round plate with a flower petal pattern on the previous piece. From now on I'll refer to this as a 1x1 flower plate.

25. Now we will attach the small cliff wall to the cliff base. Place the cliff base in front of you, with the large cliff wall at the back. Rotate the small cliff wall so it is standing upright with the flat side of the 3x7 plate on the left. There should be two pins facing left, two facing up, and one facing right at the bottom. Push the bottom right pin, from the left into the front left-facing hole on the front 3x3x1 square liftarm on the cliff base. The small cliff will be able to rotate, so make sure it stays flat relative to the bottom of the cliff base.

26. Push a light gray 3L pin with a bushing on one side, with the bushing at the left, from the left into the bottom front left-facing hole on the small cliff wall. Push it all the way in until it connects the small cliff to the cliff base.

27.1. Next we will build a third, final cliff wall. Set the rest of the cliff assembly aside. Place a dark gray 3x7 panel, horizontally with the flat side on top, in front of you.

27.2. Push two black 2L pins from group A, from the front, into the left and right front-facing holes on the previous piece.

28. Find a dark gray 7x3 curved panel. This piece looks similar to a 3x7 panel, except that it is curved. It has one smooth, curved side and one hollow side. It has one long side with five holes, two short sides with two holes each, and two perpendicular holes going through the panel on the side opposite the five-holes. Push this piece, horizontally with the smooth, curved side on top and the five-hole side at the back, from the front onto the previous piece. It should curve down towards you.

29.1. Push a blue 2L axle/pin combo from group C, with the axle at the right, from the right into the back right-facing hole of the assembly. The pin side of this piece has friction ridges so it should not spin easily.

29.2. Push three black 2L pins from group A, from the right into the hole in front of the previous piece, and into the front two right-facing holes on the curved panel. The third pin hole from the back should be the one free hole on the right side of the assembly.

Open group 4.

30. Find a light gray panel fairing small, smooth, short, side A. This piece has one smooth, curved 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, curved side at the back, the left side is taller than the right. Push this piece, with the L-shaped hole pattern on the left and the smooth, curved side on top, from the right onto the back pin and axle from the previous two steps. Its back side should be even with the back side of the cliff wall.

31. Find a dark gray 3x3 tapered right curved panel. This looks kind of like a smaller version of the previous piece, and it has one smooth, curved side and one hollow side. One side has two holes and another side has one hole. Push this piece, with the two-hole side on the left and the smooth, curved side facing up, from the right onto the remaining two pins on the right side of the cliff wall.

32. Now we'll attach the final cliff to the cliff base. Place the cliff base, with the large cliff at the back, in front of you. Rotate the final cliff wall so it's standing upright, with the 3x7 panel at the back and the 7x3 curved panel at the front. Push the two right-facing holes on the 7x3 curved panel, from the left, onto the two left-facing pins on the left side of the base. These pins are on the small cliff wall. There should now only be two top-facing studs on the cliff base, which are on the small cliff wall.

33.1. Now we will add a roof to part of the cliffs to make a cave. Place a dark gray 3x7 bent liftarm, horizontal with the holes facing forward and the 3L liftarm pointing up to the left.

33.2. Find a light gray 1L pin with a 2L bar extension. This looks like a 1L pin, which has a stud on one side and a 2L bar sticking out on the other side. Push this piece, with the bar at the front, from the back through the fifth hole from the right, pushing it all the way to the front so the stud points to the back and the bar extends 2L to the front. There should be one hole between this bar and the corner hole of the 3x7 bent liftarm.

33.3. Push a blue 2L axle/pin combo from group C, with the axle at the back, from the back through the second hole from the right on the bent liftarm. The only hole to the right of this should be an axle hole. The pin side of this piece has friction ridges so it should not spin easily.

33.4. Push a red 1L pin with a stud on one side, with the stud at the front, from the front into the hole to the left of the previous piece. This pin has friction ridges so it should not spin easily.

33.5. Place a transparent green crystal cluster, with the crystals at the front, on the stud of the previous piece.

33.6. Push the single hole side of a dark gray 3x3 tapered right curved panel, with the two-hole side at the bottom and the smooth, curved side at the right, from the back onto the axle on the back side of the bent liftarm. Rotate this piece so the two holes are at the same angle as the 3L liftarm.

33.7. Keeping the base flat, rotate the cliff base so the large wall is at the right. The two pins pointing up on the small cliff should be at the back. Find the column of six top facing holes on the large cliff wall. Now, find the hole facing left and right below the front one of these holes. We will attach the cave roof to this hole. Rotate the bent liftarm so the crystal hangs down, and so the 3L liftarm is at the back left. Push the 3L liftarm down onto the two pins on the small cliff. Rotate the piece from the previous step so the bottom hole on the right side is even with the hole we found on the cliff wall.

34. Push a light gray 3L pin with a bushing on one side, with the bushing at the right, from the right into the hole we found on the cliff wall, pushing it all the way through so it connects to the cave roof.

35.1. Rotate the cliff base so the large cliff wall is at the front. Find a dark gray 5x3x2 left corner quarter ellipse. This piece looks like a quarter of an elongated curved dome. It has one smooth, curved side and three hollow sides. One side has an L-shaped pattern of four holes, and one long side has a row of three holes perpendicular to the L-shaped pattern. Rotate this piece so the L-shaped holes are at the bottom and the row of three holes is upright facing the back. The smooth, curved side should be at the back right. With the bottom of the piece even with the bottom of the cliff base, push it onto the rightmost front-facing pin on the base. Its right side should be even with the right side of the base. There should be a bushing, and then another pin to the left of this piece

35.2. Push a light gray panel fairing small, smooth, short, side A, with the L-shaped hole pattern at the bottom and the smooth, curved side at the front, with the row of two holes upright facing the right, from the front onto the remaining pin so it is to the left of the previous piece and so its bottom is even with the bottom of the base. The bushing to the right of the pin should not connect to this piece.

36.1. Keeping the base flat on the table, rotate it so the large cliff wall is at the back. Find the 3x7 bent liftarm which is on the back right corner near the bottom. The 3L liftarm portion should point to the back right. Find a lime green axle and pin connector with one axle. This piece looks like a 1L axle connected to a perpendicular cylinder with a pin hole in the middle of it. Push this piece, with the axle at the bottom and the pin hole facing the front and right, from the top into the rightmost hole on the bent liftarm. This is an axle hole so the axle can only face one of four directions.

36.2. Push a light gray 2L pin, from the front right, into the pin hole of the previous piece. It should be perpendicular to the 3L portion of the bent liftarm below it, if not you'll need to rotate the previous piece 90 degrees. This pin does not have friction ridges so it should spin easily.

37.1. Now we'll make a plate you can push to raise and lower the shark hiding in the cave. Set the cliff base aside for now. Place a yellow 13L liftarm, horizontally with the holes facing forward, in front of you.

37.2. Push two blue 3L pins from group B, with the stop rings at the front, from the front through the rightmost and third from the right holes on the previous piece. Push them all the way through so they extend 1L to the front and back.

38. Push a red 1L pin with a hollow stud on one side, with the stud at the back, from the back through the hole to the left of the left piece from the previous step.

Open group 5.

39. Push a yellow 3x3x1 square liftarm, laying flat with the rounded edges at the left and right, from the front onto the two front-facing pins on the 13L liftarm. Repeat this symmetrically on the back side.

40. Place the cliff base in front of you, with the large cliff wall at the back. Push the rightmost free hole of the push plate assembly, from the front right, onto the front right facing pin on the bent liftarm at the right side of the cliff base. The two square liftarms should be at the right, and if you push down on the plates, the left side of the 13L liftarm should lift up.

41.1. Now we'll make the floor of the cave, set the cliff base aside for now. Find a light gray 11L liftarm with perpendicular holes. This looks like a normal 11L liftarm, except that every hole is perpendicular to its neighbors. Place this piece, horizontally with the smooth side on top, in front of you. The left and rightmost holes should be facing the front.

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

42.1. Push a yellow 3x3x1 square liftarm, lying flat with the rounded edges at the left and right, from the front onto the two pins from the previous step.

42.2. Push two black 2L pins from group A, from the front into the two front-facing holes on the previous piece.

43.1. Find a black pin connector toggle joint. This piece looks like a 3L liftarm with two perpendicular thin 2L liftarms on it so it forms a U-shape. The middle hole of the 3L liftarm is a pin hole and the other two are axle holes. Place this piece, lying flat with the U opening to the right, in front of you.

43.2. Push two blue 2L axle pin combos from group C, with the axles at the right, from the left into the two axle holes on the left side of the previous piece.

43.3. Find two tan 1.5L pins. These look like a 1L pin with a hollow stud on one side, except that the stud is replaced with a pin that is just long enough to go into a thin liftarm. Push one, with the short side at the back, from the front into the right hole on the front 2L thin liftarm. Repeat this symmetrically with the other.

43.4. Keeping it in the same orientation, push the back pin on this assembly into the third front-facing hole from the left on the 11L liftarm. There should be one free front-facing hole to the right between this assembly and the 3x3x1 square liftarm.

44. Push a light gray 11L liftarm with perpendicular holes, horizontally with the smooth side on top, from the front onto the three front-facing pins on the cave floor assembly. The right side of this piece should be even with the right side of the 3x3x1 square liftarm.

Open group 6.

45.1. Set the first part of the cave floor aside for now. Find a dark gray 5x11 panel. This piece looks like the 3x11 panel, except that it has five holes on the short sides instead of three. Place this piece, horizontally with the flat side at the top, in front of you.

45.2. Push two blue 3L pins from group B, with the stop rings at the left, from the left into the front and back right-facing holes on the previous piece. Push them in until they stop. They should extend 2L to the right.

46. Push a red 1L pin with a hollow stud on one side, with the stud at the front, from the front into the rightmost front-facing hole on the 5x11 panel. Repeat this symmetrically on the back side.

47. Push a dark gray 5L liftarm, vertically with the holes facing left and right, from the right onto the two pins on the right side of the panel. Push it all the way until it stops. Push another dark gray 5L liftarm, in the same orientation, to the right of the first.

48. Push two blue 2L axle/pin combos from group C, with the pins facing up, from the bottom into the left two top-facing holes on the 5x11 panel. The pin sides of these pieces have friction ridges so they should not spin easily.

49. Now place the first part of the cave floor in front of you so it is horizontal with the square liftarm on the right. Orient the second part so it is horizontal, with the two previous pieces at the left side pointing down. Attach it to the first part of the cave floor by pushing the two axle/pin combos from the previous step down into the left two top-facing holes on the first part. Because these are axles sitting in pin holes, the two parts will be very loose.

50.1. Now we will make the connectors to attach the two parts of the cave floor. Place two dark gray 1x1 bricks with an axle hole, with the holes facing left and right, in front of you.

50.2. Push two dark gray 3L axle/pin combos which have a 1L axle and a 2L pin, with the axle side on the left, from the right into the holes of the previous pieces.

50.3. Take one connector and rotate it so the pin points down and the stud of the 1x1 brick is at the front. Push it down through the front right top-facing hole on the combined cave-floor assembly, pushing it all the way down until it connects the two parts together. Repeat this symmetrically with the second connector so its stud is at the back.

51. Place a light gray 2x2 corner tile, standing upright with the open corner at the top left so it is oriented like a braille letter J when viewed from the front, on the stud of the front connector. Place it so it hangs down. Repeat this symmetrically on the back side with another light gray 2x2 corner tile.

52. Now we will attach the cave floor assembly to the cliff base. Place the cliff base in front of you, with the large cliff wall at the right and the push plate at the front right. Keeping the cave floor horizontal, with the two connectors on the right side, feel between the two liftarms on the bottom until you find the toggle joint. This has two pins pointing to the left. Rotate these so they point straight down. Attach these pins to the middle two top-facing holes on the left column of the cliff base. Make sure that the yellow arm of the push plate goes under the floor!

Open group 7.

53.1. Now we'll build the shark! Place a white 2x10 plate horizontally in front of you.

53.2. Place a white 2x2 inverted curved slope tile, with the higher side at the left, on the bottom of the left column of the previous piece. This side will be the shark's nose. The studs of both pieces should be at the same level. This is the start of the bottom of the shark. The top is gray.

54.1. Keeping the nose at the left, flip the shark upside down. Place the next pieces upside down until we flip the shark back over. Place a white 1x5 plate horizontally to the right of the previous piece. Place another white 1x5 plate horizontally behind the first.

54.2. Place a white 2x2 angled corner plate, with the angle at the front left, to the right of the front piece from the previous step. Place another white 2x2 angled corner plate symmetrically behind the first. These two pieces are the small fins near the shark's tail called pubic fins.

55. Flip the shark right side up. Now, all the pieces we place will be right side up again. Place a light gray 1x2 plate with a tow-ball socket on one side, vertically with the tow-ball socket on the right, on the right column of the shark. This will be where we put the shark's tail!

56. Place a light gray 2x4 plate horizontally to the left of the previous piece.

57.1. Place a light gray 1x2 plate with a tow-ball socket, horizontally with the tow ball socket at the front, on the front row to the left of the previous piece. Place another light gray 1x2 plate with a tow ball socket symmetrically behind the first. We'll mount the pectoral fins to these.

57.2. Place a white 1x2 plate vertically to the left of the previous two pieces.

58. Place a light gray 2x8 plate horizontally on the right eight columns of the shark. Its left side should be even with the left side of the previous piece.

59. Place a light gray 1x1 plate with a stud sticking up from one side, with the side stud at the front, on the front row to the left of the previous piece. There should be two free columns to the left of this piece. Place another light gray 1x1 plate with a stud sticking up symmetrically behind the first. The shark's eyes will be attached here.

60. Place a light gray 2x2 jumper tile on the right two columns of the shark. Place two more light gray 2x2 tiles with one stud on each to the left of the first.

61.1. Place a light gray 1x2 tile vertically to the left of the left piece from the previous step.

61.2. Place a light gray 2x4 curved slope tile, horizontally so it slopes down to the left, to the left of the previous piece. This is the top of the shark's head.

62.1. Now we'll place the shark's dorsal fins. These are the fins on the shark's back. Place a light gray 1x1 slope tile, with the thick side on the right, on the rightmost stud on the shark's back.

62.2. Place a light gray 1x3 slope brick, with the slope on the left, on the remaining two studs on the shark's back.

63.1. Now we'll build the shark's tail! Place a dark gray 1x2 plate with a ball on one side horizontally in front of you, with the ball on the left.

63.2. Place a light gray 2x2 corner tile, with the open corner at the front right so it is oriented like a braille letter F when viewed from the top, on the previous piece so that it connects to both studs of the previous piece.

63.3. Push the ball on the tail into the socket on the right side of the shark. Now, rotate the tail so it stands upright and is at an angle so it looks kind of like a less than sign, or an arrow pointing to the left without its stem. You should have one extra piece left over, which is a light gray 2x3 right wedge plate which we'll use soon.

Open group 8.

64.1. Now we'll make the two pectoral fins! We'll start with the left fin, and the right fin will be a mirror image. Place a dark gray 1x2 plate with a ball on one side horizontally in front of you, with the ball on the left.

64.2. Place the light gray 2x3 right wedge plate you had left over, horizontally with the studs at the back and the thick side at the left, on the previous piece so it overhangs one stud to the right. You can tell a right wedge plate by placing it horizontally in front of you. If the studs make a row at the back, and the thick side is at the left, it is a right wedge plate. Otherwise, it is a left wedge plate!

64.3. Rotate the fin so the ball is at the back and push it into the front tow-ball socket. Now rotate it so the fin points back and to the right.

64.4. Now we'll make the right fin! It's a mirror of the first, so you can do that, or you can read the instructions here. Place a dark gray 1x2 plate with a ball on one side horizontally in front of you, with the ball on the left.

64.5. Place a light gray 2x3 left wedge plate, horizontally with the studs at the front and the thick side at the left, on the previous piece so it overhangs one stud to the right.

64.6. Rotate the fin so the ball is at the front and push it into the back tow-ball socket. Now rotate it so the fin points back and to the right.

65. We'll finish the shark by putting on its eyes! Place a black 1x1 round tile with an eye pattern from the front onto the front side stud to the left of the front fin. Repeat this symmetrically on the back side. The eye pattern is a small dot which is off-center on the tile. You can have a sighted helper make sure these line up right if you want to!

66. Now place the cliff base in front of you, with the large cliff wall at the right. You can set the shark, with its tail at the right, onto the cave floor. Hit the push plate and see what happens!

Congratulations! Now this build is complete!

Thank you so much for building this set!

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