# *FIRST*® LEGO® League Challenge UNEARTHED™ Building Instructions

Build 9: Who Lived Here?

This build is 160 pieces, and 36 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 13-14, 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.

Build 9
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 13 (6 groups of bricks)
Main Build: Base
Group 1 contains the pieces for steps 1-5. Include a dark gray 11x15 hollow frame from bag 0.
Group 2 contains the pieces for steps 6-11. Include a white 7x11 hollow frame from bag 0.
Group 3 contains the pieces for steps 12-21.

Bag 14 (5 groups of bricks)
Group 4 contains the pieces for steps 22-23. Stack the three dark gray 1x6 technic bricks, but leave the blue one loose.
Group 5 contains the pieces for steps 24-33.

Group 6 contains the pieces for step 34, not including the two green 1x1 tiles. Include the two dark gray 4x10x6 rock panels from bag 0.
Group 7 contains two green 1x1 tiles from step 34.
Group 8 contains the pieces for steps 35-36.

Building Instructions:

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

Main Build

1.1. Find a dark gray 11x15 hollow frame. This looks like two 15L liftarms connected by two 11L liftarms forming an open rectangle. Place this horizontally in front of you.

1.2. Push a red 1L pin with a stud on one side, with the stud on the top, from the top into the second, third, fourth, fifth, and seventh holes from the left side of the back row of the previous piece. You will place a total of five pins.

1.3. Push a red 1L pin with a stud on one side, with the stud on the top, from the top into the second, third, fourth, fifth, and seventh holes from the right side of the front row of the hollow frame. You will place a total of five pins.

1.4. Push a red 1L pin with a stud on one side, with the stud on the top, from the top into the second, third and fourth holes from the front on the left column of the hollow frame. You will place a total of three pins.

1.5. Push a red 1L pin with a stud on one side, with the stud on the top, from the top into the second, third and fourth holes from the back on the right column of the hollow frame. You will place a total of three pins.

2.1. Place a lime green 1x1 tile on the leftmost stud on the front row of the hollow frame, and another on the rightmost stud on the back row.

2.2. Place a lime green 1x3 tile, horizontally, on the right two studs on the front row of the hollow frame, and another on the left two studs on the back row.

2.3. Place a green 1x4 plate, horizontally, to the left of the front piece from the previous step. This piece should be centered on the two studs so that it is a half stud away from the 1x3 tile. Place another, horizontally, to the right of the 1x3 tile on the back row.

3.1. We'll make a tiny assembly here. Place a green 1x1 plate on the stud of a red 1L pin with a stud on one side. Repeat.

3.2. Push the pin of one of the assemblies from the previous step, with the plate at the front, from the front into the leftmost hole on the front row of the hollow frame. Push the other, with the plate at the back, from the back into the rightmost hole on the back row of the hollow frame.

4.1. Push a black 2L pin from group A into a brown 1L liftarm. Repeat three times.

4.2. Push the free pin of one of the assemblies from the previous step, with the 1L liftarm at the bottom, from the bottom into each of the corner holes of the hollow frame. These should look like the legs of a table, holding the hollow frame off of the ground.

5. Push a red 1L pin with a ball on one side, from the left, into the center hole on the rightmost column of the hollow frame. Set the base aside for now.

Group 2.

6.1. Let’s make a smaller frame which will hold some artifacts. Place a white 7x11 hollow frame, horizontally, in front of you.

6.2. Push a red 1L pin with a stud on one side, with the stud on top, from the top into each hole on the top side of the previous piece. You will place a total of sixteen pins.

7.1. Place a dark gray 5L liftarm, horizontally with the holes facing the front and back, in front of you.

7.2. Push a black 2L pin from group A, from the front, into the leftmost and rightmost holes of the previous piece.

7.3. Repeat steps 7.1-7.2.

7.4. Push the pins of one of the assemblies from the previous step, centered horizontally, from the back into the back row of the 7x11 hollow frame. Repeat symmetrically on the front side with the other assembly.

8. Place a tan 6x8 plate, vertically and centered vertically, so it covers the right half of the 7x11 hollow frame. There should be three free studs on the front and back rows to the left of this piece, and half a stud gap between the left side of the plate and the first studs.

9.1. Find a dark gray 2x3 U-shaped liftarm. This looks like two 2L liftarms connected by a 1L liftarm so it forms a U or a C. Place this, vertically and so it looks like an upside down U when seen from the side, in front of you.

9.2. Push a black 2L pin from group A, from the left, into the top holes on the left side of the previous piece.

9.3. Repeat steps 9.1-9.2.

9.4. Push the pins of one assembly, from the right, into the front two holes on the right side of the left column of the hollow frame. Repeat symmetrically on the right side. These should also act like table legs for the hollow frame.

10.1. Place a light blue 1x1 round plate on the second stud from the right on the back row of the 6x8 plate. Place another on the third stud from the right on the second row from the back.

10.2. Place a light blue 1x1 round tile to the left of the previous piece. Place another on the second stud from the left on the third row from the back of the 6x8 plate.

11.1. Leaving two free rows in front of it, place a dark gray 2x2 round plate on the leftmost two columns of the 6x8 plate.

11.2. Place a tan 1x1 tile with a clip on top, with the clip fingers at the front and back, on the second stud from the right on the front row of the 6x8 plate. Place another behind the first.

11.3. Skip one free stud behind the back previous piece and place a silver cup there.

Group 3.

12.1. Clip the handle of a silver meat cleaver, with the blade on the left facing the front, into the front clip from step 11.2. Clip a silver spoon, with the bowl of the spoon on the left facing up, into the back clip.

12.2. Place a light gray 2x2 round plate on the dark gray 2x2 round plate from step 11.1.

13.1. Find a 1L liftarm with three towballs on it. Place this in front of you, with the hole facing the front and back and the balls on the left, right, and top.

13.2. Slide the axle of a dark tan 3L axle with a stud on one side, with the stud on the back, from the back into the hole of the previous piece.

13.3. Find a light blue axle and pin connector #3. This piece has two 1L axle connectors which form an angle almost 180 degrees, and a perpendicular pin hole between them. Slide the pin hole, with the axle connectors pointing up and slightly to the left of straight down, over the previous piece.

13.4. Next, we will connect the axle to the central axle hole on top of the two 2x2 round plates on the 6x8 plate. The previous two pieces are not held on by friction, so you will have to hold them on while you rotate the axle to point down. The balls should be at the front, left, and right, and the axle connectors should point straight to the front, and slightly to the left of straight back. Push the axle all the way down.

14. Now we'll connect the smaller frame to the rest of the base. Place the base, horizontally, in front of you. The column with the ball on it should be on the right. Set the smaller frame, centered horizontally and vertically, inside of the base. Make sure the holes line up for the next step.

15. Push a light gray 3L pin with a stop on one side, with the stop at the front, from the front into the center hole on the front row of the base. Push it all the way in so it connects the smaller frame to the base. Repeat symmetrically on the back side.

16.1. Now we'll make another plate of artifacts. Place a light gray 1x1 technic brick, with the hole facing the front and back, in front of you.

16.2. Push a yellow 2L pin, from the front, into the hole of the previous piece. This pin does not have friction ridges and should spin freely.

17. Place a tan 6x8 plate, vertically, in front of you. Place the 1x1 technic brick with the pin in it, with the pin at the front, on the third stud from the right on the back row of the 6x8 plate.

18.1. Now we'll make an old-fashioned scale. Place a dark gray 1L liftarm with a 1L axle on one side, with the hole pointing to the front and back and the axle pointing to the left, in front of you.

Find a dark gray axle connector with two perpendicular bar holders. This looks like a 1L cylinder with an axle hole through it. There are two perpendicular hollow cylinders extending from either side of the axle hole which are bar holders. Rotate the axle from step 18.1 so it points up. Push the axle connector, with the bar holders pointing left and right, onto the axle.

18.2. Push the bar of a gold frying pan, with the pan on the left with the open side on top, into the left bar holder. Repeat symmetrically on the right side.

18.3. Push the back hole on the bottom of the scale onto the pin from step 16.2.

19.1. Place a dark gray 2x4 plate, horizontally and centered horizontally, on the second and third rows from the front of the 6x8 plate.

19.2. Place a white egg on the fourth stud from the left on the second row from the back of the 6x8 plate.

19.3. Skip one stud to the left of the previous piece and place a tan 1x1 tile with a clip on top, with the clip fingers at the front and back.

20.1. Clip a silver fish, horizontally with the tail on the right, into the clip of the previous piece.

20.2. Place a light brown 2x4 tile, horizontally, on the 2x4 plate from step 19.1.

21. Place this 6x8 plate of artifacts to the left of the first 6x8 plate.

Bag 14.

Group 4. This group has three 1x6 technic bricks stacked together and one loose. The stacked ones are dark gray and the loose one is blue.

22.1. Place a dark gray 1x6 technic brick, vertically, in front of you. This is one of the stacked ones.

Push a blue 3L pin from group B, with the stop ring on the left, into the front and back holes on the right side of the previous piece. These will extend 2L to the right.

22.2. Push the front and back holes of a dark gray 1x6 technic brick, vertically, from the right onto the previous two pieces. Push it all the way left so the pins still extend 1L to the right.

22.3. Place a dark gray 1x1 slope tile, with the tall side at the back, on the front stud of the previous piece.

Place a dark gray 1x2 slope tile, horizontally with the tall side at the front, on the back studs of the two 1x6 technic bricks.

22.4. Push the pins of the assembly we just made, from the left, into the second holes from the front and back on the left side of the base.

23.1. Place the last dark gray 1x6 technic brick, vertically, in front of you.

Push a blue 3L pin from group B, with the stop ring on the right, into the front and back holes on the left side of the previous piece. These will extend 2L to the left.

23.2. Push the front and back holes of the loose, blue 1x6 technic brick, vertically, from the left onto the previous two pieces. Push it all the way left so the pins still extend 1L to the left.

23.3. Place a dark gray 1x1 slope tile, with the tall side at the front, on the back stud of the previous piece.

Place a dark gray 1x2 slope tile, horizontally with the tall side at the back, on the front studs of the two 1x6 technic bricks.

23.4. Push the pins of the assembly we just made, from the right, into the second holes from the front and back on the right side of the base. Set the base aside for now.

Group 5

24.1. Now we'll make a sliding assembly for the front of the build. Place a black 10L axle, horizontally, in front of you.

24.2. Push a dark gray 2L axle connector onto the right side of the previous piece.

25. Find a red 4x4 bent liftarm. This looks like two 4L liftarms connected at a 135 degree angle. It looks kind of like a hockey stick. The holes at each end are axle holes. Rotate this so one 4L side is vertically pointing to the back and the other side points up and towards you. The holes should face left and right. Slide the back axle hole, from the left, onto the 10L axle. Push the bent liftarm all the way to the right until it touches the axle connector.

26.1. Find a black axle connector with a perpendicular 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 this in front of you, with the holes facing the left and right and the axle connector facing to the back.

Push the axle side of a tan 2L axle/pin combo, with the pin at the back, from the back into the axle connector of the previous piece.

26.2. Push a white 1L liftarm onto the pin side of the previous piece. The pin does not have friction ridges so this should spin freely.

26.3. Push the axle holes of the axle connector from step 26.1, from the left, onto the 10L axle. Push it all the way to the right until it touches the bent liftarm.

27.1. Place a red 3L liftarm, vertically with the holes facing left and right, in front of you.

27.2. Push a blue 3L pin from group B, with the stop ring on the left, into the front and back holes on the left side of the previous piece. Push them all the way in so they extend 1L to the left and right of the liftarm.

27.3. Push the right side of the pins from the previous step, from the left, into the rearmost and third from the rear free holes on the bent liftarm from step 25.

28.1. Push a yellow 3L axle, from the left, into the front axle hole of the bent liftarm. Only push it in 1L so the right side is even with the right side of the bent liftarm.

28.2. Push a red thick bushing, from the left, onto the left side of the previous piece. Push it all the way to the right until it touches the bent liftarm.

29. Push the back hole of a red 4x4 bent liftarm, with one 4L side vertically pointing to the back and the other pointing up and towards you, from the left onto the 10L axle. Connect it to the pins and axle on the left side of the first bent liftarm.

30.1. Find a black 2x4 L-shaped pin connector. This piece is shaped like a letter L, with three pin holes, one at the corner, and one at the end of each leg. The hole on the short leg is perpendicular to the other two. Place this piece in front of you, with the long leg horizontally pointing to the right and the short leg vertically pointing to the back.

Push a black 2L pin from group A, from the bottom, into the rightmost hole of the previous piece.

Push a blue 3L pin from group B, with the stop ring at the bottom, from the bottom into the front left hole of the 2x4 L-shaped pin connector. Push it all the way so it extends 1L above and below the pin connector.

30.2. Place a dark gray 11L liftarm, horizontally with the holes facing up and down, in front of you.

Push the two pins on the bottom of the L-shaped pin connector into the leftmost and fourth from the left holes on the previous piece.

30.3. Push a blue 3L pin from group B, with the stop ring at the bottom, into the rightmost hole on the top of the 11L liftarm.

30.4. Push a black 2L pin from group A into the fourth hole from the right on the top of the 11L liftarm.

30.5. Keeping it horizontal, lift the 10L axle and rotate it so the bent liftarm hangs straight down. Slide the left side of the axle into the back pin hole on the top of the 11L liftarm assembly. This is the only hole that faces left and right. Slide it all the way to the left.

31. Push the front holes of a black 2x4 L-shaped pin connector, with the long leg horizontally pointing to the left and the short leg vertically pointing to the back, from the top onto the two pins on the right side of the 11L liftarm. Push it all the way down so the rightmost pin extends 1L above it.

32. Slide a black 6L axle, from the right, through the back hole of the previous piece. Push it all the way to the left until it connects to the 2L axle connector on the right side of the 10L axle.

33. Place the base, horizontally, in front of you. The 6x8 panel with the fish should be on the left. Rotate the slider assembly 90 degrees away from you so the bent liftarm lays flat with the 11L liftarm on top of it. The pins on the 11L liftarm should point to the back. Push the pins into the leftmost and rightmost free holes on the front side of the base. You should be able to slide the two bent liftarms freely left and right. Set the base aside for now.

Group 6 and group 7. Group 7 contains two green 1x1 tiles.

34.1. Now we'll make the sides, which are big rocks that attach to the bottom of the base. Place a 4x10x6 rock panel, vertically with the hollow side on the right, in front of you.

34.2. Place a lime green 1x1 plate on the rearmost stud on the second column from the left on the previous piece.

Place a dark gray 1x2 slope tile, vertically with the tall side at the right, on the second and third studs from the back on the leftmost column of the rock panel. Place another in front of the first. The second one will be placed about a brick higher up than the first.

34.3. Place a dark gray 1x1 slope tile, with the tall side at the front, on the second stud from the back, on the rightmost column of the rock panel.

34.4. Place a dark gray 1x2 slope tile, horizontally with the tall side at the back, on the right two studs of the second row from the front of the rock panel.

Place a dark gray 1x1 slope tile, with the tall side at the right, on the fourth stud from the front of the second column from the left on the rock panel.

Skip one stud behind the previous piece and place a dark gray 1x2 slope tile, vertically with the tall side at the right.

34.5. Place a dark gray 1x1 slope tile, with the tall side at the back, on the second stud from the right on the front row of the rock panel.

34.6. Place a light green 1x1 tile on the front stud of the second column from the left of the rock panel.

Take a green 1x1 tile from group 7 and place it on the third stud from the front of the leftmost column of the rock panel.

34.7. Repeat steps 34.1-34.6.

34.8. Place the base in front of you, horizontally with the sliding assembly at the front. Place the left pair of 1x6 technic bricks on the base, centered vertically, on the right two columns of one side assembly. The technic bricks should go behind a 1x2 slope tile. Repeat symmetrically on the right side with the other side assembly. The base should now be lifted up off the ground.

Group 8.

35. Find the three studs on the hollow frame to the left and right of the 6x8 plates. Place a green 1x1 plate on the front stud on the left set of studs, and another on the back stud of the right set of studs.

36.1. Place a dark gray 1x4 plate, vertically, in front of you.

Place the rightmost column of a dark gray 2x3 slope brick, horizontally with the slope on the left, on the back two studs of the previous piece.

36.2. Place the back two rows of a dark gray 2x4 plate, vertically, under the left two columns of the previous piece.

36.3. Place a dark gray 2x3 slope brick, horizontally with the slope on the left, on the front two rows of the assembly.

36.4. Place a green 1x1 tile on the back stud of the previous piece.

36.5. Repeat steps 36.1-36.4.

36.6. Place the rightmost column of one of the assemblies we made behind the left 1x1 plate from step 35. Rotate the other assembly 180 degrees and place its leftmost column in front of the right 1x1 plate from step 35.

Congratulations! Now this build is complete!