FIRST® LEGO® League Challenge UNEARTHED™ Building Instructions

Build 7: Forum

This build is 68 pieces, and 28 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 bag labeled 11. 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 7

Bag 11 (7 groups of bricks)
Main Build 1: Large Forum
Group 1 contains the pieces for steps 1-7.
Group 2 contains the pieces for steps 8-9.
Group 3 contains the pieces for steps 10-11.
Group 4 contains the pieces for steps 12-13.

Main Build 2: Small Forum
Group 5 contains the pieces for steps 1-6 of the small forum.
Group 6 contains the pieces for steps 7-10.
Group 7 contains the pieces for steps 11-15.

Building Instructions:

Group 1

Main Build 1: Large Forum

1.1. We'll start by building the larger part of the forum. Place a light gray 3x6 wedge plate in front of you, horizontally with the longest row at the back. The longest columns should be on the right.

1.2. Place the left stud of a tan 1x3 inverted arch brick, horizontally with the slope on the right, on the back right corner of the previous piece.

2. Place a dark gray 1x1 slope tile, with the tall side at the front, to the left of the previous piece.

3.1. Place the right stud of a light gray 1x2 slope brick, horizontally with the slope on the left, in front of the previous piece.

3.2. Place a dark gray 1x1 round plate on the 3x1 inverted arch brick from step 1.2.

4.1. Place a light gray 2x8 plate, horizontally, in front of you.

4.2. Place a light gray 1x10 brick, horizontally and centered horizontally, on the back row of the previous piece. It will overhang one stud to each side.

4.3. Place the previous piece to the right of the 1x2 slope brick from step 3.1. The left stud of the 1x10 brick will connect to the front right stud of the 3x6 wedge plate.

5.1. Place the front right stud of a light gray 2x2 corner plate, with the corner at the front right so the studs form a braille letter J, on the leftmost stud of the 1x10 brick. The back stud should attach to the 1x1 round plate from step 3.2.

5.2. Place a dark gray 1x1 slope tile, with the tall side at the front, to the right of the previous piece.

5.3. Skip two studs to the right of the previous piece and place a light green 1x1 tile.

5.4. Place a light gray 1x2 slope brick, horizontally with the slope on the left, to the right of the previous piece.

6.1. Place a light gray 1x2 brick, horizontally, on the left two studs of the front row of the forum.

6.2. Place a light gray 1x4 brick with four studs on one side, horizontally with the side studs at the front, to the right of the previous piece.

6.3. Place a light gray 1x2 brick, horizontally, to the right of the previous piece.

7. Place a tan 1x6 plate, horizontally with the studs facing the front, centered horizontally on the side studs on the front of the forum.

Group 2.

8.1. Place a light gray 3x6 wedge plate in front of you, horizontally with the longest row at the back. The longest columns should be on the left.

8.2. Place a tan 1x1 slope tile, with the tall side at the front, on the back left corner of the previous piece.

8.3. Place a light gray 1x2 slope brick, horizontally with the slope on the right, on the right two studs of the front row of the 3x6 wedge plate from step 8.1.

8.4. There is a single stud overhanging the right side of the forum. Place the leftmost stud of the 3x6 wedge plate from step 8.1 under the overhanging stud. The slope brick from the previous step will be to the right of the 1x10 brick from step 4.2.

9. Find the 1x2 slope brick on top of the 1x10 brick. Place a light gray 1x4 plate, horizontally, to the right of this piece.

Group 3.

10.1. Place a light gray 2x8 plate, horizontally, in front of you.

10.2. Place a light gray 1x2 slope brick, horizontally with the slope on the left, on the leftmost two studs on the front row of the previous piece.

10.3. Place a green 1x2 inverted arch brick, vertically with the slope at the back, to the right of the previous piece.

10.4. Place a tan 1x2 brick with two studs on one side, horizontally with the side studs at the front, on the front row to the right of the previous piece.

10.5. Place a light gray 1x2 slope brick, horizontally with the slope on the right, to the right of the previous piece.

10.6. Place the right stud of a green 1x4 plate, horizontally, on the previous piece.

10.7. Place a tan 1x2 plate, horizontally with the studs facing the front, on the side studs on the front of this assembly.

10.8. Place the back row of the assembly we just made, centered horizontally, on the front row of the forum.

11. Stack three dark gray 2x2 ribbed round bricks. Place the front row of the stack we just made on the right two studs on the second row from the front of the forum. There should be two free studs to the right of the back row of the stack.

Group 4.

12. Stack two light gray 2x2 ribbed round bricks. Find the 2x2 corner plate from step 5.1. Place the stack on this plate.

13. Place a dark gray 1x1 slope tile, with the tall side on the left, to the right of the back row of the stack of dark gray 2x2 ribbed round bricks from step 11.

Main Build 2: Small Forum

1.1. Now we'll build a smaller forum! Set the large forum aside for now. Place a light gray 3x6 double wedge plate, horizontally with the longest row at the back, in front of you.

1.2. Place the left stud of a tan 1x3 inverted arch brick, horizontally with the slope on the right, on the back right corner of the previous piece.

2. Place a light green 1x1 tile to the left of the previous piece.

3. Find the two 3x6 wedge plates in this group. Set these horizontally in front of you with the longest rows at the back. One will have the longest columns on the left. Place the left three columns of this piece, horizontally with the longest row at the back, under the right three columns of the 3x6 double wedge plate. Place the other 3x6 wedge plate symmetrically to the left of the first.

4.1. Place a light gray 1x4 plate horizontally in front of you.

4.2. Place a dark gray 1x1 round plate on the rightmost stud of the previous piece.

4.3. Place the back row of a light gray 2x2 corner plate, with the corner at the back left so the studs form a braille letter F, on the left two studs of the 1x4 plate.

4.4. Place the front stud of the previous piece on the third stud from the left on the back row of the small forum.

5. Place a tan 1x1 slope tile, with the tall side on the right, on the second stud from the left on the back row of the small forum.

6.1. Find the 1x1 tile on the fifth column from the right of the forum. Place a light gray 1x2 brick, vertically, in front of this tile.

6.2. Place the front stud of a light gray 1x2 slope brick, vertically with the slope at the back, to the left of the back stud of the previous piece.

Group 5.

7.1. Place a dark gray 1x1 round plate to the left of the front stud of the previous piece.

7.2. Place the front stud of a tan 1x3 inverted arch brick, vertically with the slope at the back, on the previous piece.

8.1. Place a tan 1x2 brick with studs on one side, horizontally with the side studs at the front, centered horizontally on the front row of the small forum.

8.2. Place the front stud of a light gray 1x2 brick, vertically, to the left of the previous piece.

9.1. Place the left stud of a tan 1x2 plate, horizontally, on the back stud of the previous piece.

9.2. Skip one stud to the right and place a dark gray 1x1 slope tile, with the tall side at the front.

10. Place a tan 1x2 plate, horizontally with the studs facing the front, on the side studs on the front side of the small forum.

Group 6.

11.1. Place a light gray 2x4 plate, horizontally, in front of you.

11.2. Place a light gray 1x2 slope brick, horizontally with the slope on the left, on the left two studs on the front row of the previous piece. Repeat symmetrically on the right.

11.3. Place a green 1x2 plate, horizontally, on the previous two pieces.

11.4. Place the back row of the assembly we just made, centered horizontally, on the front row of the small forum.

12. Place a green 1x2 inverted arch brick, vertically with the slope at the back, behind the left stud of the 1x2 plate on top of the assembly we just placed.

13. Stack two dark gray 2x2 ribbed round bricks and place the stack on the third and fourth columns from the left of the small forum.

14. Now, place the large forum, horizontally with the longest row at the back, to the right of the small forum. They don't connect to each other.

15.1. Find a light gray 4L antenna. This looks like a 1x1 round plate with a 4L bar on top. Place this, standing upright, in front of you.

15.2. Clip a red flag, with the clips on the right, onto the previous piece so the top sides are even.

15.3. Place the flag, centered horizontally and vertically, on a tan 4x4 round brick. The round plate of the antenna will be placed between the four center studs of the 4x4 round brick.

15.4. Place a tan 2x2 round plate with a rounded bottom, centered vertically and horizontally, under the previous piece.

15.5. Repeat steps 15.1-15.4 two times. These flag builds are free-standing and do not connect to the rest of the forum.

Congratulations! Now this build is complete!