

## 92176 NASA Apollo Saturn V

Set adapted by Daniel Werner and tested by Matthew Shifrin

Note: This set is directed at advanced builders. It will be very difficult to build, since some pieces (such as 1x4 quarter-cylinders, and 2x1 brackets) are only mounted by a single stud. To avoid pieces breaking, attach these pieces as lightly to your build as possible, applying just enough pressure for parts to connect, but not pressing too hard. You will be tempted to press hard to make sure everything's connected, but this will cause parts to fall off. You will often need to press on parts more lightly than you think. If required, use a sighted person throughout the build to help you mount these pieces. You might need sighted help in steps 6, 7, 8, 29, 30, 142, 143, 168, and 171.

Description by LEGO®:

You were born to explore the universe! Build and inspire the next generation of astronauts with LEGO® Space rockets and vehicles – Let's Go!

Display and role-play with this majestic meter-high LEGO brick model of the NASA Apollo Saturn V. Packed with authentic details, it features 3 removable rocket stages, including the S-IVB third stage with the lunar lander and lunar orbiter. The set also includes 3 stands to display the model horizontally, 3 new-for-June-2017 astronaut microfigures for role-play recreations of the Moon landings, plus a booklet about the manned Apollo missions and the fan designers of this educational and inspirational LEGO Ideas set.

Features a meter-high (approximately 1:110 scale) model of the NASA Apollo Saturn V with a removable S-IC first rocket stage with main rocket engine details, removable S-II second rocket stage with rocket engine details, removable S-IVB third rocket stage with the Apollo spacecraft and rescue rocket at top of the whole spacecraft, plus 3 stands to display the model horizontally.

The Apollo spacecraft features the lunar lander and the lunar orbiter. Also includes 3 new-for-June-2017 astronaut microfigures. Great for display and role-playing the manned Apollo Moon missions. Includes a booklet about the manned Apollo Moon missions and the fan designers of this set. Measures over 39" (100cm) high and 6" (17cm) in diameter.

Intro text by LEGO®:

### The Apollo Program

On May 25, 1961, President John F. Kennedy challenged his country to safely send and return an American to the Moon before the end of the decade. NASA met that challenge with the Apollo program. It would be the first time human beings left Earth orbit and visited another world. The Apollo program played a crucial role in space exploration and made it possible to explore more distant worlds further in the future.

The Apollo program consisted of 11 spaceflights. The first two missions, Apollo 7 and 9, were Earth-orbiting missions used to test the Command and Lunar Modules. The next two, Apollo 8 and 10, tested various components while orbiting the Moon, also taking photographs of the lunar surface. While Apollo 13 did not land on the moon due to a malfunction, a total of six other missions did and returned with a wealth of scientific data and almost 881.8 lbs (400 kilos) of lunar samples.

The first manned mission to the moon was Apollo 8. It circled around the moon on Christmas Eve in 1968. Just over six months later on July 20, 1969, the world witnessed one of the most astounding technological achievements of the 20th century when a NASA astronaut on Apollo 11 became the first human to set foot on the Moon.

The Apollo 11 mission lasted 195 hours, 18 minutes and 35 seconds - about 36 minutes longer than planned. After lunar orbit insertion, the Command Module (CM) and Lunar Module (LM) separated. While one crewmember remained in the CM, which orbited the Moon, the other two astronauts made the historic journey to the lunar surface in the LM. After exploring the surface and setting up experiments for 21 hours and 36 minutes, the astronauts returned safely to the CM and began the journey back to Earth.

## Saturn V

Saturn V was the most powerful rocket that had ever flown successfully and was used in the Apollo program in the 1960s and 1970s. The rocket was 363 ft. (111 m) tall and weighed 6.2 million lbs (2.8 million kilos) when fully fueled for liftoff. The Saturn V used for the later Apollo missions had three stages. Each stage would burn its engines until it was out of fuel and would then separate from the rocket. The engines on the next stage would fire, and the rocket would continue into space. The first stage had the most powerful engines, since it had the challenging task of lifting the fully fueled rocket off the ground. The first stage lifted the rocket to an altitude of about 42 miles (68 km). The second stage carried it from there almost into orbit. The third stage placed the Apollo spacecraft into Earth orbit and pushed it toward the moon.

## Transposition, docking, and extraction

Shortly after the trans-lunar injection maneuver that placed the Apollo spacecraft on its trajectory towards the Moon, the transposition and docking maneuver would be performed. This involved an astronaut separating the Apollo Command/Service Module (CSM) spacecraft from the adapter which fastened it to its launch vehicle upper stage, turning it around, and docking its nose to the Apollo Lunar Module (LM), then pulling the combined spacecraft away from the upper stage.

## Fan designers

With a shared passion for both space exploration and LEGO® building, Valérie Roche (aka Whatsuptoday) and Felix Stiessen (aka Saabfan) worked closely together to create their impressive Apollo 11 Mission model for LEGO Ideas.

“The most challenging part was the Lunar Landing module. I (Felix) tried building it as small as possible (I wanted it to fit in the half-cone parts as seen in the model) while still looking good and accurate. After that, we began building the rocket around it. We also tried to make the rocket as sound as possible, so Valérie included pillars and beams inside for structural integrity.”

“It actually took quite a long time to finish the whole model. There were often times when one of us just abandoned the project for a few weeks and came back to it later; however, thanks to the fact that it is a collaborative project, it was always the case that one of us continued making progress on the project and re-motivated the other. All in all, we would say it took us about a year to complete.”

“We were surprised (and happy, of course) when we learned our model would be the latest one in the LEGO Ideas series. What we like about the LEGO Ideas platform is the feedback and support you get from the community. It’s great to reply to comments, read suggestions and improve your model in the updates. Of course, the chance of designing your own LEGO set is also really cool!”

## LEGO® designers

Michael Psiaki, Carl Thomas Merriam and Austin William Carlson are all full-time LEGO® designers and avid space enthusiasts, so this was a project they very much wanted to be a part of. As Michael explains: “We were actually not asked. I was so excited when I heard that the project was potentially going to happen, and told Carl about it because I knew he was also a space fanatic. We decided it would be really cool to work together since it is such a big model, so we approached the Ideas team about helping to develop the product.”

“We were amazed by how big the actual model was and how it was able to separate into all of the different stages and components. This was very difficult to implement in our final design, since we needed to make sure that the rocket was strong enough when connected together, but also easy to separate.”

## Box description:

The front of the box shows the NASA Apollo Saturn V rocket flying in low earth orbit, flames coming out of the engines of the first stage. In the background you can see a part of the earth covered by clouds, a waxing gibbous moon, and a starry sky. There is a small inset image of the lunar lander on the moon's surface with two astronaut microfigures and the American flag standing next to it. There also is the Project Apollo insignia printed onto the box which is a disk circumscribed by a band showing the words "Apollo" and "NASA". At the center of the disk is a large letter "A" with the earth to its right and the moon to its left, connected by a double trajectory. The moon displays the face of the mythical god Apollo. At the bottom right, there is the LEGO Ideas batch, indicating that this is set #017. Above is a blueprint of the rocket, indicating the model's height of 100 cm (39.37 in) and diameter of 17.9 cm (7.05 in), comparing it to the size of a LEGO microfigure which is about half the height of the first stage engines. The blueprint also shows the lunar lander model's height of 5.3 cm (2.09 in) and diameter of 6.3 cm (2.48 in) as well as the lunar orbiter model's height of 3.8 cm (1.5 in) and diameter of 6.4 cm (2.52 in).

The right side of the back of the box shows the rocket divided into its individual components. From bottom to top those are: S-IC First Stage, S-II Second Stage, S-IVB Third Stage, Lunar Module, Service Module, Command Module, and Launch Escape System (LES).

The left side of the back of the box shows a pictured timeline of the LEGO model from liftoff on earth until touchdown on the moon. Starting at liftoff, the rocket is complete. The next image shows the rocket without the first stage and without the launch escape system. Next, the second stage has fallen away, too. The fourth picture shows the Apollo command and service module (CSM) separated from the third stage and lunar module, starting to perform the transposition and docking maneuver. In the next picture, this maneuver is completed with the CSM having turned around fully and having docked its nose to the lunar module. Afterwards, the CSM pulls the combined spacecraft away from the third stage. The final two pictures show the lunar module on its own as well as landed on the moon.

The timeline is enriched with real photos from the time. One photo shows the earth with the Americas in view and points out the location of the Kennedy Space Center at Cape Canaveral, Florida. Another photo shows the Apollo Saturn V on the verge of breaking the sound barrier in the background, with an American flag in focus. The next photo shows the lunar module in lunar orbit with the surface of the moon taking up most of the frame and the small earth rising in the background. There also is a photo of an astronaut's footprint on the surface of the moon. One photo shows the lunar module having landed on the moon with an American flag and other technical devices standing next to it. A photo of the moon indicates the landing sites of the different Apollo missions that landed on the moon, namely Apollo 11, 12, 14, 15, 16, and 17. The final picture shows the lunar orbiter at splashdown, after having landed back on earth in the ocean, with an orange dinghy with four men in black diving suits next to it.

The build is 1969 pieces and 337 building steps.

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

- Front: towards you.
- 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 back.
- Horizontally: going from left to right.
- Upright: pointing up towards the ceiling, and down towards the floor.
- 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.

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

For builders with low vision, or a sighted building partner may want to follow along with the printed visual instructions that come with each kit or PDF versions are always online at LEGO.com for each set: (<https://www.lego.com/en-us/service/buildinginstructions/92176>) 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:

To begin a successful build, it helps to sort the pieces into groups, bags or small containers. Have a sighted friend or family member do this in advance following the instructions below. You will see that the pieces should be sorted into groups according to the building steps in the kit. Doing this in advance makes locating the pieces easier. See below on how to sort the pieces to correspond to the steps in this set. Number the containers using letters A-Z, numbers or meaningful names. The parts will be collected into a small number of steps in the instructions. Example: Steps 1-3 means collect all the parts used in steps 1, 2 and 3, and put them in one container.

#### Large bag 1.

Group 1 contains the pieces for steps 1-5.

Group 2 contains the pieces for steps 6-10. The two dark bluish gray quarter cylinders from step 7 and 8 are in a separate subgroup.

Group 3 contains the pieces for steps 11-15. The two black 1x6 tiles from step 15 are in a separate subgroup.

Group 4 contains the pieces for steps 16-24.

Group 5 contains the pieces for steps 25-29.

Group 6 contains the pieces for steps 30-33. The two dark bluish gray quarter cylinders from step 30 are in a separate subgroup.

Group 7 contains the pieces for steps 34-37. The two dark bluish gray quarter cylinders from step 34 are in a separate subgroup.

#### Large bag 2.

Group A contains four white 2x3 curved slopes with the letter A used in step 41.

Group U contains four white 2x3 curved slopes with the letter U used in step 44.

Group S contains four white 2x3 curved slopes with the letter S used in step 44.

Group 8 (4x) contains the pieces for steps 38-49, except for the curved slopes with letters on them (see previous groups). The black pieces from steps 40, 41, 42, and 44 are in a separate subgroup. Make four identical groups, one for each of the four identical pieces that will be built from the large bag 2.

#### Large bag 3.

Group F contains four white 2x3 curved slopes with the American flag used in step 54.

Group 9 (4x) contains the pieces for steps 50-55, except for the curved slopes with the American flag on them (see group F). Make four identical groups, one for each of the four identical pieces.

Group 10 contains the pieces for steps 56-57.

Group 11 contains the pieces for steps 58-62. The four black 2x3 curved slopes from step 60 are in a separate subgroup.

#### Large bag 4.

Group 12 contains the pieces for steps 63-70.

Group 13 contains the pieces for steps 71-78.

Group 14 contains the pieces for steps 79-81.

Group 15 contains the pieces for steps 82-91.

Group 16 contains the pieces for steps 92-99.

Group 17 contains the pieces for steps 100-102.

#### Large bag 5.

Group 18 contains the pieces for steps 103-105.

Group 19 contains the pieces for steps 106-108.

Group 20 contains the pieces for steps 109-111.

Group 21 contains the pieces for steps 112-114.

Group 22 contains the pieces for steps 115-119. The two black 1x4 tiles from step 117 are in a separate subgroup.

Large bag 6.

Group 23 contains the pieces for steps 120-123.

Group 24 contains the pieces for steps 124-125.

Group 25 contains the pieces for steps 126-128.

Group 26 contains the pieces for steps 129-133. The black pieces from steps 129, 131, and 132 are in a separate subgroup.

Group 27 contains the pieces for steps 134-135. The eight black 2x2 curved slopes from step 135 are in a separate subgroup.

Large bag 7.

Group 28 contains the pieces for steps 136-141.

Group 29 contains the pieces for steps 142-147. The four dark bluish gray quarter cylinders from step 143 and 147 are in a separate subgroup.

Group 30 contains the pieces for steps 148-153.

Group 31 contains the pieces for steps 154-156.

Group 32 contains the pieces for steps 157-166.

Group 33 contains the pieces for steps 167-172.

Group 34 contains the pieces for steps 173-180.

Large bag 8.

Group N contains four white 1x6 tiles with red letters reading "UNITED" used in steps 198, 213, and 224.

Group T contains four white 1x6 tiles with red letters reading "STATES" used in steps 203, 214, and 225.

Group 35 contains the pieces for steps 181-193. The black 1x2 tile from step 191 is in a separate subgroup.

Group 36 contains the pieces for steps 194-200, except for the white 1x6 tile with red letters reading "UNITED" used in step 198.

Group 37 contains the pieces for steps 201-212, except for the white 1x6 tile with red letters reading "STATES" from step 203. The black pieces from steps 208 and 209 are in a separate subgroup.

Group 38 contains the pieces for steps 213-222, except for the white 1x6 tile with red letters reading "UNITED" used in step 213 and the white 1x6 tile with red letters reading "STATES" from step 214. The two white 1x2 tiles from step 219 are in a separate subgroup.

Group 39 contains the pieces for steps 223-225, except for the two white 1x6 tiles with red letters reading "UNITED" used in step 224 and the two white 1x6 tiles with red letters reading "STATES" from step 225.

Large bag 9.

Group 40 (4x) contains the pieces for steps 226-235. The black 1x2 plate from step 232 and the three black 2x3 curved slopes from step 233 are in a separate subgroup. Make four identical groups, one for each of the four identical pieces that will be built from the large bag 9.

Large bag 10.

Group 41 contains the pieces for step 236.

Group 42 contains the pieces for step 237.

Group 43 contains the pieces for steps 238-240.

Group 44 contains the pieces for steps 241-243.

Large bag 11.

Group 45 contains the pieces for steps 244-250.

Group 46 contains the pieces for steps 251-253.

Group 47 contains the pieces for steps 254-261. The two red 2x2 plates with 1x2 side studs from steps 254 and 256, and the two black 1x2 plates from step 259 are in a separate subgroup.

Group 48 contains the pieces for steps 262-264. The four black 2x2 curved slopes from step 262 are in a separate subgroup.

Group 49 contains the pieces for steps 265-271. The two black 1x3 plates from step 268 are in a separate subgroup.

Group 50 contains the pieces for steps 272-278. The two black 1x3 plates from step 275 are in a separate subgroup.

Group 51 contains the pieces for steps 279-286. The four black 2x2 curved slopes from step 279 are in a separate subgroup.

Large bag 12.

Group 52 contains the pieces for steps 287-295. The white 4x4 round plate from step 287 is in a separate subgroup.

Group 53 contains the pieces for steps 296-303.

Group 54 contains the pieces for steps 304-308.

Group 55 contains the pieces for steps 309-313.

Group 56 contains the pieces for steps 314-325.

Group 57 contains the pieces for steps 326-329.

Group 58 contains the pieces for steps 330-337. The two light bluish gray 1x6 plates from steps 330 and 333 are in a separate subgroup.

Building Instructions:

The first six large bags deal with the first stage of the rocket.

Start by using the parts from the first large bag to build the inner structure of the first stage.

Open the large bag 1.

Open group 1.

1. Place two dark bluish gray 4x8 half round plates horizontally upside down in front of each other, so that they form a circle.

2. Place a light bluish gray 4x4 round brick with pin holes upside down into the center connecting the previous two pieces.

3. Make a piece four times. Place a light bluish gray 1x2 technic brick with a side hole horizontally on top of a light bluish gray 1x2 plate with one stud. Place a dark bluish gray 1x2 bracket with 2x2 side studs extending to the bottom horizontally on top of the previous piece so that the 1x2 studs cover the top and the 2x2 studs cover the front. Repeat to make four pieces. Flip one of the pieces you just built 90 degrees to the front so that the 2 studs point to the front and the hole points to the top. Place it onto the front center of the front half round plate, so that the former 2x2 side studs, which are now at the bottom, attach to the half round plate. Repeat symmetrically on the left, back, and right.

4. Flip the piece right side up and rotate it by 45 degrees so that the side studs point diagonally. Place a white 1x1 round plate onto the single stud at the edge of the half round plate at the front. Repeat symmetrically on the left, back, and right.

5. Place a tan 1x2x2 brick onto the two studs at the edge between the front and left previous pieces. Place a white 2x2 plate with 1x2 side studs on top of the previous piece, the two side studs pointing to the front left overhanging to the back right. Repeat symmetrically on the back left, back right and front right.

Open group 2.

6. Make a piece four times. Use a red 1x2 bracket with 2x2 side studs extending to the top horizontally so that the 2x2 studs point to the front. Place a light bluish gray 1x2 plate with one stud on top of the previous piece. Place a light bluish gray 1x2x2 brick with 2x2 side studs horizontally, side studs to the front, under! the red bracket. Repeat to make four pieces. Place one of the pieces you just built horizontally, side studs to the front, centered on top of the white 1x1 round plate in the front. Repeat symmetrically on the left, back, and right.

7. Place a white quarter cylinder in the back connecting two 2x2 plates with 1x2 side studs as well as the 1x2 plate with one stud in the back. Repeat symmetrically on the left with a dark bluish gray quarter cylinder from a separate subgroup of group 2.

8. Repeat step 7 with a white quarter cylinder in the front and with a dark bluish gray quarter cylinder from a separate subgroup of group 2 in the right to complete the full cylinder.

9. Make a piece. Locate a light bluish gray 2x6 plate and orient it horizontally. Place a white 2x2 plate with 1x2 side studs, side studs to the left, with its right column under! the leftmost column of the previous piece. Repeat symmetrically on the right. The top side of the combined piece should have an area of 2x8 studs. Place the piece you just built diagonally, side studs to the front left and back right, on top of the cylinder, connecting the front left with the back right (there should be two studs in the front left and two studs in the back right). Similarly to the previous piece but missing the connecting 2x6 plate, place two more white 2x2 plates with 1x2 side studs at the front right and back left of the cylinder, the side studs pointing to the outside.

10. Make a piece four times. Locate a red 1x2 bracket with 2x2 side studs extending to the top and place a light bluish gray 1x2 plate with one stud on top. Repeat to make four pieces. Place the 4 pieces you just built centered onto the 4 free single studs of the quarter cylinders in the front, left, back, and right, the 2x2 side studs pointing to the outside.

Open group 3.

11. Turn the piece so that the 2x6 plate from step 9 is oriented vertically from the front to the back. Locate two tan 4x8 half round plates and place them on top, to the front and back forming a circle and closing the cylinder.

12. Locate a black 4x4 cone with 2x2 studs on top and place it centered onto the previous piece. Place a reddish brown 2x2 plate on top of the previous piece.

13. On the front left side of the assembled piece, locate the red 1x2 bracket with 2x2 side studs extending to the top from step 6. The piece in question covers a small fraction of the bottom part of the front left quarter cylinder (it is the middle one of the three pieces with 2x2 side studs at the front left side). Place a blue 1x2 plate horizontally onto the lower two side studs of said piece. Repeat symmetrically on the back right.

14. Make a piece two times. Locate a light bluish gray 2x10 plate and orient it horizontally. Place a blue 1x8 plate horizontally onto the back row of the previous piece, flush at the left, leaving two free studs to the right. Repeat to make two pieces. Place one of the pieces you just built rotated upright, with the former left side being at the bottom and the former right side being at the top, above the 1x2 plate in the front left from the previous step connecting to the upper 1x2 bracket with 2x2 side studs, overhanging by 1 row to the top. Repeat symmetrically on the back right.



15. Make a piece two times. Locate a light bluish gray 2x10 plate and orient it horizontally. Place a tan 2x8 plate horizontally onto the previous piece, flush at the left, leaving 2x2 free studs to the right. Place a white 1x6 tile onto the back row of the previous piece, flush at the left. Place a black 1x6 tile from a separate subgroup of group 3 in front of the previous piece. Repeat to make two pieces. Place one of the pieces you just built rotated upright, with the former left side being at the bottom and the former right side being at the top, in the front right connecting the lower 1x2 bracket with 2x2 side studs to the upper 1x2 bracket with 2x2 side studs, this time not overhanging to the top, so flush at the top. Repeat symmetrically on the back left.

Set the current piece aside. Steps 16-22 describe a separate piece.

Open group 4.

16. Locate two red 1x2 brackets with 2x2 side studs extending to the top and place them side by side with the side studs pointing to the left and right.

17. Connect the two brackets by placing a tan 2x2 brick in the center.

18. Place a dark bluish gray 1x2 bracket with 2x2 side studs extending to the bottom horizontally, side studs to the front, onto the front row of the previous piece. Repeat symmetrically on the back.

19. Locate eight light bluish gray 1x2 plates with one stud on top and place them horizontally from the sides onto the piece you are building to cover all 16 side studs.

20. Locate eight yellow 1x2 plates with a clip on top. Place one of them horizontally, clip to the right, from the front with its left column onto the single stud of the upper one of the previous pieces, overhanging by half a stud to the right. Repeat to the bottom, but with the clip to the left, and with its right column onto the single stud, overhanging by half a stud to the left. The two studs of the last two pieces you placed should be vertically aligned, one above the other. Repeat symmetrically on the left, back, and right.

21. Place a light bluish gray 1x2 plate with one stud vertically from the front connecting the two previous pieces in the front, so in between the two front clips. Repeat symmetrically on the left, back and right.

22. Place a tan 2x2 brick on top.

23. Place the piece you built in steps 16-22 centered on top of the piece you set aside, so onto the reddish brown 2x2 plate.

24. Place a pearl gold telescope from the front onto the light bluish gray 1x2 plate with one stud from step 21 in the front using the thicker end of the telescope. Repeat symmetrically on the left, back and right.

Set the current piece aside. Steps 25-36 describe a separate piece, the upper part of the inner structure of the first stage.

Open group 5.

25. Locate a tan 6x6 plate and place a pearl gold 1x1 round plate with a hollow stud into each of the corners.

26. Place a blue 1x2 plate horizontally in the center of the front row. Place a green 1x2 slope tile behind it in the center of the second row, slope to the back. Repeat symmetrically on the left, back, and right.

27. Locate a white 2x2 plate with 1x2 side studs, side studs to the front and place its back row with the lower studs on the front blue 1x2 plate from the previous step, overhanging to the front. Repeat symmetrically on the left, back, and right.

28. Locate a light bluish gray 3x6 trapezoid plate and place the side with two studs on top of the back row (with the two lower studs) of the previous piece in the front, extending to the back. The leftmost stud should rest on the front right stud of the left previous piece and vice versa on the right. Repeat symmetrically on the back.

29. Make a piece four times. Place a light bluish gray 1x2 plate with one stud onto the two top studs of a red 1x2 bracket with 2x2 side studs extending to the top. Repeat to make four pieces. Place one of the pieces you just built in the front left corner centered on top of the pearl gold 1x1 round plate with a hollow stud, with the 2x2 side studs pointing to the front left. Repeat symmetrically on the back left, back right, and front right.

Open group 6.

30. Place a white quarter cylinder in the front left connecting the two 2x2 plates with 1x2 side studs in the left and front as well as the 1x2 plate with one stud in the front left. Repeat symmetrically on the back right. Repeat symmetrically on the back left and front right with a dark bluish gray quarter cylinder from a separate subgroup of group 6. The white and dark bluish gray quarter cylinders should alternate.

31. Place a blue 1x2 plate vertically at the left, connecting the two left quarter cylinders on top. Repeat symmetrically on the right. Place a tan 2x8 plate vertically from the front to the back, horizontally centered, connecting all four quarter cylinders on top.

32. Place a tan 2x8 plate horizontally from the left to the right on top of the two blue 1x2 plates and the center of the tan 2x8 plate from the previous step. Place a blue 1x2 plate horizontally onto the front row of the vertical tan 2x8 plate from the previous step. Repeat symmetrically on the back.

33. Make a piece four times. Place a light bluish gray 1x2 plate with one stud onto the two top studs of a red 1x2 bracket with 2x2 side studs extending to the top. Repeat to make four pieces. Place one of the pieces you just built in the front left corner centered on top of the one remaining stud of the front left quarter cylinder with the side studs pointing to the front left. Repeat symmetrically on the back left, back right, and front right. The 2x2 side studs should be vertically in line with the lower ones from step 29.

Open group 7.

34. Place a white quarter cylinder in the front left connecting the horizontal tan 2x8 plate in the left and the blue 1x2 plate in the front as well as the 1x2 plate with one stud in the front left. Repeat symmetrically on the back right. Repeat symmetrically on the back left and front right with a dark bluish gray quarter cylinder from a separate subgroup of group 7. The white and dark bluish gray quarter cylinders should alternate. Also, the white quarter cylinders should be vertically above the ones from step 30 and vice versa.

35. This step is equal to step 31. Place a blue 1x2 plate vertically at the left, connecting the two left quarter cylinders on top. Repeat symmetrically on the right. Place a tan 2x8 plate vertically from the front to the back, horizontally centered, connecting all four quarter cylinders on top.

36. Make a piece. Locate a green 4x4 plate. Put a tan 1x2 brick with two side studs horizontally, side studs to the front, onto the center of the front row. Repeat symmetrically on the left, back, and right. Place a red 4x4 round brick centered on top so that the studs on top are vertically and horizontally aligned. Place the piece you just built centered on top of the tan 2x8 plate from the previous step. There should be two free rows to the front and two to the back.

37. In this step, you'll connect the lower and upper inner structures of the first stage. The piece you set aside should be oriented so that the tiled upright plates point to the front left and to the back right. The piece you just built should be oriented so that the blue 1x2 plates connecting two quarter cylinders each are on the left and on the right. Put the piece you just built centered on top of the piece you set aside.

You have successfully built the inner structure of the first stage and finished the first large bag.

Continue by using the parts from the second large bag to build the exterior of the lower part of the first stage, prominently displaying the letters U, S, and A read from top to bottom in red on each side.

Open the large bag 2 which contains the groups U, S, and A as well as four identical group 8s.

Set the current piece aside. Steps 38-48 need to be repeated four times! Each piece is a quarter of the lower first stage's exterior hull.

Open group 8.

38. Locate two dark bluish gray 2x14 plates, orient them horizontally and put one behind the other.

39. Find two red 1x2 technic bricks with a cross-shaped axle hole. Put one vertically centered onto the very left column of the two previous pieces, connecting them, leaving one free row to the front and one to the back. Repeat to the right. Put a tan 2x2 brick to the right. Put a light bluish gray 2x6 plate horizontally to the right. There should be four uncovered columns to the right.

40. Locate a white 1x2 hinge brick with the hinge protruding at the short side. Place it horizontally onto the second and third leftmost studs of the front row, to the front of the pieces from the previous step, hinge to the left covering the leftmost stud. Place a white 1x1 brick to the right. Repeat symmetrically on the back with the two black parts from a separate subgroup of group 8.

41. Find three black 2x3 curved slopes from a separate subgroup of group 8. Put one to the right of the previous piece, slope to the back, covering the two back rows, protruding one row to the back. Repeat to the right, twice. Repeat symmetrically on the front, starting left with two white 2x3 curved slopes (not! from a separate subgroup) and then using a single white 2x3 curved slope with the letter A from the separate group A to the right.

42. Locate a white 2x6 wedge and orient it horizontally so the slopes are to the right and to the front. Put this piece on top of the pieces from step 39 and 40, leaving free the two leftmost columns and putting it onto the front two rows. The piece should cover the front row of the tan 2x2 brick, the right stud of the white 1x2 hinge brick in the front and the white 1x1 brick. It also partly covers but doesn't connect to the front left two slopes. Repeat symmetrically on the back with the black wedge from a separate subgroup of group 8.

Set the current piece aside.

43. Locate a dark bluish gray 2x14 plate and orient it horizontally.

44. Find two black 2x3 curved slopes from a separate subgroup of group 8. Put one onto the very left of the previous piece, slope to the back, covering the back row, protruding two rows to the back. Repeat to the right. Repeat symmetrically on the front starting at the left with a white 2x3 curved slope with the letter S from the separate group S, continuing with another white 2x3 curved slope with the letter U from the separate group U to the right. Put a light bluish gray 2x6 plate horizontally to the right and to the back, onto the dark bluish gray plate. There should be four uncovered columns to the right.

45. Place six white 1x2 grille tiles horizontally onto the previous piece.

46. Locate a light bluish gray 4x6 plate and orient it horizontally. Put it under! the 4 rightmost columns of the piece you are currently building. The front and back row as well as the two rightmost columns of the 4x6 plate should remain free, so 8 studs should be covered.

47. Locate a white 1x3 curved slope, so only half the width of the slopes before. Put it to the right of the grille pieces from step 45, slope to the front, covering the front two rows, protruding one row to the front. Locate a white 2x3 curved slope and put it the same way to the right. Repeat symmetrically to the back.

48. Connect the two pieces you built by putting the latter piece onto the rightmost 4 columns of the former piece so that the curved slopes are right next to each other. The letters in the front row now read USA read from right to left (which will be top to bottom later).

Make sure that you repeated steps 38-48 four times. Next you will connect these four exterior hull pieces to the inner first stage you built before.

49. Orient one of the hull pieces you just built vertically upright with the former left side (the wedges) at the bottom and the former top pointing to the outside. Like this, connect it to the inner first stage by putting it in one of the four vertical gaps between the upright tiles and plates (where at about mid-height, the telescopes are sticking out from the inside). The center of the bottommost row of the hull piece should connect to the two side studs at the very bottom of the vertical gap. It should also connect to the additional side studs further up (all in all, it should connect to 4-times 1x2 side studs) as well as the telescope. Repeat three times to cover all sides of the first stage.

You have successfully built the exterior of the lower part of the first stage, prominently displaying the letters U, S, and A read from top to bottom in red on each side and finished the second large bag.

Continue by using the parts from the third large bag to build the exterior of the upper part of the first stage, displaying an American flag on each side.

Open the large bag 3 which contains the group F as well as four identical group 9s, group 10, and 11.

Set the current piece aside. Steps 50-54 need to be repeated four times! Each piece is a quarter of the exterior hull of the upper part of the first stage.

Open group 9.

50. Locate a dark bluish gray 4x10 plate and orient it horizontally. Place a tan 2x8 plate horizontally, centered vertically and horizontally, on top.

51. Place a blue 2x4 plate horizontally to the left of the previous piece, protruding three rows to the left.

52. Place a tan 1x4 plate vertically under! the previous piece as far to the right as possible, so that the blue 2x4 plate only protrudes two rows to the left now.

53. Locate two white 1x3 curved slopes. Skip one column from the right and place one of them, slope to the front, covering the front two rows, protruding one row to the front. Repeat symmetrically on the back.

54. Locate nine white 2x3 curved slopes. Place one of them to the left of the previous piece, slope to the back, covering the back two rows, protruding one row to the back. Repeat to the left four times. Repeat symmetrically on the front, with the second slope from the left being a white 2x3 curved slope with an American flag from the separate group F. In the end there should be an uncovered two stud column in the left and an uncovered four stud column in the right.

Make sure that you repeated steps 50-54 four times. Next you will connect these four exterior hull pieces to the inner first stage you built before.

55. Orient one of the hull pieces you just built vertically upright with the former right side pointing up and the former top pointing to the outside. Like this, connect it to the inner first stage by putting it above one of the hull pieces you connected before. The bottom two rows of the piece you just built should be put onto the top two rows of the previously connected hull piece so that the center two stud-wide plates of the two pieces touch each other. Repeat three times to cover all sides.

Open group 10.

56. Make a piece four times. Locate a red 1x2 bracket with 2x2 side studs extending to the top, side studs to the back. Place a light bluish gray 1x2 plate with one stud on top of the previous piece. Put a white 1x1 round brick on top of the previous piece. Locate another red 1x2 bracket with 2x2 side studs extending to the top, side studs to the back and place it centered on top of the previous piece, oriented the same way as the earlier piece. Place a light bluish gray 1x2 plate with one stud on top of the previous piece. Place a white 1x1 round plate with a solid stud on top of the previous piece. Repeat to make four pieces. Orient the first stage you built before in a way that one of the four vertical gaps between the recently attached side panels is at the front. Orient one of the pieces you just built so that the side studs point to the front and place it centered onto the one stud of the quarter cylinder on top of the front vertical gap. Repeat symmetrically on the left, back, and right.

57. Make a piece four times. Locate a tan 2x2 brick. Locate a dark bluish gray 2x3 bracket, like a step, with 1x2 studs at the lower step and 2x2 studs at the upper step. Orient the lower step to the front and put it on top of the previous piece. Locate a light bluish gray 1x2 bracket with 1x2 side studs extending to the bottom and put it onto the lower step of the previous piece, side studs pointing to the front. Repeat to make four pieces.

Rotate the first stage so that one of the recently attached side panels points to the front. Orient one of the pieces you just built upright, so that the 1x2 side studs of the previous piece point to the top and the 2x2 studs of the upper step point to the front. Place the piece above the front side panel of the first stage by attaching it from the front. The middle row of the oriented piece should attach to 1x2 side studs at the core of the first stage and the bottom row should attach to the middle 2 side studs of the 1x4 side studs above the front side panel. Repeat symmetrically on the left, back, and right.

Open group 11.

58. Locate two tan 4x8 half round plates and place them centered on top, one at the front and one at the back, forming a circle and closing the cylinder.

59. Locate eight white 2x3 curved slopes and use them to close the two row high gaps in the upper side panels on each side (slightly above mid-height of the first stage).

60. Locate a white 2x3 curved slope and place it horizontally upright, slide to the right, above the right side of the front side panel, so onto the right column of the upper step of the dark bluish gray 2x3 bracket from step 57, flush with and in the same way the other slopes of the side panel are set. Repeat symmetrically to the left of the previous piece with a black 2x3 curved slope from a separate subgroup of group 11. Repeat symmetrically on the left, back, and right.

61. Locate a pearl gold 1x1 round plate with a hollow stud and place it on top of the first stage at the front left corner, so centered behind a piece with 2x2 side studs. Repeat symmetrically on the back left, back right, and front right.

62. Locate a light bluish gray 2x2 / 2x2 bracket without side studs and orient it so that the 2x2 studs on top point to the front and the other half of the bracket is at the bottom. Place it to the right and front of the front left 1x1 round plate, covering three studs, one in the front row and two in the second row. Repeat to the right. Repeat symmetrically on the left, back, and right. Afterwards, in the middle of all the bracket pieces a 4x4 square of studs should remain uncovered.

You have successfully built the exterior of the upper part of the first stage, displaying an American flag on each side and finished the third large bag.

Continue by using the parts from the fourth large bag to build more of the exterior of the first stage, closing the long vertical gaps, among other things.

Open the large bag 4.  
Open group 12.

63. Rotate the rocket so that one of the large vertical gaps in between the smooth hull pieces points to the front. Use a red 1x2 bracket with 2x2 side studs extending to the top horizontally so that the 2x2 studs point to the front and place it centered on top of the pearl gold 1x1 round plate with a hollow stud in the front. The bracket should be aligned with the two similar brackets underneath. Repeat symmetrically on the left, back, and right.

Set the current piece aside. Steps 64-69 need to be repeated two times!

64. Locate a tan 2x8 plate and orient it horizontally, upside down. Put a red 1x2 plate with a clip on one end horizontally upside down, clip to the right, onto the rightmost two studs of the front row. Repeat to the back.

65. Place a dark bluish gray 2x4 plate horizontally upside down to the left of the previous two pieces. Place a tan 2x8 plate horizontally upside down to the left of the previous piece. It should be overhanging to the left by 6 columns.

66. Place a light bluish gray 2x10 plate horizontally upside down from the bottom!, immediately left of the 2x8 plate at the right from step 64, overhanging to the left by 4 columns. Place a blue 1x2 plate vertically upside down from the top to the left of the 2x8 plate at the left from step 65.

67. Place a tan 2x8 plate horizontally upside down to the left of the previous piece. It should be overhanging to the left by 5 columns. Turn the whole piece right-side-up. Place a yellow 2x3 plate horizontally skipping two columns from the left, so that it is left of the light bluish gray 2x10 plate from step 66.

68. Place a black 1x8 tile horizontally in the front row overhanging one column at the right, covering the front clip. Place a white 1x6 tile horizontally to the back, also overhanging one column at the right, covering the back clip. Place a white 1x2 tile horizontally to the left of the previous piece.

69. Place a white 2x4 tile horizontally to the left of the previous two pieces. Repeat to the left two! times. To the left should be two uncovered steps, each 2x2 in size.

Make sure that you repeated steps 64-69 two times. Next you will connect these two exterior hull pieces to the first stage you built before.

70. The rocket has four large vertical gaps in between the smooth hull pieces. Two opposing gaps have tiles at the bottom whereas the other two opposing gaps have plates. Make sure you identify the two types of gaps and rotate the rocket so that one of the gaps with tiles at the bottom points to the front. Locate the large horizontal gap in the rocket's hull separating the upper smooth hull from the lower one. Rotate one of the pieces you just built upright so that its former right side (with the clips) is at the top and the left side is at the bottom. Place it to close the vertical gap in the upper hull so that its bottom is flush with the bottom of the upper hull. At the top the piece should overhang by two rows above the top bracket piece (one stud and the clip of the red 1x2 plates with a clip). Make sure that the hull piece attaches to all side studs it is covering and is flush with the adjacent hull pieces (the side studs rotate a bit, so you might need to adjust them). Repeat symmetrically on the back.

Set the current piece aside. Steps 71-77 need to be repeated two times!

Open group 13.

71. Locate a red 1x2 plate with a clip on one end and orient it horizontally, clip to the right. Place a white 1x8 plate horizontally on top of the previous piece, covering its two studs and overhanging to the left.

72. Place a dark bluish gray 2x4 plate horizontally centered under! the previous piece protruding to the front so that its back row is covered. The previous piece should now be overhanging to the left by two studs.

73. Place a tan 2x8 plate horizontally to the left of the previous piece. This piece's rightmost two studs of the back row should be underneath the left two studs of the white 1x8 plate. Place a black 1x1 tile with a clip on top, clip vertical, onto the second stud from the right in the front row. The arms of the clip should be at the front and back.

74. Place a blue 1x2 plate horizontally onto the back row skipping four columns from the left, so to the left of the white 1x8 plate from step 71. Place a white 1x8 plate horizontally to the left of the previous piece.

75. Place a light bluish gray 2x10 plate horizontally under the previous piece so that the rightmost four studs of its back row are covered by the leftmost four studs of the previous piece. Place a green 1x3 plate horizontally onto the back row skipping three columns from the left, so to the left of the white 1x8 plate from the previous step.

76. Locate two white 1x2 plates with a pin hole on top. Orient them vertically with the pin hole to the front and connect them using a black technic pin. Place them to the left and front of the previous piece. Left of it there should be one uncovered column.

77. Place a white 1x6 tile horizontally onto the back row skipping one column from the left. Repeat to the right three times. The rightmost piece should overhang to the right by one column, covering the clip.

Make sure that you repeated steps 71-77 two times. Next you will connect these two exterior hull pieces to the first stage you built before.

78. Rotate the rocket so that one of the two remaining large vertical gaps points to the front. Locate the large horizontal gap in the rocket's hull separating the upper smooth hull from the lower one. Rotate one of the pieces you just built upright so that its former right side (with the clip) is at the top and the left side at the bottom. Place it to close the vertical gap in the upper hull so that its bottom is one row further down than the bottom of the upper hull. At the top, the piece should overhang by two rows above the top bracket piece (one stud and the clip of the red 1x2 plate with a clip). Make sure that the hull piece attaches to all side studs it is covering and is flush with the adjacent hull pieces (the side studs rotate a bit, so you might need to adjust them). Repeat symmetrically on the back.

Open group 14.

79. Make a piece two times. Orient a red 1x2 plate with a clip on one end horizontally, clip to the right. Place a green 1x3 plate horizontally on top of the previous piece, overhanging one column to the left. Place a black 1x4 tile horizontally on top of the previous piece, overhanging one column to the right, covering the clip. Repeat to make two pieces. Rotate one of the pieces you just built upright so that its former right side (with the clip) is at the top and the left side is at the bottom. Place it right next to the clip at the top of the large vertical piece you attached in the last step so that the two clips are side by side. Its bottom should touch the black 1x1 plate with a clip on top. Repeat symmetrically on the back.

Set the current piece aside. Steps 80-85 need to be repeated two times!

80. Locate a black 1x1 cone with a bar, bar to the bottom and place a black 1x1 round brick on top.

81. Place a black 1x1 round plate on top of the previous piece. Repeat one more time.

Open group 15.

82. Place a white 1x1 round brick on top of the previous piece. Repeat four more times.

83. Place a white 1x1 round plate on top of the previous piece.

84. Place a white 1x1 round brick on top of the previous piece. Repeat five more times.

85. Place a white 1x1 round tile with a bar, bar to the top, on top of the previous piece.

Make sure that you repeated steps 80-85 two times. Next you will attach these two pieces to the rocket.

86. Locate the gap under the piece you last attached to the front of the hull. At the top of this gap should be a horizontal clip, at the bottom there is a small upright hole from a technic connector. Take one of the pieces you just built and turn it upside down so that the cone is at the top. Insert the bar of the white 1x1 round tile with a bar into the technic connector at the bottom of the gap and clip the bar of the cone into the horizontal clip at the top of the gap. Repeat symmetrically on the back.

Set the current piece aside. Steps 87-90 need to be repeated two times!

87. Stack four white 1x1 round bricks on top of each other.

88. Place a white 1x1 round plate on top of the previous piece. Repeat one more time.

89. Place a white 1x1 round tile with a bar, bar to the top, on top of the previous piece.

90. Make a piece. Locate a black 1x2 plate with a pin hole on top, orient it horizontally, pin hole to the right and tip it over to the front so that the pin hole points to the bottom and top. Locate a blue 1/2 technic pin and insert its long end from the top into the pin hole of the previous piece. Place the piece you just built under the piece you built before so that the 1x1 round brick is placed on top of the short side of the blue 1/2 technic pin.

Make sure that you repeated steps 87-90 two times. Next you will attach these two pieces to the rocket.

91. Place one of the pieces you just built under the piece you last attached to the front of the hull by inserting the bar of the white 1x1 round tile with a bar into the bottom of the technic connector at the bottom of the column of round bricks. Attach the bottom of the piece you built, the black 1x2 plate with a pin hole on top, to the hull as well. It should turn out to attach to the second row from the top of a vertical plate further down the rocket hull. Repeat symmetrically on the back.

Set the current piece aside. Steps 92-94 need to be repeated two times!

Open group 16.

92. Stack six black 1x1 round bricks on top of each other.

93. Place a black 1x1 round plate on top of the previous piece. Place a black 1x1 round tile with a bar, bar to the top, on top of the previous piece.

94. Make a piece. Locate a black 1x2 plate with a pin hole on top, orient it horizontally, pin hole to the right and tip it over to the front so that the pin hole points to the bottom and top. Locate a blue 1/2 technic pin and insert its long end from the top into the pin hole of the previous piece. Place the piece you just built under the piece you built before so that the 1x1 round brick is placed on top of the short side of the blue 1/2 technic pin.



Make sure that you repeated steps 92-94 two times. Next you will attach these two pieces to the rocket.

95. Place one of the pieces you just built under the piece you last attached to the front of the hull by inserting the bar of the black 1x1 round tile with a bar into the bottom of the technic connector at the bottom of the column of round bricks. Attach the bottom of the piece you built, the black 1x2 plate with a pin hole on top, to the hull as well. It should turn out to attach to the bottom row of a vertical plate further down the rocket hull. Repeat symmetrically on the back.

96. Place a white 1x6 tile vertically to the left of the previous piece you attached to the front of the hull, flush at the bottom. Place a white 1x4 tile vertically above the previous piece. At the top the tile should be flush with the hull to the left. Repeat symmetrically on the back.

Set the current piece aside. Steps 97-100 need to be repeated four times!

97. Locate a light bluish gray 2x6 plate and orient it horizontally.

98. Place a tan 1x4 plate vertically under! the leftmost column of the previous piece, centered vertically. Place another tan 1x4 plate vertically under! the second column from the right (not the rightmost!), centered vertically as well.

99. Locate a black 2x3 curved slope and place it vertically, slope to the back onto the back row of the two leftmost columns of the light bluish gray 2x6 plate. Repeat to the right two times.

Open group 17.

100. Locate a white 2x3 curved slope and place it vertically, slope to the front in front of the previous piece. Skip two columns to the left and repeat. Place a white 1x2x1 panel (bench) horizontally in between the last two pieces, backrest to the back.

Make sure that you repeated steps 97-100 four times. Next you will attach these four pieces to the rocket.

101. Take one of the pieces you just built and orient it upright, the former upper side to the front, so that the three black 2x3 curved slopes are to the left above one another and the two white 2x3 curved slopes and the bench are to the right. Attach the piece to any of the large gaps at the very top of the upper hull. The piece should fit right in, closing the gap in the hull, flush at the top. Repeat symmetrically on the other three gaps at the top of the upper hull.

102. Make a piece four times. Orient a blue 1x2 plate vertically. Orient a white 2x2 curved slope, slope to the right and place its left column on top of the previous piece. Repeat to make four pieces. Next you will attach these four pieces to the rocket. Orient one of the pieces you just built upright, the former upper side to the front and slope to the right and place it right of one of the four benches you attached in the last step. Repeat symmetrically on the other three benches to fill the last small gaps in the upper hull.

You have successfully completed the upper hull of the first stage and finished the fourth large bag.

Continue by using the parts from the fifth large bag to complete all of the hull of the first stage.

Open the large bag 5.

Set the current piece aside. Steps 103-107 need to be repeated four times!

Open group 18.

103. Locate a blue 2x4 plate and orient it horizontally.

104. Place a white 1x1 round plate in the back left corner. Place a white 1x2 plate with a bar handle horizontally to the right, handle to the back. Place a white 1x1 round plate to the right. The back row of the blue 2x4 plate from the previous step should be covered now.

105. Make a piece three times. Locate a dark bluish gray 1x2 bracket with 1x2 side studs extending to the top as well as a light bluish gray 1x2 bracket with 1x2 side studs extending to the bottom and orient both of them horizontally, side studs to the front. Place the bracket with side studs extending to the top on top of the bracket with side studs extending to the bottom. The side studs should have a combined size of 2x2, now. Repeat to make three pieces. Place one of the pieces you just built onto the front left stud of the blue 2x4 plate from step 103, overhanging one column to the left, side studs to the front. Repeat to the right. Repeat to the right, this piece should overhang one column to the right.

Open group 19.

106. Locate two red 2x2 curved slopes. Place one of them onto the leftmost two studs of the back row as well as the studs in front of those, slope to the back. Repeat to the right. All top studs except for the leftmost and rightmost studs of the front row should be covered by the slopes, now.

107. Locate four white 1x2 grille tiles as well as a white 2x2 tile. Place a grille tile horizontally onto the two leftmost studs of the top row of the side studs. Repeat to the bottom. Repeat on the very right with the remaining two grille tiles. Place the 2x2 tile in between the grille tiles onto the two center columns of the side studs.

Make sure that you repeated steps 103-107 four times. Next you will attach these four pieces to the rocket.

108. Note the larger holes in the lower hull of the rocket. Each of the four sides of the rocket has an area of size 2x6 which is covered with vertical white 1x2 grille tiles and holes to its left and right. In this step you will close the areas to the right! of each of them. Orient one of the pieces you just built so that its former bottom points to the right and the handle points to the back. Close one of the right areas by clipping the handle to a yellow 1x2 plate with a clip that's inside the rocket. The front of the piece you clipped in should be reasonably flush with the rest of the hull. Repeat to close the other right areas.

Set the current piece aside. Steps 109-113 need to be repeated four times! Note that you'll build almost exactly the same piece as in steps 103-107, except that the center of the side studs is not covered by a 2x2 tile but also by horizontal white 1x2 grille tiles, instead.

Open group 20.

109. Locate a blue 2x4 plate and orient it horizontally.

110. Place a white 1x1 round plate in the back left corner. Place a white 1x2 plate with a bar handle horizontally to the right, handle to the back. Place a white 1x1 round plate to the right. The back row of the blue 2x4 plate from the previous step should be covered now.

111. Make a piece three times. Locate a dark bluish gray 1x2 bracket with 1x2 side studs extending to the top as well as a light bluish gray 1x2 bracket with 1x2 side studs extending to the bottom and orient both of them horizontally, side studs to the front. Place the bracket with side studs extending to the top on top of the bracket with side studs extending to the bottom. The side studs should have a combined size of 2x2, now. Repeat to make three pieces. Place one of the pieces you just built onto the front left stud of the blue 2x4 plate from step 109, overhanging one column to the left, side studs to the front. Repeat to the right. Repeat to the right, this piece should overhang one column to the right.

Open group 21.

112. Locate two red 2x2 curved slopes. Place one of them onto the leftmost two studs of the back row as well as the studs in front of those, slope to the back. Repeat to the right. All top studs except for the leftmost and rightmost studs of the front row should be covered by the slopes, now.

113. This is where the piece differs from the pieces you built in steps 103-107. Locate six white 1x2 grille tiles. Cover all of the side studs horizontally with the grille tiles.

Make sure that you repeated steps 109-113 four times. Next you will attach these four pieces to the rocket.

114. Remember the areas of size 2x6 which are covered with vertical white 1x2 grille tiles as described in step 108 where you closed the areas to the right of them. In this step you will close the areas to the left! of each of them. Orient one of the pieces you just built so that its former bottom points to the left and the handle points to the back. Close one of the left areas by clipping the handle to a yellow 1x2 plate with a clip that's inside the rocket. The front of the piece you clipped in should be reasonably flush with the rest of the hull. Repeat to close the other left areas. Note that some holes in the hull will persist which will be closed in the next steps.

Set the current piece aside. Steps 115-117 need to be repeated two times!

Open group 22.

115. Locate a light bluish gray 2x10 plate and orient it horizontally.

116. Locate six white 1x2 grille tiles. Cover the center 2x6 area of the plate from the previous step horizontally with the six grille tiles. The studs in the leftmost and rightmost two columns should remain uncovered.

117. Place a black 1x4 tile from a separate subgroup of group 22 horizontally onto the leftmost two studs of the front row overhanging two columns to the left. Similarly, place a white 1x4 tile horizontally to the back. Place a white 2x4 tile horizontally onto the rightmost two columns overhanging two columns to the right.

Make sure that you repeated steps 115-117 two times. Next you will attach these two pieces to the rocket.

118. Note the remaining four holes in the lower hull of the rocket. Two of them (on opposing sides) are larger and two studs wide (2x14 vertically to be exact), whereas the other two of them are rather small and only one stud wide (1x6 vertically to be exact). In this step you will close the larger two holes. Orient one of the pieces you just built upright, so that the tiled area points to the front and the 2x4 tile is at the top. Like this, the piece should fit exactly into one of the larger holes, closing it, flush with the remainder of the hull. Repeat to close the other larger hole.

119. Make a piece two times. Locate a light bluish gray 1x6 plate and orient it horizontally. Locate three white 1x2 grille tiles and completely cover the plate with them. Repeat to make two pieces. In this step you will close the two last small holes in the lower hull of the rocket. Orient one of the pieces you just built vertically upright, so that the tiled area points to the front. Like this, the piece should fit exactly into one of the smaller holes, closing it, flush with the remainder of the hull. Repeat to close the other small hole.

You have successfully completed all of the hull of the first stage and finished the fifth large bag.

Continue by using the parts from the sixth large bag to build the engines of the first stage.

Open the large bag 6.

Open group 23.

120. Locate four black 8l axles (the length of a 1x8 plate) and one yellow 7l axle. Tilt the main rocket onto its side so that the top of the rocket points to the back and its underside points to the front. The pairs of 2x6 wedges which are attached to each of the four sides of the rocket at the bottom should be at the top, right, bottom, and left. In this and the next steps you'll work on the underside of the rocket. Insert the yellow 7l axle from the front into the center hole of the underside of the rocket which is in the center of a light bluish gray 4x4 round brick. Insert a black 8l axle into the axle hole of the red 1x2 brick at the top (with the cross-shaped - not the round hole!). Repeat on the right, bottom, and left. These are the axles to which the 5 engines of the first stage will be attached.

121. Locate a dark bluish gray 2x2 round brick with an axle hole and put it onto the yellow axle in the center, studs to the back. Move it back as far as possible so that its studs attach to the 4x4 round brick behind. Locate four light bluish gray technic cranks (they have length 3 and an axle hole on one side as well as a 1l technic connector on the other side). Orient one of the cranks so that the axle hole is at the top, aligned to the back and front, and the technic connector is at the bottom, pointing to the back. Like this, put the top axle hole onto the black 8l axle at the top and move it as far back as possible - the technic connector should fit right into the hole of a light bluish gray 1x2 brick. Repeat symmetrically on the right, bottom, and left.

122. Make a piece by placing two light bluish gray 2x2 round plates on top of each other and place these onto a dark bluish gray 3x3x2 cone with 2x2 studs on top. Put the piece you just built onto the yellow axle in the center, studs to the back. Move it back as far as possible so that its studs attach to the 2x2 round brick behind, from the previous step.

123. Make a piece four times. Locate a dark bluish gray 3x3x2 cone with 2x2 studs on top. Place a black 2x2 brick with an axle hole from top to bottom and a 1-finger hinge connector at one side on top of it, hinge to the left. Connect a pearl dark gray bull bar with a 2-finger hinge connector (LEGO refers to it as a train pantograph) horizontally from the left to the hinge connector of the previous piece by clipping the 1-finger hinge in between the 2-finger hinge. Repeat to make four pieces. Orient one of the pieces you just built so that the top studs point to the back and the bull bar is at the bottom. Like this, put the piece onto the black 8l axle at the top and move it as far back as possible - the axle should go through the axle hole of the 2x2 brick as well as the axle hole of the 3x3x2 cone. Repeat symmetrically on the right, bottom, and left.

Open group 24.

124. Make a piece five times. Locate a pearl dark gray 2x2 plate with an octagonal bar frame around it. Clip a pearl dark gray mechanical arm piece from the top to the diagonal bar at the front right of the previous piece, arm extending to the front right and slightly up. Locate a black 1x1 round tile with a thin bar on top. Insert the thin bar into the hole of the previous piece that's furthest away from the clip, so where a theoretical elbow joint of the mechanical arm would be. Locate a dark bluish gray megaphone and place the stud that's opposite of its cone-shaped opening onto the previous piece. The opening of the megaphone should point away from the mechanical arm, the handle should point to the front left. Repeat to make five pieces. Take one of the pieces you just built and change the orientation of the mechanical arm and everything that's attached to it by rotating it at the clip, so that the studs of the 2x2 plate with the bar frame point to the front, the megaphone opening points to the back, and the clip is at the bottom right. Like this, put the piece onto the black 8l axle at the top and move it as far back as possible - the axle should go through the axle hole in the center of the 2x2 plate with the bar frame. If the plate doesn't fit onto the axle in the desired orientation, switch the clip to an adjacent bar of the octagonal bar frame and repeat. The megaphone should then be partially framed by the bull bar. Repeat symmetrically on the right, bottom, and left. Also repeat in the center with the yellow 7l axle, the orientation being the same as for the piece at the top, clip at the bottom right.

125. Make a piece five times. Place a white 2x2 round tile with one stud on top on top of a white 2x2 round plate. Place a trans-orange (transparent orange) 3x3 dish with one stud on top onto the previous piece. Place the piece you just built into a pearl dark gray half-high barrel with 2x2 studs and an axle hole inside. Repeat to make five pieces. These are the tail ends of the engines of the first stage. Orient one of the pieces you just built so that the top stud points to the front. Like this, put the piece onto the black 8l axle at the top and move it as far back as possible - the axle should go through the axle hole of the barrel and the barrel should attach to the pearl dark gray 2x2 plate with an octagonal bar frame from the previous step. Repeat on the right, bottom, left, and center.

Open group 25.

126. Make a piece four times. Locate a dark bluish gray 1x2 plate with a 2-finger hinge connector on one end and orient it horizontally, hinge to the left. Place the upper end of a light bluish gray 1x3x2 curved arch vertically onto the left stud of the previous piece, the base of the arch overhanging to the front. Repeat to the right. Place a light bluish gray 1x2 tile horizontally onto the top studs of the two arches. Repeat to make four pieces. Before attaching the pieces you just built to the rocket, identify the attachment point. The attachment point for the top engine is the 1-finger hinge connector right of the red 1x2 brick with the cross-shaped axle hole into which you inserted the black 8l axle in step 120. Orient one of the pieces you just built so that the hinge points to the left and the former top of the piece points to the back. Like this, attach the 2-finger hinge connector to the 1-finger hinge connector you identified, before, by clipping the 1-finger hinge in between the 2-finger hinge. Repeat symmetrically on the right, bottom, and left.

127. In this step you'll build the same pieces as in the step before, but mirrored horizontally. Make a piece four times. Locate a dark bluish gray 1x2 plate with a 2-finger hinge connector on one end and orient it horizontally, hinge to the right! Place the upper end of a light bluish gray 1x3x2 curved arch vertically onto the left stud of the previous piece, the base of the arch overhanging to the front. Repeat to the right. Place a light bluish gray 1x2 tile horizontally onto the top studs of the two arches. Repeat to make four pieces. This time, the attachment point for the top engine is the 1-finger hinge connector left! of the red 1x2 brick with the cross-shaped axle hole into which you inserted the black 8l axle in step 120, so also left of the attachment point from the previous step. Orient one of the pieces you just built so that the hinge points to the right and the former top of the piece points to the back. Like this, attach the 2-finger hinge connector to the 1-finger hinge connector you identified, before, by clipping the 1-finger hinge in between the 2-finger hinge. Repeat symmetrically on the right, bottom, and left.

128. In this step you will rotate the pieces you attached in the last two steps to form the shell for the outer engines. Start with the top engine and rotate the left and right piece at the respective hinge towards the engine (so towards the front and towards each other) until the two meet in the middle (the bases of the arches should touch, flush with each other). Repeat on the right, bottom, and left.

Set the current piece aside. Steps 129-132 need to be repeated four times!

Open group 26.

129. Locate a black 1x2 slope plate (1x1 slope with a 1x1 plate next to it) from a separate subgroup of group 26 and orient it horizontally, slope to the left. Place a blue 1x2 plate horizontally onto the stud of the previous piece, overhanging to the right.

130. Locate a white 1x2 slope plate (1x1 slope with a 1x1 plate next to it) and orient it horizontally, slope to the right. Place its stud under! the right stud of the blue 1x2 plate from the previous step, so that it protrudes to the right.

131. Locate a black 2x2 plate from a separate subgroup of group 26 and place its back row under! the black 1x2 slope plate from step 129, flush at the left. Locate a white 2x2 plate and place it to the right of the previous piece, so with its back row under! the white 1x2 slope plate from the previous step, flush at the right.

132. Locate a black 1x2 slope brick! from a separate subgroup of group 26 and place it horizontally, slope to the left, onto the leftmost two studs of the front row. Locate a white 1x2 slope brick! and place it horizontally, slope to the right, onto the rightmost two studs of the front row.

Make sure that you repeated steps 129-132 four times. Next you will attach these four pieces to the rocket.

Stand the rocket upright, so that the engines are at the bottom and one of the outer engines is at the front.

133. Orient one of the pieces you just built so that its top studs point to the front, the black pieces (former left) are at the left and the white pieces (former right) are at the right. Like this, attach the piece above the engine shell of the front engine that you rotated into place in step 128. The piece will overlay the two hinges you attached the engine shell to in steps 126 and 127, the two studs in between as well as the row of four studs above. Repeat symmetrically on the left, back, and right.

Open group 27.

134. Locate a white tail fin and orient it so that its underside points to the back and the fin extends to the front and bottom. The upper row of 1x2 studs of the piece you attached in the front in the previous step forms a 2x3 plane surface with the 2x2 studs above. Attach the tail fin to this 2x3 surface, oriented as described before. Repeat symmetrically on the left, back, and right.

135. Make a piece four times. Orient a light bluish gray 2x4 brick horizontally. Locate a white 2x2 curved slope and place it onto the leftmost two studs of the back row, slope to the back, overhanging to the back. Repeat to the right. Repeat symmetrically in the front row using two black 2x2 curved slopes from a separate subgroup of group 27. Repeat to make four pieces. Orient one of the pieces you just built so that its underside points to the back, the white pieces (former back) are at the left and the black pieces (former front) are at the right. Like this, attach the piece in the front right in the open space between the front and right tail fins you attached in the previous step. The top two rows of anti-studs of the piece should attach to a light bluish gray bracket piece further inside the rocket - there should not be a gap between the top of the piece and the hull of the first stage above. Repeat symmetrically on the front left, back left, and back right.

You have successfully built the engines of the first stage and finished the sixth large bag.

Continue by using the parts from the seventh large bag to build the inner structure of the second stage.

Open the large bag 7.  
Open group 28.

Set the current piece aside.

136. Locate a light bluish gray 2x6 plate and orient it horizontally. Place a tan 4x8 half round plate horizontally, flat side to the front, centered onto the back row of the previous piece, overhanging three studs to the back and one stud to the left and right, respectively.

137. Place a tan 4x8 half round plate horizontally, flat side to the back, in front of the previous piece, forming a circle.

138. Flip the piece upside down, vertically, so that the 2x6 plate from step 136 is still oriented horizontally. Place a reddish brown 2x2 plate upside down and horizontally centered to the back of the 2x6 plate from step 136. Repeat symmetrically on the front. The two 2x2 plates should form a symmetrical plus sign together with the 2x6 plate.

139. Locate eight white 2x2 plates with 1x2 side studs. Orient one of them upside down, side studs to the front and place it so its back right stud is on the front left stud of the previous piece. The front row of the plate should connect to the 4x8 half round plate underneath and the back left stud should be unconnected. Repeat to the right. Repeat what you did with the previous two pieces symmetrically at the left, back, and right using up all eight plates.

140. Flip the piece right side up again. Locate four pearl gold 1x1 round plates with a hollow stud and place one in the front right, so onto the rightmost stud of the second row from the front. Repeat symmetrically on the front left, back left, and back right. Locate four dark bluish gray 2x2 curved slopes with two studs on top and place one centered horizontally in the frontmost two rows, studs at the front. Repeat symmetrically on the left, back, and right.

141. Locate four white 2x2 plates with 1x2 side studs and place one onto the 2x2 curved slope in the front from the previous step, studs to the front. Repeat symmetrically on the left, back, and right.

Open group 29.

142. Make a piece four times. Place a red 1x2 bracket with 2x2 side studs extending to the top on top of a tan 1x2 bracket with 2x2 side studs extending to the bottom, the side studs of both pieces pointing to the front. Place a light bluish gray 1x2 plate with one stud on top on top of the upper bracket. Repeat to make four pieces. Place one of the pieces you just built centered onto the 1x1 round plate in the front right, side studs pointing to the front right. Repeat symmetrically on the front left, back left, and back right.

143. Place a dark bluish gray quarter cylinder from a separate subgroup of group 29 in the front left connecting the outer rows of the two 2x2 plates with side studs in the left and front as well as the 1x2 plate with one stud in the front left. Repeat symmetrically on the back right. Repeat symmetrically with a white quarter cylinder (not from a separate subgroup!) in the back left, and front right.

144. Make a piece. Locate a tan 2x8 plate and orient it horizontally. Place a blue 1x2 plate vertically onto the leftmost column of the previous piece. Repeat on the rightmost column. Place the piece you just built vertically from front to back, horizontally centered, connecting all four quarter cylinders from the previous step on top.

145. Make a piece. Locate a white 2x2 plate with 1x2 side studs and orient it side studs to the left. Place a light bluish gray 2x6 plate horizontally onto the right column of the previous piece, overhanging to the right. Place a white 2x2 plate with 1x2 side studs, side studs to the right, with its left column under! the rightmost column of the previous piece, symmetrically to the 2x2 plate with 1x2 side studs in the left. Place the piece you just built horizontally from left to right, vertically centered, connecting all four quarter cylinders from step 143 as well as the tan 2x8 plate from the previous step on top.

146. Make a piece four times. Place a light bluish gray 1x2 plate with one stud on top horizontally on top of a red 1x2 bracket with 2x2 side studs extending to the top, side studs to the front. Repeat to make four pieces. Place one of the pieces you just built centered onto the single stud in the front right, side studs to the front right. Repeat symmetrically on the front left, back left, and back right.

147. Place a dark bluish gray quarter cylinder from a separate subgroup of group 29 in the front left connecting the outer row of the 2x2 plate with side studs in the left, the 1x2 plate in the front as well as the 1x2 plate with one stud in the front left. Repeat symmetrically on the back right. Repeat symmetrically with a white quarter cylinder (not from a separate subgroup!) in the back left, and front right. The quarter cylinders are placed similarly to the ones in step 143, just higher up.

Open group 30.

148. Place a tan 2x8 plate horizontally from left to right, vertically centered, connecting all four quarter cylinders from the previous step on top.

149. Make a piece. Locate a white 2x2 plate with 1x2 side studs and orient it side studs to the left. Place a light bluish gray 2x6 plate horizontally onto the right column of the previous piece, overhanging to the right. Place a white 2x2 plate with 1x2 side studs, side studs to the right, with its left column under! the rightmost column of the previous piece, symmetrically to the 2x2 plate with 1x2 side studs in the left. Place a green 1x2 plate with an upwards bar arm, bar arm to the left, vertically onto the second column from the left, so the leftmost column of the 2x6 plate. Repeat symmetrically in the second column from the right, so the rightmost column of the 2x6 plate. Place a dark bluish gray 2x4 plate horizontally in the gap between the two previous pieces. Place the piece you just built vertically from front to back, horizontally centered, connecting all four quarter cylinders from step 147 as well as the 2x8 plate from the previous step on top.

150. Make a piece two times. Place a green 1x2 plate with an upwards bar arm, bar arm to the left on top of a blue 1x2 plate vertically. Repeat to make two pieces. Place one of the pieces you just built, bar arm to the left, vertically onto the second column from the left of the horizontal tan 2x8 plate from step 148. Repeat symmetrically in the second column from the right.

151. Make a piece four times. Locate a dark bluish gray 1x2 bracket with 1x2 side studs extending to the top and orient it horizontally, side studs to the front. Place a light bluish gray 1x2 plate with one stud on top, horizontally on top of the previous piece. Place a white 1x1 round plate on top. Repeat to make four pieces. Place one of the pieces you just built centered onto the single stud in the front right, side studs to the front right. Repeat symmetrically on the front left, back left, and back right.

152. Locate three light bluish gray 2x6 plates. Place one horizontally with its back left stud on the white 1x1 round plate in the back left from the previous step and its back right stud on the white 1x1 round plate in the back right from the previous step. Repeat to the front. Repeat to the front. The front left stud of the last piece should be connected to the white 1x1 round plate in the front left from the previous step and likewise in the front right.

153. Place a tan 2x2 brick in the center. Place a white 1x2x1 panel (bench) horizontally to the front, backrest to the back. Place a white 1x2 tile horizontally to the front. Repeat what you did with the previous two pieces symmetrically at the left, back, and right.

Open group 31.

154. Place a reddish brown 2x2 plate in the center onto the tan 2x2 brick from the previous step.

155. Make a piece four times. Locate a blue 1x2 plate and orient it horizontally. Place a red 1x1 tile with a clip on top, clip horizontal, onto the left stud of the previous piece. Place a yellow 1x2 plate with a clip on top, horizontally, clip to the right, to the right, overhanging to the right. Place a white 1x1 round plate onto the center stud, so the left column of the previous piece. Place another white 1x1 round plate on top of the previous piece. Place a red 1x1 brick with a side stud onto the previous piece, side stud to the front. Repeat to make four pieces. Flip one of the pieces you just built face-down, so that the side stud is flat on the table and the 1x1 brick with a side stud is at the front. Like this, insert the upwards bar arm of the green 1x2 plate in the front into the side stud of the piece you just built. The back of the piece should touch the front of the front bench piece from step 153. Repeat symmetrically on the left, back, and right.

156. Make a piece four times. Place a black 1x1 round brick onto a white 1x1 round plate. Repeat to make four pieces. Place one of the pieces you just built in the gap between the frontmost and leftmost 2x2 studs. Another way to describe these 2x2 studs would be the two leftmost columns of the front light bluish gray 2x6 plate from step 152. The piece you built should be put into the gap in the center between these four studs (not onto the front left stud!). Repeat symmetrically on the back left, back right, and front right.

Open group 32.



157. Make a piece. Locate a tan 6x6 plate. Place a blue 1x2 plate vertically and vertically centered in the leftmost column of the previous piece. Repeat symmetrically in the rightmost column. Place a pearl gold 1x1 round plate with a hollow stud in the front left corner of the 6x6 plate. Repeat on the back left, back right, and front right. Place the piece you just built centered onto the main piece, the blue 1x2 plate being at the left and right. It should be aligned with the 6x6 plate the three 2x6 plates from step 152 form.

Set the current piece aside. Steps 158-165 need to be repeated two times!

158. Locate a dark bluish gray 2x4 plate and orient it horizontally, upside down!

159. Locate two red 1x2 plates with a clip on one end. Place one horizontally, upside down, clip to the left onto the leftmost two anti-studs of the back row of the previous piece, clip overhanging to the left. Repeat to the front.

160. Locate a light bluish gray 2x2 bracket with a 2x2 tile with a hole extending to the bottom. Place it upside down, the 2x2 tile with the hole to the right extending to the top onto the rightmost two columns, so right of the two previous pieces.

161. Place a blue 1x2 plate vertically, upside down, onto the rightmost column. Locate two light bluish gray 1x2 plates with 1x2 side studs extending to the bottom. Place one horizontally, upside down, side studs to the front to the left of the previous piece onto the front row. Repeat symmetrically to the back.

162. Rotate the piece right side up, clips to the right. Place a green 1x2 slope tile vertically, slope to the right, onto the rightmost column. Place a yellow 2x3 plate horizontally to the left.

163. Make a piece. Locate a dark bluish gray 2x4 plate and orient it horizontally. Place a dark bluish gray 1x2 plate with 1x2 side studs extending to the top vertically, side studs to the right, onto the rightmost column of the previous piece. Place a blue 1x2 plate vertically onto the leftmost column of the 2x4 plate. Place another blue 1x2 plate vertically onto the previous piece. Place the piece you just built horizontally, side studs to the right, onto the yellow 2x3 plate from the previous step, flush at the right, overhanging one column to the left.

164. Locate two tan 1x2 plates with 2x2 side studs extending to the bottom. Place one horizontally, side studs to the front in the front row, between the stacked blue 1x2 plates and the dark bluish gray 1x2 plate with 1x2 side studs extending to the top from the previous step. Repeat symmetrically to the back.

165. Locate two light bluish gray 1x2 plates with one stud on top. Place one vertically upright onto the side studs in the front, connecting the light bluish gray 1x2 plate with 1x2 side studs extending to the bottom from step 161 and the tan 1x2 plate with 2x2 side studs extending to the bottom from the previous step. Afterwards, in the bottom row of the side studs, there should be a free stud at the right, in the middle row, there should be a free stud at the left, and in the top row there should be two free studs. Repeat symmetrically on the back.

Make sure that you repeated steps 158-165 two times. Next you will attach these two pieces to the second stage.

166. Make sure the rocket is still oriented as before, with the vertical blue 1x2 plates from step 157 at the very top being to the left and right. Orient one of the pieces you just built so that the clips point to the top and the former top points towards the front. Like this, place the piece onto the center of the second and third row from the front. Repeat symmetrically to the back. The 2x2 tiles with the hole from step 160 should touch each other in the center of the tan 6x6 plate.

Open group 33.

167. Locate two white 1x6 tiles. Place one horizontally from the left, connecting the two pieces you attached in the previous step, by attaching it to the two light bluish gray 1x2 plates with one stud at the left sides of the pieces. Repeat symmetrically on the right.

168. Make a piece four times. Locate a red 1x2 bracket with 2x2 side studs extending to the top and orient it horizontally, side studs to the back. Place a light bluish gray 1x2 plate with one stud on top horizontally on top. Place a white 1x1 round plate on top. Repeat to make four pieces. Place one of the pieces you just built vertically, side studs to the left, vertically centered onto the 1x1 round plate in the front left corner. Repeat on the back left. Repeat symmetrically on the front right and back right.

Set the current piece aside. Step 169 needs to be repeated two times!

169. Locate a light bluish gray 1x2 concave brick and orient it horizontally. Locate two tan 1x1 plates with a clip on one side. Place one, clip to the left, onto the left stud of the previous piece. Repeat symmetrically to the right. Place a tan 1x2 plate with 2x2 side studs extending to the bottom horizontally, side studs to the front, on top. Make a piece two times. Place a trans-orange 1x1 round tile onto a black 1x1 rounded plate with a bar handle. Repeat to make two pieces. Clip the bar handle of one of the pieces you just built into the clip in the left, 1x1 round tile to the top. Repeat symmetrically on the right.

Make sure that you repeated step 169 two times. Next you will attach these two pieces to the second stage.

170. Orient one of the pieces you just built vertically, side studs to the left. Place it onto the vertical blue 1x2 plate in the leftmost column, in between the two red 1x2 brackets from step 168. Repeat symmetrically on the right.

171. Make sure that the four black 1x1 round plates with a bar handle from the pieces you attached in the previous step attach to the white 1x1 round plates underneath each of them by pressing down on them until they are connected.

172. Now that the red 1x2 brackets with 2x2 side studs extending to the top from step 168 in the four corners are attached from the top as well (see last step), rotate each of them so the side studs point diagonally outwards, i.e. the side studs of the bracket in the front left should point to the front left and so on (in line with the side studs further down the sides of the stage). Make a piece two times. Locate a dark bluish gray 2x4 plate and orient it horizontally. Place a yellow 2x3 plate horizontally on top, flush at the left. Place a dark bluish gray 1x2 plate with 1x2 side studs extending to the top vertically, side studs to the right, to the right. Repeat to make two pieces. Orient one of the pieces you just built vertically upright, side studs to the top, its former top to the left and place it vertically centered onto the tan 2x2 side studs from step 169 in the left center, so it should overhang one row to the top and one row to the bottom. Repeat symmetrically on the right.

Set the current piece aside. In steps 173-179 you'll build the base of the second stage.

Open group 34.

173. Place a light bluish gray 2x2 round tile with one stud on top centered onto a light bluish gray 4x4 round plate. Orient the 4x4 round plate so the studs are aligned vertically and horizontally.

174. Locate two blue 1x2 plates. Place one horizontally onto the front row. Repeat on the back. Locate two light bluish gray 1x4 plates. Place one vertically onto the left column of the 4x4 round plate, overhanging one stud to the front and one to the back. Repeat on the right.

175. Place a black 1x1 round brick onto the center stud.

176. Locate four tan 1x2 bricks with 1x2 side studs. Place one horizontally, side studs to the front centered into the front row. Repeat symmetrically on the left, back, and right. The four pieces should touch corners.

177. Place a green 4x4 plate centered on top.

178. Make a piece two times. Connect two light bluish gray 1x2 bricks with a hole using a black technic pin by inserting the technic pin into the holes of the two bricks. The two bricks should be oriented horizontally. Place a light bluish gray 2x4 slope horizontally, slope to the front, centered on top, overhanging one column to the left and one to the right. Locate two light bluish gray 1x2 concave bricks. Place one vertically under! the leftmost column of the previous piece so that it's no longer overhanging to the left. Repeat on the right. Repeat to make two pieces. Orient one of the pieces you just built vertically, slope to the bottom, its former top to the left. Like this, attach its two center studs of the top row from the left to the tan 1x2 side studs at the left from step 176. Repeat symmetrically on the right.

179. The pieces you build in this step are almost identical to those in the previous step, but differ at two spots! Make a piece two times. Connect two light bluish gray 1x2 bricks with a hole using a black technic pin by inserting the technic pin into the holes of the two bricks. The two bricks should be oriented horizontally. Place a light bluish gray 2x4 slope horizontally, slope to the front, centered on top, overhanging one column to the left and one to the right. Next is where the piece differs to the one in the previous step. Locate two light bluish gray 2x2 slopes. Place one, slope to the left, under! the leftmost column of the previous piece so that it's no longer overhanging to the left. Repeat symmetrically on the right. Repeat to make two pieces. Orient one of the pieces you just built horizontally, 2x4 slope to the bottom, its former top to the front. Like this, attach its two center studs of the top row from the front to the tan 1x2 side studs at the front from step 176. Repeat symmetrically on the back.

Next you will attach the base of the second stage you just built to the bottom of the second stage.

180. With the second stage still rotated as before and the base you just built also rotated as when you built it, place the base centered under! the second stage and attach it. The 4x4 plate at the top of the base should fit right into a gap of the same size at the bottom of the second stage.

You have successfully built the inner structure of the second stage and finished the seventh large bag.

Continue by using the parts from the eighth large bag to build parts of the hull of the second stage.

Open the large bag 8 which contains the groups N, and T as well as groups 35-39.  
Open group 35.

181. Make a piece. Locate a light bluish gray 2x2 plate with pin holes underneath and orient it so that the pin holes point to the left and right. Place a white 2x5 bracket (staircase) horizontally, upper stair to the right, on top, flush at the left, the upper stair overhanging to the right. Place a yellow 2x3 plate horizontally under! the upper stair of the previous piece, protruding one column to the right. Orient the piece you just built vertically upright, the pin hole at the top pointing to the top and its former top pointing to the front left. Attach the upper two rows of the yellow 2x3 plate from the front left to the red 2x2 side studs of the bracket from step 168 in the front left (the one you rotated in step 172).

Set the current piece aside. In steps 182-192 you'll build a part of the hull of the second stage.

182. Locate a white 1x2 plate with a pin hole on top and orient it vertically, pin hole in the back. Insert the short side of a blue 3l technic pin from the right into the pin hole.

183. Make a piece. Locate a white 1x2 plate with a pin hole on top and orient it vertically, pin hole in the back. Place a black 1x1 round plate under! the back row of the previous piece, so underneath the pin hole. Slide the pin hole of the piece you just built from the right onto the blue technic pin until it touches the similar plate with a pin hole from the previous step.

184. Slide a white 2l round pin connector (feels like a smooth tube with a small slot in the middle) horizontally from the right onto the blue technic pin. Insert a black technic pin from the right into the previous piece.

185. Slide a white 2l round pin connector horizontally from the right onto the black technic pin. Insert a black technic pin from the right into the previous piece.

186. Same as the step before. Slide a white 2l round pin connector horizontally from the right onto the black technic pin. Insert a black technic pin from the right into the previous piece.

187. Same as the step before. Slide a white 2l round pin connector horizontally from the right onto the black technic pin. Insert a black technic pin from the right into the previous piece. There should be four white 2l round pin connectors in a row now.

188. Make a piece. Locate a blue 1x2 plate and orient it horizontally. Place a white 1x2 plate with a pin hole on top vertically, pin hole in the back, with its back anti-stud onto the left stud of the previous piece, overhanging to the front. Slide the piece you just built from the right onto the black technic pin.

189. Make a piece. Place a light bluish gray 1x8 plate horizontally centered onto a tan 1x10 plate horizontally, leaving one free stud to the left and to the right. Attach the piece you just built from the bottom! with its leftmost stud attaching to the front row of the middle one of the three white 1x2 plates with a pin hole and its rightmost stud attaching to the front row of the right one of the three. The light bluish gray 1x8 plate should fit right in between the two mentioned plates.

190. Make a piece. Locate two dark bluish gray 1x2 plates with a bar handle on one end and orient them horizontally, bar handle to the left, one behind the other. Connect the two pieces by placing a blue 1x2 plate vertically onto their left column. Place the rightmost column of the piece you just built under! the leftmost column of the bigger piece you built before (so underneath the left of the three white 1x2 plates with a pin hole on top), bar handles still to the left.

191. Place a white 1x1 slope onto the leftmost stud of the back row, slope to the left. Place a black 1x1 tile with a clip on top, clip vertical, in front. Place a black 1x2 tile from a separate subgroup of group 35 horizontally to the right. Place a black 1x1 tile with a clip on top, clip vertical, to the right. Place a white 1x1 slope, slope to the right, to the right. Place a white 1x2 tile horizontally to the right. There should be five uncovered studs to the right.

192. Clip a white 4l bar horizontally into the two black clips from the previous step.

Next you will attach the part of the hull you just built to the lower left front of the second stage.

193. First, identify the attachment points by checking the front left side of the rocket. At the top of the front left side, there is the white 2x5 bracket you attached, before building the last piece (step 181). Below at about mid-height, there are red 2x2 side studs which are the upper attachment point. Further down, almost at the bottom, there are 2x4 side studs (red and tan) which are the lower attachment point. Orient the piece you just built vertically upright, with the white bar from the previous step being vertical in the lower right, bar handles at the bottom and the former top of the piece pointing to the front left. At the top left, a plate of size 1x1 should protrude to the top. The respective anti-stud will attach to the top left stud of the upper attachment point and the remainder of the piece you just built will attach to the side studs below, naturally (the side studs rotate a bit, so you might need to adjust them). Afterwards, the mentioned attachment points should be fully covered, except for the top right stud of the upper attachment point.

Set the current piece aside. In steps 194-201 you'll build another part of the hull of the second stage.

Open group 36.

194. Locate a white 1x2 plate with a pin hole on top and orient it vertically, pin hole in the back.

195. Insert a black technic pin from the right into the hole of the previous piece. Slide a white 2l round pin connector horizontally from the right onto the black technic pin.

196. Insert a black technic pin from the right into the hole of the previous piece. Slide a white 2l round pin connector horizontally from the right onto the black technic pin.

197. Same as the step before. Insert a black technic pin from the right into the hole of the previous piece. Slide a white 2l round pin connector horizontally from the right onto the black technic pin. There should be three white 2l round pin connectors in a row now.

198. Make a piece. Place a blue 1x6 plate horizontally centered onto a light bluish gray 1x8 plate horizontally, leaving one free stud to the left and to the right. Place a white 1x6 tile horizontally with red letters reading "UNITED" from right to left (later it will be top to bottom) from the separate group N onto the previous piece. Place the leftmost stud of the piece you just built under! the front stud of the white 1x2 plate with a pin hole on top at the very left, extending to the right.

199. Make a piece. Locate a white 1x2 plate with a pin hole on top and orient it vertically, pin hole in the back. Place a black 1x1 round plate under! the back row of the previous piece, so underneath the pin hole. Place the front stud of the piece you just built onto the rightmost stud of the light bluish gray 1x8 plate you attached in the previous step. The pin hole of the piece you just built should be in line with the hole of the white 2l round pin connector from step 197.

200. Insert a red 1/2 technic pin with a 2l bar extension horizontally, bar extension to the left, from the right into the pin hole of the previous piece as far as possible until only the stud of the technic pin sticks out to the right.

Open group 37.

201. Make a piece. Place a white 1x1 round plate on top of a white 1x1 round brick. Place a white 1x1 cone on top. Orient the piece you just built horizontally, cone to the right and attach it from the right to the previous piece.

Next you will attach the part of the hull you just built to the upper left front of the second stage.

202. Orient the piece you just built vertically upright, the cone pointing to the top and its former top to the front left. Attach it to the second stage immediately above where you attached the last hull piece and in line with it. The cone should be underneath the left column of the white 2x5 bracket at the top front left.

203. Identify the white 2x5 bracket at the top of the front left side, above the cone that you attached in the previous step. Place a white 1x2 tile vertically upright onto the bottommost studs of the left column of the bracket, so immediately above the cone. Place a white 1x6 tile vertically upright to the right, flush at the top with the previous piece, extending to the bottom, so that it touches the 1x6 tile with the letters "UNITED" to the bottom. Place a white 1x6 tile with red letters reading "STATES" from top to bottom from the separate group T vertically, underneath the 1x6 tile reading "UNITED". The tile should fit exactly into a 6-stud gap to the right of the white 2l round pin connectors, under the 1x6 tile and above a 1x2 tile.

Set the current piece aside. In steps 204-210 you'll build another part of the hull of the second stage.

204. Locate a tan 2x8 plate and orient it horizontally. Place a dark bluish gray 2x4 plate horizontally onto its rightmost four columns, flush at the right.

205. Place a reddish brown 2x2 plate to the left of the tan 2x8 plate from the previous step, so without attaching it.

206. Place a tan 2x8 plate horizontally to the left of the dark bluish gray 2x4 plate from step 204, thereby connecting the reddish brown 2x2 plate from the previous step, and overhanging 2 columns to the left.

207. Locate two dark bluish gray 1x2 plates with a bar handle on one end. Place one horizontally, bar handle to the left, under! the leftmost two studs of the front column, the bar protruding to the left. Repeat to the back.

208. Place a white 1x1 tile with a clip on top, clip vertical, onto the leftmost stud of the back row. Place a white 1x1 tile to the right. Place a black 1x2 tile from a separate subgroup of group 37 horizontally to the right. Place a white 1x1 tile with a clip on top, clip vertical, to the right. Place a white 1x6 tile horizontally to the right. All of the back row, except for the rightmost stud should be covered now.

209. Place a black 1x1 tile with a clip on top from a separate subgroup of group 37, clip vertical, onto the leftmost stud of the front row. Place a black 1x2 tile from a separate subgroup of group 37 horizontally to the right. Place a black 1x1 tile with a clip on top from a separate subgroup of group 37, clip vertical, to the right. Place a white 1x1 slope, slope to the right, to the right. Place a white 1x2 tile horizontally to the right. There should be five uncovered studs to the right.

210. Clip a white 4l bar horizontally into the two black clips in the front row. Clip a white 6l bar with a stop ring horizontally into the two white clips in the back row, stop ring to the right and stop ring immediately right of the right clip.

Next you will attach the part of the hull you just built to the lower right front of the second stage.

211. Remember the attachment points described in step 193 at the front left. The same attachment points exist at the front right side of the hull. The piece you just built will attach to the upper red 2x2 attachment point (slightly below mid-height of the second stage) as well as the lower 2x8 (red + tan) attachment point. Orient the piece you just built vertically upright, the bars vertical at the lower end and its former top pointing to the front right. The very top of the piece will be attached to the lower row of the upper attachment point and the remainder of the piece will attach to the side studs below, naturally. Afterwards, the mentioned attachment points should be fully covered, except for the top row of the upper attachment point and the bar handles at the bottom should be at the same height as those in the front left.

212. Follow the front right side straight up from where you attached the piece in the previous step. Almost at the top, there are another red 2x2 side studs (the equivalent to the ones at the front left, to which you attached the 2x5 bracket in step 181). This will be the attachment point of the next piece you are building. Make a piece. Locate a light bluish gray 2x2 plate with pin holes underneath and orient it so that the pin holes point to the left and right. Place a white 2x5 bracket (staircase) horizontally, upper stair to the right, on top, flush at the left, the upper stair overhanging to the right. Place a yellow 2x3 plate horizontally under! the upper stair of the previous piece, protruding one column to the right. Place a white 2x2 tile onto the upper stair, flush at the right. Orient the piece you just built vertically upright, the pin hole at the top pointing to the top and its former top pointing to the front right. Attach the upper two rows of the yellow 2x3 plate from the front right to the previously identified attachment point (the red 2x2 side studs at the top front right side). The staircase should be attached similarly to the one at the top front left side.

Open group 38.

213. Make a piece. Locate a tan 2x8 plate and orient it horizontally. Place a dark bluish gray 2x4 plate horizontally on top, flush at the left. Place a blue 1x2 plate vertically to the right. Place a light bluish gray 2x6 plate horizontally to the right, overhanging to the right by three columns. Locate two white 1x2 grille tiles. Place one horizontally onto the two rightmost studs of the back row. Repeat to the front. Place a white 2x2 tile to the left of the previous two pieces. Place a white 1x6 tile horizontally with red letters reading "UNITED" from right to left (later it will be top to bottom) from the separate group N to the left in the front row. Orient the piece you just built vertically upright, its former top pointing to the front right and the grille tiles at the upper end. Like that, attach the piece from the front right with its top row to the bottom row of the yellow 2x3 plate from the previous step and its bottom row to the uncovered top row of the side studs of the upper attachment point from step 211.

214. In the right column of the hull pieces attached in the last steps, there is an un-tiled vertical gap of 1x6 studs. Place a white 1x6 tile with red letters reading "STATES" from top to bottom from the separate group T vertically upright in this gap, which is underneath the tile that reads "UNITED". In the left column of the hull pieces attached in the last steps, there is an un-tiled vertical gap of 1x8 studs. Place a white 1x8 tile with black dashes vertically upright in this gap.

Set the current piece aside. Steps 215-221 need to be repeated two times!

215. Locate a tan 2x8 plate and orient it horizontally. Place a dark bluish gray 2x4 plate horizontally onto its rightmost four columns, flush at the right.

216. Place a reddish brown 2x2 plate to the left of the tan 2x8 plate from the previous step, so without attaching it.

217. Place a tan 2x8 plate horizontally to the left of the dark bluish gray 2x4 plate from step 215, thereby connecting the reddish brown 2x2 plate from the previous step, and overhanging 2 columns to the left.

218. Locate two dark bluish gray 1x2 plates with a bar handle on one end. Place one horizontally, bar handle to the left, under the leftmost two studs of the front column, the bar protruding to the left. Repeat to the back.

219. Place a white 1x2 tile from a separate subgroup of group 38 horizontally onto the leftmost two studs of the back row. Place a black 1x2 tile horizontally to the right. Place a white 1x1 tile to the right. There should be seven uncovered studs to the right.

220. Place a black 1x1 tile with a clip on top, clip vertical, onto the leftmost stud of the front row. Place a black 1x2 tile horizontally to the right. Place a black 1x1 tile with a clip on top, clip vertical, to the right. Place a white 1x1 slope, slope to the right, to the right. There should be seven uncovered studs to the right.

221. Place a white 2x2 tile to the right of the previous piece and the piece behind. Clip a white 4l bar horizontally into the two clips in the front row.

Make sure that you repeated steps 215-221 two times. Next you will attach these two pieces to the second stage.

222. Rotate the second stage by 180° so that its former back is now at the front and vice versa. Remember the attachment points described in step 193 at the front left (which is now at the back right). The same attachment points exist at the front left, again, now that you rotated the second stage. The pieces you just built will attach to the red 2x2 attachment point at about mid-height (henceforth called the upper attachment point) as well as the lower 2x8 (red + tan) attachment point. Orient one of the pieces you just built vertically upright, the bar vertical at the lower right and its former top pointing to the front left. The very top of the piece will be attached to the lower row of the upper attachment point and the remainder of the piece will attach to the side studs below, naturally. Afterwards, the mentioned attachment points should be fully covered, except for the top row of the upper attachment point and the bar handles at the bottom should be at the same height as those in the back left and back right.. Repeat symmetrically on the front right.

Open group 39.

223. The pieces you are building in this step are the same as the piece you built in step 212. Follow the front left and right sides straight up from where you attached the pieces in the previous step. Almost at the top, there are red 2x2 side studs on each of the two sides (the equivalent to the ones at the back left, to which you attached the 2x5 bracket in step 212). These will be the attachment points of the next pieces you are building. Make a piece two times. Locate a light bluish gray 2x2 plate with pin holes underneath and orient it so that the pin holes point to the left and right. Place a white 2x5 bracket (staircase) horizontally, upper stair to the right, on top, flush at the left, the upper stair overhanging to the right. Place a yellow 2x3 plate horizontally under! the upper stair of the previous piece, protruding one column to the right. Place a white 2x2 tile onto the upper stair, flush at the right. Repeat to make two pieces. Orient one of the pieces you just built vertically upright, the pin hole at the top pointing to the top and its former top pointing to the front left. Attach the upper two rows of the yellow 2x3 plate from the front left to the previously identified attachment point (the red 2x2 side studs at the top front left side). The staircase should be attached similarly to the one at the top back left side. Repeat symmetrically on the front right.

224. Make a piece two times. Locate a tan 2x8 plate and orient it horizontally. Place a dark bluish gray 2x4 plate horizontally on top, flush at the left. Place a blue 1x2 plate vertically to the right. Place a light bluish gray 2x6 plate horizontally to the right, overhanging to the right by three columns. Locate two white 1x2 grille tiles. Place one horizontally onto the two rightmost studs of the back row. Repeat to the front. Place a white 2x2 tile to the left of the previous two pieces. Place a white 1x6 tile horizontally with red letters reading "UNITED" from right to left (later it will be top to bottom) from the separate group N to the left in the front row. Place a white 1x6 tile horizontally to the back. Repeat to make two pieces. Orient one of the pieces you just built vertically upright, its former top pointing to the front left and the grille tiles at the upper end. Like that, attach the piece from the front left with its top row to the bottom row of the yellow 2x3 plate at the top left front side from the previous step and its bottom row to the uncovered top row of the side studs of the upper attachment point from step 222. Repeat symmetrically on the front right.

225. In the right columns of the hull pieces attached in the last step, there are un-tiled vertical gaps of 1x6 studs. Locate two white 1x6 tiles with red letters reading "STATES" from top to bottom from the separate group T and place them vertically upright in the two gaps, which are underneath the tiles that read "UNITED". In the left columns of the hull pieces attached in the last step, there also are un-tiled vertical gaps of 1x6 studs. Place two white 1x6 tiles vertically upright in these two gaps.

You have successfully built parts of the hull of the second stage and finished the eighth large bag.

Continue by using the parts from the ninth large bag to mostly finish the hull of the second stage.

Open the large bag 9 which contains four identical group 40s.

Set the current piece aside. Steps 226-234 need to be repeated four times!

Open group 40.



226. Locate a tan 2x8 plate and orient it horizontally.

227. Place a dark bluish gray 2x4 plate vertically under! the second and third column from the left of the previous piece, vertically centered, so protruding one row to the front and one to the back. Place a light bluish gray 4x6 plate horizontally under! the tan 2x8 plate from the previous step, to the right of the previous piece, so protruding one row to the front, one to the back, and one column to the right.

228. Place a reddish brown 2x2 plate to the right of the tan 2x8 plate from step 226, overhanging one column to the right.

229. Place a light bluish gray 4x6 plate horizontally under! the right column of the previous piece, to the right of the light bluish gray 4x6 plate from step 227, so protruding one row to the front, one to the back, and five columns to the right.

230. Place a tan 2x8 plate horizontally to the right of the reddish brown 2x2 plate from step 228, overhanging three columns to the right.

231. Place a light bluish gray 4x6 plate horizontally under! the three rightmost columns of the previous piece, to the right of the light bluish gray 4x6 plate from step 229, so protruding one row to the front, one to the back, and three columns to the right.

232. Make a piece. Locate a blue 1x2 plate and orient it vertically. Place the rightmost column of a tan 2x8 plate horizontally onto the previous piece, overhanging seven columns to the left. Place a dark bluish gray 2x4 plate vertically under! the second and third column from the right of the previous piece (so left of the blue 1x2 plate), vertically centered, so protruding one row to the front and one to the back. Place a black 1x2 plate from a separate subgroup of group 40 vertically onto the rightmost column of the tan 2x8 plate. Place a black 1x4 double curved slope vertically onto the previous piece, vertically centered, so overhanging one row to the front and one to the back. Locate two white 2x3 curved slopes. Place one vertically, slope to the front, with its back row onto the two rightmost uncovered studs in the front row of the tan 2x8 plate, so its middle row should attach to the front row of the vertical dark bluish gray 2x4 plate and its front row should be overhanging to the front. Repeat symmetrically to the back. Orient the piece you just built horizontally with the slopes at the right end of the piece. Like this, attach it to the right of the tan 2x8 plate from step 230.

233. Place a white 2x3 curved slope vertically, slope to the front, with its back row onto two leftmost studs of the front row of the leftmost tan 2x8 plate, similarly to how you attached the front 2x3 curved slope in the previous step (only the right stud of the middle row will be attached to the front row of the vertical dark bluish gray 2x4 plate). Repeat symmetrically to the back with a black 2x3 curved slope from a separate subgroup of group 40. Repeat to the right with a black 2x3 curved slope from a separate subgroup of group 40. Repeat symmetrically to the front with a black 2x3 curved slope from a separate subgroup of group 40. Repeat to the right with a white 1x3! curved slope (again, note that this piece should be only one column wide in contrast to the previous pieces). Repeat symmetrically to the back with a white 1x3! curved slope.

234. Locate sixteen white 2x3 curved slopes. Place eight of them to the right of the previous piece, similarly to the back slopes in the previous step. Repeat symmetrically to the front. There should be a gap of 2x2 studs to the right of the just attached slopes, with the slopes from step 232 to the right of the gap.

Make sure that you repeated steps 226-234 four times. Next you will attach these four pieces to the second stage.

235. Inspecting the second stage you should be able to identify four large vertical gaps at the front, left, back, and right. The pieces you just built will fit perfectly into each of these gaps. Orient one of the pieces you just built vertically upright, the black 1x4 double curved slope at the upper end (former right) and its former top pointing to the front. Like this, attach the piece from the front to the second stage, its upper end attaching to the 1x2 side studs at the upper end of the front side, and its lower end attaching to the 1x4 side studs at the lower end of the front side. The tiled areas of the piece you just attached should align with the tiled areas that were already attached to the front left and front right of the second stage, flush at the bottom and top. The horizontal gap in the piece you just attached (near the upper end) should be aligned with the grille tiles at the front left and front right. Repeat symmetrically on the left, back, and right.

You have mostly finished the hull of the second stage and finished the ninth large bag.

Continue by using the parts from the tenth large bag to finish the second stage and to combine the first and second stage.

Open the large bag 10.  
Open group 41.

236. Make a piece four times. Locate a blue 1x2 plate and orient it horizontally. Place a black 1x1 rounded plate with a bar handle horizontally, bar handle to the left, onto the left stud of the previous piece, bar handle overhanging to the left. Place a light bluish gray 1x2 bracket with 1x2 side studs extending to the bottom vertically, side studs to the right, with its front anti-stud onto the right stud of the blue 1x2 plate, overhanging to the back. Place a dark bluish gray 1x2 bracket with 1x2 side studs extending to the top vertically, side studs to the right, on top. Place a yellow 1x2 curved slope horizontally, slope to the left, onto the front row. Locate two white 1x2 grille tiles and place one horizontally, grille to the right, from the right onto the bottom row of side studs. Repeat to the top. Repeat to make four pieces. Re-identify the remaining horizontal gaps in the hull of the second stage (almost at the top). There are four gaps, one at the front, left, back, and right, each of them separated by two vertical upright white 1x2 grille tiles. In the center of each gap there is a tan 2x2 plate of studs pointing outwards. In this step, you're going to fill in the gaps to the right of the mentioned 2x2 plate. In these gaps, towards the inside and left, there is a horizontal clip further inside the rocket which is what the bar handle of the pieces you just built will be attached to (you won't be able to feel the clip unless you have very small fingers, but it is there). Orient one of the pieces you just built, so that the bar handle is at the back and the curved slope is at the left. Like this, insert the piece into the mentioned right side of the front horizontal gap and clip the bar handle to the mentioned clip further inside the rocket. Repeat symmetrically on the left, back, and right (only the right! gaps).

Open group 42.

237. In this step, you'll build almost the same pieces as in the previous step, but horizontally mirrored and with a red curved slope instead of a yellow one. Make a piece four times. Locate a blue 1x2 plate and orient it horizontally. Place a black 1x1 rounded plate with a bar handle horizontally, bar handle to the right, onto the right stud of the previous piece, bar handle overhanging to the right. Place a light bluish gray 1x2 bracket with 1x2 side studs extending to the bottom vertically, side studs to the left, with its front anti-stud onto the left stud of the blue 1x2 plate, overhanging to the back. Place a dark bluish gray 1x2 bracket with 1x2 side studs extending to the top vertically, side studs to the left, on top. Place a red 1x2 curved slope horizontally, slope to the right, onto the front row. Locate two white 1x2 grille tiles and place one horizontally, grille to the left, from the left onto the bottom row of side studs. Repeat to the top. Repeat to make four pieces. In this step, you're going to fill in the gaps to the left! of the tan 2x2 plates mentioned in the previous step. In these gaps, towards the inside and right, there is a horizontal clip further inside the rocket which is what the bar handle of the pieces you just built will be attached to. Orient one of the pieces you just built, so that the bar handle is at the back and the curved slope is at the right. Like this, insert the piece into the mentioned left side of the front horizontal gap and clip the bar handle to the mentioned clip further inside the rocket. Repeat symmetrically on the left, back, and right.

Open group 43.

238. Make a piece four times. Locate a light bluish gray 2x2 plate. Locate two white 1x2 grille tiles and place one horizontal onto the front row. Repeat to the back. Repeat to make four pieces. The pieces you just built will fill the remaining small gaps in the upper hull of the second stage, the tan 2x2 plates mentioned in the previous two steps. Orient one of the pieces you just built upright, grill tiles to the front and bars vertical. Like this, attach the piece onto the tan 2x2 plate in the upper front. Repeat on the left, back, and right. There should be a horizontal ring exclusively consisting of vertical upright white 1x2 grille tiles spanning the second stage, now. Locate four white 4x4 tapered wedges (like a race car hood). Identify the remaining three rows of the vertical upright white 2x5 bracket (staircase) at the top front left, above a white 2x2 tile (the piece that has the light bluish gray 2x2 plate with pin holes attached to its underside). Orient the wedge upright with the former top to the front left and the flattened tip pointing to the top. Like this, attach the piece from the front left to the front left staircase, horizontally centered, the upper stair fitting into the gap in the bottom row of the piece, and overhanging one row to the top. The top row of the upper stair (the only row of the upper stair that was and is still visible at this point) together with the two studs of the wedge should form a horizontal area of 1x4 studs, now. Repeat symmetrically on the back left, back right, and front right.

239. Make a piece four times. Locate a blue 1x2 plate and orient it horizontally. Place a red 1x2 hinge brick base horizontally on top, open side to the front. Repeat to make four pieces. In the gaps between the race car hoods attached in the previous step, there are 1x2 studs to which you will attach the pieces you just built. Place one of the pieces you just built horizontally, open side of the hinge to the front, onto the two horizontal studs in the front gap between the front left and front right race car hoods. Repeat symmetrically on the left, back, and right.

240. Make a piece four times. Locate a light bluish gray 2x2 hinge brick top plate and orient it so that the hinge is horizontal in the bottom back. Place a black 1x4 double curved slope horizontally centered onto the front row. Repeat to make four pieces. Clip the hinge of one of the pieces you just built from the top into the front hinge brick base you attached in the previous step, hinge plate overhanging to the front. Then, angle the hinge brick top plate downwards as far as possible, by pushing it down from the top at the front, which should move the hull piece attached to it in line with the race car hoods. Repeat symmetrically on the left, back, and right.

Open group 44.

241. Make a piece four times. Locate a blue 1x2 plate and orient it horizontally. Locate two black 2x2 curved slopes and place one, slope to the left, with its front right anti-stud onto the left stud of the 1x2 plate, so overhanging to the left and back. Repeat symmetrically to the right. Repeat to make four pieces. Orient one of the pieces you just built horizontally with the blue 1x2 plate being at the bottom back and the slopes to the left and right. Like this, place the piece with its front row onto the back row of the front hinge brick top plate you attached in the previous step, overhanging to the back. Repeat symmetrically on the left, back, and right.

242. Make a piece five! times. Locate a flat silver wheel with an axle hole on one side and a stud on the other and orient it so the stud points to the top. Place a trans-orange 1x1 round plate on top. Turn the piece upside down. Insert a white 4l bar vertically upright from the top into the axle hole. Slide a flat silver 2x2 round brick with a hole (dome), dome top to the top, from the top onto the previous piece as far as possible. Repeat to make five pieces. Turn the second stage onto its back side, bottom to the front. You need to identify five holes into which you will insert the bars of the pieces you just built. The first hole is at the very center of the underside. Roughly halfway between the center of the underside and the hull, there are light bluish gray 1x2 bricks with a hole, one at the top, right, bottom, and left. These are the remaining four holes. Insert the bar of one of the pieces you built into each of the mentioned holes until the dome top touches the underside of the rocket. These are the engines of the second stage.

Awesome, you finished building the second stage.

243. In this step, you will combine the first and second stage by clipping bars at the underside of the second stage into clips at the top of the first stage. Make sure to identify the four double bars at the outside of the bottom of the second stage, two bars right next to each other at each of the four sides. Also, make sure to identify the four double clips at the outside of the top of the first stage, two clips right next to each other at each of the four sides. In between the clips there is space for the engines of the second stage. Now attach the bottom of the second stage from the top to the top of the first stage, clipping the double bars into the double clips at each of the four sides. Afterwards, there shouldn't be any gaps between the first and second stage.

You have successfully built the second stage as well as combined it with the first stage and finished the tenth large bag.

Continue by using the parts from the eleventh large bag to build the third stage and attach it to the other two stages.

Open the large bag 11.

Set the current piece aside to build the third stage.

Open group 45.

244. Locate a light bluish gray 4x4 round plate and orient it so that the studs are left-right (and back-front) aligned. Place a green 2x2 round tile with a hole centered on top.

245. Locate four light bluish gray 1x2x2 bricks with 2x2 side studs. Place one horizontally, side studs to the front, with its right anti-stud onto the left stud of the front row of the 4x4 round plate, overhanging to the left. Repeat to the right. Repeat symmetrically on the back with the remaining two pieces.

246. Make a piece two times. Locate a light bluish gray 1x2x2 brick with 2x2 side studs and flip it onto its back, side studs facing up and its former top pointing to the right. Place a tan 2x3 plate horizontally onto the 2x2 side studs, flush at the left, overhanging one column to the right. Place a light bluish gray 1x4 double curved slope vertically and centered onto the leftmost column. Repeat to make two pieces. Orient one of the pieces you just built vertically, right side up, side studs and slope to the left. Like this, place it onto the leftmost column of the 4x4 round plate in between the left studs of the back and front left bricks with 2x2 side studs. Repeat symmetrically on the right.

247. Make a piece. Locate a dark bluish gray 2x2 round brick and place two blue 1x2 plates vertically on top. The piece you just built should fit right into the center in between all the 1x2x2 bricks with 2x2 side studs. Note that it won't attach to the green 2x2 round tile underneath since the tile doesn't have any studs, but its top studs should be level with the top studs of the surrounding pieces forming an area of 4x4 studs.

248. Locate four white 2x2 plates with 1x2 side studs. Place one of them, side studs to the front onto the front left, flush at the left and front. Repeat to the right. Repeat symmetrically on the back with the remaining two pieces.

249. Make a piece. Stack three dark bluish gray 2x2 round bricks. Place a reddish brown 2x2 plate on top. Place the piece you just built onto the center of the third stage, attaching to one stud each of all of the four previous pieces.

250. Make a piece. Locate a white 2x6 brick and orient it horizontally. Locate four tan 1x2 brackets with 2x2 side studs extending to the bottom. Place one vertically, side studs to the left, onto the leftmost column of the previous piece. Repeat symmetrically on the right. Place the third bracket horizontally, side studs to the front, onto the center of the front row of the 2x6 brick. Repeat symmetrically to the back. Orient the piece you just built vertically and place it centered onto the reddish brown 2x2 plate from the previous step, at the top of the "center tower".

Open group 46.

251. Make a piece two times. Locate a blue 2x4 plate and orient it horizontally, upside down. Locate four dark bluish gray 1x2 plates with a tow ball on their long side. Place one horizontally, upside down, tow ball to the front, onto the two leftmost anti-studs of the front row of the 2x4 plate. Repeat to the right. Repeat symmetrically on the back with the remaining two pieces. Place a reddish brown 2x2 plate upside down onto the two center columns. Repeat to make two pieces. Orient one of the pieces you just built vertically upright, its top side to the left. Like this, attach the piece from the left, vertically centered, to the left 2x2 side studs at the top of the center tower, overhanging one row to the top and one to the bottom. Repeat symmetrically on the right.

252. Make a piece two times. Locate a white 2x6 brick and orient it horizontally. Locate six white 2x2 curved slopes. Place one of them, slope to the back, with its front row onto the two leftmost studs of the back row of the 2x6 brick, overhanging one row to the back. Repeat to the right, twice. Repeat symmetrically on the front with the remaining three pieces. Repeat to make two pieces. Orient one of the pieces you just built vertically upright, its top side to the left. Like this, attach the piece from the left to the two bottom rows of the blue 2x4 plate from the previous step and downwards to the tan 2x2 studs almost at the bottom of the left side. The top two rows of the blue 2x4 plate from the previous step should remain uncovered. Repeat symmetrically on the right.

253. Make a piece. Stack three dark bluish gray 2x2 round bricks. Place a blue 2x4 plate horizontally and centered on top. Place the piece you just built horizontally onto the center of the third stage, extending the "center tower" upwards.

Set the current piece aside. In steps 254-260 you will build the top section of the third stage.

Open group 47.

254. Locate a white 2x2 plate with 1x2 side studs and orient it side studs to the back. Place a red 2x2 plate with 1x2 side studs from a separate subgroup of group 47, side studs to the right!, to the right of the previous piece, so without attaching it.

255. Place a reddish brown 2x2 plate with its back row onto the front right stud of the left 2x2 plate (the white one) and the front left stud of the right 2x2 plate (the red one), overhanging one row to the front.

256. Place a red 2x2 plate with 1x2 side studs from a separate subgroup of group 47, side studs to the left!, with its back right stud under! the front left stud of the previous piece, so in front of the white 2x2 plate from step 254. Place a white 2x2 plate with 1x2 side studs, side studs to the front!, with its back left stud under! the front right stud of the reddish brown 2x2 plate from the previous step, so to the right of the previous piece. The four 2x2 plates should be placed in a square now, the side studs of each of the pieces facing a different direction, with the reddish brown 2x2 plate connecting all of them in the center.

257. Place a green 4x4 plate centered on top.

258. Locate two blue 2x4 plates and place them vertically on top, next to each other.

259. Make a piece two times. Locate a black 1x2 bracket with 2x2 side studs extending to the top and orient it horizontally, side studs to the front. Place a blue 1x2 plate horizontally on top. Place a black 1x2 plate from a separate subgroup of group 47 horizontally on top. Locate two white 1x1 round plates and place them next to each other onto the bottom row of side studs. Locate two black 1x1 round plates with a bar handle. Place one horizontally, bar handle to the left, onto the top left side stud. Repeat symmetrically to the right. Repeat to make two pieces. Orient one of the pieces you just built with the side studs pointing to the top, bar handles to the left and right and the white 1x1 round plates in the back row at the top. Like this, attach the piece with its right anti-stud of the back side to the left side stud at the front. If attached correctly, the piece should be horizontally centered. Repeat symmetrically on the back.

260. Place a black 2x8 plate vertically on top, horizontally centered. The piece should cover the white 1x1 round plates and the black 1x1 round plates with the bar handles from the previous step (except for the bar handles) as well as the center two columns of the main piece.

Next you will attach the piece you built in steps 254-260 to the top of the third stage.

261. Place the piece you just built, oriented as before with the black 2x8 plate vertical, centered on top of the third stage.

Open group 48.

262. Make a piece two times. Locate a black 1x2 bracket with 2x2 side studs extending to the top and orient it horizontally, side studs to the front. Locate two white 1x1 round plates and place them next to each other onto the bottom row of side studs. Locate two black 1x1 round plates with a bar handle. Place one horizontally, bar handle to the left, onto the top left side stud. Repeat symmetrically to the right. Place a white 2x6 brick vertically on top (not! onto the side studs), overhanging 5 rows to the back. Place a black 2x2 curved slope from a separate subgroup of group 48, slope to the left, with its right column onto the frontmost two studs of the left column of the previous piece, overhanging one column to the left. Repeat symmetrically to the right, also with a black 2x2 curved slope from a separate subgroup of group 48. Repeat to the back, twice!, using white! 2x2 curved slopes. Repeat symmetrically on the left, also using two white 2x2 curved slopes. The white 2x6 brick should be fully covered with curved slopes, now. Repeat to make two pieces. Orient one of the pieces you just built vertically upright, side studs at the top, its former top to the left. Like this, attach the piece from the left immediately above and flush with the bottom side panel at the left from step 252. Repeat symmetrically on the right.

263. Locate two black 2x3 plates. Place one horizontally, vertically centered, to the left of the vertical black 2x8 plate at the top, covering the left white 1x1 round plates and the left black 1x1 round plates with the bar handles from the previous step (except for the bar handles) as well as the two studs to the right of them. Repeat on the right side of the top. The two horizontal 2x3 plates should form an 8x8 plus sign together with the vertical 2x8 plate.

264. Make a piece two times. Stack two white 2x4 plates on top of each other horizontally. Flip the piece upside down. Locate two yellow 2x2 corner plates and flip them upside down. Orient one of them as if it were the braille letter F (so with the missing stud in the front right) and place it onto the previous piece flush at the left, front, and back. Repeat symmetrically to the right. The center two anti-studs of the front row should not be covered by the corner plates, now. Locate two dark bluish gray 1x2 plates with a bar handle on one end and flip them upside down. Place one of them vertically, bar handle to the front, with its back stud onto the left of the uncovered anti-studs that were mentioned before (front row, second anti-stud from the left), overhanging one column and the bar handle to the front. Repeat to the right. Flip the piece right side up again, bar handles to the front. Place a light bluish gray 1x4 double curved slope horizontally and horizontally centered onto the protruding studs of the 1x2 plates with the bar handle, so in front of the white 2x4 plate. Repeat to make two pieces. Flip the third stage upside down, the covered sides remaining at the left and right. Orient one of the pieces you just built horizontally upright, bar handles at the top and its former top to the front. Like this, place the piece from the front to the 3x4 side studs at the top of the front side, bar handles protruding to the top. Repeat symmetrically on the back. There should be a ring of four light bluish gray 1x4 double curved slopes around the third stage at the top of the sides, now.

Set the current piece aside. Steps 265-270 need to be repeated two times!

Open group 49.

265. Locate a white 1x10 plate and orient it horizontally. Place a white 1x2x1 panel (bench) horizontally, backrest to the back, onto the rightmost two studs.

266. Place a white 1x1 plate to the left of the previous piece. Place a white 1x2 plate with bar handles on each end vertically, bar handles protruding to the right, with its back stud to the left of the previous piece, overhanging to the front.

267. Locate two light bluish gray 1x2 plates with a tow ball socket on their long side. Place one horizontally, tow ball socket to the front, to the left of the previous piece. Repeat to the left. Place a white 1x3 plate horizontally to the left, overhanging one stud to the left.

268. Make a piece. Locate a black 1x3 plate from a separate subgroup of group 49 and orient it horizontally. Place a black 1x2 plate horizontally onto the two leftmost studs of the previous piece. Place a black 1x1 slope, slope to the front, onto the leftmost stud of the previous piece. Place the piece you just built with its rightmost stud under! the overhanging leftmost stud of the piece you were building before.

269. Place a white 1x10 plate horizontally to the left of the white bench. At the left side, the plate should touch the black 1x1 slope from the previous step.

270. Place a white 1x8 tile horizontally to the left of the white bench. Place a black 1x2 tile horizontally to the left.

Make sure that you repeated steps 265-270 two times. Next you will attach these two pieces to the third stage.

271. First, identify the attachment points for the piece you just built. At the front and the back of the third stage which should still be turned upside down, the hull is not complete yet and there is a large gap in the hull. At about mid-height at each of the left and right sides of the gaps, there are two tow balls one above the other. The pieces you just built will be attached to the left tow balls, respectively. Orient one of the pieces you just built vertically upright, bench at the top and tow ball sockets pointing to the back right. Like this, attach the two tow ball sockets from the front left to the two tow balls at the left side of the front gap of the third stage. Repeat symmetrically on the back right.

Set the current piece aside. Steps 272-277 need to be repeated two times!

Open group 50.

272. Locate a white 1x10 plate and orient it horizontally. Place a white 1x2x1 panel (bench) horizontally, backrest to the back, onto the leftmost two studs.

273. Make a piece. Locate two dark bluish gray 1x1 bricks with a side stud and place them next to each other, side studs to the front. Place a light bluish gray ingot on top, connecting the two previous pieces. Tilt the piece you just built onto its back, side studs to the top, ingot at the back. Like this, place the piece to the right of the white bench.

274. Locate two light bluish gray 1x2 plates with a tow ball socket on one side. Place one horizontally, tow ball socket to the front, to the right of the previous piece. Repeat to the right. Place a white 1x3 plate horizontally to the right, overhanging one stud to the right.

275. Make a piece. Locate a black 1x3 plate from a separate subgroup of group 50 and orient it horizontally. Place a black 1x2 plate horizontally onto the two rightmost studs of the previous piece. Place the piece you just built with its leftmost stud under! the overhanging rightmost stud of the piece you were building before.

276. Place a white 1x1 slope, slope to the front, onto the rightmost stud. Place a black 1x2 plate horizontally to the left. Place a white 1x3 plate horizontally to the left. Repeat to the left. The previous piece should touch the right 1x1 brick with the side stud from step 273.

277. Place a white 1x8 tile horizontally to the right of the white bench. Place a black 1x2 tile horizontally to the right.

Make sure that you repeated steps 272-277 two times. Next you will attach these two pieces to the third stage.

278. Remember the attachment points described in step 271. The pieces you just built will be attached to the right! tow balls, respectively. Orient one of the pieces you just built vertically upright, bench at the top and tow ball sockets pointing to the back left. Like this, attach the two tow ball sockets from the front right to the two tow balls at the right side of the front gap of the third stage. Repeat symmetrically on the back left.

Open group 51.

279. Make a piece two times. Locate a light bluish gray 2x12 plate and orient it horizontally. Locate two black 2x2 curved slopes from a separate subgroup of group 51. Place one, slope to the front, with its back row onto the two leftmost studs of the front row of the previous piece, overhanging one row to the front. Repeat symmetrically to the back. Locate ten white 2x2 curved slopes. Attach them similarly to the last two pieces, to their right, covering all of the studs of the 2x12 plate. Repeat to make two pieces. Orient one of the pieces you just built vertically upright, with the black curved slopes (former left) at the bottom of the front and its former top pointing to the front. Like this, attach the piece from the front to the front of the third stage, closing the hull at the front. The bottom row of the piece you just built should attach to the 1x2 side studs at the bottom front and the top two rows should attach to the 2x4 plate at the top front. Repeat symmetrically on the back. The hull of the third stage should no longer have any holes, now.

280. Flip the third stage right side up again. Place a reddish brown 2x2 plate centered on top.

281. Place a light bluish gray 6x6 dish with 2x2 studs on top centered on top. Place a light bluish gray 2x2 round tile with one stud on top centered on top.

282. Flip the third stage onto its back side, so the bottom points to the front. Insert a white 6l bar with a stop ring vertically, stop ring to the back, into the center of the bottom of the third stage. Slide a light bluish gray 3x3 dish with one stud on top upright, stud to the front, from the front onto the white bar as far as possible.

283. Make a piece. Locate a dark bluish gray 1x1 brick with a side stud and orient it with the side stud to the front. Place a light bluish gray 1x1 half circle round tile on top, flat side to the back. Like this, slide the piece you just built from the front onto the white bar from the previous step as far as possible, the bar exiting out of the side stud.

284. Slide a flat silver 2x2 round brick with a hole (dome), dome top to the back, from the front onto the white bar from step 282 as far as possible, attaching to the side stud of the previous piece.

285. Make a piece. Locate a flat silver wheel with an axle hole on one side and a stud on the other and orient it so the stud points to the top. Place a trans-orange 1x1 round tile on top. Orient the piece you just built upright, round tile to the front. Like this, slide the piece from the front onto the white bar from step 282 as far as possible, attaching to the previous piece. This is the engine of the third stage.

286. In this step, you will combine the first two stages and the third stage by clipping bars at the underside of the third stage into clips at the top of the second stage. Make sure to identify the two double bars at the outside of the bottom of the third stage, two bars right next to each other at two opposing sides. Also, make sure to identify the two double clips at the outside of the top of the second stage, two clips right next to each other at two opposing sides. In between the clips there is space for the engine of the third stage. Now attach the bottom of the third stage from the top to the top of the second stage, clipping the double bars into the double clips at the two opposing sides. Afterwards, there shouldn't be any gaps between the first two stages and the third stage.



You have successfully built the third stage as well as combined it with the first two stages and finished the eleventh large bag.

Continue by using the parts from the twelfth large bag to build the tip of the rocket, including the lunar module, the service module, the command module and the launch escape system. Also you will build the lunar lander, the lunar orbiter as well as three stands to display the rocket sideways.

Open the large bag 12.

Set the current piece aside. Next, you will build the ascent stage and the tip of the rocket.

Open group 52.

287. Locate a light bluish gray 4x4 round plate and orient it so that the studs are left-right (and back-front) aligned. Place a white 4x4 round plate from a separate subgroup of group 52 on top.

288. Place a dark bluish gray 2x2 round brick centered on top.

289. Locate two light bluish gray 1x2 concave bricks. Place one of them vertically onto the left column of the previous piece. Repeat to the right.

290. Locate two light bluish gray 2x4x2 half cylinders. Place one of them horizontally, open half to the back, onto the front half of the white 4x4 round plate from step 287. The curvature should match the underlying round plates. Repeat symmetrically to the back.

291. Place a light bluish gray 4x4 round brick with four side pin holes on top. Place a light bluish gray 4x4 round plate with a 2x2 round open center on top of the previous piece.

292. Locate four light bluish gray 1x1 round plates with flower edges. Turn one upright, stud to the back, and place it into the front pin hole of the 4x4 round brick from the previous step. Repeat symmetrically on the left, back, and right.

293. Place a white 4x4x2 cone on top.

294. Make a piece four times. Locate three white 1x1 water faucets and stack them on top of each other, spouts of the faucets facing in the same direction. Repeat to make four pieces. Orient one of the pieces you built so that the water spouts point to the left and place it onto the front left stud of the previous piece. Repeat symmetrically on the back left, back right, and front right with the water spouts pointing to the back, right, and front, respectively.

295. Place a white 2x2 round plate on top.

Open group 53.

296. Make a piece. Locate a black 8l axle and stick the center of the underside of a white 2x2 truncated cone with one stud onto one end. Orient the piece you just built vertically upright, cone at the top and insert it from the top into the axle hole of the 2x2 round plate from the previous step, going through the center of all the water faucets and also into the axle hole of the 4x4x2 cone from step 293, as far as possible until the cone attaches to the 2x2 round plate from the previous step.

297. Rotate each of the water faucets from step 294 by 90° clockwise, so until the spout touches the next water faucet. Afterwards, none of the spouts should stick out any longer. Place a white 1x1x6 support pillar onto the top of the cone from the previous step. Place a white 1x1 cone on top. This is the very tip of the rocket.

298. Flip the piece you are building onto its back side, so with the tip of the rocket pointing to the back. Locate a tan 4l axle with a center stop. The center stop is a part of the axle that is not cross-shaped but round instead. Orient the piece vertically with the center stop more to the front and insert it from the front into the center axle hole as far as possible, so until the center stop touches the 4x4 round plate.

299. Locate a black 3x3x2 cone and orient it upright, tip to the back. Like this, slide it onto the tan axle from the previous step until it touches the center stop.

Set the current piece aside. Steps 300-301 need to be repeated two times!

300. Locate a white 4x8x6 cone half and orient it horizontally, open half to the back.

301. Make a piece two times. Locate three white 4x4 round corners with three studs on top and stack them on top of each other, oriented similarly. Repeat to make two pieces. Orient one of the pieces as if it were the front left quarter of a circle and place it under! the left half of the cone from the previous step. The curvature of the round corners should match the one of the cone. Repeat symmetrically to the right.

Make sure that you repeated steps 300-301 two times. Next you will attach these two pieces to the ascent stage.

302. Flip the ascent stage (the piece you were building before, including the tip of the rocket) right side up again, the tip of the rocket pointing to the top. Notice that if you place the two half cone pieces you just built next to each other to form a full cone, there is a small hole in the center of the top. This is the hole, the center stop of the tan 4l axle from step 298 will go through. The top side of the half cones will attach to the underside of the light bluish gray 4x4 round plate almost at the bottom of the ascent stage and the black 3x3x2 cone at the very bottom of the ascent stage (from step 299) will become hidden inside the half cones. Attach the two pieces you just built as described, one from the left and one from the right.

303. In this step you will attach the ascent stage and the tip of the rocket you just built to the first three stages you built before. To do so, simply attach the ascent stage from the top to the top of the third stage, rotating the ascent stage until the studs attach. The exact rotation is not important.

Congratulations, you have finished building the actual rocket and will continue to build the lunar lander, the lunar orbiter as well as three stands to display the rocket sideways.

Set the current piece aside. Next you will build a small display base for the lunar lander.

Open group 54.

304. Locate a light bluish gray 10x10 octagonal plate and orient it so that the studs are left-right (and back-front) aligned, so one of the sides with 1x4 studs next to each other should be at the front.

305. Locate two light bluish gray 2x2 round tiles with one stud on top. Place one in the third and fourth row from the front, second and third column from the left. Place the other one centered in the middle onto the 10x10 octagonal plate. Place a black 1x1 cone (fez) onto the previous piece.

Set the current piece aside. Next you will build the bottom of the lunar lander.

306. Locate a dark bluish gray 2x4 technic plate with 3 holes and orient it horizontally.

307. Make a piece four times. Place a pearl gold 1x1 plate onto the side stud of a dark bluish gray 1x1 brick with a side stud. Repeat to make four pieces. Place one of the pieces you just built onto the front left stud, plate to the front. Repeat on the front right stud. Repeat symmetrically on the back with the remaining two pieces.

308. Make a piece two times. Locate a pearl gold 2x2 curved slope with two studs on top and orient it so the studs are at the right. Place a pearl gold 1x1 plate onto the front stud. Repeat to the back. Place a pearl gold 1x2 plate with a bar handle on one side vertically, bar handle to the right, onto the previous two pieces. Repeat to make two pieces. Orient one of the pieces you built with the bar handle to the front and place its back row onto the center of the front row of the piece you built before, so onto the 2x4 technic plate, overhanging one row to the front. Repeat symmetrically on the back.

Open group 55.

309. Locate two pearl gold 1x2 plates with a bar handle on one side. Place one vertically, bar handle to the left onto the leftmost column, so onto the two dark bluish gray 1x1 bricks with a side stud. Repeat symmetrically on the right.

310. Make a piece. Locate a light bluish gray 4x4 round plate and flip it upside down. Locate two black 2x2 round plates, stack them on top of each other and also flip them upside down. Place them upside down onto the center of the 4x4 round plate. Flip the piece you just built right side up again, so the black 2x2 round plates are at the bottom and place it centered onto the piece you built before, the 2x2 round plates fitting into the gap in the center.

311. Locate four metallic gold 1x1 slopes. Place one from the front onto the sideways pearl gold 1x1 plate at the left of the front side, slope to the left. Repeat symmetrically on the back left, back right, and front right.

312. Locate a yellow 3l axle and insert it vertically upright from the top into the center axle hole as far as possible.

313. Make a piece four times. Locate a pearl gold 1x1 round plate with a hollow stud. Place a pearl gold telescope vertically upright, thick part at the bottom, on top of the previous piece. Insert a dark bluish gray 1l bar with a clip on one end (wrench), bar first from the bottom into the 1x1 round plate and telescope until only the clip sticks out. Repeat to make four pieces. Clip one of the pieces you just built from the front to the bar handle at the front, telescope pointing to the front. Repeat symmetrically on the left, back, and right. These are the legs of the lunar lander and will be rotated into place, later.

Set the current piece aside. Next you will build the top of the lunar lander.

Open group 56.

314. Locate a dark bluish gray 1x2 plate and orient it horizontally. Place a light bluish gray 1x2 plate with a 1-finger hinge connector at one side horizontally, hinge to the front, in front of the previous piece, so without attaching it.

315. Locate two light bluish gray 2x2 round plates, stack them on top of each other and place them on the previous two pieces, connecting both.

316. Locate two light bluish gray 1x2 technic bricks with an axle hole. Place one horizontally onto the front row. Repeat to the back.

317. Locate two light bluish gray 1x2 brackets with 2x2 side studs extending to the bottom. Place one vertically, side studs to the left, onto the left column. Repeat symmetrically on the right.

318. Locate two light bluish gray 1x2 plates with one stud on top. Place one vertically onto the left column. Repeat to the right.

319. Place a dark bluish gray 1x2 plate horizontally onto the two top studs of the previous two pieces. Place a light bluish gray ingot horizontally on top of the previous piece.

320. Make a piece. Locate a light bluish gray 1x2 plate with a bar handle on each end and orient it horizontally. Place a dark bluish gray 1x2 plate horizontally on top. Place a light bluish gray ingot horizontally on top. Rotate the piece you just built vertically upright, its former underside pointing to the left and attach it from the right to the back column of the 2x2 side studs at the right.

321. Make a piece. Locate a light bluish gray 1x2 plate with a bar handle on each end and orient it horizontally. Place a light bluish gray 1x1 half circle round tile onto the left stud, flat side to the right. Place a dark bluish gray 1x1 plate with a ring with a stud on each side on one side, ring to the front, to the right. Orient the piece you just built vertically upright, its former underside pointing to the right, ring to the front, and attach it from the left to the back column of the 2x2 side studs at the left.

322. Flip the piece you are building onto its back, so that the 1-finger connector points to the top. Place a light bluish gray 2x2 round plate with rounded bottom and space hatch pattern, rounded bottom to the front, from the front to the former underside of the piece you are building.

323. In this step, you'll connect the top of the lunar lander (the piece you just built) and the bottom of the lunar lander (the piece you built before). The top of the lunar lander should still be rotated as when you built it, so with the space hatch round plate pointing to the front, and the 1-finger hinge connector pointing to the top. The bottom of the lunar lander should be oriented with the telescopes pointing in the four cardinal directions. Slide the top of the lunar lander with the axle holes of the 1x2 technic bricks from the top onto the yellow 3l axle sticking out of the top of the bottom of the lunar lander.

324. In this step, you'll connect the lunar lander and the small display base you built before the lunar lander. At the bottom of the lunar lander is a horizontal dark bluish gray 2x4 plate. Place it centered onto the black 1x1 cone (fez) in the center of the display base.

325. Rotate the telescopes at the sides of the lunar lander (the legs) towards the bottom until they touch the light bluish gray 10x10 octagonal plate. Locate three white microfigures with a NASA astronaut pattern. Place one onto the light bluish gray 2x2 round tile with one stud on top at the front left of the octagonal plate. Place another one onto the rightmost stud of the front row of the octagonal plate. Place the third one anywhere you'd like or place it next to the octagonal plate as LEGO does in the instructions. Locate a transparent 1x2 tile with an American flag on it and place it vertically upright, its former top pointing to the front in between the rightmost stud of the second row from the front and the second stud from the right of the third row from the front.

You have successfully built the lunar lander. Next you'll build the lunar orbiter.

Open group 57.

326. Locate a dark blue 8x8 round tile with 2x2 studs on top and rotate it so that there is a front and back row of studs. Place a light bluish gray 4x4 round plate with a 2x2 round open center, rotated so that there are two studs horizontally next to each other at the front, and place the underside of these two studs onto the front row of studs of the previous piece.

327. Make a piece. Locate a dark bluish gray 4x4x2 cone with an axle hole and hatches and handles patterns. Slide it from the top onto a dark bluish gray 4l axle with a stop on one end, vertically upright, stop at the bottom, as far as possible. Place the piece you just built centered onto the light bluish gray 4x4 round plate from the previous step.

328. Make a piece. Locate a dark bluish gray axle connector hub with 4 bars, one at each side, and rotate it so that the bars point in the four cardinal directions and the hole with the larger opening is at the top. Slide a pearl gold 1x1 round plate with a hollow stud from the front, stud to the back, onto the front bar of the previous piece. Locate three bright light orange balls with a hole. Slide one of them onto each of the left, back, and right bars. Keeping the orientation, slide the piece you just built from the top onto the dark bluish gray 4l axle sticking out of the top of the 4x4x2 cone.

329. Make a piece. Locate eight orange 3l hinge cylinders with a 1-finger hinge connector on one end and a 2-finger hinge connector on the other end. Connect all of them into a ring by connecting a 1-finger connector to a 2-finger connector eight times, the last connection closing the circle. Place the piece you just built around the 4x4x2 cone, representing the inflatable ring keeping the lunar orbiter afloat in the ocean after landing back on earth.

You have successfully built the lunar orbiter. Next you'll build the three stands to display the rocket sideways.

Open group 58.

330. Place a blue 1x6 plate vertically on top of a light bluish gray 1x6 plate from a separate subgroup of group 58 vertically.

331. Place a blue 1x6x5 rectangular girder vertically on top.

332. Make a piece two times. Locate a dark bluish gray 1x4 thin lift-arm and orient it horizontally. Locate two yellow 3l axles. Place one vertically upright from the top into the left axle hole of the lift-arm. Repeat symmetrically on the right axle hole. Slide a dark bluish gray 1x4 thin lift-arm horizontally from the top onto the two previous pieces, similar to the lift-arm at the bottom, as far as possible. Locate two light bluish gray bushes (see the note on LEGO Technic™ part names in the beginning). Slide one from the top onto the left yellow 3l axle, as far as possible. Repeat on the right yellow 3l axle. Repeat to make two pieces. Rotate one of the pieces you just built horizontally upside down, with the yellow axles pointing to the bottom. Like this, insert the right yellow axle from the top into the back axle hole at the top of the rectangular girder, overhanging to the left. Repeat on the front axle hole.

333. Make a piece. Place a blue 1x6 plate vertically on top of a light bluish gray 1x6 plate from a separate subgroup of group 58 vertically. Place a blue 1x6x5 rectangular girder vertically on top. Slide the piece you just built from the bottom onto the yellow axles at the left, so that the girder attaches similar to the one at the right.

You have successfully built the first, slightly taller stand. Next you'll build the two slightly smaller stands.

Steps 334-336 need to be repeated two times.

334. Locate a blue 1x6x5 rectangular girder and orient it vertically. Locate two red 2l axles. Insert one vertically upright from the top into the front axle hole at the top of the previous piece. Repeat on the back axle hole.

335. Locate four dark bluish gray 1x4 thin lift-arms. Slide one horizontally from the top with its right axle hole onto the front red 2l axle, as far as possible, overhanging to the left. Repeat to the top. Repeat with the remaining two lift-arms at the back.

336. Make a piece. Locate a blue 1x6x5 rectangular girder and orient it vertically. Locate two red 2l axles. Insert one vertically upright from the top into the front axle hole at the top of the previous piece. Repeat on the back axle hole. Slide the piece you just built from the bottom into the left axle holes of the lift-arms, so that the girder attaches similar to the one at the right.

Make sure that you repeated steps 334-336 two times.

337. To display the rocket sideways, place it onto the three stands, the rocket resting in between the thin lift-arms (so the thin lift-arms should be oriented horizontally). The taller stand should be placed under the third stage. The two smaller stands should be placed under the first and second stage.

Congratulations! You have successfully built the NASA Apollo Saturn V!

The three stages can be separated by doing the opposite of what you did during construction (so by pulling apart the stages, separating the clips from the bars). Also, the lunar lander can be placed within the ascent stage. To do so, separate the ascent stage from the third stage, separate the lunar lander from the display base, fold its legs all the way down, and place the lunar lander centered onto the single stud at the top of the third stage. Afterwards, you can combine the third stage and the ascent stage again, hiding the lunar lander within the ascent stage.

Thank you so much for building this set!

At the end of the instruction booklets are advertisements for three LEGO Ideas sets. The first set is 21322 Pirates of Barracuda Bay, a shipwreck island model which can be split in half. The second set is 21323 Grand Piano which features a removable 25-key keyboard, authentic hammer action, moving dampers and pedal, and motor. Combined with the LEGO Powered Up app, you can play a tune yourself or automatically. The third set is 21321 International Space Station, featuring 2 rotating joints with 8 adjustable solar panels and a posable Canadarm2 among other details. LEGO Ideas sets are all created by LEGO fans and voted for by LEGO fans. Find more information at [ideas.lego.com](https://ideas.lego.com).

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