



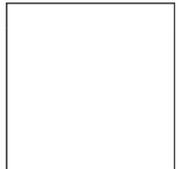
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# An unprecedented move



In the 1970s and 80s, NASA and Boeing joined forces to create innovative technology for transporting NASA's Orbiters, commonly known as space shuttles. The idea for airborne means of transportation arose from a tangible challenge: ground transportation was both challenging and time-consuming.

Teams from NASA and Boeing collaborated to explore if and how the Boeing™ 747™ series, originally designed for commercial use, might be re-engineered to serve as Space Shuttle Carrier Aircraft (SCA).

Between 1974 and 1990, two Boeing 747 models were successfully repurposed to carry active space shuttles between landing sites and launch complexes. Mainly to and from NASA's Kennedy Space Center in Florida.

The first Boeing 747 SCA was acquired by NASA from a commercial airline company in 1974. Initially used for wake vortex research, it was later modified to its shuttle-carrying configuration. It played a key role in the 1977 Space Shuttle Approach and Landing Tests with the orbiter prototype, Enterprise.

This aircraft conducted most of the shuttle ferry missions and delivered retired shuttles to museums. It was retired in 2012 and is now part of an exhibit at NASA's Space Center Houston.

The second Boeing 747 SCA served from 1990 until 2012, accumulating over 33,000 total flight hours since it was first built. It is now displayed at an aerospace heritage museum in California.



# Getting ready for the first launch

The two SCAs featured unique modifications. Most of the interior furnishings were removed to reduce weight and make room for the features that were required to carry shuttles.



#### **VERTICAL STABILISERS:**

*Two additional vertical stabilisers were installed on each end of the standard horizontal stabiliser to improve stability during flight.*

#### **POWER SUPPLY ADDITIONS:**

*Power supplies and cabling were added, primarily to power the orbiter's fluid system heaters and water coolant loop pumps during ferry operations.*



#### **TAIL CONE:**

*A special tail cone engine cover was used on the space shuttle to improve aerodynamics during transportation.*



#### **ORBITER MOUNTING STRUTS:**

*Three mounting struts were added — one forward and two aft — to secure the Space Shuttle orbiter to the aircraft.*

#### **ENGINE IMPROVEMENTS:**

*The Pratt & Whitney JT9D engines were altered to provide more power.*



# From the LEGO® Icons design team

In 1983, the first Boeing™ 747™ SCA and the NASA Orbiter Enterprise appeared together at the Paris Air Show in France as part of their only international tour. With help from our partners at NASA and Boeing, we developed new building solutions and elements to capture specific design details and functions from this unique exhibit. We hope you enjoy building this marvel of aviation engineering as much as we enjoyed creating it.

#### COCKPIT:

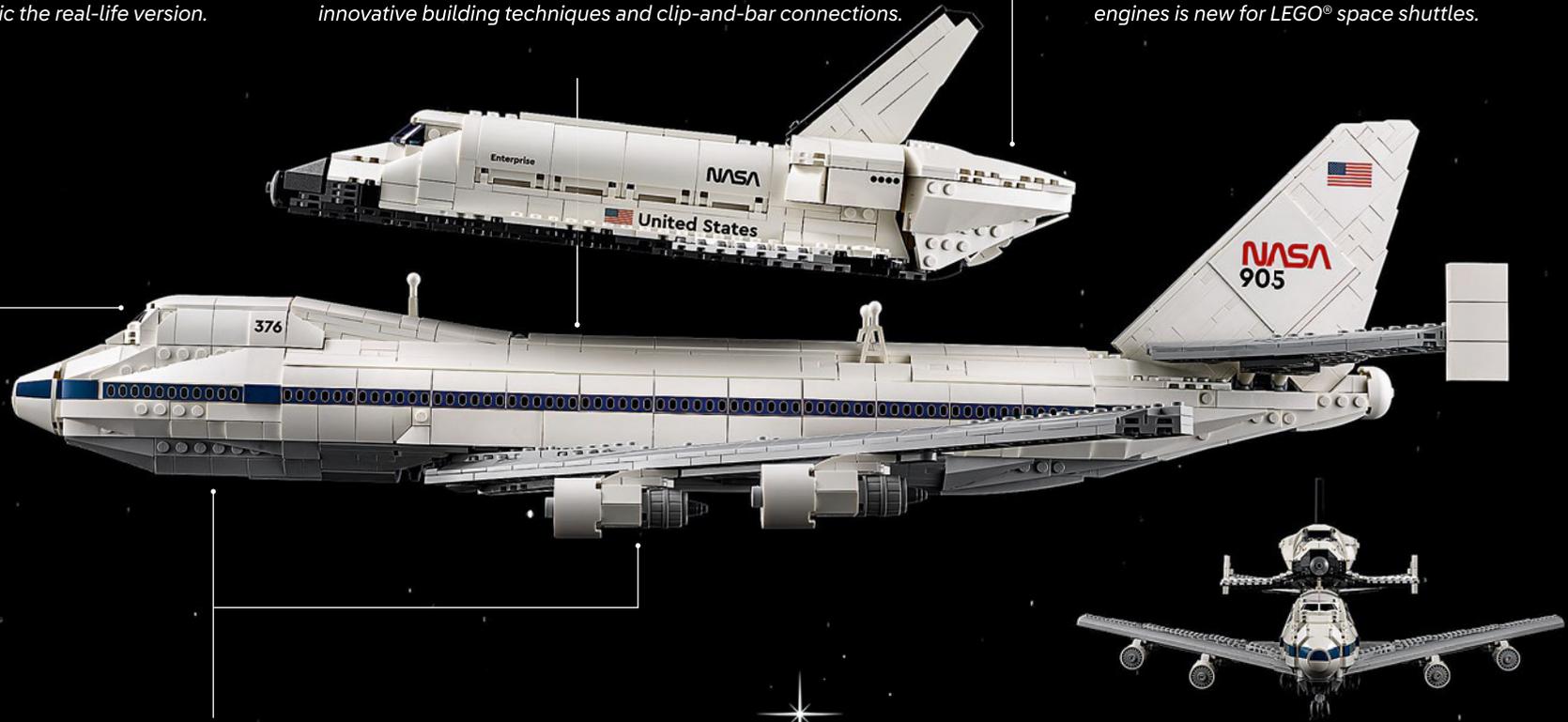
The curvy cockpit and characteristic nose mimic the real-life version.

#### FUSELAGE:

The smooth 'tube' shape of the Boeing 747 is achieved through innovative building techniques and clip-and-bar connections.

#### TAIL CONE:

The tail cone used to cover the NASA Enterprise's engines is new for LEGO® space shuttles.

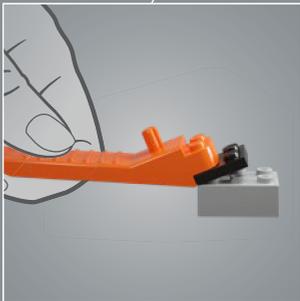
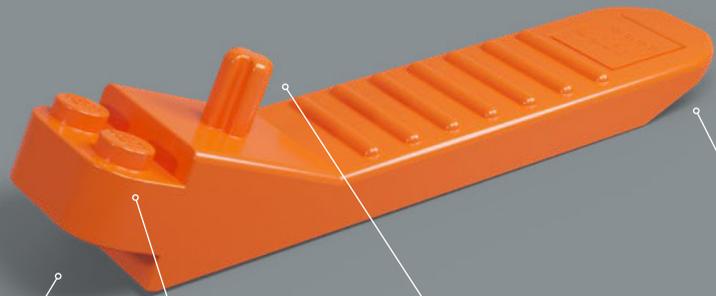


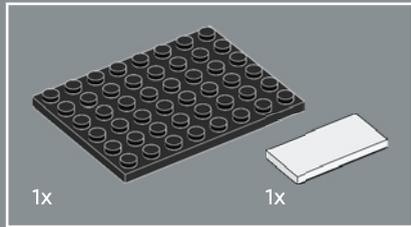
#### LANDING GEAR:

This is the first official LEGO® plane with five landing gears synchronised to move simultaneously. A new landing gear element holds four airplane wheels on the 'truck'.

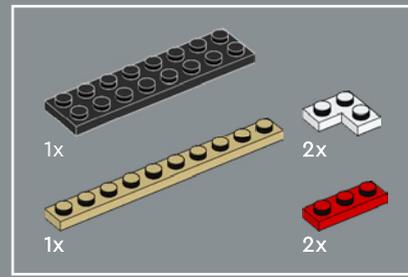
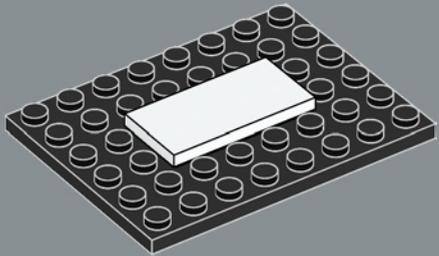
#### WINGS:

A set of triangular builds, one horizontal and one vertical, help form the curved leading edge of the Boeing™ 747™ wings and their slight upright angle.

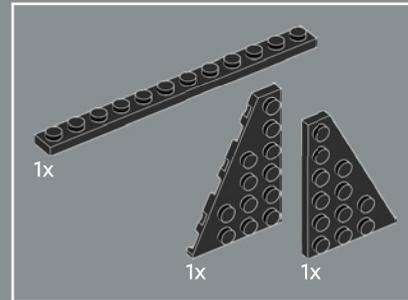
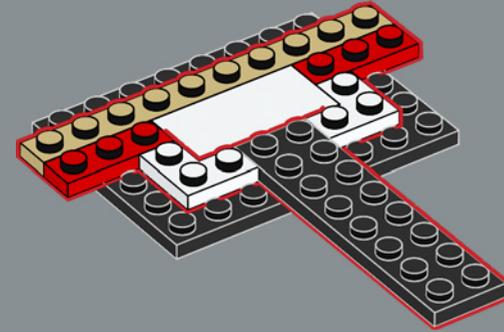




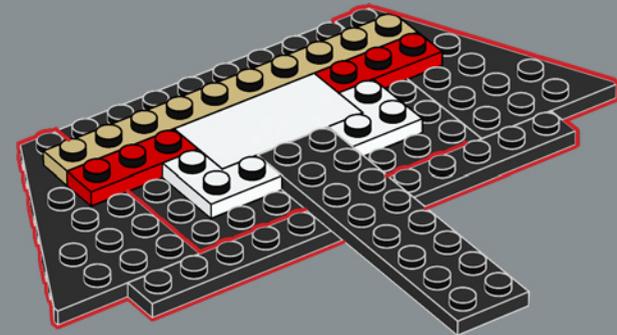
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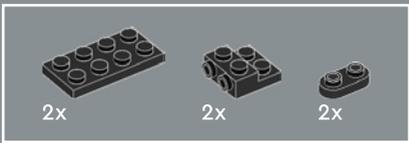


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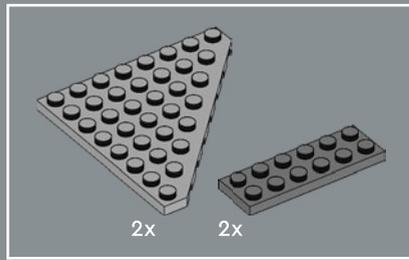
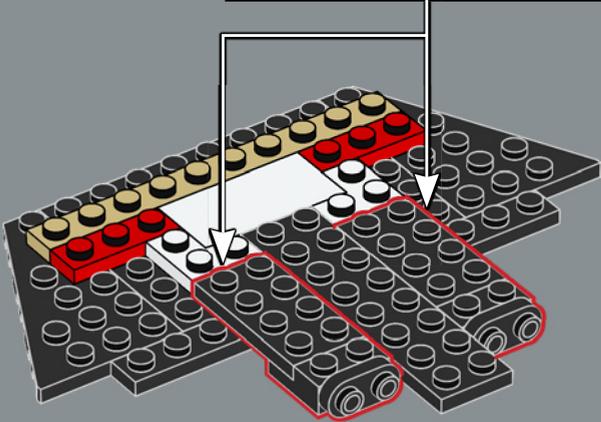
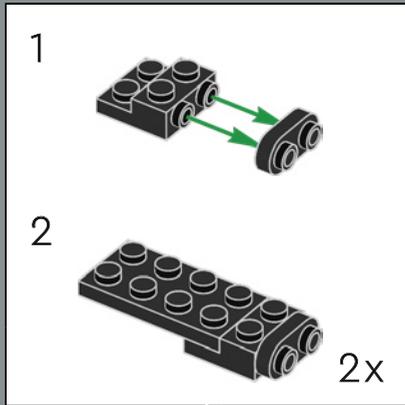


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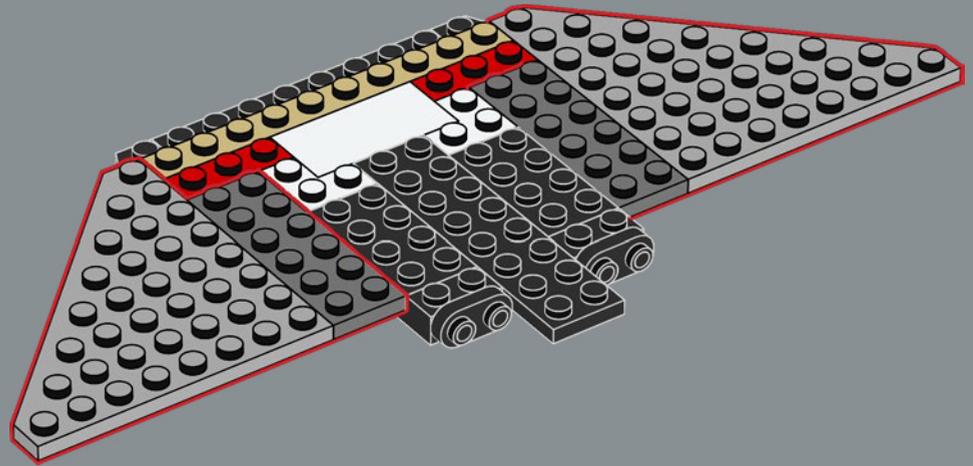


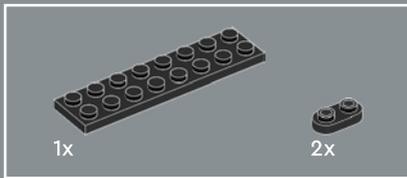


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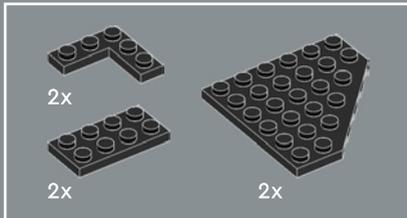
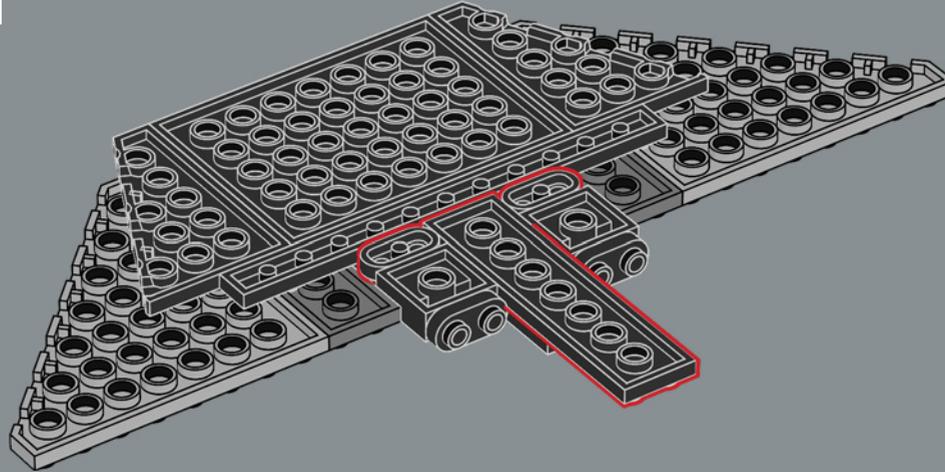


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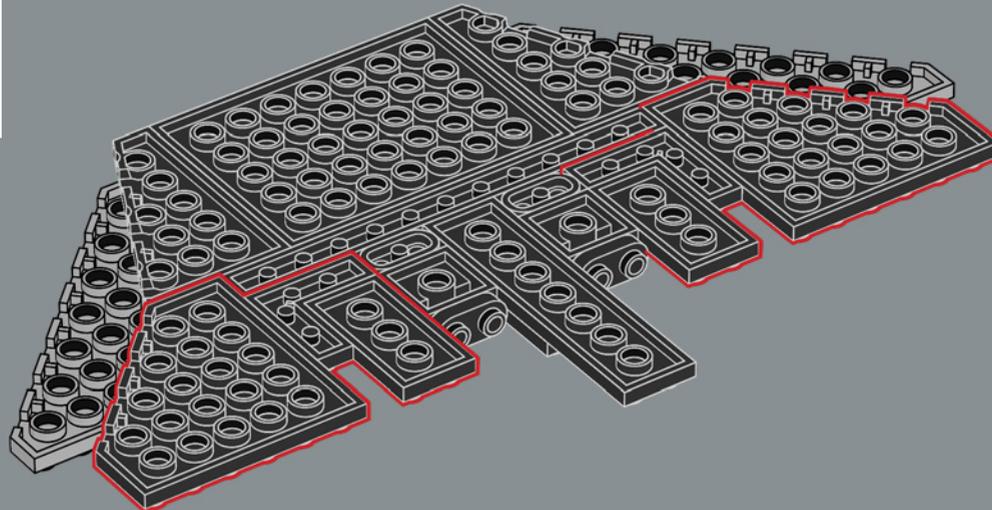




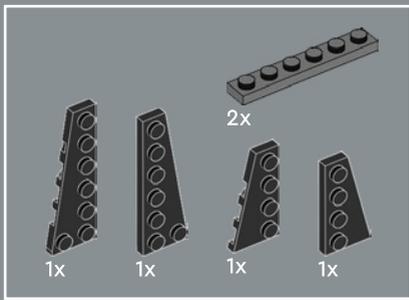
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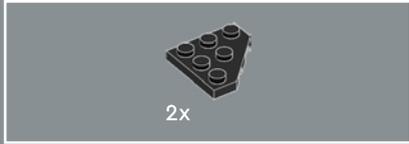
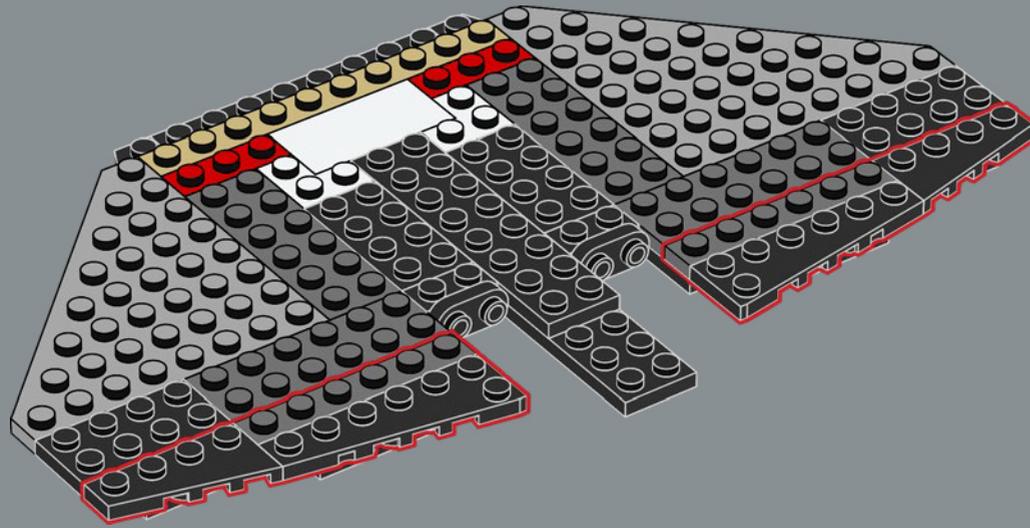
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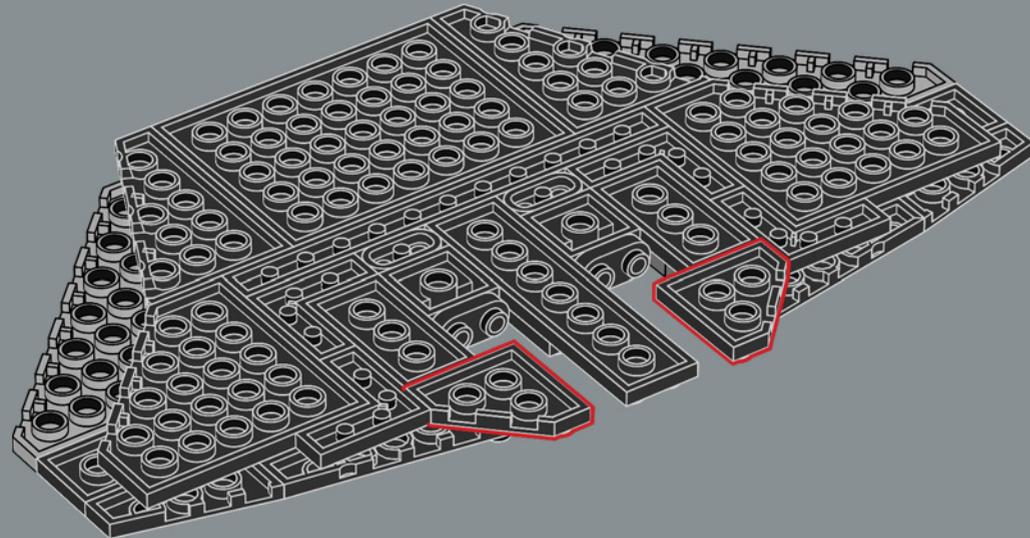




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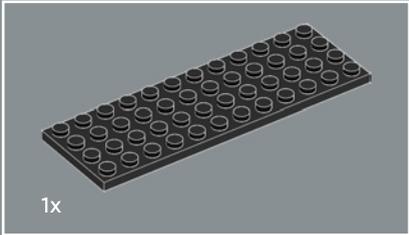
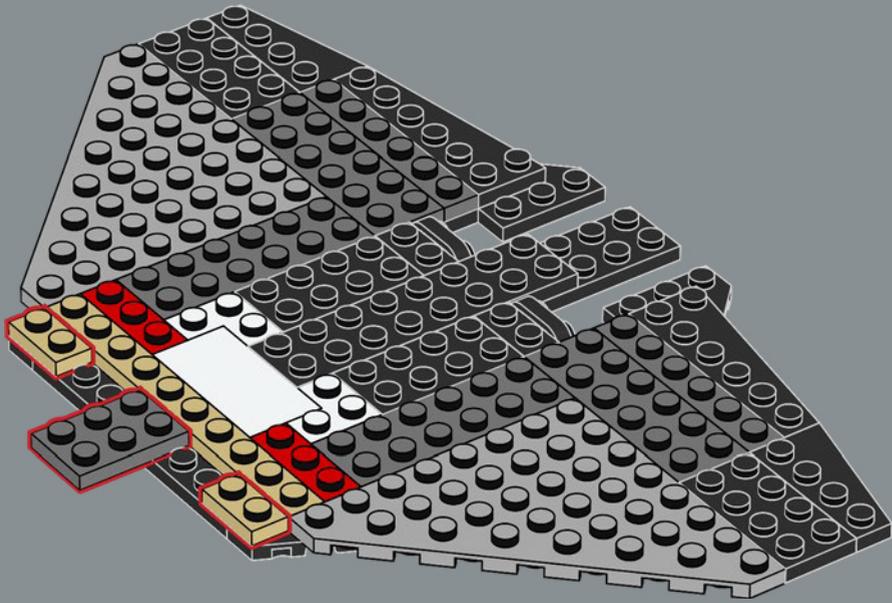


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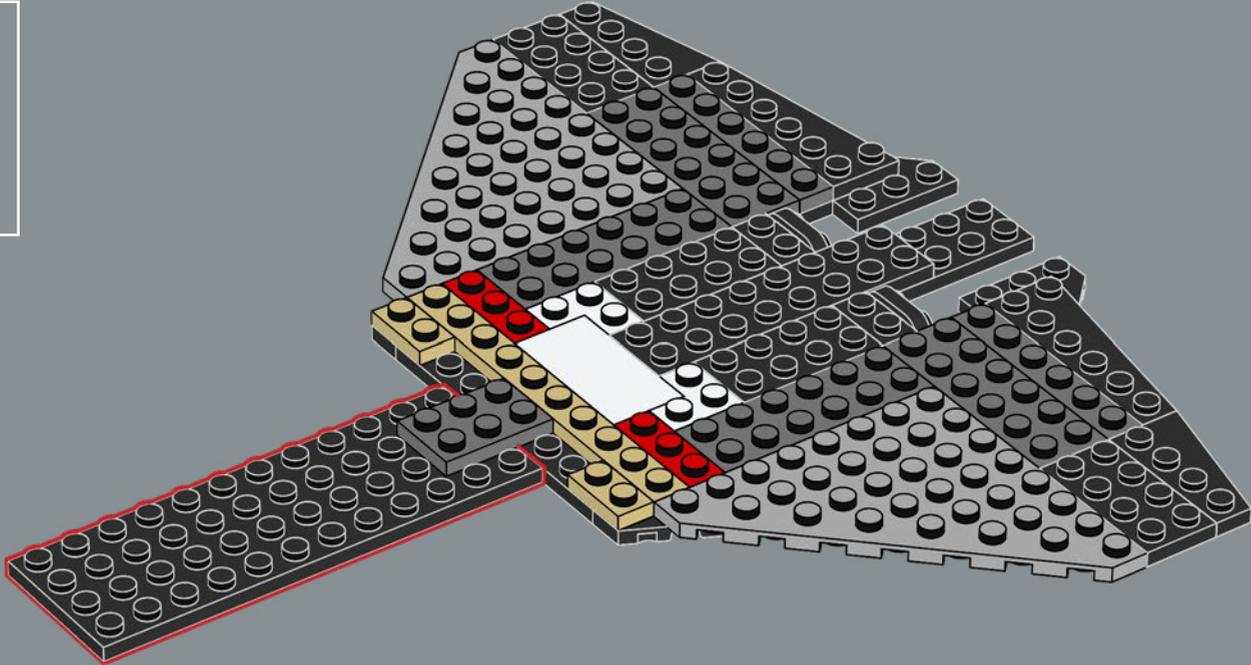


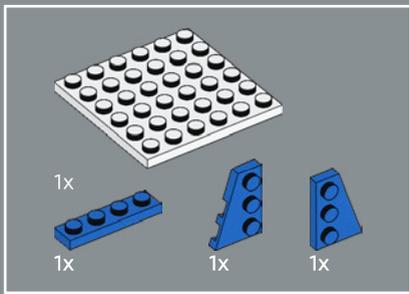


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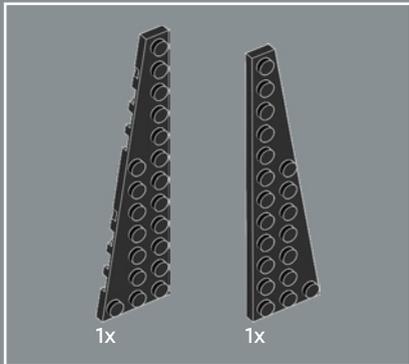
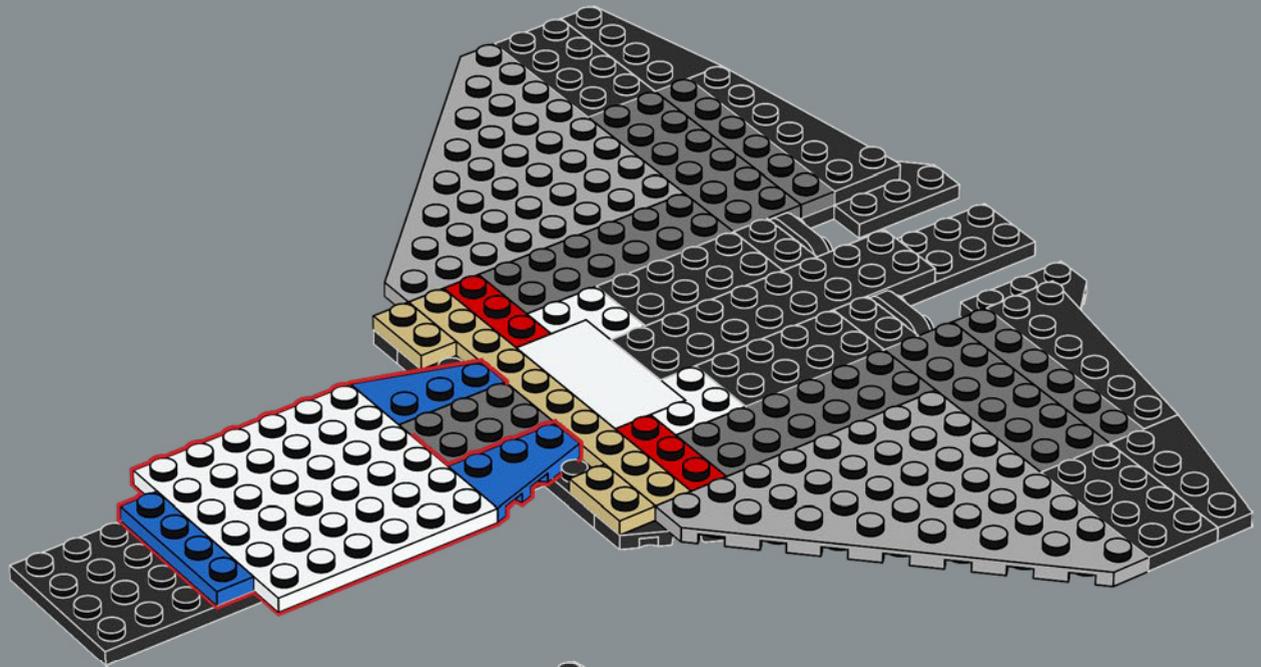


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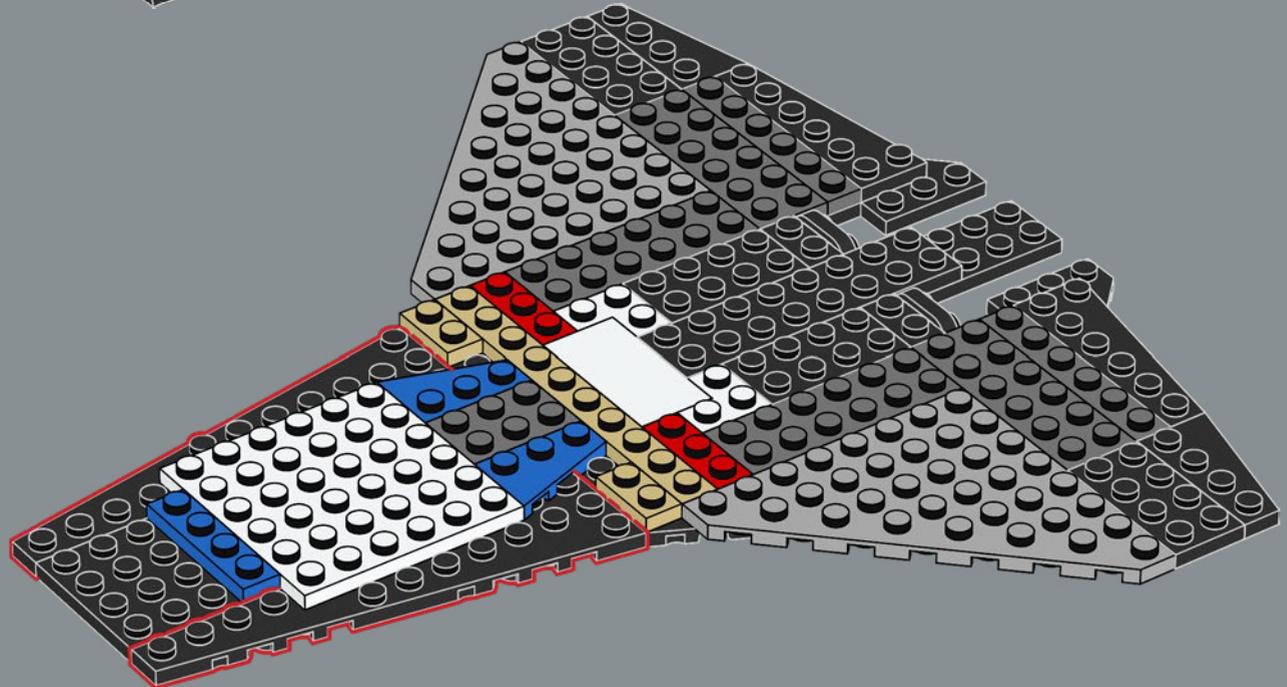


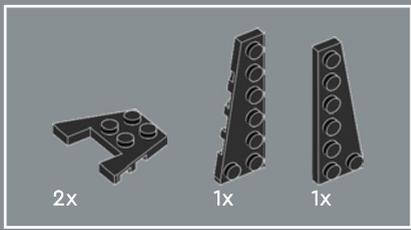


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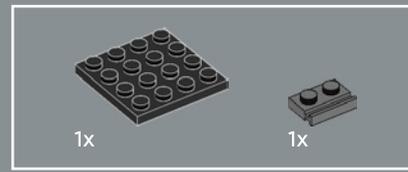
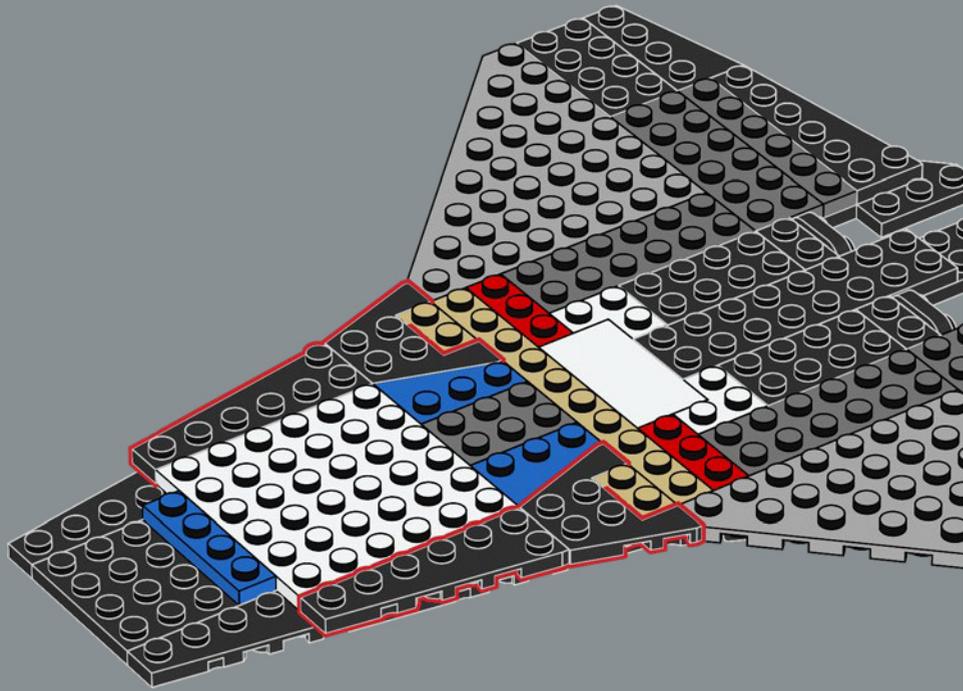


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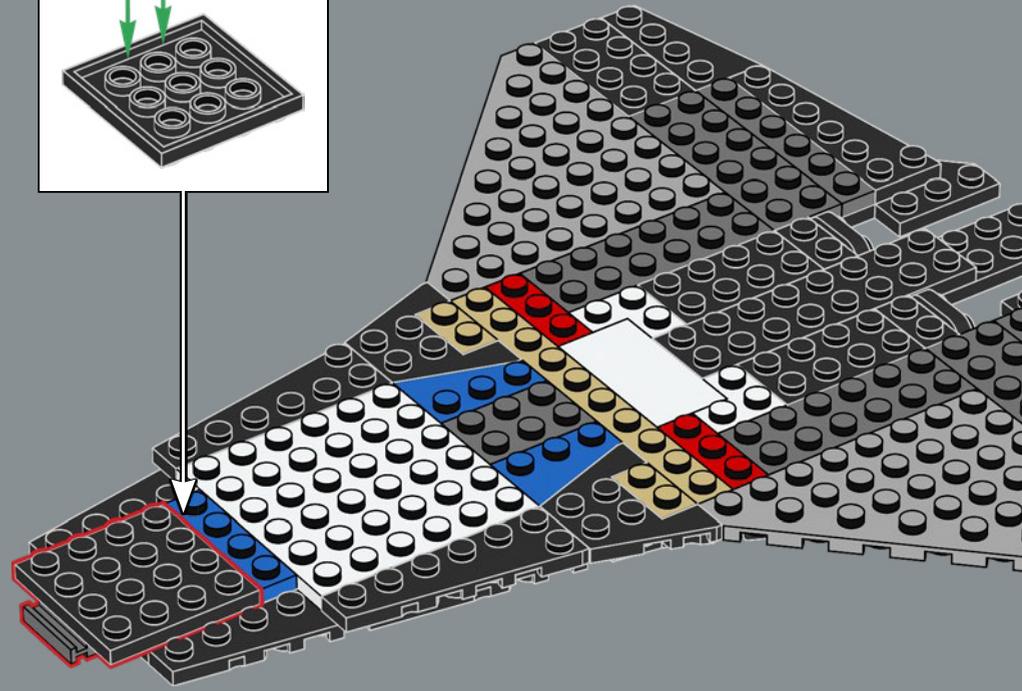
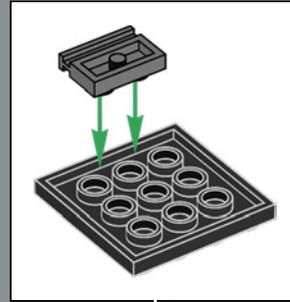


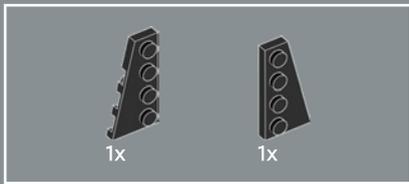


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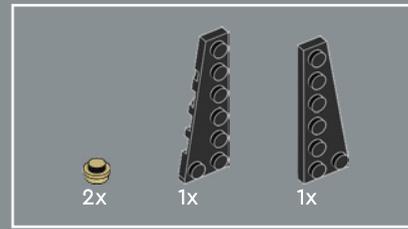
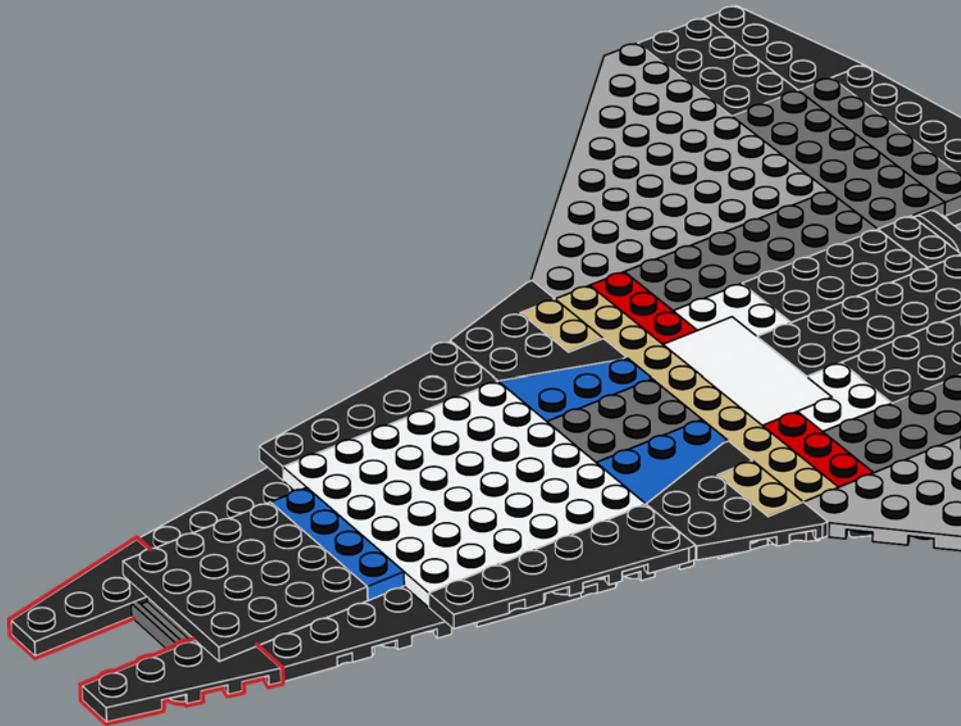


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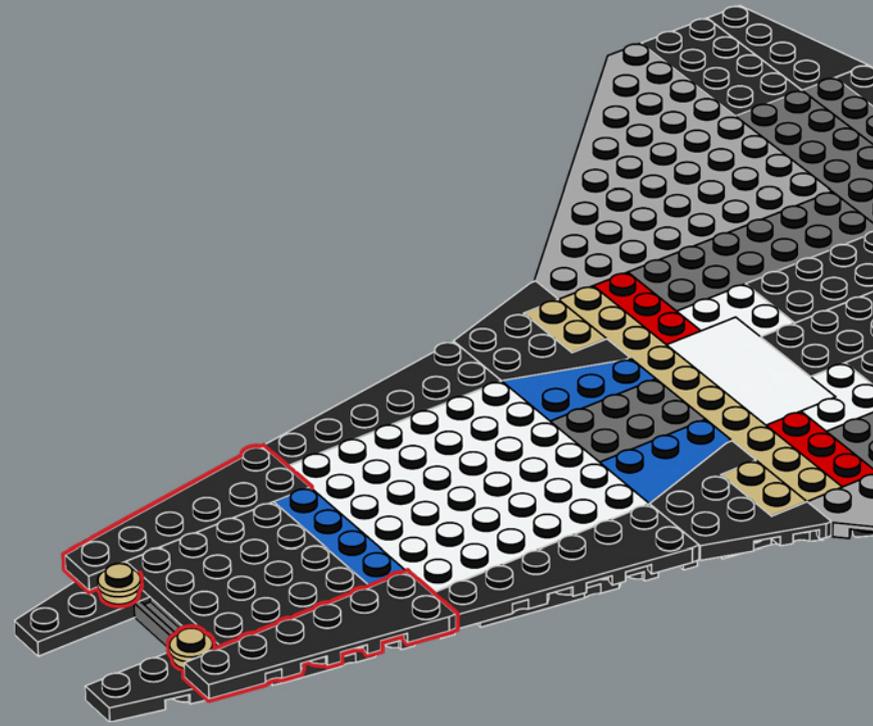


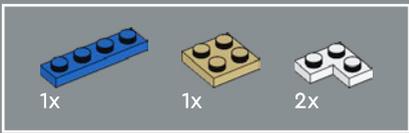


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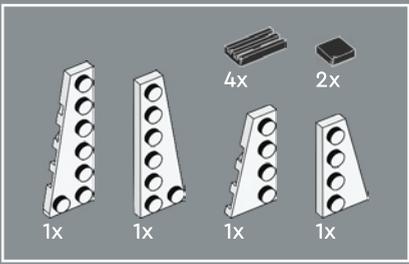
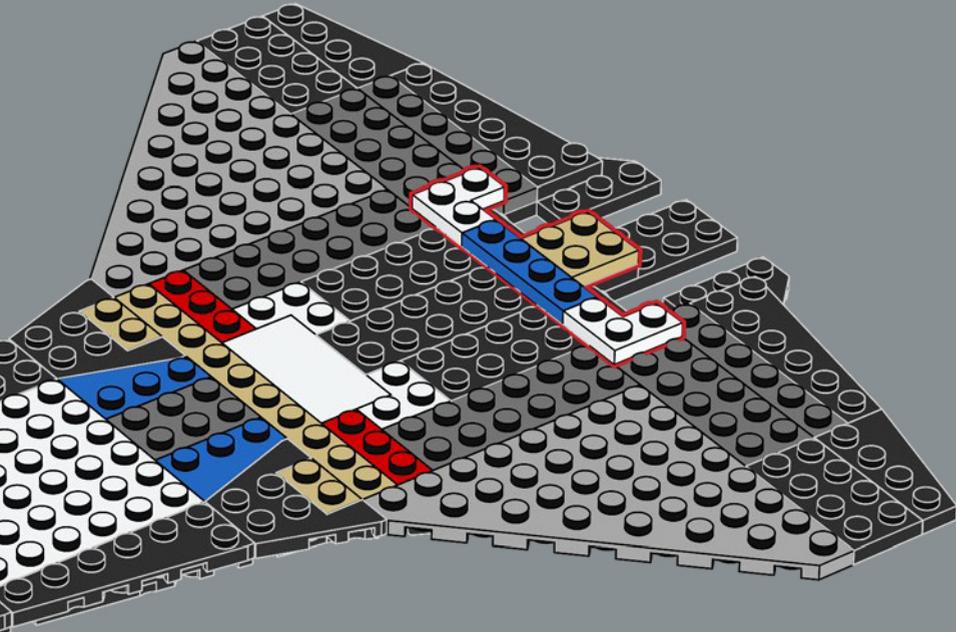


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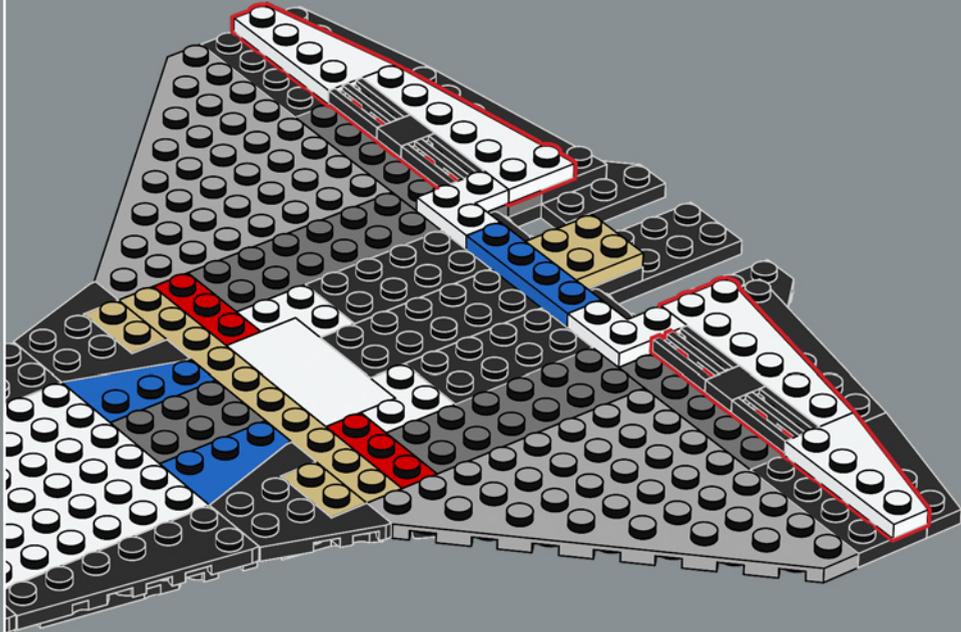


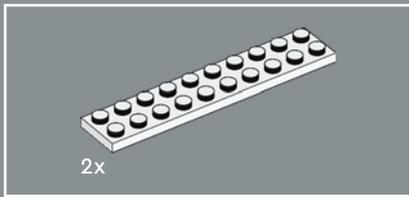


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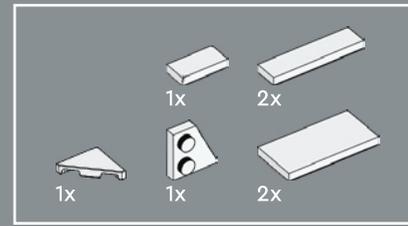
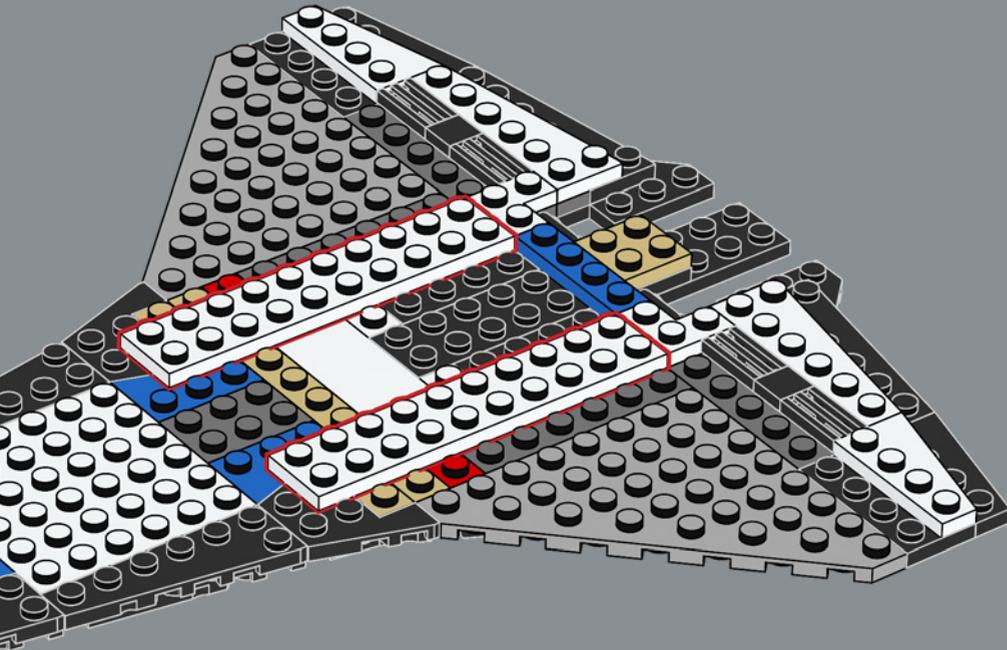


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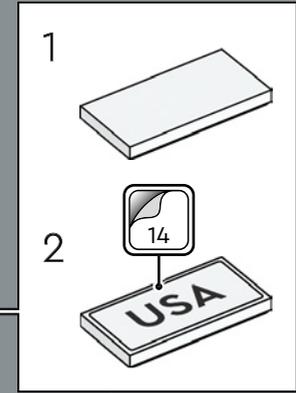
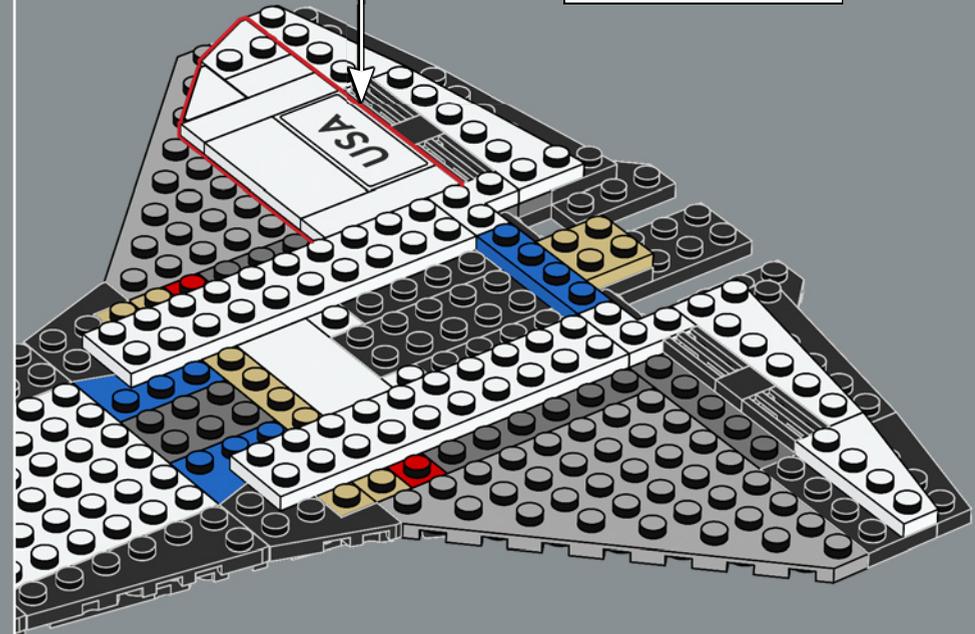


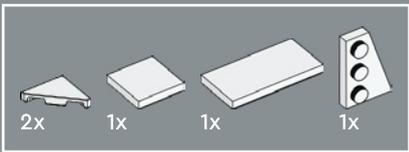


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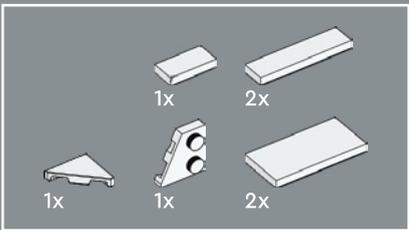
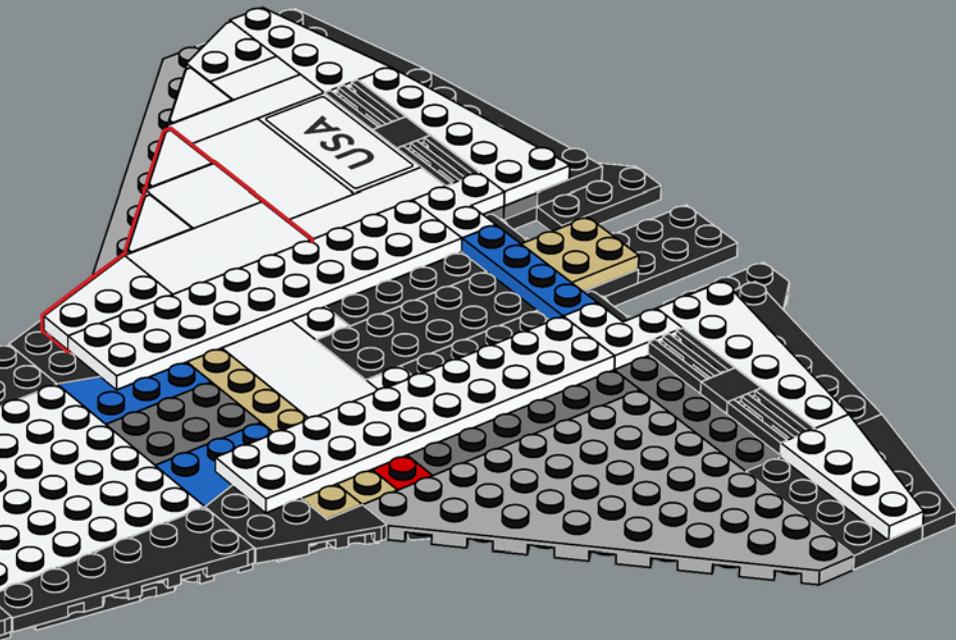


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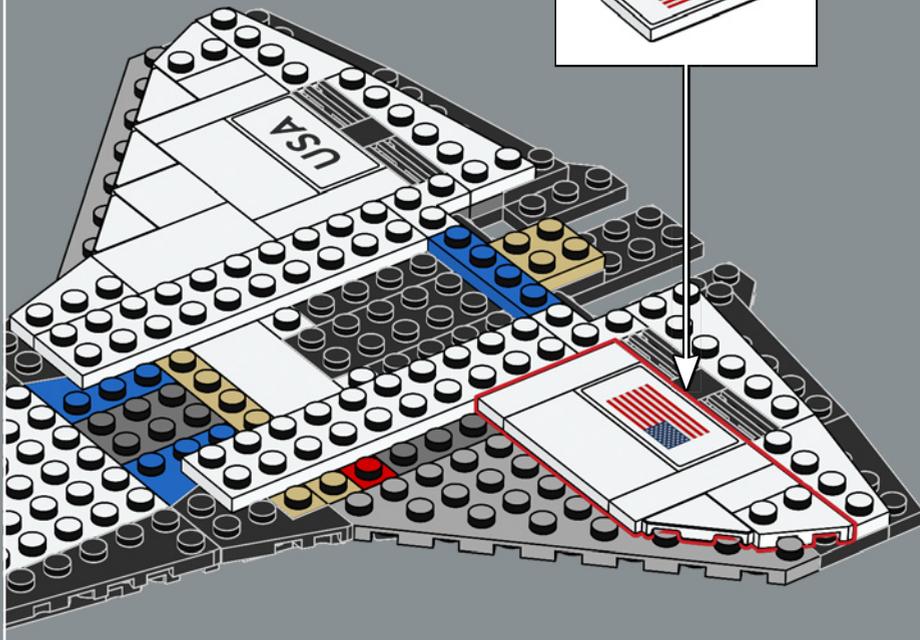
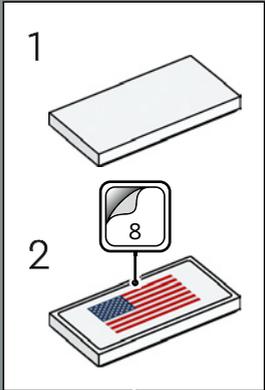


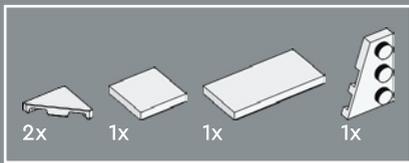


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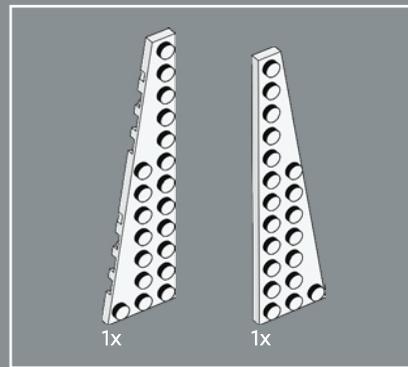
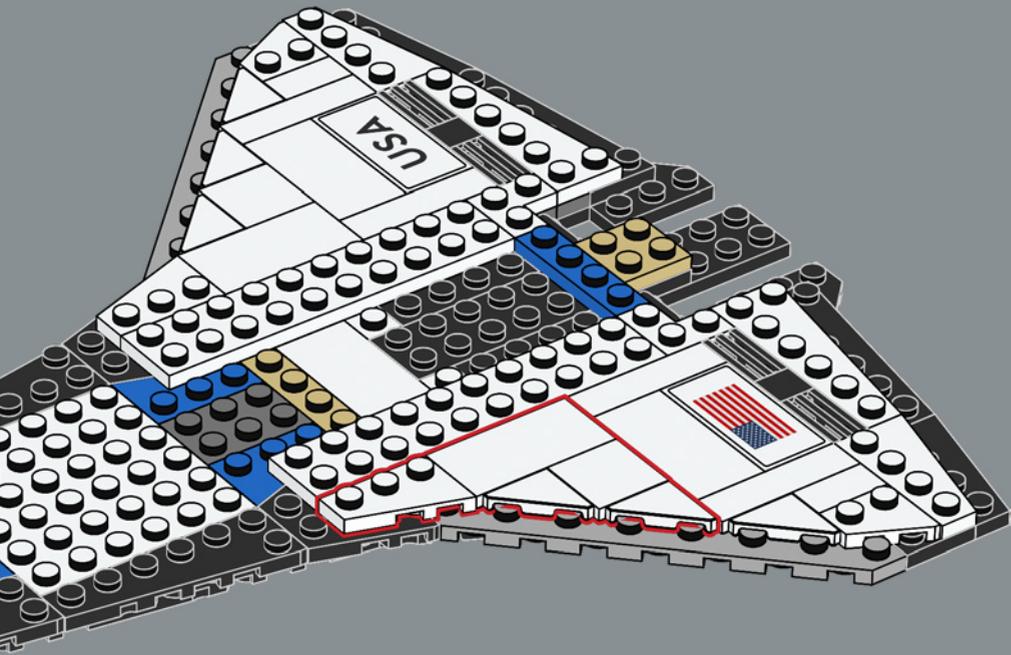


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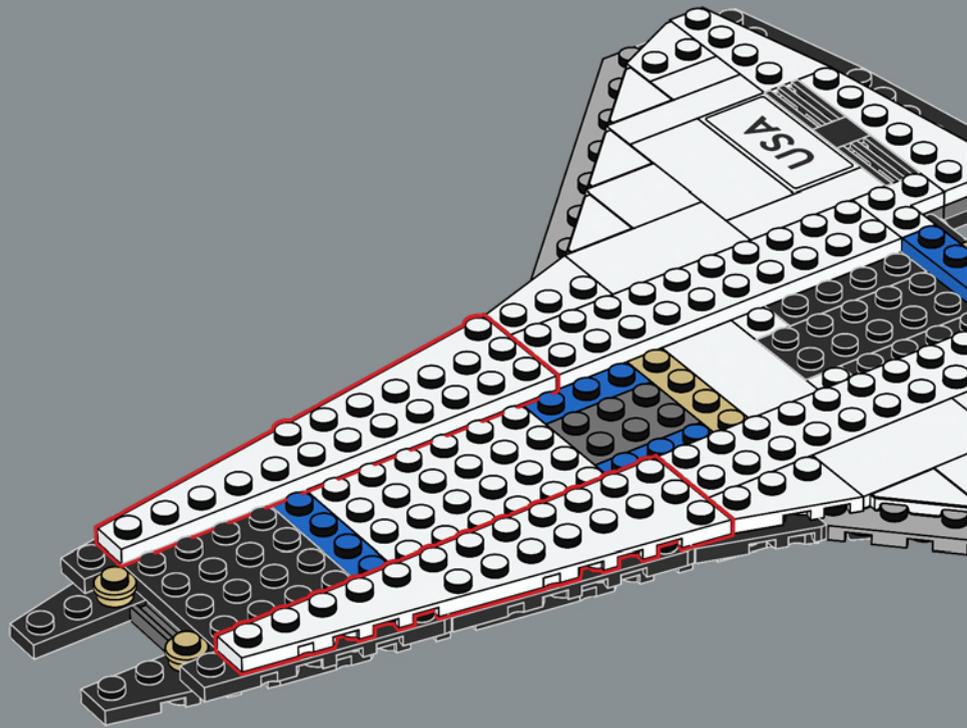




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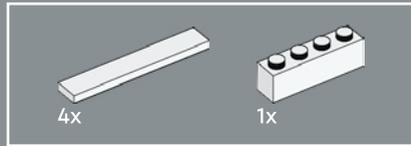


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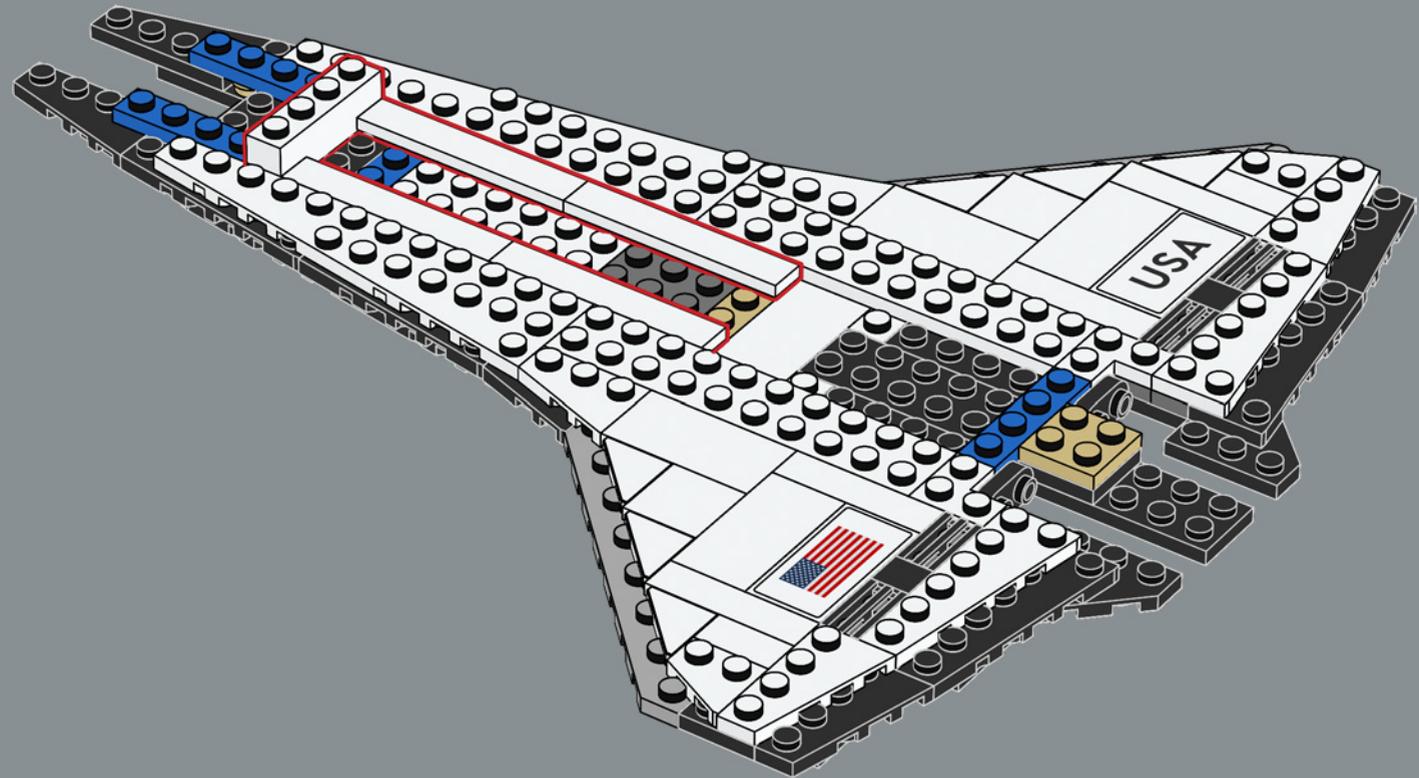


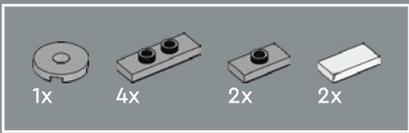


The Enterprise can still be seen and visited today at an aviation museum in New York.

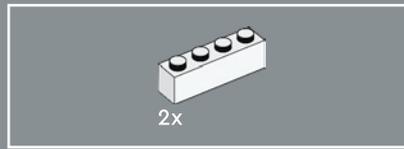
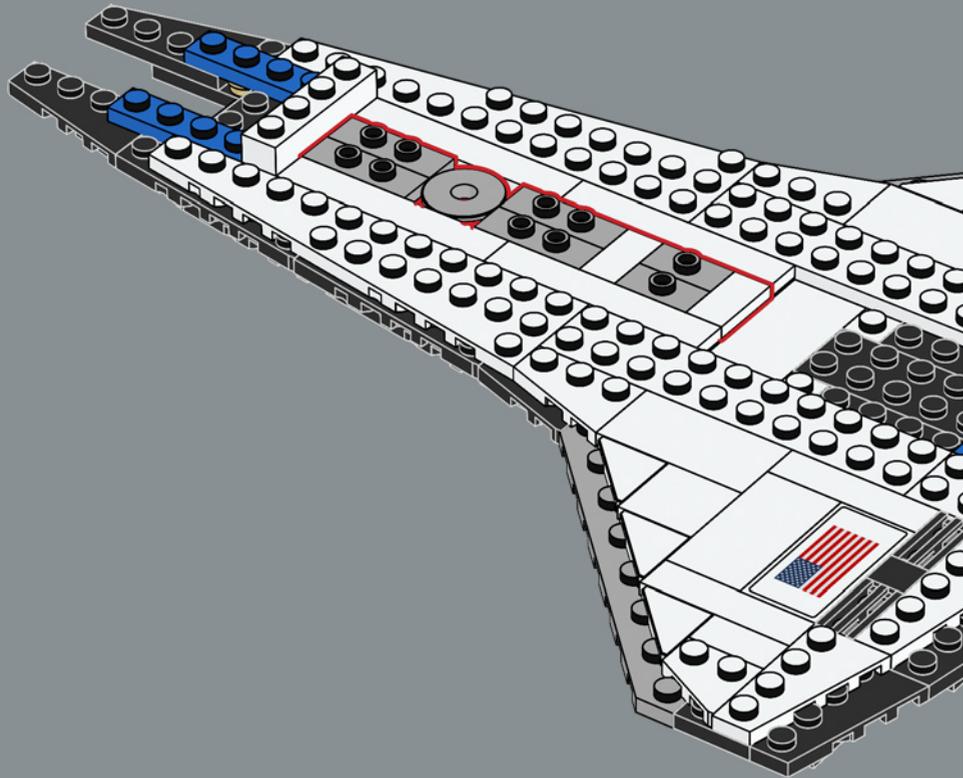


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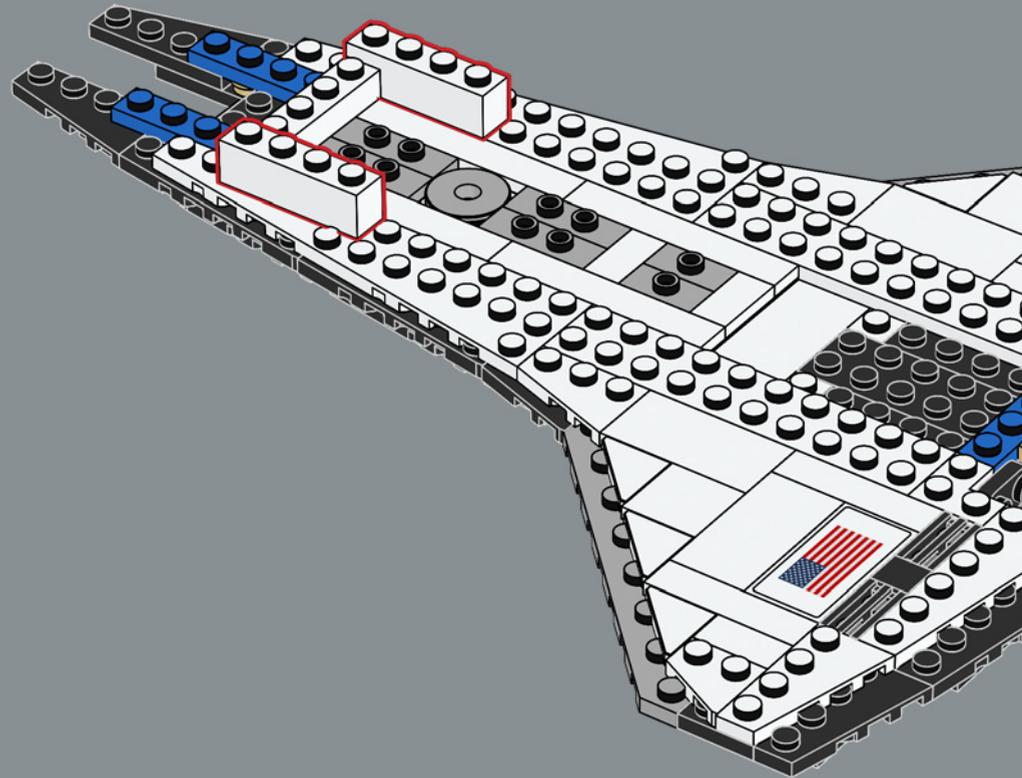


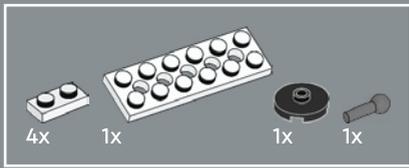


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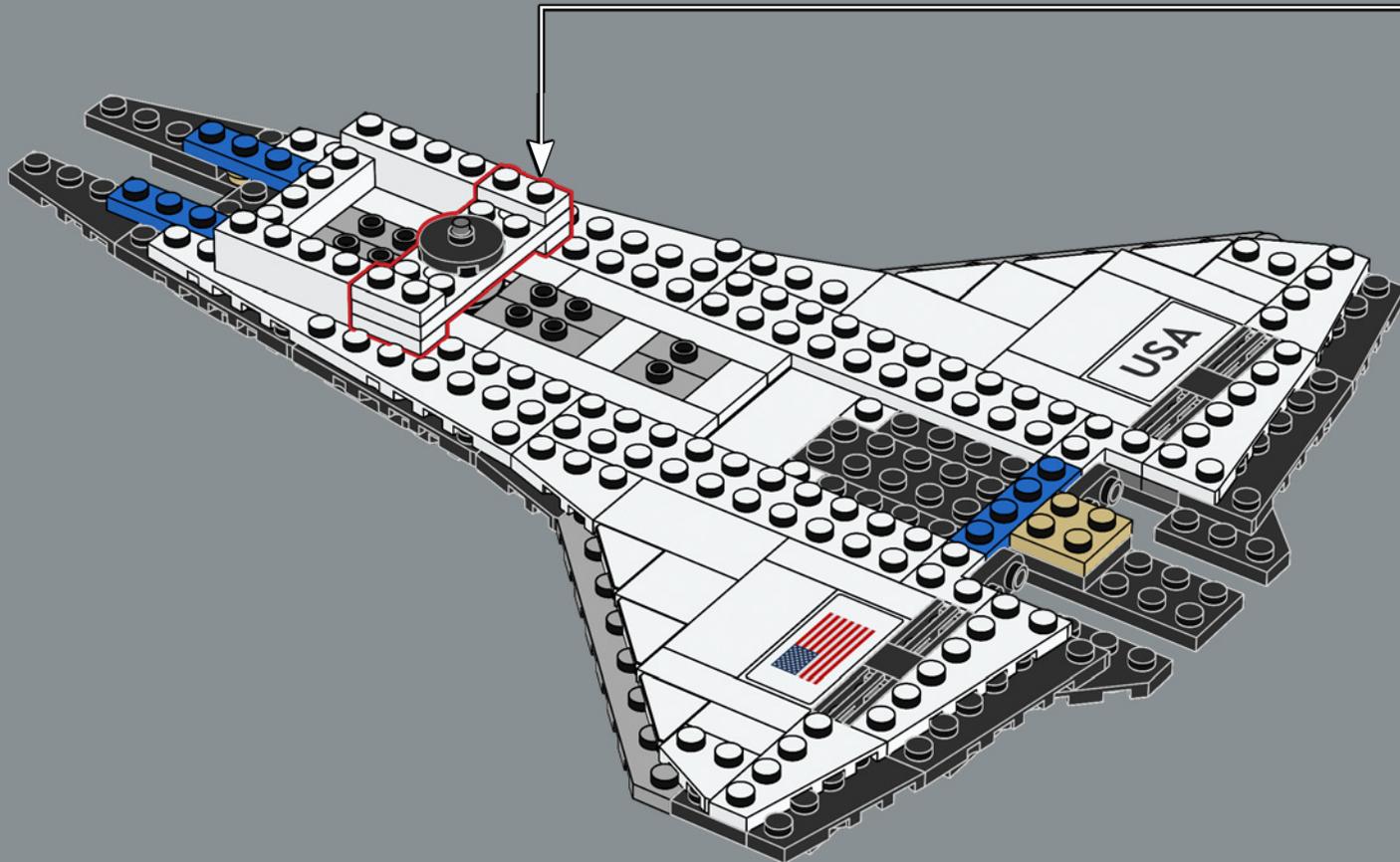
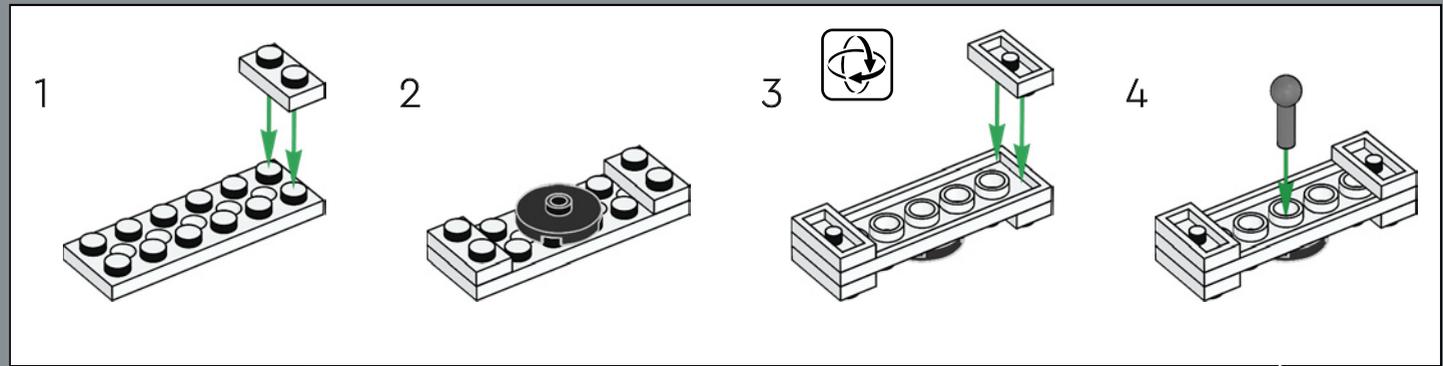


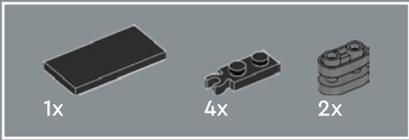
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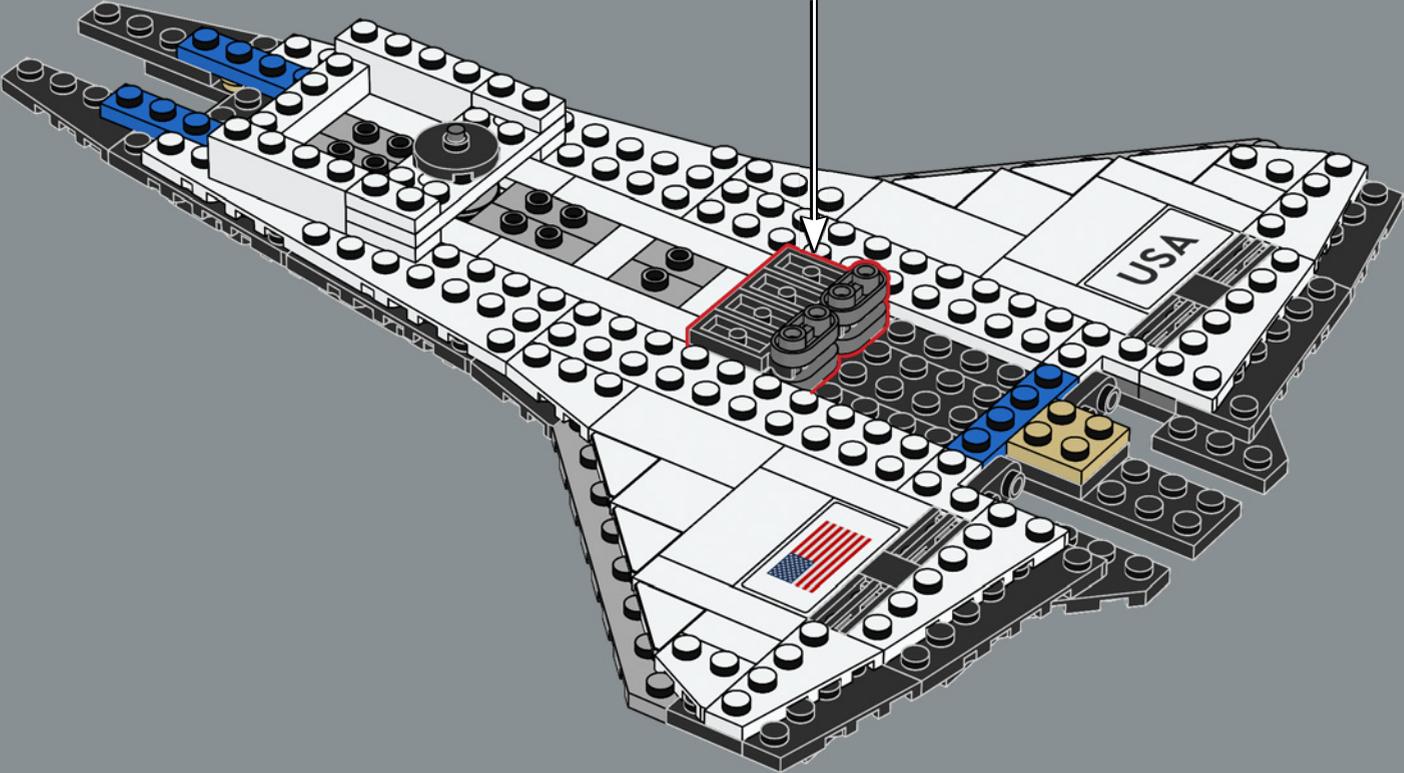
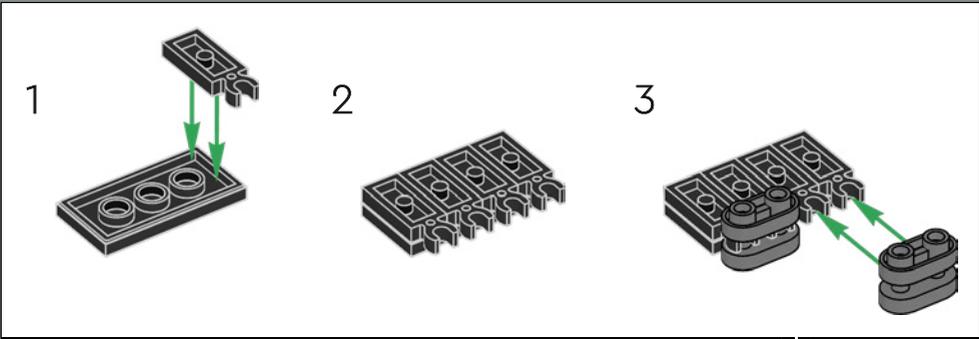


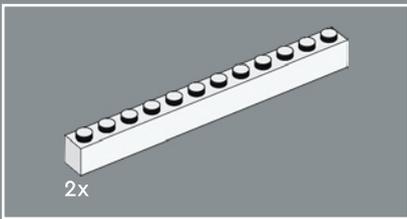
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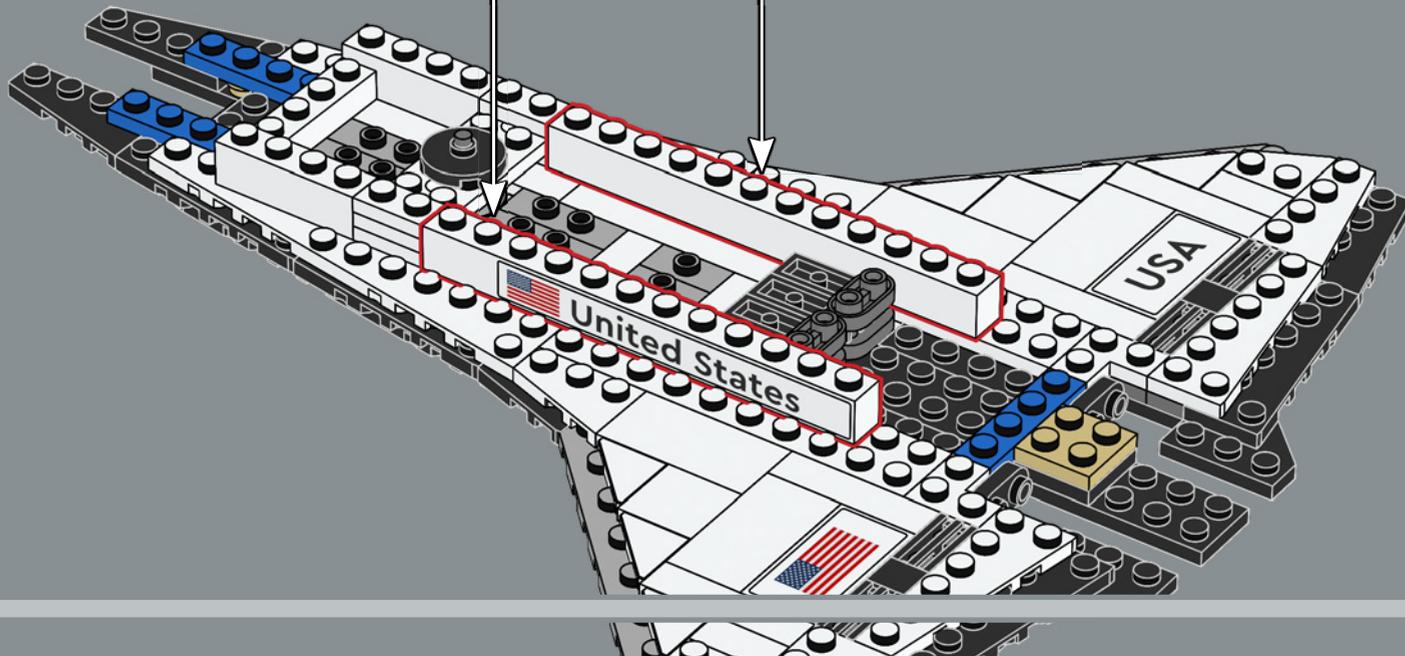
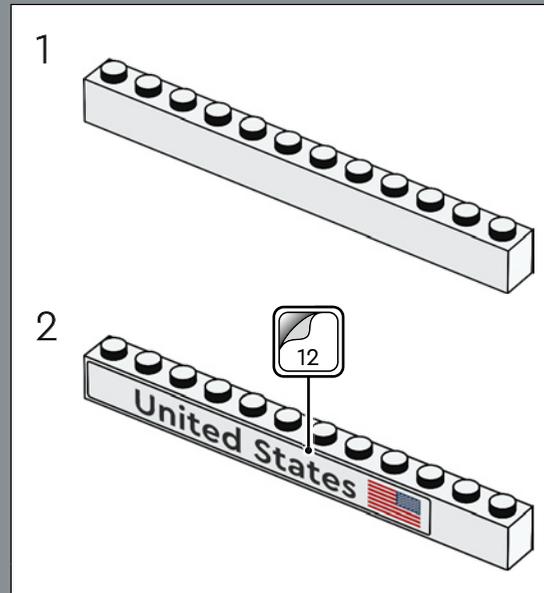
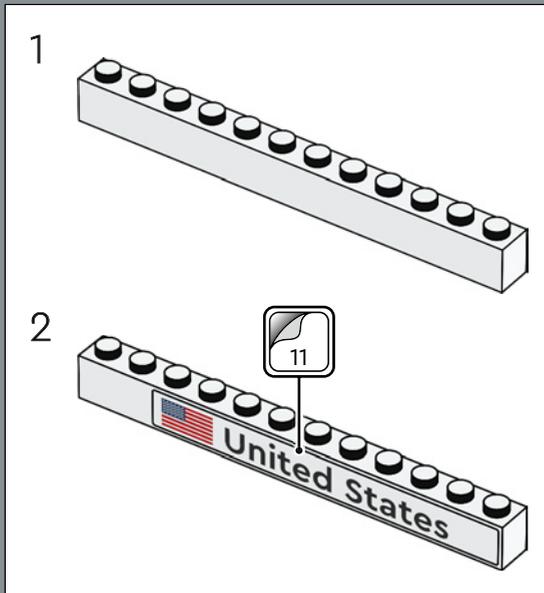


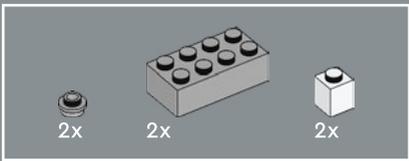
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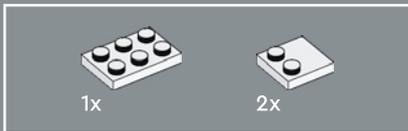
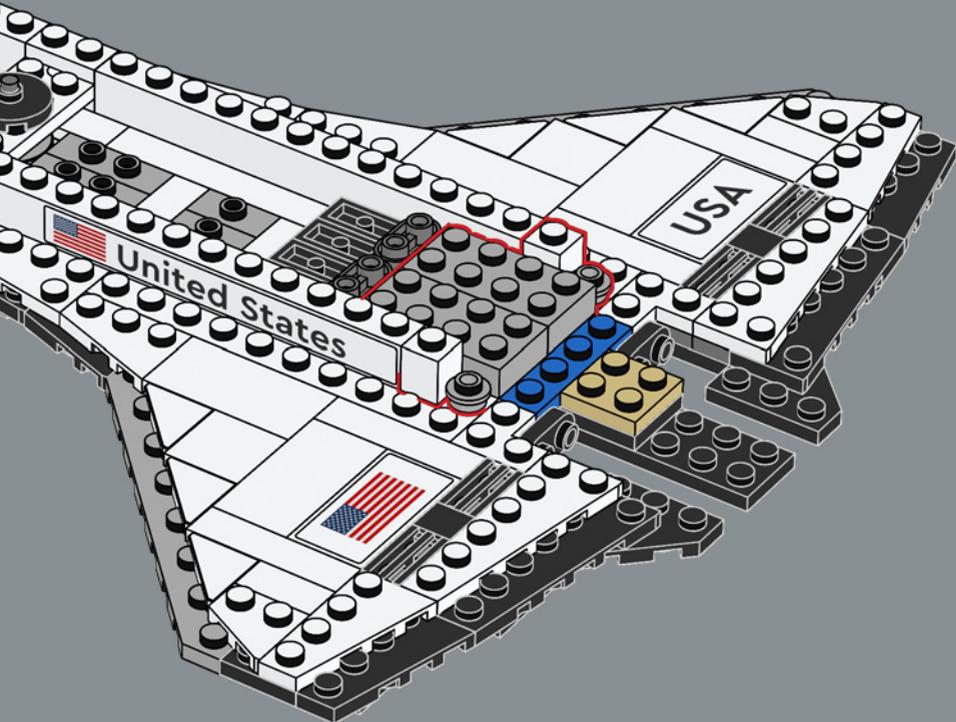


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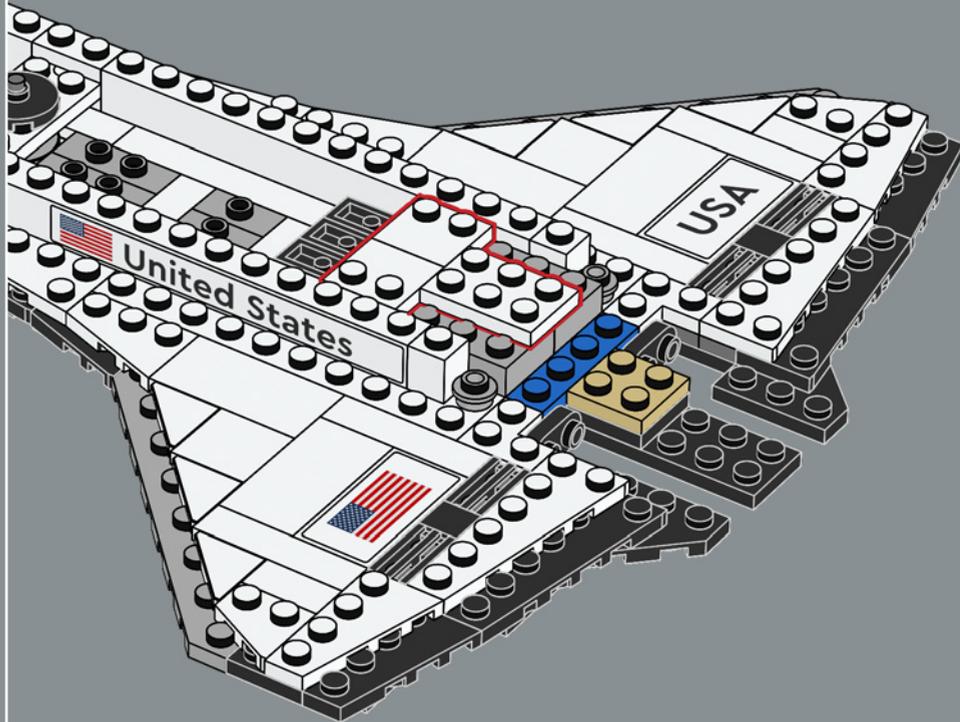




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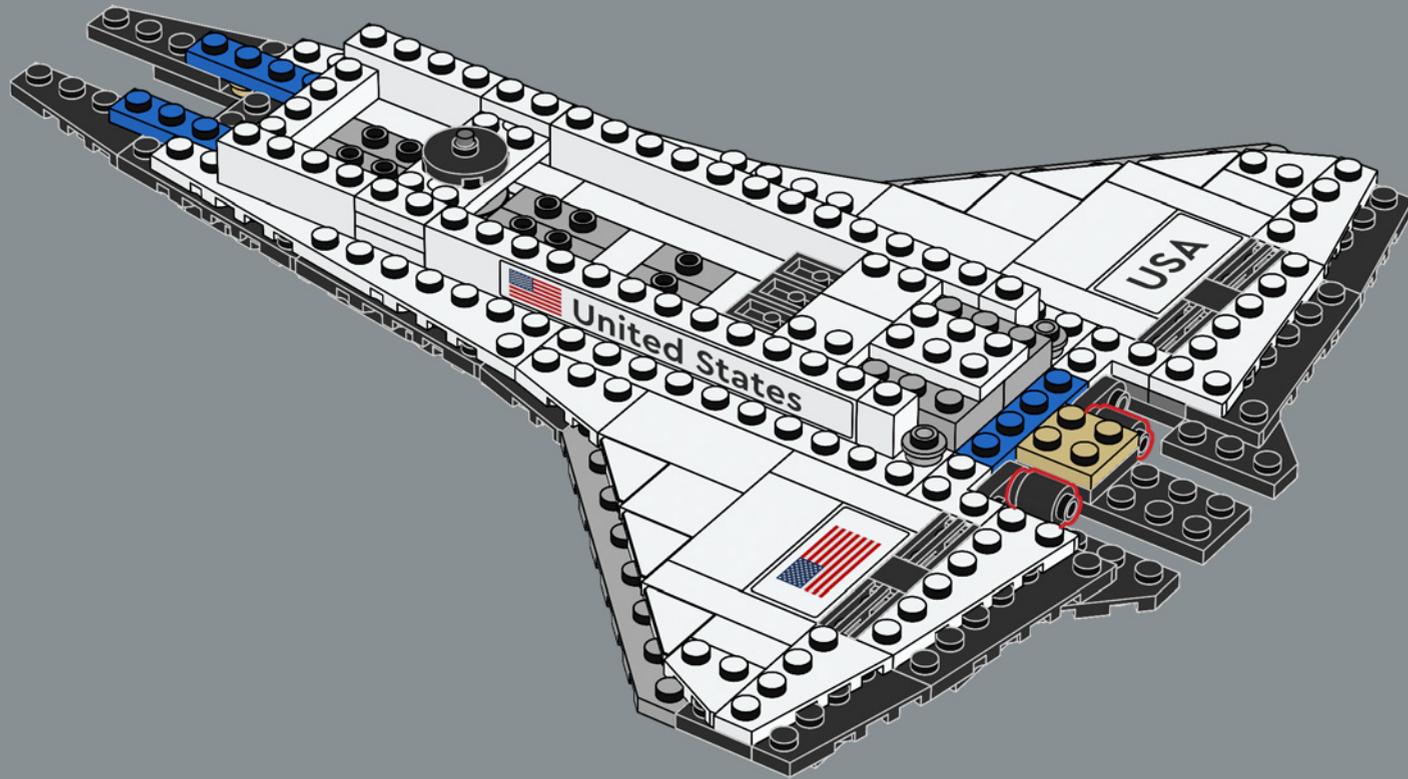
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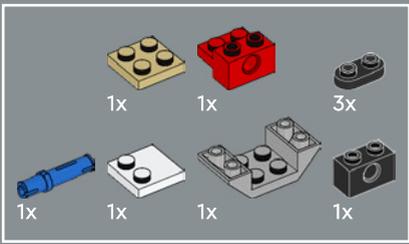




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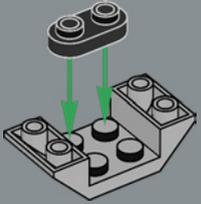
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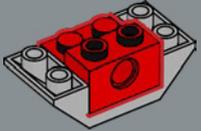


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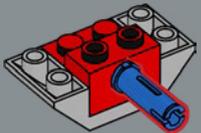
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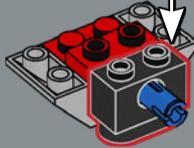
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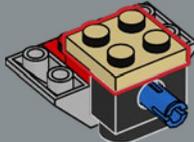
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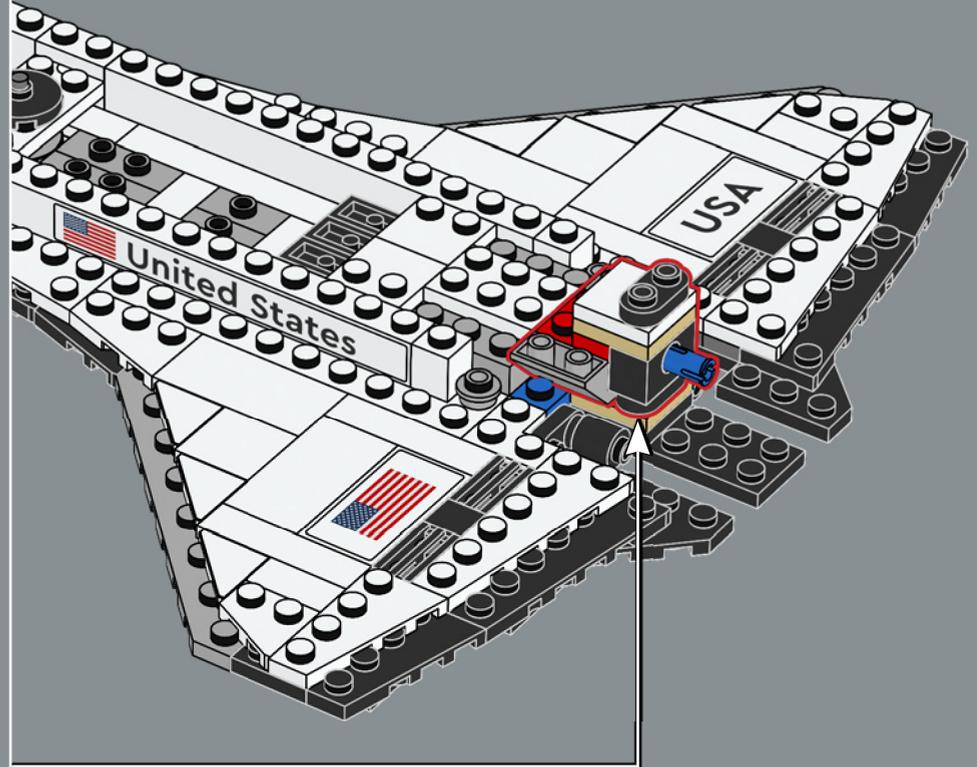
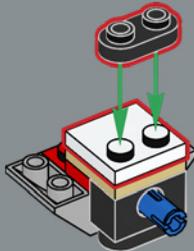
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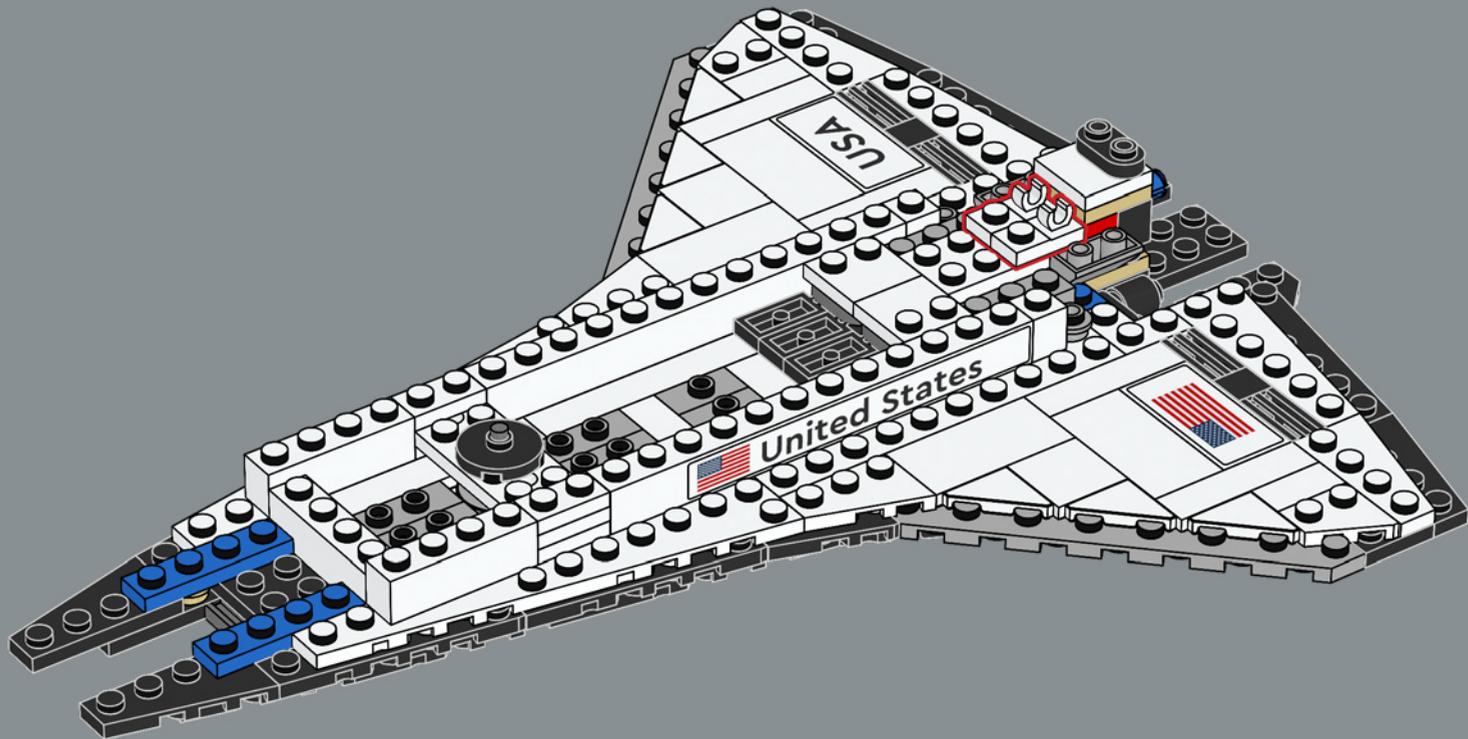


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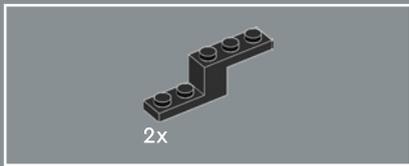




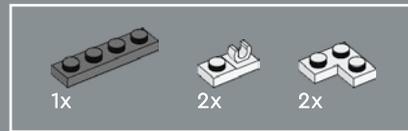
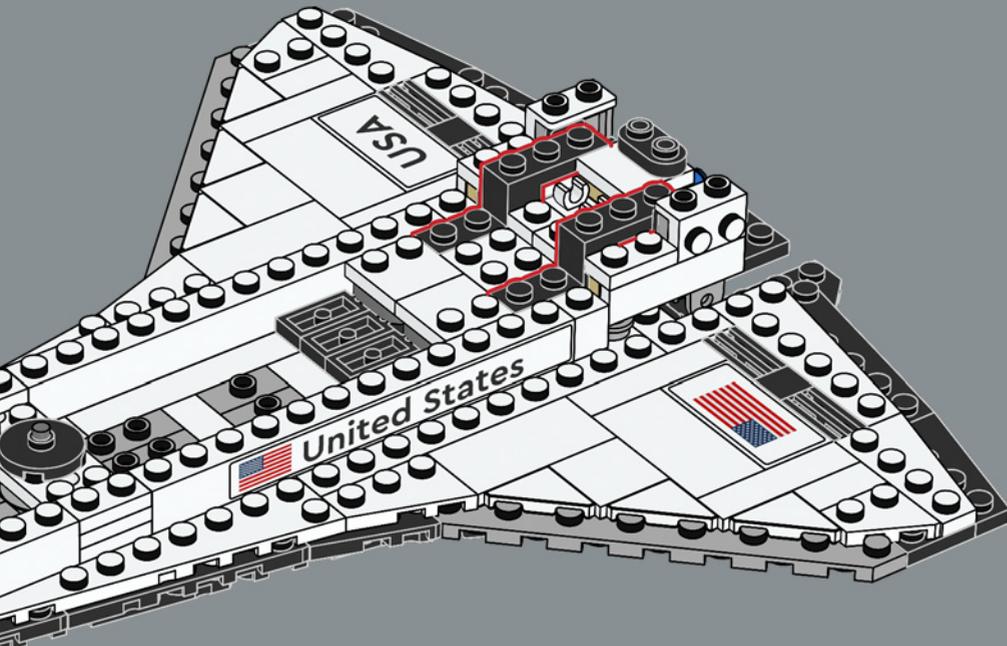
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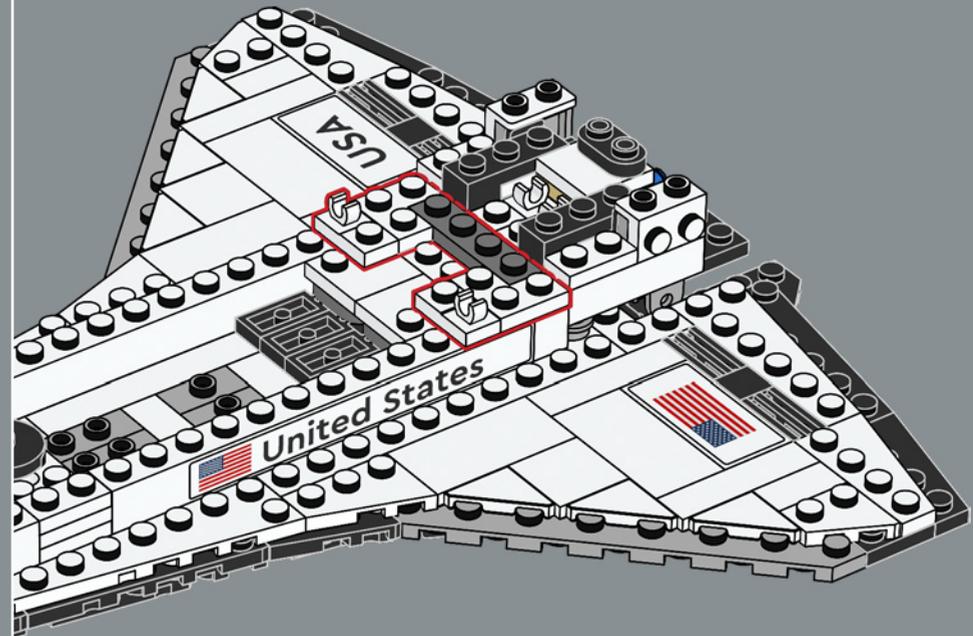


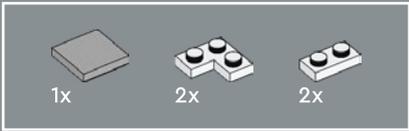


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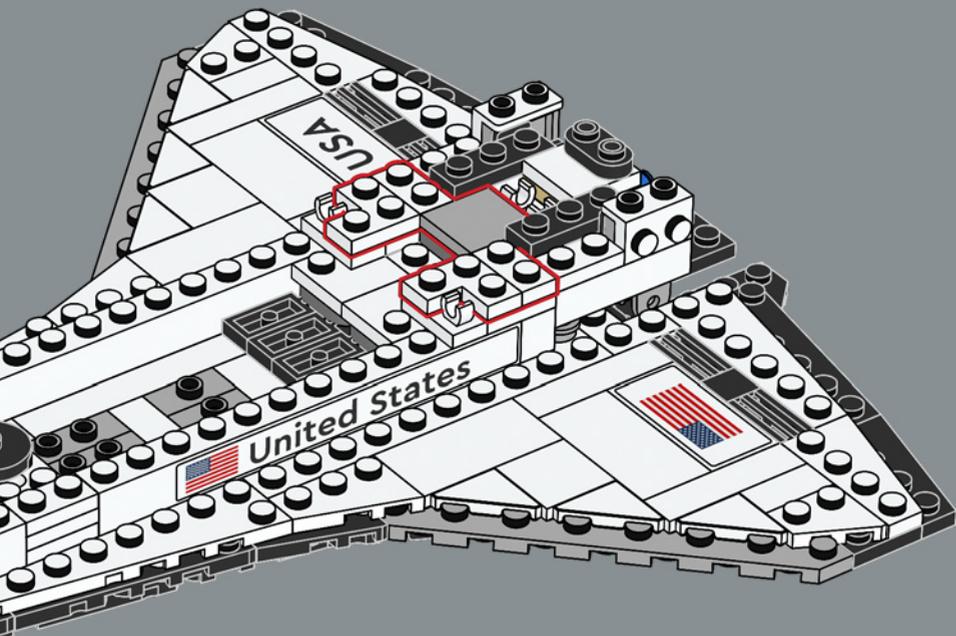


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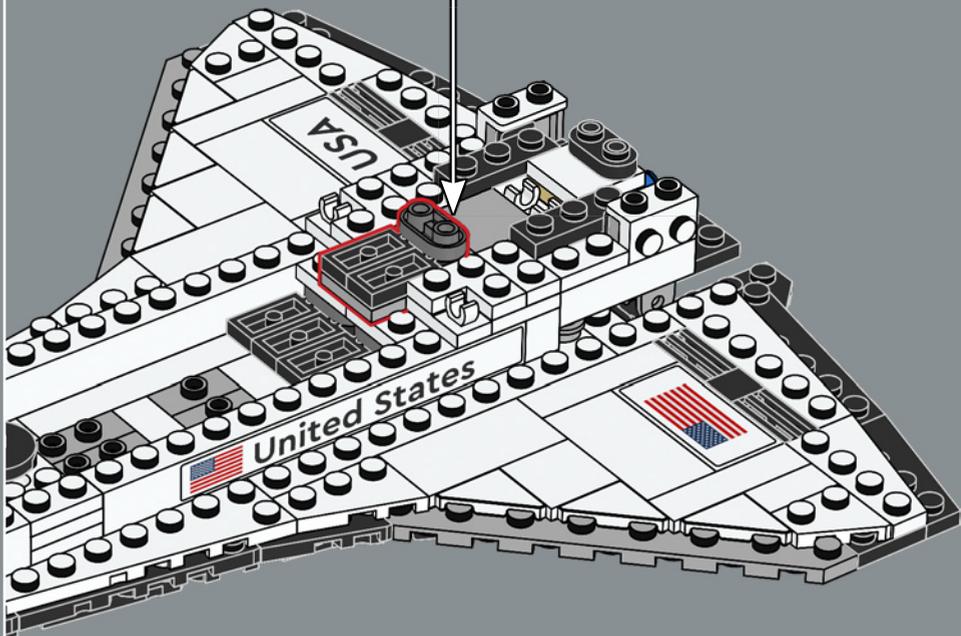
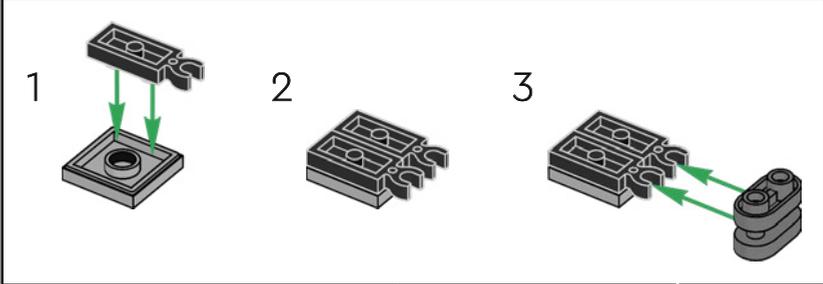


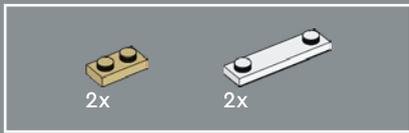


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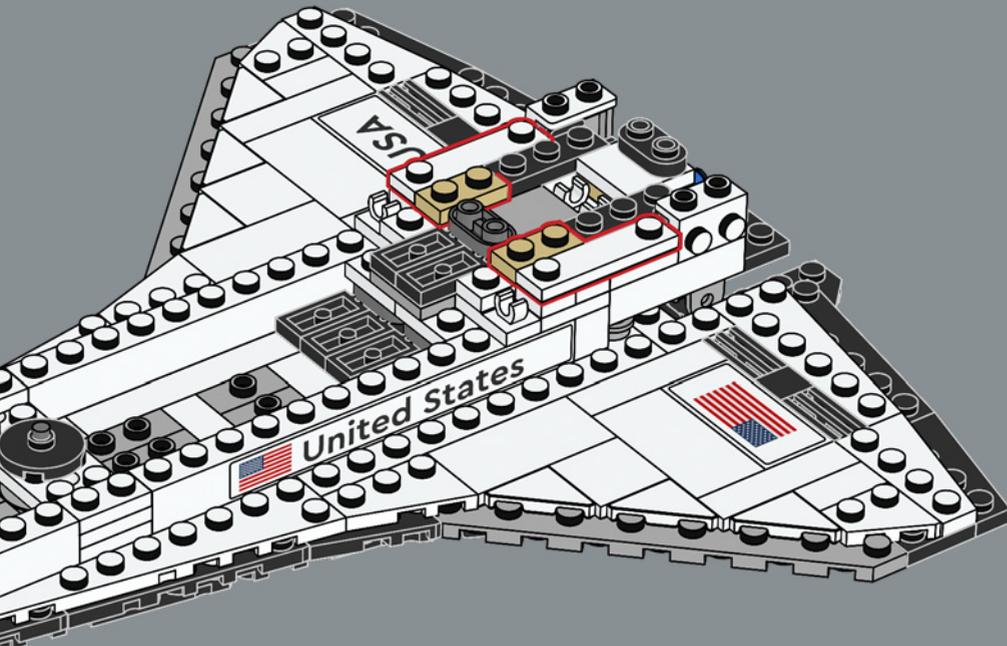


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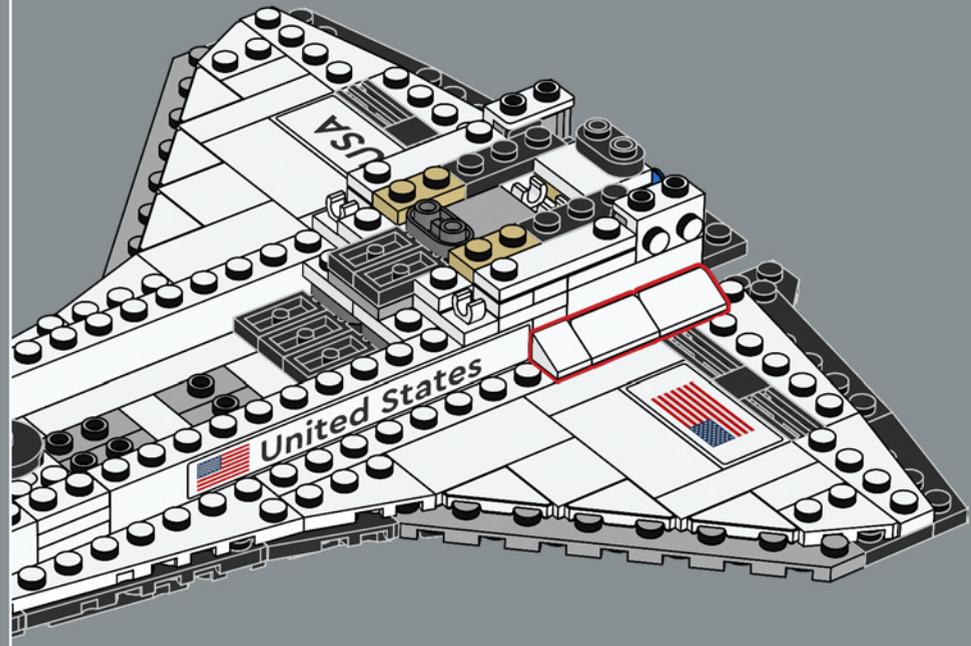


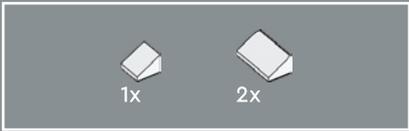


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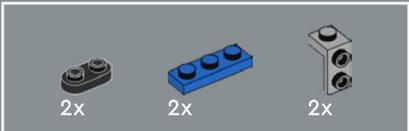
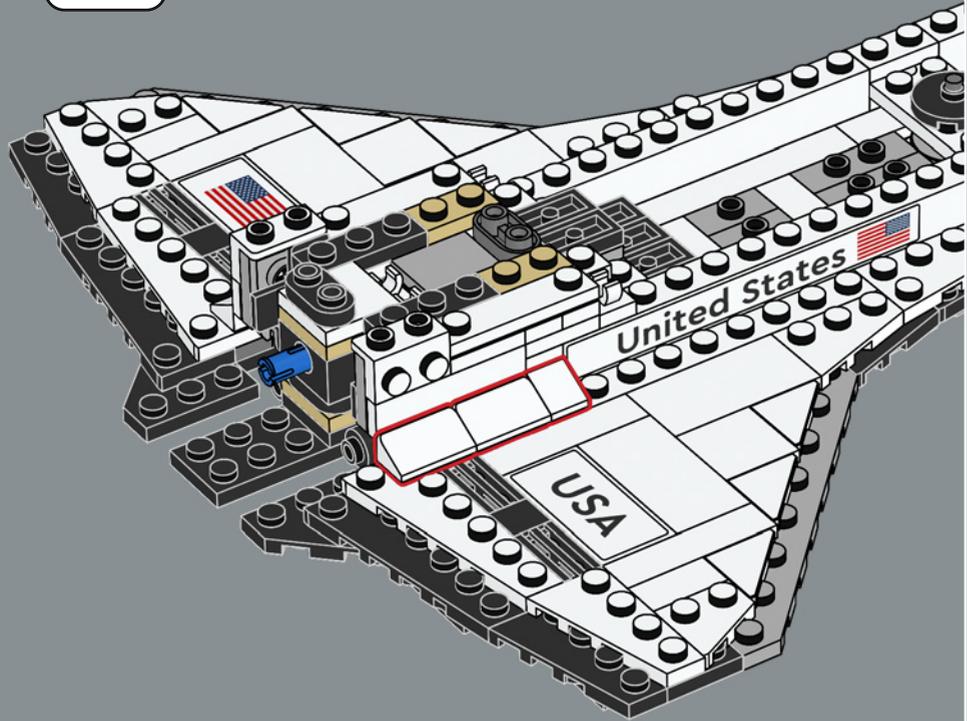


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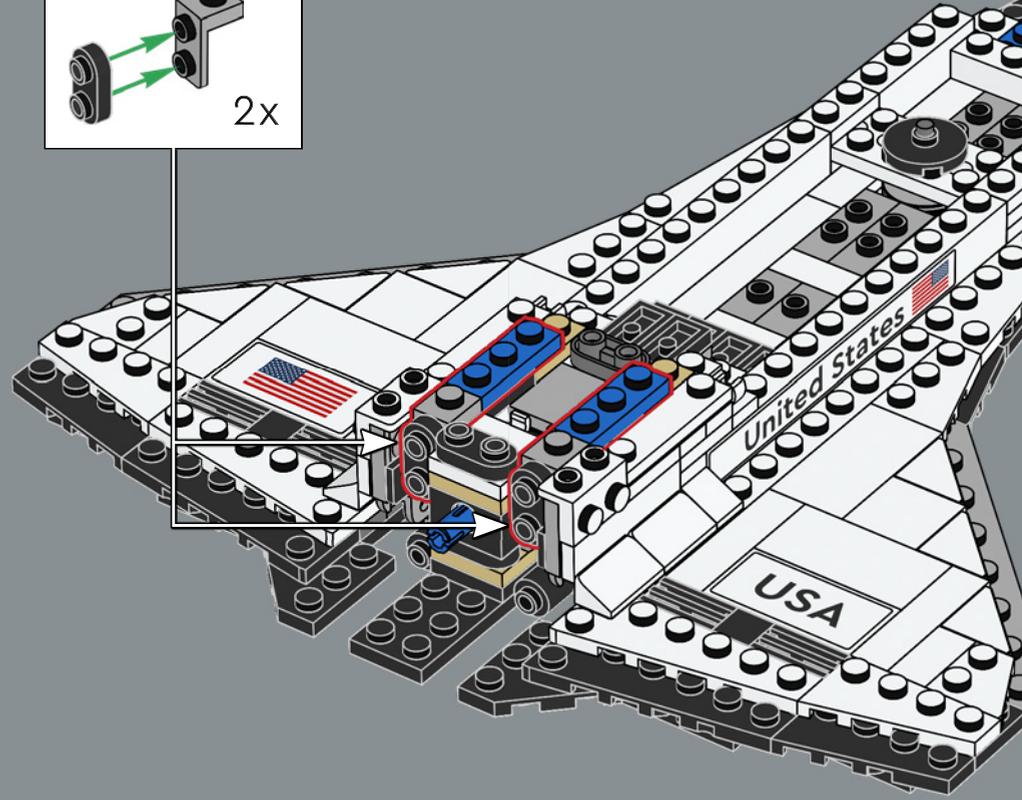
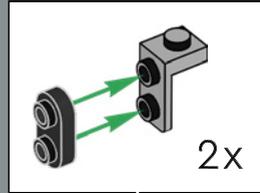


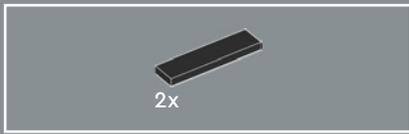


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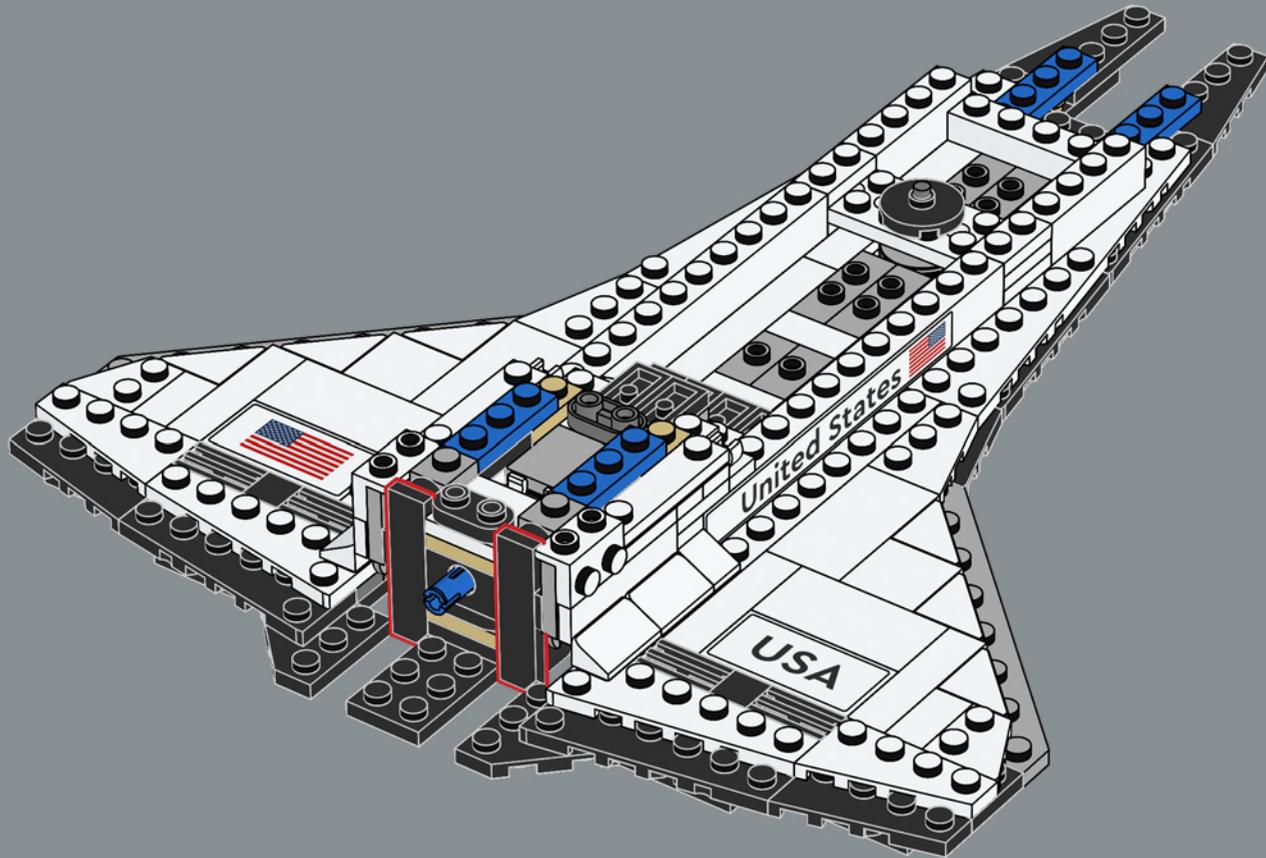


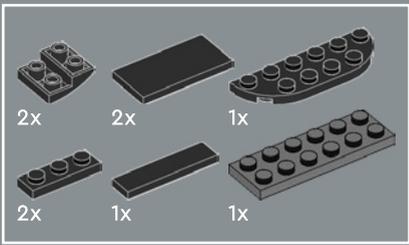
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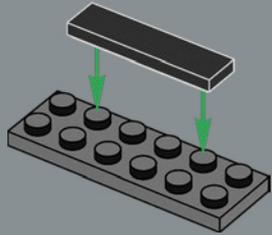
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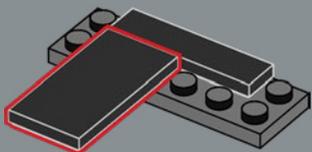


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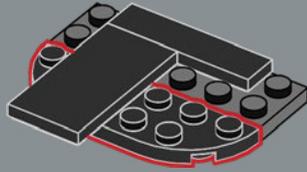
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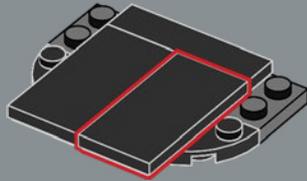
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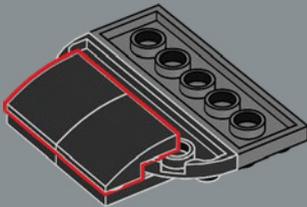
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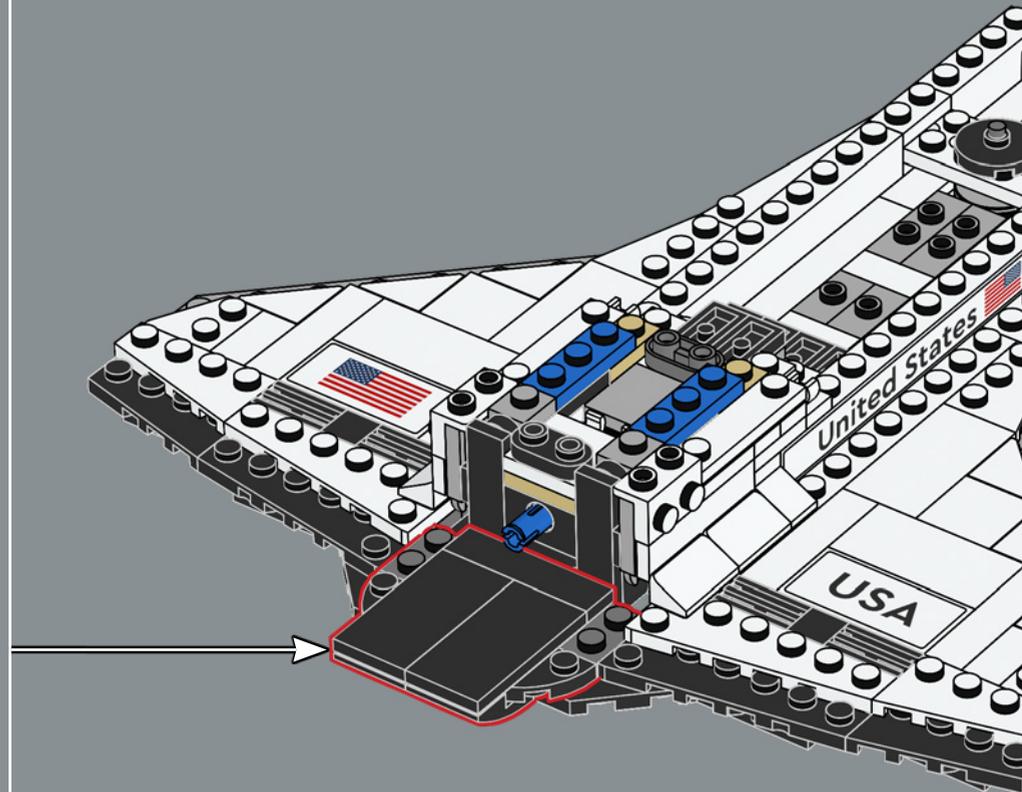
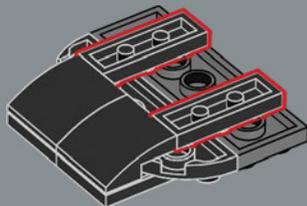
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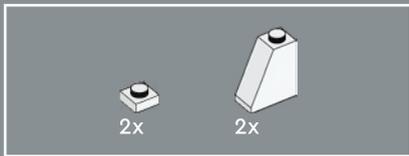


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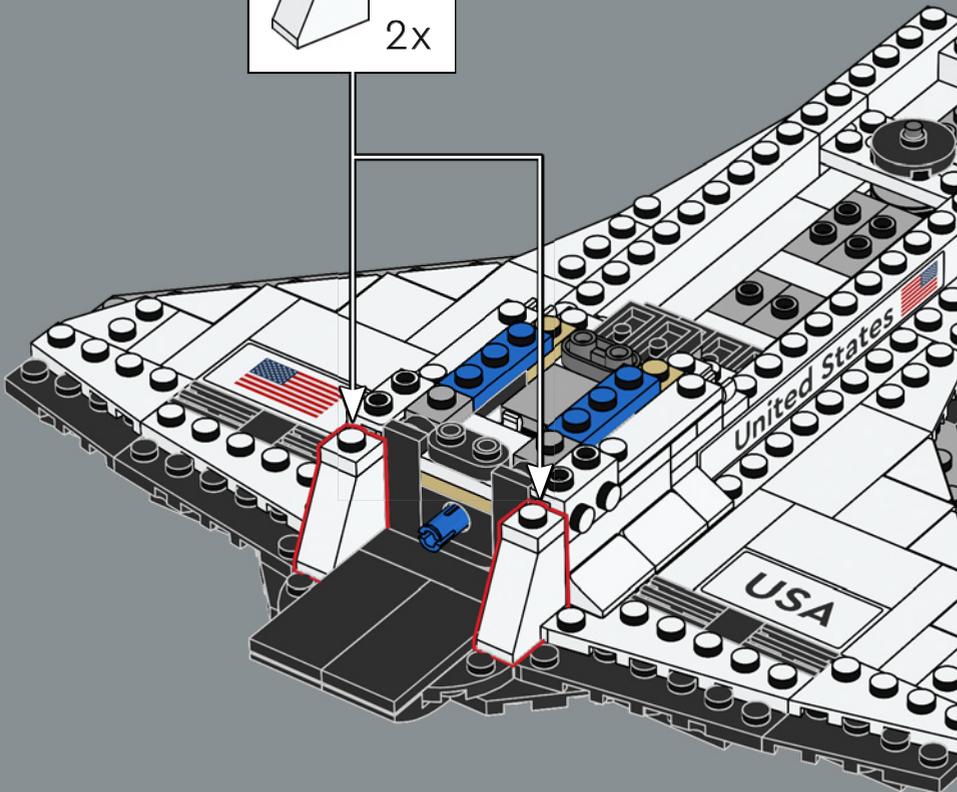
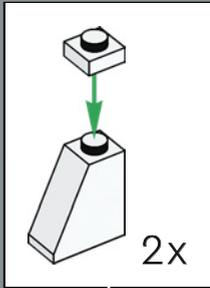


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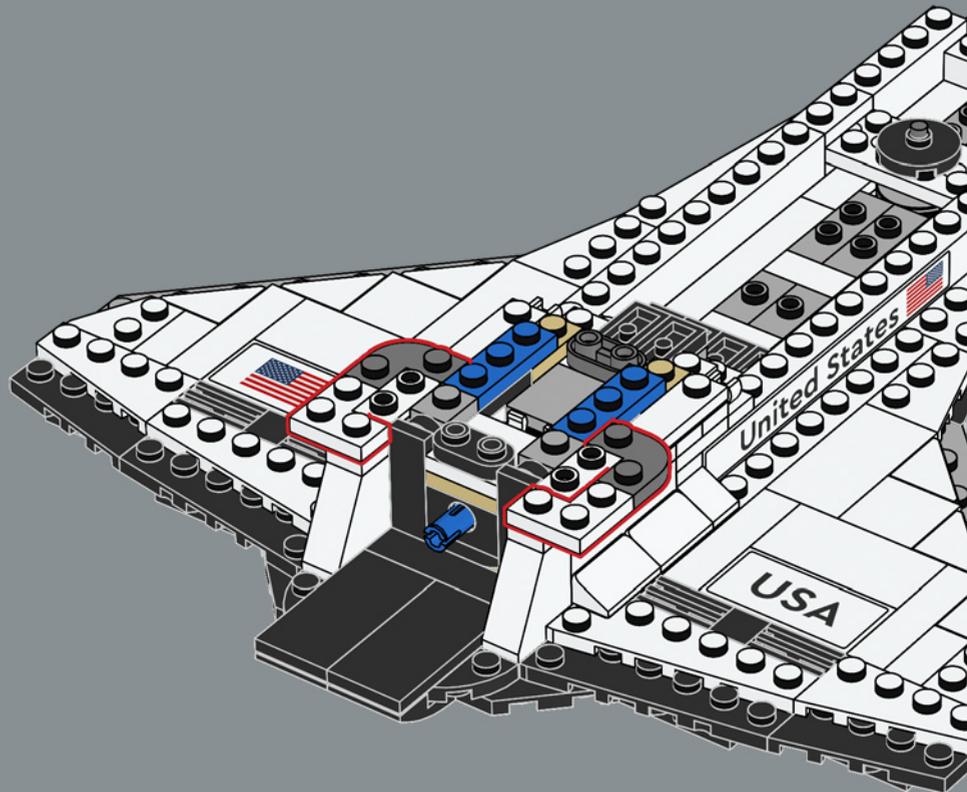


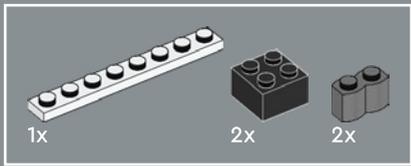


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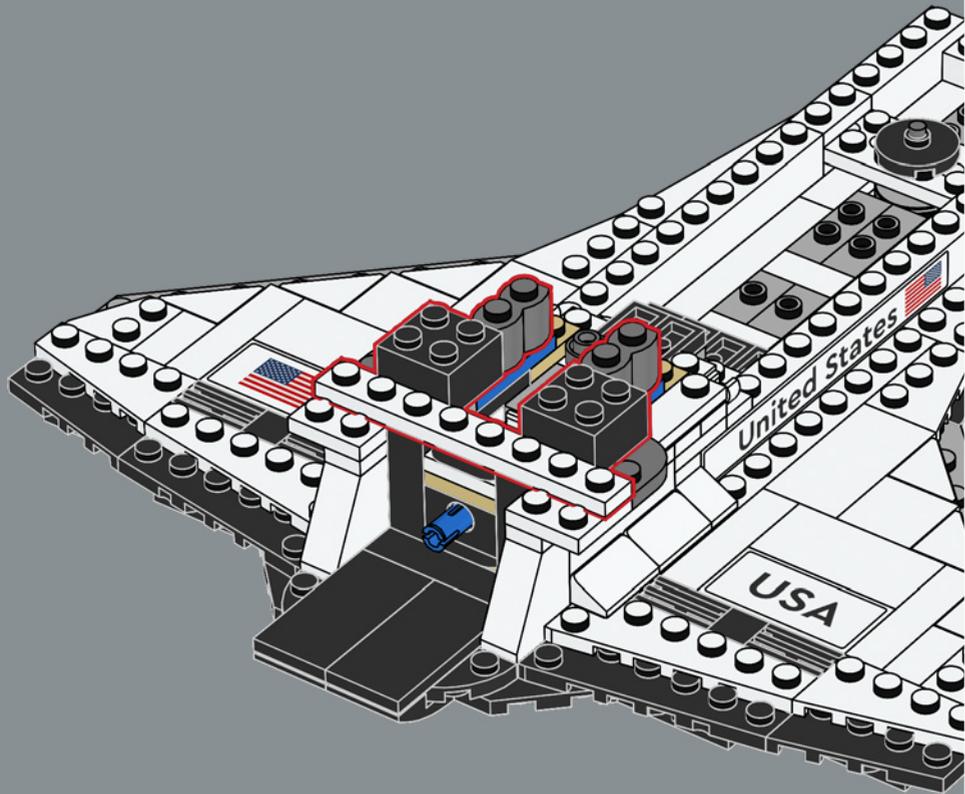


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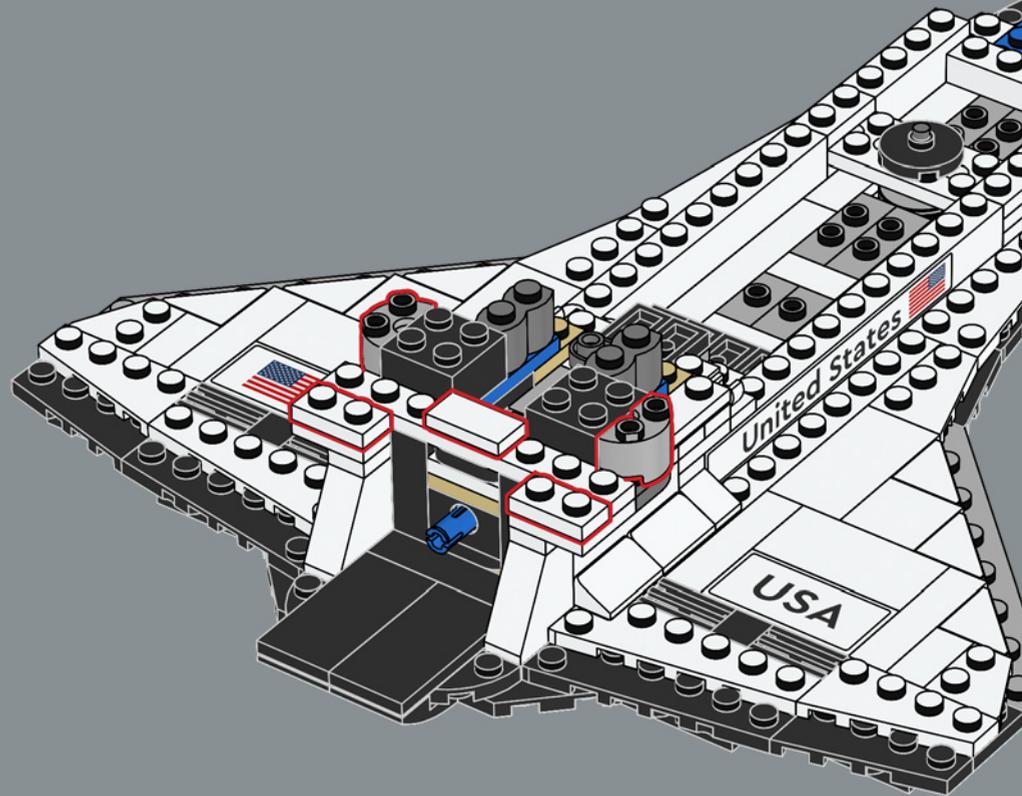


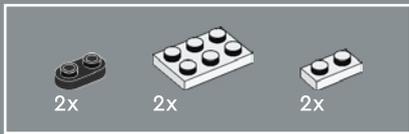


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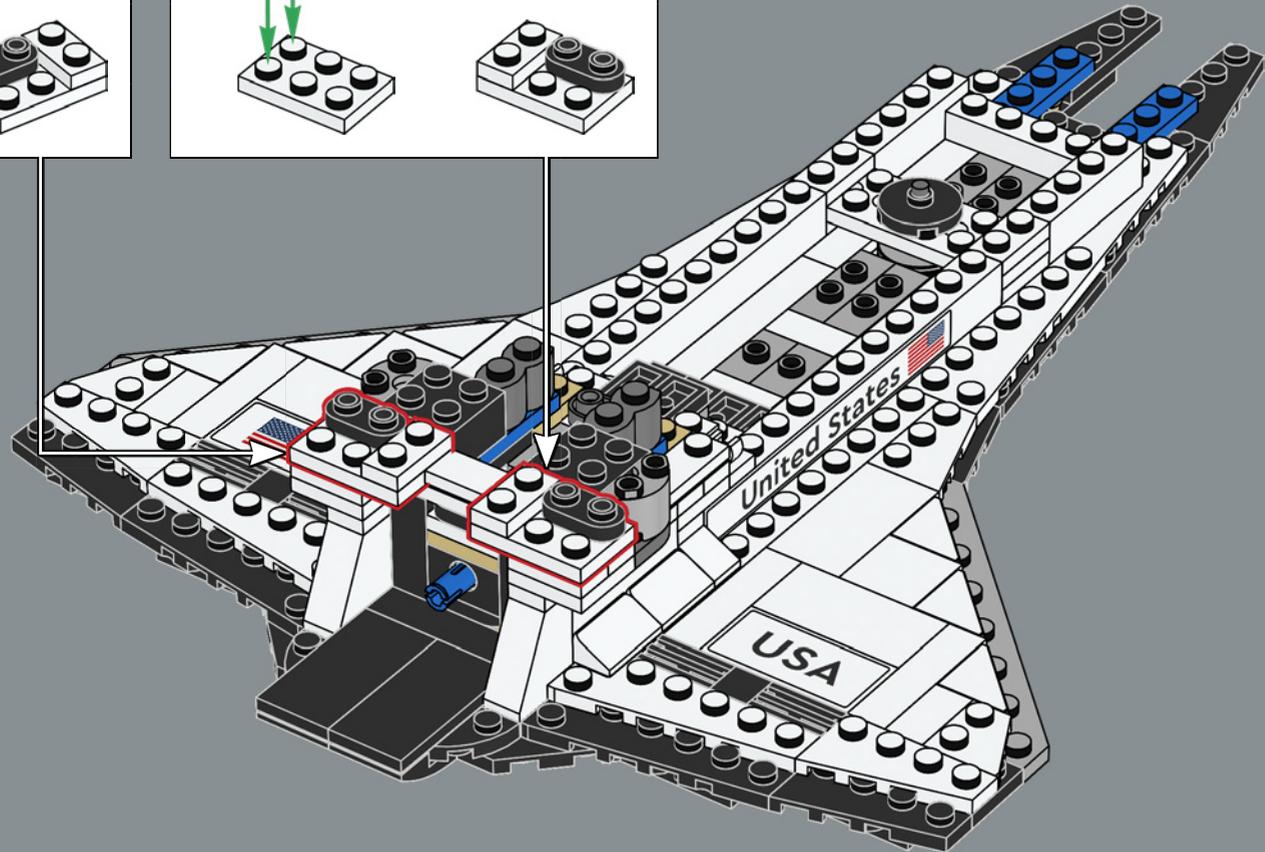
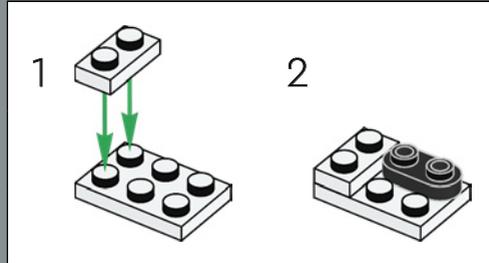
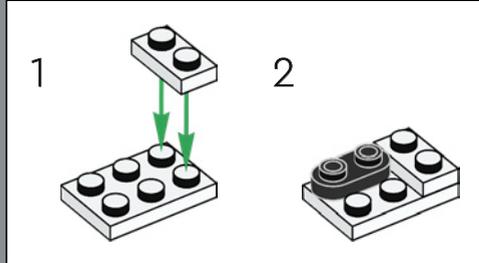


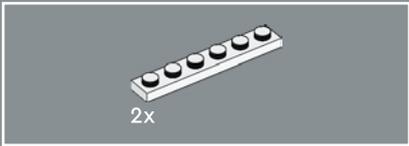
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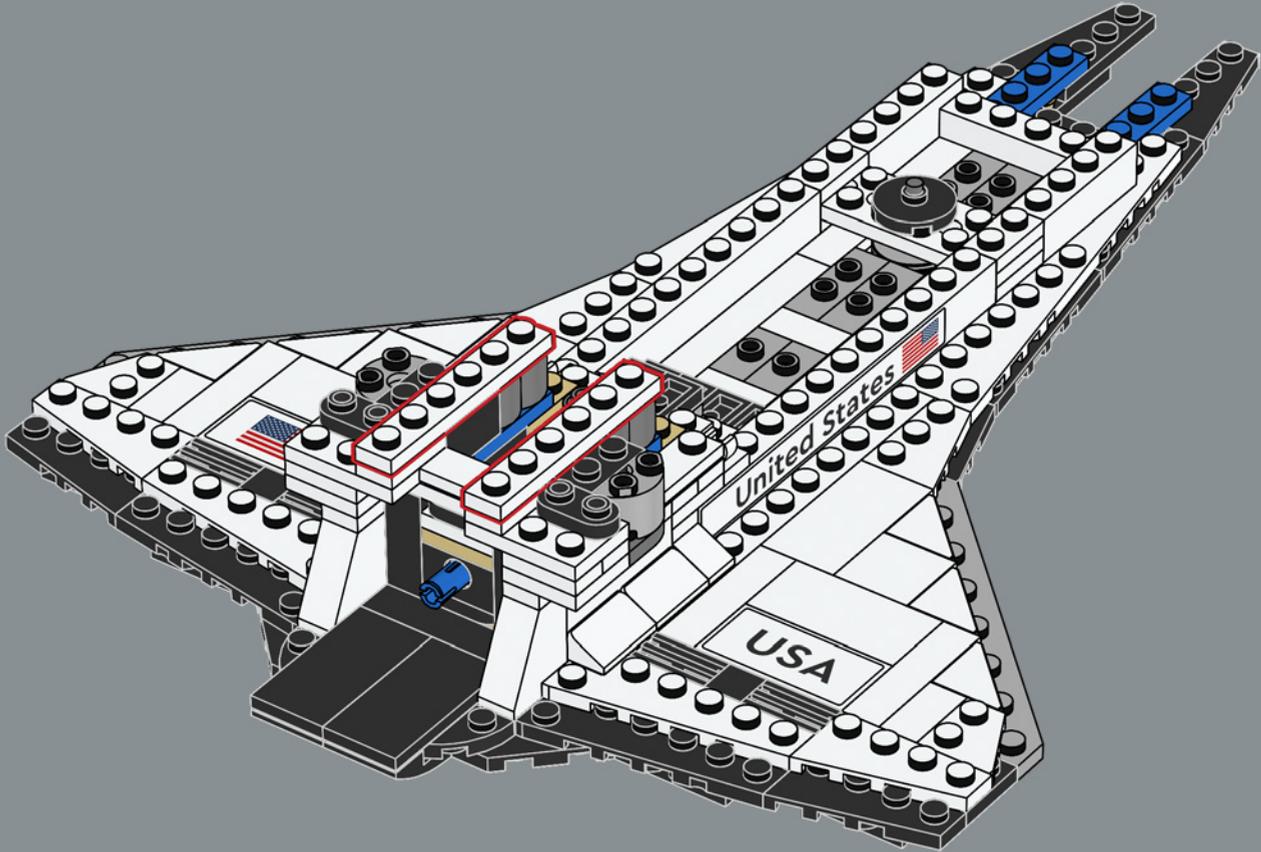


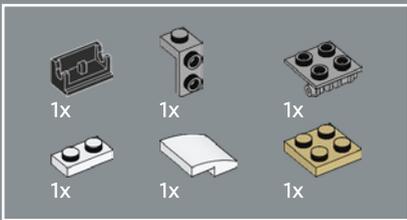
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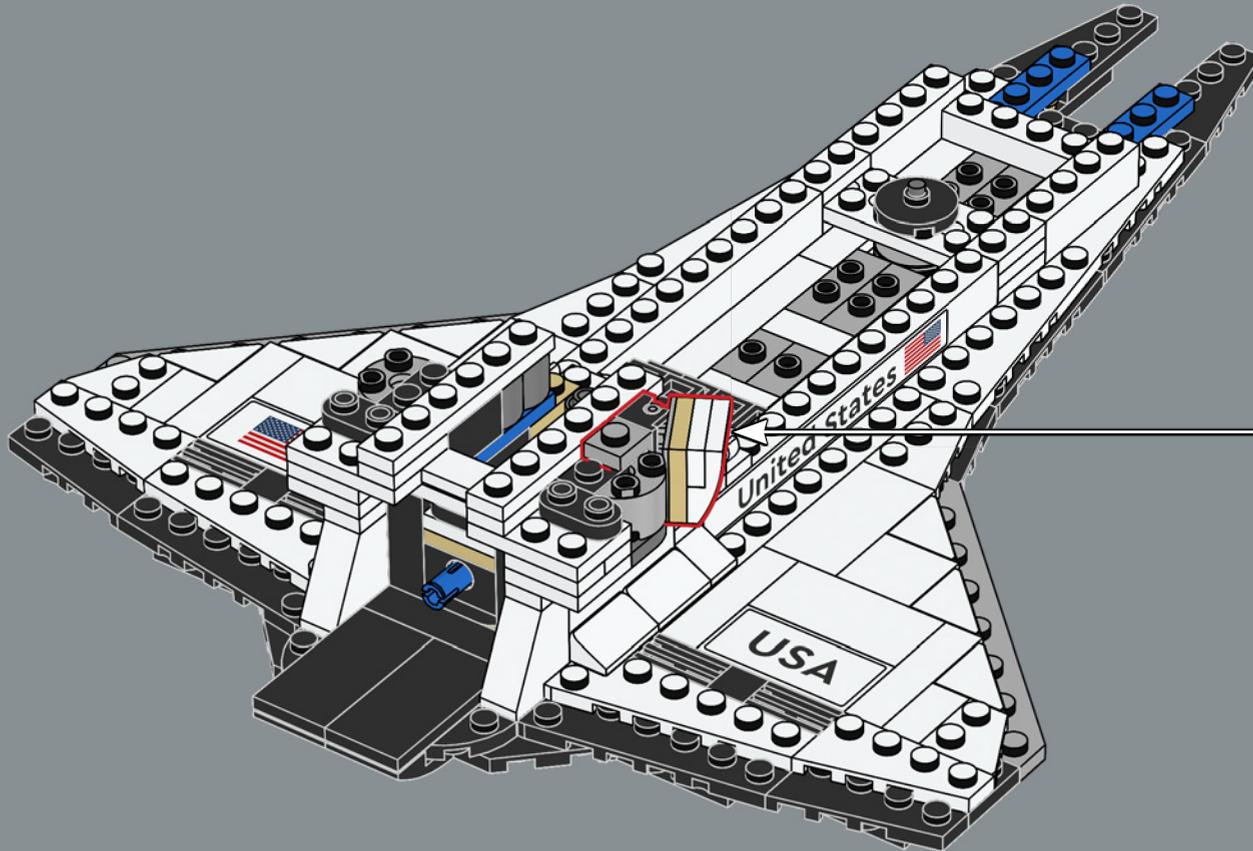
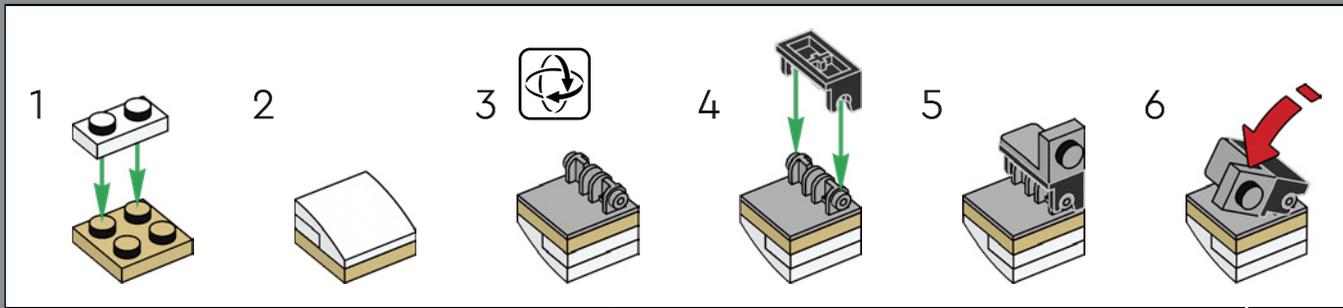


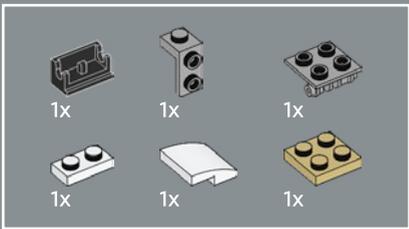
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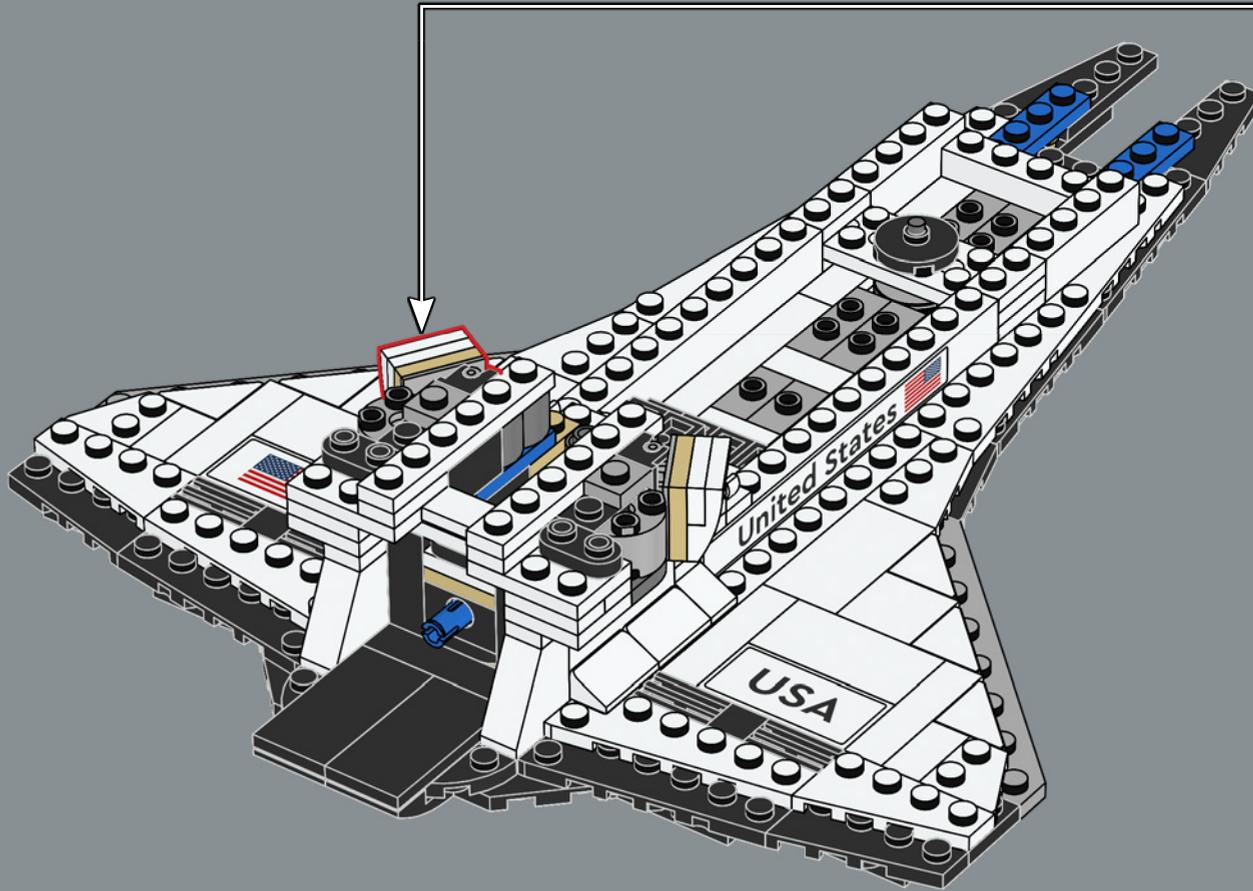
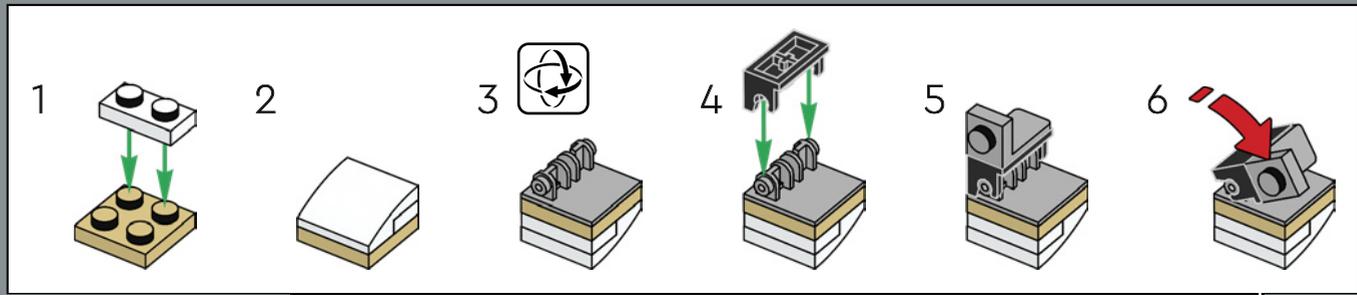


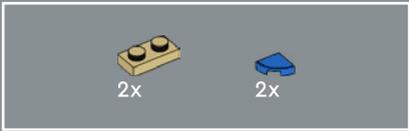
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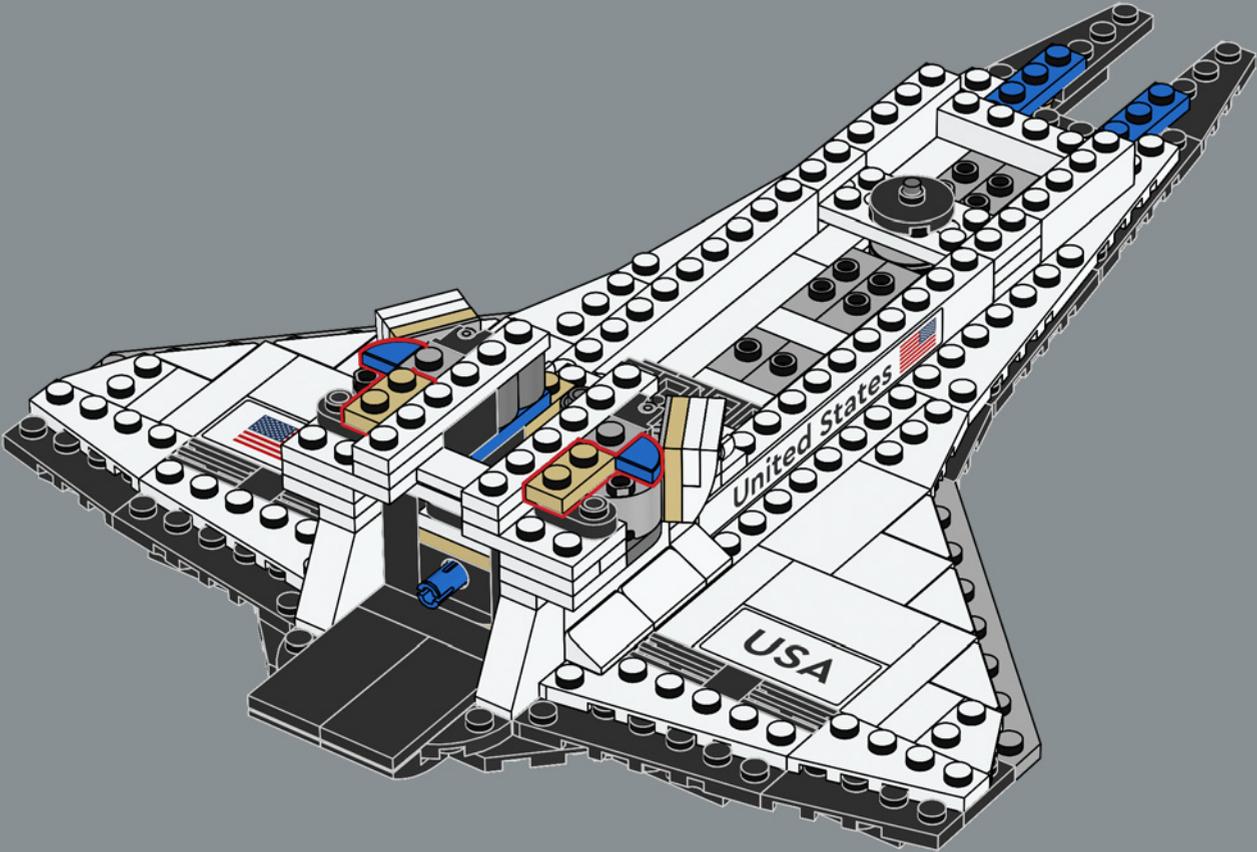


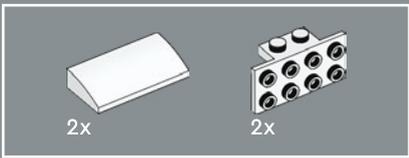
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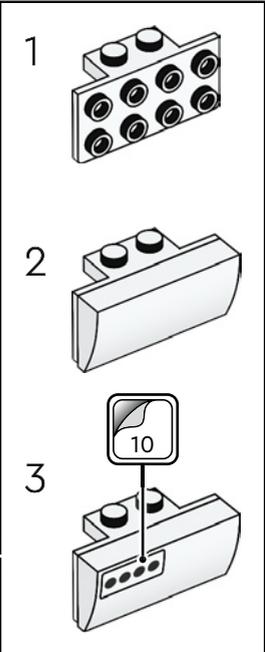
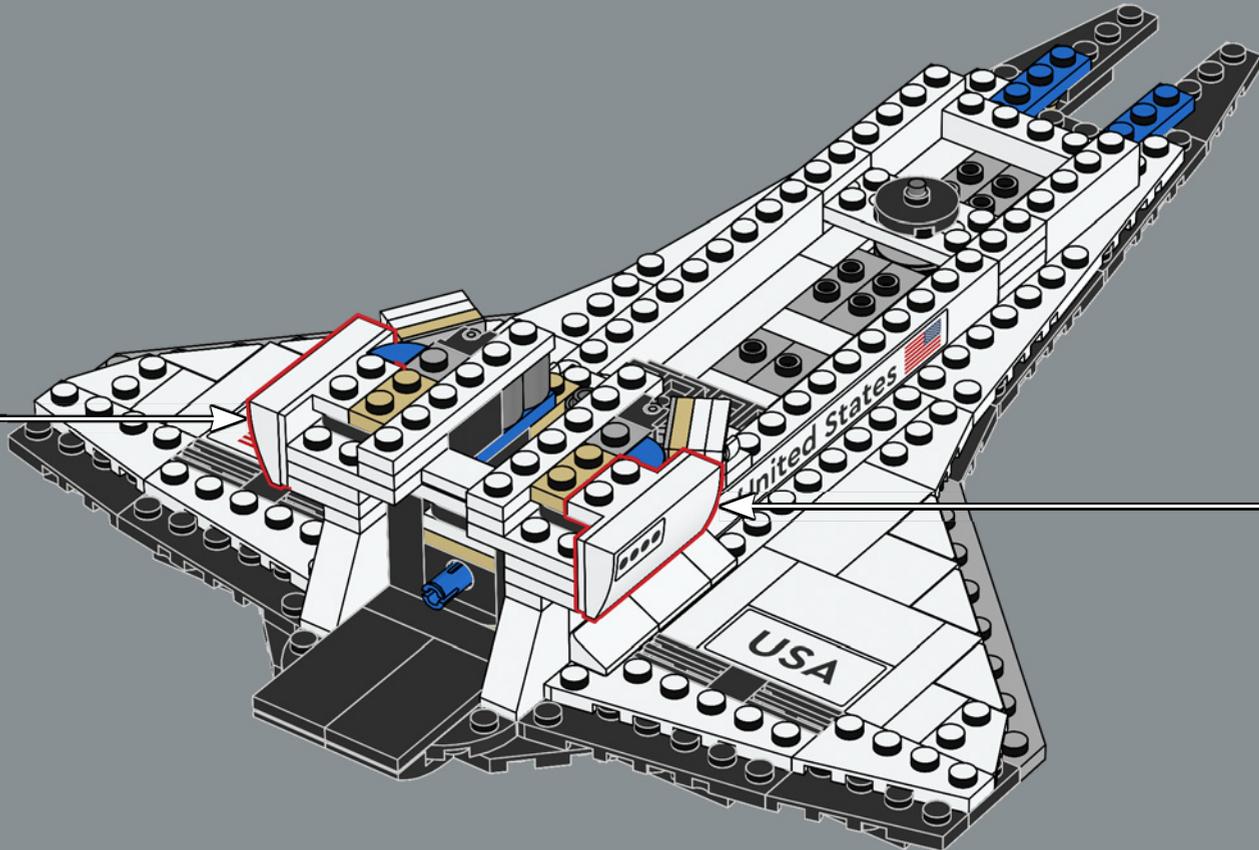
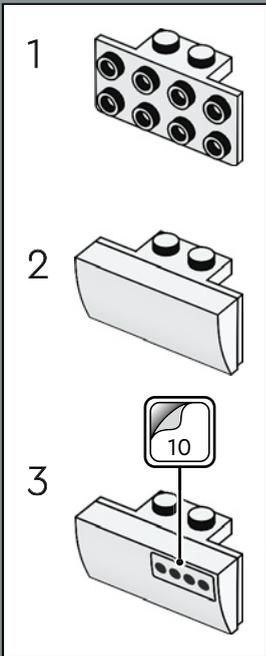


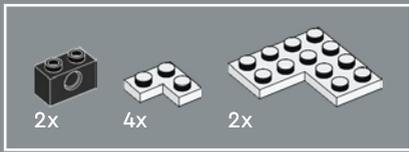
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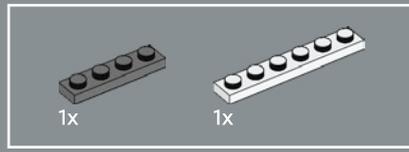
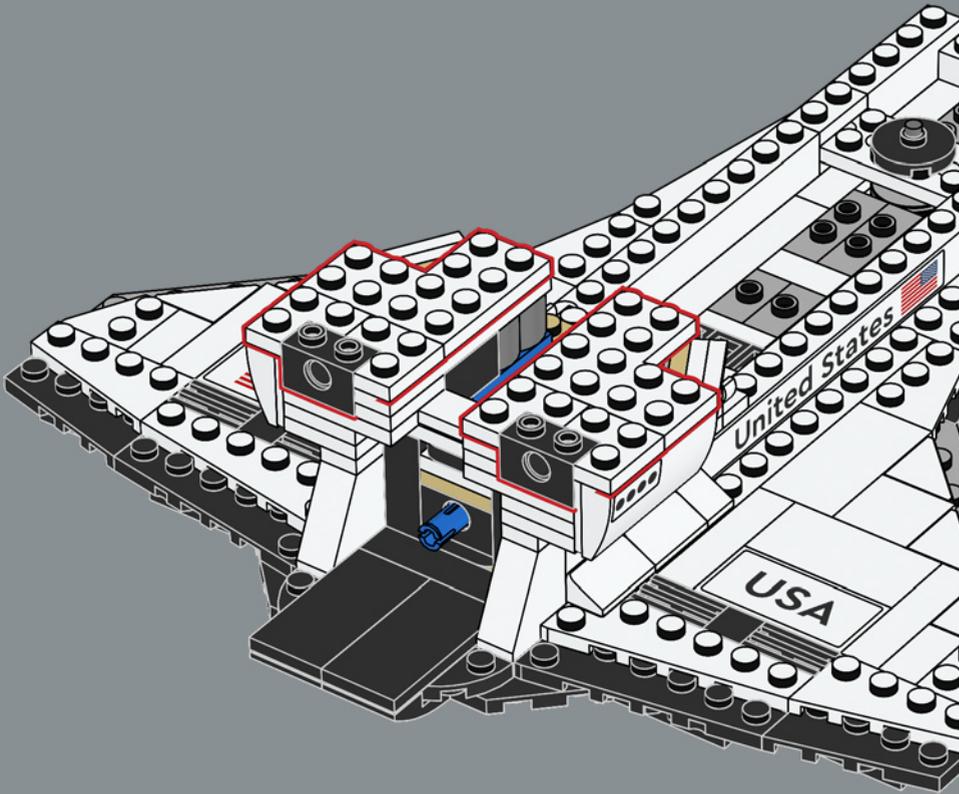


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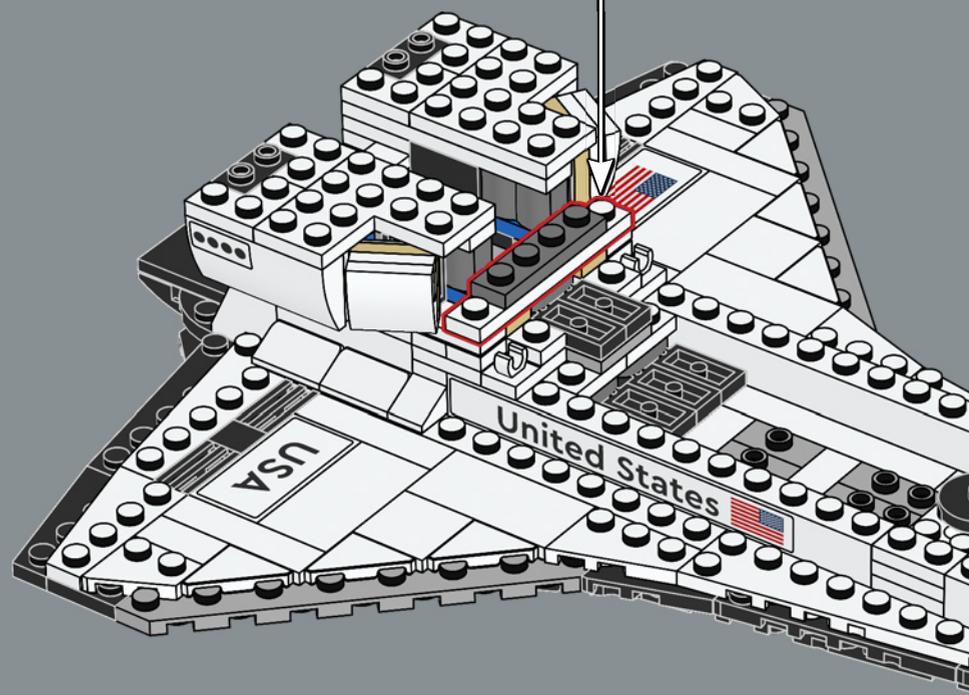
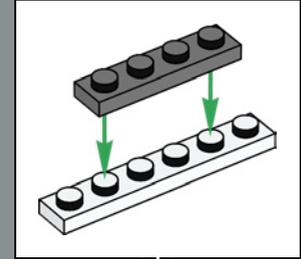




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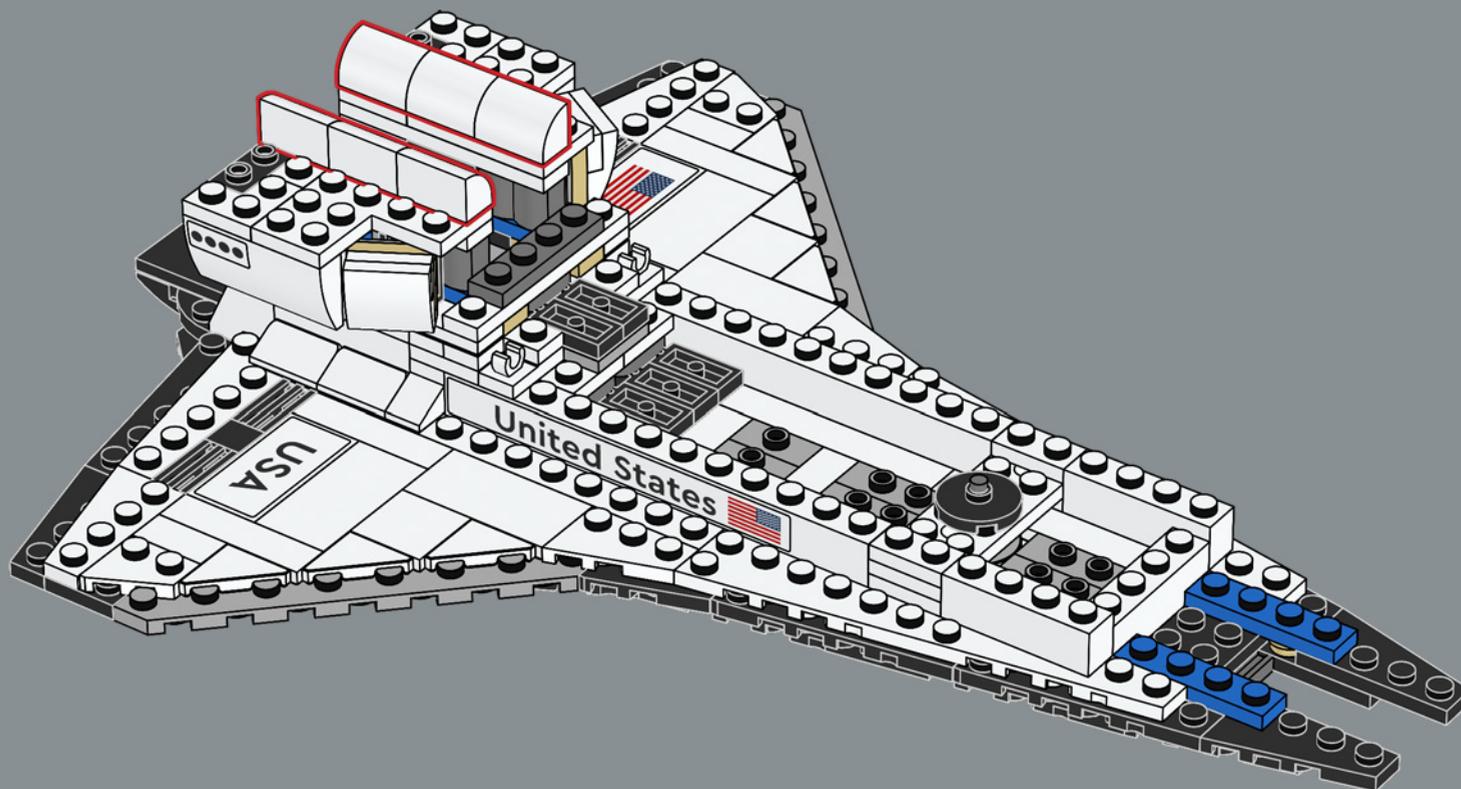
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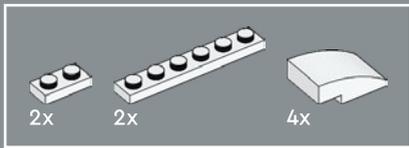




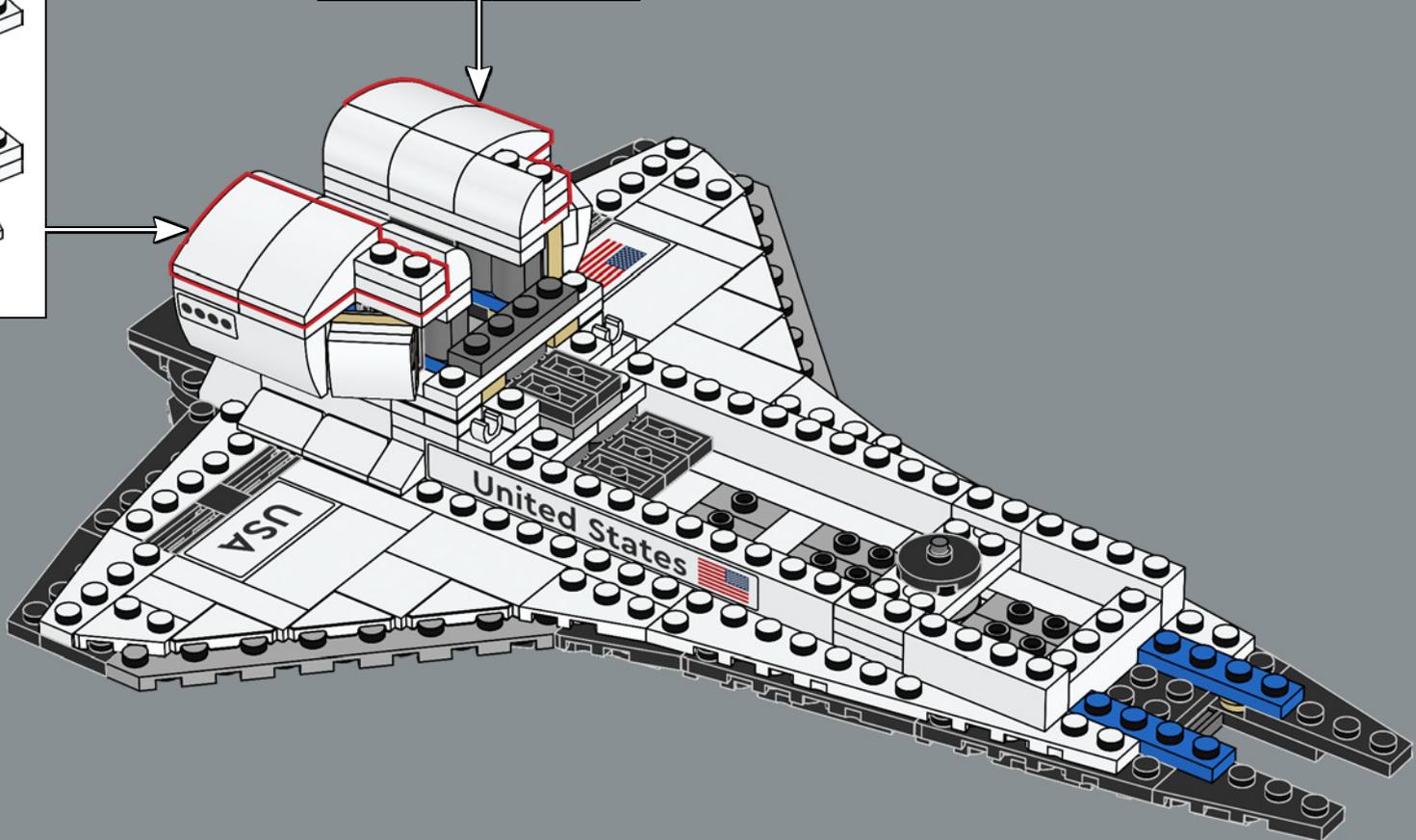
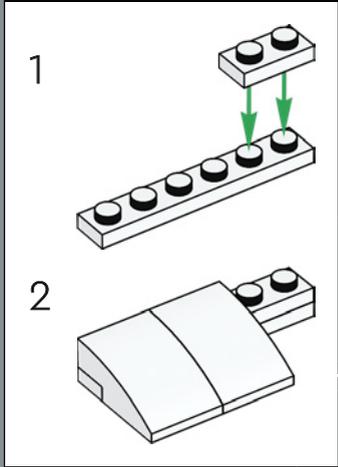
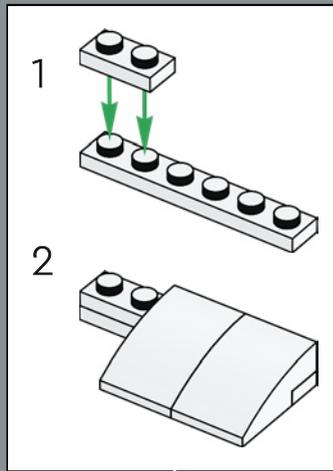
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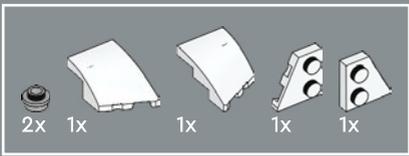
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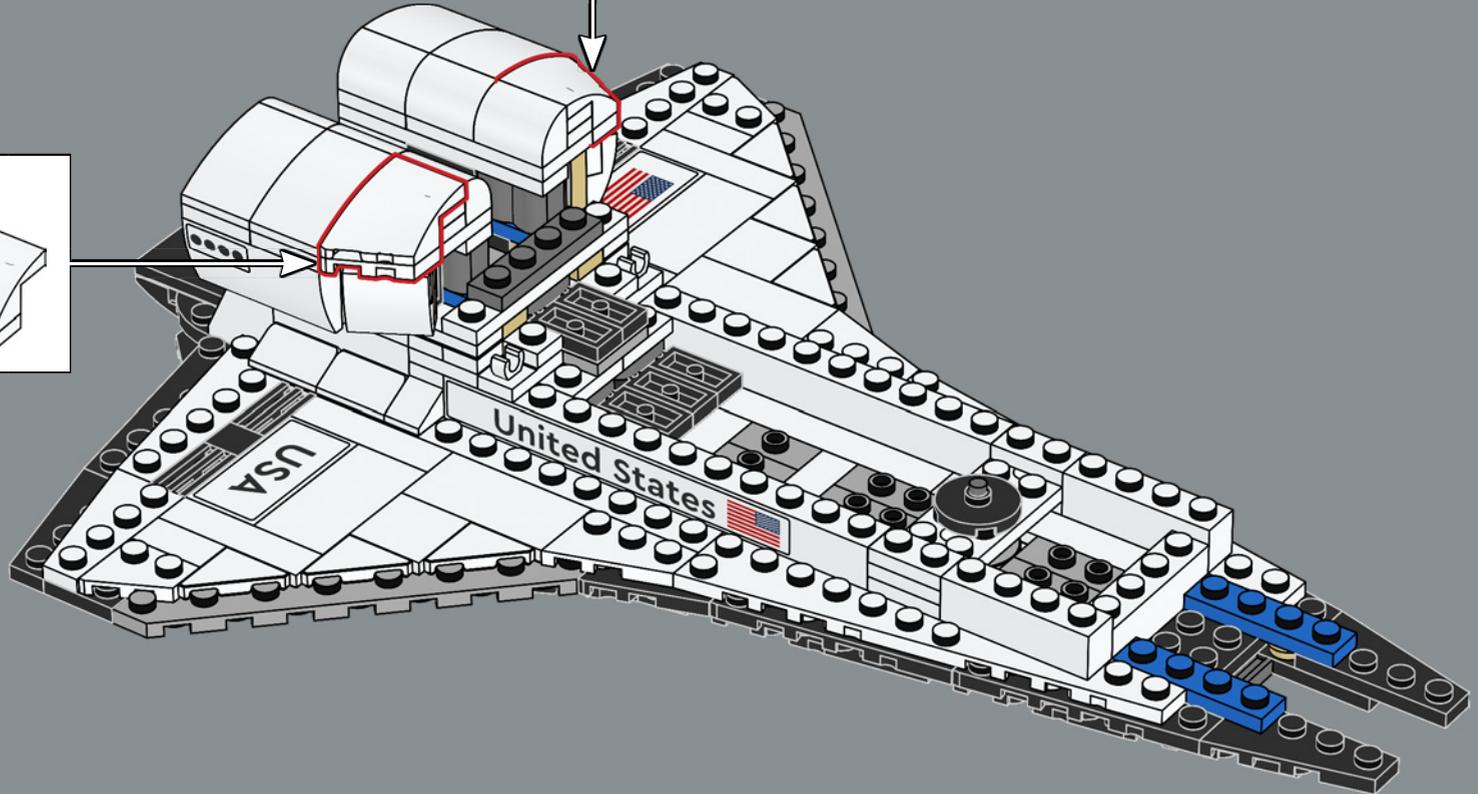
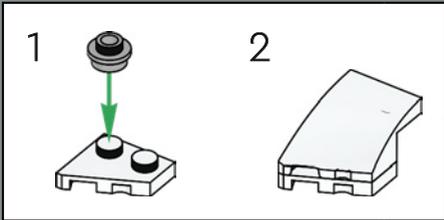
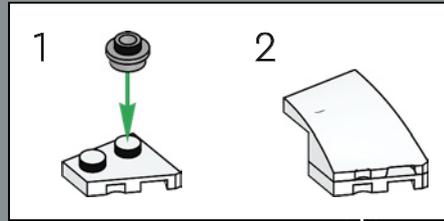


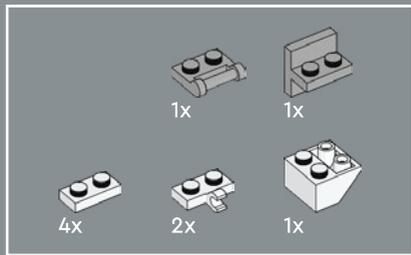
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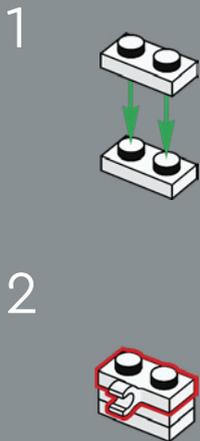


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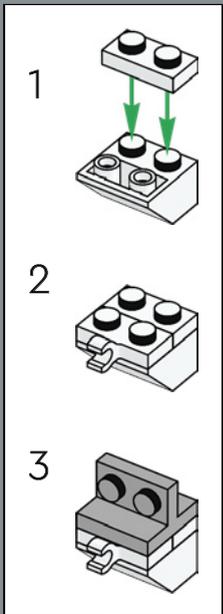
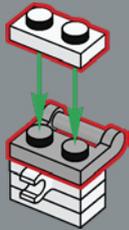




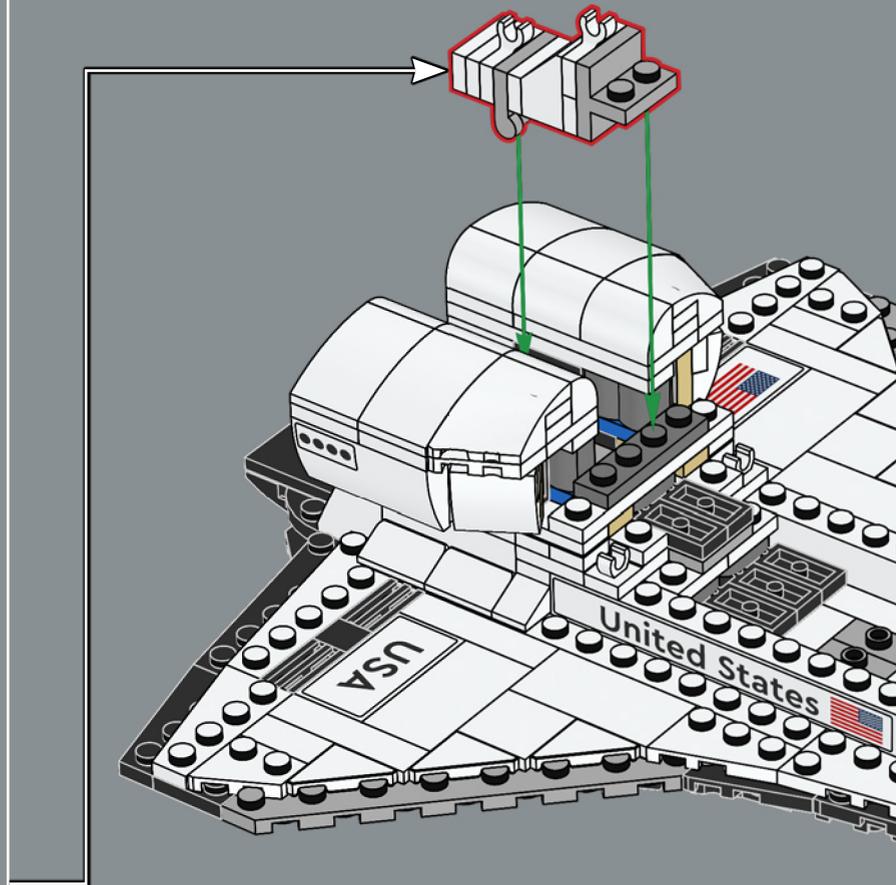
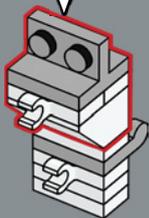
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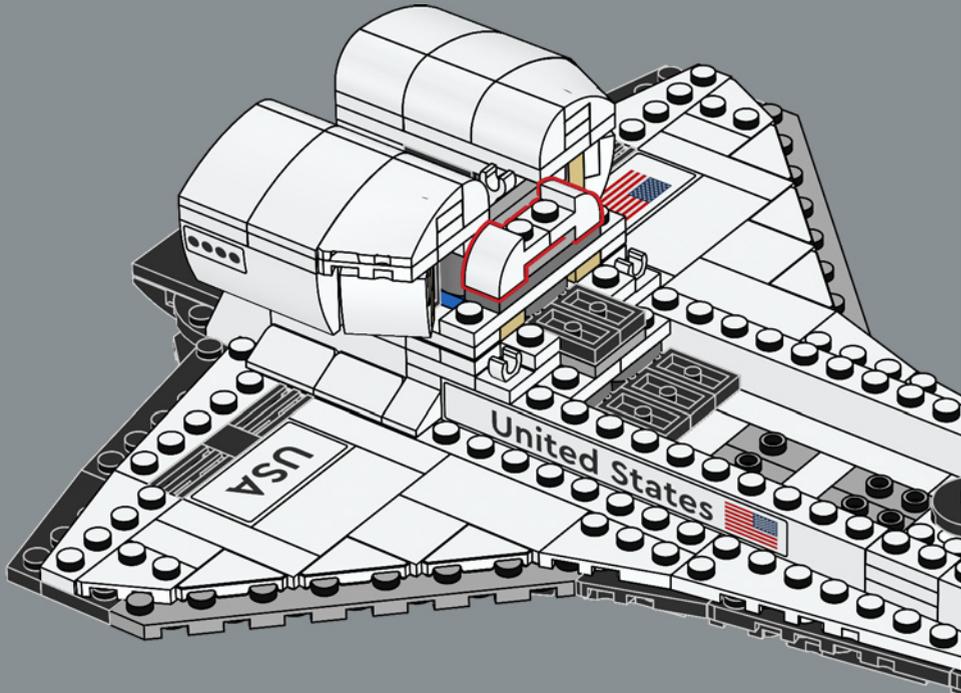
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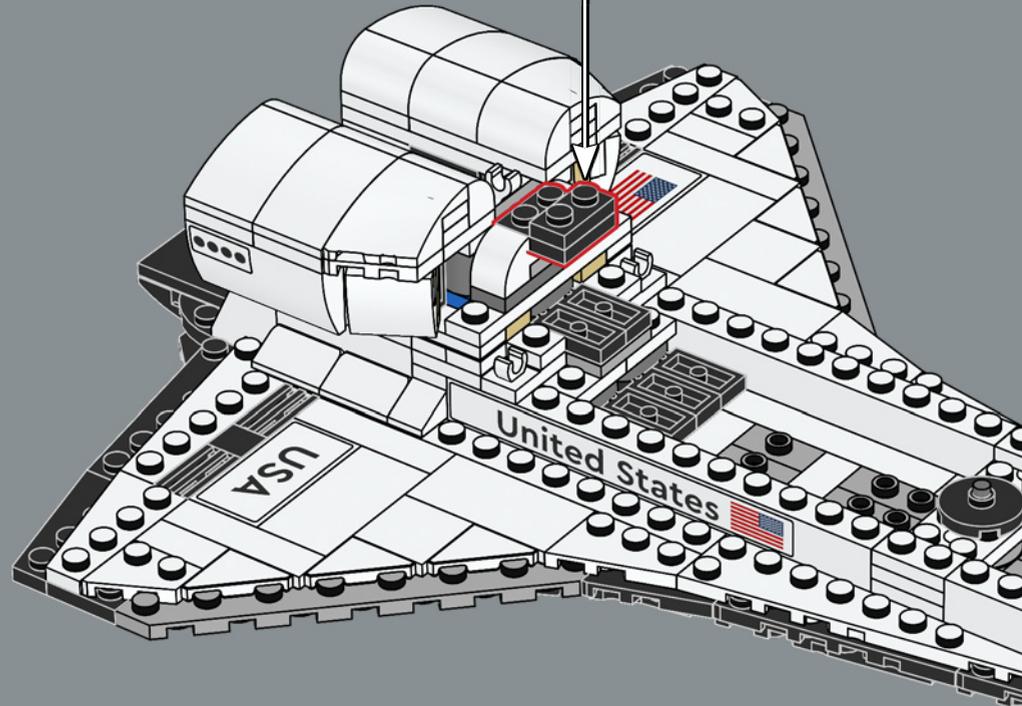
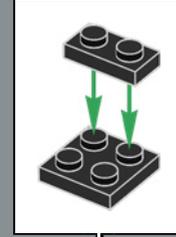


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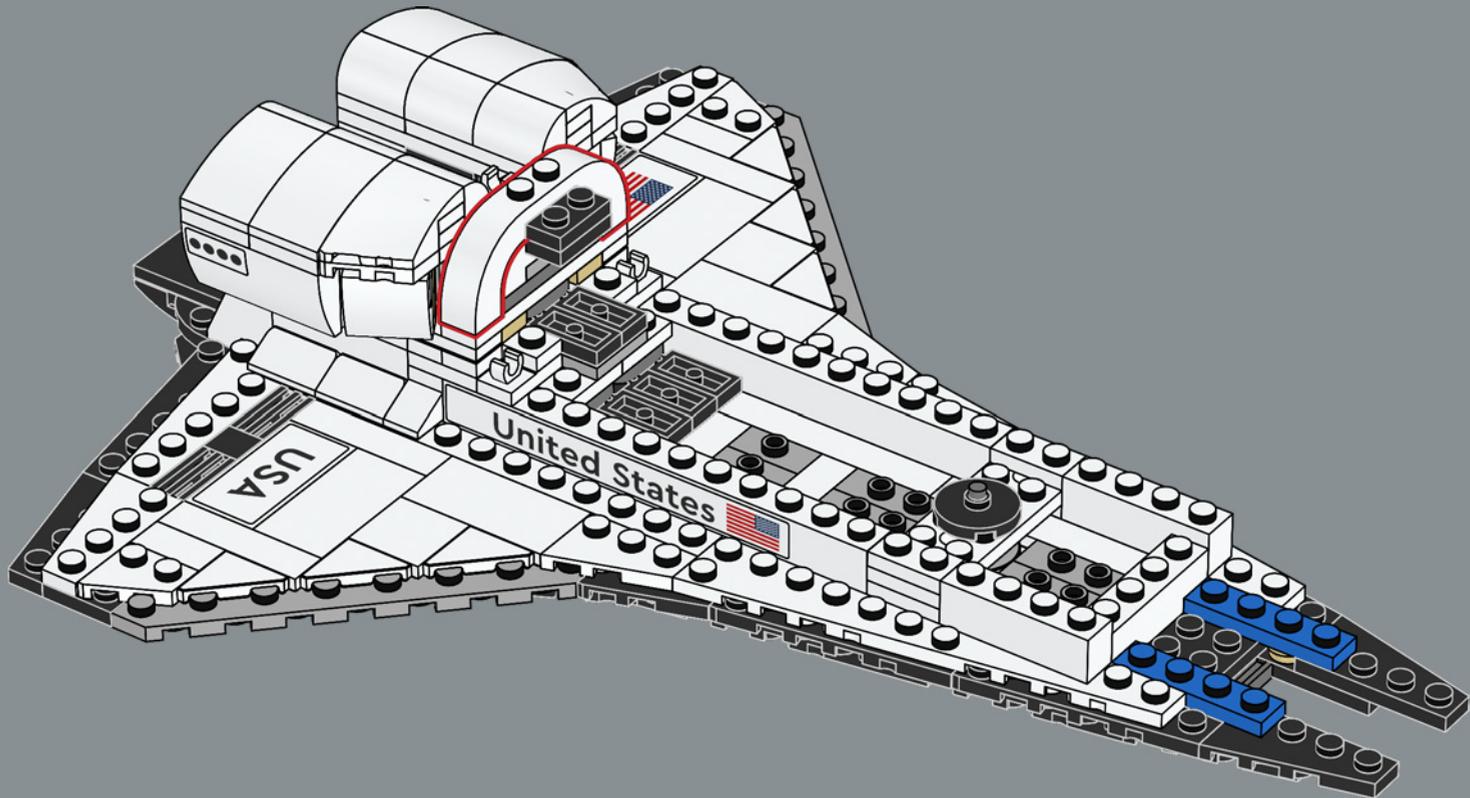
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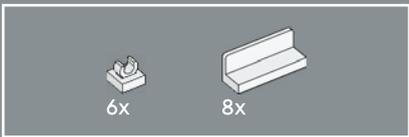
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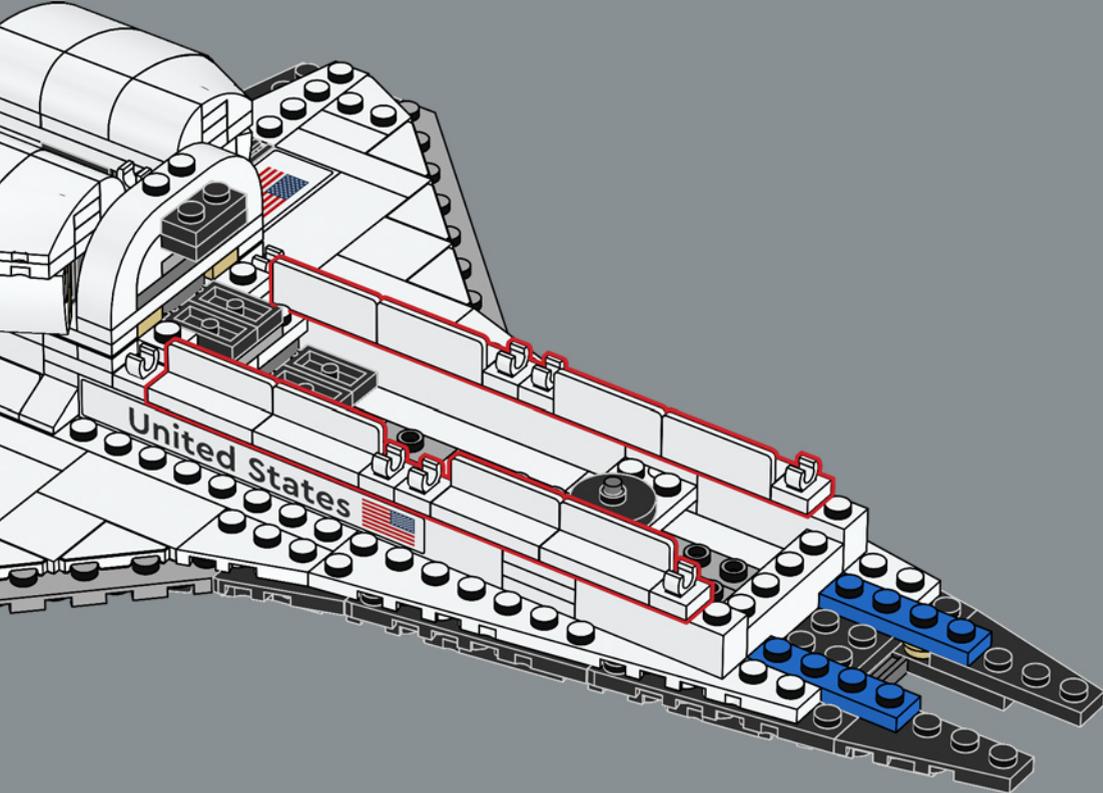


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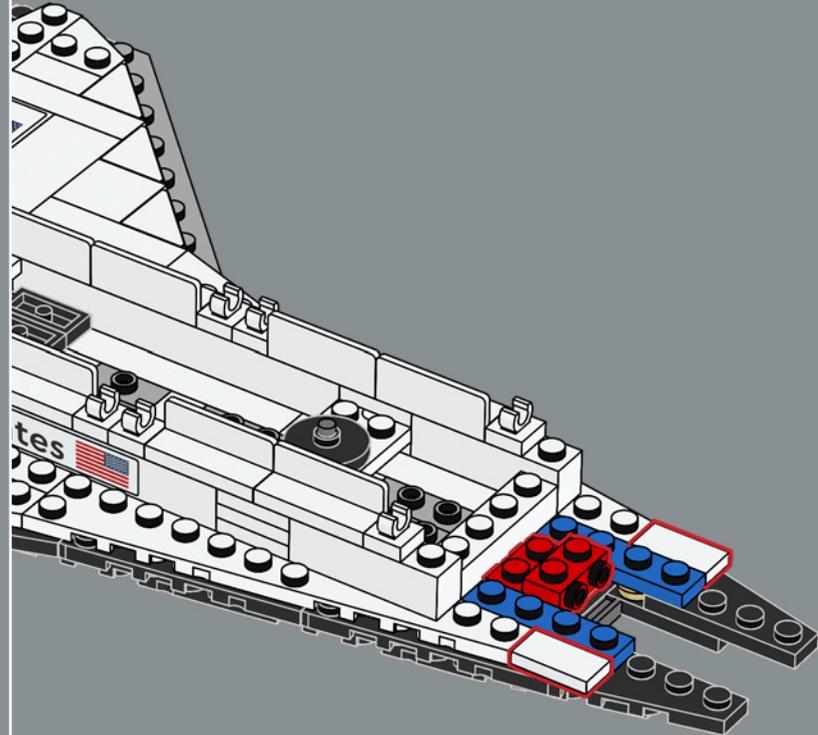


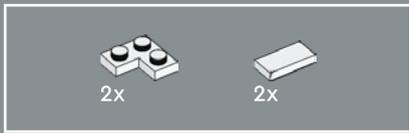


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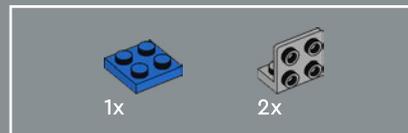
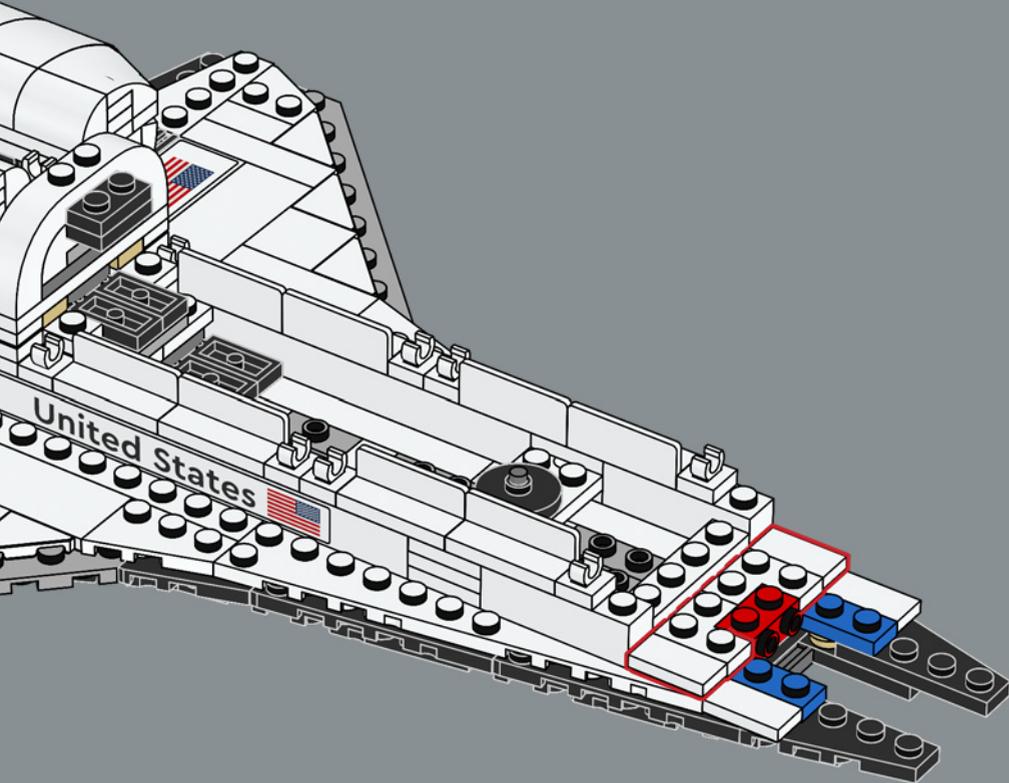


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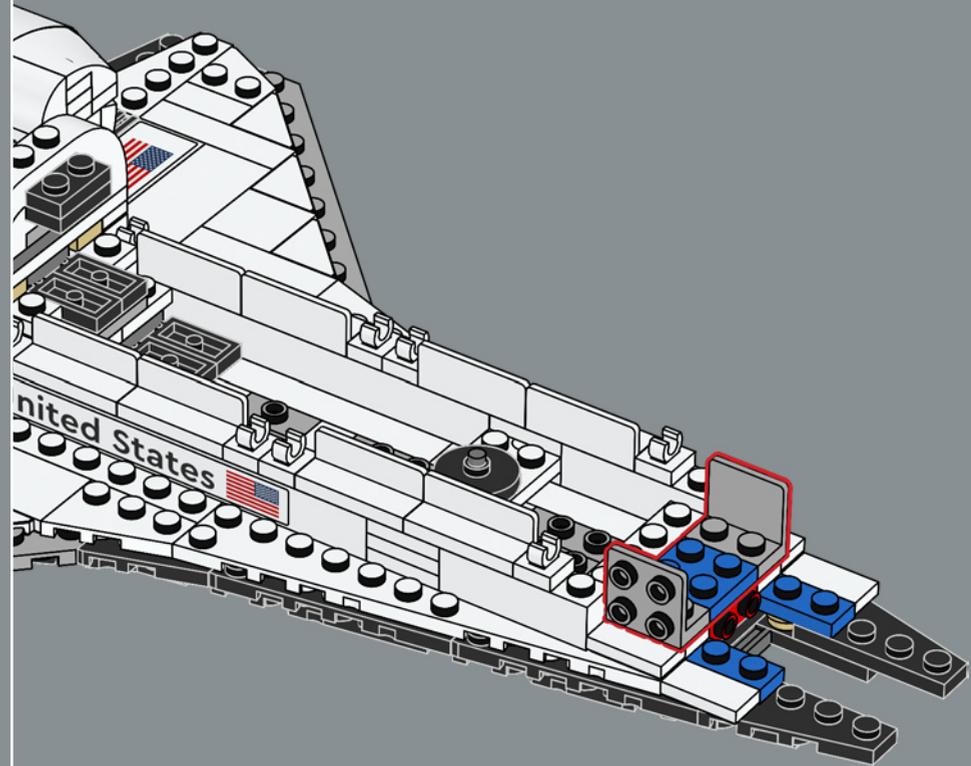


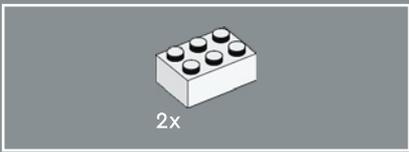


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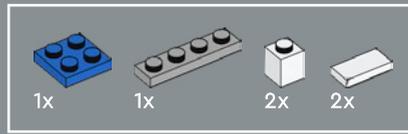
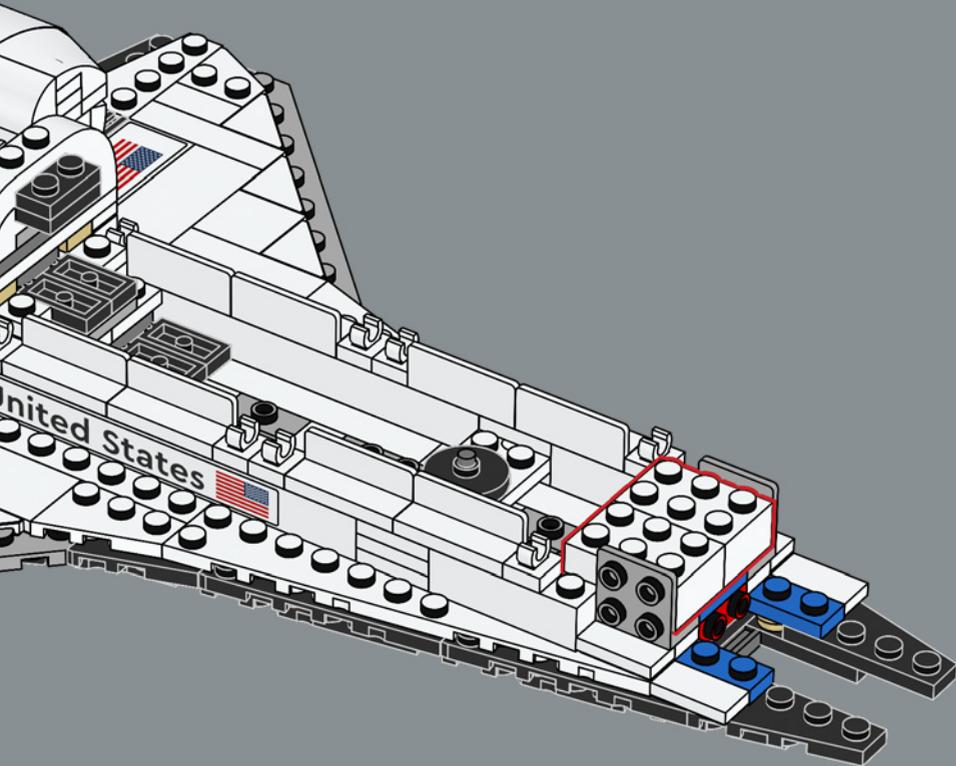


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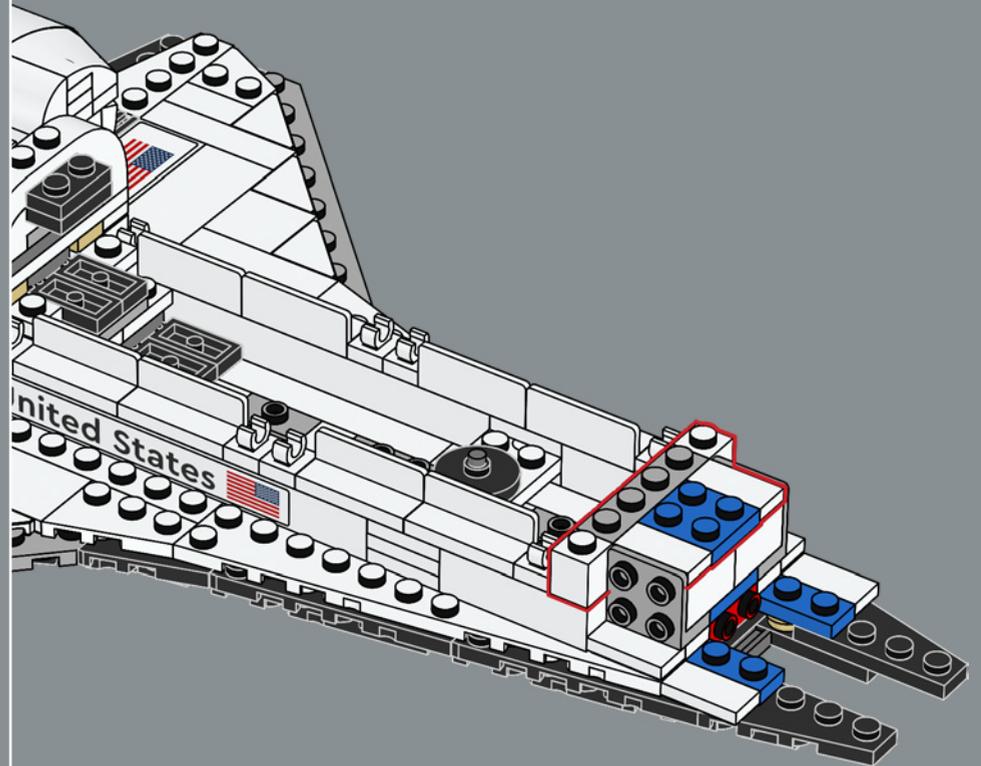


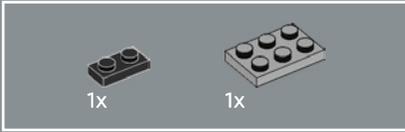
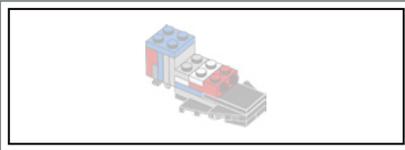


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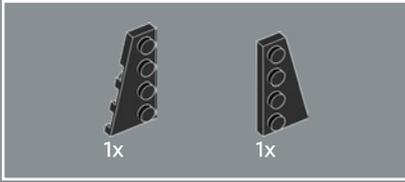
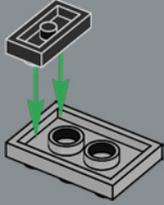


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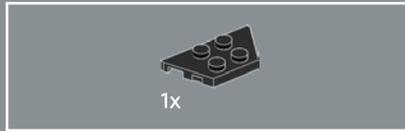
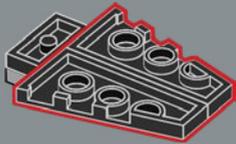




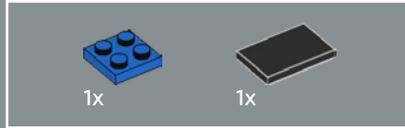
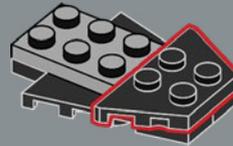
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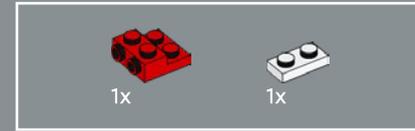
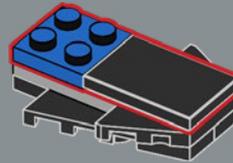
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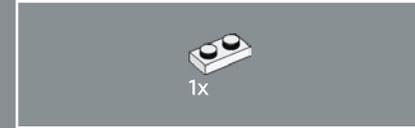
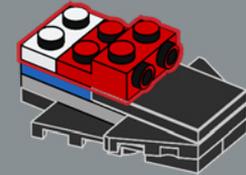
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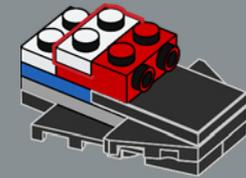
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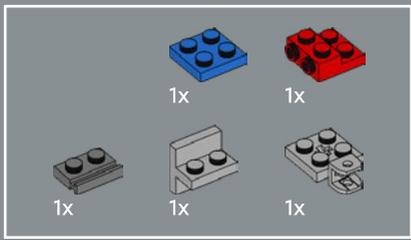


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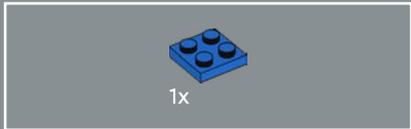
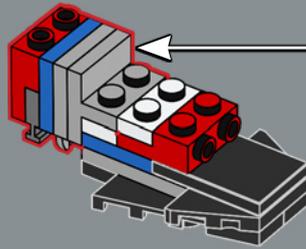
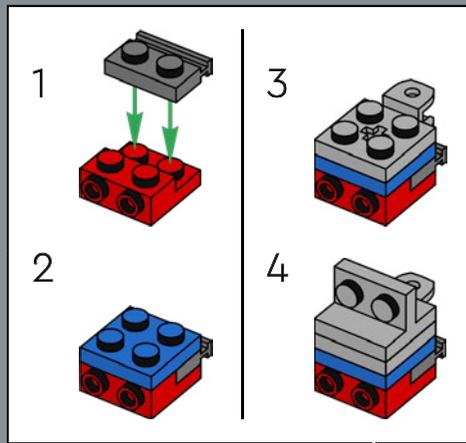


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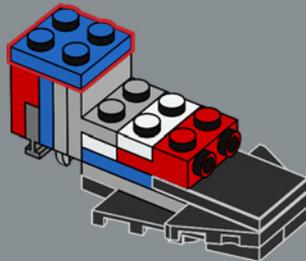




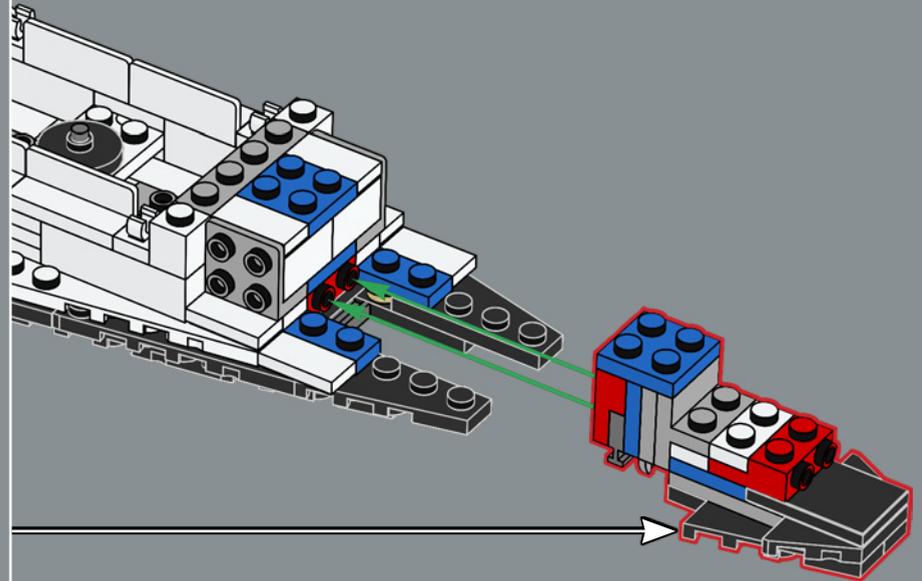
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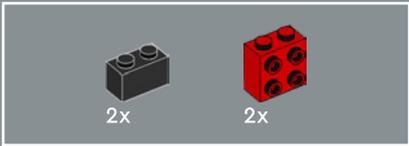


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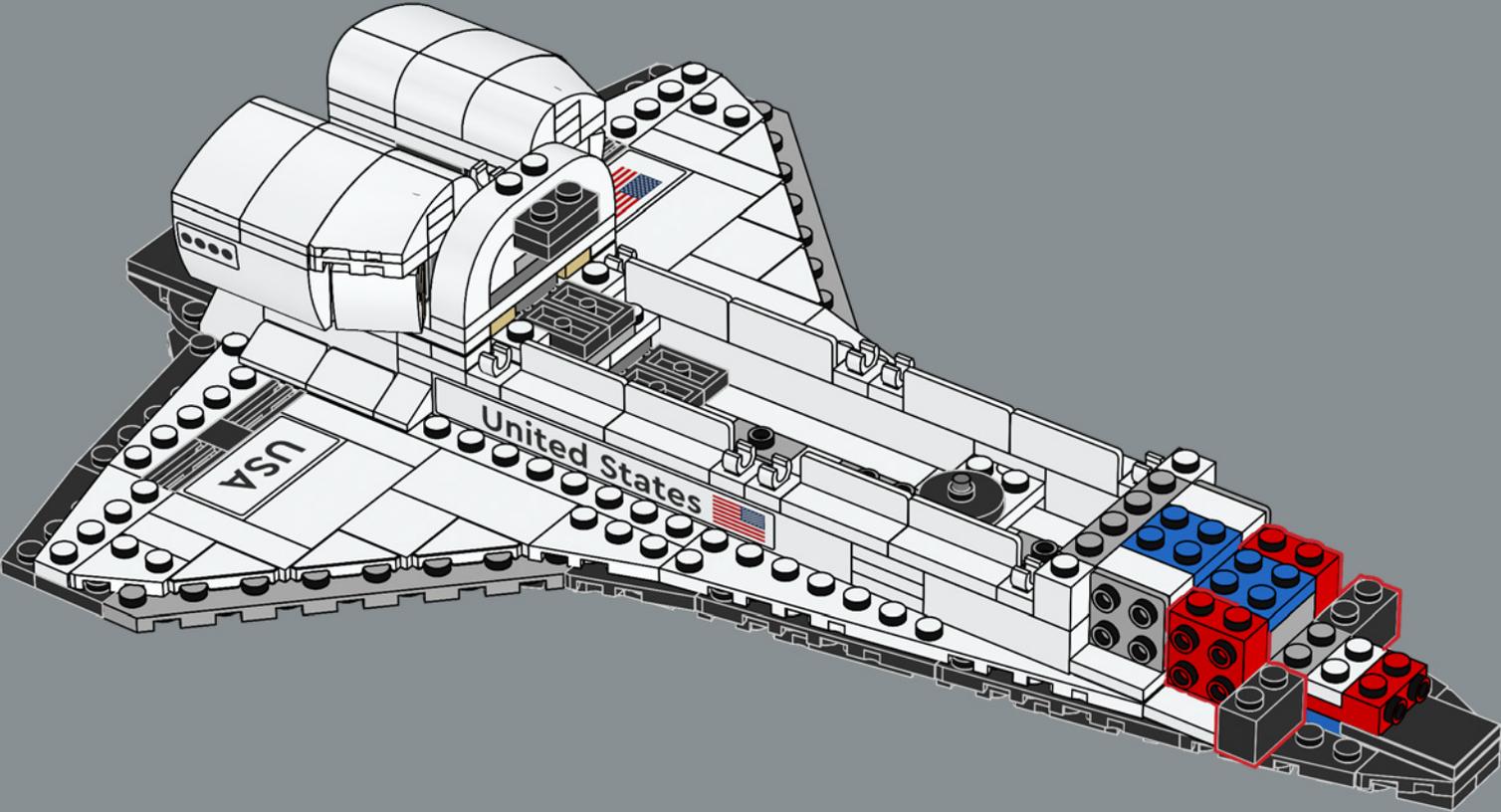


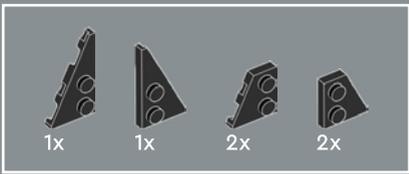
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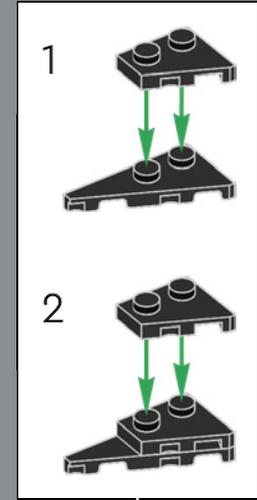
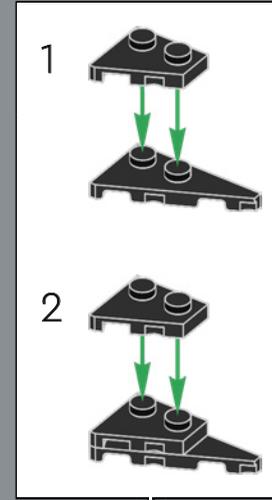
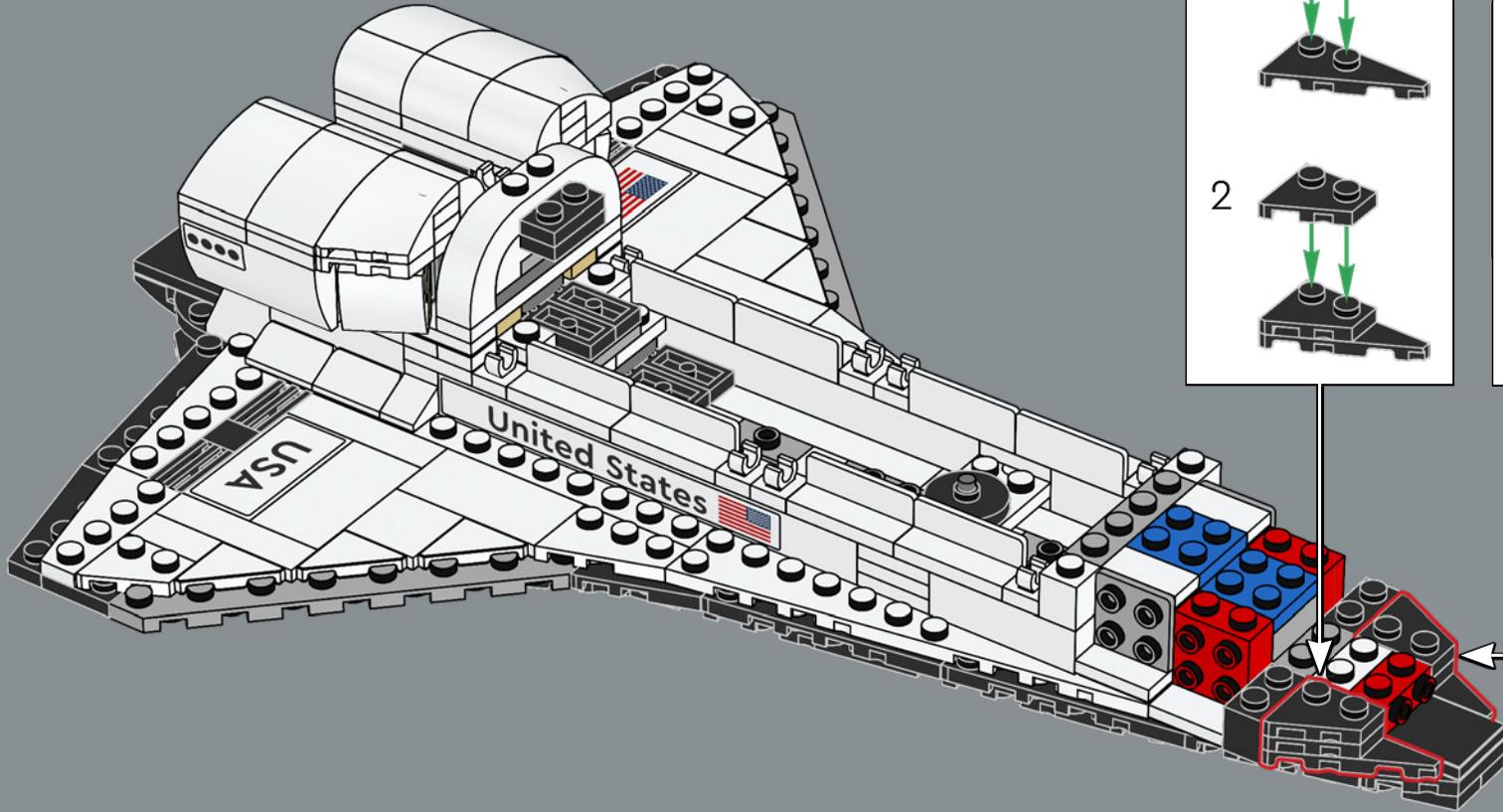


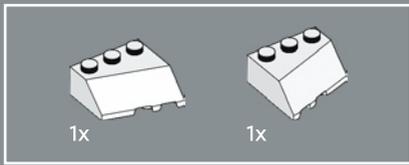
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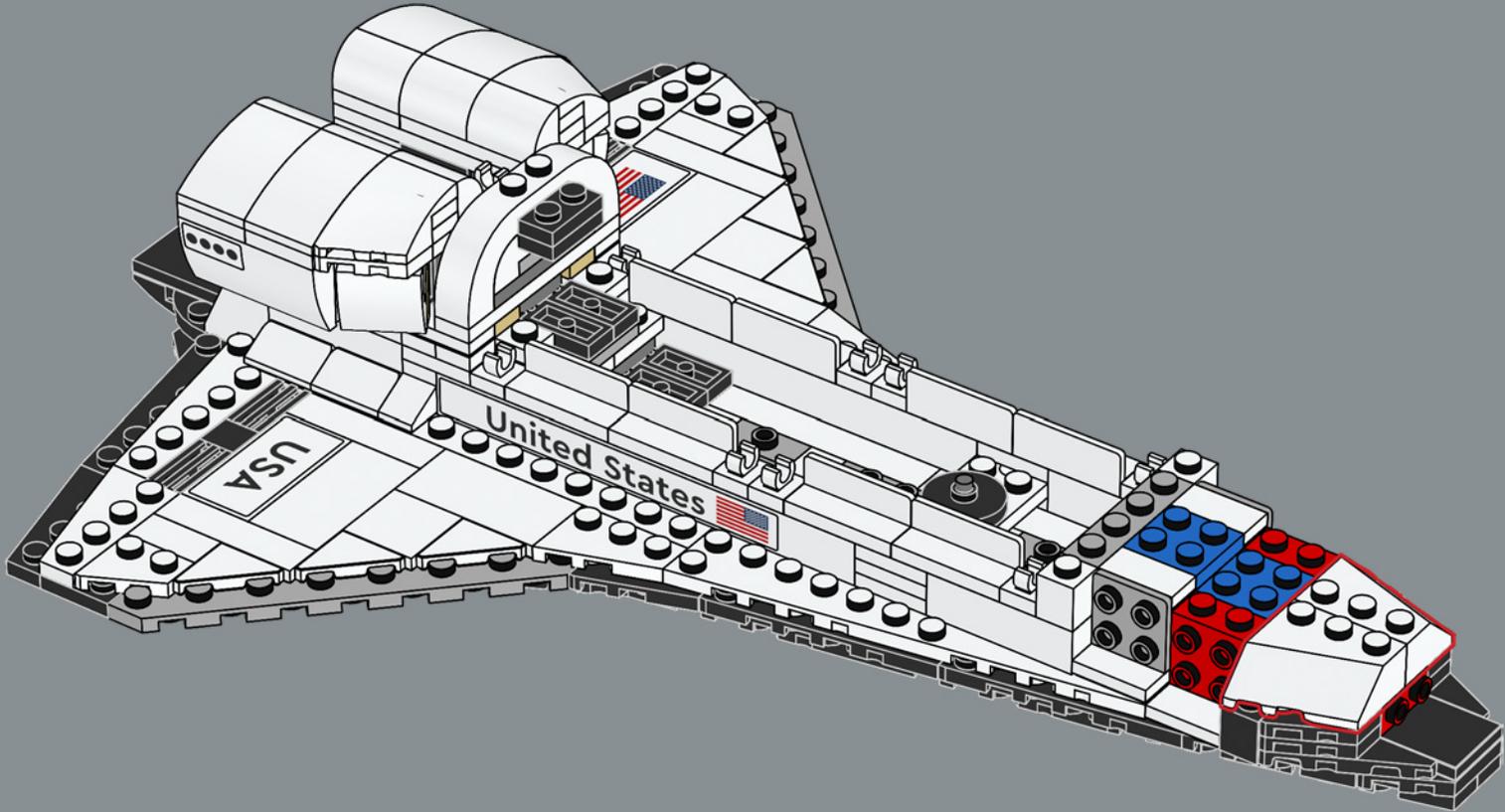


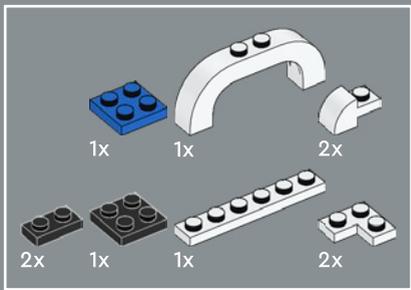
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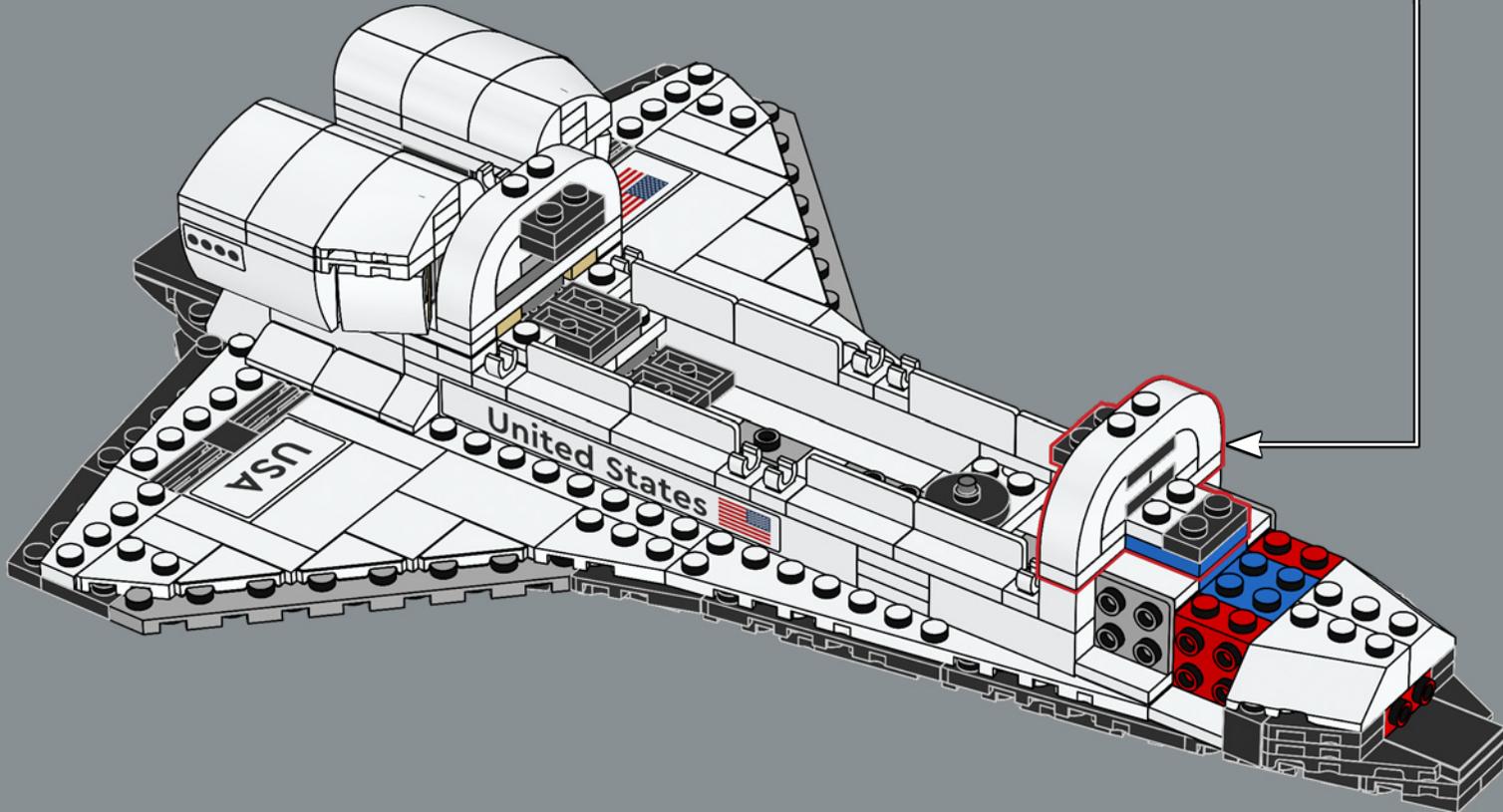
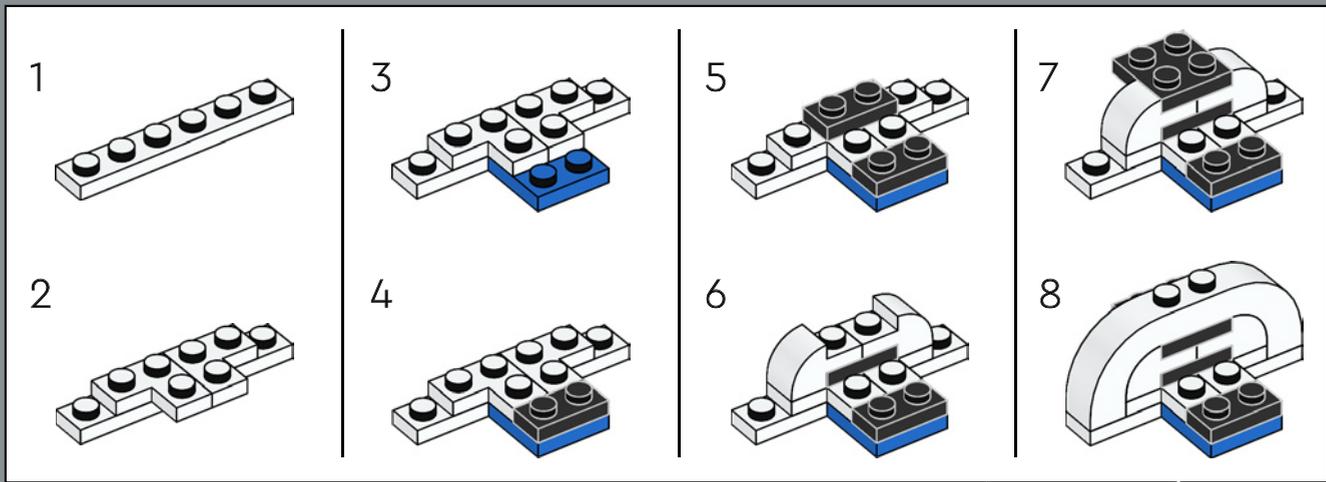


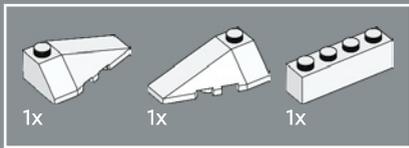
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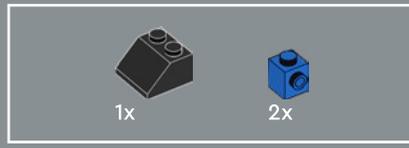
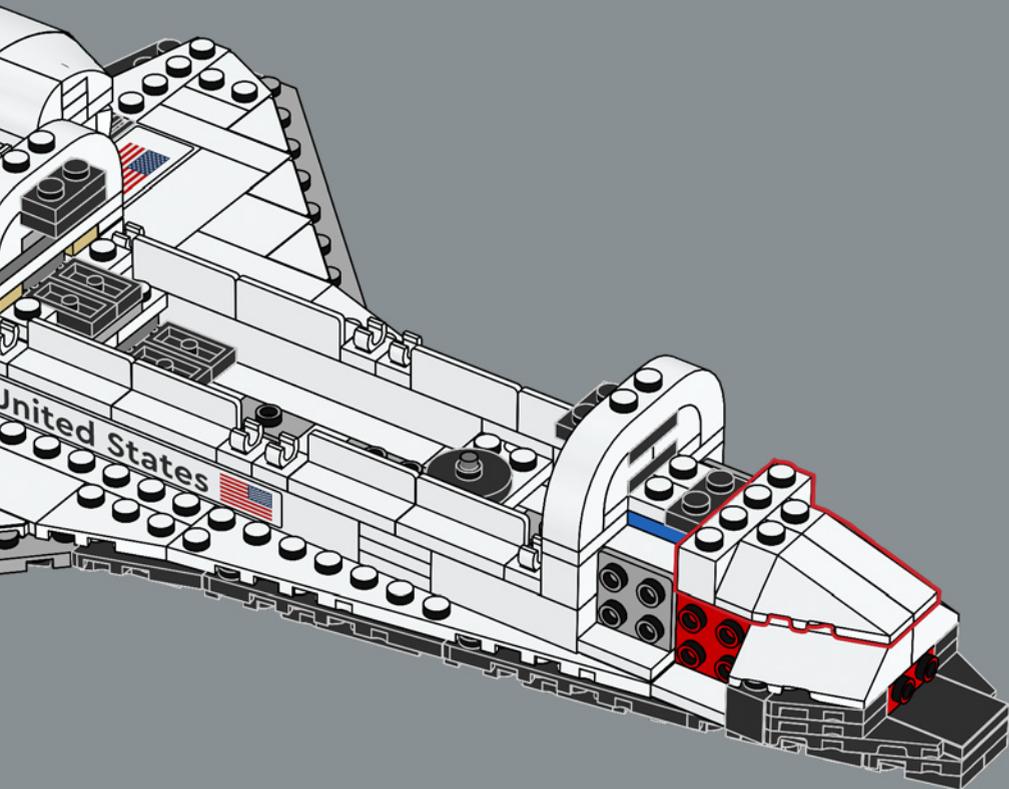


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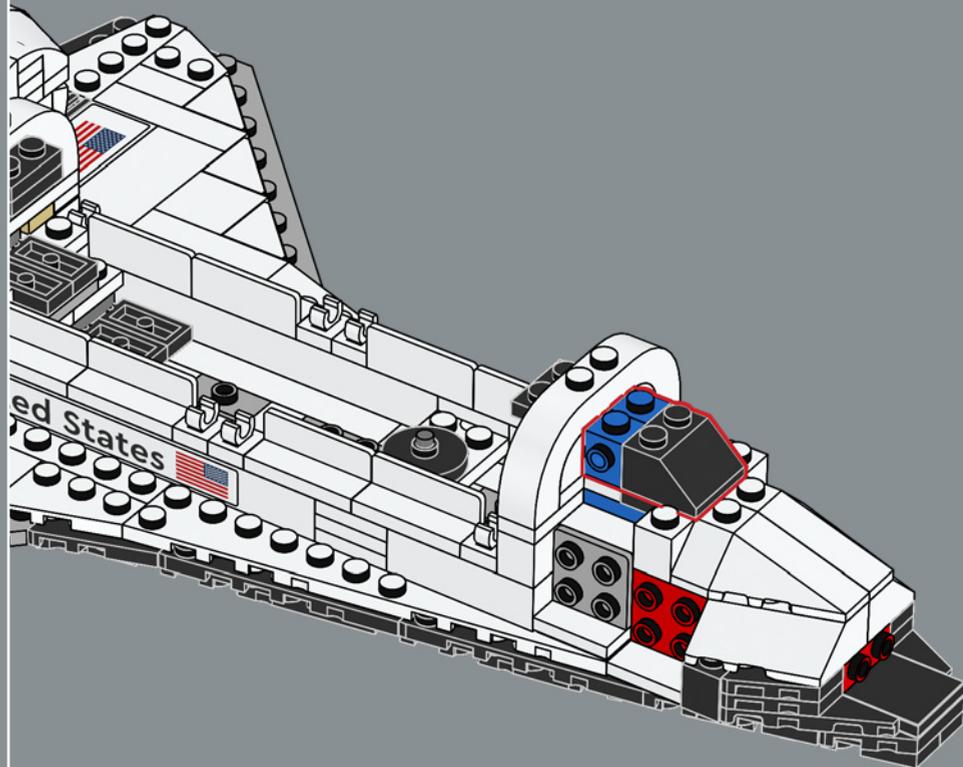


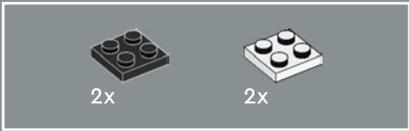


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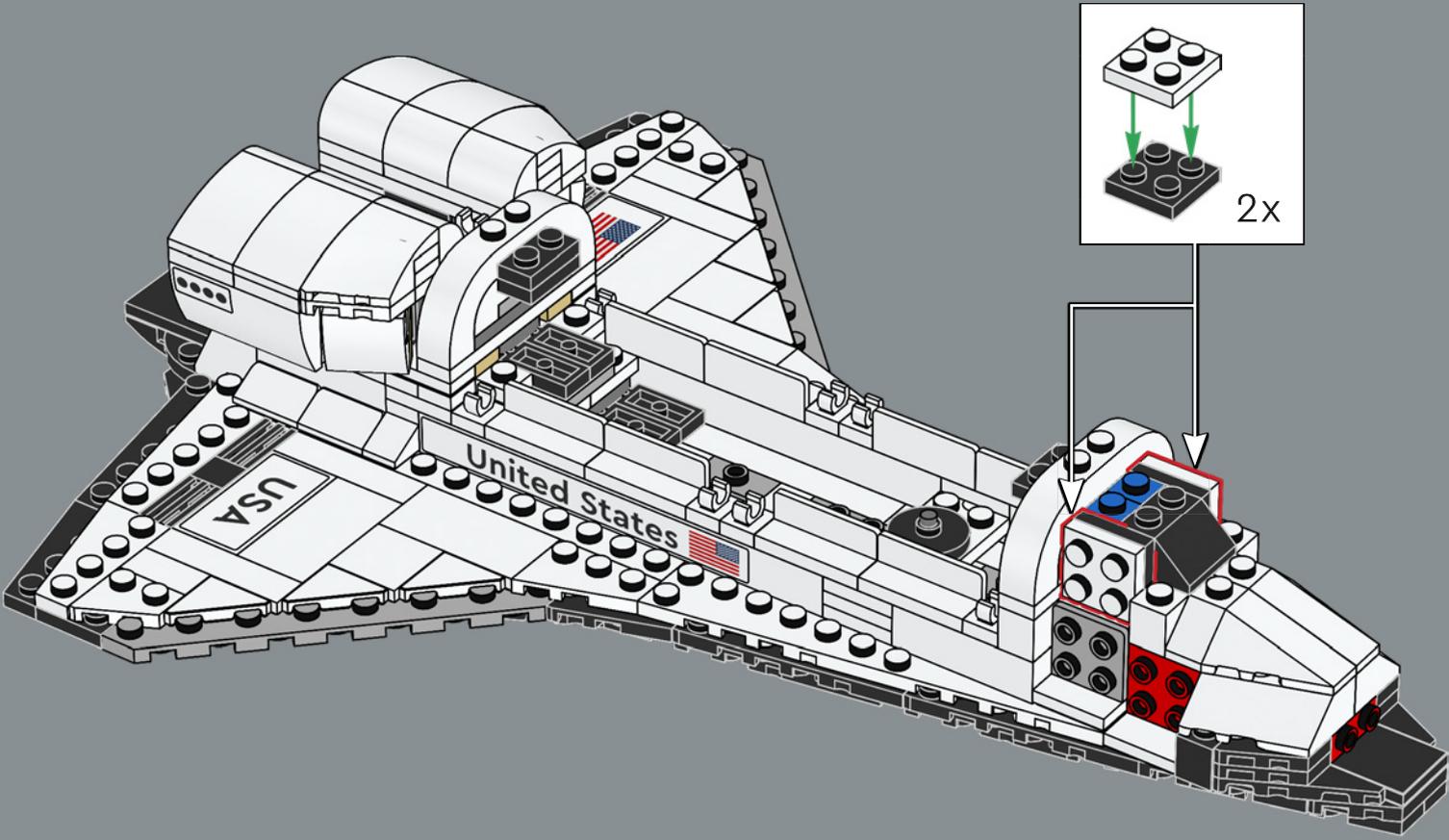


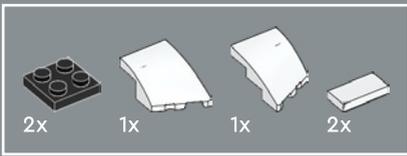
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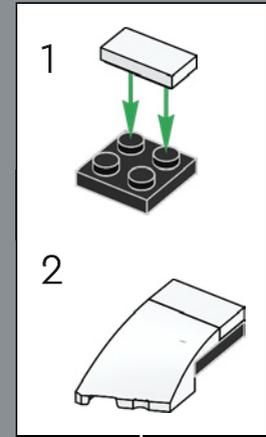
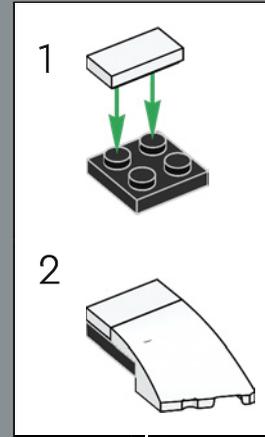
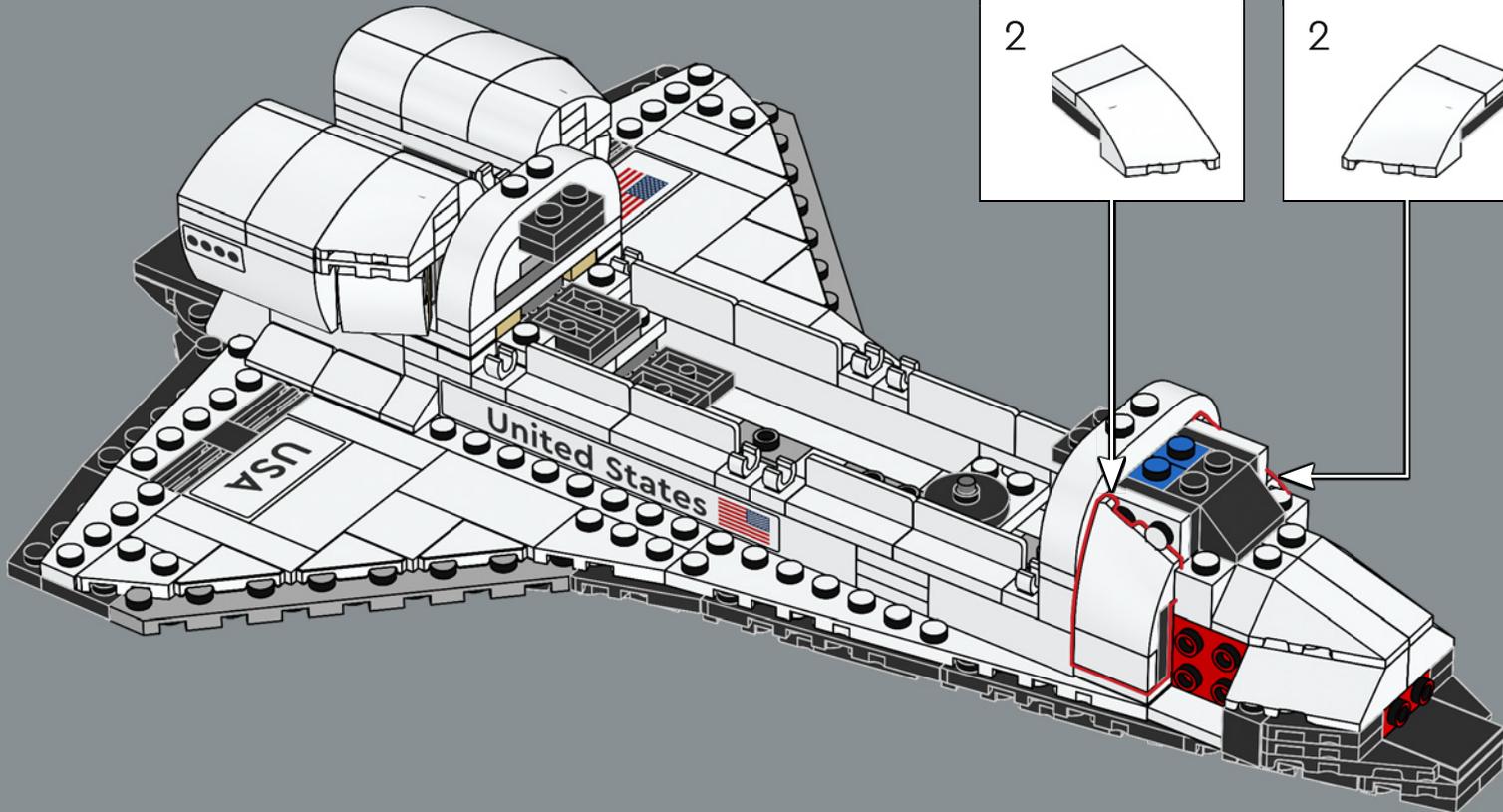


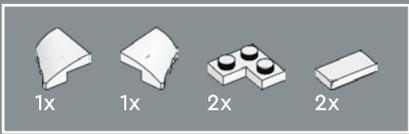
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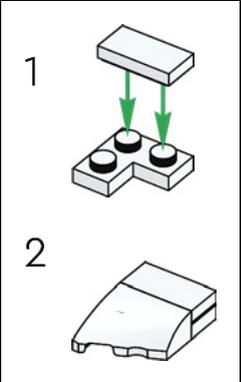
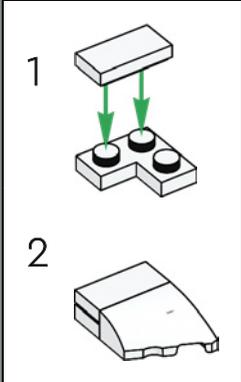
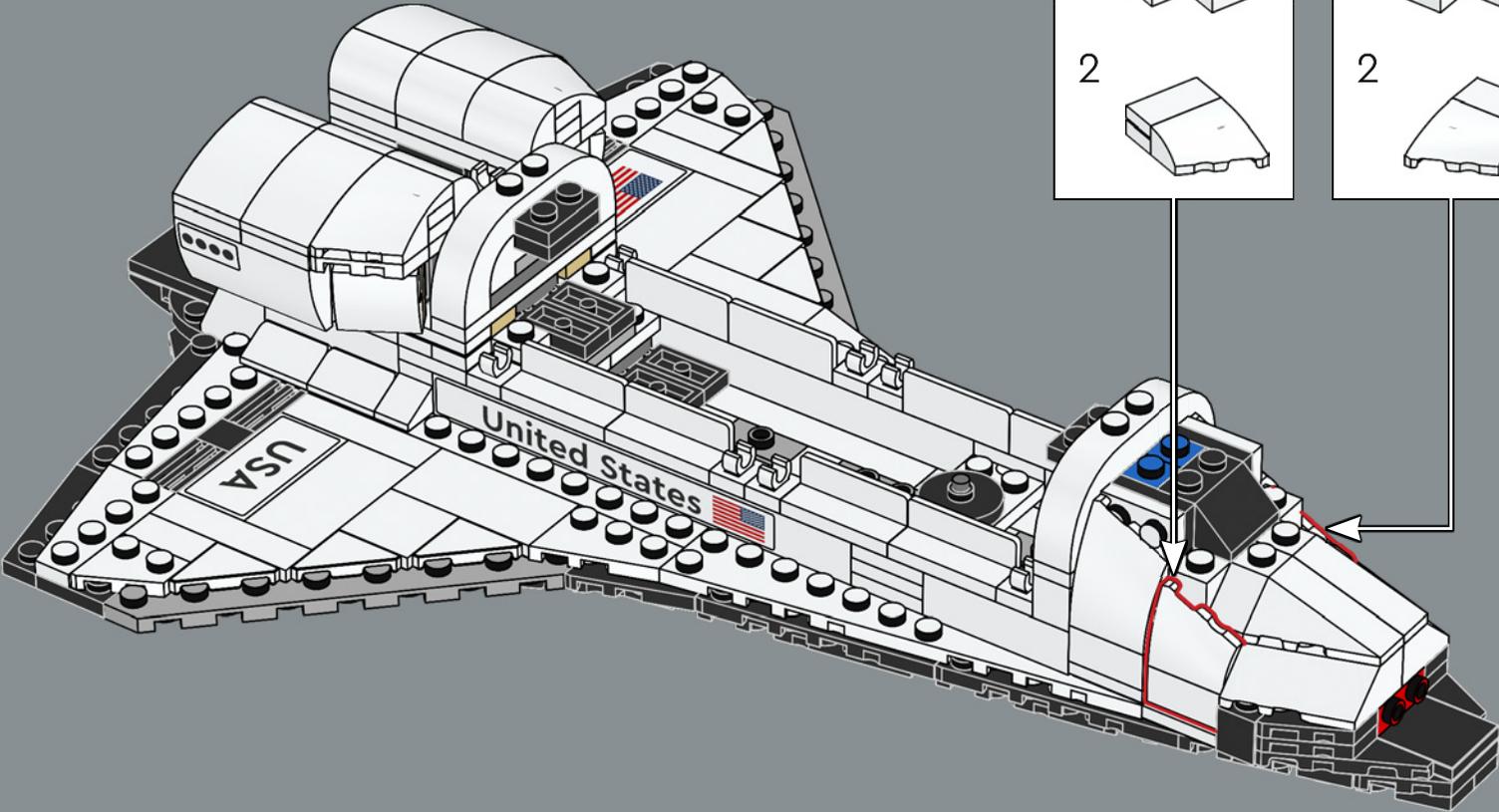


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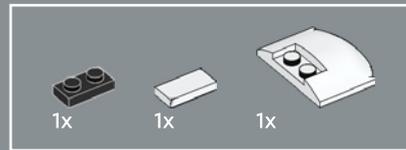
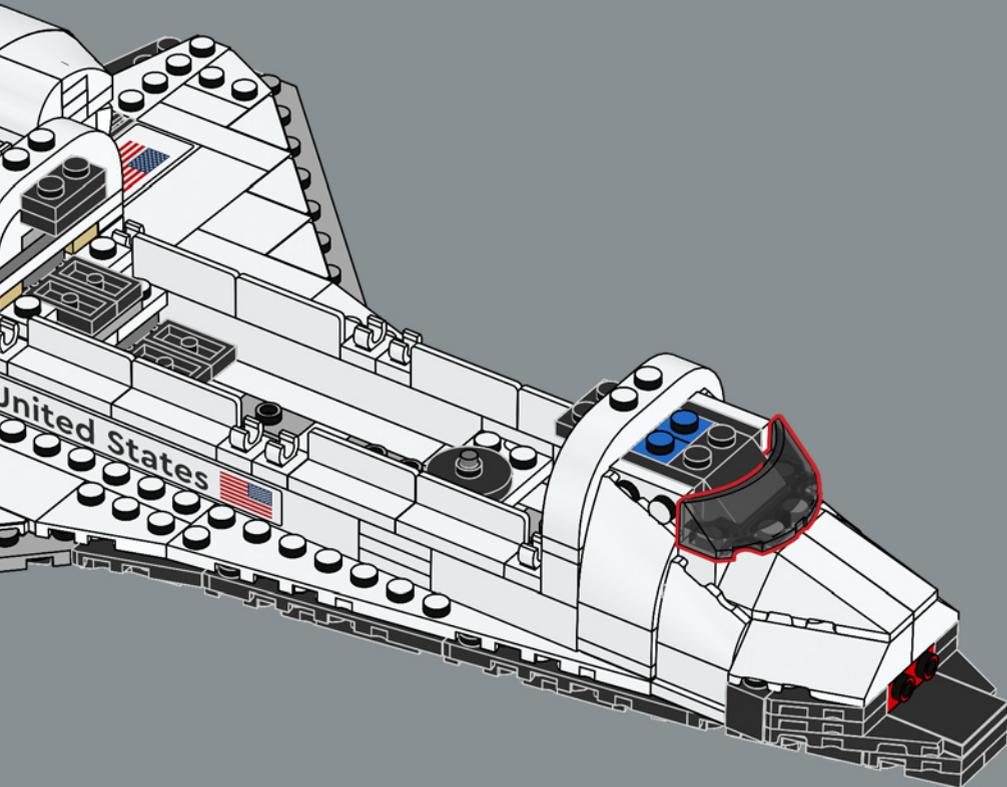


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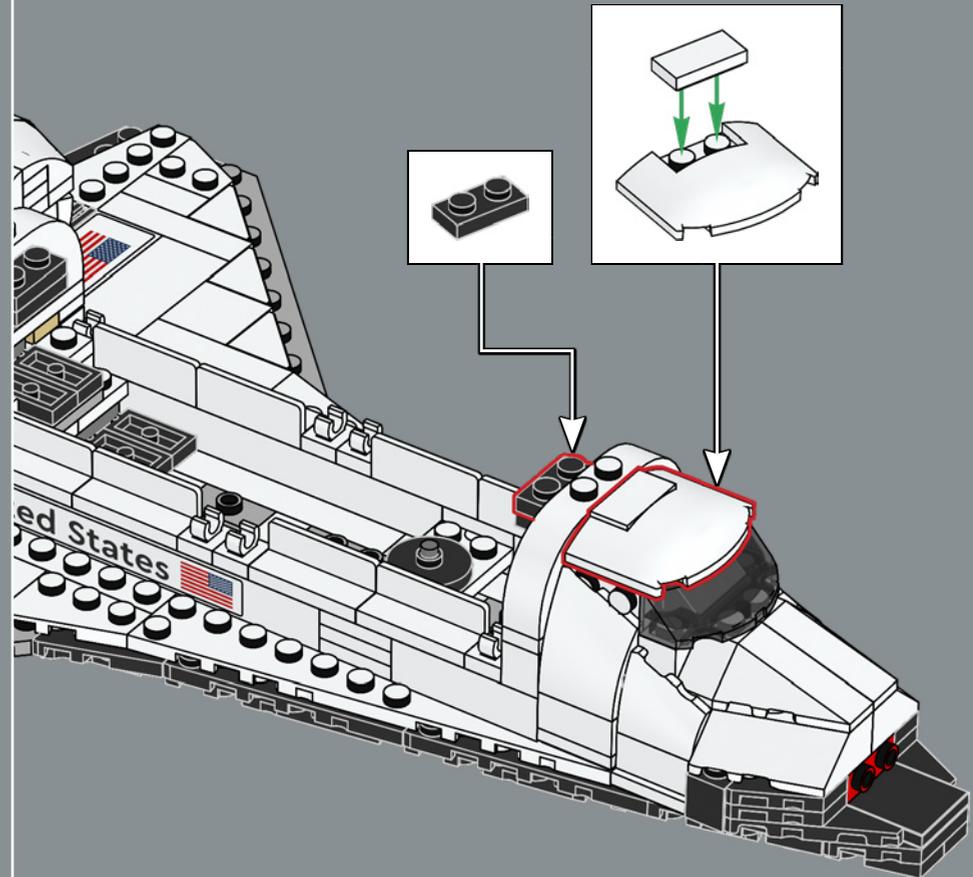




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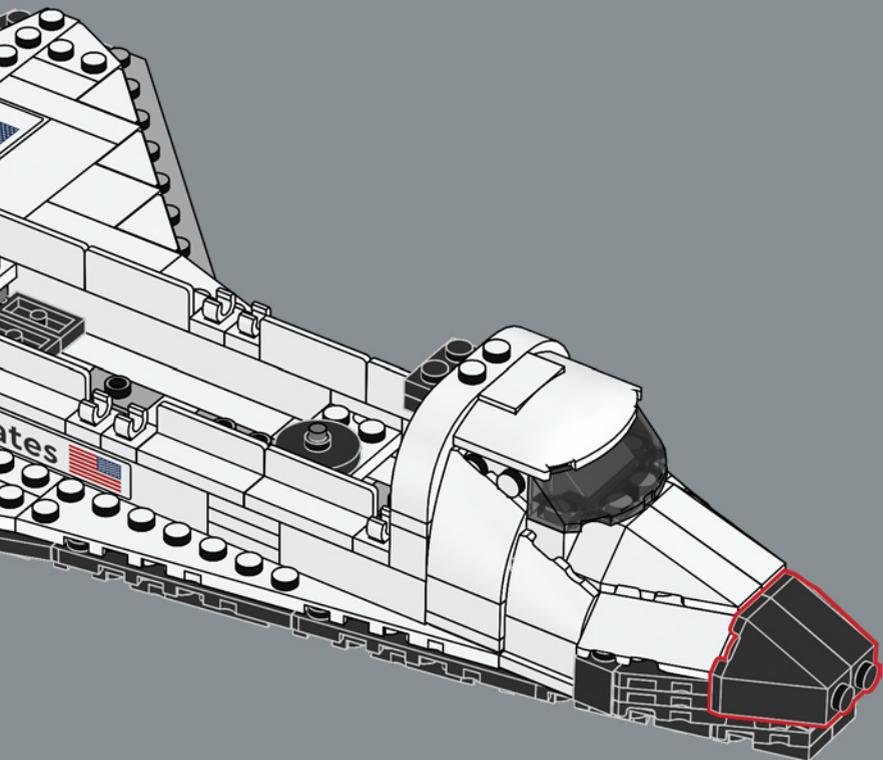


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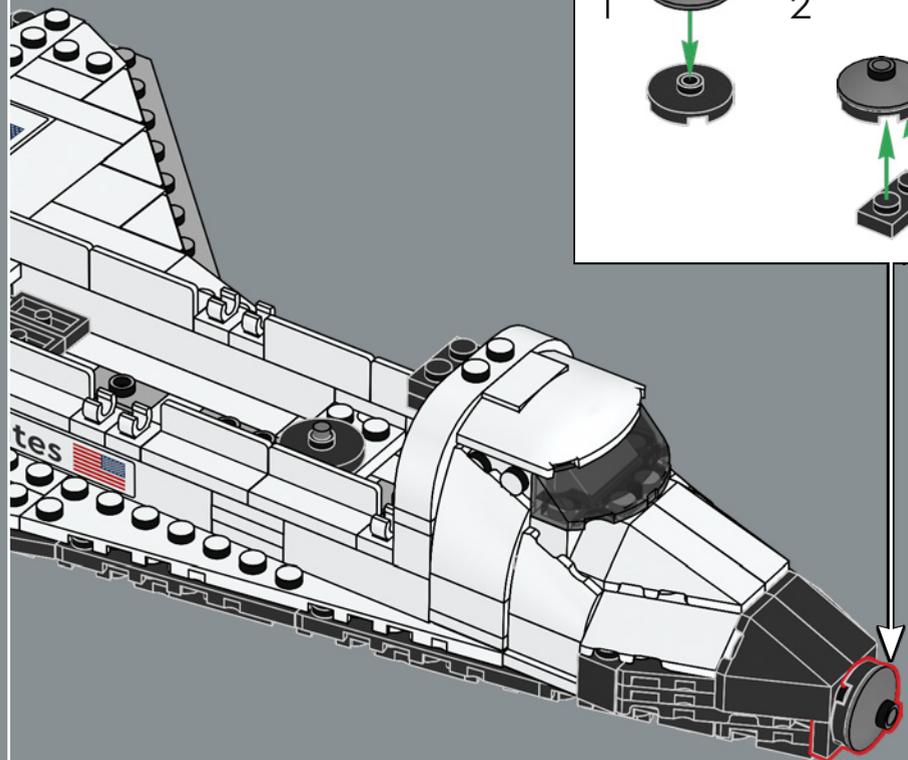


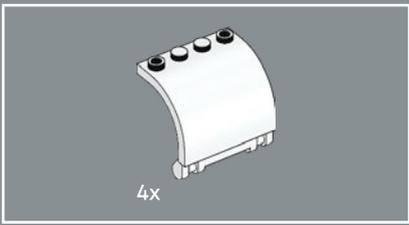


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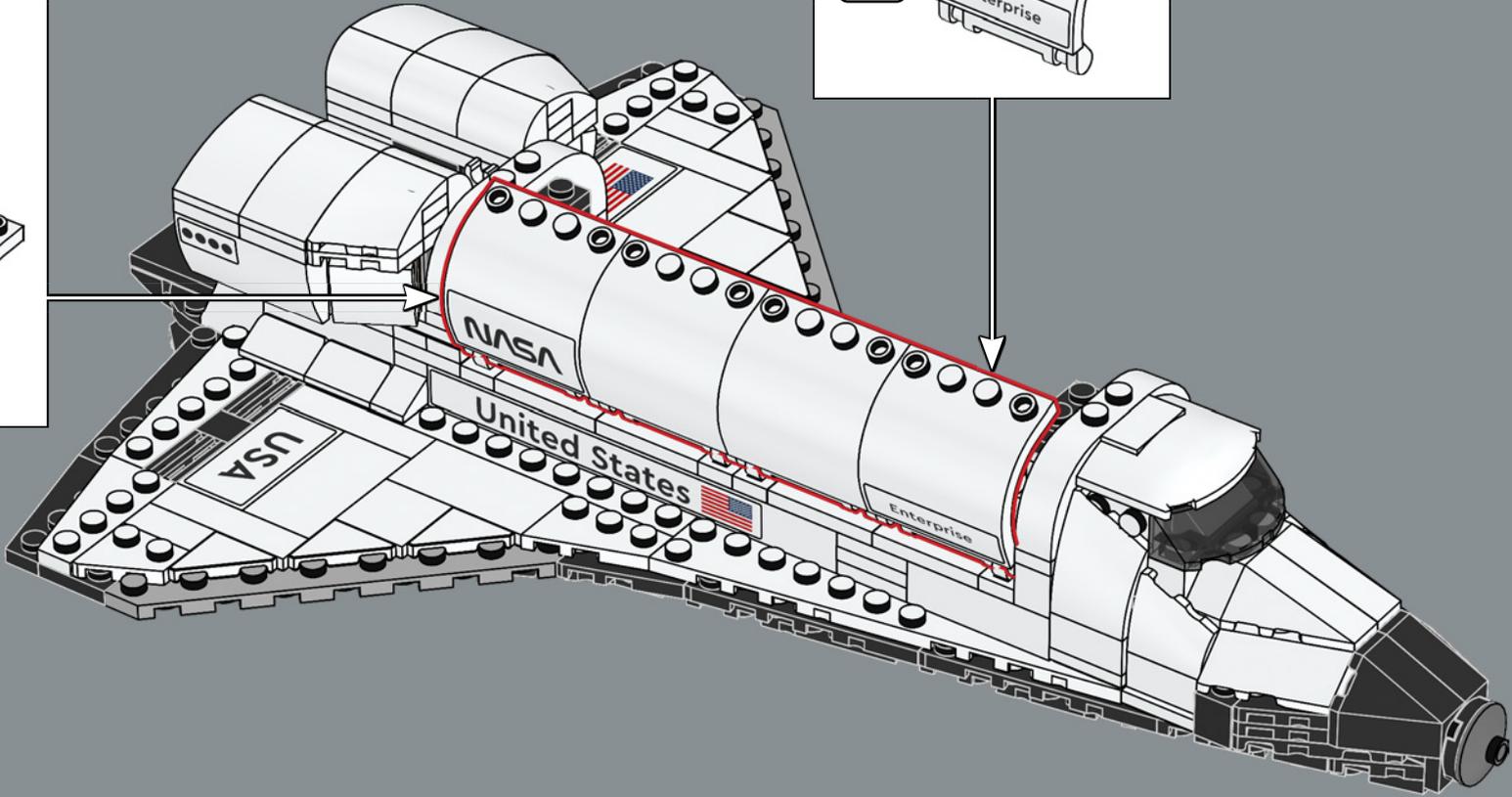
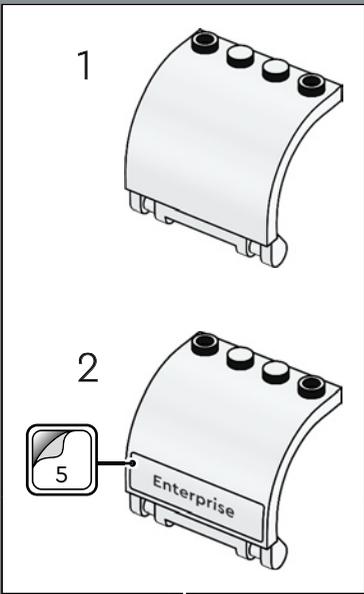
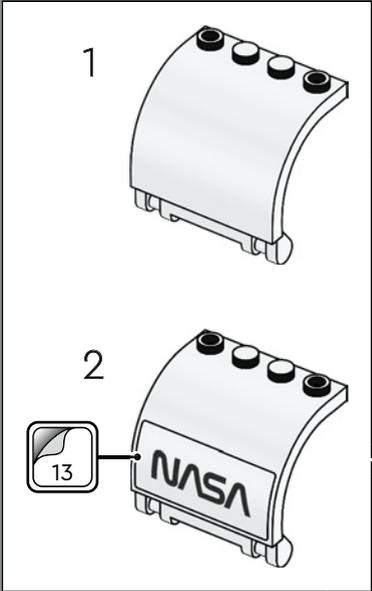


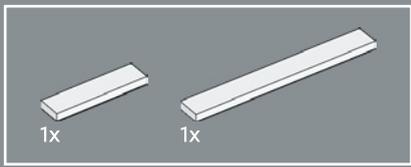
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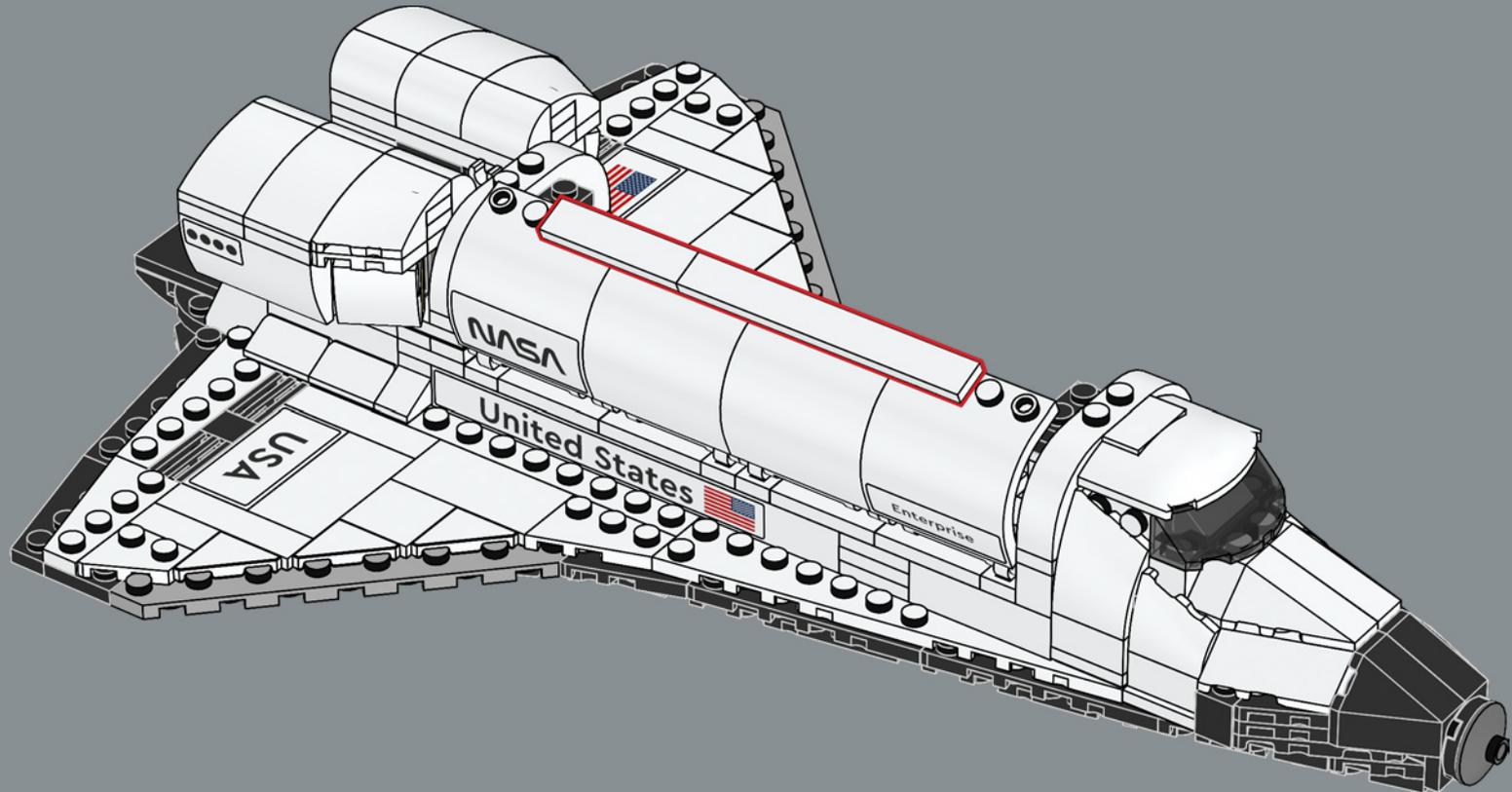


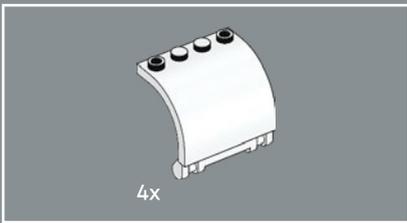
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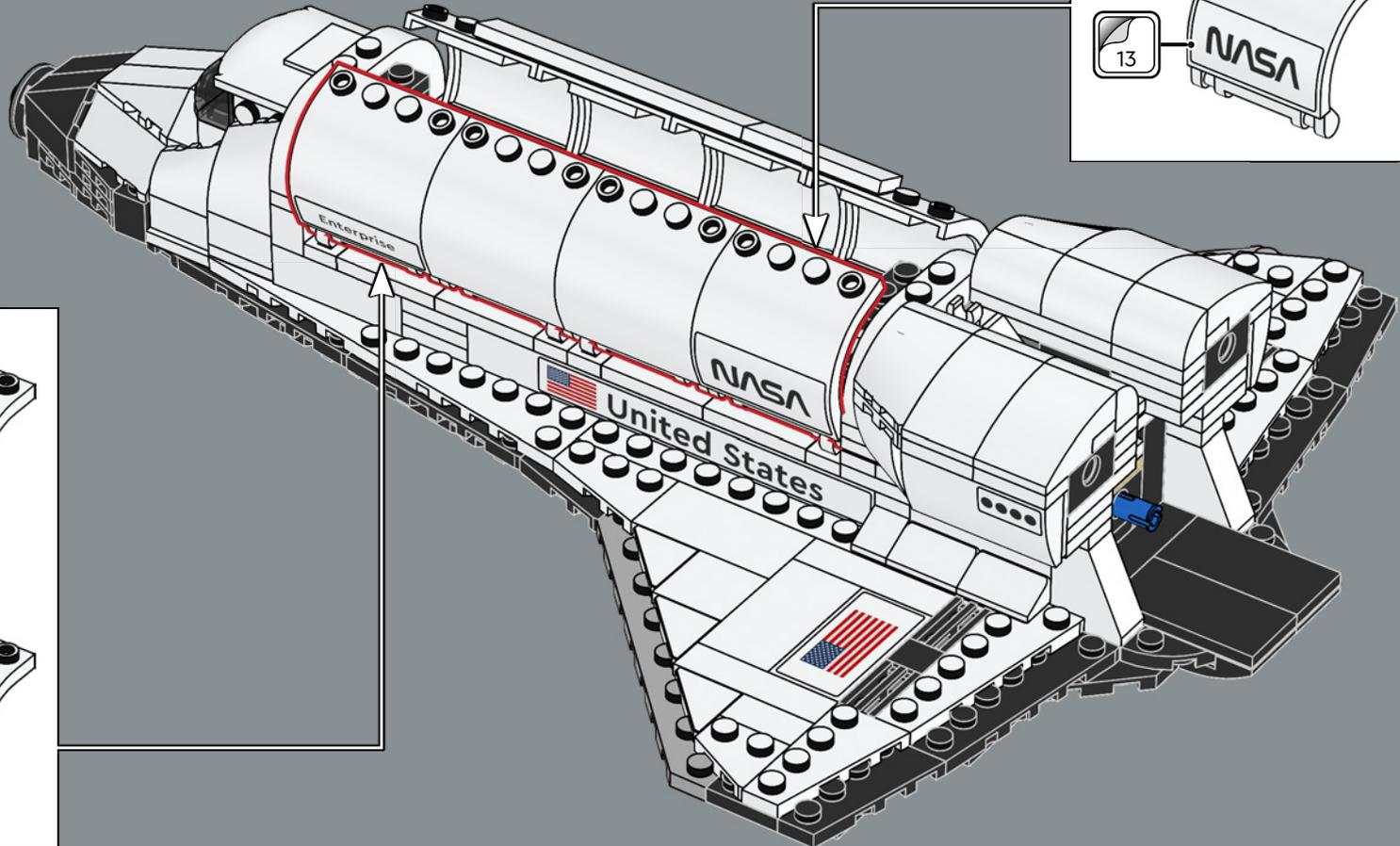
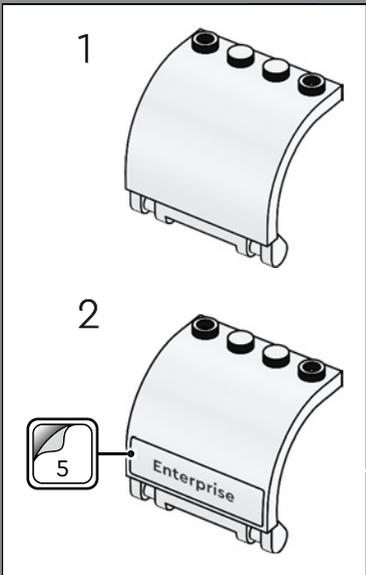
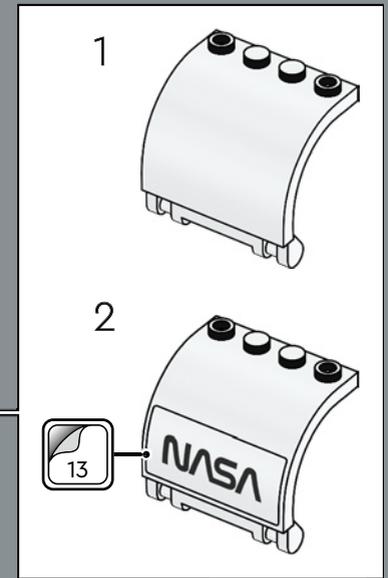


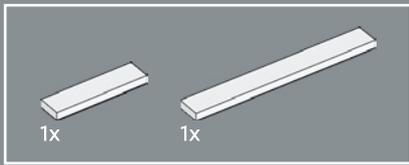
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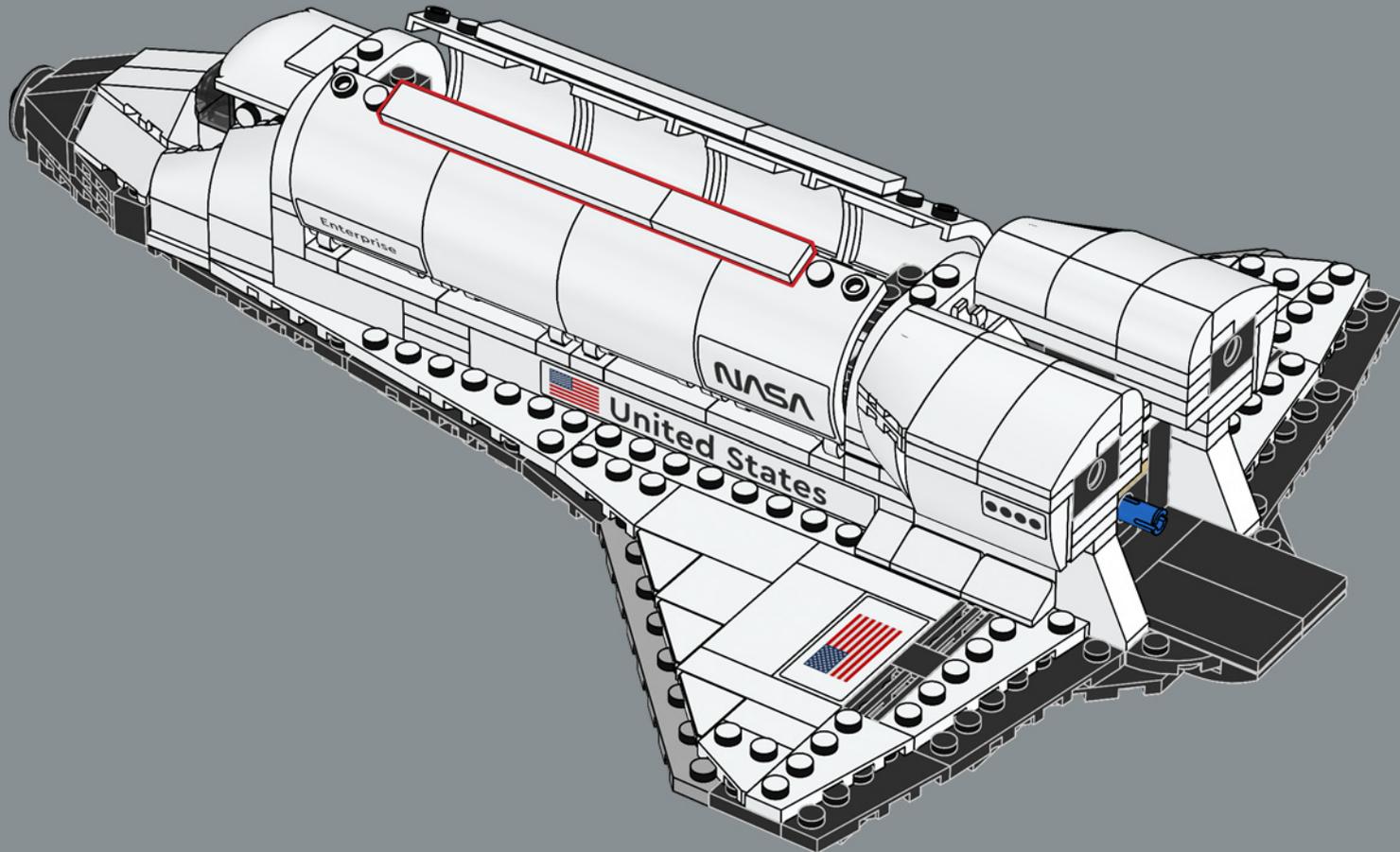
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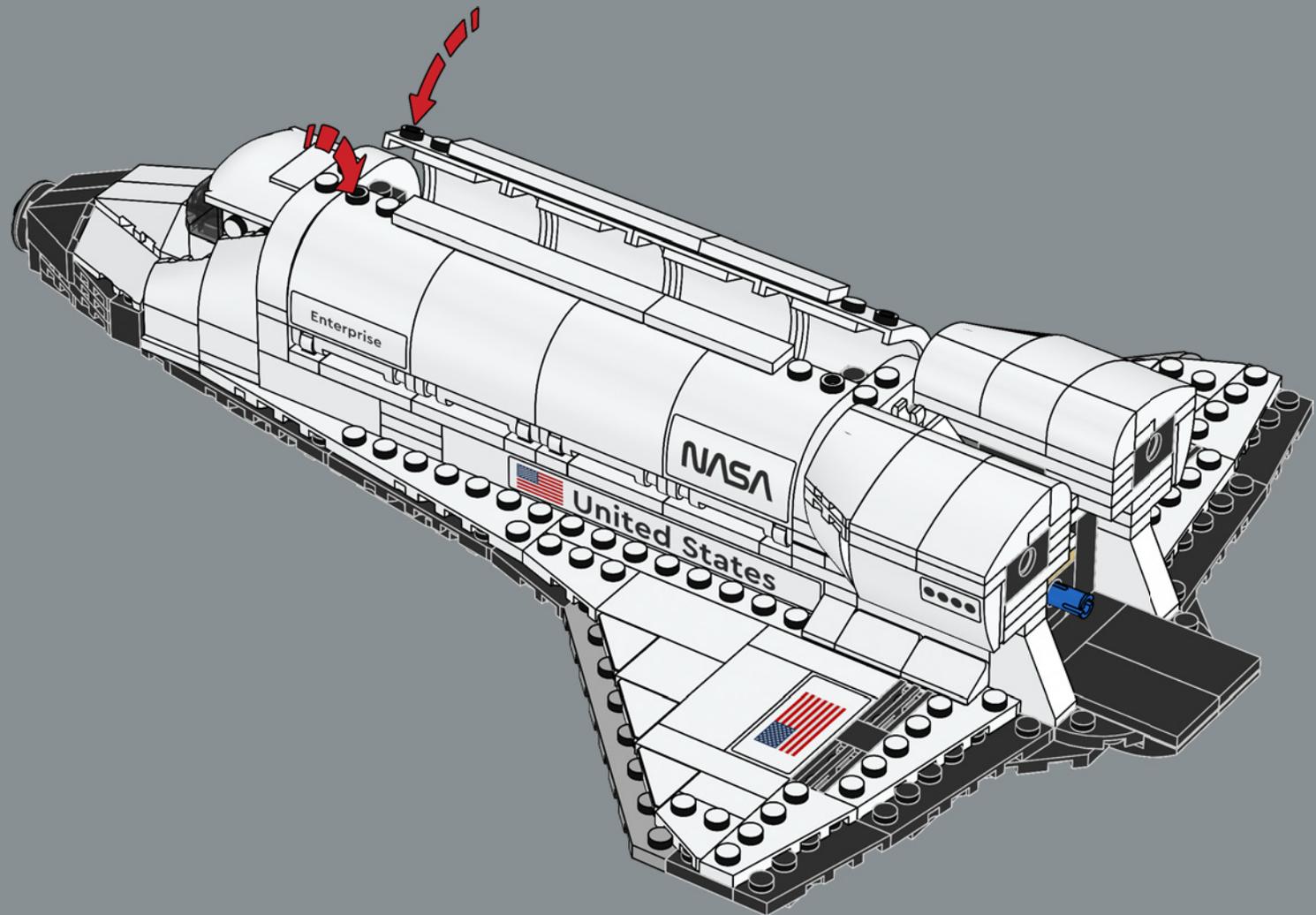


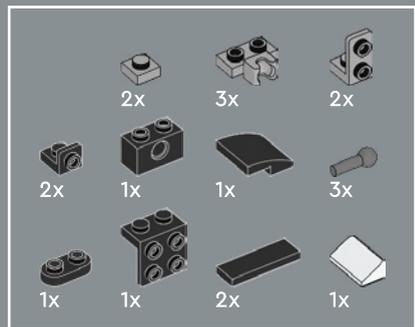


The Enterprise was originally to be named the Constitution, but a letter writing campaign by sci-fi fans convinced the US government to rename it!

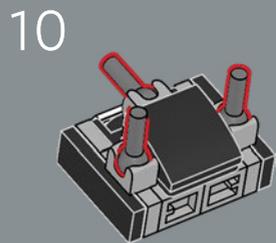
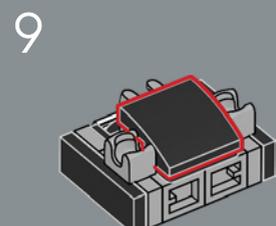
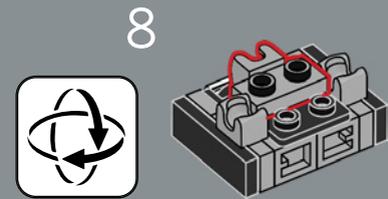
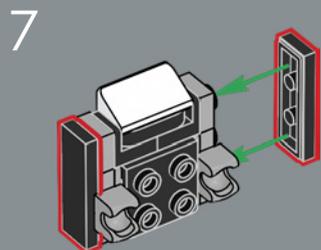
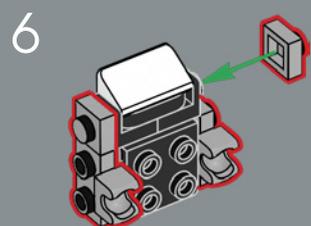
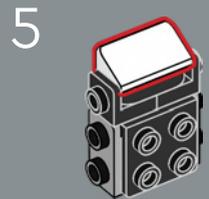
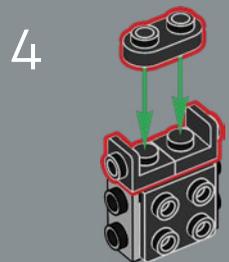
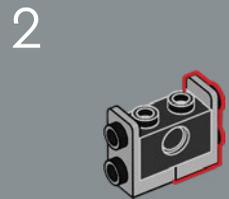
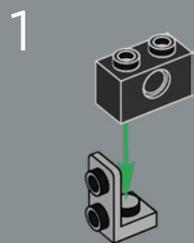
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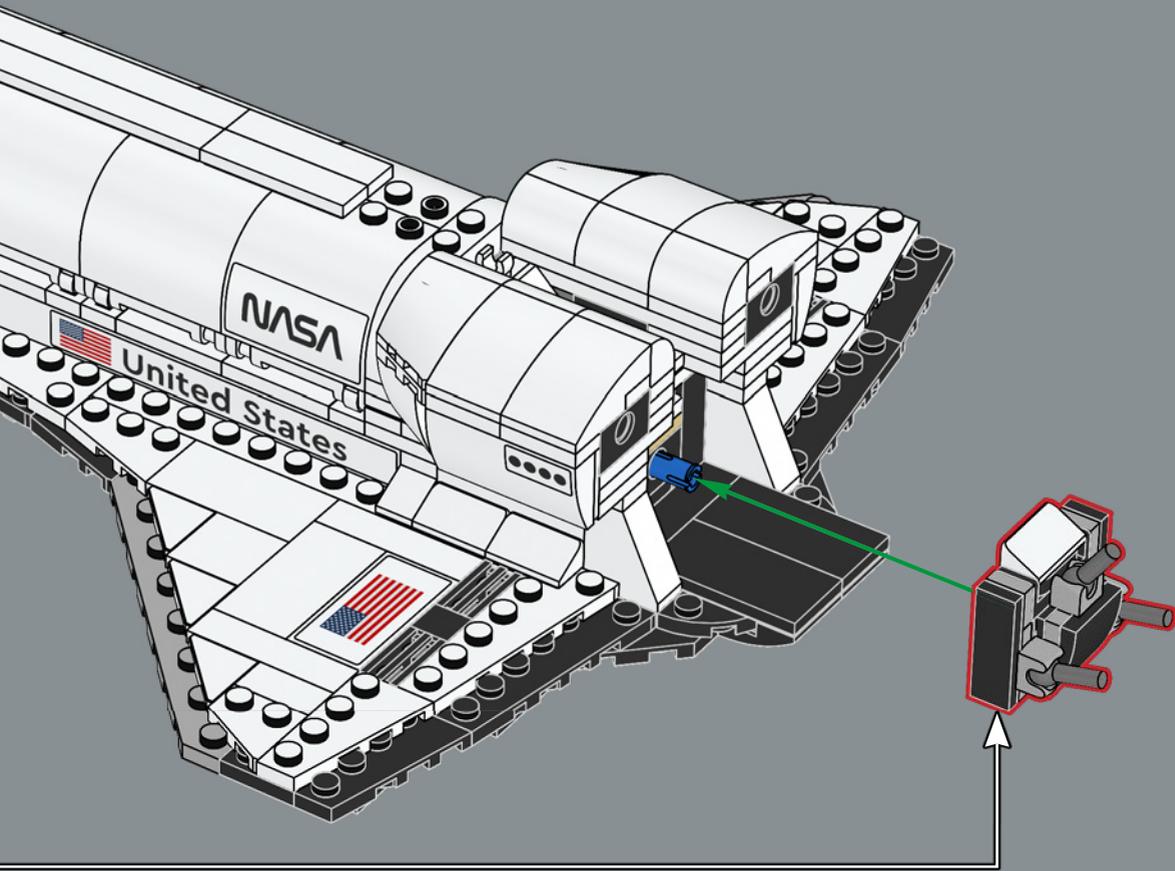




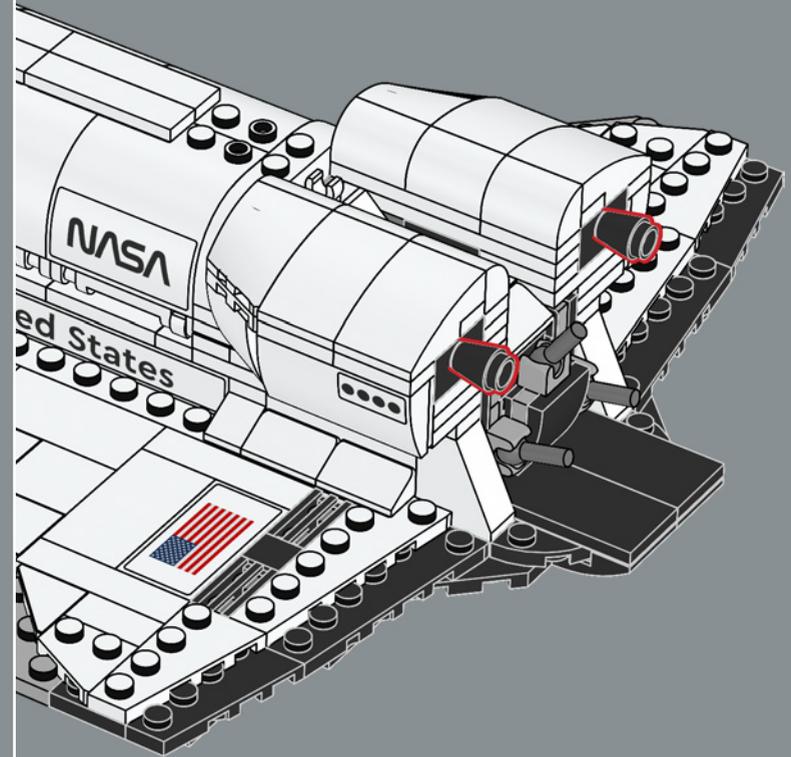


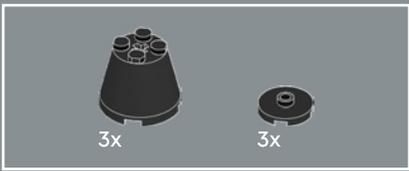
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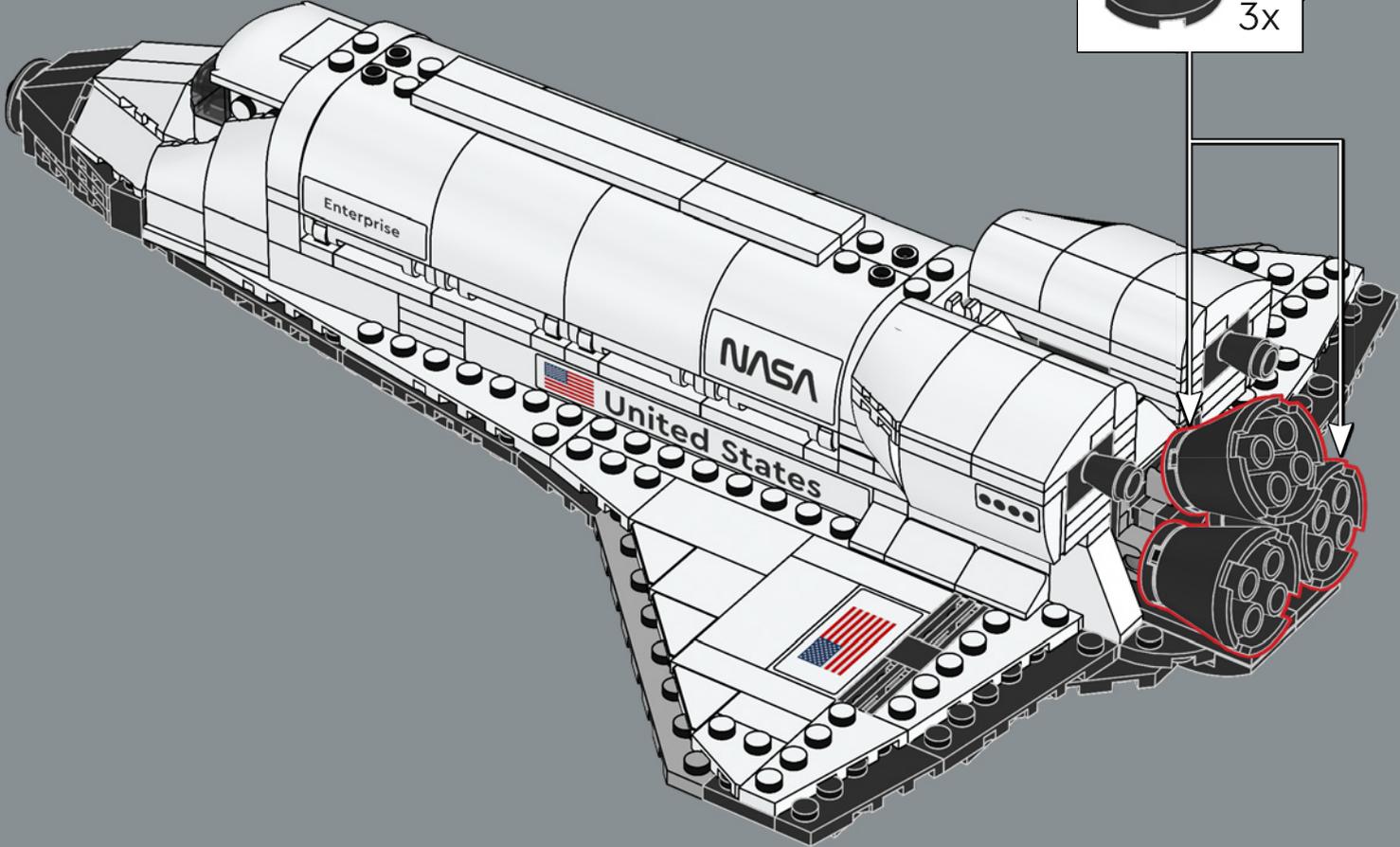
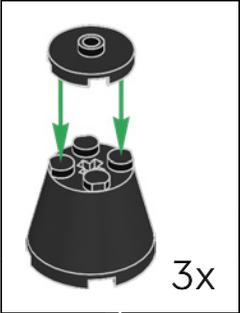


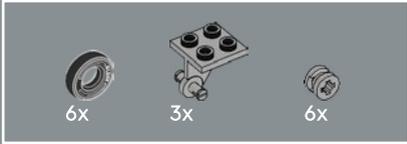
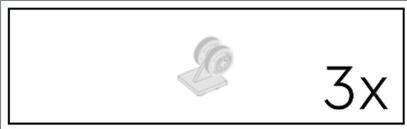
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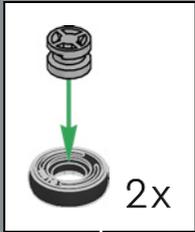
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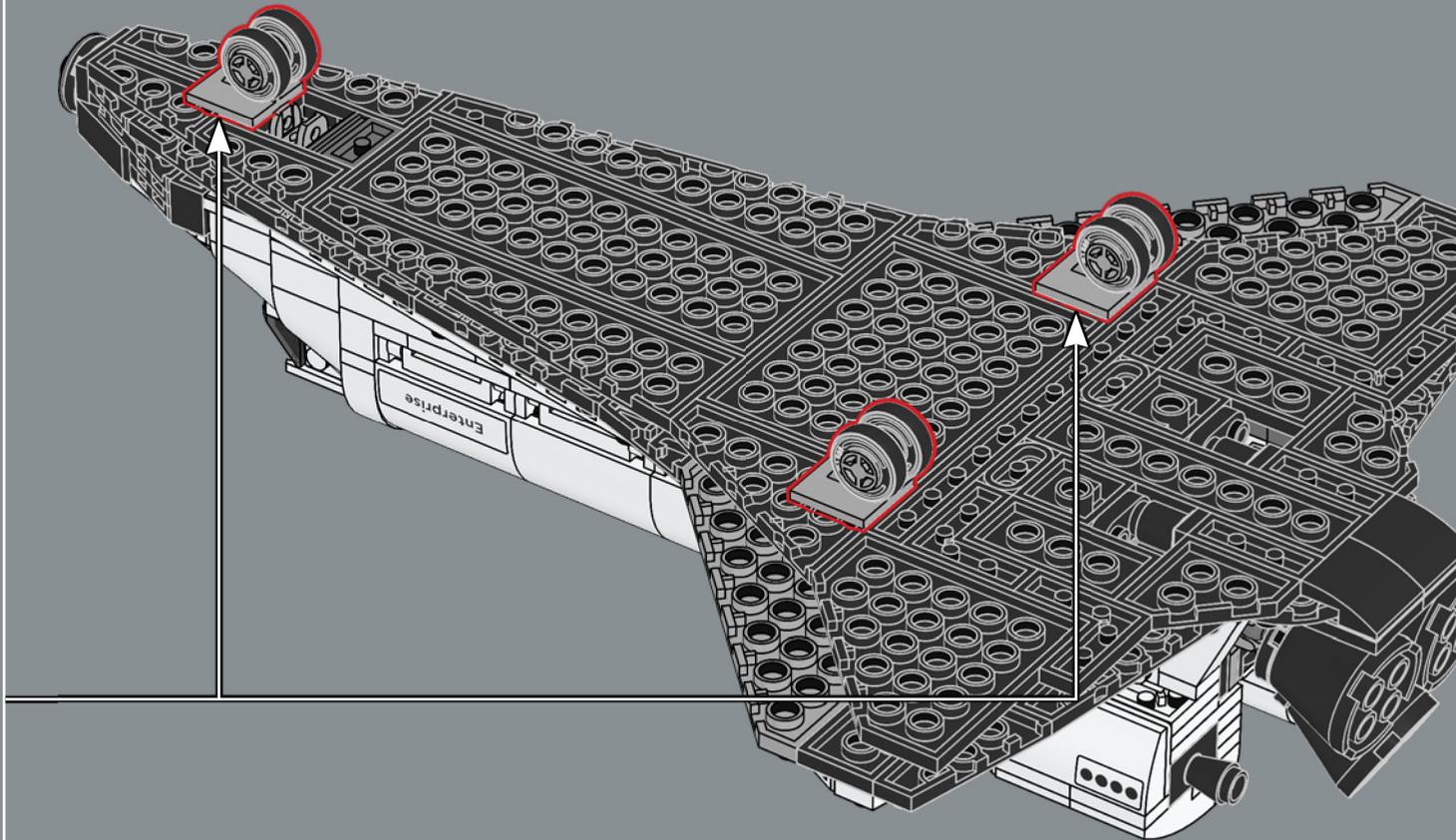
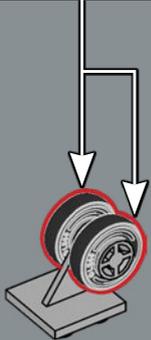


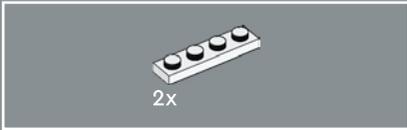
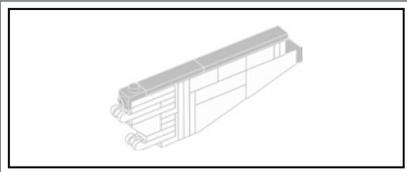
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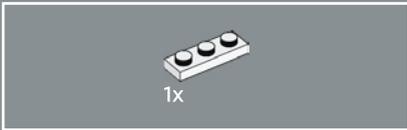
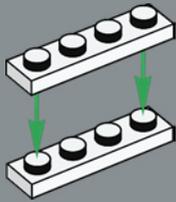


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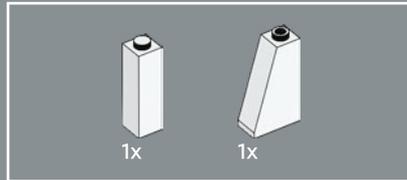
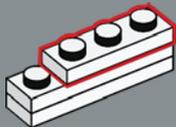




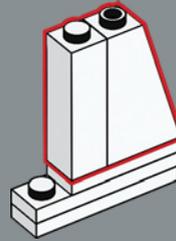
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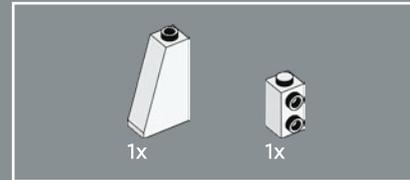
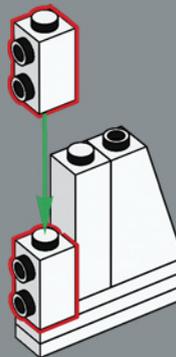
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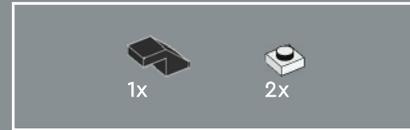
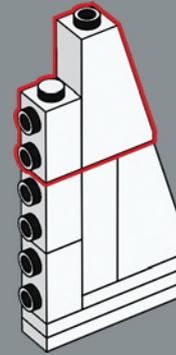
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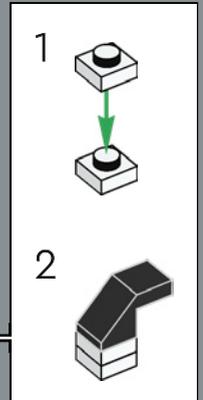
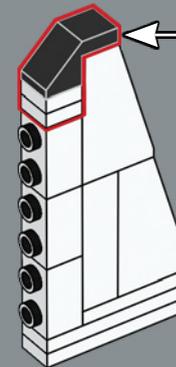
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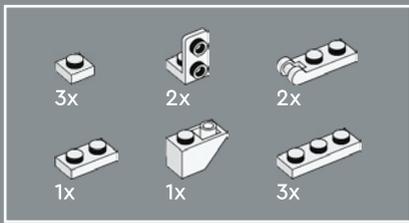


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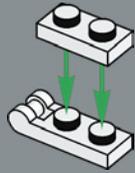
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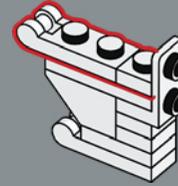
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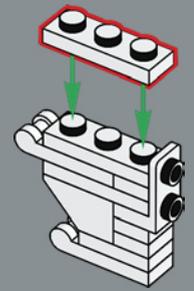
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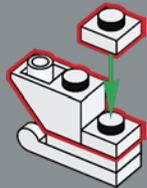
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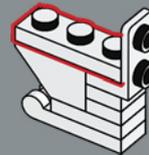
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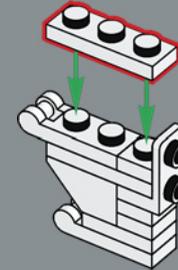
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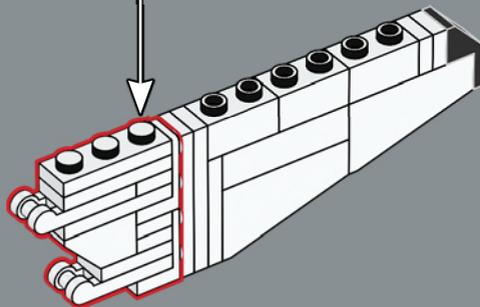
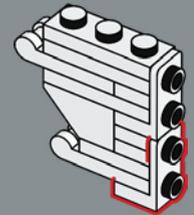
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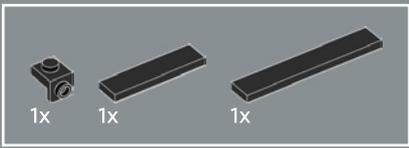


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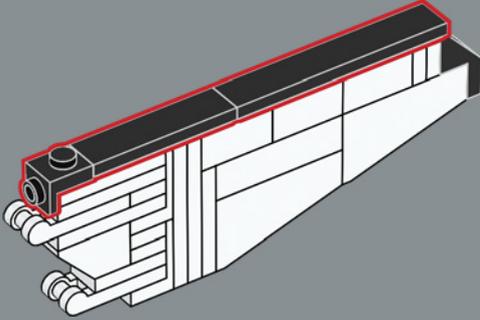


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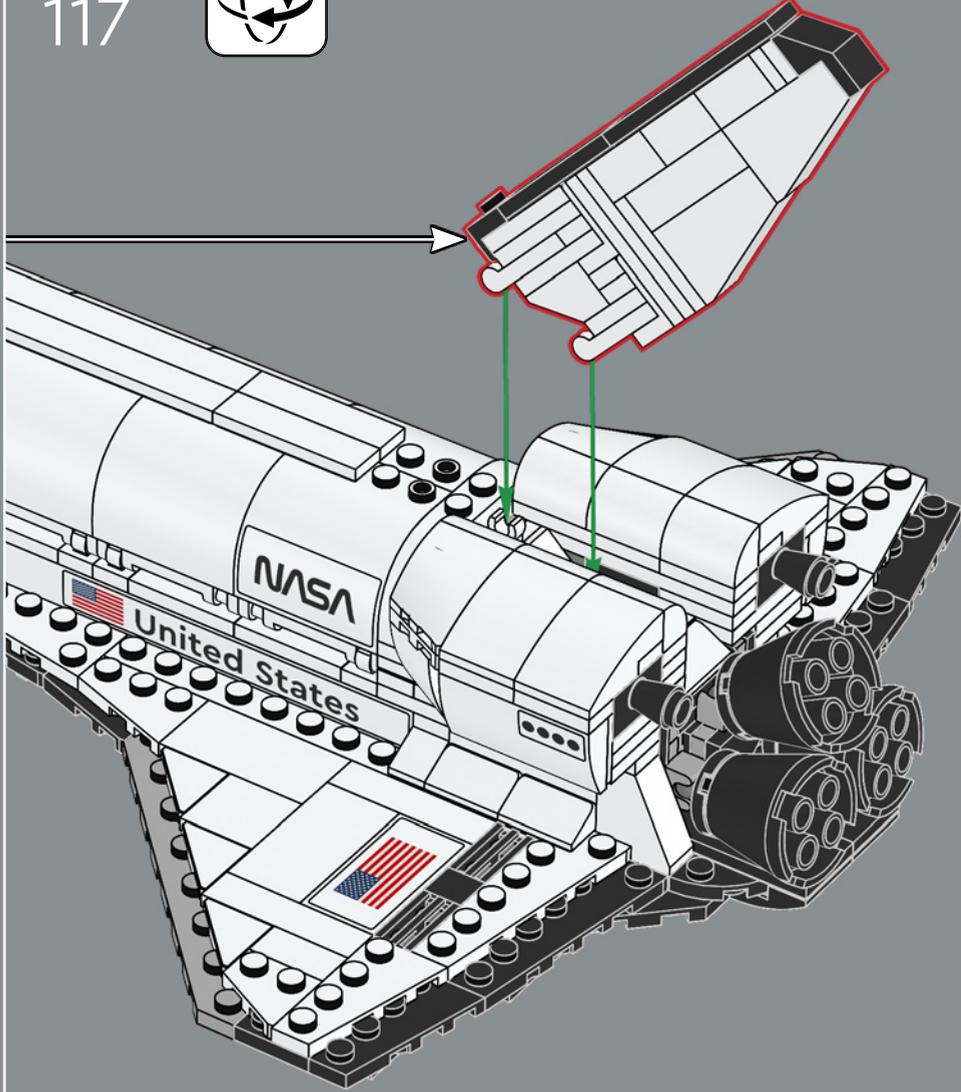


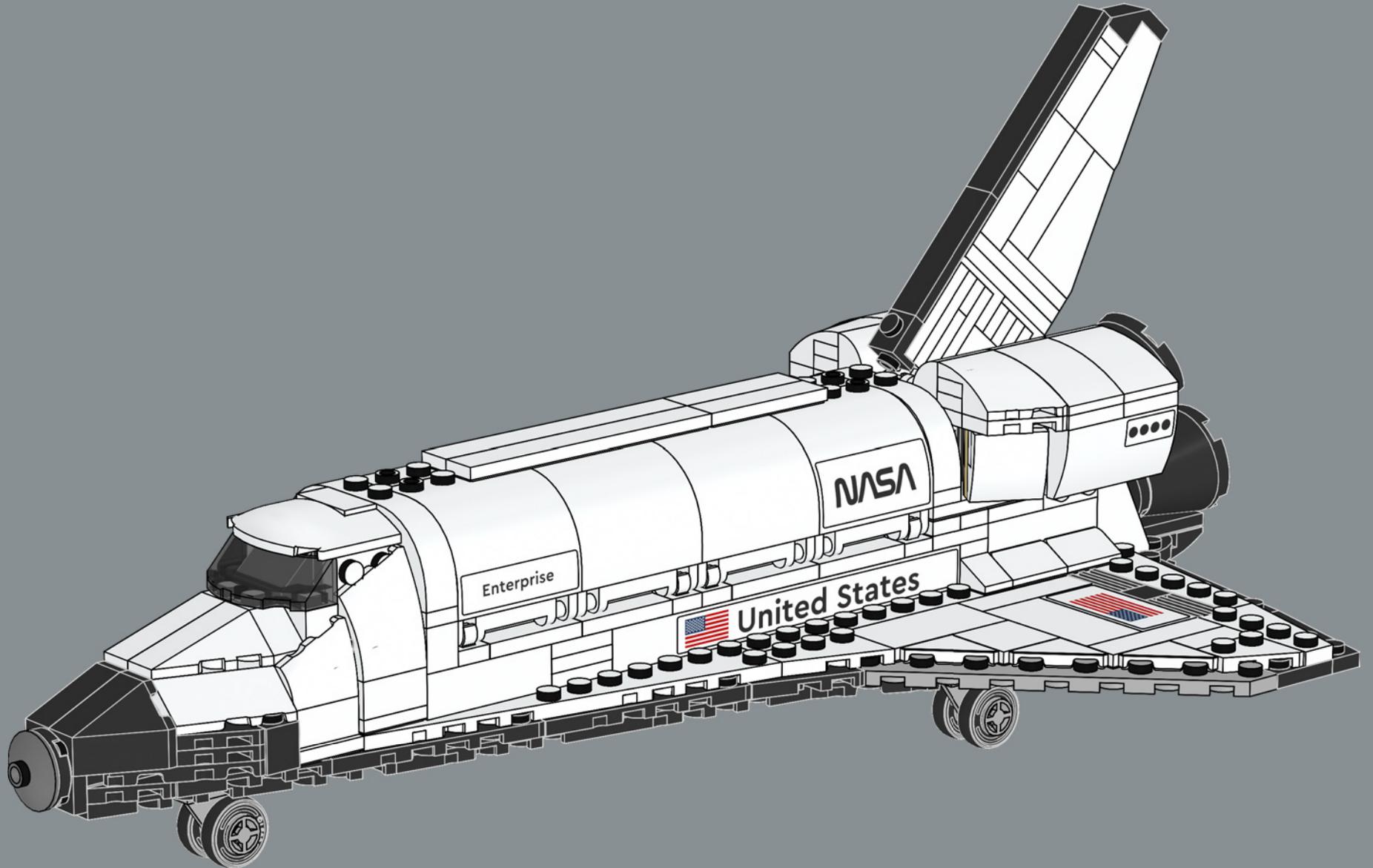


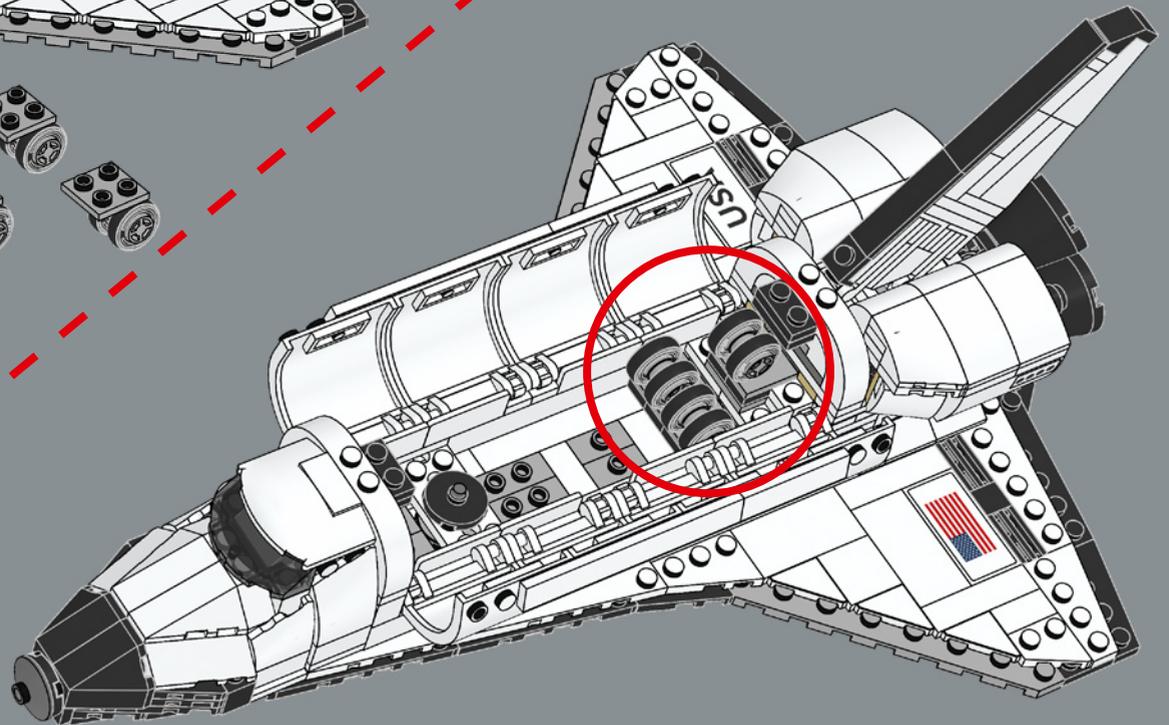
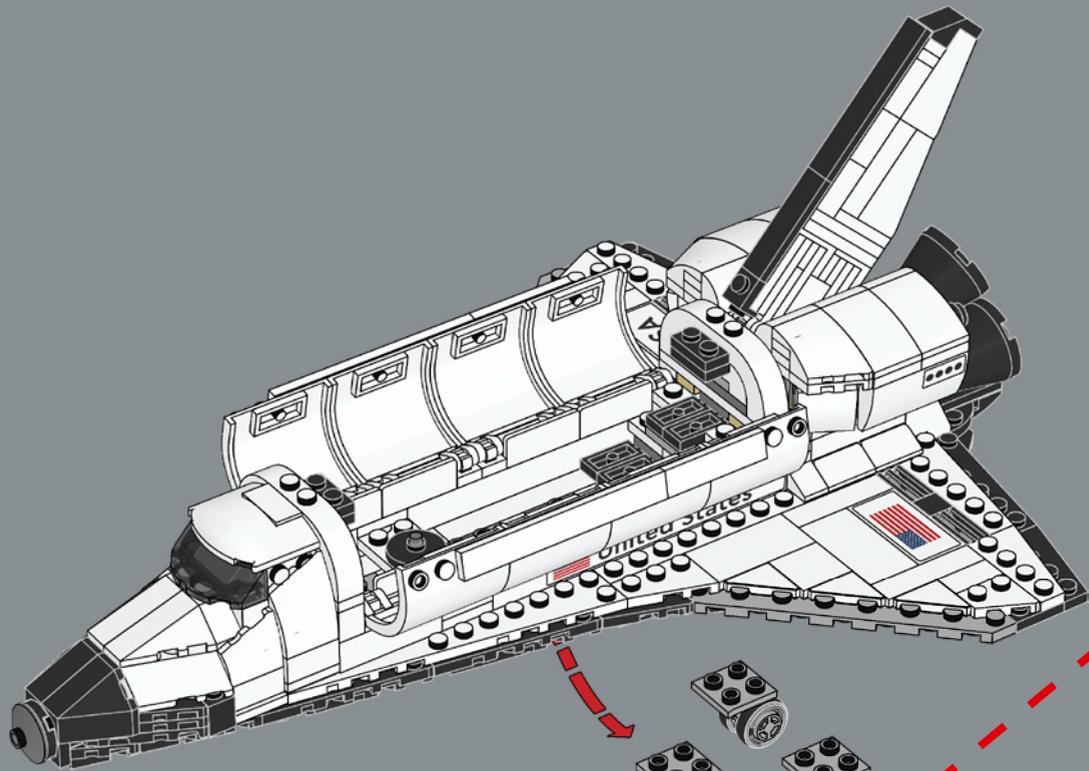
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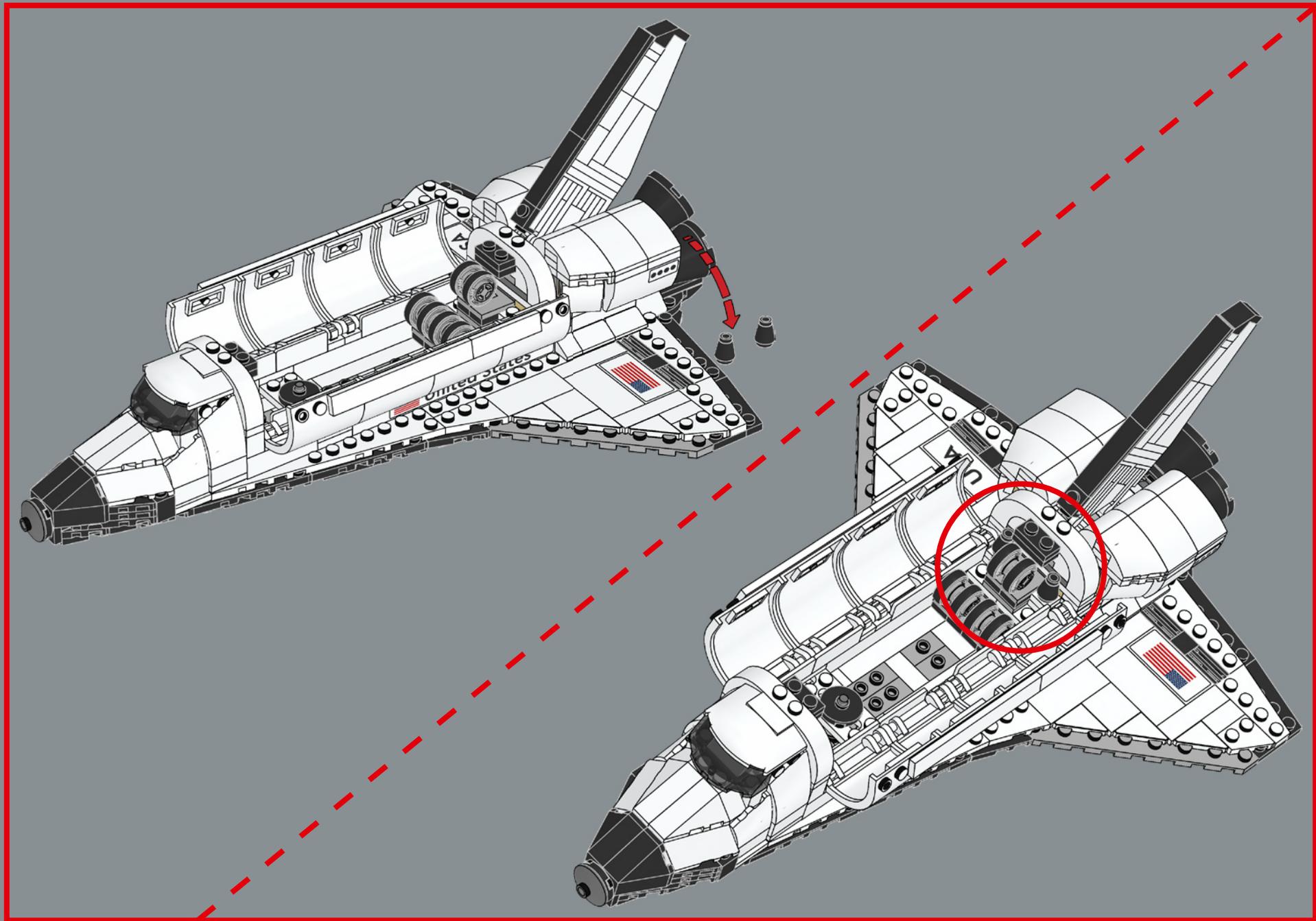


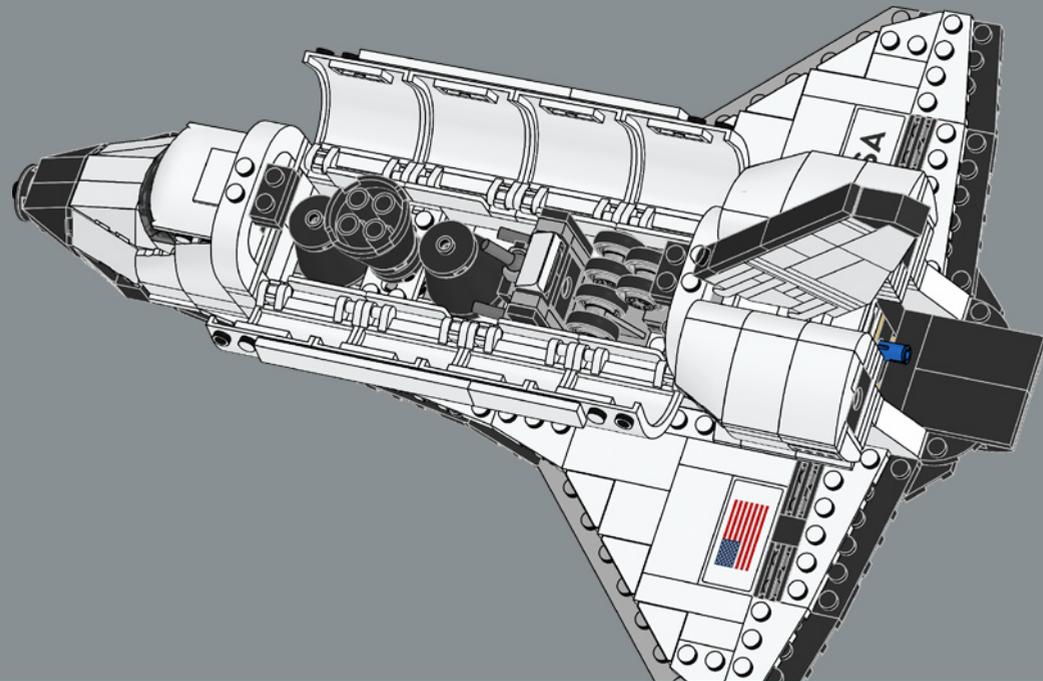
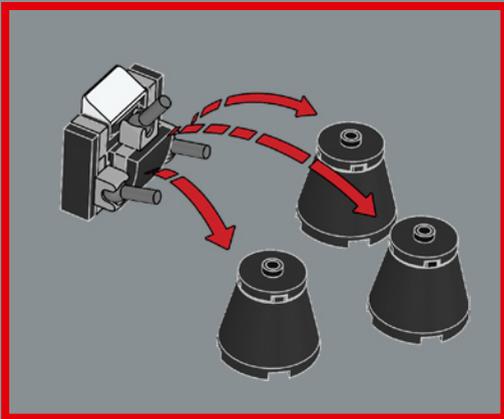
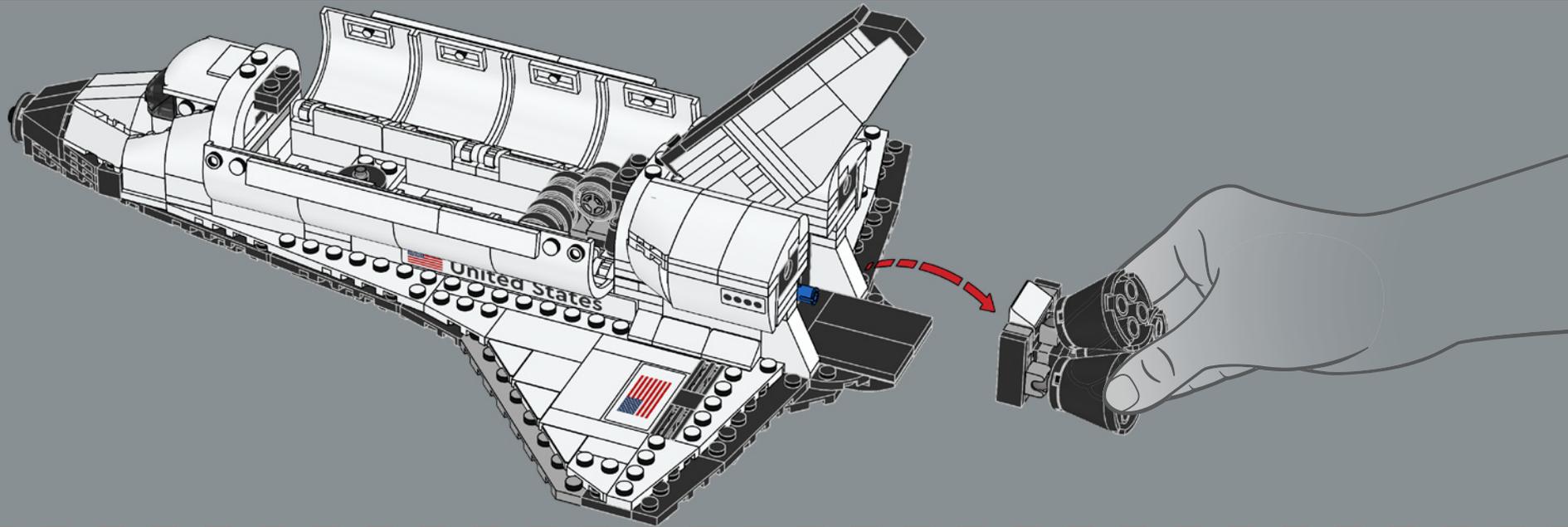
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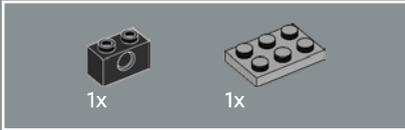
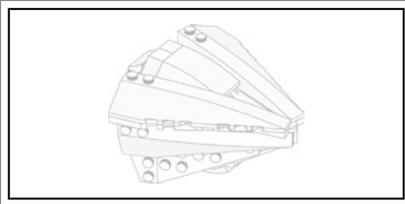




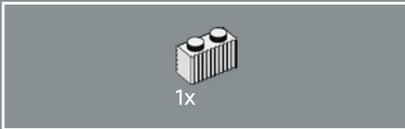
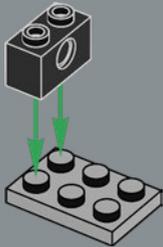




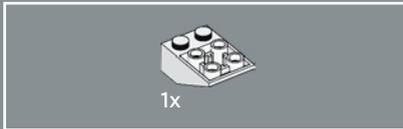
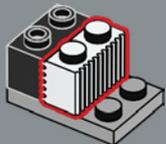




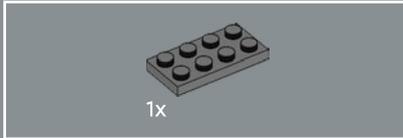
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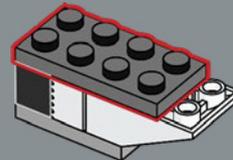
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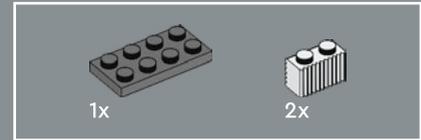
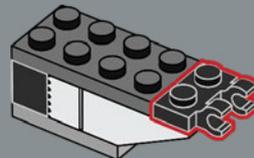
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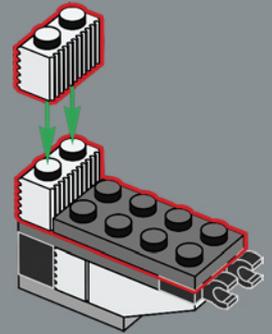
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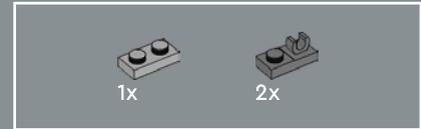
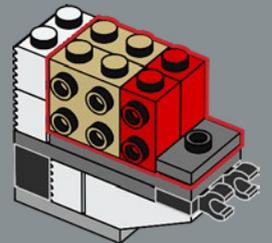
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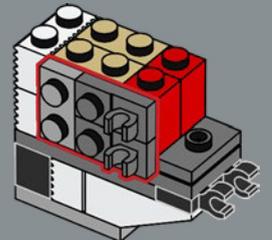
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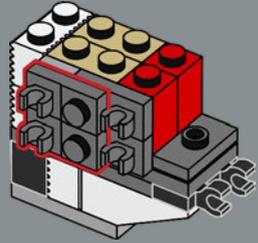
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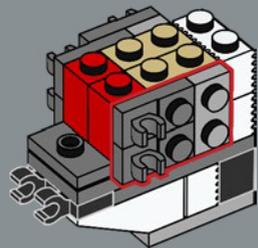


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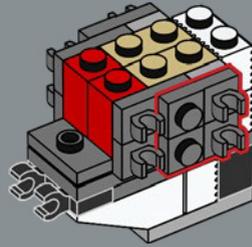
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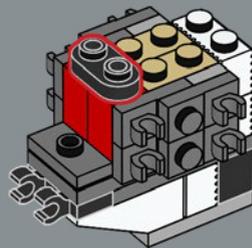
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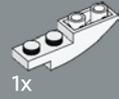
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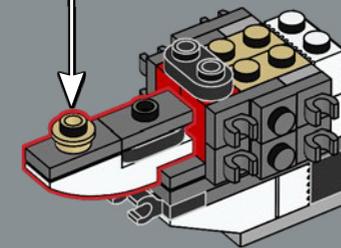
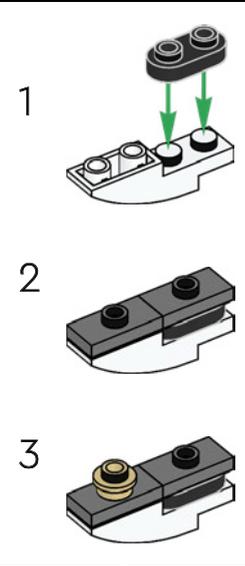


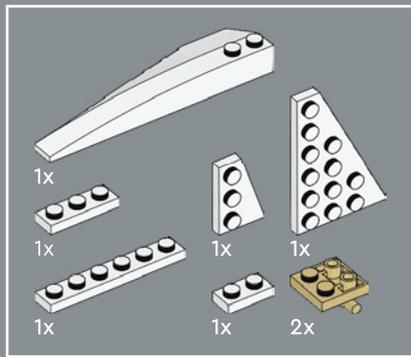
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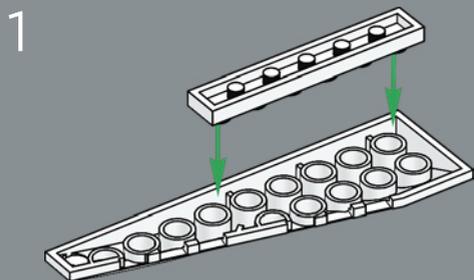
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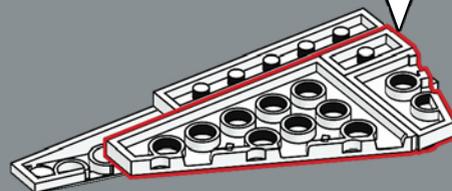
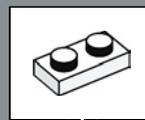


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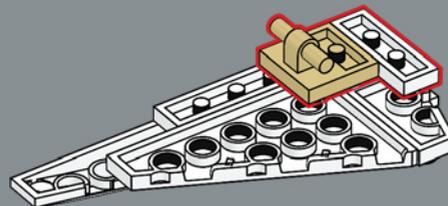


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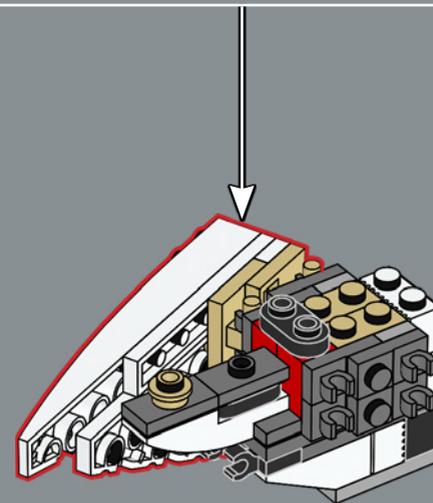
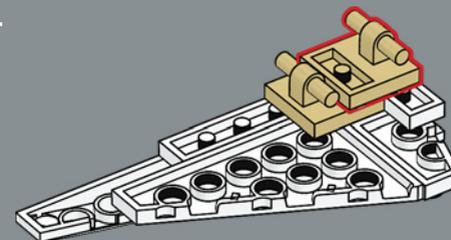
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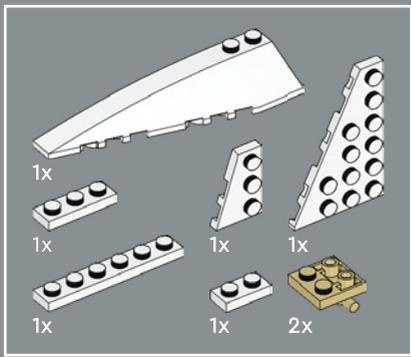
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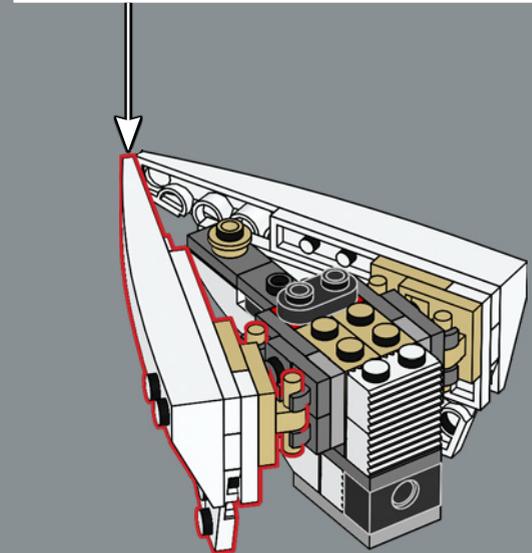
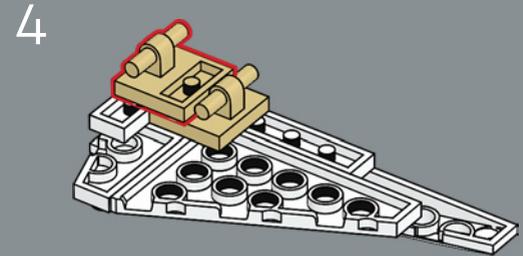
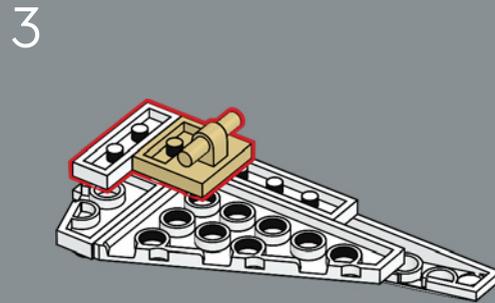
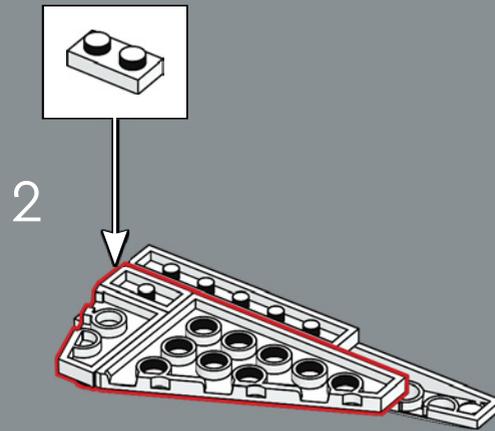
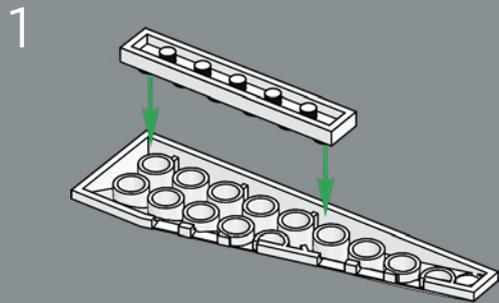
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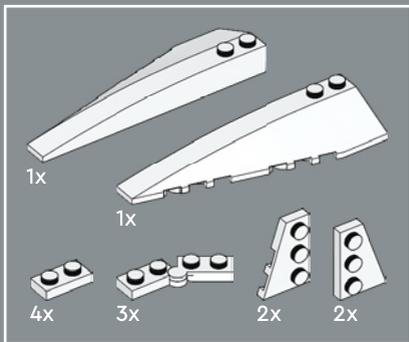


The tail cone, a covering for the real-life Space Shuttle's engines, was attached during transportation to improve the aerodynamics. The LEGO® version mimics the shape and is not hollow.



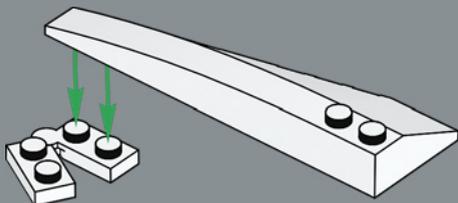
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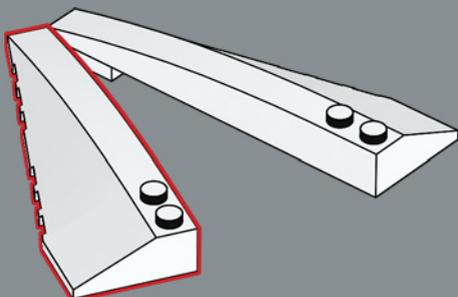


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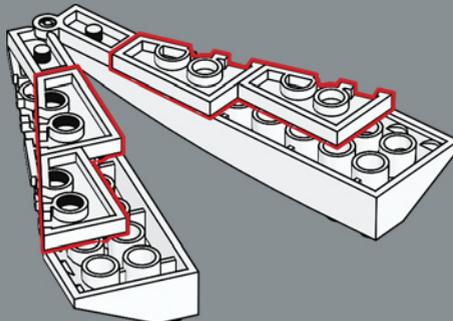
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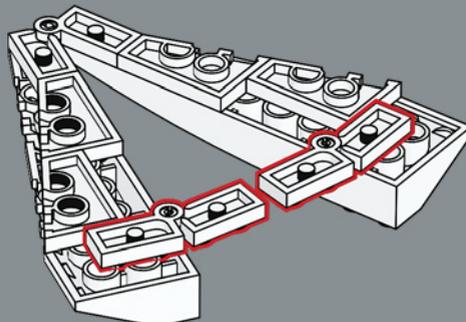
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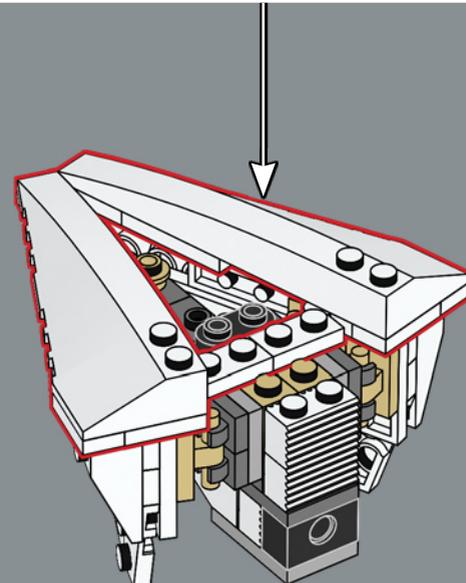
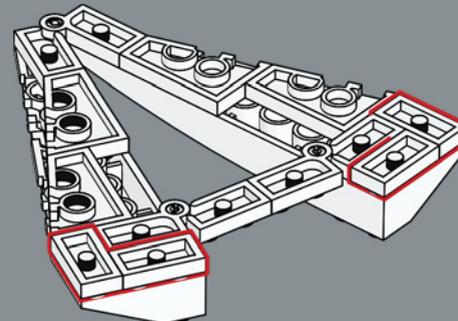
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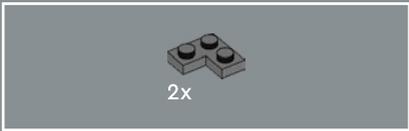


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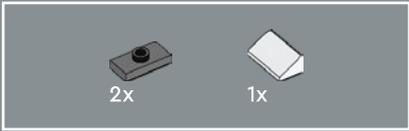
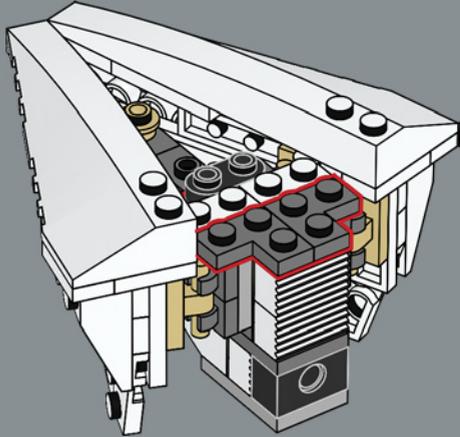


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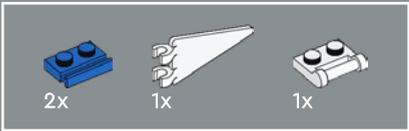
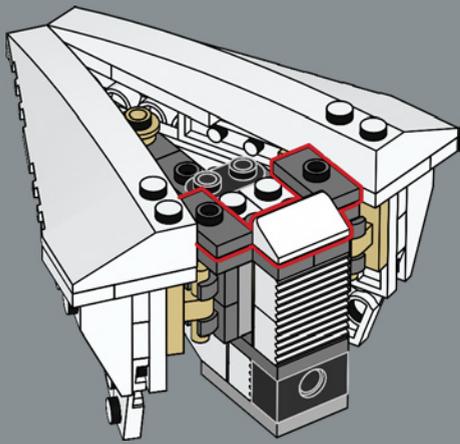




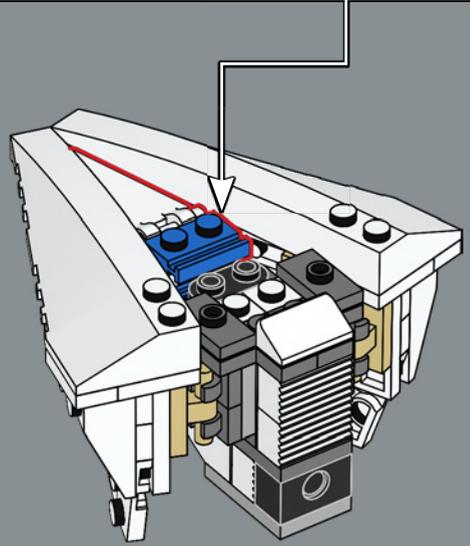
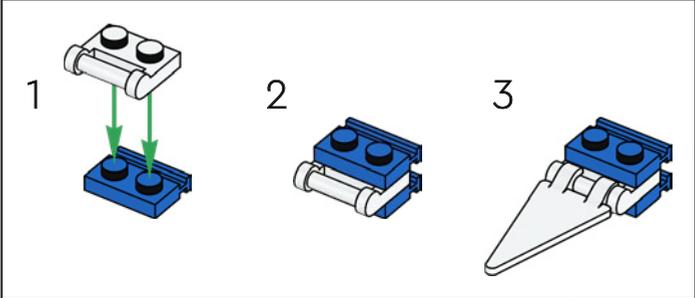
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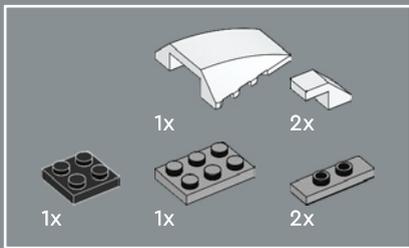


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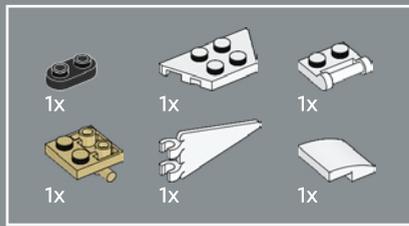
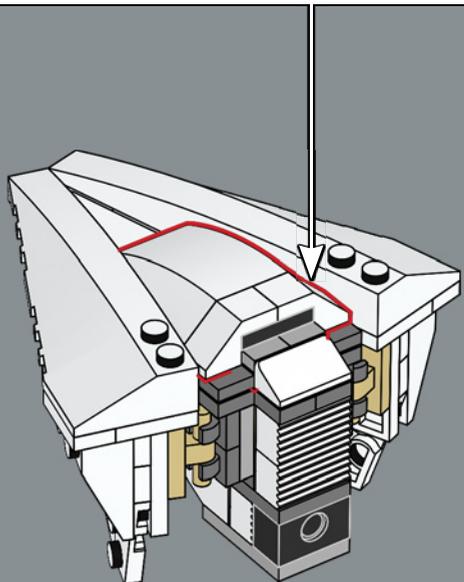
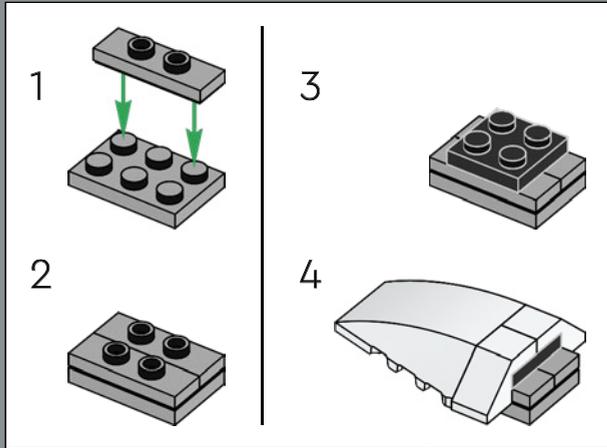


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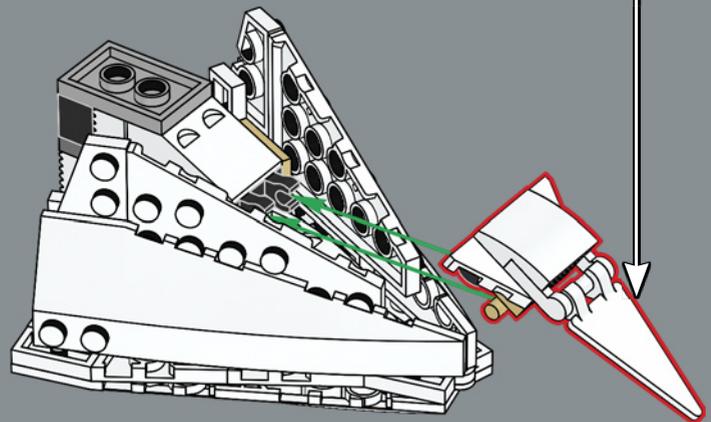
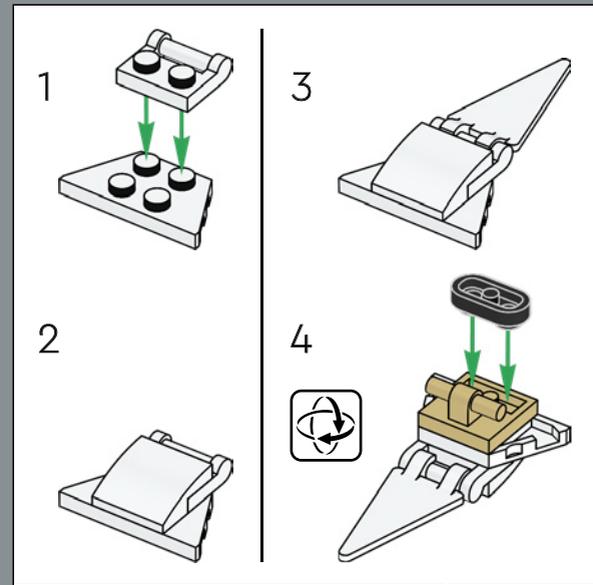




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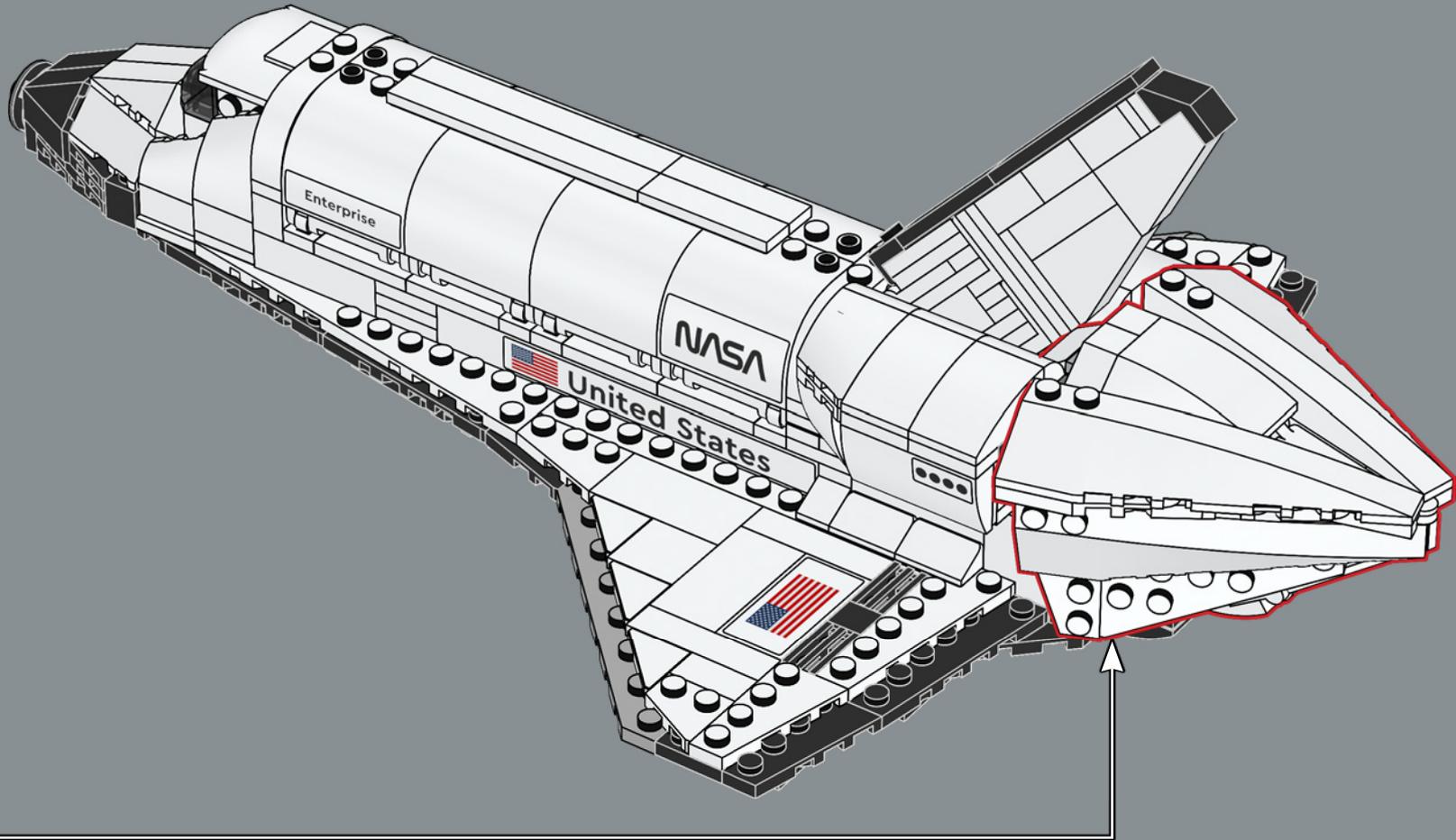


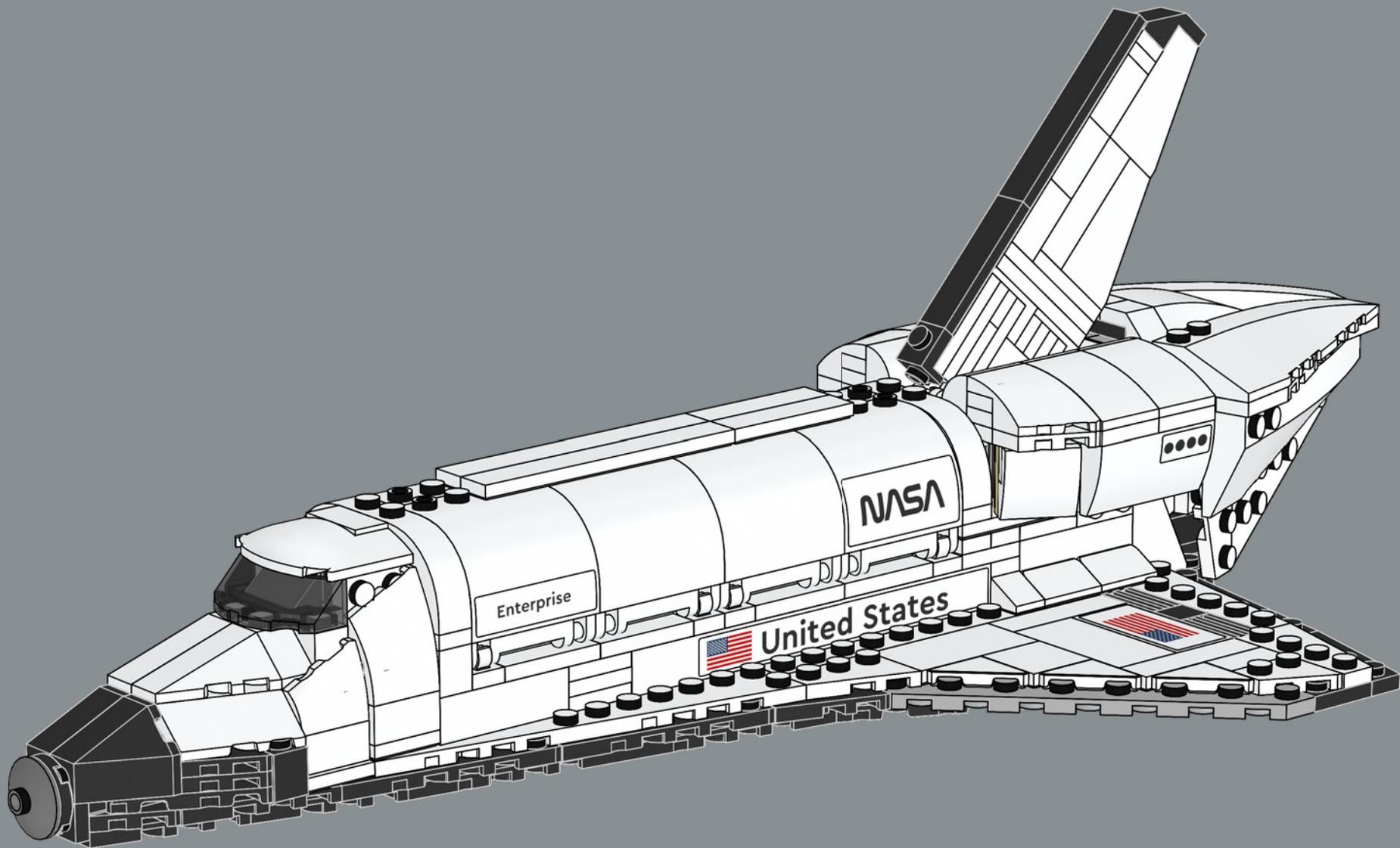
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The Enterprise completed five crewed free flights as tests. The first three were flown with the tail cone, the final two had mock-up engines installed instead.

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