

## NORSK

### Luke 15: Katapult med papirfly

Slik fungerer papirflykatapulten:

#### Montering av katapulten

1. Monter håndtaket.
2. Fest A4, C6, A5 og C5 på B2 i riktig rekkefølge.
3. Sett sammen A4 og C6, og plasser dem i posisjonen vist i figuren. Gjør det samme med C5 og A5.
4. Før B1 gjennom C6 for å fullføre skytebanen.
5. Fest håndtaket til utskytningsbanen.
6. Sett sammen to C3-deler og plasser dem i hullet på B1.
7. Flett de to C3-håndtakene sammen og fest endene av metallakselen med plastforinger.
8. Skyv C6 fremover og fest C5 med en strikk som vist i figuren.
9. Dra C6 tilbake og lås C3 i "skyteklar" posisjon. Du kan også dekorere utskyteren med akrylmaling.

#### Bruk av katapulten

1. Plasser papirflyet i skytebanen og trekk i håndtaket for å skyte.
2. Sett en elastisk ball i utskyteren og skyt – dette gir deg en kul "flipperspill"-utskyter.

(Se vedlagte illustrasjoner)

## SVENSKA

### Lucka 15: Katapult med pappersflygplan

Så här fungerar pappersflygplanskastaren:

#### Montering av katapulten

1. Montera handtaget.
2. Fäst A4, C6, A5 och C5 på B2 i rätt ordning.
3. Sätt ihop A4 och C6, och placera dem i den position som visas i figuren. Gör detsamma med C5 och A5.
4. För in B1 genom C6 för att färdigställa utskjutningsbanan.
5. Fäst handtaget till utskjutningsbanan.
6. Sätt ihop två C3-delar och placera dem i hålet på B1.
7. Fläta ihop de två C3-handtagen och fäst ändarna av metallaxeln med plastbussningar.
8. Skjut C6 framåt och fäst C5 med ett gummiband enligt figuren.
9. Dra tillbaka C6 och lås C3 i "skjutklart" läge. Du kan även dekorera katapulten med akrylfärg.

#### Användning av katapulten

1. Placera pappersflygplanet i utskjutningsbanan och dra i handtaget för att skjuta iväg det.
2. Sätt en elastisk boll i katapulten och skjut iväg den – det blir som en häftig "flipperspel"-katapult.

(Se bifogade illustrationer)



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My First

# AIRPLANE KIT

Learn About It's Physical Structure During the Assembly Process

## ACTIVITY GUIDE

6+



Level:



**WARNING: CHOKING HAZARD -**  
THIS TOY CONTAINS SMALL PARTS & SMALL BALL. NOT  
FOR CHILDREN UNDER 3 YEARS.



# My First Airplane Kit

## ⚠ WARNING:

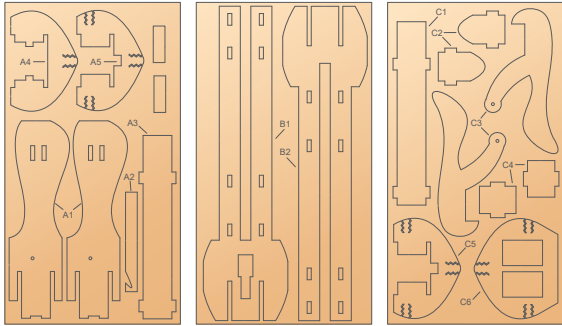
- Contains small parts, not suitable for children under 3 years old.
- Adult supervision required.

## NOTES:

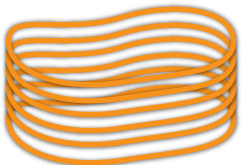
- Don't immerse in water.
- Keep away from open flame.

## Assembly instructions:

Remove the parts from the board sequentially according to the instructions. Be careful not to damage the parts. If it is difficult to remove, please use a knife to carefully cut the connection points, adult assistance required.



Assemble catapult (1 set)



Rubber Band (6 PCS)



Elastic Ball (1 PC)

Metal shaft (1 PC)



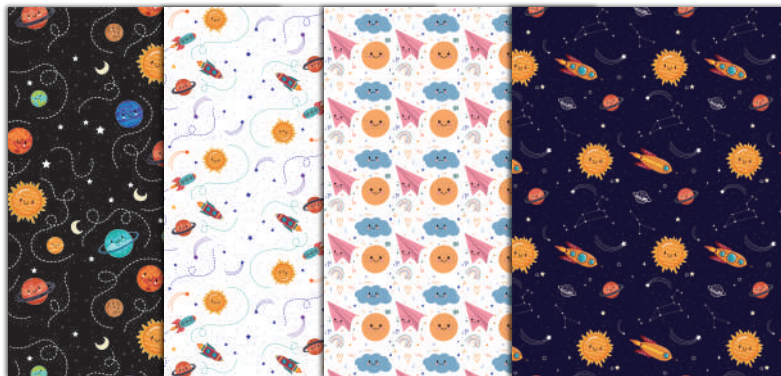
Acrylic paint (3 PCS)



Brush (1 PC)



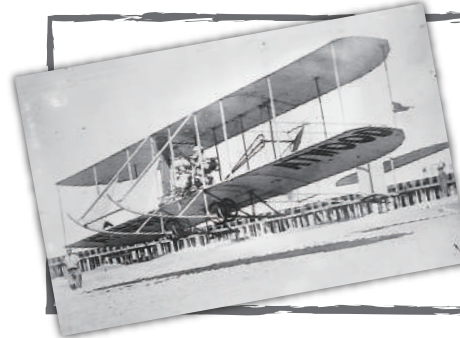
Plastic Bushing (2 PCS)



Paper Folding (12 PCS)

## ACTIVITY #1: INTRODUCE BACKGROUND ABOUT AIRCRAFT

An airplane is a fixed-wing aircraft that is propelled forward by thrust from a jet engine, propeller, or rocket engine. Airplanes come in a variety of sizes, shapes and wing configurations. The broad spectrum of uses for airplanes includes recreation, transportation of goods and people, military and research. Worldwide, commercial aviation transports more than four billion passengers annually on airliners and transports more than 200 billion tonne-kilometers of cargo annually. Most airplanes are flown by a pilot on board the aircraft, but some are designed to be remotely or computer-controlled such as drones.



The Wright brothers invented and flew the first airplane in 1903, recognized as "the first sustained and controlled heavier-than-air powered flight". They built on the works of George Cayley dating from 1799, when he set forth the concept of the modern airplane (and later built and flew models and successful passenger-carrying gliders) and the work of German pioneer of human aviation Otto Lilienthal, who, between 1867 and 1896, also studied heavier-than-air flight. Lilienthal's flight attempts in 1891 are seen as the beginning of human flight.

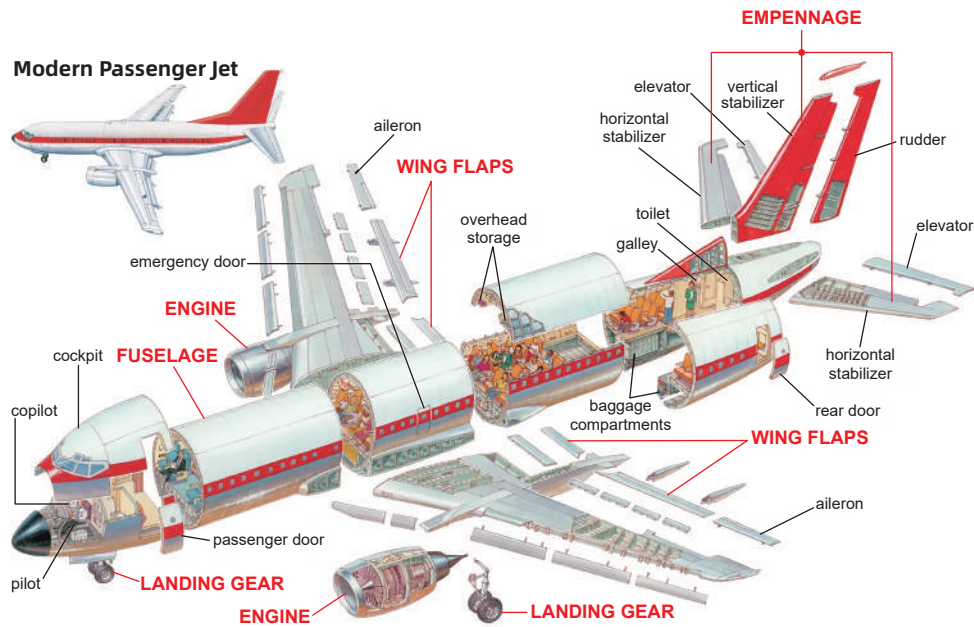


Following its limited use in World War I, aircraft technology continued to develop. Airplanes had a presence in all the major battles of World War II. The first jet aircraft was the German Heinkel He 178 in 1939. The first jet airliner, the de Havilland Comet, was introduced in 1952. The Boeing 707, the first widely successful commercial jet, was in commercial service for more than 50 years, from 1958 to at least 2013.



Boeing 747

## ACTIVITY #2: THE MAIN COMPONENTS AND PRINCIPLES OF THE AIRCRAFT



### The main components of the aircraft

FUSELAGE	WINGS	POWER PLANT	LANDING GEAR	EMPENNAGE
The long hollow tube that holds passengers and cargo, also known as the body of the airplane.	Also known as foils, the wings generate the lifting force needed for flight. The wings are in the middle and back of aircraft.	The engine and propeller make up the power plant.	A plane can't function without landing gear. Shock absorbers and wheels are part of the landing gear.	The tail end of the aircraft is the empennage, which helps with stability using assistance from the rudder and elevator.

### FUSELAGE

The fuselage is one of the major aircraft components. Its long hollow tube, also known as the body of the airplane, holds the passengers along with cargo. This area includes the cockpit, so the pilots are in front of the fuselage. Despite there being different types of fuselages, they connect the major parts of an airplane. Out of the five basic parts of an airplane, this is the aircraft component that most people are most familiar with, as passengers.

### POWER PLANT

The power plant of an airplane structure includes the engine and the propeller. The engine itself is a complicated system composed of many smaller parts like cylinders, fans, and pistons. Together, these aircraft engine parts work to generate the power or thrust of an aircraft. There are various intricacies in the power plant assisting in powering the aircraft, such as various aircraft fuel system components.

### EMPENNAGE

The empennage is located at the tail end of the aircraft. Its two main components, the rudder and elevator, help with the stability of the plane. The rudder helps the aircraft steer from right to left, and the elevator helps with changing elevation.

### WINGS

As an exterior part of an aircraft, the wings, commonly known as foils, are one of the aircraft parts that are most imperative for flight. The airflow over the wings is what generates most of the lifting force necessary for flight. Along with the large wings that stem from the middle of the fuselage, the wings also include two smaller ones at the back of most aircraft, at the tail. Airplane wings, while seeming fairly simple, are one of the many parts of a plane that has required tremendous feats of engineering.

### LANDING GEAR

You cannot have a safe plane without having the landing gear. Not only are these parts imperative to land, but the landing gear is also used to help an aircraft take-off and taxi. The landing gear includes shock absorbers for a smooth landing and takeoff, as well as the wheels on the plane, to name a few of the aircraft components responsible for movements on the ground.

## ACTIVITY #3: HOW THE AIRCRAFT CARRIER TAKE OFF?

As an overlord of the sea, aircraft carriers have gradually become the backbone of the navy since their emergence in the last century. The most important function of an aircraft carrier is to carry fighters, so how do fighters on an aircraft carrier take off?

*There are multiple different systems in place. The most widely-used ones are:*

### CATOBAR

CATOBAR (catapult-assisted takeoff but arrested landing): the airplane spools up its engine(s) to full thrust while being held in place by a restraint system, then gets literally catapulted off the deck with a sled that is attached to the nose wheel gear and "slings" the airplane forward and accelerates it to takeoff speed. For landing, the airplane extends a tail hook that catches a steel wire on the deck which "pulls" the airplane to a stop.

### STOL

STOL (short takeoff and landing): some airplanes are capable of normal takeoff and landing on the runway lengths provided by an aircraft carrier. This is mostly no longer in use, but it was the way things worked in WW I and WW II. The world records for STOL airplanes at the moment are about 10 feet for takeoff and under 10 feet for landing.

### VTOL

VTOL (vertical takeoff and landing): some airplanes are able to take off and land vertically. Some examples are the McDonnell Douglas AV-8B Harrier II "Jump Jet" and the F-35B variant of the Lockheed Martin F-35 Lightning II.

### STOVL

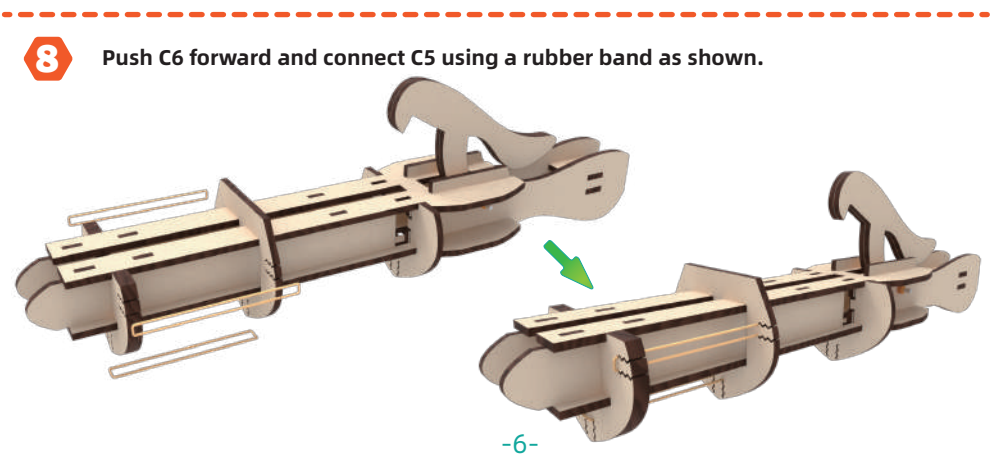
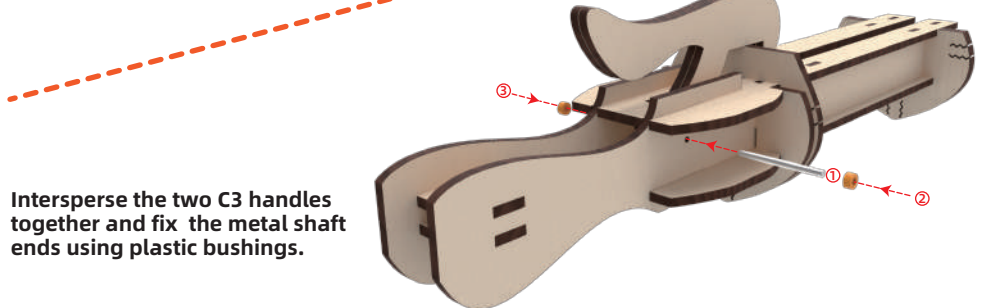
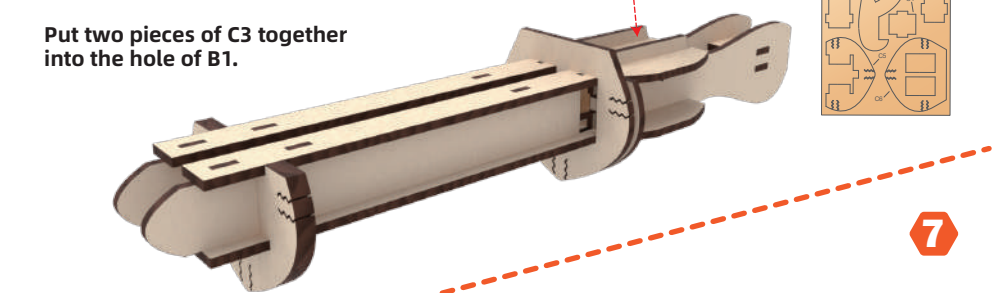
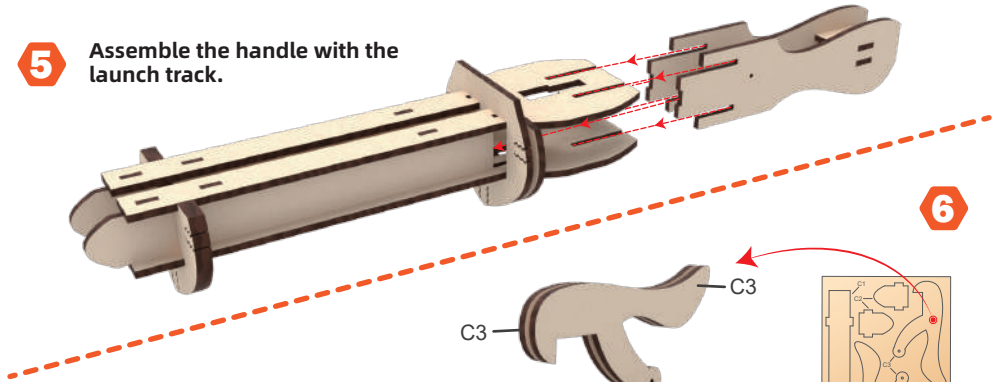
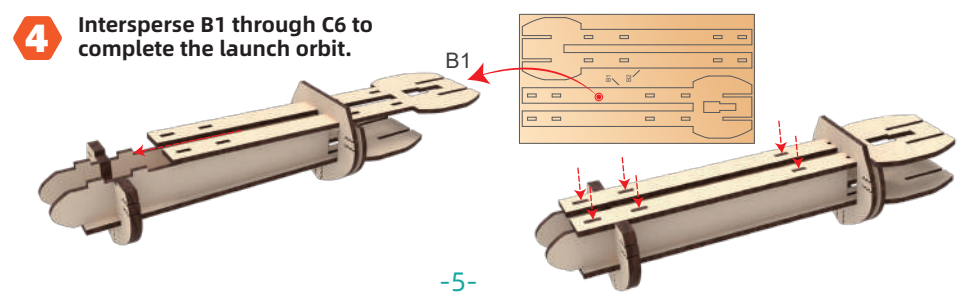
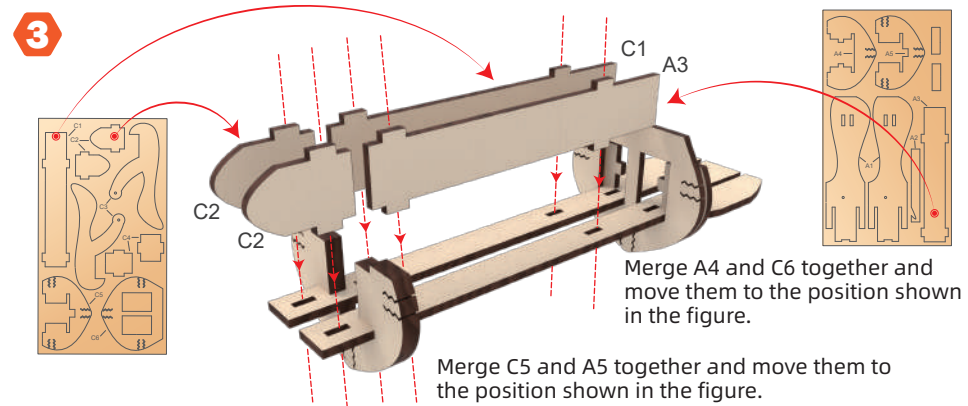
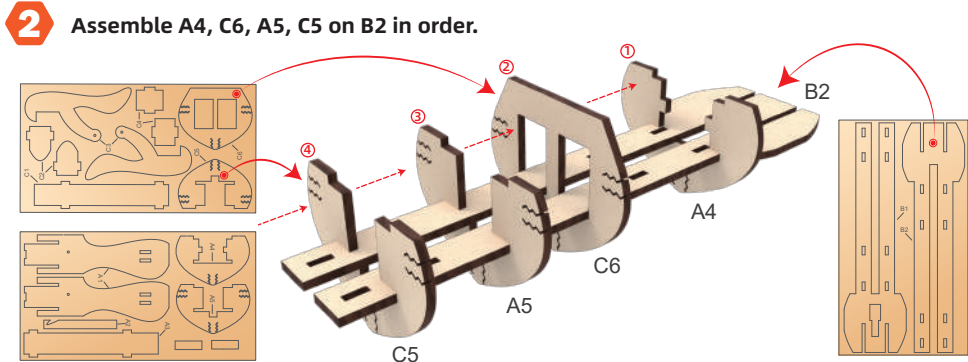
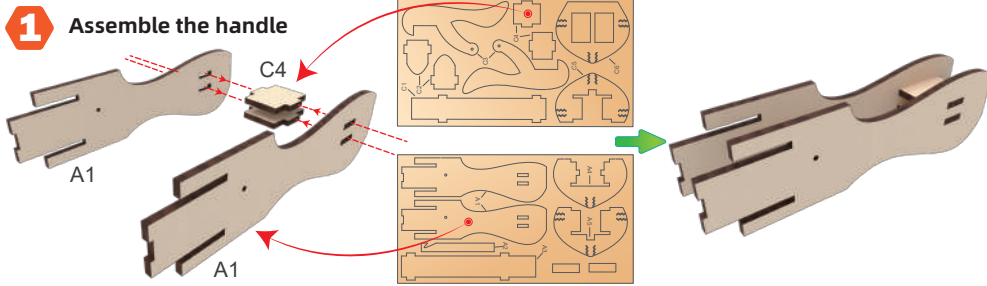
STOVL (short takeoff / vertical landing): taking off vertically uses a lot of fuel and limits the weight of the airplane (meaning they cannot take as many weapons with them), therefore it is more efficient to have a short takeoff roll and take off with at least some forward speed.

Ski Jump: at the end of the deck, the very end of the runway is curved upward, this gives the airplane additional upward momentum and accelerates it upwards into the air. Typically used for STOVL airplanes. The most well-known examples are the British aircraft carriers of the last decades.

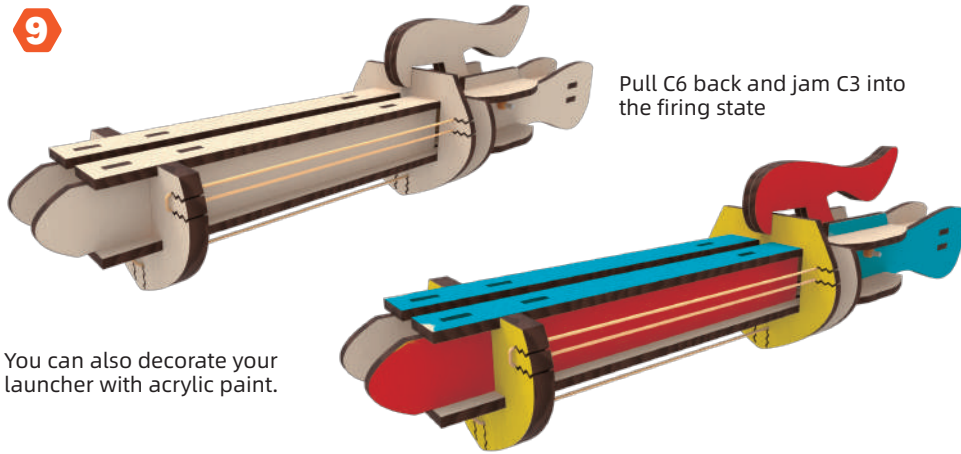
*The device we completed together today is used to simulate the way of "CATOBAR".*



## ACTIVITY #4: Assembling of aircraft launchers



9



Pull C6 back and jam C3 into the firing state

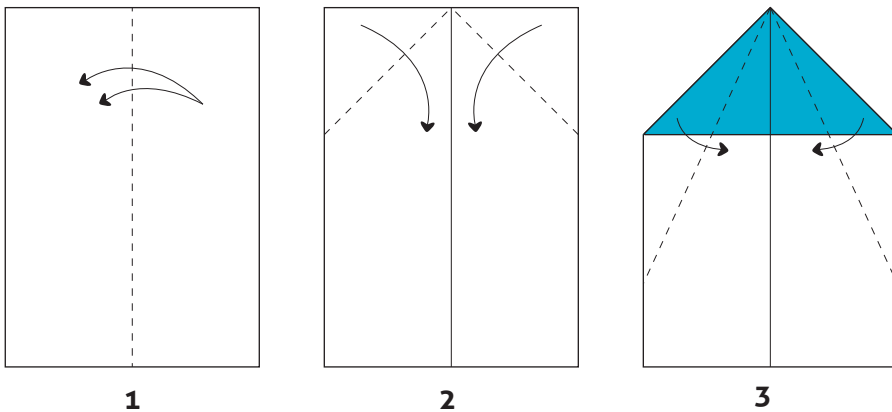
You can also decorate your launcher with acrylic paint.

## ACTIVITY #5: FOLDING OF ALL KINDS OF AIRCRAFT

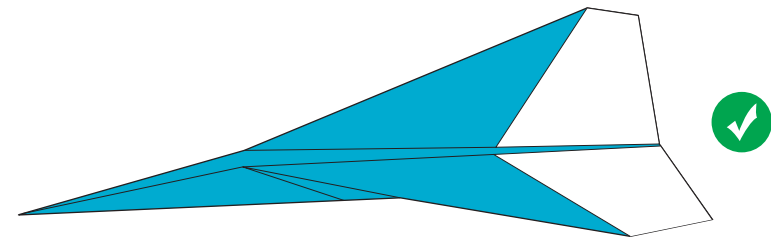
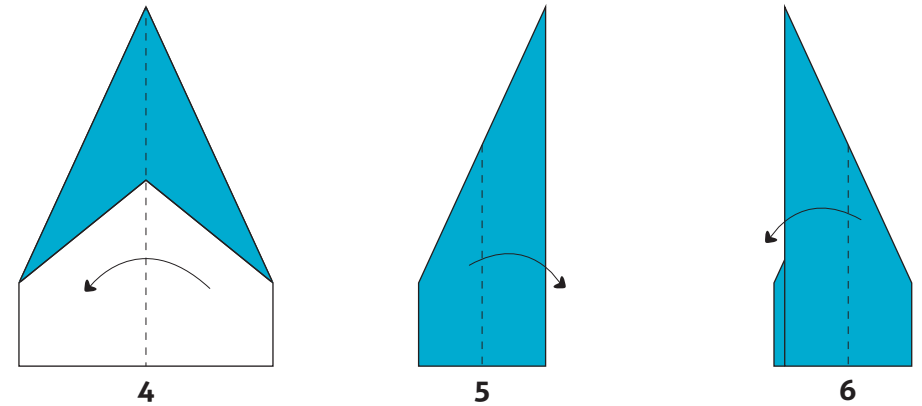
Make the paper airplane

- ① Fold the paper in the direction of the imaginary line.
- ② Fold the area in the imaginary lines according to the direction of the arrow.
- The line shows the edge of the paper or the kink mark.
- ↪ Fold the paper along the line in the picture.
- Fold the top of the paper to this vertex position.
- This color represents the front of the paper.
- This color represents the back of the paper.
- ✓ The paper airplane is folded.

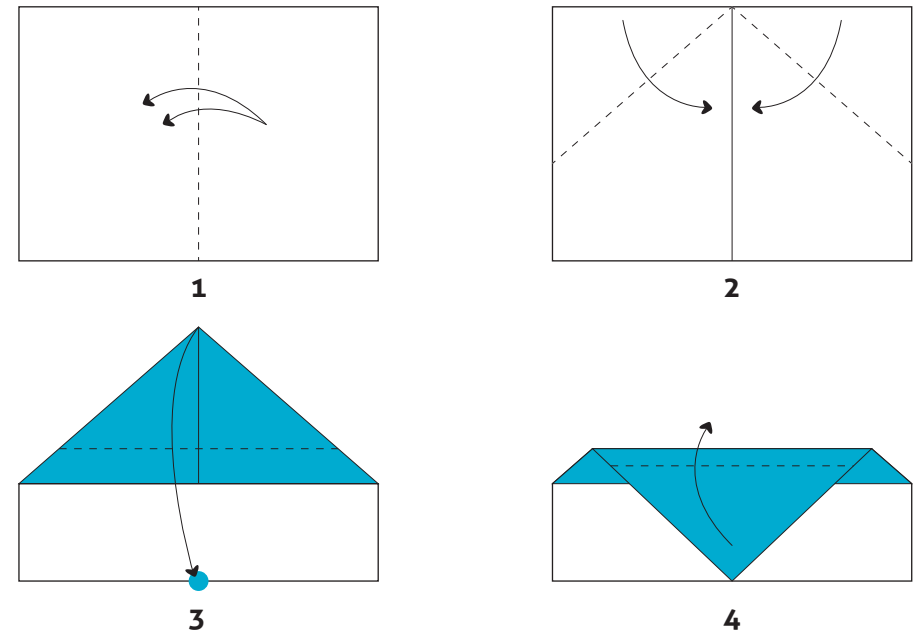
Method 1:



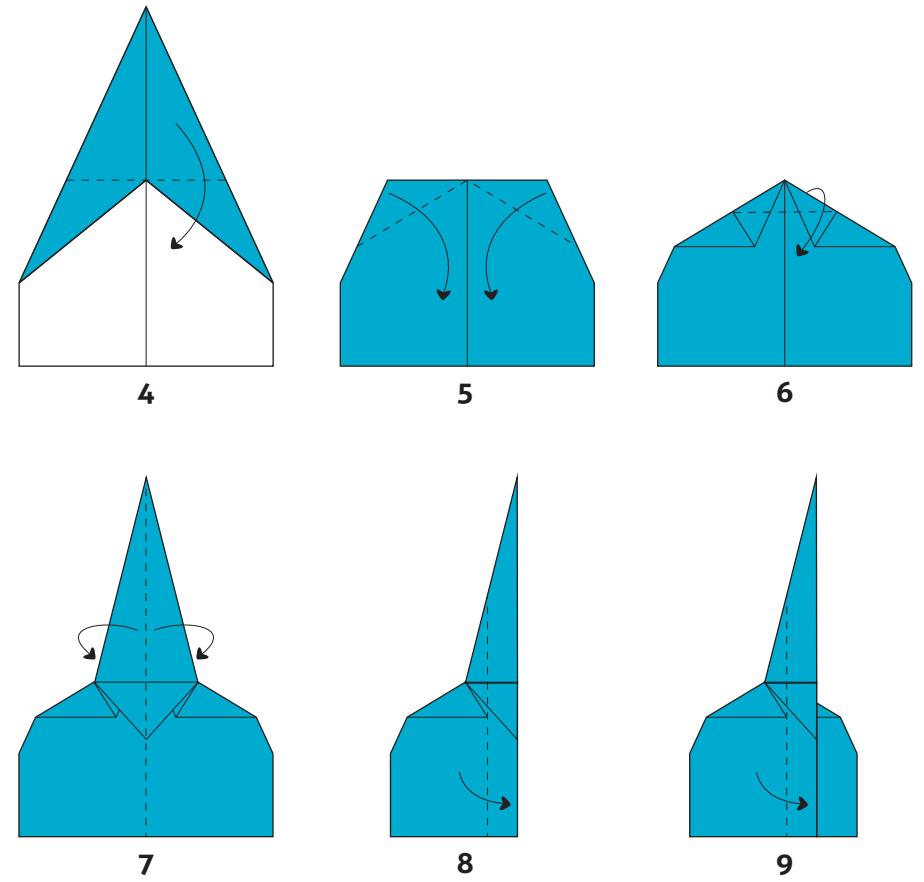
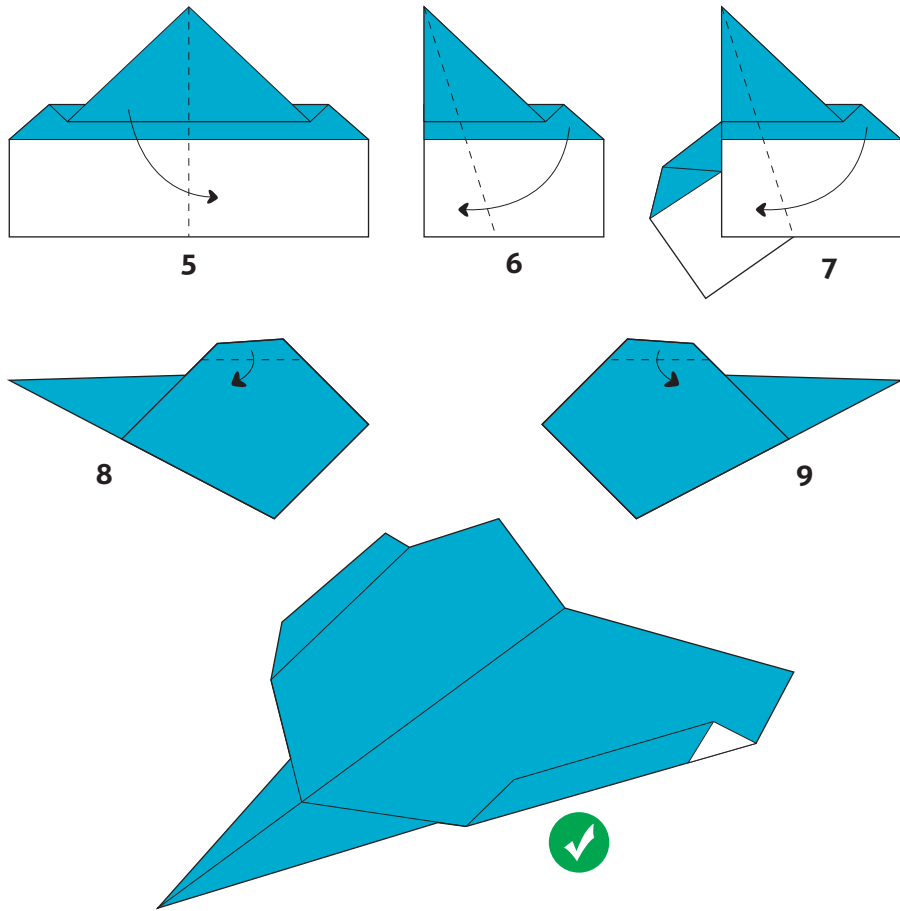
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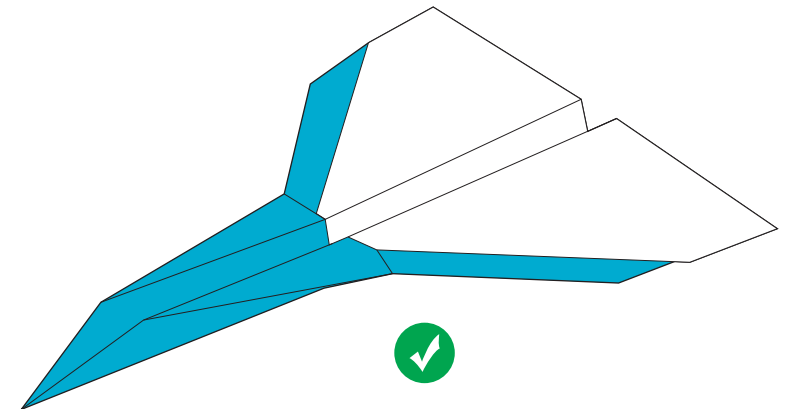
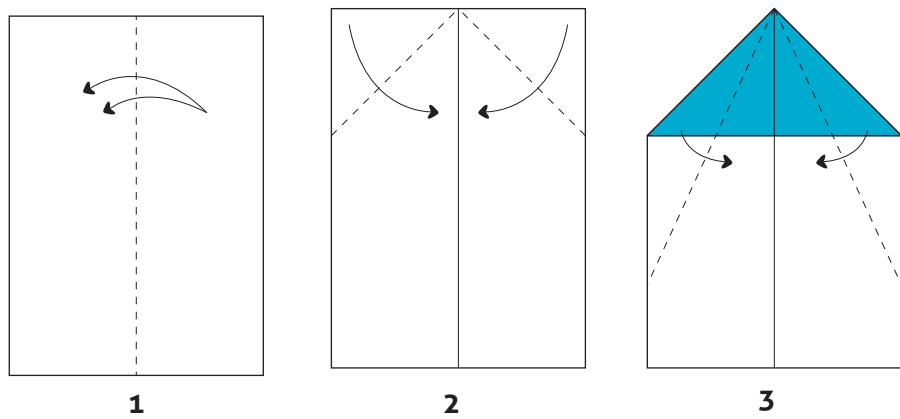
Method 2:



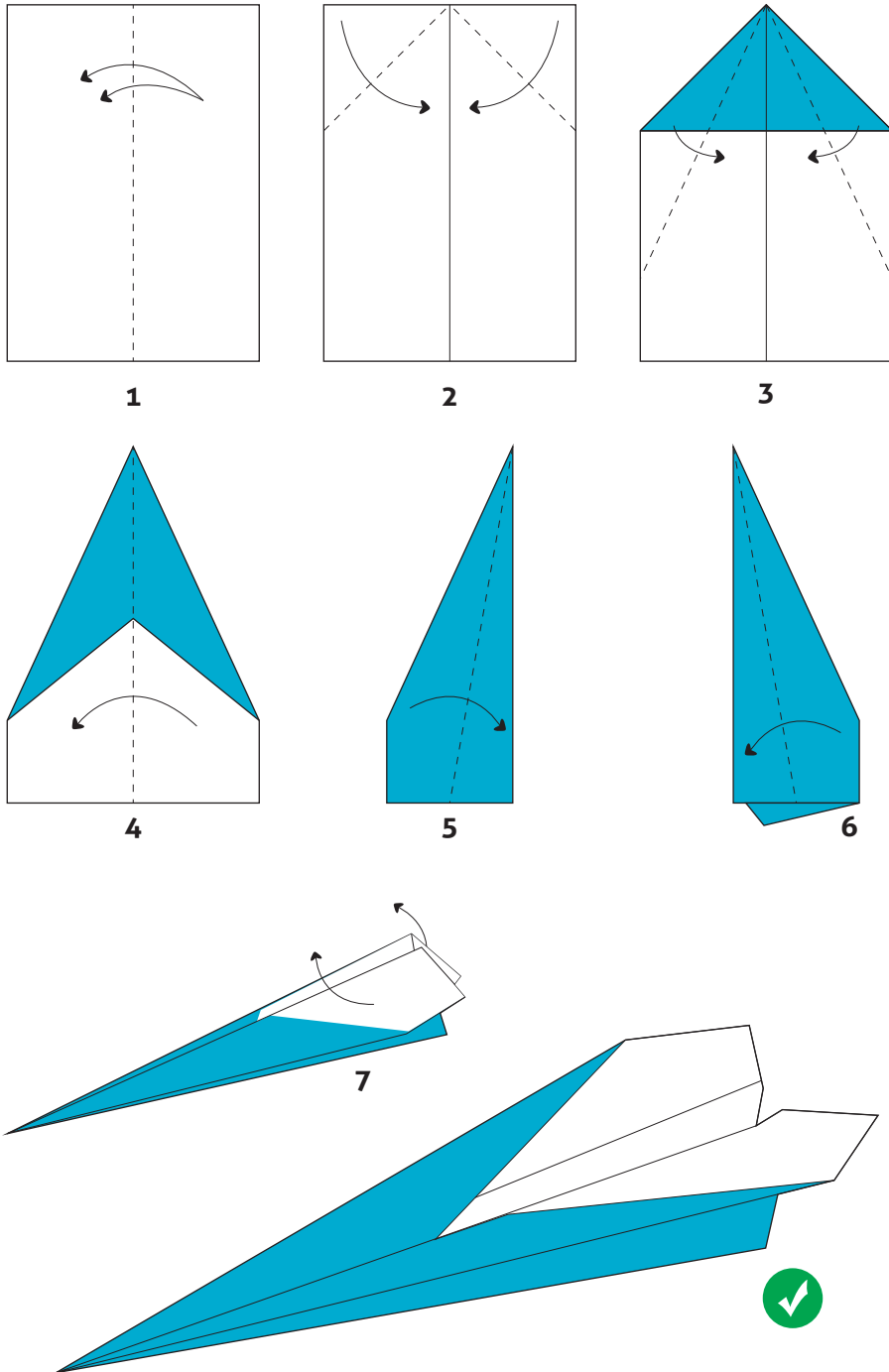
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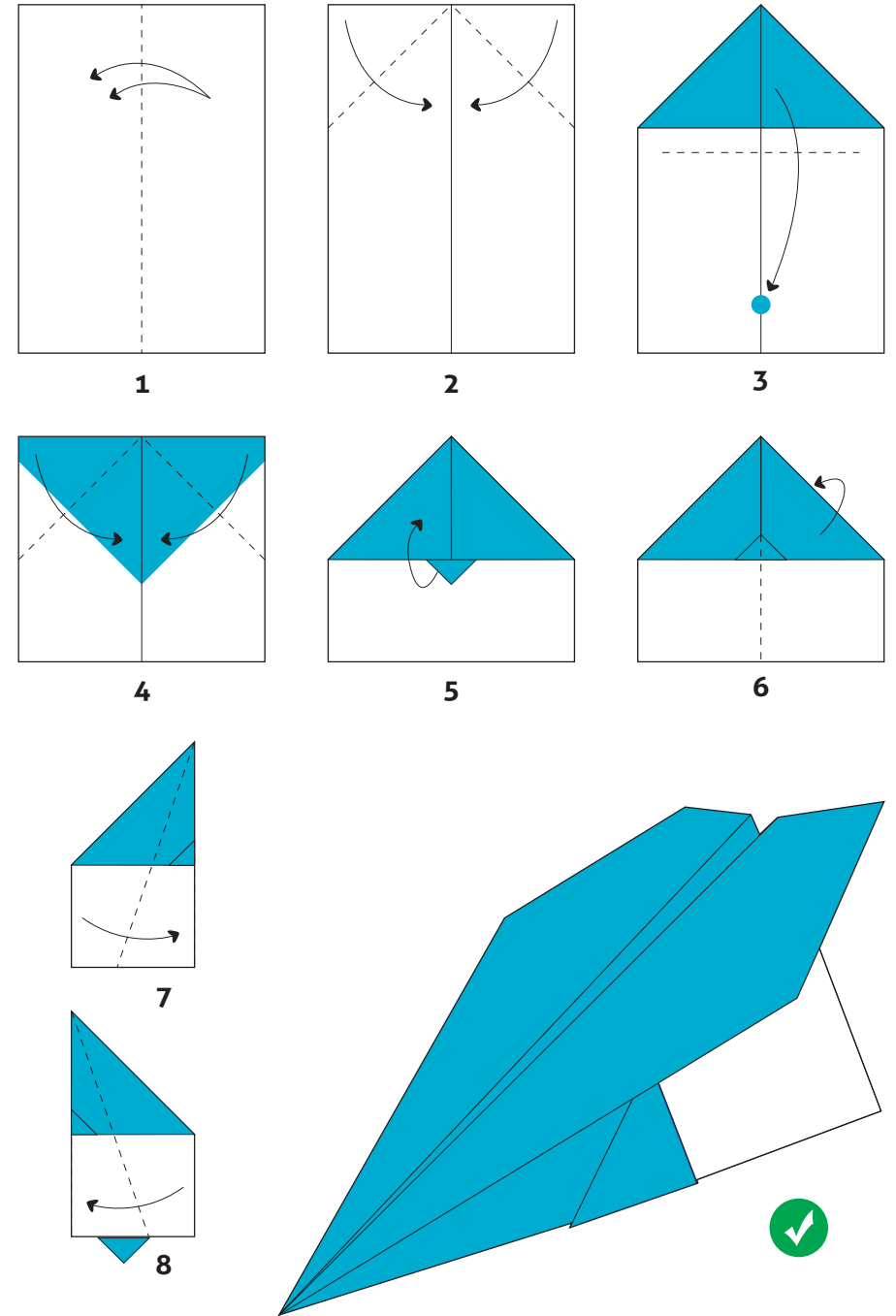
Method 3:



Method 4:

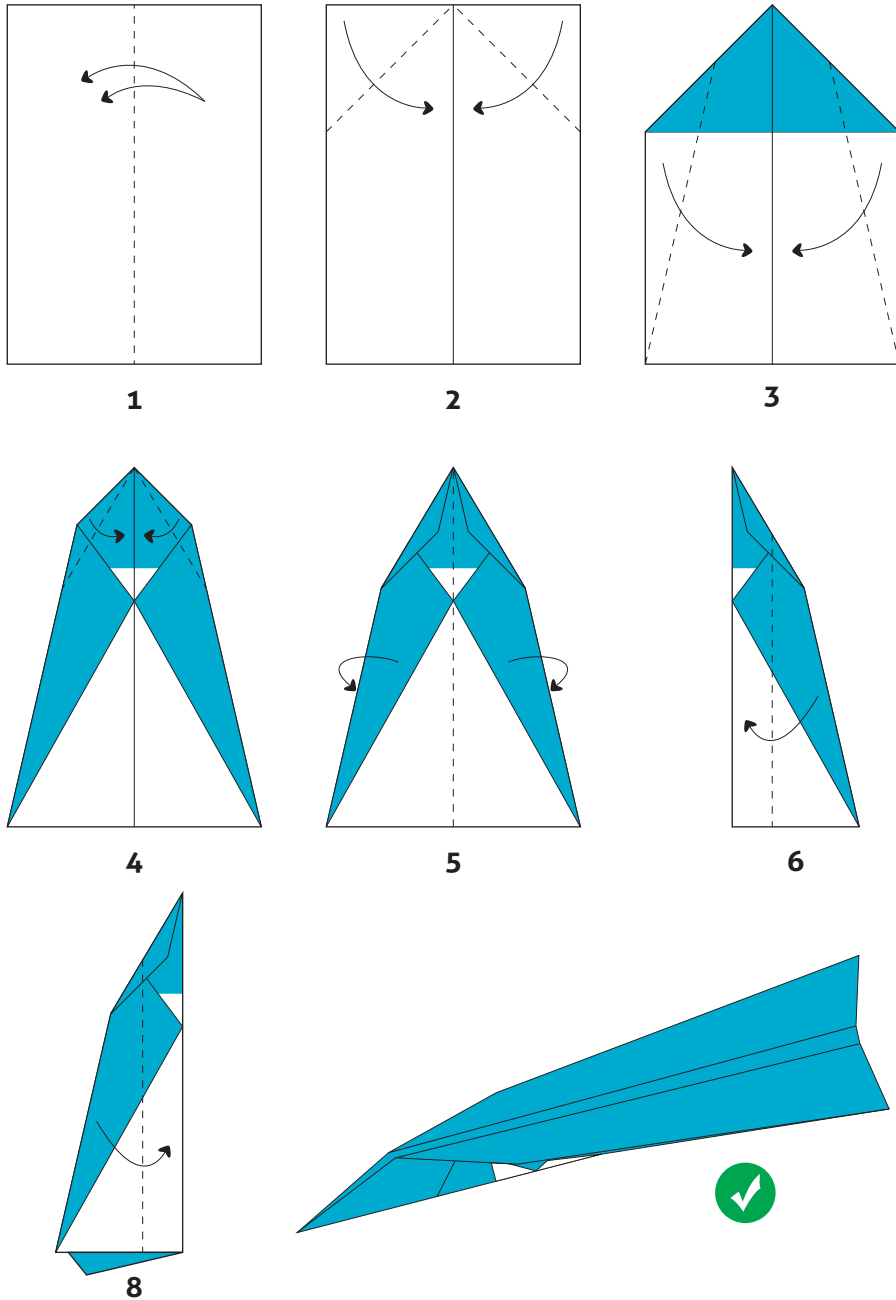


Method 5:





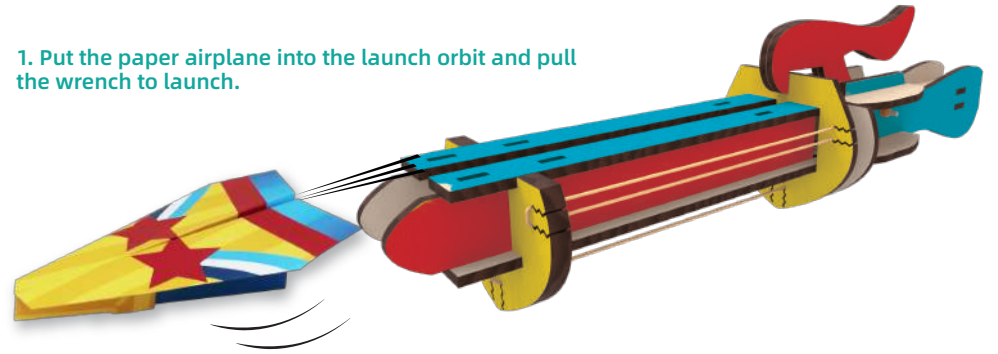
Method 6:



Tips: Besides 6 methods of folding airplane above, you can fold a creative airplane with your imagination. You can also color your paper airplane or think a cool name and write it on the paper airplane.

## ACTIVITY #6: Launch

1. Put the paper airplane into the launch orbit and pull the wrench to launch.



2. Put the elastic ball into the launcher to launch and you will get a cool pinball launcher.

