







No food or drink


No food or drink



EXIT







Hot air balloon

When the air in a balloon is heated, it becomes lighter than the air around it.

This carries the balloon upward.

This is why a balloon is called a "lighter-than-air" aircraft.

How does a hot air balloon work?

It is made up of many tiny particles. When these particles are heated they become charged with energy. The particles move around more and because of each other because of the gaps between particles get bigger.

That is why the hot air balloon rises, as the same space is taking up by the air but becomes less dense and lighter.



What is a burner?

When the air inside the balloon is hot, the burner can light it. The burner can light it up together or apart. The air inside the burner is hot. The air inside the burner is hot. The burner is a burner. The burner is a burner. The burner is a burner.









...e air in a balloon is heated, it
lighter than the air around it.
...es the balloon upward.
...y a balloon is called
...than-air' aircraft.

How does a hot-air balloon work?

Air is made up of many tiny particles. When these particles are heated they become charged with energy. The particles move around more and bounce off each other. Because of this the gaps between particles get bigger.

The air now has fewer particles taking up the same space so below. We say the air has become less dense and lighter.



Want to know more?

When the air inside the balloon gets hot, the particles stop moving so fast. They become more packed together so it takes the balloon a longer time to rise. The balloon is no longer heated, and it falls.





Ballcon
How many balls can you fit in a space of 100 cm³?

29



 **Thrust**

An aeroplane needs **thrust** to move forward.
Thrust is created when air is pushed backward.
A propeller provides the **thrust** on some aeroplanes.

- 1 Press the button to start the propeller.
- 2 Push the handle up to turn the propeller faster. Can you see the propeller move forward?
- 3 Put your hand on the handprint. Can you feel pushing back?

... can this propeller produce 100,000 new...

Communication

What is communication?

Navigation

What is navigation?



Drag

Drag slows an airplane down.

Drag is the force that works against thrust. It is produced when air hits the airplane.

Airplanes are designed to produce less drag.

How does it work?

The front drag is the resistance that an object feels as it moves through the air. It is caused by the air molecules hitting the object and pushing back against it.

1

When an object moves through the air, it pushes the air molecules out of the way. This creates a resistance that slows the object down.

2

Drag is caused by the air molecules hitting the object and pushing back against it. This is why objects that are smooth and streamlined experience less drag.



3

Drag is caused by the air molecules hitting the object and pushing back against it. This is why objects that are smooth and streamlined experience less drag.

4

Drag is caused by the air molecules hitting the object and pushing back against it. This is why objects that are smooth and streamlined experience less drag.



A pilot controls the airplane by moving the control surfaces. They change the direction of the airplane.



Wings up and down
Move the stick to side to side.
This is called roll.
The control surfaces use the ailerons.



Control
A pilot controls the aeroplane by moving the control surfaces. They change the direction of the aeroplane.

The joystick is used to control the direction of the aeroplane. The joystick is used to control the direction of the aeroplane.





Pilot training

is pilot training

Pilots control the airplane by moving the control surfaces. They change the direction of the airplane.



When the ailerons move up and down, the airplane rolls to the left or right.

When the elevator moves up and down, the airplane pitches up or down.

When the rudder moves left and right, the airplane yaws to the left or right.





Hawker Typhoon

The Hawker Typhoon was a single-engine, high-wing, multi-engine fighter aircraft. It was developed by Hawker Aircraft Limited and was the first British aircraft to be designed as a dedicated ground attack aircraft.

Specification

1. Maximum speed: 380 mph (612 km/h)
2. Range: 1,500 miles (2,414 km)
3. Service ceiling: 30,000 feet (9,144 m)
4. Armament: 4 × 20 mm cannons, 6 × .50 caliber machine guns

Design

The Typhoon was designed as a high-speed, high-altitude fighter. It featured a high-wing configuration, which allowed it to maintain high speeds at high altitudes. The aircraft was also equipped with a powerful engine and a large fuel tank, giving it a long range.

Testing

The Typhoon was tested extensively during the war. It was found to be a very capable fighter, with a high speed and a long range. It was also found to be a very effective ground attack aircraft.

Production

The Typhoon was produced in large numbers during the war. It was the most numerous of the multi-engine fighters used by the RAF. It was also produced in other countries, including the United States and Canada.

Problems

The Typhoon suffered from several problems during the war. One of the most serious was a problem with the engine, which caused many crashes. Another problem was a problem with the landing gear, which caused many crashes.

1. Engine problems: The Typhoon's engine was prone to overheating and failure, particularly at high altitudes. This was a major problem for the aircraft's performance.

2. Landing gear problems: The Typhoon's landing gear was prone to failure, particularly during takeoff and landing. This was a major problem for the aircraft's safety.