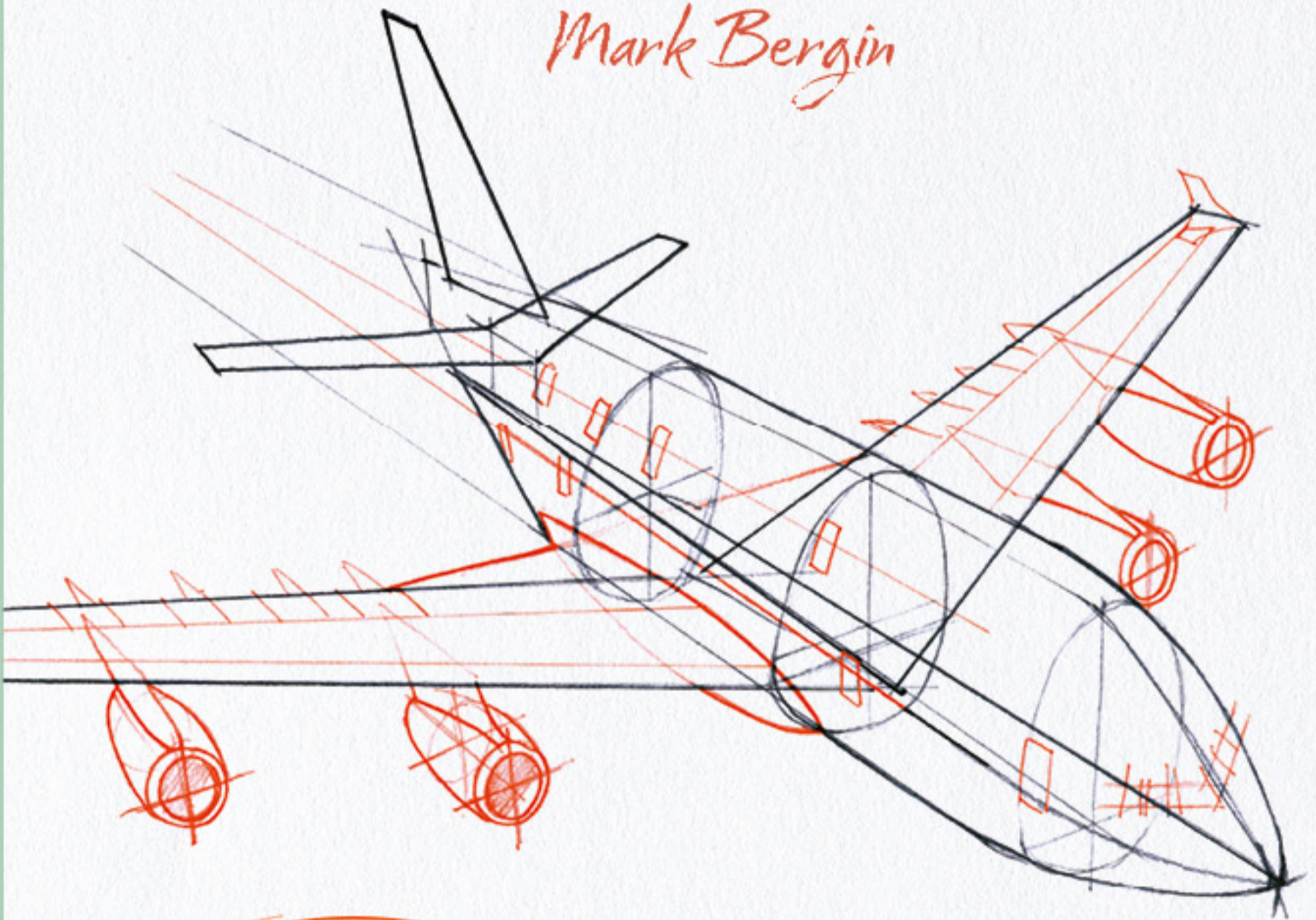


HOW TO DRAW

PLANES

Mark Bergin



Easy to follow
AMAZING ART!
Step-by-step



HOW TO DRAW

CARICATURES

Mark Bergin



Hatch

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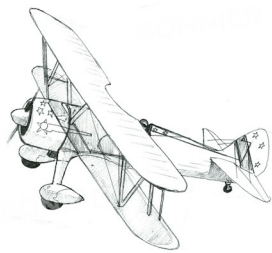
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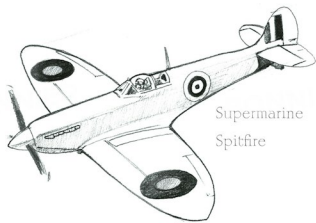
Making a start

Learning to draw is about looking and seeing. Keep practicing and get to know your subject. Use a sketchbook to make quick sketches. Start by doodling, and experiment with shapes and patterns. There are many ways to draw, this book shows one method. Visit art galleries, look at artists' drawings, see how friends draw, and most importantly, find your own way.



Pitts Special

Remember that it is practice that will make the drawing work, if it looks wrong, start again. Keep working at it - the more you draw, the more you will learn.



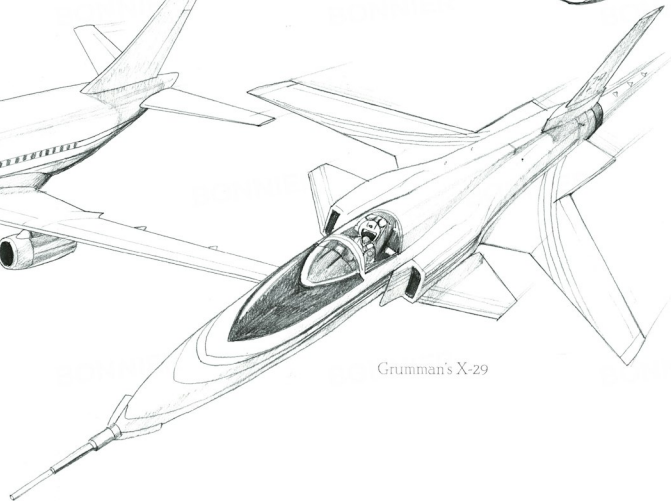
Supermarine Spitfire



Airbus A380



Cessna

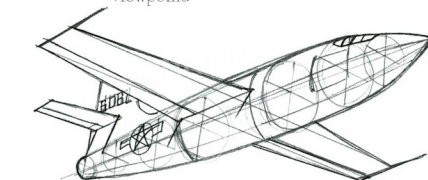
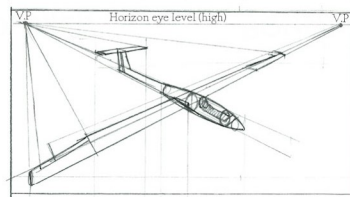
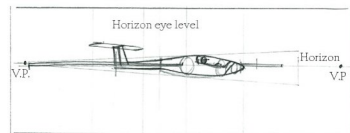
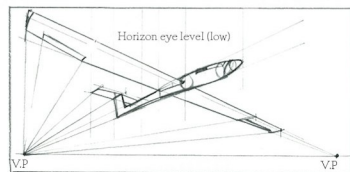


Grumman's X-29

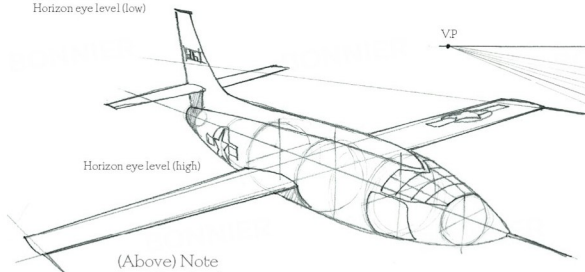
Perspective

If you look at a plane from different viewpoints, you will see that the part of the plane that is closest to you will look larger, and the part furthest away from you will look smaller. Drawing in perspective is a way of creating a feeling of space and three dimensions on a flat surface.

(Below) Note how the circular construction lines are larger the nearer they are to your viewpoint. The circles are smaller at the rear of the plane, because that is furthest away from your viewpoint.



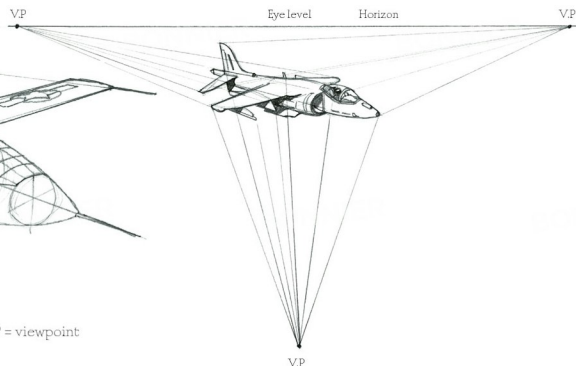
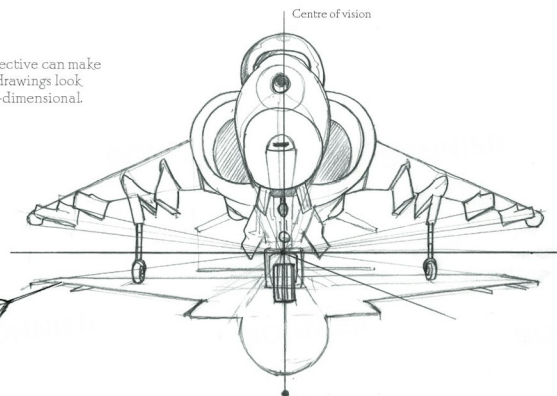
Horizon eye level (low)



Horizon eye level (flight)

(Above) Note how the circular construction lines are larger the nearer they are to the centre of the plane.

Perspective can make your drawings look three-dimensional.

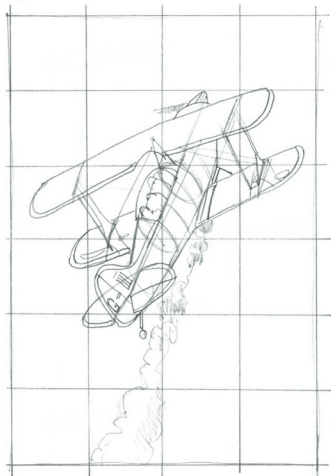
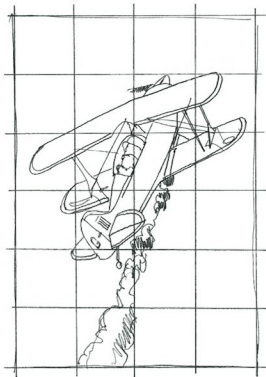


V.P = viewpoint

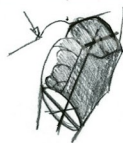
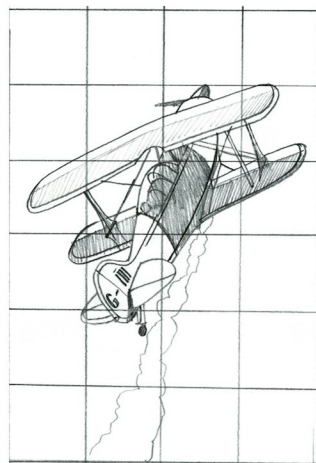
Using photographs

It is important that you consider the position of your drawing on the paper; this is called composition. Drawing from a photograph can help you identify shape and form.

(Below) Make a tracing of the photograph and draw a grid over it.

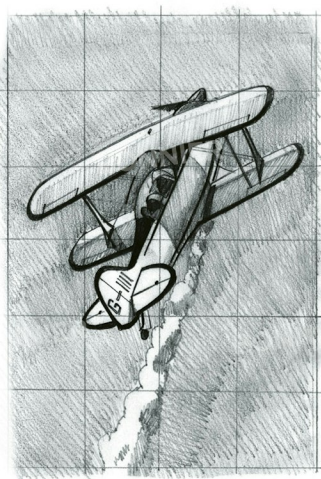


(Above) Then draw another grid, enlarging or reducing it to the same scale. You can now transfer the outline shapes from your tracing, to the paper, using your grid as a guide.



(Above) Use construction lines to help you work out the three-dimensional shape.

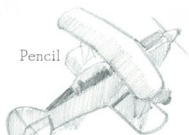
(Left) You must remember that the photograph is flat. You need to make your drawing look three-dimensional. See how light falls on the plane.



Materials

Try using different drawing papers and materials. Experiment with charcoal, wax crayons, and pastels. Pens, from felt-tips to ball-points will all make interesting marks, or try drawing with pen and ink on wet paper.

Pencil



Remember, the best equipment and materials will not necessarily make the best drawing.

Felt-tip pen



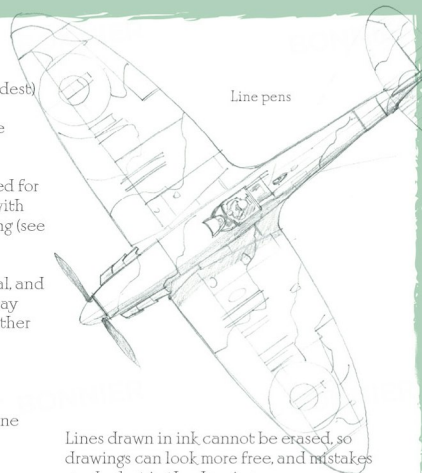
Pencils are graded from 6H (the hardest) through 5H, 4H, 3H, 2H to H, then B through 1B, 2B, 3B, 4B, 5B up to 6B (the softest).

Charcoal is very soft and can be used for big, bold drawings. Spray charcoal with fixative* to prevent further smudging (see page 2).

Pastels are even softer than charcoal, and come in a wide range of colours. Spray pastels with fixative* to prevent further smudging (see page 2).

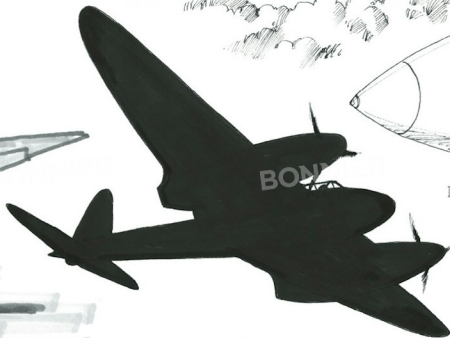
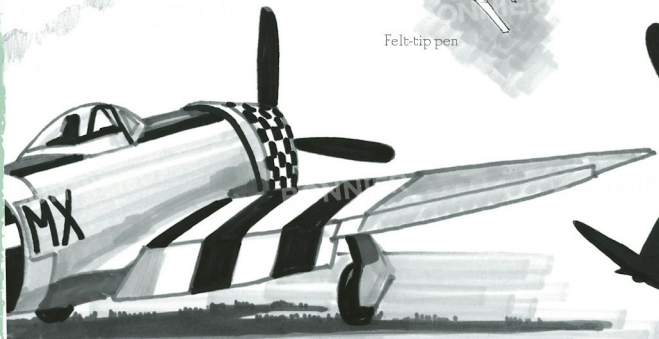
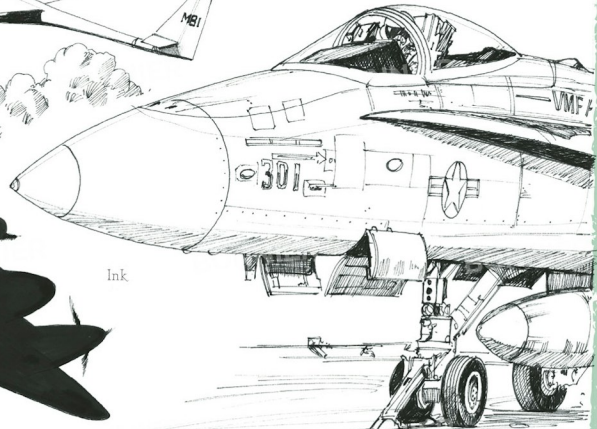
Special effects can be achieved by scraping away parts of a drawing done with wax crayons.

Line pens



Lines drawn in ink cannot be erased, so drawings can look more free, and mistakes can be lost in the drawing.

Ink

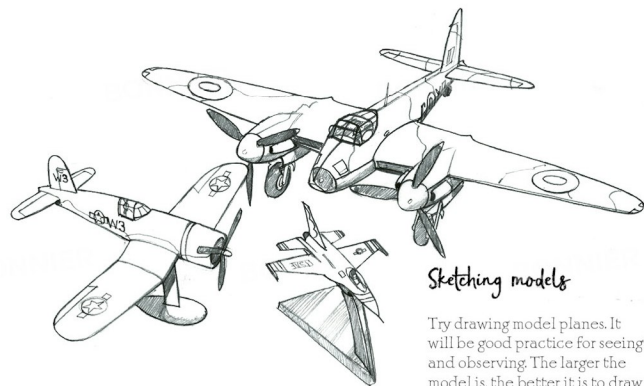


Sketching

We can't always rely on our memories, so we have to look around and find real-life things we want to draw. Using a sketchbook is one of the best ways to build drawing skills. Learn to observe objects: see how they move, how they are made and how they work. What you draw should be what you have seen. Since the Renaissance, artists have used sketchbooks to record their ideas and drawings.

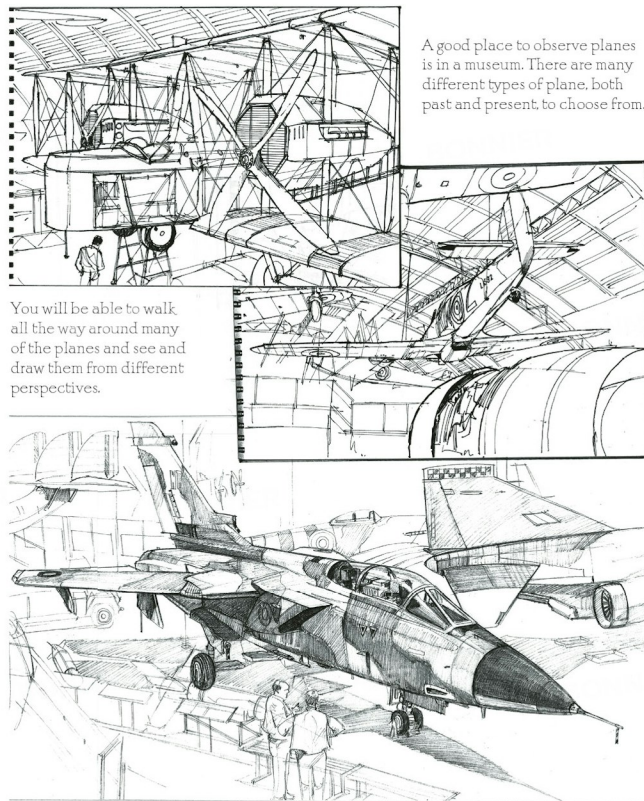
Sketching

A sketch that has taken a short time can say as much as a careful drawing that has taken many hours.



Sketching models

Try drawing model planes. It will be good practice for seeing and observing. The larger the model is, the better it is to draw because its proportions are better.

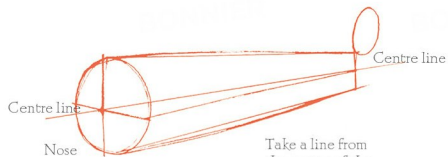


A good place to observe planes is in a museum. There are many different types of plane, both past and present to choose from.

You will be able to walk all the way around many of the planes and see and draw them from different perspectives.

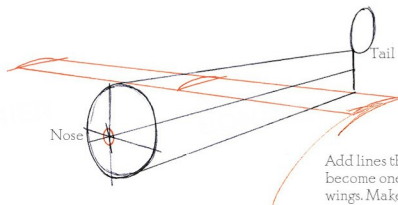
Fokker DR1 Triplane

The Fokker Dreidecker (DR1) triplane was used by Germany in WWI against the British Sopwith triplane. It carried one pilot and was armed with two machine guns. Its most famous pilot was Baron Manfred von Richthofen.

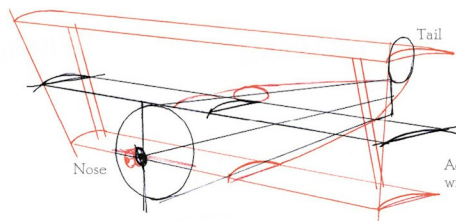


Start by drawing a cross, then draw a circle.

Take a line from the centre of the cross, this is the centre line of the plane.



Add lines that will become one pair of wings. Make the ends slightly curved.

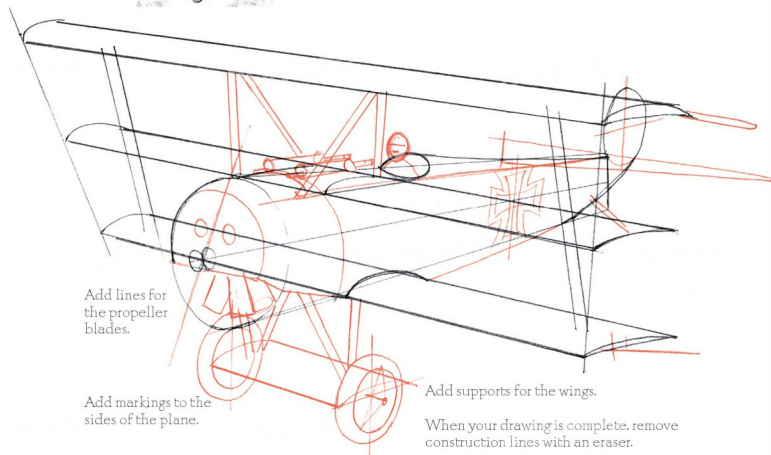


Add supports for the wings.

Now add lines that will become the other wings.



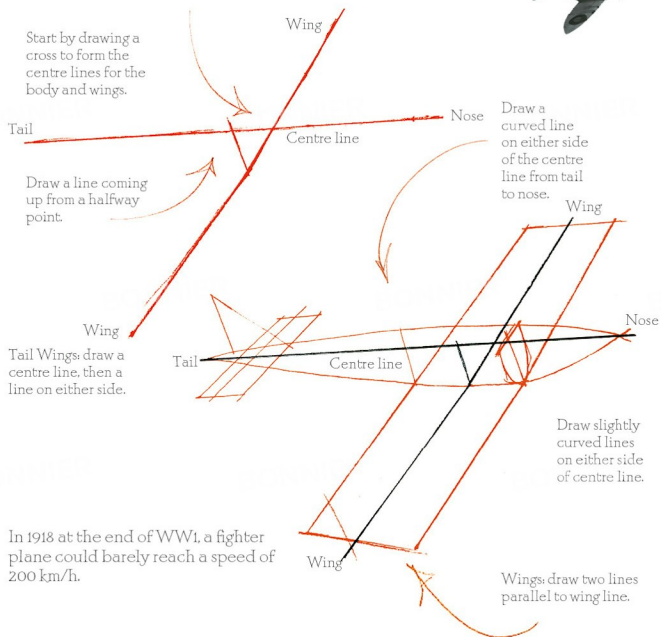
The DR1 was a difficult aircraft to fly, and was regarded as a machine strictly for experienced pilots.



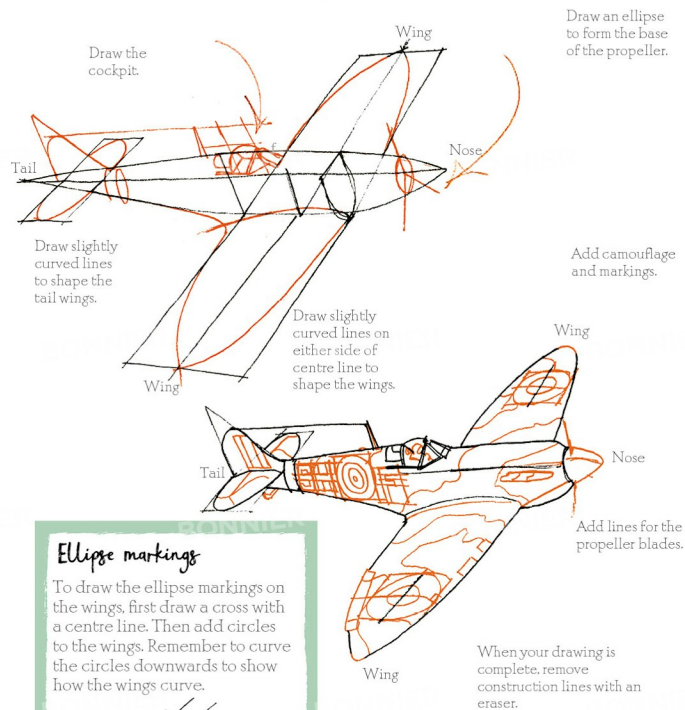
Baron Manfred von Richthofen was born in Breslau, Germany (now Wrocław, Poland) and died on 21 April 1918, aged 25, in the skies over Vaux sur Somme, France. The Germans called him Der Rote Kampfflieger ('The Red Battle-Flyer'), the French called him le petit rouge ('the little red') and in Britain he was known as the Red Baron.

Supermarine Spitfire

In the summer of 1940, fewer than a thousand British Hurricanes and Supermarine Spitfire planes defeated 3,000 aircraft in the Luftwaffe (German airforce).



In 1918 at the end of WW1, a fighter plane could barely reach a speed of 200 km/h.



Ellipse markings

To draw the ellipse markings on the wings, first draw a cross with a centre line. Then add circles to the wings. Remember to curve the circles downwards to show how the wings curve.

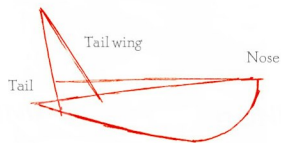


By the end of WW2, fighter planes, such as the Spitfire, could travel at almost 720 km/h.

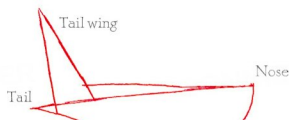
Supermarine S6B



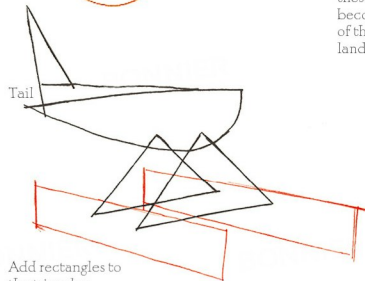
The Supermarine S6B Seaplane became the fastest aircraft on Earth in September 1931 when it achieved a record-breaking speed of 656 km/h.



Start with a triangular shape with one curved side.



Draw two triangles, these will become part of the landing gear.



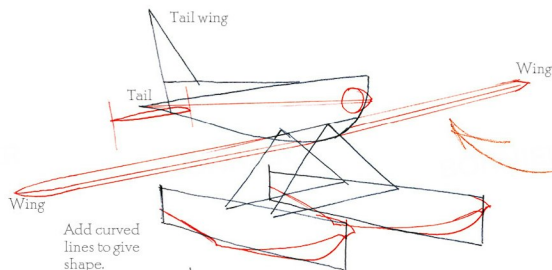
Add rectangles to the triangles.

The Supermarine S6B won the Schneider Trophy Seaplane contests for speed over a set course, for the third successive year - and outright - on 12 September 1931.



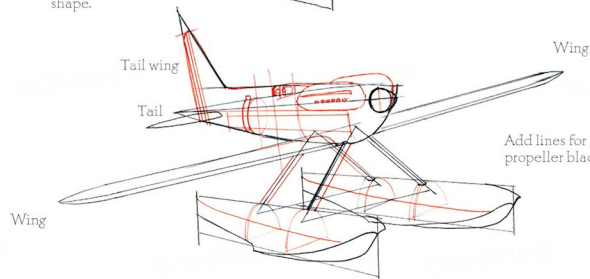
Light and dark

Shading can make your drawing appear three-dimensional.



Add curved lines to give shape.

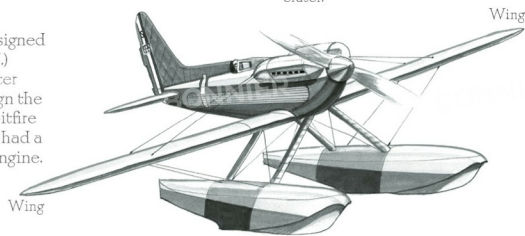
Draw in lines parallel to the base of the triangles which will become the wings.



Add lines for the propeller blades.

When your drawing is complete, remove construction lines with an eraser.

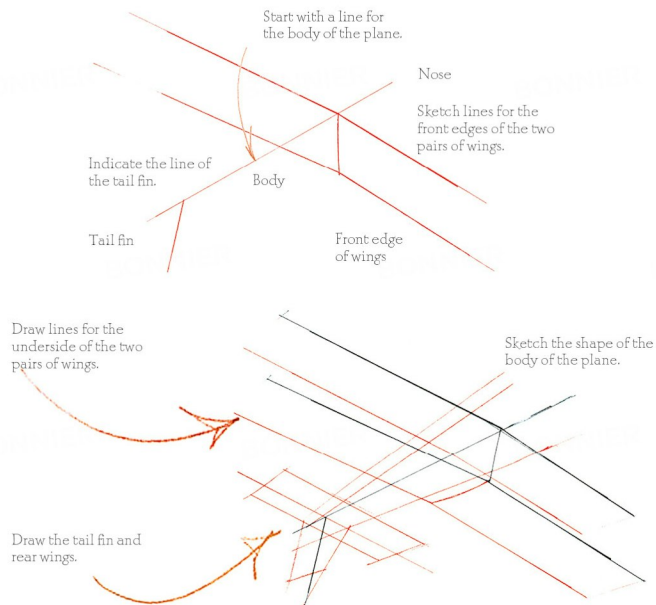
The S6B was designed by Reginald (R.J.) Mitchell. He later went on to design the Supermarine Spitfire fighter. The S6B had a Rolls-Royce R engine.



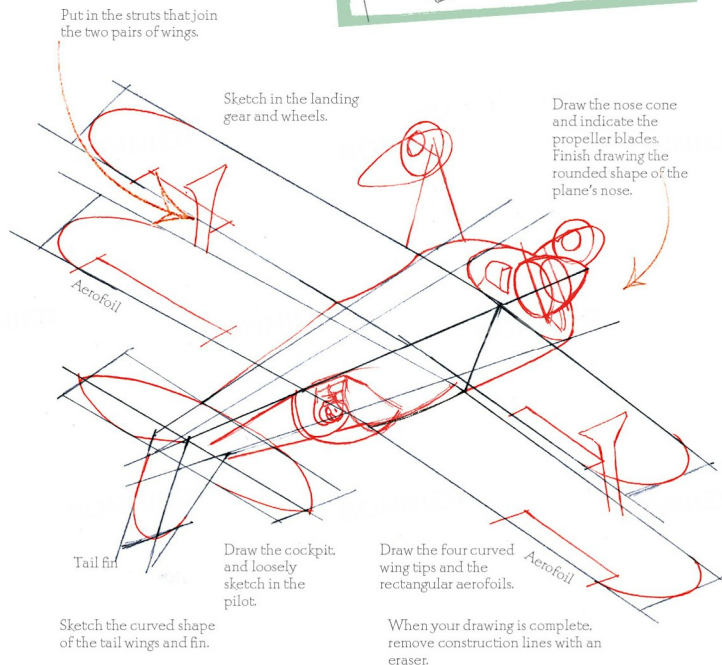
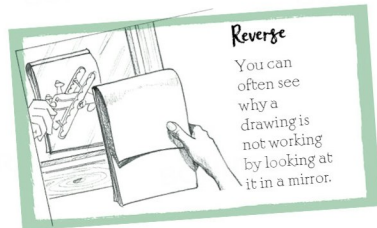
Pitts Special



One of the world's most famous stunt planes, the Pitts Special, was designed in 1944 in Florida, by Curtis Pitts.

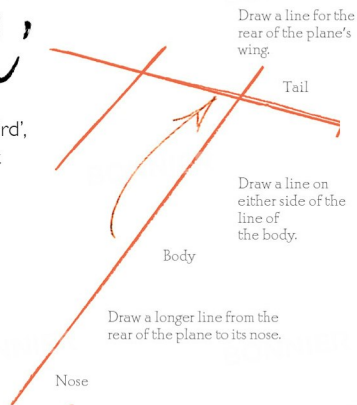


Continuing to compete until the early 1980s, the Pitts Special won more aerobatic contests than any other type of aircraft.



'Blackbird'

The Lockheed SR-71, or 'Blackbird', is the world's fastest jet plane. It reached a speed of 3,529 km/h, over three times the speed of sound, in 1976. The SR-71 was used for spying.



Draw a line for the rear of the plane's wing.

Tail

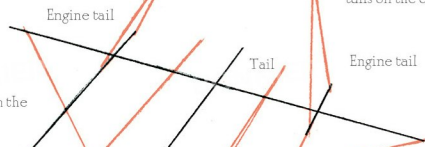
Draw a line on either side of the line of the body.

Body

Draw a longer line from the rear of the plane to its nose.

Nose

Draw two triangular shapes to indicate the tails on the engines.



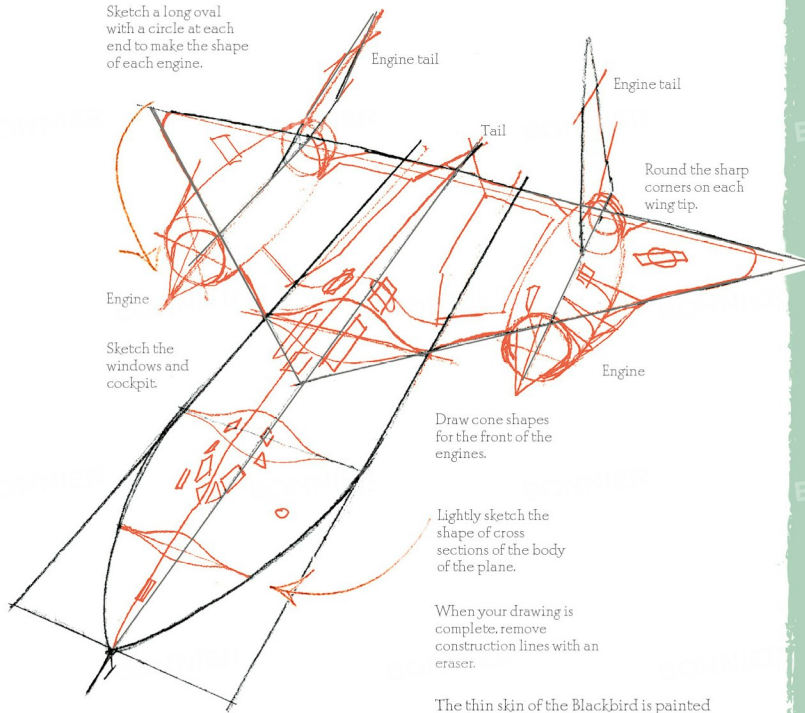
Draw a large triangle to form the wings.

Draw two curved lines to make the front of the aircraft.

Nose

Sketch a rectangle from the nose of the plane to the rear. Make the shape slightly wider at the front.

Sketch a long oval with a circle at each end to make the shape of each engine.



Engine tail

Engine tail

Tail

Round the sharp corners on each wing tip.

Engine

Sketch the windows and cockpit.

Engine

Draw cone shapes for the front of the engines.

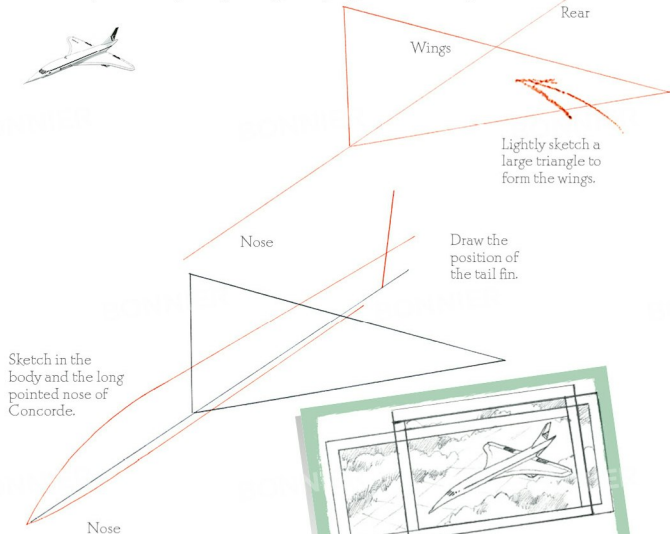
Lightly sketch the shape of cross sections of the body of the plane.

When your drawing is complete, remove construction lines with an eraser.

The thin skin of the Blackbird is painted with a special heat-resistant paint. The skin of the plane can withstand a temperature of over 300 degrees centigrade during flight.

Concorde

Concorde had four specially designed Rolls-Royce engines. These provided the extra power needed for take off and the transition to supersonic flight. It was the most powerful pure jet-engine flying commercially.

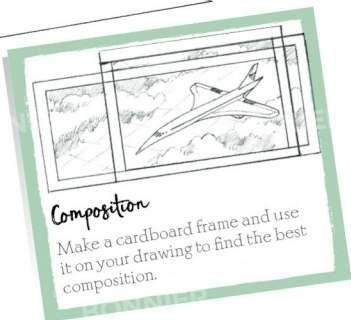


Sketch in the body and the long pointed nose of Concorde.

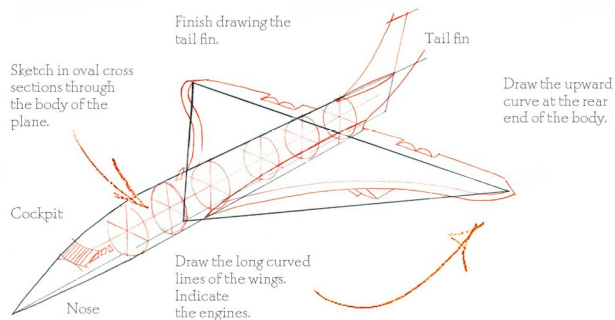
Draw a line from the nose of the Concorde to its rear.

Lightly sketch a large triangle to form the wings.

Draw the position of the tail fin.



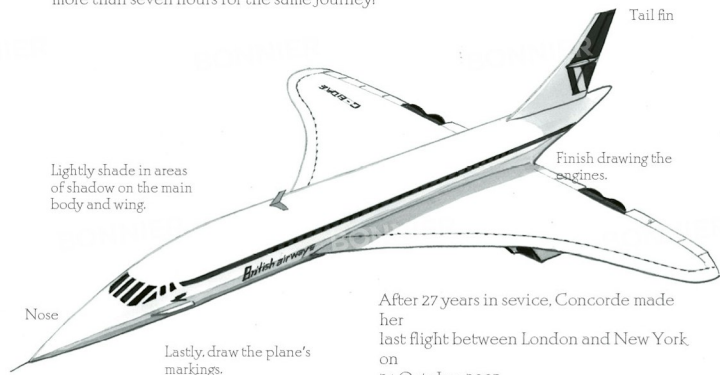
Composition
Make a cardboard frame and use it on your drawing to find the best composition.



Draw the windows in the cockpit.

When your drawing is complete, remove construction lines with an eraser.

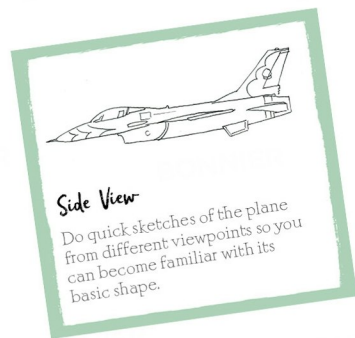
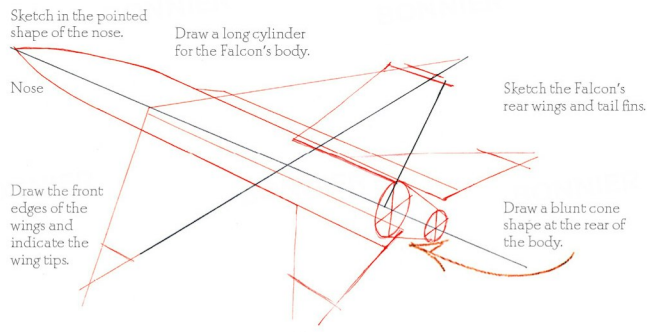
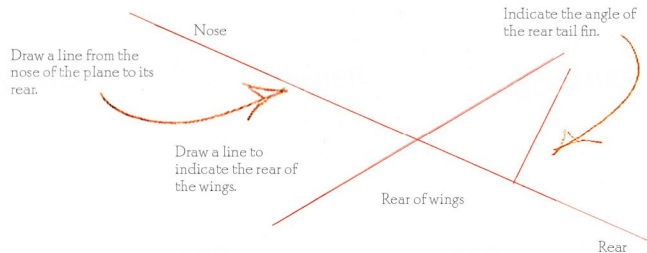
The average flight time between London Heathrow and New York JFK was three hours and 20 minutes. Typically a Boeing 747 takes more than seven hours for the same journey!



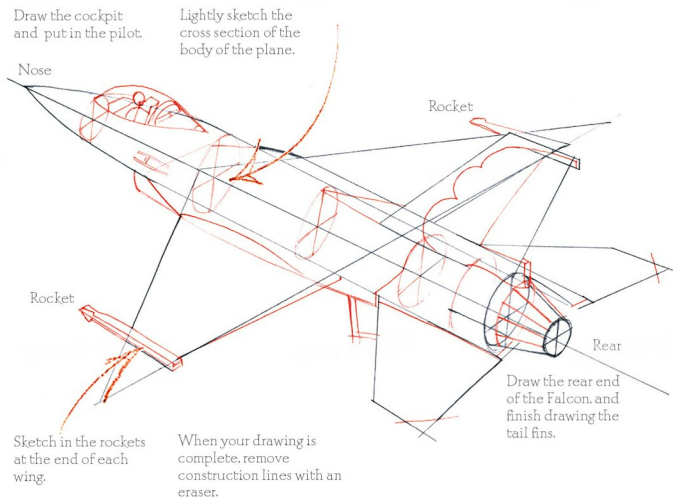
After 27 years in service, Concorde made her last flight between London and New York on 24 October 2003.

F-16A Fighting Falcon

The F-16A Fighting Falcon is a compact and manoeuvrable fighter aircraft. It is highly effective in both air-to-air combat and air-to-surface attacks.



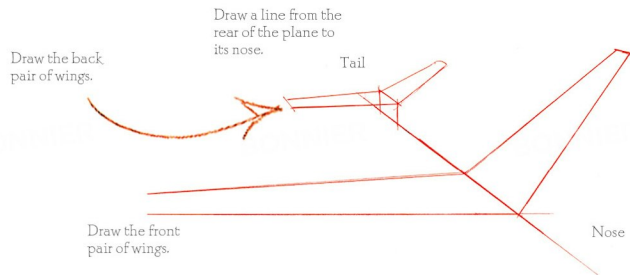
The F-16A can accurately locate targets in all weathers and detect hard-to-find, low flying aircraft. It can also fly more than 860 km without needing to stop and refuel.



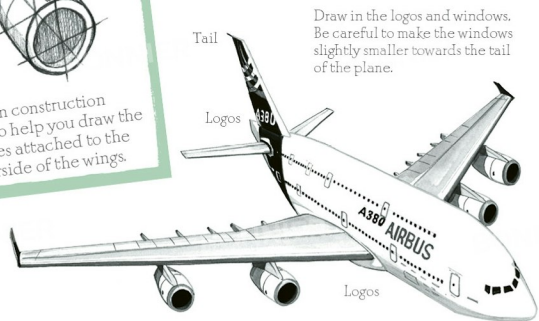
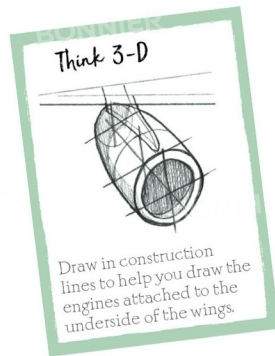
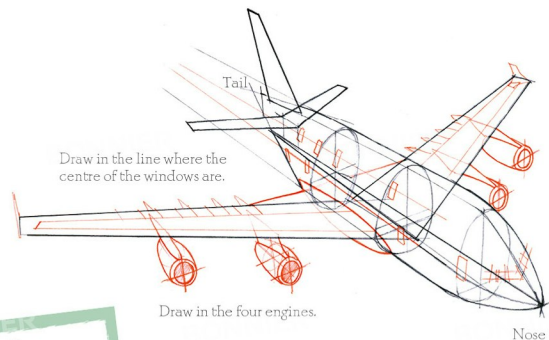
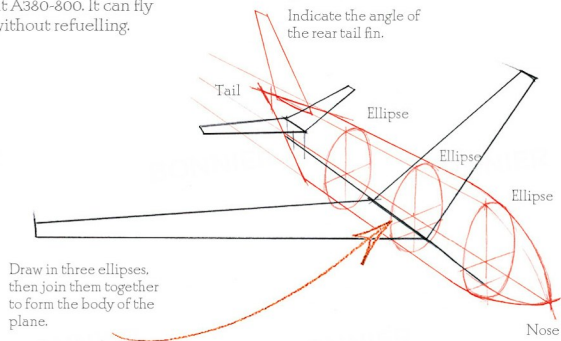
Airbus A380



The 555 seat, double-decker Airbus A380 will be the world's largest passenger carrying airliner.



Several variations of A380 planes are planned, the basic aircraft is the 555 seat A380-800. It can fly 15,000 km without refuelling.

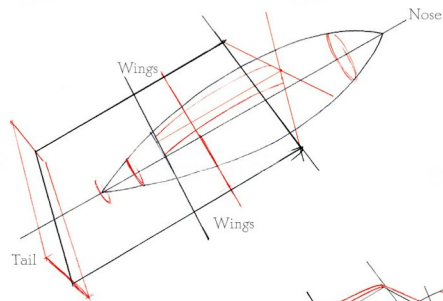
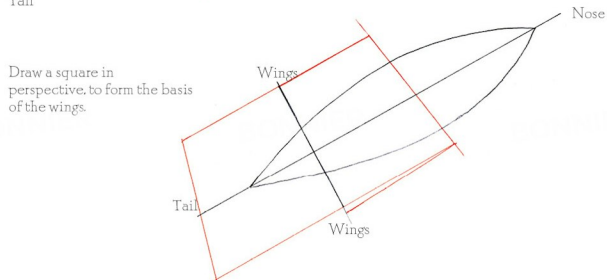
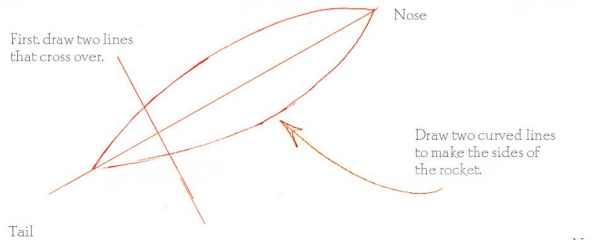


The A380 will be able to use existing airports, they have also been designed to create lower fuel emissions and less noise.

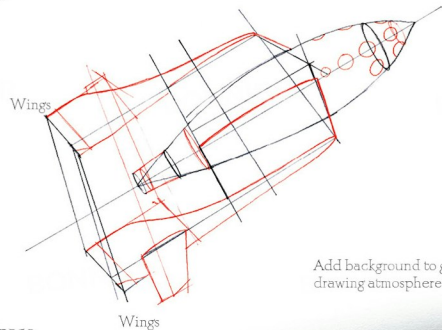
When your drawing is complete, remove construction lines with an eraser.

Space Ship One

Space Ship One made the first privately-funded space flight on 21 June 2004. It is hoped that this is the future of space tourism. Thousands of people are expected to leave the Earth's atmosphere each year.



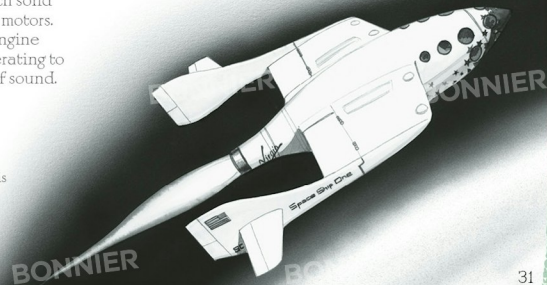
Draw in the construction lines for the wings, as indicated here in red.



Add background to give your drawing atmosphere.

The engine of Space Ship One has combined elements from both solid and liquid rocket motors. This is a unique engine capable of accelerating to twice the speed of sound.

When your drawing is complete, remove construction lines with an eraser.



Glossary

Chiaroscuro The use of light and dark shades in a drawing or painting.

Composition The position of a picture on the drawing paper.

Construction lines Structural lines used in the early stages of a drawing.

Fixative A type of resin used to spray over a finished drawing to prevent smudging* (see page 2).

Focal point A central point of interest.

Light source The direction the light is coming from.

Proportion The correct relationship of scale between parts of a drawing.

Reference Photographs or other images that can be drawn, if drawing from life is not possible.

Squaring up To transfer a drawing or photo accurately using square grids.

Three-dimensional An image that has the effect of making it look lifelike or real.

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