

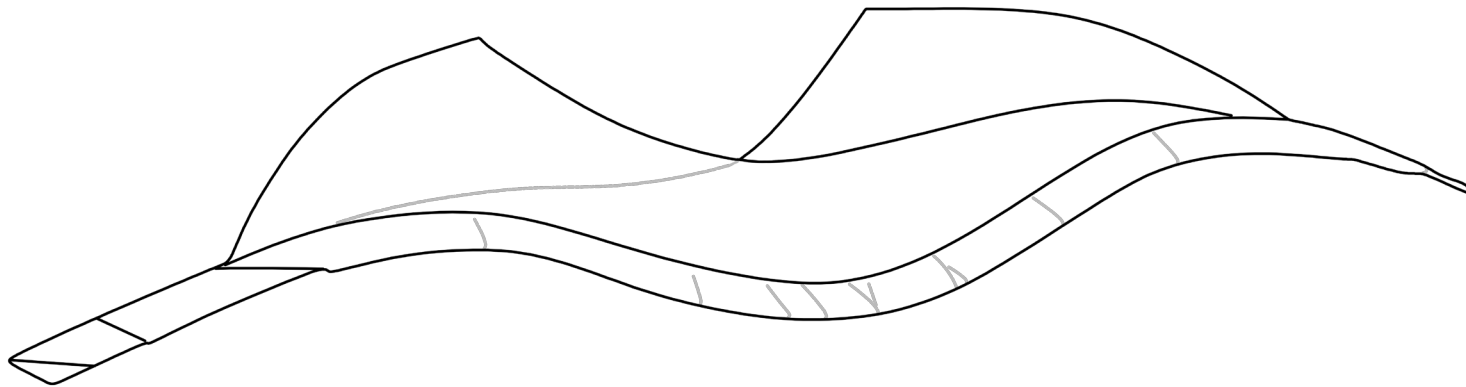
# 2020 and Beyond

## How to face the pace and ace a place in future contested space.

The Manta is guaranteed to be the most beautiful and surprising paper plane in your repertoire. Just like an object floating through space or a Manta Ray slipping through the ocean, this plane mesmerises with its effortless orbit.

### Centenary snippet

Space capabilities provide situational awareness and the delivery of real-time communications and position, navigation and timing information, essential for 21st century military operations. The Air Force is working with the Australian Space Agency and industry to transform the way it operates in space.



### MISSION - BALANCE AND SYMMETRY FOR EQUAL DRAG

Just as satellites effortlessly orbit the earth, Manta Rays effortlessly glide through our oceans. Did you know that water is 830 times denser than air? Manta Rays buoyancy and hydrodynamic design allow them to slip through the ocean effortlessly. This paper plane requires you to manage the complexities that joint forces play on the surface of your Manta's omni wing. This is not done just via conventional folds but also by shaping, a technique in origami that requires you to rise to the challenge of diligent detail and seamless symmetry to achieve majestic slow swooping flights.

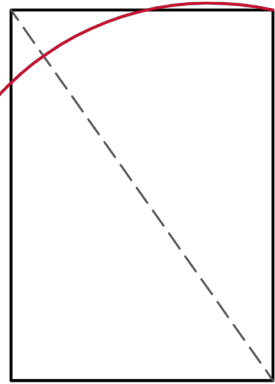
### Fun Fact:

NASA's 'Helios' is a remotely piloted 'Atmospheric Satellite' with a 130m wing of solar panels powering fourteen propellers which flies on the edge of the earth's atmosphere. It too has wings that resemble a Manta Ray.

## INSTRUCTIONS

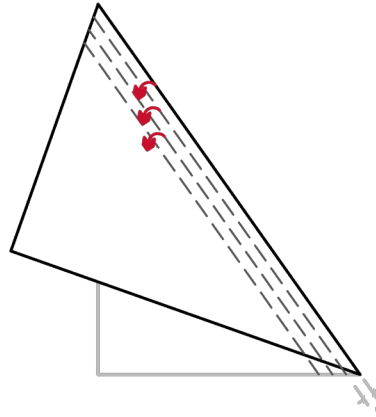
Follow the steps indicated to fold and shape  
The Manta

— — **FOLD**



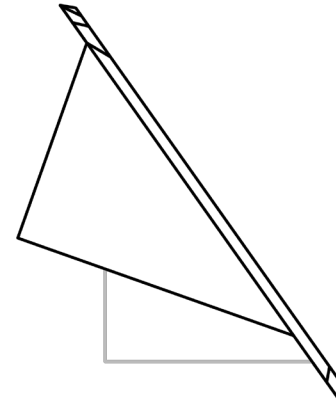
### STEP 1

Fold carefully as shown along the dashed line.



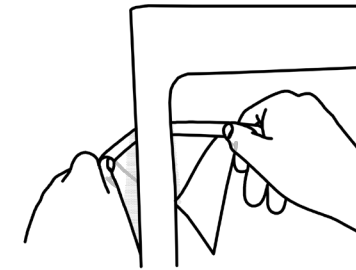
### STEP 2

With the first fold being 9mm wide, fold three consecutive folds along the long edge of the folded paper



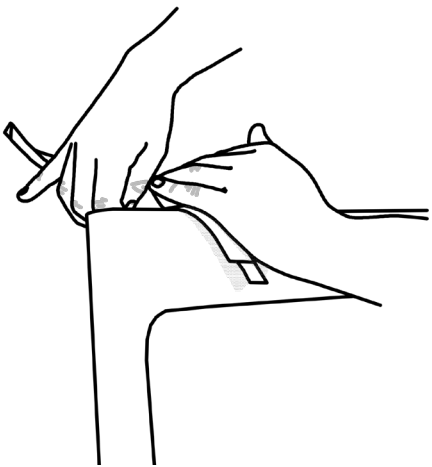
### STEP 3

That's all of the folding done (Basic Training), now onto 'Shaping'. Lookout, this is next level type stuff!!



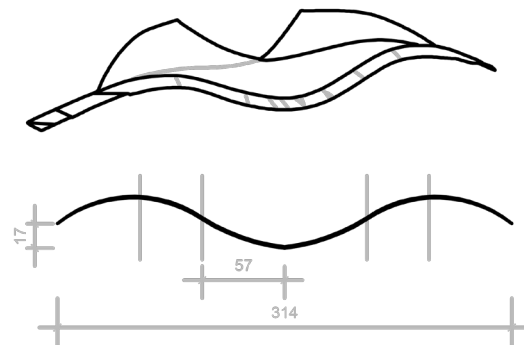
### STEP 4

Like a RAAF Officer would do before a parade, shape your plane using the 'Shoe shine method', as shown. Ensure you keep the band of folds against your curling surface.



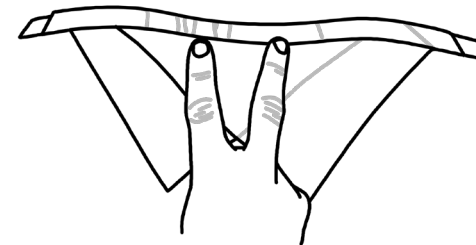
### STEP 5

Shape the paper carefully as shown to create the perfect profile.



### STEP 6

Take your time to make this shape just right. If you do you'll find it glides beautifully with slow swoops.



### TEST FLIGHTS

Hold the plane as shown and throw like a Basketballer from the free throw line. If you don't know what this looks like, ask your Teacher.

## GREAT FLYING MANTA!! YOU'RE OPERATIONAL!!

If you can pass this test, you are ready to fold more advanced planes. Check out [airforce.gov.au/100](http://airforce.gov.au/100) for more designs.