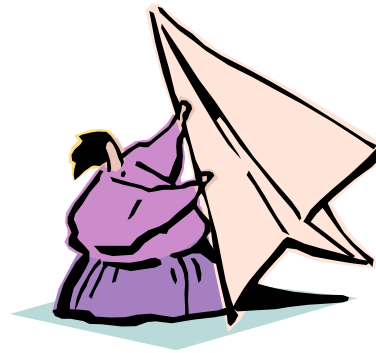
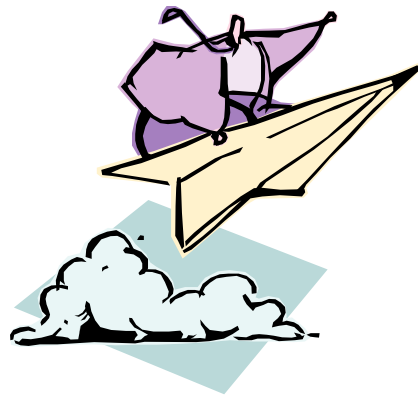
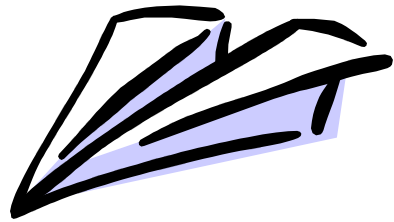


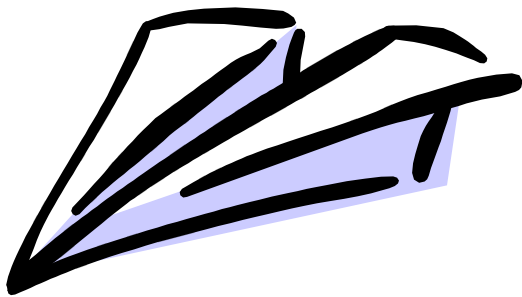
Paper planes



Paper planes

Paper planes are fun to make and fly!

We can use them to find out about flight.



Which flies best?
Which goes the furthest?
Is bigger better?

Forces

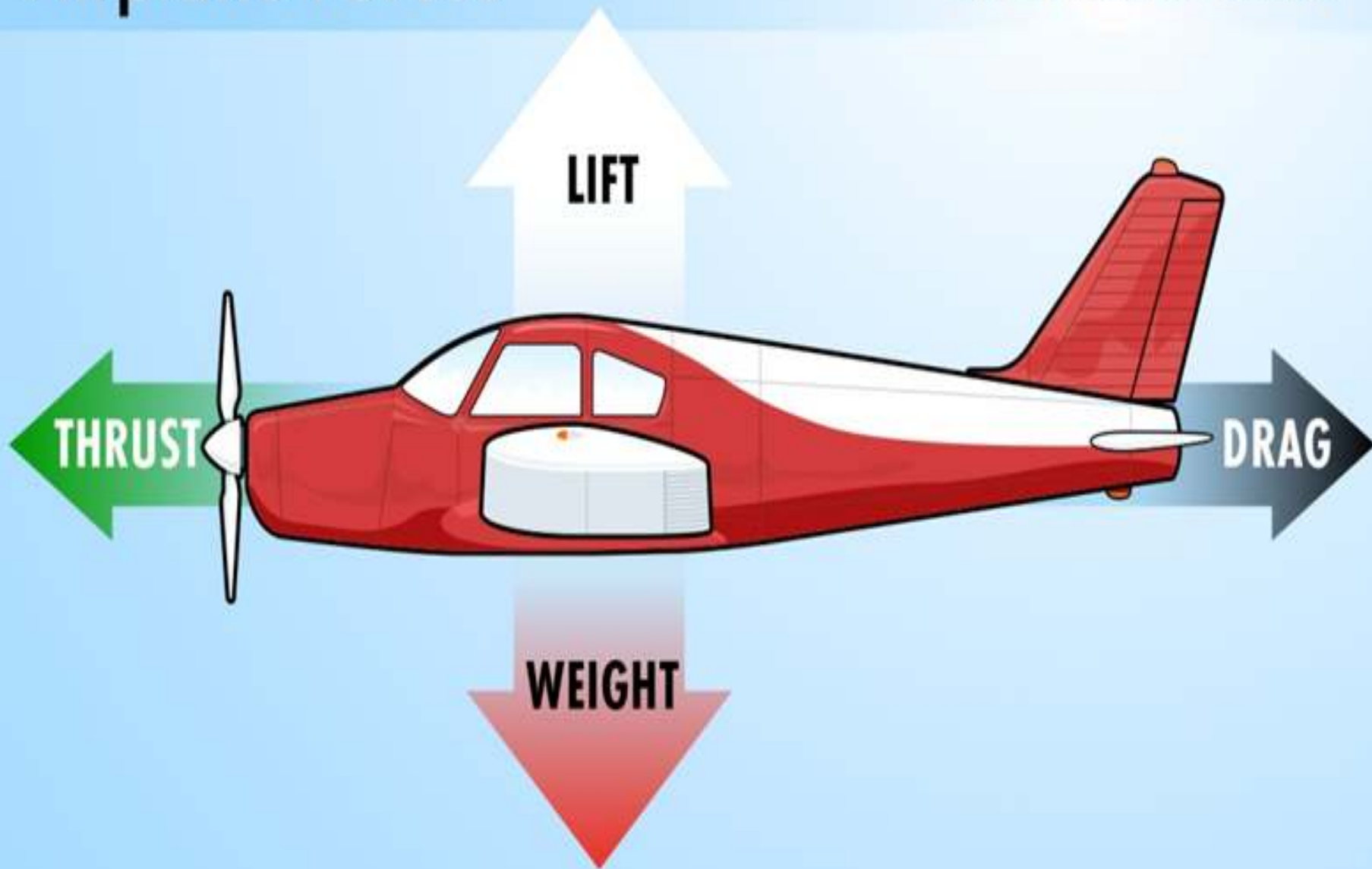
Have you ever thrown a Frisbee®? It flies because of four forces. These same four forces help an airplane fly. The four forces are lift, thrust, drag, and weight. As a Frisbee flies through the air, lift holds it up. You gave the Frisbee thrust with your arm. Drag from the air made the Frisbee slow down. Its weight brings the Frisbee back to Earth again.

Forces

1. **Weight** is the force of gravity. It acts in a downward direction—toward the center of the Earth.
2. **Lift** is the force that acts at a right angle to the direction of motion through the air. Lift is created by differences in air pressure.
3. **Thrust** is the force that propels a flying machine in the direction of motion. Engines produce thrust.
4. **Drag** is the force that acts opposite to the direction of motion. Drag is caused by friction and differences in air pressure.

Airplane Forces

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Paper planes

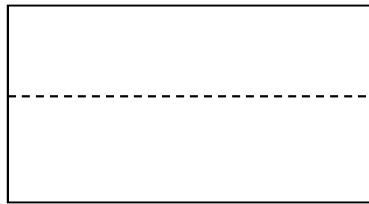
We are going to on an investigation using paper planes.

It is going to be *YOUR* investigation.

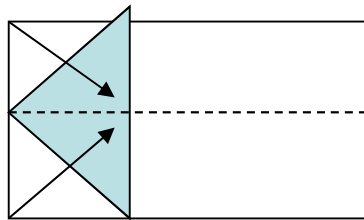
You have to decide which thing you are going to change and test.

Paper planes

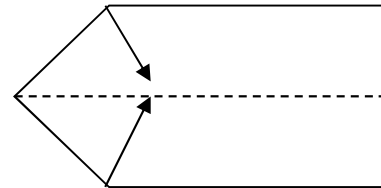
This is my design for a paper plane.



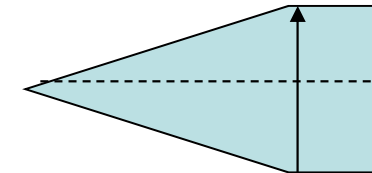
Fold in half
and open up
again



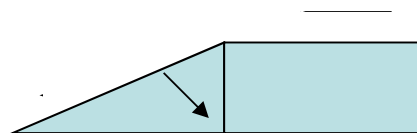
Fold the
corners over



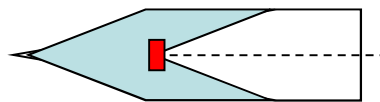
Turn it
over and
fold over
again



Now fold into
half



Fold the
top to the
bottom on
both sides



Open up
and fix
with a bit
of sticky
tape

I used A4 sugar paper

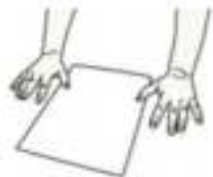
What things could you change?



How to make a Paper Aeroplane



Follow the instructions below to make your own paper aeroplane.
Fold the paper carefully, making sure that the creases are sharp
and your plane is symmetrical.



1



2



3



4



5



6



7



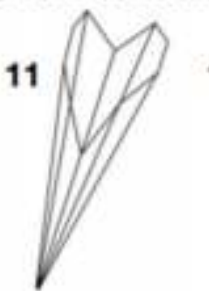
8



9



10



11

12



Could you use a ruler to make sure that the paper folds are straight?

When you fly your aeroplane, think about the forces that are taking place.

How can you improve your plane?

Could you make a different design?



Paper planes - What things could you change?

What will you be testing? (So what will your question be?)

Some ideas to think about

The sort of paper you will use

The sizes of the paper

The design of the plane

Will you measure how straight it flies or how far it goes?



Paper planes

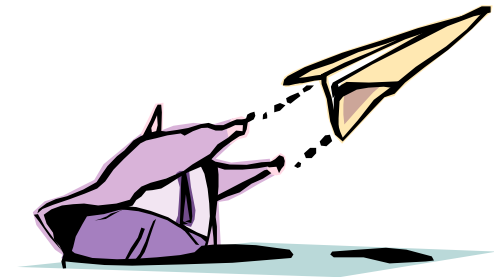
How will you make it a fair test?

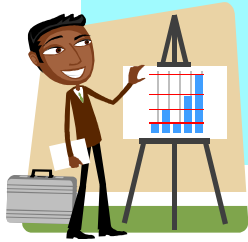
Does it matter how you throw it?

Does it matter how many times you throw it?

Does it matter where you throw it from?

Did you remember that a fair test means you only change one thing!





Paper planes

How will you record your results?



Could you use a table or chart?

Tally, Venn or Carroll?

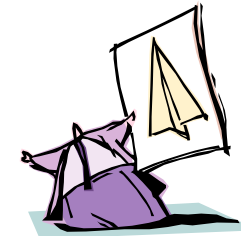
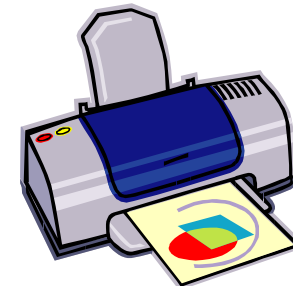
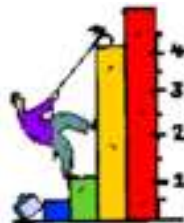


Table and chart?



LO: To complete a scientific investigation.

- Design your own investigation using paper aeroplanes.
- Start with your question – what are you investigating?
- You need to include: a prediction, how you are going to make it a fair test, your results and a conclusion.