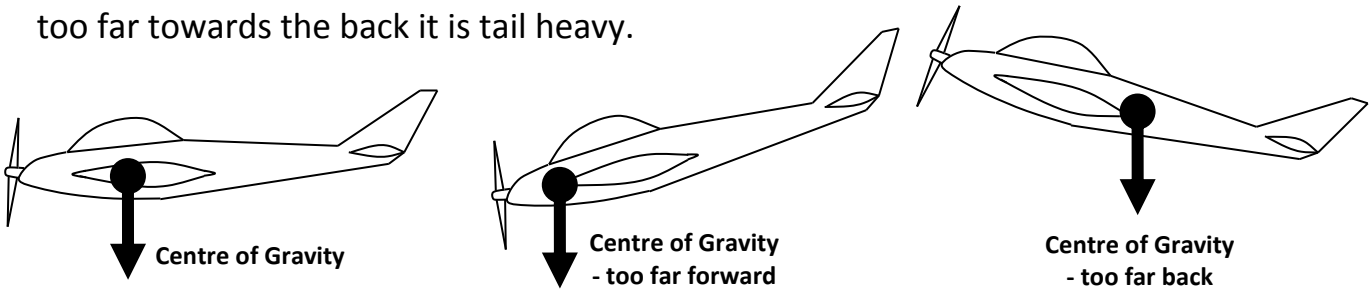
Bathurst Aero Club

Science Week - Weight & Balance

The centre of gravity of an aircraft is the point where it would balance if it could be suspended. If the centre of gravity is too far forward, the aircraft will be nose heavy, if too far towards the back it is tail heavy.



Prior to take-off the pilot must check that the aircraft's centre of gravity is within the recommended limits. If it is outside of the limits the aircraft may not be able to be controlled safely.

The position of the centre of gravity is dependent on:

- The weight of the aircraft and items inside it
- The position of the weights from a fixed point

Depending on how far the weight is located from the fixed point will influence what effect it has on the centre of gravity. For example, in the Bathurst Aero Club Cessna 172 aircraft a heavy bag loaded in the tail storage will have a much greater effect on the centre of gravity than the same object secured in the front passenger seat.

Science Experiment – Aircraft Centre of Gravity, Weight & Balance

1. Balance a piece of cardboard (e.g. from the thin side of a cereal box) on a pencil with flat sides.
2. Add an eraser to one end of the cardboard to represent the aircraft engine.
3. Now balance the cardboard again on the pencil.
   Where is the balance point now? How does it compare to the original balance point?
4. Continue to add items at different positions either side of the balance point and rebalance each time.
   How does the balance point move? Which weights cause the most movements?