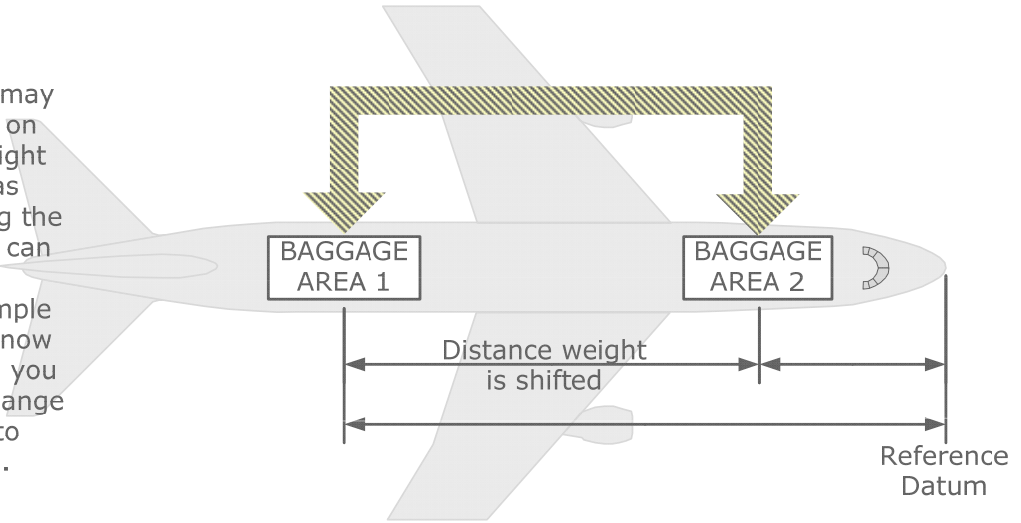


Weight shifting

Weight may be shifted or may have to be shifted around on an aeroplane after the weight and balance calculation has been completed. Re-doing the entire weight and balance can be a chore for even small aeroplanes. There is a simple formula which you must know for the exam which allows you to easily determine the change in the CG without having to redo the entire calculation.



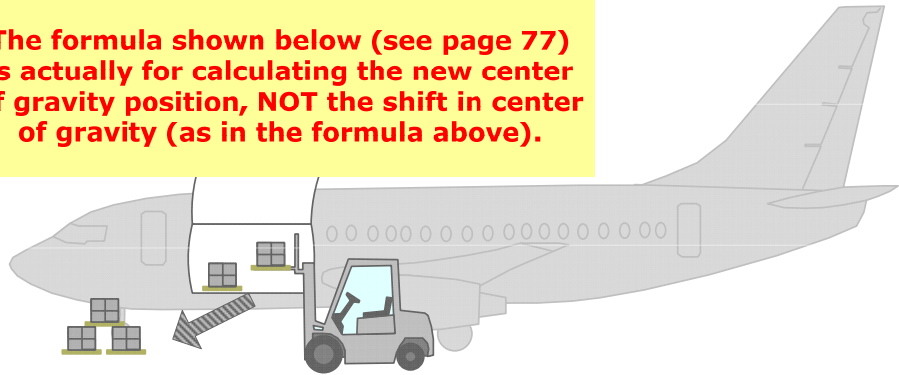
$$\text{CG shift} = \frac{\text{Distance weight is shifted}}{\text{Total weight of the aircraft}} \times \text{Weight shifted}$$

You must know both these formulae!

Weight addition or removal

Cargo can be added or removed and extra passengers can arrive at the last moment. Re-doing the entire weight and balance can be a chore for even small aeroplanes. There is a simple formula which you must know for the exam which allows you to easily determine the change in the CG without having to redo the entire calculation.

The formula shown below (see page 77) is actually for calculating the new center of gravity position, NOT the shift in center of gravity (as in the formula above).



$$\text{New CG position} = \frac{\text{Original CG arm} \times \text{Original total weight} - \text{Weight removed} \times \text{CG of the weight removed}}{\text{New total weight of the aircraft}}$$