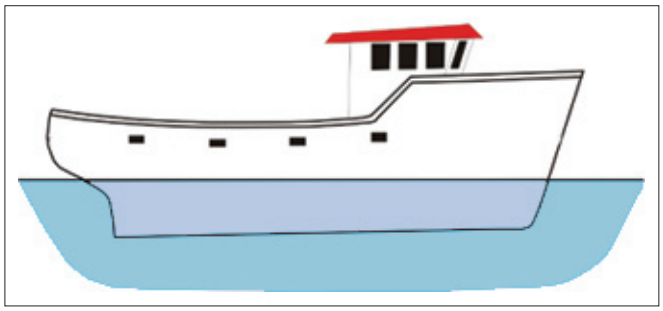
2. Definitions

DISPLACEMENT

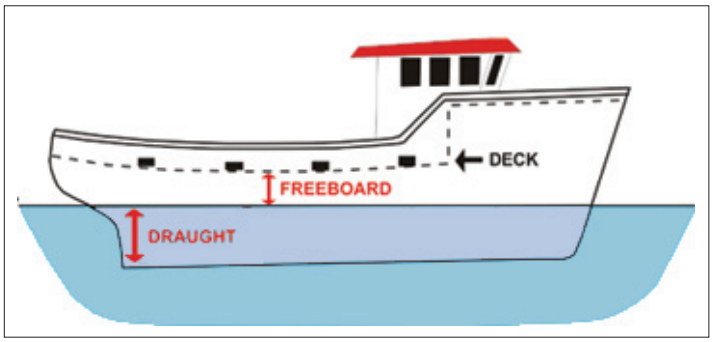
Archimedes principle: Every floating body displaces its own weight of the liquid in which it floats.



For a vessel to float freely in water, the weight of the vessel must be equal to the weight of the volume of water it displaces.

Displacement is the volume of water the vessel displaces.

DRAUGHT

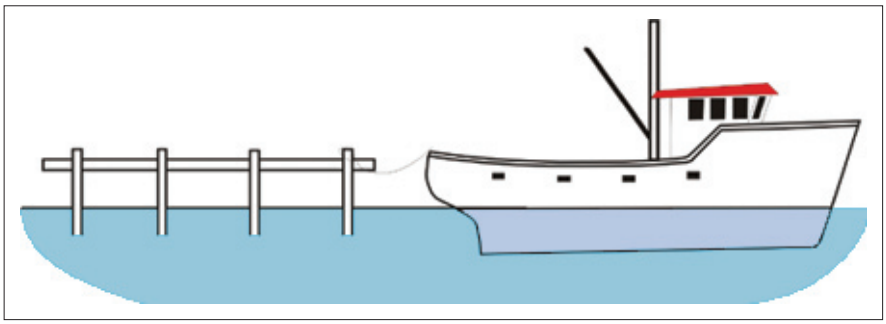


Draught relates to the depth of water required for a vessel to float freely and is measured vertically from the underneath side of the keel to the waterline.

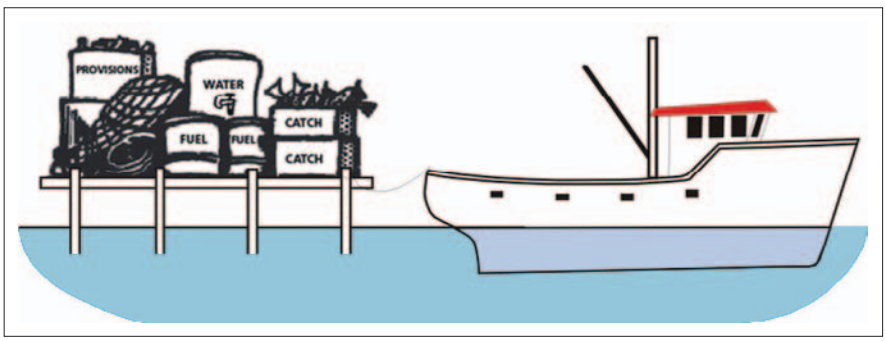
FREEBOARD

Freeboard is the vertical distance from the top of the lowest point of the working deck at the side of the vessel to the waterline.

LIGHT SHIP WEIGHT

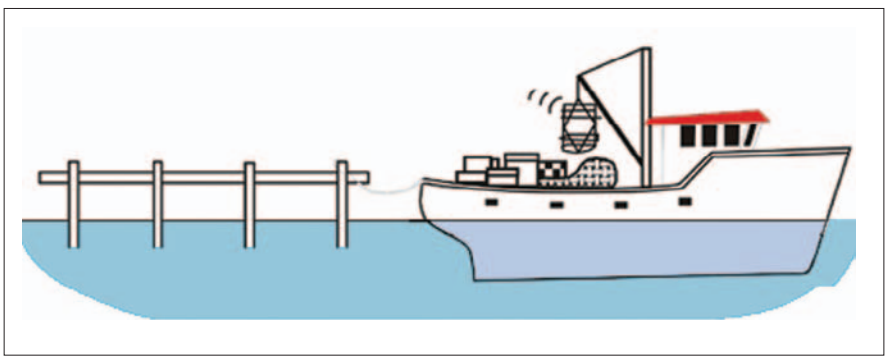


The light ship weight is the actual weight of a vessel when complete and ready for service but empty.



DEADWEIGHT

Deadweight is the actual amount of weight in tonnes that a vessel can carry when loaded to the maximum permissible draught (includes fuel, fresh water, gear supplies, catch and crew).



DISPLACEMENT MASS

Displacement mass is the total weight of the vessel, i.e.:

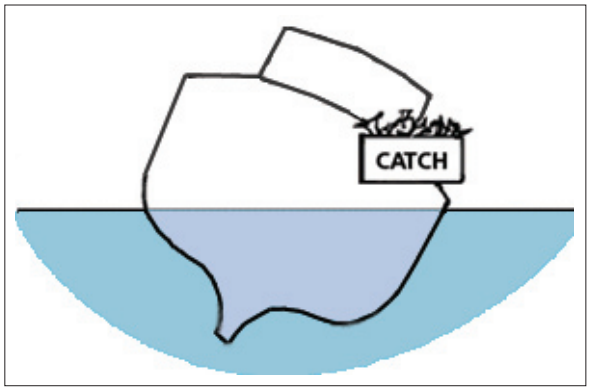
Lightship weight + deadweight = displacement mass

LIST

A vessel is said to be listed when it is inclined by forces within the vessel, e.g. movement of weight within the vessel.

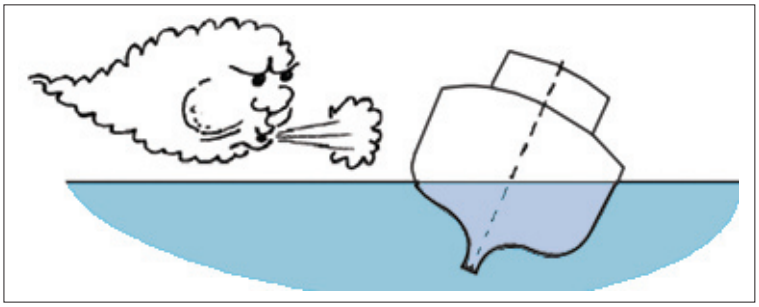
A list reduces the stability of the vessel.

When a list is corrected by increasing the displacement mass, the additional weight should be placed as low as possible in the vessel.



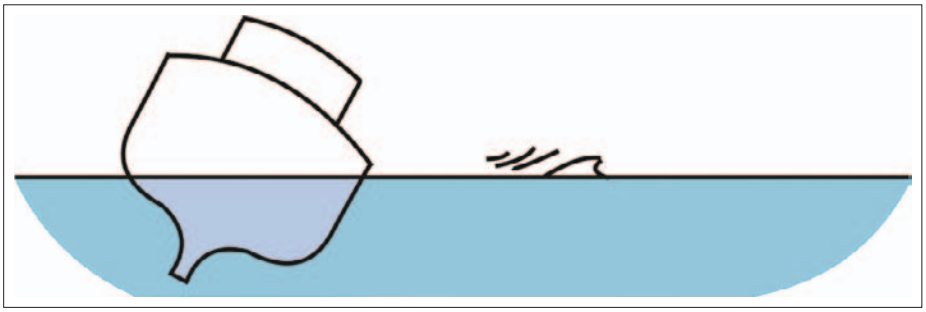
HEEL

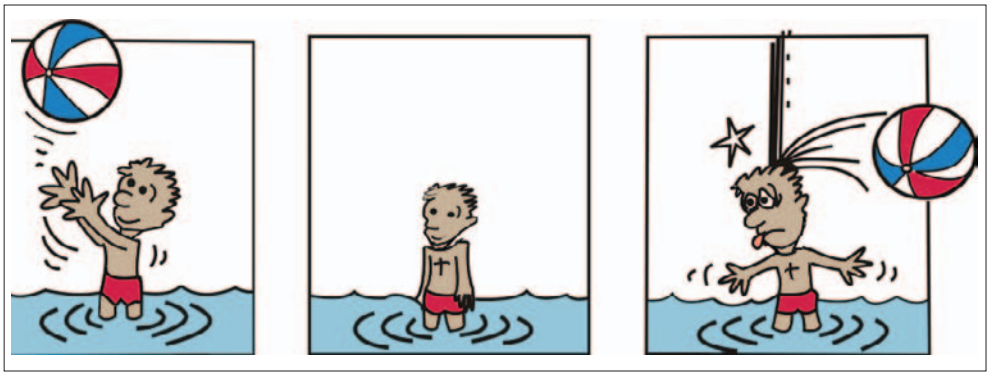
A vessel is said to be heeled when it is inclined by an external force, e.g. from waves or the wind.



LOLL

The term "loll" describes the state of a vessel which is unstable when upright and which floats at an angle from the upright to one side or the other. If an external force, e.g. a wave or wind, changes this state, the vessel will float at the same angle to the other side. Loll is quite different from list or heel as it is caused by different circumstances and requires different counter-measures to correct. It is, therefore, most important that fishermen are able to distinguish between these terms. (See also the section on unstable equilibrium on page 10.)

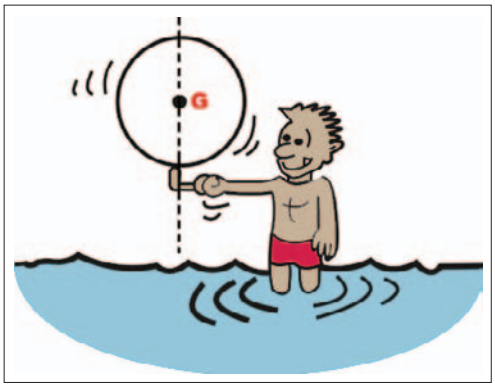




GRAVITY

"What goes up must come down".

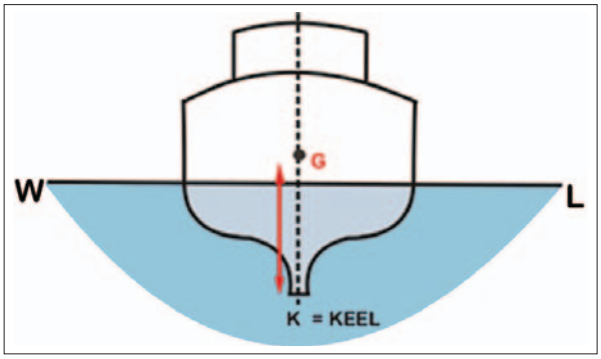
Throw a ball in the air. It soon comes back down in response to the earth's gravitational pull.



CENTRE OF GRAVITY

Centre of gravity is the point (**G**) at which the whole weight of a body can be said to act vertically downwards.

The centre of gravity depends upon weight distribution within the vessel and its position may be found by carrying out an inclining test or by calculation. The position of the centre of gravity (**G**) is measured vertically from a reference point, usually the keel of the vessel (**K**). This distance is called **KG**.



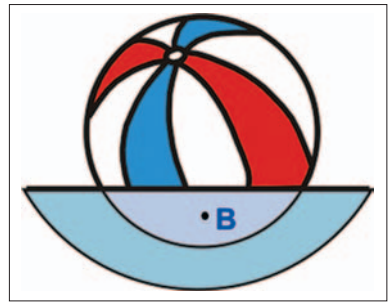
BUOYANCY

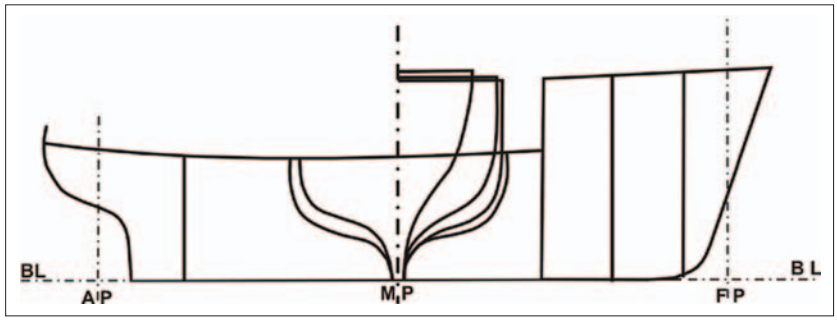
If a ball is pushed underwater it will soon bob up again. This force is called buoyancy.

When a vessel floats freely, its buoyancy is equal to its displacement mass (refer to Archimedes principle on page 3).

CENTRE OF BUOYANCY

The centre of buoyancy (**B**) is the point through which the force of buoyancy is considered to act vertically upwards. It is located at the geometric centre of the underwater section of the vessel.





When the shape of the hull of a vessel is known, the designer, often a naval architect, can calculate the centre of buoyancy (**B**) for the various combinations of displacement, trim and heel.