



UNIT I

**SHIP SIZE**



# **Archimedes' principle**

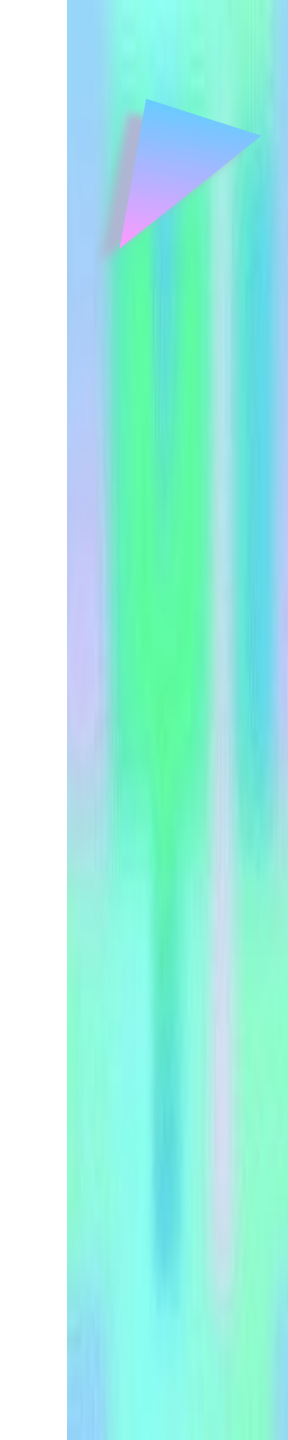
**A ship fully afloat  
displaces water equal to  
its own weight.**

**For that reason a ship's  
weight is expressed in  
terms of displacement.**

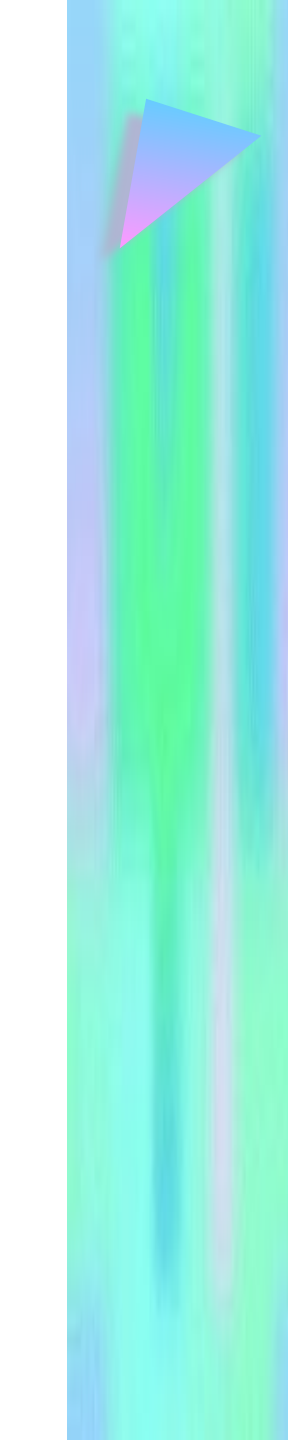


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Displacement is defined  
as  
**light displacement**  
and  
**load displacement**

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**Light displacement** is the weight of liquid displaced by a vessel when floating with no cargo, fuel, stores or any other weights not forming part of the hull or machinery or fixed equipment of vessel.

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Load displacement is the weight of liquid displaced by a vessel when floating with cargo, fuel, stores any other weights.



# DEADWEIGHT

The difference between the load displacement and the light displacement is the **deadweight**.

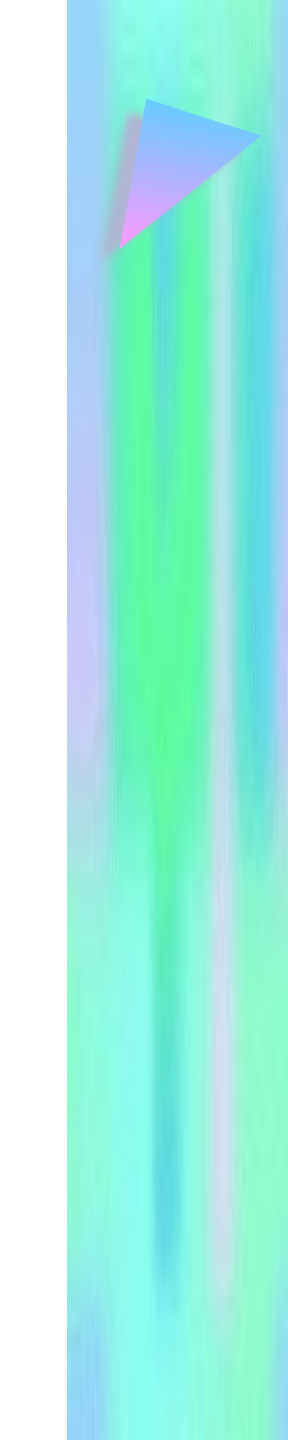
Deadweight (DWT) is the cargo-carrying capacity of the vessel



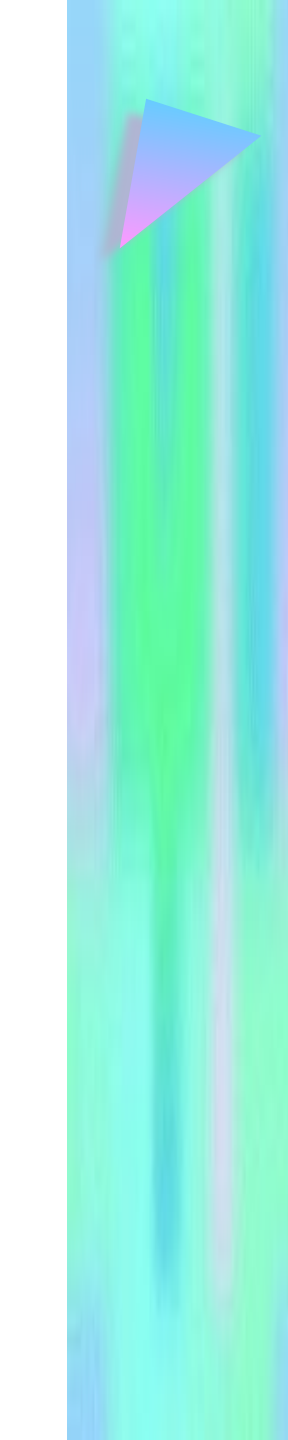
# TONNAGE

**Tonnage** is a measurement of the enclosed volume of a ship used to describe her cargo capacity and does not indicate displacement





**Gross tonnage** is the volumetric capacity of the spaces in the ship's hull and of the enclosed spaces above the deck available for cargo, stores, fuel, passengers, and crew..

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**Net tonnage** is the moulded volume of cargo spaces, the number of passengers carried, moulded depth, and service draught; net tonnage gives an indication of the ship's earning capacity.



# ANSWER THE QUESTIONS

1-What do you understand by Archimedes' principle?



**2-What is light displacement?**



**3-Is tonnage and  
displacement the same?**



A- Fill in the blanks with appropriate adjectives given below.

*different / salt / even / enclosed /  
international / similar*

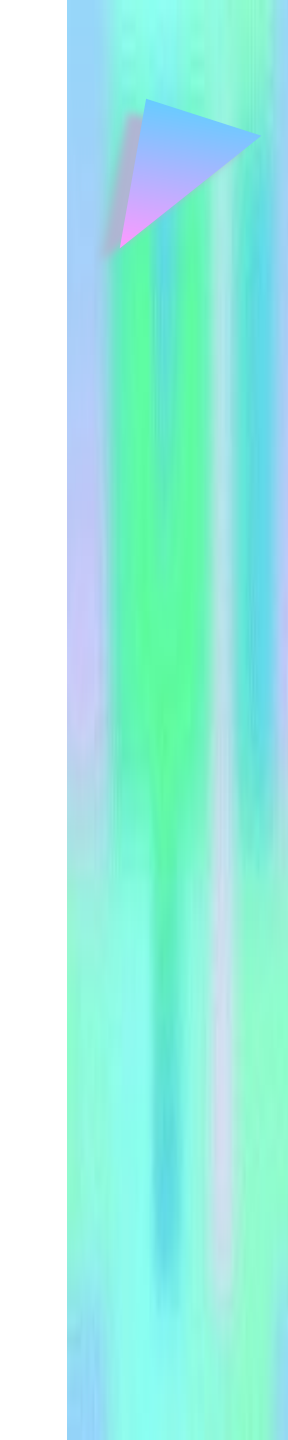
- 1-The dimensions of containers and size of ships are regulated by .....rules.
- 2-The draught change whether the ship in fresh water or .....water.
- 3-If the ship has no trim, this means the ship is on an .....keel.
- 4-Displacement and tonnage are ..... terms.
- 5-Some .....spaces of a ship must be protected against fire.



**B-Fill in the blanks with suitable prepositions.**

*At(2)-on(2)-in(4)-across-through(2)-into(2)-onto-from-to*

- 1- Egyptian ships traded ..... the Mediterranean.
- 2- Steamships travelled ..... Europe ..... China by passing ..... Suez Canal.
- 3- Platforms were built for defence ..... the fore and aft ends.
- 4- Diesel engines were first used ..... vessels .....1912.
- 5- Ships are built ..... shipyards.

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- 6- ..... the past, drawings were prepared for every part of the ship ..... a mould loft.**
  - 7- The design is passed ..... numerically controlled cutting machines.**
  - 8- The design of ship's structure is translated ..... digital signals.**
  - 9- Ships are assembled ..... the sloping ways .**
  - 10- The cargo is loaded or unloaded ..... hatches by derricks**
  - 11- The people on board are accommodated ..... cabins.**
  - 12 The liquid petroleum products are pumped ..... the tanks.**





“The weight of water displaced by a ship when floating with no cargo, stores, fuel etc.”

**a. gross tonnage**

**b. load displacement**

**c. light displacement**

**d. net tonnage**

**e. tare**



“The weight of water displaced by a ship when floating with no cargo, stores, fuel etc.”

**c. light displacement**