



PHYSICS

BOOKS - NAVNEET PUBLICATION

FORCE AND PRESSURE

Question Bank

1. What is a force ?



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2. Rewrite the sentence after filling the blanks :

The tendency of an object to remain in its existing state is called its ----



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3. Rewrite the sentence after filling the blanks :

Pressure = $\frac{f \text{ or } ce}{\text{-----}}$



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4. Rewrite the sentence after filling the blanks

:

$$1\text{bar} = \text{-----} \frac{N}{m^2}.$$



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5. Rewrite the sentence after filling the blanks :

1 atmosphere = ----- Pa.



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6. Rewrite the sentence after filling the blanks :

The SI unit of density is ----.



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7. Write proper word in the blank space :

The SI unit of force is the ----.



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8. Write proper word in the blank space :

The air pressure on our body is equal to the ----
- pressure.



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9. Write proper word in the blank space :

For a given object, the buoyant force in liquids
of different ----is ----



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10. Write proper word in the blank space :

The SI unit of pressure is -----.



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11. Write proper word in the blank space :

According to Archimedes' principle the magnitude of the force of buoyancy acting on a body is -----.



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12. Write proper word in the blank space :

The pascal is the unit of ----.



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13. Write proper word in the blank space :

Keeping the surface area constant, if the applied force is doubled, the pressure ----.



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14. State whether the following statement are

True or False :

The density of water is $1000g / cm^3$.



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15. State whether the following statement are

True or False :

Force and weight have the same units.



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16. State whether the following statement are True or False :

Atmospheric pressure at sea level is about $10^5 \frac{\text{dyne}}{\text{cm}^2}$



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17. State whether the following statement are True or False :

The buoyant force due to a liquid is proportional to the acceleration due to gravity.



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18. State whether the following statement are

True or False :

Atmospheric pressure increases with altitude.



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19. State whether the following statement are

True or False :

Pressure due to a given force is directly

proportional to the area on which the force acts.



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20. State whether the following statement are True or False :

When a body is completely immersed in a liquid, the buoyant force is acting on it due to the liquid is proportional to the volume of the liquid displaced by the body.



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21. State whether the following statement are

True or False :

The density of a material is useful to determine its purity.



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22. State whether the following statement are

True or False :

One tends to slip over a banana peel on the

street and one can slip due to mud are events that occur due to reduced friction.



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23. State whether the following statement are

True or False :

Frictional force is electromagnetic in origin.



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24. Identify the odd term :

Density, Pressure exerted by a gas, Mass, Force.



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25. Identify the odd term :

Lactometer, Hydrometer, Voltmeter,
Submarine.



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26. Make a match :

Group 'A'	Group 'B'
(1) Fluid	(a) Higher pressure
(2) Blunt knife	(b) Atmospheric pressure
(3) Sharp needle	(c) Specific gravity
(4) Relative density	(d) Lower pressure
(5) Hectopascal	(e) Same pressure in all directions



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27. Complete the following table :

Mass (kg)	Volume (m ³)	Density (kg/m ³)
350	175	-----
-----	190	4



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28. Complete the following table :

Density of a metal (kg/m ³)	Density of water (kg/m ³)	Relative density
-----	10 ³	5
8.5 × 10 ³	10 ³	-----



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29. Complete the following table :

Weight (N)	Area (m ²)	Pressure (N.m ⁻²)
-----	0.04	20000
1500	500	-----



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30. Rewrite the following table in such a way that Column 2 and Column 3 will match with

Column 1 :

Column 1	Column 2	Column 3
(1) Pressure	Mass / volume	Specific gravity
(2) Density	Force / area	Decreases with increase in height above the sea level
(3) Atmos- pheric pressure	No unit	Useful to determine the purity of a substance
(4) Relative density	The pascal	Decreases with increase in area



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31. Answer the following questions:

Which of the following has more inertia? A ten-rupee coin and a one-rupee coin.



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32. Answer the following question on one sentence :

Name the physical quantity expressed in pascal.



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33. Answer the following question on one sentence :

State the SI unit of pressure.



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34. Answer the following question on one sentence :

Name the property of a liquid due to which it exerts an upward force on an object immersed in it.



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35. Answer the following question on one sentence :

Name the principle used in designing ships and submarines.



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36. Answer the following question on one sentence :

What is specific gravity ?



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37. Answer the following question on one sentence :

State any one factor on which the pressure exerted by a liquid at a point inside the liquid depends.



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38. Answer the following question on one sentence :

state any one factor on which the buoyant force due to a liquid depends.



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39. Answer the following question on one sentence :

Name the device used to determine the purity of a sample of milk.





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40. Answer the following question on one sentence :

Name the device used to determine the density of a liquid.



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41. Answer the following question on one sentence :

Name two instruments whose working is based on Archimedes' principle.



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42. Answer the following question :

Give three examples to show that a force acts on two bodies through an interaction between them.



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43. Answer the following question :

What is a contact force ? Give one example.



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44. Answer the following question :

What is a non contact force ? Give one example.



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45. Answer the following question :

In the following example, state whether the force is a contact force or non contact force :
a reluctant dog is being pulled by his master



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46. Answer the following question :

In the following example, state whether the force is a contact force or non contact force :
a boy playing football is kicking the ball away.





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47. Answer the following question :

In the following example, state whether the force is a contact force or non contact force :

when iron nails are brought near a magnet, they are attracted to the poles of the magnet and stick to the magnet



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48. Answer the following question :

In the following example, state whether the force is a contact force or non contact force :
a coconut is falling from the coconut tree.



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49. Answer the following question :

In the following example, state whether the force is a contact force or non contact force :
when a comb is rubbed against hair, small

pieces of paper kept on a table get attracted to the comb.



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50. Answer the following question :

In the following example, state whether the force is a contact force or non contact force :
when brakes are applied to a moving bicycle, it stops after some time



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51. Answer the following question :

Give one example in which frictional force is useful.



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52. Answer the following question :

What are balanced forces ?



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53. Answer the following questions:

Explain the term unbalanced force.



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54. Answer the following questions:

Force has magnitude as well as direction.



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55. Answer the following questions:

Force is a vector quantity. Explain.



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56. Answer the following questions:

Explain the term balanced forces.



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57. Answer the following questions:

Explain the term unbalanced force.



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58. Answer the following questions:

What will happen if the force is removed completely when an object acquires a certain speed?



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59. Answer the following questions:

What are the three types of inertia?



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60. Answer the following questions:

Define inertia of rest. Give two examples of inertia of rest.



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61. Answer the following questions:

Define inertia of motion. Give two examples of inertia of motion.



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62. Answer the following questions:

Define inertia of direction. Give two examples of inertia of direction.



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63. Answer the following questions:

why do we fall sideways when we are sitting in a bus and it takes a sharp turn?



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64. Answer the following questions:

What happens when you shake a wet piece of cloth? Explain your observation.



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65. Answer the following questions:

If brakes are suddenly applied to a moving car, the passengers in the car are pushed in the forward direction. Explain why.



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66. Answer the following question :

Why does it happen ? If a stationary bus suddenly speeds up, passengers are thrown in the backward direction.



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67. Answer the following questions:

A person alighting from a moving train is likely to fall in the direction of motion of the train.

Explain why.



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68. Define pressure.



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69. Why does a knife have a sharp edge and a needle has a sharp tip ?



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70. State the formula for pressure. Hence, determine the unit of pressure.



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71. State the CGS unit of pressure. State the relation between the SI and CGS units of

pressure.



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72. State the factors on which pressure depends.



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73. Explain with a suitable example that pressure varies inversely as the area of to

surface on which the force is applied, if the force remains constant.



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74. With neat diagram, describe an experiment to show that pressure increase if the surface area is decreased, keeping the applied force the same.



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75. State the unit for pressure used in atmospheric science. How is it related to the unit pascal ?



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76. Why do the blades of a pair of scissors have edges ?



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77. Why does a needle have a sharp point ?



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78. Why do school bags have broad shoulder traps ?



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79. How will the pressure change if the area is doubled keeping the force the same ?



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80. Write proper word in the blank space :

Keeping the surface area constant, if the applied force is doubled, the pressure ----.



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81. Why do the load carrying heavy vehicles have large number of wheels ?



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82. State the characteristics of the pressure due to a liquid (or a fluid in general).



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83. Write the short note on the pressure due to a liquid (a liquid in general).



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84. Why is the wall of a dam made stronger and thicker at the base than at the top ?



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85. Why does this happen ? The wall of a dam is broad at its base.



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86. Give two examples to show that air exerts equal pressure in all directions.



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87. What is a fluid ? Give two examples.



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88. Take two rubber balloons. Fill one with water and blow air into the other. Now prick

both balloons with a pin. What do you observe ?



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89. State the characteristics of the pressure due to a liquid (or a fluid in general).



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90. Write a short note on pressure exerted by a fluid.



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91. Take an empty can. Pour small quantity of water in it. Boil this water for a few minutes until the steam has driven out most of the air. Now close the can with the stopper tightly. Allow it to cool by pouring cold water over it. What do you observe ?



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92. What atmospheric pressure ?



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93. State the relation between 1 atmosphere and the pascal.



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94. Why some people feel their ears popping at the top of a mountain.



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95. Why some people feel breathless as they climb higher and higher on a mountain.



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96. We can enjoy a cold-drink or fruit juice with the help of a straw but can we imagine drinking a cold-drinking or fruit juice on the moon using a straw ?





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97. People are often advised not to carry fountain pens while travelling by air.



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98. Why do some people have earache when they travel by an aeroplane ?



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99. Explain why a person may bleed from the nose when at a great height above the sea level.



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100. How much pressure do we carry on our heads ? Why don't we feel it ?



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101. When a rubber sucker is pressed onto a flat glass surface, it sticks tightly on the surface. Why ? You need a large force to separate it from the surface. Why ?



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102. Describe a simple experiment to demonstrate atmospheric pressure.



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103. Explain the working of an ink dropper.



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104. Why is the opening of a dropper very narrow ?



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105. What is the characteristics of the cap of eye drop bottles ?





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106. Explain the working of a syringe used by children when they play with coloured water.



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107. How does the doctor's syringe work ?



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108. Explain the origin of pressure due to a gas enclosed in a container.



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109. Define buoyant force.



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110. State the factors on which the buoyant force depends.



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111. A lemon sinks in a glass filled with water but it floats when we stir in two spoons of salt in the water. Explain why.



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112. State Archimedes' principle.



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113. Write proper word in the blank space :

According to Archimedes' principle the magnitude of the force of buoyancy acting on a body is ----.



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114. Using the formula for the magnitude of the buoyant force, state under what conditions the body will sink in the fluid.



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115. Using the formula for the magnitude of the buoyant force, state under what conditions the body will float in the fluid.



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116. Using the formula for the magnitude of the buoyant force, state under what conditions the body will remain in equilibrium anywhere within the fluid.



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117. State the applications of Archimedes' principle.



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118. If a spring balance is used to weigh a body, will the weight of the body be the same in vacuum and air ? Explain why



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119. What is density of a substance ? Obtain its SI unit.



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120. What is relative density of a substance ?



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121. A plastic cube is released in water. Will it sink or come to the surface of water ?



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122. Why does it happen ? A ship dip into a larger depth in fresh water as compared to marine water.



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123. A piece of wood floats both in water and kerosine. In which liquid does it sink more during floating ? Why ?



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124. State whether the body will float or sink in a liquid if the density of the body is greater than that of the liquid.



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125. State whether the body will float or sink in a liquid if the density of the body is less than that of the liquid.



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126. State whether the body will float or sink in a liquid if the density of the body is equal to that of the liquid.



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127. If the relative density of a body is greater than 1, will it float in water ?



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128. A glass of water has an ice cube floating in water. The water level just touches the rim of the glass. Will the water overflow when the ice melts ? Give the reason.



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129. A plastic cube is released in water. Will it sink or come to the surface of water ?



Watch Video Solution

130. Write short note :

Buoyant force :



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131. State the applications of Archimedes' principle.



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132. Give scientific reason :

The tiles are placed over a slushy patch of ground to help cross it.



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133. Give scientific reason :

Drawing pins have flattened heads.



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134. Give scientific reason :

An iron nail sinks in water but a ship made from iron floats on water.



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135. Give scientific reason :

A piece of iron sinks in water but floats on mercury.



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136. Give scientific reason :

A sheet of metal that sinks in water can float if shaped like a pan.



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137. Solve the following example :

Calculate the pressure exerted by the wooden block when it is kept in the vertical position.

given : The length of the wooden block is 80 cm, the breadth is 50 cm, the thickness is 20

cm and the weight is 500 N.



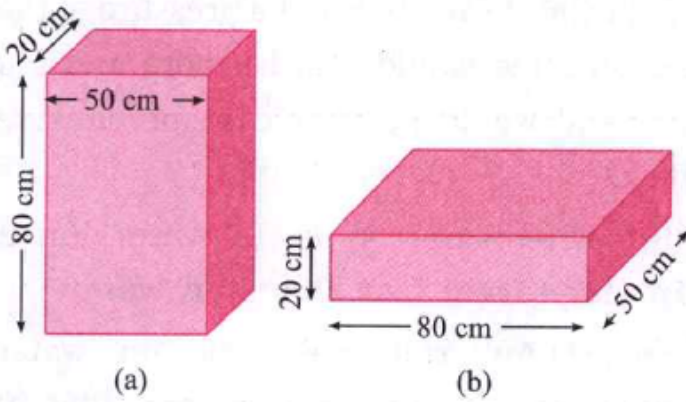
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138. Solve the following example :

Calculate the pressure when the wooden block is kept in the horizontal position with its surface $80\text{ cm} \times 50\text{ cm}$ touching the floor.

given : The length of the wooden block is 80 cm, the breadth is 50 cm, the thickness is 20

cm and the weight is 500 N.



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139. Solve the following example :

Measure the length, breadth, height and mass of a rectangular tiffin box. Find the weight of

the box and calculate the pressure in two different positions.



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140. Solve the following example :

A force of 1000N is applied over an area's $50\text{cm} \times 20\text{cm}$ Find the corresponding pressure.



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141. Solve the following example :

The density of a metal is $1.8 \times 10^3 \text{ kg/m}^3$.

Find the relative density of the metal.



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142. Solve the following example :

The metal block has dimensions

$10\text{cm} \times 5\text{cm} \times 2\text{cm}$ and the density of to

metal is $8 \times 10^3 \text{ kg/m}^3$. It is kept on a table

with the face $10\text{cm} \times 5\text{cm}$ in contact with the

table. Find the force and pressure exerted by the block on the table. ($g = 9.8m / s^2$)



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143. Solve the following example :

A body of volume $100cm^3$ is immersed completely in water. Find the weight of the water displaced by the body.

$$[g = 9.8m / s^2, \rho(\text{water}) = 10^3kg / m^3]$$



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144. Solve the following example :

A body of mass 200 g and volume 50cm^3 is put in a bucket containing water. Will it float or sink ?



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145. Solve the following example :

A body of mass 200 g and volume 400cm^3 is put in a bucket containing water. Will it float or sink ?



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146. Solve the following example :

The volume of an object is 20cm^3 and the mass is 50 g. The density of water is 1g/cm^3 . Will the object float on water or sink in water ?



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147. Solve the following example :

The volume of a plastic covered sealed box is

350cm^3 and the box has a mass 500 g Will the box float on water or sink in water ? What will be the mass of water displaced by the box ?



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148. Solve the following example :

The mass of a tile is 500 g. If the density of the tile is $2.5\text{g}/\text{cm}^3$. What will be the weight of the tile when it is completely immersed in water ?

($g = 9.8\text{ m//s}^2$, $\rho(\text{water}) = 1000\text{ kg//m}^3$)`



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149. Calculate the relative density of a metal having density $7.5g/cm^3$



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150. Find the density of steel if its relative density is 8 and the density of water is $10^3kg/m^3$



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151. A body has mass 200 g and volume 100cm^3 . Find its density and relative density.



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152. If the relative density of a material is 2.5, find its density.



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153. a force of 100 N is applied on an area $40\text{cm} \times 25\text{cm}$. Find the corresponding pressure.



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154. If the pressure exerted on an area $10\text{cm} \times 10\text{cm}$ is 1000"dynes"/cm^2 , find the applied force.



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155. A metal block of mass 10 kg is kept on a table. If the contact surface area is 100cm^2 . Find the pressure on the table.



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156. A body of volume 50cm^3 is immersed completely in water then the mass of water displaced by the body will be



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157. A block of mass 100 g and volume 20cm^3 is put in a bucket filled with water. Will it float or sink ?



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158. Will a block of mass 100 g and volume 400cm^3 float or sink in water ?



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159. The volume of a cube is 125cm^3 Its mass is 250 g. It is put in a tub containing water. Will it float or sink ?



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