

## HOTS

1. Two persons are applying forces on two opposite sides of a moving cart .The cart still moves with the same speed in the same direction. What do you infer about the magnitudes and direction of the forces applied ?
2. Suppose you walk barefoot on sand, and next , walk on sand with a pair of high-heeled shoes,in which case do you think your footprints will be deeper ? Why ?  
(Hint : Think of the area of contact in the two cases.)
3. Air planes have pressurized cabins. Why ? (Hint: Think of the atmospheric pressure at high altitudes.)
4. Why do sea divers wear specially designed suits ?  
(Hint : Think of tyre pressure. )
- 5 . An archer shoots an arrow in the air horizontally .However, after moving some distance , the arrow falls to the ground . Name the initial force that sets an arrow to the motion . Explain why the arrow ultimately falls down to the ground ?
6. Is the gravity a property of earth only?
7. Two rods A and B , having same weight and equal length have different thickness. Rod A is thinner while rod B is thicker. They are held vertically on the surface of sand. Which one of them will sink more ? Why ?
8. On Rajika's birthday her brother Tejas was taken the charge to amuse the children with some science funs. Tejas stacked balloons to the wall by just rubbing them in his clothes. He bent the water stream from a tap without touching it. He did so by bringing a big balloon near to the flowing water. All children were very happy on seeing this science fun. Everybody praised Tejas.
  - (a) How do balloons stick to the walls ?
  - (b) How Tejas bent the water stream by bringing a big balloon near it and without touching it ?
  - (c) What values of Tejas shown here ?
9. Is it difficult to cut a cloth using a pair of scissors with blunt heads . Explain.
10. We observe that the wheels of buses and trucks are heavier than the wheels of car or scooters. Why?
11. In walking the pressure on the ground is more as compared to that in standing on the ground . Explain this statement.
12. Derive the relation between S.I and CGS units of force.
13. We know that there is a huge amount of atmospheric pressure on us. But we do not experience its effect . Why ?

14. A duster of mass 10 g is placed on a table. Find the thrust exerted by the duster on the table . ( Take the acceleration due to gravity as 10 meter per second square . )

15. Women generally weight less than men. The footprints of women wearing pointed heels are, however, deeper than those of a man wearing fiat shoes . Explain.

16. Who exerts more pressure? (a) A girl of 50 kg wearing heels with an area of cross section 1sq.cm. (b) An elephant of 4000 kg with foot area of each 250sq.cm.

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