Class 8 Science Chapter 8 Important Questions

Class 8 Science Chapter 8 Important Questions Set – 1

What do you mean by “force”? Explain with few examples.

The force is responsible for changing the state of motion of objects. A moving object like a ball is either made to move faster or slower or its direction of motion is changed when force is applied.
Forces are used in our everyday actions like pushing, pulling, lifting, stretching, twisting and pressing. For example, a force is used when we push or kick a football, a force is used when we pull a door, a force is used when we lift a box from the floor, a force is used when we stretch a rubber band, a force is also used when we twist a wet cloth to squeeze out water. Even the roofs of some huts fly away during a storm because the force of strong winds pushes them away. Each of these actions usually results in some kind of change in the motion of an object.

What do mean by “pressure”?

The force acting on a unit area of a surface is called pressure. It is especially true for those forces which act perpendicular to the surface on which the pressure is to be computed.

What do mean by “pressure”?

If we push hard on a piece of wood with our thumb, the thumb does not go into the wood. But if we push a drawing pin into the wood with the same force of our thumb, the drawing pin goes into the wood. This can be explained as, our thumb does not go into the wood because the force of thumb is falling on a large area of the wood due to which the “force per unit area” or pressure on the wood is small. The drawing pin goes into the wood because due to the sharp tip of the drawing pin, the force of thumb is falling on the very small area of the wood. Due to which the “force per unit area” or pressure on the wood becomes very large. It is clear from this example that pressure is the force acting on a unit area of the object.

“Force – a push or a pull”. Justify your answer.
Actions like opening, shutting, kicking, pushing, pulling etc., are often used to describe certain tasks. Opening or shutting a door, drawing a bucket of water from a well, a football player taking a penalty kick, a cricket ball hit by a batsman, moving a loaded cart,

Opening a drawer. Each of these actions usually results in some kind of change in the motion of an object. In science, a push or a pull on an object is called a force. Thus, we can say that the motion imparted to objects was due to the action of a force.

"Forces are due to an interaction". Comment on this.

An interaction of one object with another object result in a force between the two objects. In other words, a force arises due to the interaction between two objects. At least two objects must be interacting with each other for a force to come into play or for showing the effect. If there is no interaction between two objects, no force can show its effect. Suppose a man is standing behind a stationary car. Suppose the man now begins to push the car, that is, he applies a force on it. The car may begin to move in the direction of the applied force. Note that the man has to push the car to make it move. Here, the objects or things which are interacting for the to come into play and show its effect are the "man" and the "car". In the above example of a stationary car and man only man is capable of applying force to the stationary car.
If both the objects are capable to applying force on each other, then the interaction between them can be of "pushing" or "pulling". For example, the two girls are interacting and applying force on each other by pushing each other. From these examples, we can infer that at least two objects must interact for a force to come into play. Thus, an interaction of one object with another object results in a force between the two objects.

Class 8 Science Chapter 8 Important Questions Set – 2

What do you mean by "state of motion"?

The state of motion of an object is described by its speed and the direction of motion. The state of rest is considered to be the state of zero speed. An object may be at rest or in motion; both are its states of motion.

Can you explain, why shoulder bags are provided with broad straps and not thin strap?

A school bag or shoulder bag has wide strap made of thick cloth (canvas) so that the weight of bag may fall over a large area of the shoulder of the child producing less pressure on the shoulder. And due to less pressure, it is more comfortable to carry the heavy school bag.
On the other hand, if the school bag has a strap made of thin string, then the weight of school bag will fall over a small area of the shoulder. This will produce a large pressure on the shoulder of the child and it will become very painful to carry the heavy school bag.

A coin or a pen falls to the ground when it slips off our hand. Why?

A coin or a pen falls to the ground when it slips off your hand. When the coin is held in your hand it is at rest. As soon as it is released, it begins to move downwards. It is clear that the state of motion of the coin undergoes a change. Objects or things fall towards the earth because it pulls them. This force is called the force of gravity, or just gravity. This is an attractive force. The force of gravity acts on all objects. The force of gravity acts on all of us all the time without our being aware of it.

Write a short note on the “atmospheric pressure”.

We know that there is air all around us. This envelop of air is known as the atmosphere. The atmospheric air extends up to many kilometers above the surface of the earth. The pressure exerted by this air is known as atmospheric pressure. The pressure is force per unit area. If we imagine a unit area and a very long cylinder standing on it filled with air, then the weight of the air in this cylinder is the atmospheric pressure. The weight of air in a column of the height of the atmosphere and area 10 cm × 10 cm is as large as 1000 kg. The reason we are not crushed under this weight is that the pressure inside our bodies is also equal to the atmospheric pressure and cancels the pressure from outside.

How would you prove that pressure exerted by liquids?

Take a discarded water or soft drink plastic bottle. Fix a cylindrical glass tube, a few cm long near its bottom. You can do so by slightly heating one end of the glass tube and then quickly inserting it near the bottom of the bottle. Make sure that the water does not leak from the joint. If there is any leakage, seal it with molten wax. Cover the mouth of the glass tube with a thin rubber sheet. Now fill the bottle up to half with water. While pouring some more water in the bottle. A change can be seen in the bulge of the rubber sheet.
Note that the rubber sheet has been fixed on the side of the container and not at the bottom. The bulging of the rubber sheet in this case indicate that water exerts pressure on the sides of the container as well.

Class 8 Science Chapter 8 Important Questions Set – 3

What do you mean by “electrostatic force”?

A straw is said to have acquired electrostatic charge after it has been rubbed with a sheet of paper. Such a straw is an example of a charged body. The force exerted by a charged body on another charged or uncharged body is known as electrostatic force. This force comes into play even when the bodies are not in contact. The electrostatic force, therefore, is another example of a non-contact force.

Why does a sharp knife cuts better than a blunt knife? Explain.

A sharp knife has a very thin edge to its blade. A sharp knife cuts objects better because due to its very thin edge, the force of our hand falls over a very small area of the object producing a large pressure. On the other hand, a blunt knife has a thicker edge. A blunt knife does not cut an object easily because due to its thicker edge, the force of our hand falls over a larger area of the object and produces lesser pressure. This lesser pressure cuts the object with the difficulty.

Does it mean that the application of a force would always result in a change in the state of motion of the object?

It is common experience that many a time application of force does not result in a change in the state of motion. For example, a very heavy box may not move at all even if you apply the maximum force that you can exert. Again, no effect of force is observed when you try to push a wall.

How would you say that "muscular force" is also called the "contact force"? Explain the relation between them.

Generally, to apply a force on an object, your body has to be in contact with the object. The contact may also be with the help of a stick or a piece of rope. When we push an object like a school bag or lift a bucket of water, we use a force. This force is caused by the action of muscles in our body. The force resulting due to the action of muscles is known as the muscular force. Since muscular force can be applied only when it is in contact with an object, it is also called a contact force.

Why frictional force is said to be a contact force. Explain with example.

A ball moving on the ground which slows down gradually and stops after covering some distance. We know that a force is required to stop a moving body. This means that a force is exerted by the ground on the moving ball which opposes its motion and brings it to a stop. This force which opposes the motion of a ball on the ground is known as frictional force.

If we stop pedalling a running bicycle, it slows down gradually and stops after covering some distance. The bicycle moving on the road slows down and finally comes to a stop due to the frictional force between the tyres of the bicycle and the road. This frictional force opposes the motion of bicycle and brings it to a stop. In this case, the two surfaces in contact are the surface of the road and the surface of the tyres of bicycle.

The frictional force always acts on all the moving objects, and its direction is always opposite to the direction of motion. Since, frictional force arises only when the surfaces of two objects are in touch with each other, therefore, frictional force is an example of contact force.

Class 8 Science Chapter 8 Important Questions Set – 4

What would happen if the two forces applied to an object in the opposite direction? Explain with example (one person may stronger than other).

When the two forces act in opposite direction (one from right and one from left side) their effective magnitude decreases. Suppose there is a heavy box lying on the ground. Let the two men push this box from opposite direction. That one of the men is stronger of the two and applies a larger pushing force than the other man. We can say that the box will move in that direction in which a larger force is applied by the stronger man. The box will move very slowly in this case, because the net force acting on the box is equal to the difference in the magnitudes of the two forces applied by the two men. And this net force will be very small.

One person cannot move a heavy object. What would happen if the two forces applied to an object in the same direction? Explain with example.

If the two forces applied to an object in the same direction then the result force acting on the object is equal to the sum of two forces. In other words, when two forces act in the same direction their effective magnitude increases. This can be understood from the following example:
Suppose there is a heavy box which one man can move only by pushing it very hard. Now, if two men push this heavy box in the same direction, it becomes much easier to move the heavy box. This is because when the two men apply their forces to push together in the same direction, the two forces added up to provide a much bigger force and this bigger force can move the heavy box very easily.

A force can change the state of motion. Explain with example.

While taking a penalty kick in football, the player applies a force on the ball. Before being hit, the ball was at rest and so its speed was zero. The applied force makes the ball move towards the goal. Suppose, the goalkeeper dives or jumps up to save the goal. By his action the goalkeeper tries to apply a force on the moving ball. The force applied by him can stop or deflect the ball, saving a goal being scored. If the goalkeeper succeeds in stopping the ball, its speed decreases to zero.

Which type of effect can produce a force?
A force can produce the following effects:

- i) A force may make an object move from rest.
- ii) A force may change the speed of an object if it is moving.
- iii) A force may change the direction of motion of an object.
- iv) A force may bring about a change in the shape of an object.
- v) A force may cause some or all of these effects.

Name the forces acting on a plastic bucket containing water held above the ground level in your hand. Discuss why the forces acting on the bucket do not bring a change in its state of motion.
The force acting on a plastic bucket are:
i). Gravitational force, as it is acting downwards.
ii). Muscular force as it is applied by our hands to lift the bucket in upward direction.
Although these forces are acting on the bucket but no change is found in its state of motion because the two forces are balancing each other and as a result net force is zero.

Class 8 Science Chapter 8 Important Questions Set – 5

A man is pushing a cart down a slope. Suddenly, the carts starts moving faster and he wants to slow it down. What should he do?

Man can do the following things:
i). He can start pulling the cart instead of pushing it in order to balance the downward force due to gravity.
ii). He can go the other side by moving himself very fast in the direction of motion and try to slow down the speed of cart by giving an opposite force to moving cart.

It is much easier to burst an inflated balloon with a needle than by a finger. Explain.

Because needle tip has very less area of cross-section in comparison to that of our finger and we know that pressure exerted by a force is inversely proportional to the area where it has been applied, so pressure exerted will be more by the needle tip than the finger.

Two women are of the same weight. One wears sandals with pointed heels while the other wear sandals with flat soles. Which one would feel more comfortable while walking on the sandy beach? Give reasons for your answer.

While walking on the sandy surface, one needs the footwears of larger area so that the pressure exerted on the ground is minimum. So, in this case, the woman having the sandals with pointed heels will be less comfortable in walking while the other women wear sandals with flat soles feels more comfortable while walking on sandy beach.

An inflated balloon was pressed against a wall after it has been rubbed with a piece of synthetic cloth. It was found that the balloon sticks to the wall. What force might be responsible for the attraction between the balloon and the wall?
The force which is responsible for the attraction between the balloon and the wall is electrostatic force. When we rub the balloon by a synthetic cloth, it gets charged. When it is taken near the wall, it will get attracted towards the uncharged wall because of the electrostatic force which is the force exerted by a charged body on another uncharged body.

An anchor shoots an arrow in the air horizontally. However, after moving some distance, the arrow falls on the ground. Name the initial force that sets the arrow in motion. Explain why the arrow ultimately falls down?
The Archer shoots an arrow by applying muscular force to stretches the string of the bow. When the string is released, it regains its original position that provides the initial force to set the arrow in motion horizontally.
The force of gravity that acts on the arrow in the downward direction and hence, the arrow ultimately falls to the ground.