Chapter 10: Force and Types of Force

EXERCISE [PAGES 74 - 75]

Exercise | Q 1.1 | Page 74
Choose the term to fill in the blanks.
_____ has to be applied to change the _____ of a _____ object.
(moving, direction, force)

SOLUTION

Force has to be applied to change the **direction** of a **moving** object.

Exercise | Q 1.2 | Page 74
Choose the term to fill in the blanks.
When an elephant drags a wooden log over the land, the forces that are applied on the log are _____, _____ and _____.
(muscular force, mechanical force, gravitational force, frictional force)

SOLUTION

When an elephant drags a wooden log over the land, the forces that are applied on the log are **muscular force**, **gravitational force** and **frictional force**.

Exercise | Q 1.3 | Page 74
Choose the term to fill in the blanks.
A ball was set rolling on a large table. If its _____ is to be changed, a _____ will have to be applied on it.
(force, motion, gravitation)

SOLUTION

A ball was set rolling on a large table. If its **motion** is to be changed, a **force** will have to be applied on it.

Exercise | Q 1.4 | Page 74
Choose the term to fill in the blank.
The force of friction always acts _____ the motion.

1. along
2. **against**

SOLUTION

The force of friction always acts **against** the motion.

Exercise | Q 2 | Page 74
Match the following:

Group 'A'	Group 'B'
(i) An ox pulling a cart	(a) Magnetic force
(ii) Lifting a heavy iron object with a crane	(b) Electrostatic force
(iii) Weighing with a spring balance	(c) Muscular force
(iv) Applying brakes to a bicycle	(d) Gravitational force
(v) Picking up pieces of paper with a plastic scale	(e) Frictional force

SOLUTION

Group 'A'	Group 'B'
(i) An ox pulling a cart	(c) Muscular force
(ii) Lifting a heavy iron object with a crane	(a) Magnetic force
(iii) Weighing with a spring balance	(d) Gravitational force
(iv) Applying brakes to a bicycle	(e) Frictional force
(v) Picking up pieces of paper with a plastic scale	(b) Electrostatic force

Exercise | Q 3.1 | Page 74

One or more forces are acting in the following example. Name them.
An object falling from a tall building _____

SOLUTION

An object falling from a tall building: **Gravitational force**

Exercise | Q 3.2 | Page 74

One or more forces are acting in the following example. Name them.
An aeroplane flying in sky _____

SOLUTION

An aeroplane flying in sky: **Mechanical and Gravitational force**

Exercise | Q 3.3 | Page 75

One or more forces are acting in the following example. Name them.

Squeezing sugarcane juice with a squeezer _____

SOLUTION

Squeezing sugarcane juice with a squeezer: **Muscular force**

Exercise | Q 3.4 | Page 75
One or more forces are acting in the following example. Name them.
Winnowing food grain _____

SOLUTION

Winnowing food grain: **Muscular and Gravitational force**

Exercise | Q 4.1 | Page 75
Explain in your own words and give one example.
Muscular force

SOLUTION

The force applied by the action of muscles in our body is termed as a muscular force. For example, when you pick up a book placed on the table using your hands, you apply muscular force.

Exercise | Q 4.2 | Page 75
Explain in your own words and give one example.
gravitational force

SOLUTION

It is the force that is exerted by the Earth on every object, which is near or on its surface. For example, an apple falling from a tree branch towards the ground is due to gravitational force.

Exercise | Q 4.3 | Page 75
Explain in your own words and give one example.
mechanical force

SOLUTION

The force generated by the means of a machine is known as mechanical force. For example, when a car gets started, its engine creates a mechanical force on the tires that help the car to accelerate. So here, the movement of the car occurs due to the force generated by the machine on the tires.

Exercise | Q 4.4 | Page 75
Explain in your own words and give one example.
Electrostatic force

SOLUTION

Electrostatic force is the force that exists either between the two charged bodies or between a charged and an uncharged body. For example, the charged scale attracts the pieces of paper by a non-contact force known as electrostatic force.

Exercise | Q 4.5 | Page 75
Explain in your own words and give one example.
The force of friction

SOLUTION

The force which acts opposite to the direction of motion of a body is known as the force of friction. For example, a ball rolling on the ground stops after some time because of frictional force acting between the ground and the ball.

Exercise | Q 4.6 | Page 75
Explain in your own words and give one example.
Magnetic force

SOLUTION

The force exerted by a magnet is known as a magnetic force. For example, the separation of iron stuff from junk is done with the help of a magnetic force.

Exercise | Q 5.1 | Page 75
Why machines are oiled from time to time?

SOLUTION

A machine is oiled from time to time to reduce friction between its body parts. By doing so, the life span of a machine increases.

Exercise | Q 5.2 | Page 75
Why an object thrown upwards comes down after reaching a point?

SOLUTION

An object thrown upwards comes down after reaching a point. This is because of the Earth's gravitational pull.

Exercise | Q 5.3 | Page 75
Why powder is sprinkled on a carrom board?

SOLUTION

Powder is sprinkled on a carom board to reduce friction between the striker/carom coins and the carom board. The powder smoothens the surface of the board and thus the striker and coins can move on it easily.

Exercise | Q 5.4 | Page 75

Why the ramp at a railway station has a rough surface?

SOLUTION

The ramp at a railway station has a rough surface so that the friction between our feet and the ground is enough for us to walk comfortably and without tripping.

Exercise | Q 6.1 | Page 75

In what way are we different muscular force and mechanical force?

SOLUTION

Muscular force	Mechanical force
The force applied by the action of muscles in our body is termed as a muscular force.	The force generated by the means of a machine is known as mechanical force.
For example, when you pick up a book placed on the table using your hands, you apply muscular force.	For example, when a car gets started, its engine creates a mechanical force on the tyres that help the car to accelerate. So here, the movement of the car occurs due to the force generated by the machine on the tyres.

Exercise | Q 6.2 | Page 75

In what way are we different the force of friction and gravitational force?

SOLUTION

The force of friction	Gravitational force
The force which acts opposite to the direction of motion of a body is known as the force of friction.	It is the force that is exerted by the earth on every object, which is near or on its surface.
It is a contact type of force.	It is a non-contact type of force.
For example, a ball rolling on the ground stops after some time because of frictional force acting between the ground and the ball.	For example, an apple falling from a tree branch towards the ground is due to gravitational force.

Exercise | Q 7.1 | Page 75

Write an answer to the following question in your own words.
What are the things that can be done by applying force?

SOLUTION

Following things can be done by applying force:

1. It can move a body initially at rest.
2. It can bring a moving body to rest.
3. It can change the direction of a moving body.
4. It can change the speed of a moving body.
5. It can change the shape of a body.
6. It can change the size of the body.

Exercise | Q 7.2 | Page 75

Write an answer to the following question in your own words.
What is meant by weight?

SOLUTION

Weight is the force exerted on a body due to the gravitational pull of Earth.

Exercise | Q 7.3 | Page 75

Write an answer to the following question in your own words.
Which machines run on muscular force?

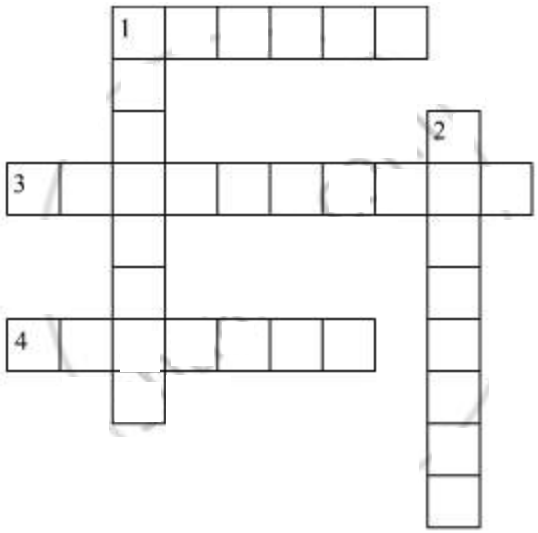
SOLUTION

Machines which run on muscular force are:

- Bicycle
- Rickshaw
- Hand pump
- Stitching machine
- Hand cart

Exercise | Q 8 | Page 75

Solve the following crossword puzzle.



Down:

(1) _____ force is to be applied to push a scooter that has failed.

(2) _____ force can be used to pick up scattered pins.

Across:

(1) A _____ pulls an iron nail towards itself.

(3) _____ force was used when the farm was ploughed with a tractor.

(4) It is due to the force of _____ that raindrops fall to the ground

SOLUTION