Force and Energy - Simple Machine

Ques 1: What is force?
Ans: A push or pull acting on an object is called force.

Ques 2: What is gravity?
Ans: The force that attracts objects towards the center of the earth is called gravity.

Ques 3: What is magnetism?
Ans: The push or pull applied by a magnet on metals like iron and nickel and on other magnets is called magnetism.

Ques 4: What is energy? Name any four types of energy.
Ans: The ability to do work is called energy. The four types of energy are heat energy, light energy, wind energy and sound energy.

Ques 5: What is a machine?
Ans: A machine is a tool that makes our work easier by helping us overcome a larger force (load) by applying lesser force (effort).

Ques 6: Name the six types of simple machines.
Ans: The six types of simple machines are:

1. Lever
2. Pulley
3. Wheel and axle
4. Wedge
5. Screw
6. Inclined plane

Ques 7: List the four effects that force have on objects.
Ans: The four effects that force have on objects are:

1. A force can make a stationary object move or make a moving object move faster.
2. A force can make a moving object stop or slow down.
3. a force can change the direction in which an object is moving.
4. A force can change the shape of an object.

Ques 8: What is friction? Why is friction necessary?
Ans: The force that tries to stop the sliding movement of objects across a surface is

called friction. Friction is necessary because friction between or feet and ground makes it possible for us to walk.

Ques 9: List any two advantages and two disadvantages of friction.
Ans: The two advantages of friction are:

1. The friction between the tyres of vehicles and the road makes them roll forward. Thus, friction makes movement of vehicles possible.
2. Friction between the chalk and the black board makes it possible for the teachers to write on the blackboard.

The two disadvantages of friction are:

1. Friction makes it hard to slide heavy objects accross the floor.
2. Friction generates heat. Heat produced due to friction causes damage to machine parts like car brakes.

Ques 10: What is a lever? Describe the three types with examples.
Ans: A lever is a rigid road arranged in such a manner that it can move freely around a fixed point. It consists of the following three parts:

1. Fulcrum: This is the fixed point around which the road moves.
2. Load: It is the object on which work is to be performed.
3. Effort: It is the force that needs to be applied on te road in order to perform a task.

First class lever:

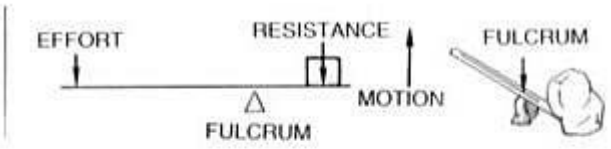
1. Levers in which the fulcrum is located between the load and effort are called first class or class one levers.
2. Eg: a pair of scissors, a seesaw and a crowbar.

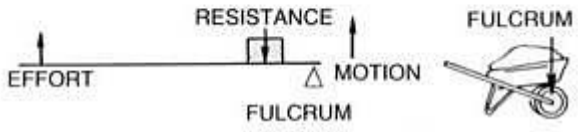
Second class lever:

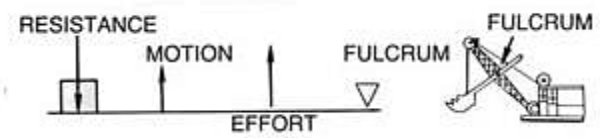
1. Levers in which the load is located between the fulcrum and the effort are called second class or class two levers.
2. Eg: a wheelbarrow, a bottle opener and a nut cracker.

Third class lever:

1. Levers in which the effort is located between the fulcrum and the load are called third class or class three lever.







Ques 11: What is a wheel and axle? Give examples.
Ans: A wheel and axle consists of a wheel rigidly attached to a rod (called axle). When one rotates the wheel, the axle also rotates.
Eg: The crane used to raise a bucket of water from a well, a screw driver, a door knob and the steering wheel of a car.

Ques 12: What is a pulley? What are its different types? Give examples.
Ans: A pulley consists of a wheel with a grooved rim, with a rope, chain or belt running round it. The wheel rotates around a stationary axle. A pulley can be of two types fixed and movable.

Fixed pulley:

1. The axle is fixed to some kind of support like a hook or a wall. This pulley changes the destruction of the force and makes the work easier.
2. Eg: To lift a bucket of water from a well, to raise a flag to the top of a flag holder.

Movable pulley:

1. The axle is not fixed to any kind of support. It is free and movable. This pulley helps to lift heavy loads with less effort. It is usually used in combination with a fixed pulley.
2. Eg: Machine like a crane uses both fixed and movable pulleys to lift heavy loads.

Ques 13: List any two advantages and two disadvantages of friction?
Ans: The two advantages of friction are –

1. The friction between the types of vehicle and the road makes them role forward. This friction makes as movement of vehicles possible.
2. Friction between chalk and the black board makes it possible for the teachers to write on the blackboard.

The two disadvantages of friction are –

1. Friction makes it hard to slide heavy objects across the floor.
2. Friction generates heat. Heat produced due to friction causes damage to machine parts like car brakes.

Ques 14: What is a lever? Describe its three types with examples.
Ans: A lever is a rigid rod arranged in such a manner that it can move freely around a fixed point. It consists of the following three parts.

1. Fulcrum – This is the fixed point around which the rod moves.
2. Load – It is the object on which work is to be performed.
3. Effort – It is the force that needs to be applied on the rod in order to the perform a task.

Firs – Class lever: Levers in which the fulcrum is located between the load and effort are called first class or class one levers. Eg. – a pair of scissors, a seesaw and a crowbar.

Second – Class lever: Levers in which the load is located between the fulcrum and the effort are called second-class or class two levers. Eg. – a wheelbarrow, a bottle opener and a nut cracker.

Third – class lever: Levers in which the effort is located between the fulcrum and the load are called third – class three levers. Eg. – Stapler, forceps, fishing rods and ice tongs or chimta.

Ques 15: What is a wheel and axle? Give examples.
Ans: A wheel and axle consists of a wheel rigidly attached to a rod (called axle). When one rotates the wheel, the axle also rotates. Eg. – The crank used to raise a bucket of water from a well, a screw driver, a door knob and the steering whole of are.

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Ans: A pulley consists of a whee with a grooved rim, with a rope, chain or belt running round it. The wheel rotates around a stationary axle. A pulley can be of two types fixed and movable.

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Movable pulley: The axle is not fixed to any kind of support. It is free and movable. It is free and movable. This pulley helps to lift heavy loads with less efforts. It is usually used in combination with a fixed pulley. Eg. – Machine like a crane uses both fixed and movable pulleys to lift heavy loads.