# પુ.ના International School

Shree Swaminarayan Gurukul, Zundal

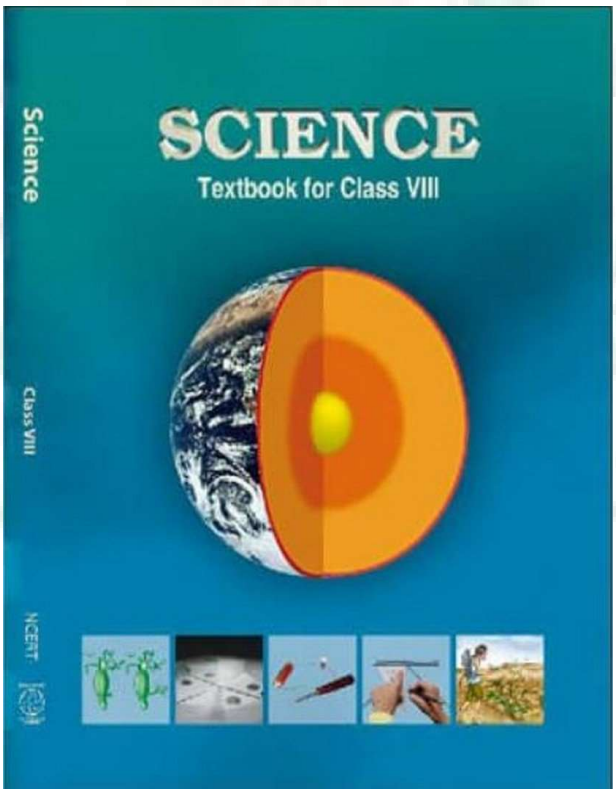
# Class -VIII

## SUBJECT - SCIENCE

## [Sample Plan]

## TERM - 2

## SEPTEMBER - OCTOBER



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## Chapter – 10

## Reaching the age of Adolescence

❖ Define the terms -

1) **Adolescents** :- Humans become capable of reproduction after puberty sets in. Between the ages of 11 years and 19 years children are called **adolescents.**

**2) Puberty:** It is the time when sex organs begin to work. It brings about growth in reproductive organs and changes in the body. Puberty starts at the beginning of **adolescence**.

3) **Hormones :- Hormones** are secretions of endocrine glands which pour them directly into the blood stream.

❖ **Extra Questions:-**

**Very short Answer Questions :-**

**1. Name the hormone that is released by testes at the onset of puberty.**

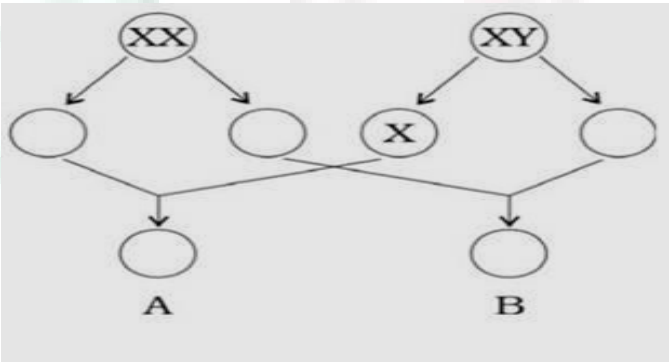
**Ans:** At the onset of puberty, the testes release the male hormone called **testosterone**.

**2. Name the female hormone produced by ovaries that helps in the development of mammary glands.**

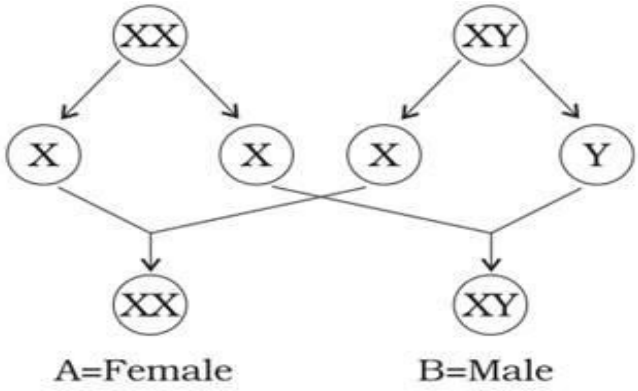
**Ans:** At the onset of puberty, the ovaries in females release female hormone called **estrogen.** Estrogen helps in the development of mammary glands (milk-producing glands).

**Short Answer Questions:-**

**1. Fill the blank circles in figure and identify the sex of child A and B.**



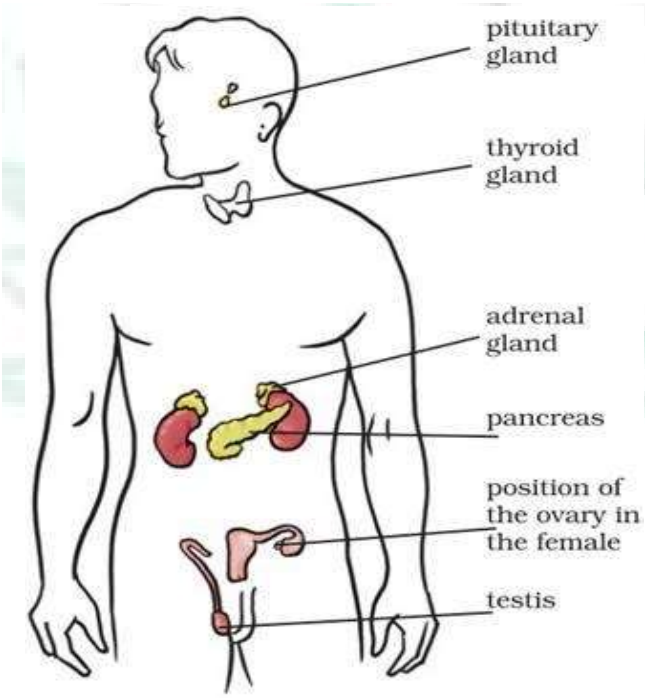
**Ans:** Child A is female child. Child B is male child.




**2. We should avoid taking medicines/drugs unless prescribed by a doctor. Give reasons.**
**Ans:** Several medicines have adverse side effects and have specific dosage levels which, if not followed, may harm the body. Drugs can be addictive too and can ruin our health and happiness. Hence, medicines/drugs should be avoided unless prescribed by a doctor.

**Long Answer Questions:-**
**1. In the Fig. mark the positions of the endocrine glands which release the hormones that:**
**(a) Controls the release of sex hormones.**
**(b) Is responsible for the secondary sexual characters in boys.**
**(c) Prevents diabetes.**
**(d) Maintains the correct salt balance in the blood.**

**Ans:** The position of the endocrine glands have been marked in the figure:



**2. In human females, each time during menstruation and release of egg, the inner wall of uterus thickens. Is this thickening permanent? Give reasons.**

**Ans.** No, this thickening of the uterine wall is not permanent.

If the egg gets fertilised, it starts developing and gets embedded in the uterine wall resulting in pregnancy. During pregnancy, no more eggs are released and the thickened lining of the uterus is discharged only when the baby is born.

However, if fertilisation does not occur, the released egg and the thickened lining are shed off resulting in menstruation.

**EXERCISE :-**

**1. What is the term used for secretions of endocrine glands responsible for changes taking place in the body?**

Ans. The term used for secretion of endocrine glands is hormones, which is responsible for various changes taking place in the body.

**2. Define adolescence.**

Ans. Adolescence is the period of life, when the body undergoes changes, leading to reproductive maturity. It begins around the age of 11 and lasts till 18 or 19 years of age. The period of adolescence may vary from person to person.

**3. What is menstruation? Explain.**

Ans. Menstruation is the process of the shedding of the uterine lining on a regular monthly basis in woman. During menstruation the uterus wall along with blood vessels break off. This causes blood to come out and a new wall of uterus is formed. Menstruation lasts generally lasts for 4 to 5 days.

**4. List changes in the body that take place at puberty.**

Ans. The onset of puberty brings about:
Growth of the reproductive organs which begin to function.
Hair growth at various places of the body. Breasts develop in girls and facial hairs appear in boys.
Voice of the boys becomes hoarse as voice box enlarges during adolescence.

**5. Prepare a table having two columns depicting names of endocrine glands and hormones secreted by them.**

Ans.

| Name of Endocrine Gland | Hormones Secreted |
|---|---|
| Testis | Testosterone |
| Ovary | Estrogen |
| Adrenal | Adrenaline |
| Thyroid Gland | Thyroxin |
| Pituitary Gland | FSH |
| Pancreas | Insulin |

**6. What are sex hormones? Why are they named so? State their function.**
Ans. Sex hormones are the hormones that control the development of secondary sexual characteristics and also regulate the proper functioning of the sex organs. They are named so because they are produced in both males and females by the respective sex organs under the influence of the pituitary gland.

**Functions of sex hormones:**
Testosterone: This hormone brings about secondary sex characters in boys such as the growth of a beard, the voice becoming hoarse, development of reproductive organs, etc.

Oestrogen: This hormone is responsible for the development of secondary sexual characters in females such as the enlargement of breasts, development of female reproductive organs, etc.

**7. Choose the correct option.**
(a) Adolescents should be careful about what they eat, because
(i) Proper diet develops their brains.
(ii) Proper diet is needed for the rapid growth taking place in their body.
(iii) Adolescents feel hungry all the time.
(iv) Taste buds are well developed in teenagers.

**Ans - (ii) Proper diet is needed for the rapid growth taking place in their body.**

(b) Reproductive age in women starts when their
(i) Menstruation start.
(ii) Breast start developing
(iii) Body weight increases
(iv) Height increases.
**Ans - (i) menstruation starts.**

(c) The right meal for adolescents consist of
(i) Chips, noodles, coke.

(ii) Chapatti, dal, vegetables.
(iii) Rice, noodles and burger.
(iv) Vegetables cutlets, chips and lemon drink.

**Ans - (ii) Chapatti, dal, vegetables.**

**8. Write notes on-**

**(a) Adam's apple.**

**(b) Secondary sexual charecters.**

**(c) Sex determination in unborn baby.**

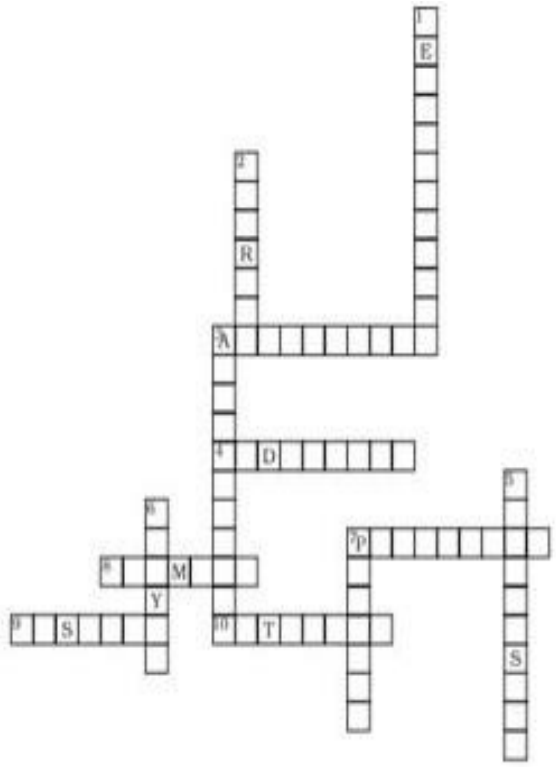
Ans. (a) Adam's apple- At puberty, the voice box or the larynx begins to grow. The growing voice box in boys can be seen a protruding part of the throat called Adam's apple.

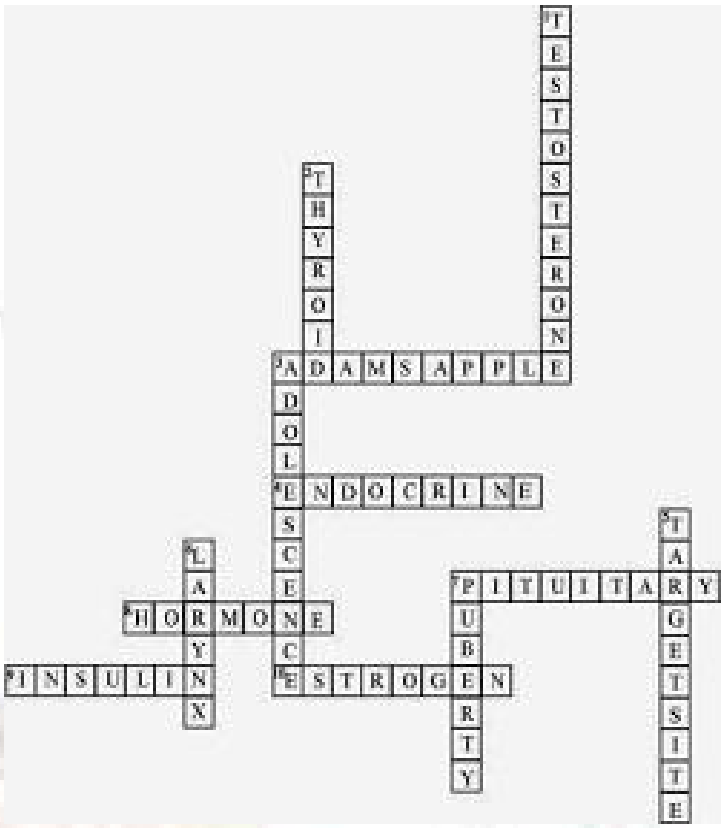
(b) Secondary sexual characters- Those changes that take place at puberty in boys and girls are called secondary sexual characters. In includes increase in size of breast in girls and pubic hairs around genital organ in girls. In boys facial hair and cracking of voice are secondary sexual features.

(c) Sex determination in the unborn baby- Human beings have 23 pairs of chromosome. One pair of male (XY) and one pair of chromosome in female (XX) are called sex chromosome. Male produce two types of gametes half containing X chromosome and half containing Y chromosome. When the sperm containing Y chromosome fuse with egg the sex of baby is male and when X chromosome containing sperm fertilise the egg the sex of baby is female.

**9. Word game: use the clues to work out the words.**

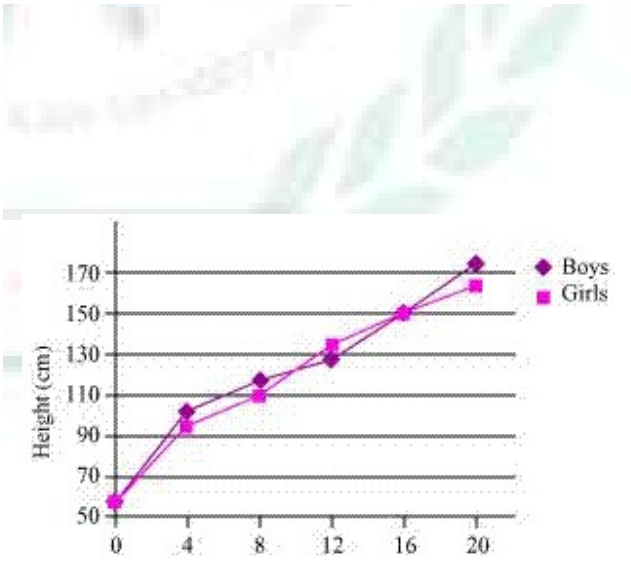
| **Across** | **Down** |
|---|---|
| 3. Protruding voice box in boys | 1. Male hormone |
| 4. Glands without ducts | 2. Secretes thyroxin |
| 7. Endocrine gland attached to brain | 3. Another term for teenage |
| 8. Secretion of endocrine glands | 5. Hormone reaches here through blood stream |
| 9. Pancreatic hormone | 7. Term for changes at adolescence |
| 10. Female hormone | |





**10. The table below shows the data on likely height of boys and girls as they grow in age. Draw graphs showing height and age for both boys and girls on the same graph paper. What conclusions can be drawn from these graphs?**

| Age (Years) | Height (cm) | |
|---|---|---|
| | Boys | Girls |
| 0 | 53 | 53 |
| 4 | 96 | 92 |
| 8 | 114 | 110 |
| 12 | 129 | 133 |
| 16 | 150 | 150 |
| 20 | 173 | 165 |



Ans. The graph depicts the relation between the age and height of both boys and girls. During puberty, there is a sudden increase in height of both boys and girls. On the basis of the above graph, it can be observed that during the age of 48 years, girls have less height as compared to boys. However, as soon as girls reach 12 to13 years, their height shows a sudden increase and becomes more than boys. In later years, growth in both sexes becomes stable. Growth during puberty is under the control of hormones.

## Chapter – 11
## Force and Pressure

❖ **Define the terms -**

**1) Force**: A push or a pull, that changes or tends to change the state of rest or of uniform motion of an object or changes its direction or shape.

**Types of Forces:**
**Contact Forces:** The forces act on a body when the source of force is in actual contact with the body. The point where the force is applied on an object is called the point of application of force (or point of contact).
(i) **Muscular Force** (ii) **Mechanical Force** (iii) **Frictional Force**

**Non-Contact Forces**: Forces which do not involve physical contact between two bodies on which they act.
(i) **Magnetic Force**(ii) **Electrostatic Force**(iii) **Gravitational Forces**

**2)Pressure: Thrust** acting per unit surface area is called pressure. Thrust is the force acting on an object perpendicular to its surface. In SI system, pressure is measured in Newton per square metre which is equal to 1 pascal (Pa).

**Extra Questions:-**

**Very short Answer Questions :-**

1. Where do we apply a force while walking?
**Ans:** While walking, we apply a force on the ground against the force of friction.
2. A ball of dough is rolled into a flat chapatti. Name the force exerted **to** change the shape of the dough.
**Ans:** The shape of the dough is changed through the action of body muscles. The resulting force is called the **muscular force**.

**Short Answer Questions :-**
**1. Fig. shows a man with a parachute. Name the force which is responsible for his downward motion. Will he come down with the same speed without the parachute?**

Ans: The force of gravity is responsible for the downward motion of the man with the parachute. He comes down slowly with the parachute since the air trapped beneath the open parachute provides an opposing force.

He will not come down with the same speed without the parachute. Without the parachute, the opposing upward force against the force of gravity will be missing and the speed of downward motion of the man will be higher.

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

Ans: When the man is pushing the cart down the slope, the force of gravity also acts on the cart. The net force acting on the cart increases and hence, the cart starts moving faster down the slope.

The man should apply an opposing force to decease the net force acting on the cart. Instead of pushing the cart, he should try to pull the cart up the slope so that the cart slows down.

**Long Answer Questions :-**

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

Ans: The woman wearing "sandals with flat soles" will feel more comfortable while walking on the sandy beach.

Since the two women are of the same weight, they will apply the same amount of force on the sand. The area of contact of "sandals with flat soles" will be larger as compared to the area of contact of "sandals with pointed heels". The pressure exerted by the pointed heels will be more than that exerted by "sandals having flat soles". As a result, the pointed heels will sink in the sand and offer higher friction to walking.

**EXERCISE:-**

**1. Give two examples each of situations in which you push or pull to change the state of motion of objects.**

Ans. **Two examples of push force are as follows:**

- A heavy box at rest is pushed to move it from one room to another. This changes the state of motion of the box.
- A player pushes a football using his foot. This changes the state of motion of the ball.

**Two examples of pull force are as follows:**

- Rope is pulled to draw water from a well. This changes the state of motion of the water bucket.
- A drawer is pulled to open it. This changes the state of motion of the drawer

**2. Give two examples of situations in which applied force causes a change in the shape of an object.**

Ans. (i) Making a chapati from a ball of dough.

(ii) Stretching of rubber band.

**3. Fill in the blanks in the following statements.**

(a) To draw water from a well, we have to **pull** at the rope.

(b) A charged body **attracts** an uncharged body towards it.

(c) To move a loaded trolley, we have to **pull** it.

(d) The north pole of a magnet **repels** the north pole of another magnet.

**4. An archer stretches her bow while taking aim at the target. She then releases the arrow, which begins to move towards the target. Based on this information fill up the gaps in the following statements using the following terms:**

Muscular, contact, non-contact, gravity, friction, shape, attraction

(a) To stretch the bow, the archer applies a force that causes a change in its **Shape**

(b) The force applied by the archer to stretch the bow is an example of **muscular** force.

(c) The type of force responsible for a change in the state of motion of the arrow is an example of a **contact** force.

(d) While the arrow moves towards its target, the forces acting on it are due to **gravity** and that due to **friction** of air.

**5. In the following situations identify the agent exerting the force and the object on which it acts. State the effect of the force in each case.**

(a) Squeezing a piece of lemon between the fingers to extract its juice.

(b) Taking out paste from a toothpaste tube.

(c) A load suspended from a spring while its other end is on a hook fixed to a wall.

(d) An athlete making a high jump to clear the bar at a certain height.

Ans.

| S.No | Agent exerting the force | Object on which it acts | Form of effect |
|---|---|---|---|
| (a) | Fingers | Lemon | Change in shape of lemon |
| (b) | Fingers | Toothpaste tube | Change in shape of tube |
| (c) | Load | Spring | Change in shape of Spring |
| (d) | Muscles of Athlete | Athlete | Change of state of motion of Athlete/ High jump |

**6. A blacksmith hammers a hot piece of iron while making a tool. How does the force due to hammering affect the piece of iron?**

Ans. The force of hammering changes the shape of iron in the form of desired tool.

**7. 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?**
Ans. Electrostatic force.

**8. Name the forces acting on a plastic bucket containing water held above ground level in your hand. Discuss why the forces acting on the bucket do not bring a change in its state of motion.**
Ans. The forces that act on the bucket are as follows:-
(i) The pressure of water contained in it.
(ii) Force of gravity due to Earth's gravitation.

Pressure of water can not change the state of motion because it is inside the bucket and force of gravity is compensated by force applied vertically upward using rope.

**9. A rocket has been fired upwards to launch a satellite in its orbits. Name the two forces acting on the rocket immediately after leaving the launching pad.**
Ans. The two forces acting on rocket are:

- Force due to gravity acts vertically downward.
- Frictional force of atmosphere.

**10. When we press the bulb of a dropper with its nozzle kept in water, air in the dropper is seen to escape in the form of bubbles. Once we release the pressure on the bulb, water gets filled in the dropper. The rise of water in the dropper is due to**
(a) Pressure of water.
(b) Gravity of the earth.
(c) Shape of rubber bulb.
(d) Atmospheric pressure.

Ans. (d) Atmospheric pressure.

## Chapter – 12
## Friction

**Define the terms -**

**1. Friction:- Friction** is a force that opposes the relative motion between two surfaces of objects in contact. The force of friction always acts in a direction opposite to that of the applied force.

**Types of Friction**:

(i) **Static Friction**: When a body is at rest, the force of friction is called the static friction and is always equal and opposite to the applied force. The force of friction which acts when the body is just at the verge of sliding on the surface is called limiting friction.

(ii) **Sliding friction**: The friction force which opposes the actual relative sliding motion between two contact surfaces. Sliding friction is smaller than static friction.

(iii) **Rolling Friction**: The frictional force that exists between two surfaces when a body rolls over the other. Rolling friction is smaller than sliding friction.

❖ **Extra Questions:-**

**Very short Answer Questions :-**

**1. Will force of friction come into play when a rain drop rolls down a glass window pane?**

Ans: Yes, the force of friction will come into play when a rain drop rolls down a glass window pane.

**2. While playing tug of war fig. Preeti felt that the rope was slipping through her hands. Suggest a way out for her to prevent this.**

Ans: Preeti can rub soil between her hands to increase the friction between the rope and her hands. Increased friction will prevent slipping of rope through her hands.

**Short Answer Questions :-**

**1. Is there a force of friction between the wheels of a moving train and iron rails? If yes, name the type of friction. If an air cushion can be introduced between the wheel and the rail, what effect will it have on the friction?**

Ans: Yes, the force of friction between the wheels of a moving train and iron rails is rolling friction. If an air cushion is introduced between the wheels and the rails, the friction between the two surfaces will decrease.

**Long Answer Questions :-**

**1. Two friends are trying to push a heavy load as shown in given Fig. Suggest a way which will make this task easier for them.**

Ans : It would be easier for the friends to roll the load than to slide it. They can put rollers below the heavy load. Rolling friction is smaller than sliding friction. Putting rollers below the heavy load will make the task easier for them.

**EXERCISE :-**

**1. Fill in the blanks.**

(a) Friction the **relative motion** between the surfaces in contact with each other.
(b) Friction depends on the **nature** of surfaces.
(c) Friction produces **heat.**
(d) Sprinkling of powder on the carom board **reduces** friction.
(e) Sliding friction is **less** than the static friction.

**2. Four children were asked to arrange forces due to rolling, static and sliding frictions in a decreasing order. Their arrangements are given below.**

Choose the correct arrangement.

(a) Rolling, static, sliding
(b) Rolling, sliding, static

(c) Static, sliding, rolling
(d) Sliding, static, rolling

Ans. (c) static, sliding, rolling

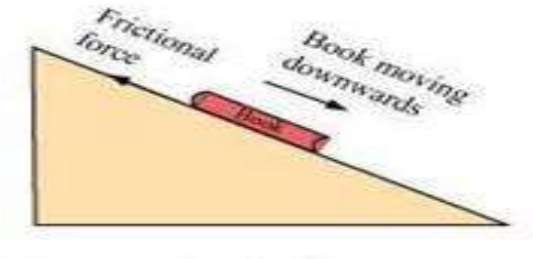
**3. Alida runs her toy car on dry marble floor, wet marble floor, newspaper and towel spread on the floor. The force of friction acting on the car on different surfaces in increasing order will be :**

(a) Wet marble floor, dry marble floor, newspaper and towel
(b) Newspaper, towel, dry marble floor, wet marble floor
(c) Towel, newspaper, dry marble floor, wet marble floor
(d) Wet marble floor, dry marble floor, towel, newspaper

Ans. (a) Wet marble floor, dry marble floor, newspaper and towel.

**4. Suppose your writing desk is tilted a little. A book kept on it starts sliding down. Show the direction of frictional force acting on it.**

Ans. The frictional force will act parallel to the inclined surface, opposite to the direction of the sliding of book i.e., upward.




**5. You spill a bucket of soapy water on a marble floor accidently. Would it make it easier or more difficult for you to walk on the floor? Why**?

Ans. It is difficult to walk on a soapy floor because soapy floor reduces the frictional force and feet do not make necessary grip which we require to walk hence we can slip on such floors.

**6. Explain why sportsmen use shoes with spikes.**

Ans. Spikes increase friction and provide the shoes better grip on the ground. It avoids slipping of sportsmen while playing or running.

**7. Iqbal has to push a lighter box and Seema has to push a similar heavier box on the same floor. Who will have to apply a larger force and why?**

Ans. Friction force is directly proportional to mass. So heavier box will apply more force as compared to lighter box on the floor and hence Seema will apply more frictional force.

**8. Explain why sliding friction is less than static friction.**

Ans. When the objects are at rest, the interlocking of irregularities in the two surfaces of the objects is higher than that of when objects are moving. When objects are moving, there is less interaction between their surfaces. That's why sliding friction is less than static friction.

**9. Give examples to show that friction is both a friend and foe.**

Ans. **Friction as a friend:**

- We are able to walk because of frictional forces between ground and our feet.
- Nails and screws stick to wall surfaces because of friction.
- Teacher writes on black –board with chalk because of friction between black-board surface and the chalk.
- Lighting a match stick because of friction between match stick and the side surface of match box.

**If there is no friction, then a moving body would never stop.**

**Friction as a foe:**

- Wear and tear of soles of our shoes is due to friction.
- During Tyres deflation, vehicles cannot move properly because of increased friction.
- Friction can also produce heat, which increases wear and tear of machine parts.

**10. Explain why objects moving in fluids must have special shapes.**

Ans. When a body moves through a fluid, it experiences an opposing force which tries to oppose its motion through the fluid. This opposing force is known as the drag force or fluid friction . This frictional force depends on the shape of the body. Aeroplanes , jets , rain drops have streamlined curve surface to reduce air drag.