Chapter 12: Pressure

Kindly write the highlighted question in your science exercise book and remaining mark on the text book.

Q.E) Give reasons for the following.

1. Refer page 171

2.Water flows out slowly from a tap at the second floor than a tap at ground floor.

Ans: Pressure exerted by water increases with the depth. A tap at the second floor is at the lesser depth compared to a tap at the ground floor. Hence water flows out slowly from a tap at the second floor than a tap at the ground floor.

3) Refer page 172.

4) Walls of a dam made thicker near the bottom than at the top.

Ans: The pressure of the water is very large at the bottom of the dam due to its large depth. Therefore walls of a dam are made thicker near the bottom than at the top to withstand the great pressure of water which increases with increase in the depth.

5) It is difficult to cut a piece of cloth using a pair of scissors with blunt blades.

Ans**:** Blunt blades have larger area compared to the sharp-edged blades. Thus, the applied force produces a lower pressure in case of blunt blades, which makes it difficult to cut the cloth

Q.F) Answer the following questions in one word or a single sentence.

1. Force acting per unit area.

2. 1Pa = 1N/ 1 m^2

3. Due to the collision of gas molecules against the walls the container.

4. 760 mm Hg

5. Refer page 173 and 174.

6. The liquid pressure increases with depth below the liquid surface.

7. Nose bleeding at higher altitudes, sipping through a straw, etc.

8. Barometer

Q.G) Answer the following questions in brief.

1. Refer page 169

2. Refer page 169

3. Refer page 171

4. Refer page 174

5. Refer page 169

6. Shown in the video by Tr. Renu.

7. Calculate the pressure exerted on the piston of area 154 m^2 when a car weighing 2400 N is placed on it.

Pressure = $forcepp$ Pressure = force/area = 2400 N/154 m^2

= 2400 ==. 2400/154 = 15.58 Pa

Ans: The pressure exerted on the piston is, 15.58 Pa.

Q.H) Answer the following questions in detail.

1. Pressure = Force/Area.

Pascal : When one Newton force acts on an area of one metre square, the pressure is one Pascal. (Remaining ans..Refer page 170.)

2. Define atmospheric pressure and state its cause. ~~Describe an activity to show the large magnitude of atmospheric pressure.~~

Ans : The pressure exerted by the gaseous envelope around us is called as atmospheric pressure.

The layer of air that envelopes the surface of the Earth is called the atmosphere. This atmosphere has a weight due to which it exerts pressure on us, known as atmospheric pressure.

3. Written in the science journal.

4. Refer page 173.

5. A force of 50 N exerts pressure of 500 Pa at a certain area. How can you increase the pressure to 5000 Pa by applying the same force.

Ans. Given : force = 50 N and pressure = 500 Pa.

Let's find the area

Pressure = Force /area

Therefore, Area = force/pressure= 50/500=1/10

Pressure = = = 0.1 m^2

To increase the pressure to 5000 Pa , we need to decrease the area.

Find the area to get pressure, 5000 pa.

Area = force/pressure= 50/5000=1/100 = 0.01 m2

To get 5000 Pa pressure with same force, we need to reduce the area to 0.01 m^2

Assess Zone

Tick (✓) the correct answer.

1. How much is the atmospheric pressure at the sea level?
   a. 1,013 kPa
   b. 101.3 kPa
   c. 10.13 kPa
   d. 1.01 kPa

2. A boy weighing 70 N stands on grass wearing shoes of area 20 cm^2 with a girl weighing 55 N and wearing heels of area 0.2 cm^2. Who will exert greater pressure?
   a. The girl will exert more pressure
   b. The boy will exert more pressure
   c. Both will exert equal pressure
   d. Difficult to predict

3. What is pressure inversely proportional to?
   a. Volume of the object
   b. Weight of the object
   c. Area of the base of the object
   d. Nature of object

4. Which of the following is not a unit of pressure?
   a. Pascal
   b. mm of mercury column
   c. N/m^2
   d. none of these

5. How does the pressure changes due to a liquid?
   a. Increases with depth
   b. Decreases with depth
   c. Remains same at all levels
   d. First increases then decreases

6. How does the pressure exerted by a liquid vary at a point?
   a. Greater pressure sideways at all point at same level
   b. Equal pressure in all directions at same level
   c. Greater pressure upwards at all points at same level
   d. Greater pressure downward at all points at same level

7. Why do mountaineers need oxygen cylinder at higher altitudes?
   a. Moderate atmospheric pressure
   b. High atmospheric pressure
   c. Low atmospheric pressure
   d. Zero atmospheric pressure

8. When is the atmospheric pressure maximum?
   a. Top of mountains
   b. base of mountains
   c. sea level
   d. same at all places

9. Which of the following does not exert any pressure on the container?
   a. Hydrogen gas b. Oxygen gas c. Water d. None of these

10. What instrument is used to measure atmospheric pressure?
   a. Thermometer b. Barometer c. Nanometer d. Spectrometer

B. Fill in the blanks.

1. N/m² is the unit of Pressure
2. ~~Pressure exerted~~ is more for a _____ object than a _____ object.
3. Fluids exert equal in all directions equally.
4. Atmospheric pressure is due to the weight of the air column above us.
5. Sucking through a straw is possible due to atmospheric pressure

C. State whether the following statements are true or false.

1. Pressure exerted by an object depends on the weight of the object alone. False
2. Liquids exert pressure downwards and gases exert pressure upwards. False
3. Pressure at the bottom of a vessel is more than at the top surface. True
4. The atmospheric pressure on us is counterbalanced by the blood pressure from inside us. True
5. Pressure is produced when a force acts on per unit area. True

D. Match the following.

1. Syringe	(d)	a. High atmospheric pressure
2. Barometer	(e)	b. Sea level
3. Maximum pressure	(b)	c. Top of mountains
4. Oxygen cylinder	(c)	d. Atmospheric pressure
5. Crushing can	(a)	e. Weather forecasting