



INDIAN SCHOOL AL WADI AL KABIR



CLASS: VIII	DEPARTMENT: SCIENCE 2026-2027	DATE: 26/08/2026
WORKSHEET NO:5 WITH ANSWERS	TOPIC: PRESSURE, WINDS, STORMS AND CYCLONES	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

I. OBJECTIVE TYPE QUESTIONS

1. Pressure is defined as:

- (a) Force $\times$ Area
- (b) Force $\div$ Area
- (c) Mass $\times$ Velocity
- (d) Area $\div$ Force

2. The SI unit of pressure is:

- (a) Newton (N)
- (b) Joule (J)
- (c) Pascal (Pa)
- (d) Watt (W)

3. The envelope of air surrounding the Earth is called:

- (a) Hydrosphere
- (b) Lithosphere
- (c) Biosphere
- (d) Atmosphere

4. Air moves from a region of _____ pressure to a region of _____ pressure.

- (a) Low $\rightarrow$ High
- (b) High $\rightarrow$ Low
- (c) Equal $\rightarrow$ Equal
- (d) None of these

5. A dam is made much broader at its base than at the top because:

- (a) The water is colder at the bottom
- (b) Water pressure increases with depth
- (c) The dam looks more stable that way
- (d) Water flows faster at the bottom

6. An overhead water tank is placed at a height so that:
- (a) Water stays clean
 - (b) The water does not evaporate
 - (c) The height of the water column increases pressure at the taps
 - (d) The pump works efficiently
7. During a storm, opening doors and windows may help because:
- (a) Wind enters the house faster
 - (b) Pressure difference decreases
 - (c) Rain stays outside
 - (d) Temperature decreases

For question numbers 8-10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (A), (B), (C), and (D) as given below -

- (A) Both A and R are true, and R is the correct explanation of the assertion.**
- (B) Both A and R are true, but R is not the correct explanation of the assertion.**
- (C) A is true, but R is false.**
- (D) A is false, but R is true.**

- 8. Assertion (A):** The eye of a cyclone is the calmest region of the cyclone.
Reason (R): The eye is the region of lowest air pressure, while strong winds blow around it.
- 9. Assertion (A):** During lightning, lying flat on the ground is a safe practice.
Reason (R): A crouching position reduces contact with the ground and is safer.
- 10. Assertion (A):** Water flows out through holes made on the sides of a bottle filled with water.
Reason (R): Liquids exert pressure only at the bottom of the container.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. Why does a sharp knife cut vegetables more easily than a blunt knife?
[Hint: A sharp knife has a smaller contact area. Therefore, it produces greater pressure for the same force and cuts easily.]
2. In an experiment, two pipes of different diameters filled to the same height produce equal bulges in balloons. What does this show?
[Hint: Liquid pressure depends on the height of the water column. It does not depend on the diameter of the pipe.]
3. Why does a bag with narrow straps hurt the shoulders more than one with broad straps, even if both have the same weight?
[Hint: A bag with narrow straps hurts the shoulders more because its weight is concentrated on a small area. This produces more pressure on the shoulders.]

A bag with broad straps spreads the same weight over a larger area, so the pressure is less, and the bag feels more comfortable.]

4. What does water flowing out from holes on the sides of a bottle prove?

[Hint: Liquids exert pressure on the sides of a container. Liquids exert pressure in all directions.]

5. State the direction of movement of air between two regions of different air pressure.

[Hint: Air moves from a high-pressure region to a low-pressure region. This movement of air forms wind.]

6. How does sea breeze help the fishermen?

[Hint: During the day, sea breeze blows from the sea towards the land. This wind helps push their boats towards the shore.]

III. SHORT ANSWER TYPE QUESTIONS: (3M)

1. A force of 250 N is applied on a surface of area 5 m². Calculate the pressure exerted. If the same force is applied on an area of 2.5 m², what is the new pressure? What do you infer?

[Hint : Given:

- Force = 250 N**
- Area = 5 m²**

Pressure when area = 5 m²

Pressure= Force/Area

P = 250 / 5 = 50 Pa

Pressure = 50 Pa

Pressure when area = 2.5 m²

P = 250 / 2.5 = 100 Pa

Pressure = 100 Pa

Inference: When the same force acts on a smaller area, the pressure increases.]

2. Describe an activity to show that liquid pressure depends on the height of the liquid column.

[Hint: 1. Take a pipe with a balloon fixed at its lower end.

2. Fill the pipe with water and observe the balloon bulge.

3. Add more water to increase the height of the water column.

4. The balloon bulges more as the height increases.

Conclusion: Liquid pressure increases with the height of the liquid column.]

3. Describe an activity to prove that liquids exert pressure on the sides of a container.

[Hint: 1. Take a plastic bottle and make holes on its sides at the same level.

2. Cover the holes with tape and fill the bottle with water.

3. Remove the tape.

4. Water flows out through all the holes.

Conclusion: Liquids exert pressure on the sides of a container and in all directions.]

4. Explain how winds are formed.

[Hint: Unequal heating of Earth's surface creates regions of high and low air pressure.

Air always moves from high-pressure regions to low-pressure regions.

This movement of air is called wind.]

5. Explain why roofs may be blown away during storms.

[Hint: High-speed winds create a low-pressure area above the roof.

- **Air pressure inside the house becomes greater than the pressure above the roof.**
- **The pressure difference pushes the roof upward, which may blow it away if it is weak.]**

6. Why do cyclones weaken after reaching land?

[Hint: Cyclones obtain energy from warm, moist ocean air. After reaching land, the supply of moist air is cut off. As a result, the cyclone gradually loses strength and weakens.]

IV. LONG ANSWER TYPE QUESTIONS (5M):

1 (a) If the Earth stopped rotating, would cyclones still form? Justify your answer using your understanding of cyclone formation.

(b) State any two everyday situations where increasing the area of contact helps reduce pressure.

[Hint: (a) No, cyclones would not form.

A cyclone is a giant, rotating storm that requires a twisting force to make the winds spin. Without the Earth's rotation, air rushing toward the low-pressure centre would blow in a straight line instead of curving.

Because the winds cannot bend or spiral around the center, the characteristic spinning structure of a cyclone cannot form.

(b) Broad straps of school bags, placing a cloth ring under a load carried on the head.]

2. (a) Explain how sea breeze and land breeze are formed.

(b) Why do two balloons move towards each other when air is blown between them?

[Hint: (a) Formation of Sea breeze

- **During the day, land heats faster than the sea.**
- **Warm air over land rises, creating low pressure.**
- **Cool air from the sea moves towards land, forming a sea breeze.**

Formation of a land breeze

- **At night, land cools faster than the sea.**
- **Warm air above the sea rises, creating low pressure.**
- **Cool air moves from land to sea, forming a land breeze.**

(b) Fast-moving air creates a low-pressure region between the balloons.

Higher pressure outside pushes them towards each other.]

V. CASE STUDY- BASED QUESTIONS/PASSAGE-BASED QUESTIONS:

Read the Passage

Riya lives on the ground floor of a three-storey building. An overhead water tank is located on the rooftop. Her friend Noor lives on the second floor of the same building. One morning, both friends notice that the pressure of water from the tap seems weak. Riya suggests they raise the tank even higher. Noor disagrees, saying the height of the tank doesn't affect the pressure — only the amount of water in it matters.

1. Who receives greater water pressure from the tap — Riya or Noor? Explain using the concept of liquid pressure.

[Hint: Riya receives greater water pressure from her tap.]

Liquid pressure depends on the depth (or height) of the liquid column above the tap. Since Riya lives on the ground floor, her tap is at a much greater depth from the rooftop tank compared to Noor's tap on the second floor. A greater height of the water column exerts greater pressure.]

2. Is Riya's suggestion scientifically correct? Evaluate Noor's claim and state whether she is right or wrong with justification.

[Hint: Yes, Riya's suggestion is scientifically correct. Raising the tank higher increases the height of the water column, which will increase the water pressure for both floors.]

Noor is wrong. Liquid pressure depends only on the height/depth of the liquid column, not on the total volume or amount of water in the tank. A tall, thin column of water can create the same or more pressure than a wide, shallow tank containing more water.]

ANSWERS FOR QUESTION NO. 1 TO 10

1. (b) Force ÷ Area
2. (c) Pascal (Pa)
3. (d) Atmosphere
4. (b) High → Low
5. (b) Water pressure increases with depth
6. (c) The height of the water column increases pressure at the taps
7. (b) Pressure difference decreases
8. (A) Both A and R are true, and R is the correct explanation of the assertion.
9. (D) A is false, but R is true.
10. (C) A is true, but R is false.

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