

St. Andrews Scots School

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Session: 2026-2027 – Answer Key

Class: VIII Subject: Science Chapter: Pressure, Winds, Storms And Cyclones

Big Question: Page No. 75

The movement of air and changes in atmospheric pressure play an important role in controlling the weather. When air moves from areas of high pressure to areas of low pressure, winds are formed. These winds carry heat and moisture from one place to another. When warm air rises, it causes low pressure and may lead to cloud formation and rainfall. When cool air sinks, it creates high pressure and usually brings clear skies. The continuous movement of air and changes in pressure cause different weather conditions such as wind, rain, storms or calm weather.

Critical Thinking: Page No. 77

Your friend, who lives on the first floor, is likely to receive a stronger flow of water from the tap. This is because water pressure increases with depth. The first floor is farther below the overhead tank than the second floor, so the water has a greater pressure when it reaches that level, resulting in a stronger flow.

Self-Assessment: Page No. 80, 81

A. Multiple Choice Questions:

Tick (✓) the correct options:

1. (b) 2. (b) 3. (c)

B. Assertion-Reason Based Questions:

1. (d) Explanation: Assertion is false because liquids do not exert pressure only at the bottom. Liquids exert pressure in all directions — at the bottom, on the sides and even upwards. Reason is true because the pressure of a liquid increases with depth. The deeper you go in a liquid, the greater is the pressure due to the weight of the liquid above.

2. (a)

Self-Assessment: Page No. 85

A. Picture Study:

The child standing safely inside the house, away from the window, is acting most wisely during the thunderstorm.

Advice: The other children should stay indoors, avoid open spaces, trees and metal objects to remain safe from lightning.

B. Multiple Choice Questions:

Tick (✓) the correct options:

1. (c) 2. (c)

EXERCISE

SECTION-A

A. Oral Questions:

1. When the area decreases, pressure increases.
2. Water tanks are placed on rooftops to provide higher pressure so that water can flow easily through pipes.
3. High-speed winds reduce air pressure above roofs, causing them to lift or blow away.
4. When a balloon is released, the air rushes out, producing a force that pushes the balloon in the opposite direction.
5. A balloon bursts easily when pricked with a pin because the pressure inside becomes concentrated at the small point, causing it to tear.

B. Multiple Choice Questions:

Tick (✓) the correct options:

1. (d) 2. (b) 3. (b) 4. (b) 5. (c) 6. (b) 7. (c) 8. (c)

C. Assertion-Reason Based Questions:

1. (c) Explanation: Assertion is true because water pressure increases with depth.
Reason is false since pressure in a liquid depends on depth, not on the width of the container.
2. (a)
3. (d) Explanation: Assertion is false because it is not safer to stay in open fields during storms.
Reason is true, as lightning strikes tall objects like trees or poles, but open fields are also unsafe.
4. (c) Explanation: Assertion is true because air pressure inside and outside our body is balanced.
Reason is false since atmospheric pressure is not low; it is balanced and exerts force in all directions.

D. Case-Based Questions:

1. Warm air rises in the afternoon because it becomes lighter and less dense than the surrounding cool air.
2. If the Earth did not rotate, the circular motion of air would not occur and cyclones would not form.
3. In both cases, warm air rises and cool air moves in to replace it, just like the rising warm air over the farmer's field during the afternoon.

SECTION-B**A. Very Short Answer Questions:**

1. Pascal (Pa)
2. Suction pump or syringe
3. Differences in air pressure
4. Warm, moist air
5. A thunderstorm is a storm with thunder, lightning and heavy rain.
6. Lightning is a flash of light caused by electric discharge in the sky, while thunder is the sound produced by this discharge.

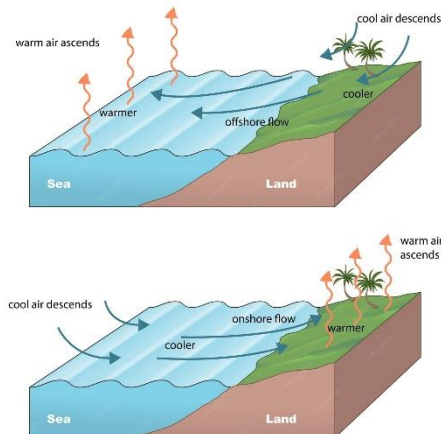
B. Short Answer Questions:

1. Cyclones weaken after reaching land because they lose their source of moisture and heat, which is the warm ocean water.
2. As the height of water increases, the pressure at the bottom also increases because pressure in a liquid depends on its depth.
3. A lightning conductor provides a safe path for electric charge to pass into the ground, preventing damage to buildings.
4. Chart paper helps show that air exerts pressure on all sides. When air is removed or pushed, the paper moves, proving air pressure exists.
5. Sharp blades have a smaller area of contact, so the pressure on the surface increases, allowing them to cut easily.

C. Long Answer Questions:

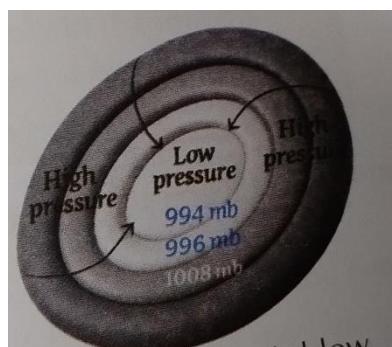
1. During the day, land heats up faster than the sea. The warm air over land rises and cooler air from the sea moves in to take its place — forming a sea breeze. At night, land cools faster than the sea. The warm air over the sea rises and cool air from the land moves towards the sea — forming a land breeze.

LAND and SEA BREEZE



2. Pressure increases when force increases and decreases when area increases. For example, a knife with a sharp edge cuts easily because the same force acts over a smaller area, producing more pressure.

3. Cyclones form when warm, moist air rises over the sea, creating a region of low pressure. Cool air rushes in, forming strong, rotating winds. Effects: Heavy rainfall, floods, damage to buildings and crops and loss of life.



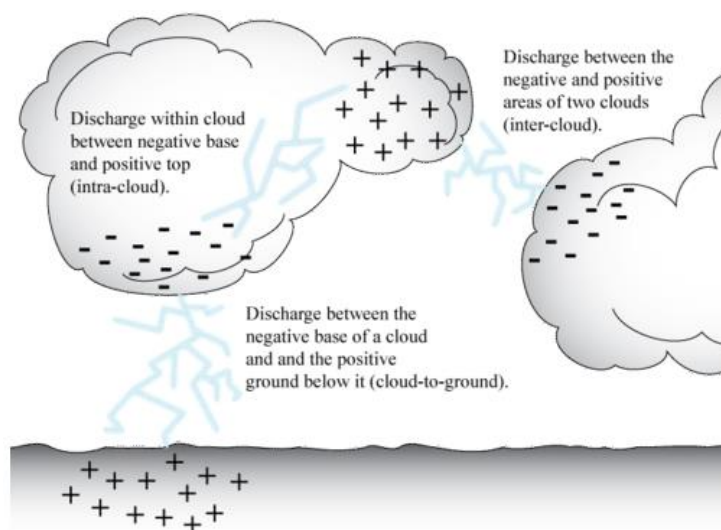
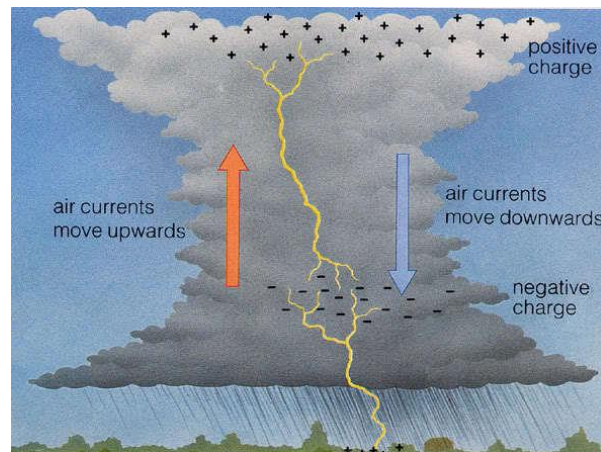
Winds blow from high to low

Pressure areas



Cyclone

4. When clouds rub together, electrical charge builds up due to friction. The upper part of the cloud becomes positively charged and the lower part becomes negatively charged. When the difference becomes large, the charges discharge as a flash of lightning, producing thunder due to rapid heating of air.



Oppositely charged clouds produce lightning

5. Take two glass tumblers, one inverted over the other with a sheet of paper in between. Blow air between the tumblers. The tumblers move closer, showing that moving air creates a region of low pressure — proving air exerts pressure.

D. Application-Based Questions:

1. When strong winds blow, air pressure outside the house decreases while pressure inside remains higher, causing doors to rattle.
2. The gardener should place the tank at a higher level so that the pressure of water increases due to greater height.
3. Knowledge of pressure helps in designing shoes with larger soles to reduce pressure and provide better grip.
4. Emergency kit items: torch, first-aid box, bottled water, non-perishable food and important documents.

E. Picture-Based Questions:

Image–1: (a) The deer is sinking deeper into the snow.

(b) The concept is $\text{pressure} = \text{force} \div \text{area}$; the deer's smaller hoof area creates greater pressure on snow.

Image–2: (a) The cycles are tilting towards the inside of the turn.

(b) The cycle on the inside has lower pressure as the rider is leaning to balance the centripetal force.

F. Life Skills:

1. I would move to a safe shelter immediately, away from open fields, trees and metal objects. I would avoid using my phone or standing under a tree to protect myself from lightning.
2. I would explain to him that it is dangerous to fly a kite during a storm because lightning can strike the string or the person holding it. It is safer to wait until the weather clears.