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Olympiads
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CREST Science Olympiad (CSO) Worksheet *for* Class 7



Topic

Air Pressure



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Worksheet on Air Pressure

1. Inflatable objects like balloons and air mattresses become rigid and hold their shape because:

- a. The air inside them gets hotter
- b. The air pressure inside them increases
- c. They are made of special materials
- d. They are filled with helium

2. In the following question, an assertion and a reason are given. Choose the correct option:

Assertion: Air pressure is lower at high altitudes compared to sea level.

Reason: The higher you go in the atmosphere, there is less air above, leading to lower air pressure.

- a. The assertion is correct but the reason is incorrect.
- b. The assertion is incorrect but the reason is correct.
- c. Both assertion and reason are correct and reason is the correct explanation of assertion.
- d. Both assertion and reason are correct but the reason is not the correct explanation of the assertion

3. In an experiment, a closed container with a balloon inside is placed in a warm water bath. What happens to the balloon as the water is heated?

- a. The balloon expands
- b. The balloon contracts
- c. The balloon pops
- d. The balloon remains the same

4. Complete the following sentence:

When air flows rapidly over the surface of an object, it results in i) _____ in air pressure on that surface, leading to the formation of an area where the air molecules are ii) _____ packed.

- a. i): a decrease, ii): less densely
- b. i): an increase, ii): less densely
- c. i): no change, ii): more densely
- d. i): a decrease, ii): more densely

5. Julia wants to demonstrate the concept that air pressure exerts force in all directions to her friends. Which of the following activity can she perform to do that?

- a. Blowing up a balloon and keeping it in a freezer
- b. Submerging a balloon in water and observing its buoyancy
- c. Filling a plastic bag with air and squeezing it
- d. Using a straw to blow air onto a piece of paper

Answer Key

1. b - When air is blown into inflatable objects like balloons and air mattresses, the air pressure inside increases. This increased air pressure pushes against the walls of the object, making it rigid and allowing it to hold its shape.
2. c - Both assertion and reason are correct, and the reason is the correct explanation of the assertion.
The assertion that air pressure is lower at high altitudes compared to sea level is true. As you go higher in the atmosphere, there is indeed less air above, resulting in lower air pressure. The reason provided correctly explains why this is the case.
3. a - As the water in the bath is heated, the air inside the container and the balloon also get heated. When air is heated, its molecules move faster and spread out, causing the air to expand. As a result, the balloon, which contains the expanding air, also expands.
4. a - When air flows rapidly over the surface of an object, it creates a decrease in air pressure on that surface. This decrease in pressure causes the air molecules to be less densely packed in that specific area.
5. b - By filling a plastic bag with air and squeezing it, Julia can demonstrate that air pressure exerts force in all directions. When she squeezes the bag, the air inside pushes back in all directions, resisting the compression. This demonstrates that air pressure acts equally in all directions, not just in one specific direction.

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