

Name: _____ Date: _____

Think You're a Climate Hero? Prove Your 6th Grade Science Prowess

Synthesize data on albedo shifts and permafrost feedback loops to show you understand the complex chain reactions shaping our planet's future.

1. The 'Albedo Effect' acts as a feedback loop in the Arctic. If global temperatures rise and sea ice melts, uncovering dark ocean water, what is the most likely secondary outcome?

- A. The ocean reflects more sunlight, cooling the localized area.
- B. The dark water absorbs more solar radiation, accelerating further warming.
- C. Salinity increases so much that the water freezes at a higher temperature.
- D. The lack of ice prevents the greenhouse effect from occurring in the poles.

2. When permafrost in the Siberian tundra thaws, it releases _____, a greenhouse gas that is roughly 25 times more potent at trapping heat than carbon dioxide over a century.

- A. Nitrogen
- B. Argon
- C. Methane
- D. Oxygen

3. Ocean acidification, caused by the absorption of excess atmospheric CO₂, primarily threatens calcifying organisms like pteropods and shellfish by making it harder for them to build their shells.

- A. True
- B. False

4. Which of these is an example of an 'Adaptation' strategy specifically designed for urban Heat Islands created by climate change?

- A. Passing a law to limit the number of cars sold in a city.
- B. Switching a city's power grid from coal to wind turbines.
- C. Installing 'cool roofs' and planting urban 'micro-forests' to lower city temperatures.
- D. Investing in carbon capture technology at a local industrial plant.

5. Climate scientists use _____, such as ice cores and tree rings, to reconstruct Earth's climate history from thousands of years before thermometers were invented.

- A. Proxy data
- B. Direct sensors
- C. Simulated variables
- D. Anecdotal evidence

6. The Greenhouse Effect is a purely man-made phenomenon that did not exist before the Industrial Revolution.

- A. True

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B. False

7. How does the 'Thermohaline Circulation' (the Great Ocean Conveyor Belt) relate to climate change concerns in the North Atlantic?

- A. Warmer temperatures are speeding up the currents, making them move faster than ever.
- B. Increased freshwater from melting glaciers could 'freshen' the water, potentially slowing the current that brings heat to Europe.
- C. The circulation is causing the ocean to become more salty, which increases evaporation.
- D. The circulation only affects the movement of fish, not global heat distribution.

8. The process where certain species shift their seasonal behaviors, such as birds nesting earlier in the spring due to warming, can lead to a 'phenological _____' if their food sources aren't available at the same time.

- A. Alignment
- B. Mismatch
- C. Extension
- D. Stability

9. Which of the following describes a 'Mitigation' strategy aimed at 'Carbon Sequestration'?

- A. Scaling up public transportation to reduce the number of individual cars.
- B. Building higher dikes along the coastline of New Orleans.
- C. Restoring peatlands and seagrass meadows that naturally trap and store carbon for centuries.
- D. Distributing air conditioners to families in heat-vulnerable regions.

10. Global warming and climate change are exactly the same thing; the terms can be used interchangeably without any difference in scientific meaning.

- A. True
- B. False