

Name: _____ Date: _____

Answer Key: Dare to Lead the Change: 5th Grade Climate Action Challenge

Solve 10 analytical problems about the greenhouse effect and ocean acidification to prove your expertise in environmental science.

1. Imagine you are building a miniature greenhouse. Which gas should you increase inside the glass to best simulate how Earth traps heat?

Answer: C) Carbon Dioxide

Carbon dioxide is a greenhouse gas that absorbs and radiates heat back toward Earth, similar to how glass traps heat in a greenhouse.

2. When oceans absorb too much CO₂, the water becomes more _____, which makes it harder for shellfish to build their shells.

Answer: B) Acidic

Ocean acidification happens when CO₂ reacts with seawater, lowering the pH and impacting marine life like clams and oysters.

3. True or False: The 'Albedo Effect' means that white Arctic ice reflects more sunlight back into space than dark ocean water does.

Answer: A) True

Light-colored surfaces like ice have a high albedo, meaning they reflect energy, while dark water absorbs it, speeding up warming.

4. Which of these is an example of an 'adaptation strategy' for a coastal city facing rising tides?

Answer: C) Building houses on stilts

Adaptation involves changing how we live to stay safe from the effects of climate change that are already happening.

5. Scientists look at _____ trapped in ancient ice cores to see what Earth's atmosphere was like thousands of years ago.

Answer: B) Air bubbles

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Air bubbles trapped in glaciers act as tiny time capsules, preserving samples of the atmosphere from the distant past.

6. True or False: 'Weather' and 'Climate' mean the exact same thing when describing a specific region.

Answer: B) False

Weather describes short-term conditions (like a rainstorm), while climate describes long-term patterns over 30 years or more.

7. If a town replaces a coal power plant with a wind farm, which part of the climate equation are they addressing?

Answer: A) Mitigation (reducing the cause)

Mitigation refers to actions that reduce or prevent the emission of greenhouse gases to slow down global warming.

8. Permafrost is ground that stays frozen all year; when it melts, it releases _____, a very potent greenhouse gas.

Answer: B) Methane

Methane is released when organic matter in melting permafrost decomposes, which further accelerates warming.

9. Which of the following is a 'carbon sink,' meaning it naturally absorbs more carbon than it releases?

Answer: C) A seagrass meadow

Plants like seagrass, mangroves, and forests act as carbon sinks by pulling CO₂ out of the air or water for photosynthesis.

10. True or False: Climate change can cause some areas to get much wetter while other areas become much drier.

Answer: A) True

Global warming shifts precipitation patterns, leading to more intense floods in some regions and severe droughts in others.