Name: _____ **Date:** _____

Answer Key: Clipping Climate Change: Challenges for Clever 4th Graders

Young environmentalists analyze real-world scenarios to develop critical problem-solving skills for protecting our planet's future ecosystems.

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1. A coastal city in Norway is seeing its winter sea ice disappear. Which analytical conclusion best explains why this is a 'feedback loop'?

Answer: A) Darker ocean water absorbs more sunlight than white ice, leading to even more warming.

This is a positive feedback loop: as ice melts, the dark water underneath absorbs more heat, causing more ice to melt.

2. True or False: Using 'Urban Cooling' strategies, like painting city rooftops white to reflect sunlight, is an example of a mitigation strategy.

Answer: A) True

Mitigation involves actions that reduce warming. Reflective roofs (albedo effect) help keep cities cooler and reduce the need for energy-heavy air conditioning.

3. When a scientist observes that a specific mountain pika (a small mammal) is moving to higher, cooler altitudes every year to survive, they are documenting _____.

Answer: B) Species Adaptation

Species adaptation occurs when animals change their behavior or location to survive in a changing environment.

4. Imagine you are an engineer. To protect a city from 'Sunny Day Flooding' caused by rising tides without building a wall, which solution shows the best evaluation of nature-based design?

Answer: C) Restoring coastal wetlands and mangroves to soak up excess water.

Nature-based solutions like wetlands act as natural sponges, providing a sustainable way to manage rising sea levels.

5. True or False: The 'Greenhouse Effect' is a completely man-made phenomenon that did not exist before factories were built.

Answer: B) False

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The Greenhouse Effect is a natural process that keeps Earth warm enough for life; however, human activity has made it much stronger, causing global warming.

6. Instead of burning fossil fuels, a town chooses to use _____ energy, which comes from sources like the wind, sun, and moving water that never run out.

Answer: C) Renewable

Renewable energy sources are naturally replenished and do not emit the same level of greenhouse gases as fossil fuels.

7. Which of these scenarios represents a 'Hidden Cost' of climate change on human health in a hot desert region?

Answer: B) An increase in respiratory issues due to more frequent dust storms.

Climate change can cause droughts that lead to more dust, which directly impacts human lung health.

8. True or False: Thawing permafrost in the Arctic is dangerous because it releases trapped gases like methane, which is even more potent than carbon dioxide.

Answer: A) True

Permafrost acts as a storage locker for methane; when it thaws, that methane enters the atmosphere and accelerates warming.

9. Scientists use _____ to study air bubbles trapped in ancient glacier ice to see what the atmosphere was like thousands of years ago.

Answer: A) Ice cores

Ice cores are samples removed from ice sheets that allow scientists to analyze historical climate data.

10. If you are analyzing a graph that shows global temperatures and CO_2 levels over 100 years, what relationship would you expect to see?

Answer: C) As CO_2 levels go up, global temperatures also tend to rise.

Carbon dioxide traps heat; therefore, historical data shows a clear correlation between rising CO_2 and rising temperatures.