Name: _____ **Date:** _____

Answer Key: Dissecting the Triple Bottom Line: 11th Grade Sustainability Quiz

Students synthesize systems thinking and lifecycle analysis across 10 complex scenarios to evaluate global resource management and intergenerational equity.

---

1. Which framework assesses the environmental impact of a product from raw material extraction through disposal, often used in corporate sustainability auditing?

Answer: B) Life Cycle Assessment (LCA)

Life Cycle Assessment (LCA) is the standard method for evaluating the 'cradle-to-grave' environmental impact of a product or process, essential for 11th-grade systems analysis.

2. The 'Precautionary Principle' suggests that if an action has a suspected risk of causing harm to the public or the environment, the burden of proof that it is NOT harmful falls on those taking the action.

Answer: A) True

The Precautionary Principle is a cornerstone of sustainable policy, prioritizing long-term safety over immediate short-term economic gain when scientific certainty is lacking.

3. In the context of the Tragedy of the Commons, which economic instrument is designed to internalize the costs of pollution by putting a direct price on emissions?

Answer: C) Pigouvian Tax

A Pigouvian tax (such as a carbon tax) is an economic strategy used to correct negative externalities, forcing producers to account for the social and environmental costs of their actions.

4. How does 'Cradle-to-Cradle' design differ from traditional 'Cradle-to-Grave' manufacturing models?

Answer: B) It eliminates the concept of waste by designing products for infinite closed-loop cycles.

Cradle-to-Cradle (C2C) focuses on regenerative design where materials are viewed as nutrients in either biological or technical cycles, mimicking natural ecosystems.

5. What term describes the maximum population size of a species that an environment can sustain indefinitely without degrading the natural resource base?

Answer: C) Carrying Capacity

Name: _____ **Date:** _____

Carrying capacity is a fundamental ecological concept used in sustainability to determine the limits of resource consumption within a specific biome or the planet.

6. The 'Rebound Effect' (Jevons Paradox) occurs when an increase in efficiency leads to an overall increase in resource consumption rather than a decrease.

Answer: A) True

Jevons Paradox is a critical challenge in sustainability science; for example, more fuel-efficient cars may lead people to drive more miles, negating the fuel savings.

7. Which of these strategies best exemplifies the intersection of 'Social Equity' and 'Environmental Sustainability' in urban planning?

Answer: B) Expanding Transit-Oriented Development (TOD) with affordable housing units.

Transit-Oriented Development reduces carbon emissions while ensuring lower-income populations have reliable access to jobs and services, addressing two pillars of sustainability simultaneously.

8. When a company spends more time and money on marketing itself as environmentally friendly than on actually minimizing its environmental impact, this practice is known as _____.

Answer: B) Greenwashing

Greenwashing is a critical concept for 11th graders to understand as they evaluate corporate social responsibility and consumer choices.

9. The concept of 'Intergenerational Equity' suggests that the current generation has a moral obligation to leave the planet in a state that is at least as productive as they inherited it.

Answer: A) True

Intergenerational Equity is a core ethical principle of sustainability, balancing the rights of people alive today with the rights of those not yet born.

10. In the context of the UN Sustainable Development Goals (SDGs), what is considered a 'wicked problem' in environmental science?

Answer: C) A complex issue with contradictory requirements and shifting social dynamics.

Sustainability involves 'wicked problems' like climate change or global ocean plastic, which involve deep systemic complexities and lack simple, linear solutions.