Name: _____ **Date:** _____

Answer Key: Keeping It Triple Bottom Line: 10th Grade Sustainability Quiz

Evaluate the intersection of life-cycle assessments, ecological footprints, and circular economy models to solve real-world environmental trade-offs.

---

1. The 'Cradle-to-Cradle' design framework differs from traditional manufacturing primarily by:

Answer: B) Eliminating the concept of waste by creating closed-loop cycles

Cradle-to-Cradle mimics biological cycles where every 'waste' product becomes a nutrient or input for a new product, moving beyond mere recycling into a truly circular economy.

2. The 'Tragedy of the Commons' suggests that individuals acting in their own self-interest will eventually deplete shared resources, even if it is not in anyone's long-term interest.

Answer: A) True

This economic theory, popularized by Garrett Hardin, explains why unregulated shared resources like fisheries or clean air are prone to overexploitation.

3. In the context of the Triple Bottom Line, a company that focuses on fair labor practices and community engagement is prioritizing the _____ pillar.

Answer: C) Social

The social pillar (often called 'People') refers to the fair and beneficial business practices toward labor and the community where a corporation conducts its business.

4. Which of these represents a 'Rebound Effect' (Jevons Paradox) in environmental policy?

Answer: B) Improved fuel efficiency leads people to drive significantly more miles, offsetting fuel savings.

Jevons Paradox occurs when technical progress increases the efficiency with which a resource is used, but the falling cost of use increases total consumption of that resource.

5. The amount of biologically productive land and sea area an individual or population requires to produce the resources they consume is known as an ecological _____.

Answer: B) Footprint

Name: _____ **Date:** _____

An ecological footprint is a standardized measure of human demand on Earth's ecosystems, comparing human consumption against Earth's biocapacity.

6. Intergenerational equity refers strictly to the financial debt passed from one generation to the next.

Answer: B) False

In sustainability, intergenerational equity is the concept that the current generation must not exhaust natural resources or degrade the environment in a way that leaves future generations worse off.

7. Which agricultural method is specifically designed to sequester carbon while maintaining soil biodiversity?

Answer: C) Regenerative agriculture

Regenerative agriculture focuses on topsoil regeneration, increasing biodiversity, and improving the water cycle, which helps trap carbon in the soil.

8. Using a life-cycle assessment (LCA), a researcher would evaluate the environmental impact of a product from _____.

Answer: B) Raw material extraction to end-of-life

An LCA is a comprehensive 'cradle-to-grave' analysis that tracks every environmental impact from the moment materials are mined until the product's final disposal.

9. Bio-mimicry is the practice of looking to nature's models and strategies to solve human design challenges, such as using the shape of a bird's beak to design a high-speed train.

Answer: A) True

Bio-mimicry is a key sustainable design tool; for example, the Shinkansen Bullet Train was modeled after the Kingfisher bird to reduce noise and increase efficiency.

10. A community decides to implement 'Greywater' systems. This most directly supports sustainability by:

Answer: B) Reusing lightly used water from sinks and showers for irrigation

Greywater recycling reduces the demand for fresh 'potable' water by using slightly dirty water (from non-toilet sources) for landscape watering or toilet flushing.