**CHAPTER 4: STUDY GUIDE**

**ECOSYSTEMS**

Steps for studying for the Ecology Unit Test:

1. Re-read your notes and use questions from these to quiz yourself
2. Be able to define the vocabulary for the list below

**VOCAB:  Be able to define the following terms.  Make VOCAB cards if you need to.**

**Pre - Biomimicry Lesson: Introduction to Ecosystems and Ecology**

|  |  |  |  |
| --- | --- | --- | --- |
| Ecology | Ecosystems | Biotic | Abiotic |
| Biome | Biosphere |  |  |

**Lesson # 1: Spheres of the Earth / Bias in Science**

|  |  |  |  |
| --- | --- | --- | --- |
| Atmosphere | Biosphere | Geosphere | Hydrosphere |
| Bias |  |  |  |

**Lesson # 2: Ice Caps**

|  |  |
| --- | --- |
| sustainability | Polar ice cap |

**Lesson # 3:Solar Energy**

|  |  |  |  |
| --- | --- | --- | --- |
| Greenhouse Effect | Greenhouse Gas | Convection Current  | Tradewinds  |
| Easterlies | Westerlies | Surface ocean current | Deep ocean current  |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |

**Lesson # 4: Energy Flow in one direction through Ecosystems**

|  |  |  |  |
| --- | --- | --- | --- |
| Producer | consumer | carnivore | herbivore |
| Primary consumer | Secondary consumer | omnivore | Trophic level |
| Decomposer | Detrivore  | Top carnivore | Biodegredation |

**Lesson # 5: Matter is recycled in ecosystems**

|  |  |  |  |
| --- | --- | --- | --- |
| nutrients | matter | Carbohydrate | Protein |
| Carbon | Nitrogen | Cellular Respiration | Photosynthesis |

**Lesson #6: Matter cycles: Water, Phosphorus, Nitrogen, Carbon**

|  |  |  |  |
| --- | --- | --- | --- |
| Nutrient cycles | Evaporation | Transpiration | precipitation |
| condensation | Point source pollution | Non-point source pollution | bioaccumulation |
| biomagnification | source | sink |  |

**QUESTIONS:**

**Pre- Biomimicry Lesson: Introduction to Ecosystems and Ecology**

1. Differentiate between an abiotic and biotic feature
2. What are the two main factors that determine the characteristics of each Biome on our earth?
3. What biome is West Vancouver located in?
4. Name three other biomes.
5. Name, and describe, two ways that humans have influenced our biomes.

**Lesson # 1: Spheres of the Earth / Bias in Science**

1. Name and briefly describe the four different spheres?
2. Define the terms biotic and abiotic.
3. Explain ways in which the biosphere and atmosphere might interact.
4. Explain ways in which the atmosphere and biosphere might interact.
5. Name one other interaction that can take place between spheres.
6. What are three different types of bias that you need to watch for as you read about science issues in the news.

**Lesson # 2: Effects of Arctic Ice Cap Melting**

1. Give an example of how each sphere (biosphere, atmosphere, geosphere, hydrosphere) may be affected by the melting ice caps.

**Lesson # 3: Solar Energy**

1. Describe the three main paths solar radiation can take as it approaches Earth.
2. Ine one sentence, describe the greenhouse effect. Is the greenhouse effect good or bad for Earth?
3. Describe one source of each of the 4 main greenhouse gases?
4. What human activities release greenhouse gases?
5. Explain why the equator is hotter than the North Pole.
6. How are winds on earth created?
7. What are the characteristics of each of the three wind systems?
8. How are surface currents created? How are deep ocean currents created?
9. What is the primary role of wind and ocean currents?

**Lesson # 4: Energy Flow in one direction through Ecosystems**

1. Create a food chain, that exists in a temperate rainforest, that includes: producer, primary consumer, secondary consumer, tertiary consumer, quaternary consumer and a decomposer
2. In your food chain above, name the herbivore, the omnivore (if there is one) and a carnivore
3. If a producer contain 1364 kJ of energy, how much of that energy would be available for the secondary consumer?
4. What percentage of energy is lost between between each trophic level?
5. What is the difference between a food chain and a food web?
6. Does the energy in an ecosystem flow one way or is it recycled? Explain.

**Lesson # 5: Matter is recycled in ecosystems**

1. What organism recycles nutrients when another organism dies?
2. How do animals retrieve energy to sustain life?
3. What is the formula for glucose?
4. Is glucose a carbohydrate, protein or fat?
5. What element is the most abundant in our atmosphere?
6. How do animals obtain nitrogen?
7. Write the chemical formula for cellular respiration.
8. Write the chemical formula for photosynthesis
9. Do nutrients within an ecosystem flow in one direction or are they recycled. Explain.

**Lesson # 6: Matter cycles: water, carbon, nitrogen and phosphorus**

1. What is the difference between point source and non-point sources of pollution?
2. How are bioaccumulation and biomagnifaction related? How are they different?
3. What is the difference between a source and a sink when discussion nutrient cycles?
4. Explain the significance of carbon, nitrogen and phosphorus to living things.
5. Name three ways in which humans can negatively impact the nutrient cycles - be specific.
6. How do animals obtain nitrogen?
7. Give two specific examples of how nutrients can go from one sphere to another.
8. What is the difference between how nutrients go through ecosystems and how energy goes through ecosystems? (think back to lesson 4).