**Things to Write Down on your Scratch Paper**

**Important Facts:**

1. Nitrogen-fixing BACTERIA key players in N cycle\*
2. 10% energy rule\*
3. Mutualism (++), commensalism (+o), parasitism (+-)\*
4. Examples of limiting factors
5. Causes of climate change, habitat destruction, and loss of biodiversity
6. Characteristics of early life: HUPAN (write out the acronym)
7. Different pieces of evidence for evolution: fossil, biochemical, anatomical\*
8. Evolution = NATURAL SELECTION!!!!!\*
9. Six Kingdoms
10. Elements of 4 major biomolecules (CHO, CHO, CHON, CHONP)\*
11. Monomers of biomolecules
12. Enzymes = lock & key, speed up chemical reactions\*
13. Prokaryote vs Eukaryote
14. Plant cells vs Animal cells
15. Cell Membrane: hydrophilic heads, hydrophobic tails\*
16. Passive transport: high to low; Active transport: low to high using ATP!!!\*
17. Equations for photosynthesis and cellular respiration (remember they are opposites!!)
18. Stages of the cell cycle and mitosis: PMAT (write out the acronym)
19. Cell Differentiation = GENE EXPRESSION!!!\*
20. Nitrogenous Bases of DNA and RNA and base-pair rules (i.e. A-T, C-G, etc.)
21. Three components of nucleic acids
22. Protein synthesis: Transcription and Translation\*
23. Genotype = genetic makeup, Phenotype = physical appearance\*
24. Gene expression based on environmental influences\*
25. Mitosis vs. Meiosis
26. Genetic Variability comes from 3 sources: Crossing Over, Independent Assortment, and Random Fertilization\*
27. Blood Types: A, B, AB, O; 3 alleles: A, B, and O (A and B are co-dominant, O is recessive)\*
28. Male and female sex chromosomes
29. Steps of making transgenic organism
30. Gel Electrophoresis used for comparing DNA\*

**Important Visuals and Graphs:**

1. Population growth graphs (exponential and carrying capacity)
2. Carbon and nitrogen cycles
3. Energy pyramid
4. Cladogram (Phylogenetic tree)
5. Structure of biomolecules
6. Stages of enzyme and substrate
7. Cell membrane diagram
8. Chart for solving cell transport problems

Inside Outside

Water

Solute

1. Cell cycle diagram
2. Practice Punnett squares

**Important Vocab\*:**

1. a-, an- not or non
2. –ase, enzyme
3. auto-, self
4. bio-, life
5. co-, together
6. cyto-, cell
7. ecto-, outer
8. endo-, internal
9. –genesis, origin
10. hetero-, different
11. homo-, same
12. hyper-, above
13. hypo-, below
14. –ose, carbohydrate
15. photo-, light
16. –ploid, chromosome
17. –troph, eat, consume