

Biology Semester 2 Final Review Guide

Cellular Activity “You Must Knows”

1. Be able to draw the basic structure of a cell membrane showing lipids and proteins.
2. Be able to predict which way water or solute will move through a cell membrane based on concentrations of solute and permeability of the membrane. (*also for anatomy unit*)
3. Know and be able to explain how you know: the inputs (reactants) and outputs (products) of photosynthesis.
4. Know and be able to explain how you know: the inputs (reactants) and outputs (products) of cellular respiration. (*also for anatomy unit*)
5. Be able to describe similarities and differences between photosynthesis and cellular respiration.
6. Know the difference between aerobic and anaerobic cellular respiration.
7. Know that yeast perform anaerobic cellular respiration when no oxygen is present and that is also called fermentation.
8. Be able to analyze data from the yeast fermentation lab to reach conclusions on rate of fermentation

Genetics Unit “You Must Knows”

9. The difference between homozygous and heterozygous; the difference between genotype and phenotype and the difference between dominant and recessive.
10. Be able to perform a genetic cross analysis with a Punnett Square.
11. Know that humans have 46 chromosomes – 23 pairs. One of each pair comes from mom and the other from dad.
12. The structure of DNA including location of deoxyribose sugar, phosphate and bases, as well as base pairing rules.
13. The process of transcription – making RNA from DNA
14. The process of translation – making protein from RNA – and how to use a codon chart.
15. Be able to describe the causes of several diseases – some that are caused by genetic inheritance only and others are caused by interaction of genes and the environment.
16. Understand several risks and benefits to the use of genetic engineering and genetically modified organisms.

Evolution Unit "You Must Knows"

17. Be able to place organisms on a cladogram based on shared characteristics.
18. Be able to analyze similarities in bone structure to make inferences about common ancestry.
19. Be able to identify the several types of reproductive isolation given a scenario in which isolation is occurring.
20. Be able to explain and understand how evolution can happen based on mutation, variation, isolation, environmental pressure, natural selection, survival and reproduction.
21. Be able to analyze fossil footprints to make inferences about the organisms that made them.

Anatomy Unit "You Must Knows"

22. Know the major organs and tissues of these body systems: circulatory, respiratory, digestive, endocrine, excretory.
23. Know the order of complexity of these structures: atoms, molecules, cells, tissue, organs, organ systems, organism, and be able to draw a representation of each.
24. Know the names of the four blood vessels entering and leaving the heart, the direction of blood flow through the heart and which side carries oxygenated blood.
25. Understand and be able to explain the cause of a heart attack.
26. Understand how the circulatory and respiratory systems work together to deliver oxygen to the body and remove carbon dioxide.
27. Know the connection between diffusion and gas exchange between the respiratory and circulatory systems.
28. Understand how concentration gradients affect direction of diffusion across a membrane.
29. Know the inputs and outputs of cellular respiration.
30. Know where in the digestive system ingestion, digestion, absorption and elimination take place.
31. Know the building blocks of each of the three macromolecules we studied and where each begins chemical breakdown.
32. Understand the process and the organs involved in the regulation of blood sugar in the body.