9th Grade Science Options: The Major Differences

	Biology #3100	**Advanced Biology #3120**
Grading	40% Daily work, Labs & Quizzes 40% Tests & Major Projects 20% Interactive Spiral	40% Labs & Quizzes 40% Tests & Major Projects 10% Daily Work 10% Notebook
Reading	In-class reading only, amount varies with each unit	**Out of class reading required** (amount varies with each unit). Required reading is in digital format.
Writing	Short answer questions on some worksheets and labs (all done in-class)	Short answer questions on all worksheets and labs. **Timed writing in-class at least once per cycle. Short answer test questions.**
Tests	2 per six weeks 40 questions: multiple choice, matching	2-3 per six weeks 50 questions: multiple choice, matching, **short answer/essay**
Projects	In-class projects with some group assignments (no outside work required)	One major **out of class** research/project assignment each six weeks.
Homework	Very little outside of class (most done during class); review for quizzes & tests is the main homework required outside of class time	Content requires review outside of class. **Homework 2-3 nights per week**
College Credit and GPA	No college credit or bonus GPA points	**+5 points added to your GPA** after successful completion of the course; no college credit

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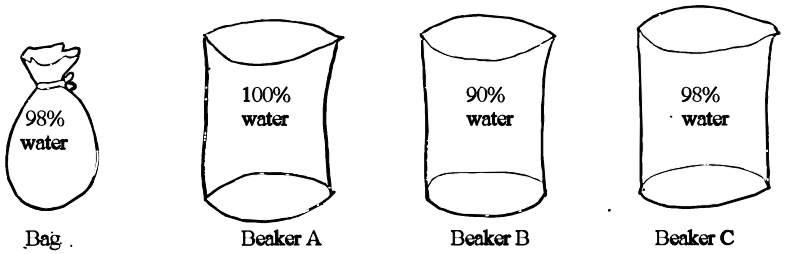
SAMPLE REGULAR BIOLOGY TEST QUESTIONS	SAMPLE ADVANCED BIOLOGY TEST QUESTIONS
Which of the following is most likely to cause increases in a predator population? a. Fewer prey b. A reduction in competition c. More parasites d. A period of drought	Use the animal population pairs below to answer the following question. I: Bobcat and Jackrabbit II: Bison (buffalo) and Grasshopper III: Grizzly bear and Salmon IV: Grey wolf and White-tailed deer V: Bald Eagle and Monarch butterfly Which of the animal populations pairs above would most likely exhibit a "boom and bust" cycle? a. I only c. II and V e. I, III, and V b. I and IV d. I, III, and IV
True or False – During Biological Magnification, the concentration of **pollutants** increases as you move up the tropic levels of a food chain.	Assume that algae store 10 ppm of DDT and the concentration is increased 5 times at each trophic level. What would be the concentration of DDT in the bald eagle? algae → small fish → trout → bald eagle a. 50 c. 250 b. 500 d. 1250
The maximum size of a cell is determined by its a. weight b. mass c. volume d. surface area	Cells are small because a. surface area/volume ratio decreases as cells get larger b. speed of diffusion takes a long time to get in and out of large cells c. cell membrane will break down in large cells
 If the bag is placed into Beaker A, what type of solution does that represent? a. hypotonic solution b. hypertonic solution c. isotonic solution	Suzie just finished her Grape Osmosis lab. She placed one group of grapes in deionized water, one group in grape juice, and one group in salt water. Her data is shown below. Grape Group A Initial Mass: 24.3g Final Mass: 21.0g Grape Group B Initial Mass: 25.6g Final Mass: 25.7g Grape Group C Initial Mass: 26.1g Final Mass: 27.9g a. Group A was placed in an isotonic solution b. Group B was placed in a hypertonic solution c. Group C was placed in a hypotonic solution d. Group A was placed in a hypotonic solution
No comparable question - % mass calculations not tested in regular Biology	The percent mass change from group A is: % mass change = (final mass - initial mass)/initial mass X 100 a. -15.7% b. -3.3 % c. -13.6% d. 13.6%

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In Advanced Biology, one goal we have is to prepare our students for future success on AP Science exams. On AP exams, students are timed while completing long free-response questions, one of which is lab or data-based, and short free-response questions, requiring a paragraph-length argument or response. In Advanced Biology at least once each six weeks we practice timed technical writing skills required for success on AP science exams.

FRQ for Cells

Question 1

During an investigation of a freshwater lake, an AP Biology student discovers a previously unknown microscopic organism. Further study shows that the unicellular organism is eukaryotic.

Identify FOUR organelles that should be present in the eukaryotic organism and describe the function of each organelle.

FRQs for Cell Transport

Question 1

A. Describe the structure of the cell membrane surrounding an animal cell.

B. Discuss how carbon dioxide (CO_2), water (H_2O), and sodium ions (Na^+) are transported across the cell membrane by both passive and active transport.

Question 2

Joseph designed an experiment to determine the amount of solute contained in an egg. First, he soaked the eggs in vinegar to dissolve their shells, leaving only the membrane. Next, the eggs were massed (weighed) and placed in syrup solutions of 30%, 60%, and 90% concentration, while the remaining egg was placed in distilled water and left to sit overnight. The next class period he massed the eggs a final time. His results are summarized in the data table below:

INSERT DATA TABLE FROM TEST 1 Question 2

A. Calculate the change in mass for each egg.

B. On the axes provided, construct and label a graph showing the results for the four eggs.

INSERT GRAPH FROM TEST 1 QUESTION 2 (B)

C. At what point is the egg isotonic to the syrup solution? Justify your answer.

D. For Eggs 1, 3, and 4, explain why the change in mass was greater than or less than the change in mass that occurred in Egg 2, the 30% syrup solution.