Biology Midterm Review/Practice Test

Inquiry

Vocabulary

Biology	Biochemistry	Dependent Variable	Hypothesis
Chemistry	Hypothesis	Control group	Conclusion
Taxonomy	Independent Variable	Experimental Group	

Things to know

Inquiry sequence (scientific method)
Tools of science
Where to place things on a graph
Draw conclusions from graphs

Things to be able to do

Mr. C is performing an experiment. He has noticed that some students cry during his tests. He also has noticed that more students cry during certain tests, rather than others. Mr. C assumes that the students are crying because they are overjoyed at the opportunity to demonstrate their knowledge. He decides that it is probably the longer tests that are causing them to cry more, because the more questions there are, the more opportunities they have. He decides to set up an experiment. Rather than just passing out one test to all of his students Mr. C decides to create ten different tests. The first test would have 10 questions, the next 20 and so on till 100 (a standard test is 50 questions long). He gives all the students the same amount of time to complete the tests, on the same day, and covers the same material, randomly drawing questions from his list. He gives each test to 15 of his 150 students at random and records how many students cry during each test (whimpering and sniffling are not counted since it is cold season). The results are found in the table below.

Number of Questions	Number of Criers (out of 15)
10	0
20	1
30	1
40	2
50	4
60	5
70	6
80	8
90	10
100	14

1) Make a graph above of the data collected; be sure to follow graphing rules. (5 points)
2) What is one of Mr. C's observations? students cry during tests
3) What is one inference that Mr. C made? students are overjoyed
4) If Mr. C had made a formal hypothesis about his experiment, what might it have been? Students cry because they are overjoyed to take tests.
5) Identify the following:
   a. Control Group: 50 question tests students
   b. Experimental Group: all others
   c. Independent Variable: # of questions
   d. Dependant Variable: # of criers
   e. Sample Size: 150
6) How **valid** was the experiment? Not very, no way to tell why they were crying
7) What improvements could be made to the experiment to improve the validity (even a good experiment can be improved)? questionnaire of feelings etc.

Taxonomy

Vocabulary

Species	Common Name	Animal	Eubacteria
Linnaeus	Scientific Name	Fungi	Archebacteria
Binomial Nomenclature	Plants	Protista	

Things to know

6 kingdoms
Order of taxonomic categories (Kungfu Panda...)
Match definitions

Things to be able to do

See things to know, no practice problems here

Biochemistry

Vocabulary

Universal Solvent	Atoms	Electrons	Biochemistry
Products	Protons	Polar	Organic
Reactants	Neutrons	Hydrogen Bonding	Inorganic

Things to know

What makes water unique
Why chemistry is critical for biology

Things to be able to do

Identify the following is organic (O) or inorganic (I)

I water O Lipids O $C_6H_{12}O_6$ I O_2 I NH_3 O DNA

Macromolecules

Vocabulary

Enzyme	Lipid	Carbohydrate	Nucleotide
Activation Energy	Protein	Amino Acid	Simple sugar
Catalyst	Nucleic Acid	Fatty Acid	monosaccharide

Things to know

Monomer of each macromolecule
Examples of each macromolecule
Food source of each macromolecule
What enzymes are and how they work

Things to be able to do

See midterm Megamatch

Characteristics of Life

Vocabulary

Reproduction	Metabolism	Homeostasis
Heredity	Cellular Organization	

Things to know

Know the 5 characteristics of life
Know examples of each of the five
Know cell theory

Things to be able to do

See Midterm Megamatch

Cells

Vocabulary

Cell membrane	Ribosome	Mitochondria	Endoplasmic Reticulum

Nucleus	Centriole	Cell Wall	Prokaryote
Lysosome	Vacuole	Unicellular	Eukaryote
Chloroplast	Golgic Body	Multicellular	

Things to know

Cell membrane structure and components
Distinguish between prokaryote and eukaryote
Distinguish between unicellular and multicellular
Distinguish between animal and plant cells
Know cell theory
Know limits to cell size

Things to be able to do

See Midterm Megamatch Cell Parts

Osmosis/Diffusion/Transport

Vocabulary

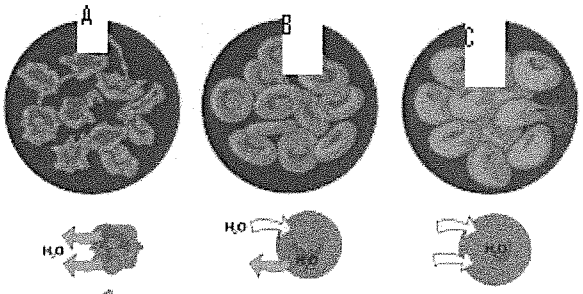
Channel Protein	Diffusion	Phagocytosis	Isotonic
Receptor Protein	Osmosis	Pinocytosis	Marker Protein
Active Transport	Endocytosis	Hypotonic	
Passive Transport	Exocytosis	Hypertonic	

Things to know

Difference between active and passive transport and examples
Different types of membrane proteins and their functions
Affect of different types of solutions on cells

Things to be able to do

See midterm megamatch



8) C Which cells are in a hypotonic solution?
9) B Which cells do you have in your blood right now?
10) C The cells in A shrank because?
a.) They were in a hypotonic solution.
b.) They were in a hypertonic solution.
c.) They were in an isotonic solution.

Photosynthesis/Cell Respiration

Vocabulary

Anaerobic	Calvin Cycle (Dark	Mitochondria	Alcoholic Fermentation
Aerobic	Reactions)	Chloroplast	
Krebs Cycle	Electron Transport Chain	ATP	
Light Reactions	Glycolysis	Lactic Acid Fermentation	

Things to know

Formulas for each reaction
Reactants and Products for each (what goes in and what comes out)
Where ATP is made (and how to make the most)
What ATP is and how it's used

Oder of reactions for both
When you do fermentation
Difference between aerobic and anaerobic respiration
Where each reaction occurs
Where the oxygen we breathe comes from

Things to be able to do

See midterm megamatch

Mitosis & Meiosis

Vocabulary

Diploid	Anaphase	Sex/Germ cell	Cell Plate
Haploid	Telophase	Somatic/Body cell	Cleavage Furrow
Interphase	Cytokinesis	Gamete	
Prophase	Mitosis	Zygote	
Metaphase	Meiosis	Crossing Over	

Things to know

How gender is determined (sex chromosomes)
Order of phases of mitosis
What happens during each phase of mitosis
Diploid vs haploid, number of chromosomes and where they're made
Differences in cytokinesis in plants and animals, cell plate vs cleavage furrow
How may chromosomes humans have
Major differences between mitosis & Meiosis including crossing over, haploid etc

Things to be able to do

Cell Part Questions

11) ___ In plant cells a cell plate forms during cytokinesis.
12) ___ The spindle is made of microtubules and is used to separate the cell.
13) ___ The centriole serves to anchor the spindle and aid in cell division.

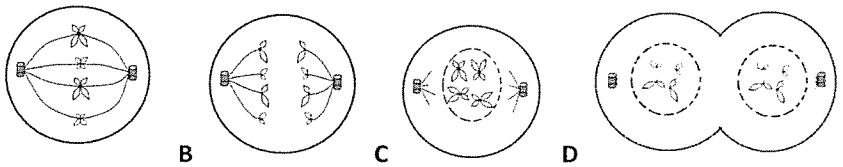
Cell Types

14) ___ Pumba (Warthog from the Lion King) has 17 chromosomes in his gametes. He is caught by the hyenas and turned into bacon. How many chromosomes are in each cell of the bacon strips? 34.
15) ___ You're a Diploid!
16) ___ Meiosis produces 4 Haploid cells and mitosis produces 2 Diploid cells.

Weird Meiosis Stuff

17) ___ Crossing over occurs during Prophase 1 of meiosis which is the (**First** / **Second**) division.
18) ___ Tetrads are pairs of sister chromatids which are present in Prophase 1 and Metaphase 1 of meiosis.

Mitosis Phases



19) ___ What is the order of the phases? C A B D
20) ___ What phase do sister chromatids separate? B
21) ___ Where do chromosomes condense? C
22) ___ Are these plant or animal cells? Animal.
23) ___ How do you know? cleavage furrow
24) ___ What phase is DNA replicated in (Name not a letter)? DNA Synthesis Phase of Interphase