

Study Guide: Test on Introduction Topics and Chemistry

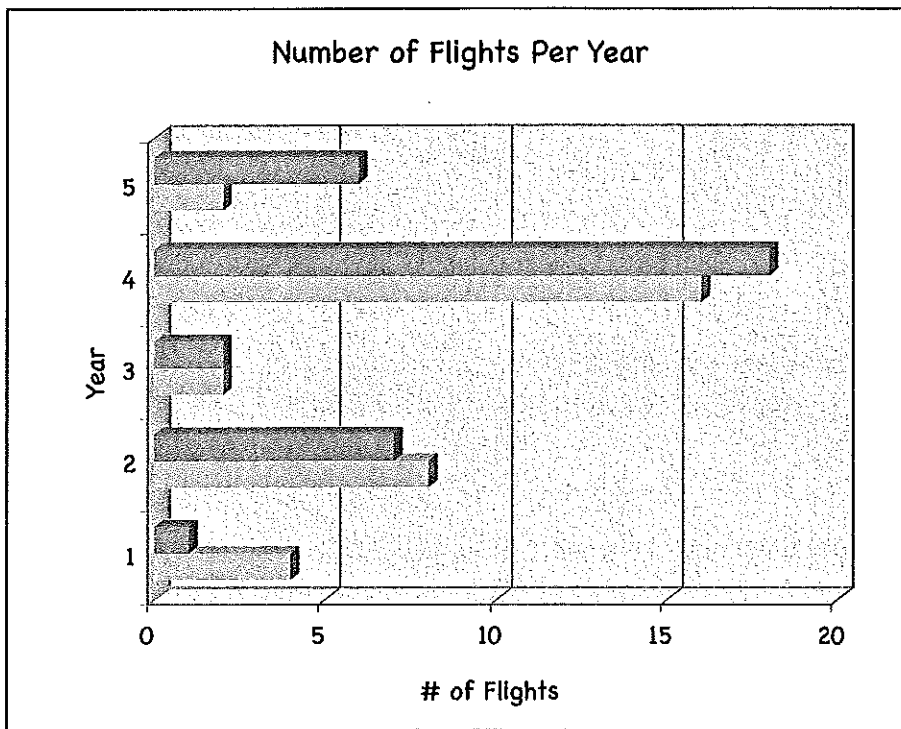
1) List the 8 Characteristics of Life.

- Reproduction
- Evolution
- Homeostasis
- Respond to Environment
- Made of Cells
- Based on a genetic Code
- Grow + Develop
- Need materials for energy

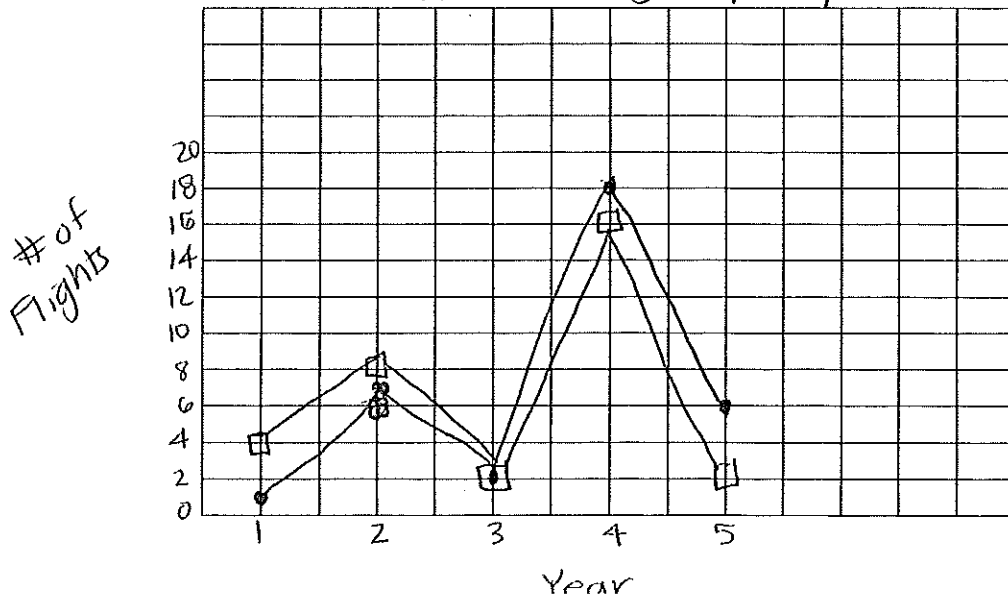
2) List the Levels of Organization (in order).

- 1) molecules
- 2) cells
- 3) Groups of cells
- 4) Organism
- 5) Population
- 6) Community
- 7) Ecosystem
- 8) Biosphere

3) Change the graph below into a line graph.



Number of Flights per year



● - Individual A
 □ - Individual B

- 4) An athlete wanted to test the effects of different shoes on the track to see if they made a difference in the amount of time it took them to run 2 miles. The athlete used 3 different types of shoes: running shoes, cross-training shoes, and spikes. The athlete ran 3 days, at the same time of day. They ate the same breakfast, did the same warm-up routine and wore similar outfits each day. On the first day the athlete wore the cross-trainers and got 18:09 for the 2 miles. The second day they wore the spikes and ran the 2 miles in 17:30 and on the 3rd day, the running shoes and a time of 17:57.

What could be a conclusion for this experiment? (varies)

The spikes made them run fastest and the cross trainers the slowest

What were the constants?

track, time of day, distance, type of outfit, breakfast

What was the independent variable? shoes

What was the dependent variable? time

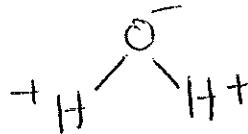
What could have been sources of error?

sleep, food from previous day, other activity, weather

- 5) What are the 6 properties of water?

polarity
hydrogen bonds
high specific heat
ice float
universal solvent
pH 7

- 6) Draw and label a water molecule.



- 7) What is the difference between adhesion and cohesion?

attraction between two different substances
attraction of the same substance to itself

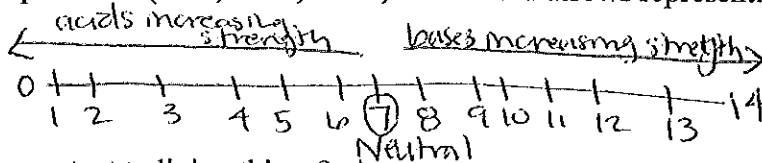
- 8) $\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$

In the above conditions, what does there need to be more of to make the conditions acidic? H^+

Basic? OH^-

Neutral? needs to be equal

- 9) Draw and label the pH scale. (0-14, acids, bases, neutral and arrows representing increasing strength)



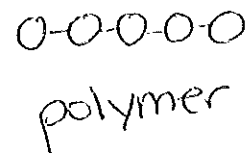
- 10) Why are buffers important to living things?

maintain homeostasis - no spikes in pH acids or bases

- 11) Draw and label the process of polymerization? (monomers, polymer, polymerization)



polymerization



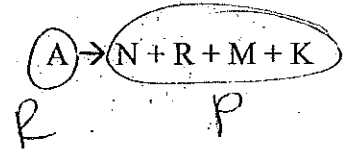
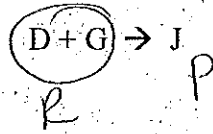
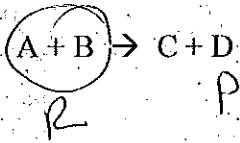
12)

Compound Name	Monomers	Polymers	Examples	Importance to Humans
Protein	Amino Acids	Protein Polypeptide	Enzymes, Hair, Nails	regulates rxn rates, fights disease
Nucleic Acid	Nucleotides	Nucleic Acid	DNA, RNA	store and transmits genetic material
Carbs.	mono saccharides	poly saccharides	sucrose, starch	energy
Lipids	glycerol, fatty acid	Lipids	waxes, oils, fats	energy, cell membrane

12) What is a chemical reaction?

when sets of compounds are changed into products

13) In the following reaction label the reactants and the products.



14) How is energy released from a molecule?

bonds break

15) What is a catalyst?

a compound that speeds up reactions

16) What is a biological catalyst?

a compound that speeds up reactions in living things

17) What is an enzyme?

biological catalyst

18) How is an enzyme and substrate like a lock and key?

enzyme - lock
substrate - key

substrates are made to fit into a specific active site (lock), the substrates are changed, like the lock is opened.

19) Label the following in the Enzymatic Reaction below: (enzyme, substrates (reactants), products, enzyme substrate complex and active site.

