Biochemistry Literacy for Kids Lesson 1: Gasses and Hemoglobin

Teacher _____ Name _____

Period _____ Date _____

Pretest

1. What are living things made of?

2. What is an element?

3. What is an atom?

4. Can you give an example of a kind of element or atom?

5. What is a molecule?

6. Can you give an example of a kind of molecule?

7. What is a cell?

8. Can you give an example of a kind of cell?

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Guided notes

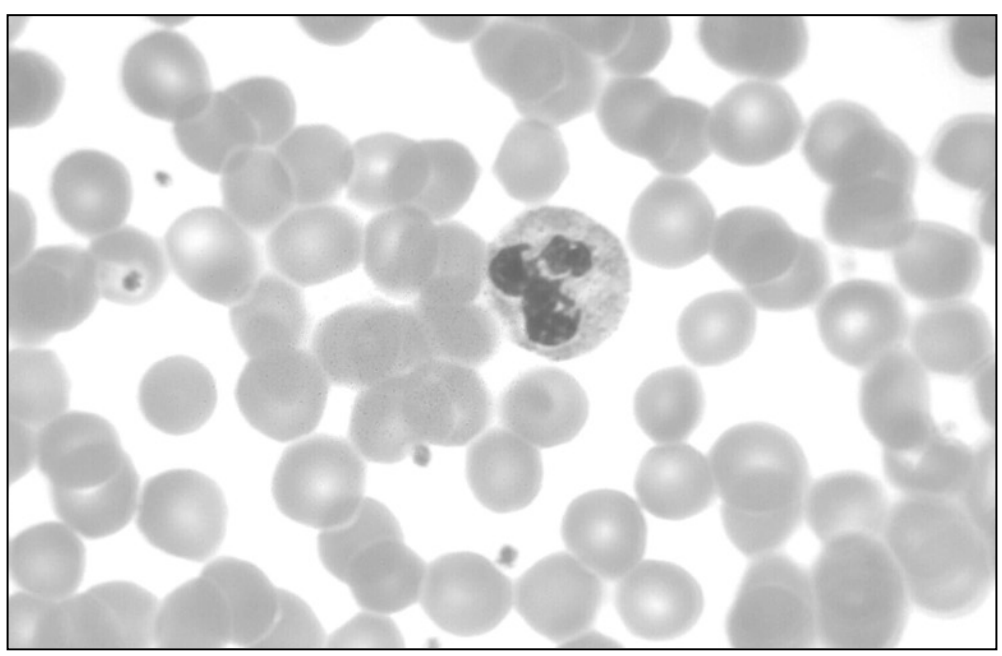
1. In most periodic tables, elements 56 and 71 and elements 88 and 103 are side by side.

The reason periodic table are drawn this way is to save _____ .

2. After viewing and exploring the hemoglobin structure, fill in the table below.
   Also, color in the element boxes of the periodic table sheet with the correct colors.

	Symbol	Atom color	Number of bonds
Hydrogen			
Carbon			
Nitrogen			
Oxygen			
Fluorine			
Neon			

3. Use arrows to label a red blood cell, a white blood cell, and a platelet.



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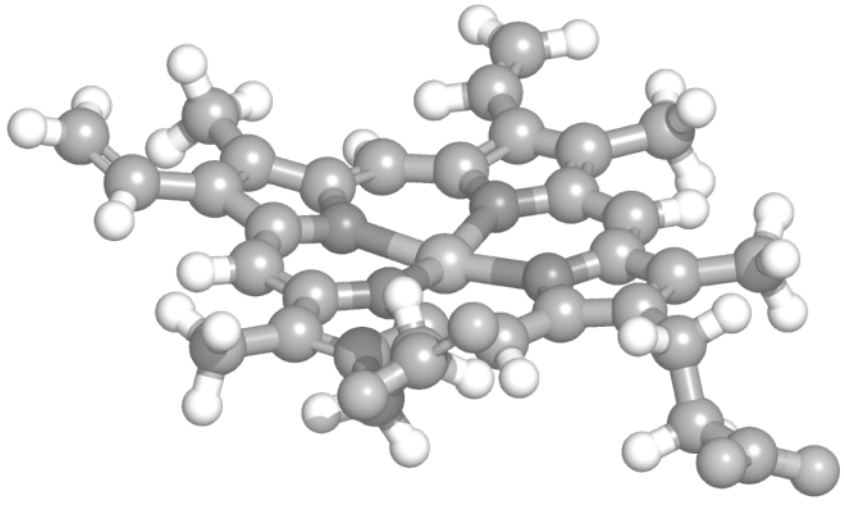
Guided notes

4. There are about _____ hemoglobin proteins inside every red blood cell.

5. Oxygen binds to the central iron of hemoglobin's heme. Sketch in the oxygen O_2 molecule.



6. Create drawings for the gas molecules as you build them. Use letters and lines for atoms and bonds.

Hydrogen gas: H_2
Catches fire, used in zeppelins

Use long bonds

Carbon dioxide: CO_2
What we exhale

Use long bonds

Nitrogen gas: N_2
80% of the air

Use long bonds

Oxygen gas: O_2
20% of the air, what we inhale

Fluorine gas: F_2
Poison

Neon: Ne
Used in neon signs

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Guided notes

7. It is very hard to break down nitrogen gas N_2 because it has a _____.

8. Zeppelins like the Hindenburg could explode because they were filled with hydrogen, which reacts with oxygen in the air in a combustion chemical reaction. Draw the molecules that are created by this chemical reaction, after the arrow.

9. Helium is a safer gas than hydrogen because it does not form any _____ .

10. For the two forms (allotropes) of carbon below, describe how the atoms are arranged. How do the molecular arrangements effect the properties of the materials?

Diamond:

Graphite:

11. Gas that we exhale _____ It makes up _____% of the atmosphere.

12. Gas that makes the sky blue _____ It makes up _____% of the atmosphere.

13. Gas that plants produce _____ It makes up _____% of the atmosphere.

14. A toxic gas _____

15. A gas used in signs _____

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Homework

1. Teach the 4, 3, 2, 1, 0 rule to a friend or family member. Write a few sentences about the teaching experience. Did they enjoy learning about chemistry?

2. Practice drawing the structures for H_2, CO_2, O_2, N_2, and F_2 in the space below.

3. Create your own molecule. Your molecule should contain at least one double or triple bond, and should be made of at least 15 atoms. Be sure to follow the 4, 3, 2, 1 rule. If you don't know where to start, connect a few carbons and then add nitrogens and oxygens. Finish by adding hydrogens.

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Posttest

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2. What is an element?

3. What is an atom?

4. Can you give an example of a kind of element or atom?

5. What is a molecule?

6. Can you give an example of a kind of molecule?

7. What is a cell?

8. Can you give an example of a kind of cell?