

TITLE OF LESSON

Physical Science Unit1 Lesson 31 – Organic & Biochemical Compounds, Continued
Nature of Matter: How do tribes gain understanding of compounds and molecules?

TIME ESTIMATE FOR THIS LESSON

One class period

ALIGNMENT WITH STANDARDS

California – Sciences: Chem, Chemical Bonds 2b

MATERIALS

Kirinyaga, Chapter 8 pp. 229-248 – Reading (not provided by ESubjects)

Biochemical – Student Pages

Biochemical Key – Teacher Pages

LESSON OBJECTIVES

- To introduce students to the rules of naming organic compounds
 - To introduce students to the functional groups of organic compounds
 - To introduce students to the structures of carbohydrates, proteins, and fats
 - To have students practice naming
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FOCUS AND MOTIVATE STUDENTS

- 1) Homework Check – Collect **Simple Organic** sheets and Lab Report 5 with both first drafts stapled to the back. Pass back graded binders and other graded work. Have students place assignments in the appropriate sections of their binders.
 - 2) **Agenda** – Have students copy the agenda you posted.
 - 3) **Reading Out Loud** – Hand in *Kirinyaga* journals. Before taking the journals, ask for volunteers to read their journals to the class. After hearing two, have the students hand in the journals for grading.
 - 4) Notes: Organic & Biochemical Compounds – Remind students that they should all be taking good notes during today’s class. They will be responsible for the material presented, thus, they will be required to place all their work in the NOTES section of their binder.
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ACTIVITIES – INDIVIDUAL AND GROUP

1. Mini Lecture – Ask students if there are other organic compounds besides alkanes, alkenes, and alkynes? (*Yes*) Ask if they know of any examples? (*methanol, ethanol, formaldehyde, vitamins, acetone*)
2. **Graphic Organizer** – Write the following table Classifying Organic Compounds on the board, filling in all the columns except the last one where you’ll be asking students to come up with common examples. You can give them hints and ask them to look at the ending because it will give them a clue as to what the examples may be. Give example if they don’t come up with one.

CLASS	ENDING	IN FORMULA	PROPERTIES	EXAMPLE
ALCOHOL	-OL	-OH	flammable, intoxicate	ethanol
ALDEHYDE	-AL	=O at end	preservative	methanal (formaldehyde)
AMINE	-INE	N, NH, NH ₂	in proteins or in drugs	caffeine amino acids
CARBOXYLIC ACID	-OIC ACID	=O & -OH	in fats and carbohydrates	lactic acid (propanoic acid); oleic acid (sat.fat)
ESTER	-OATE	=O & -O in	flavoring	pentyl ethanoate

		middle		(banana flavoring)
ETHER	ETHER	-O- in middle	anesthetic	dimethyl ether (ether)
KETONE	-ONE	=O in middle	removes paint	ethanone (acetone)

- Rules for Naming – Use the same rules as in Naming Simple Organic Compounds (e.g., alkane, alkene and alkyne) to name the organic compounds in the table above except you use the ending listed in the table above. So you name the location of the double bond (#) and the number of carbons from the prefix and add the appropriate ending: #- + prefix + ending.
- Mini Lecture – Remind students that with the exception of water, our bodies are made up of various combinations of organic compounds. The most important are carbohydrates, fats, and proteins. The carboxylic acid makes up most of the carbohydrates and fats besides being found in many vitamins. The amines group is found in all protein. Amines are also found in DNA along with carboxylic acids.
- Group Work – Have students break into groups, assign roles (see Group Roles below), and work on the Student Page, **Biochemical**. Give them 15 minutes to work on it. Tell them that the group with the most correct answers will get extra points. Remind them to follow the naming chart you have put on the board. Call time. Have a member of the group write the group's answers on the board (preferably not where you have written the graphic organizer). Make corrections if necessary, field any questions and clarify any points of confusion. The group with the greatest number of answers correct receives 2 extra points.
- Flash Cards – Have students make flash cards for the following: alcohol; aldehyde; amine; carboxylic acid; ester; ether; and ketone. They will need to include the formula, ending, properties, and examples. Tell students to make flash cards of any other vocabulary from this class.
- Flash Cards – Give the students 5 minutes to study the flash cards. While they are studying their flash cards, note in your grade book those who have completed the assignment. Then have them pair up. Assign each partner a letter (partner A and B). Tell them that first all the A's will be flashing the B's. The correct answers will be put in one pile and the incorrect in another. Tell them they have 5 minutes. Go. At the end of five minutes call time. Record the number of correct answers in the grade book when finished. Then have the B's flash the A's. Give them five minutes. At the end of five minutes, call time and record the number of correct answers for each student. The goal is to increase the number correct each time they flash. Remind students that flash cards are a great studying strategy that many college students have to use in order to remember all of the information they are expected to learn.
- Homework Review – a) Assign weekly *Kirinyaga*, Chapter 8, "When the Old Gods Die" and the Epilogue, "The Land of Nod." The assignment is to write a one-page journal titled *Kirinyaga Journal 13* due at the beginning of Lesson 36. What is your opinion of the following statement from the book:

The thing I had not realized is that a society can be a Utopia for only an instant – once it reaches a state of perfection it cannot change and still be a Utopia, and it is the nature of societies to grow and evolve. I do not know when Kirinyaga became a Utopia; the instant came and went without my noticing it.

Now I was seeking Utopia again, but this time of a more limited, more realizable nature: a Utopia for one man, a man who knew his own mind and would die before compromising. I had been misled in the past, so I was not as elated as the day we had left for Kirinyaga; being older and wiser, I felt a calm, quiet certitude rather than more vivid emotions.

Please support your opinion with at least 3 pieces of evidence from the book.

 b) Tell students to read *Kirinyaga*, Chapter 8 pp. 229-248 beginning with the beginning of the chapter and ending with "They simply remained in line, neither arguing back as Kimanti had, nor even acknowledging my presence, each of them waiting patiently until it was their turn to be treated by the European witch. Have students write *Dialectical Journal 18* with at least three entries.

HOMEWORK

- Finish **Biochemical** sheet.
- Read *Kirinyaga* pp. 229-248.
- Write *Dialectical Journal 18* with at least three entries.
- Finish making flash cards of vocabulary and all notes to date to flash in the next class period.

GROUP ROLES

Recorder – All students will be records today and record agreed upon answers.

Facilitator – You will be to keep your group focused and ensure that they complete the work.

DOCUMENTATION FOR PORTFOLIO

Lab Report 2

Test 1: Matter

Lab Report 3

Class Periodic Table

Lab Report 4

Test 2: Atoms and Periodicity