Chemistry of Fuel Notesheet C. Kohn, Waterford WI

Name: Hour Date:

Date Assignment is due: Why late? Score: + ✓ -  
 Day of Week Date If your project was late, describe why

**Weekly Schedule: See Board and record**   
Mon  
  
  
  
Tues  
  
  
  
Wed  
  
  
  
  
Thurs  
  
  
  
  
Fri

What makes something a good fuel?

Why can’t water be used as a fuel?

What makes something a bad fuel?

Besides its ability to provide power, what other considerations make a fuel good or bad?

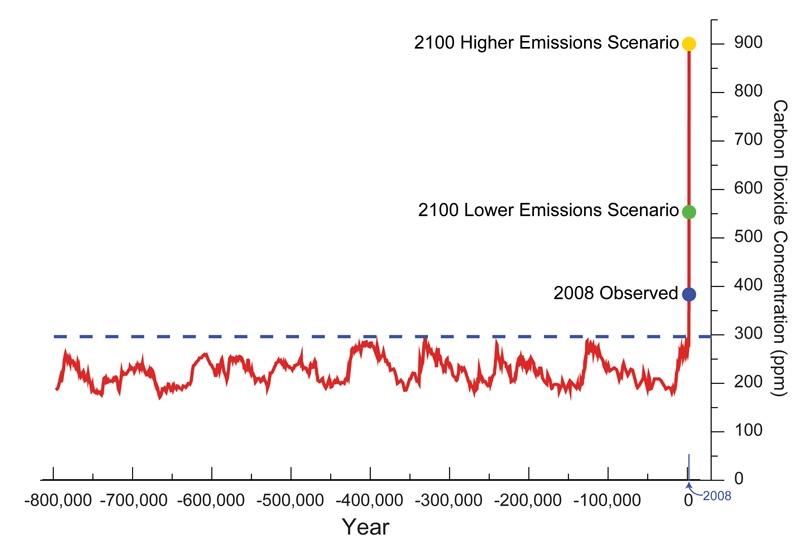
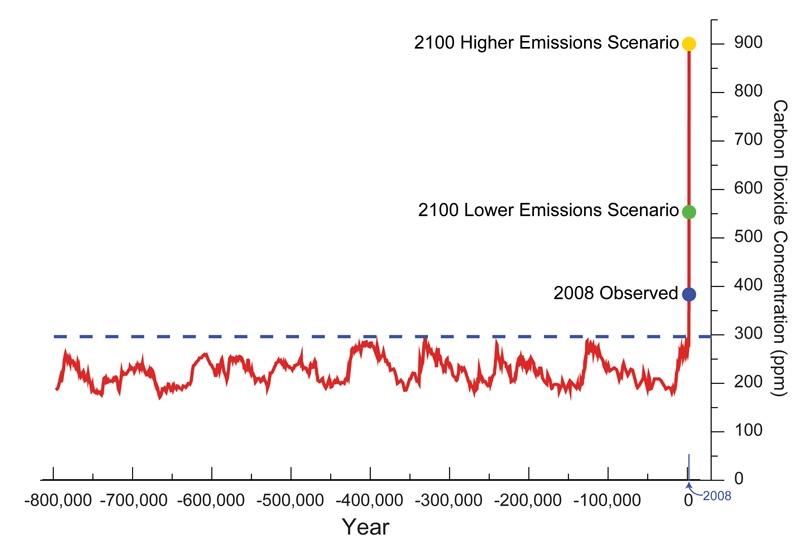
*Page through this notesheet and your notes. Then answer the questions below:*  
Circle one: *I need to review my notes & practice before the quiz.* Definitely – Yes – Sort of - No

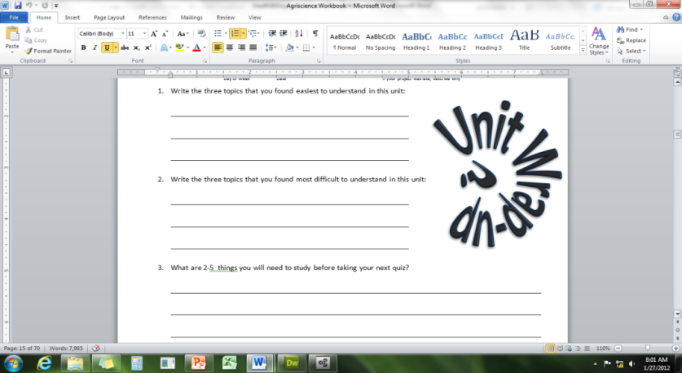
Circle one: *I have never seen or heard of some of these concepts.* Definitely – Yes – Sort of - No

Circle one: *This may be a challenging unit for me personally.* Definitely – Yes – Sort of - No

Circle one: *I may need extra strategies for some topics/vocab.* Definitely – Yes – Sort of - No

**Directions**: Use the accompanying PowerPoint (*available online*) to complete this sheet. This sheet will be due upon the completion of the PowerPoint in class. These assignments are graded on a +/✓/- scale.

1. Everything in the universe can be grouped into two categories: &
2. Matter is
3. A force is
4. Work is defined as
5. Write the formula for Work here:
6. Energy, in chemistry, is defined as
7. In other words, energy is the
8. The Laws of Thermodynamics describe the &   
   of energy.
9. Energy production actually means
10. Energy transformation occurs whenever   
      
    or
11. What is the First Law of Thermodynamics?
12. The total amount of and is
13. You cannot change only the   
    of energy.
14. What is wrong with saying that a coal fired power plant *makes* energy?
15. Write the formula for the First Law of Thermodynamics:   
    1. E = , W = , Q =
16. More accurately, we can use the formula , where ∆E is the   
      
     , ∆Q is the ∆W is
17. As energy changes forms, it usually becomes
18. Describe an example of this:
19. The Second Law of Thermodynamics states that
20. In other words, as energy is transformed through work,
21. What is entropy?
22. How does the amount of entropy in existence relate to the amount of work produced?
23. What is the formula for efficiency?
24. If a poorly maintained automobile had an efficiency of 5%, what is happening to the other 95%?
25. List and describe the two kinds of energy below:   
      
    Type: . Description:   
      
    Type: . Description:
26. How does potential energy relate to chemical reactions? *More stable molecules*
27. Does gasoline have a high potential energy or low potential energy? Explain:   
      
       
      
    What about water? Explain:
28. The of a type of molecule as a fuel depends on
29. What is bond energy?
30. When a bond is broken… energy is needed energy is released *(circle one)*
31. When a bond is formed… energy is needed energy is released *(circle one)*
32. In a chemical reaction, energy can be released when
33. How is wood an example of this concept?
34. A molecule that is a valuable fuel is
35. What is an exothermic reaction?
36. What is an endothermic reaction?
37. What is enthalpy?
38. When is enthalpy negative?
39. When is enthalpy positive?
40. What do most reactions need in order to start?
41. In a combustion reaction, this is often known as a
42. In an exothermic reaction, while an input of energy   
      
    the amount of energy released is
43. Define combustion:
44. Why is energy released in the form of light and heat during combustion?
45. Use bond energies to explain why water would not be useful as a fuel:   
      
       
      
       
    Summarize the info on the slide so that it fits above.
46. Use bond energies to explain why fossil fuels have a high potential energy as a fuel:
47. Fossil fuels are valuable as a fuel because
48. Define petroleum:
49. How was petroleum formed?
50. How are products such as gasoline and diesel fuel made from petroleum?
51. How does the structure of petroleum products relate to their boiling point?
52. Petroleum products provide about % of the energy used by the United States.
53. List five reasons why petroleum fuels are so widely used in the United States:
54. What is the main concern about the use of petroleum?
55. What is the main byproduct of petroleum use?
56. What does CO2 do in the atmosphere that makes an increase in their atmospheric concentration a concern?
57. Draw how CO2 levels have changed since 800,000 years ago in the space below:
58. Why is climate change such a concern that we would consider limiting the use of petroleum?
59. Unlike fossil fuels, fuel made from renewable plant-based sources are . This means
60. Fossil fuels are a of air pollution. This is primarily due to the fact that
61. Why are partially-combusted fossil fuel products such a concern?
62. Fossil fuels contain nearly every . Why is this a   
      
    concern?   
      
       
    Answer using the term “biomagnification”.
63. True or false: Fossil fuels can be used far more quickly than they can be created. Explain:
64. The world will likely never physically run out of petroleum, but it will run out of   
    petroleum.
65. True or false: Fossil fuels have a net energy loss when they are produced. Explain:   
      
       
      
    Why?
66. How are the processes of exploration and acquisition of fossil fuels closely associated with environmental and health problems?
67. List five reasons why it would be a good idea for the United States to find an alternative to petroleum:

Unit Wrap-up C. Kohn, Agricultural Sciences - Waterford WI

This page is designed to help raise your grade while enabling you to develop skills you will need for after high   
school. You will need to complete every question and blank in order to receive full credit for your notes. Note: if you cannot come up with a strategy to remember a difficult concept on your own, see your instructor for help.

1. What is a topic or concept from this unit that you found to be more challenging? Write or describe below:  
     
      
     
   In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
2. What is a 2nd topic or concept from this unit that you found to be more challenging? Write or describe below:  
     
      
     
   In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
3. What is a 3rd topic or concept from this unit that you found to be more challenging? Write or describe below:  
     
      
     
   In the space below, create a mnemonic, rhyme, analogy, or other strategy to help you remember this particular concept:
4. Circle the most appropriate response. You will only be graded on whether or not you completed this section.

Circle one: *I used my notes outside of class to prepare for the quiz.* Definitely – Yes – Sort of - No

Circle one: *I took extra notes in the margins for very difficult concepts.* Definitely – Yes – Sort of - No

Circle one: *I created a personal strategy for at least three difficult items.* Definitely – Yes – Sort of - No

Circle one: *I was very involved and actively studying during the quiz review.* Definitely – Yes – Sort of - No

Circle one: *I think I will be satisfied with the quiz grade I received this week.* Definitely – Yes – Sort of - No

Circle one: *I might need to meet with the instructor outside of class.* Definitely – Yes – Sort of - No