Name_____ Period _____

The Heat is On!

Objective: Cite evidence showing that heat may be given off or taken in during a chemical change.

Procedure: Go to the following website and answer all the questions with complete sentences. There are four sections to go through, take your time and don't click on any animations until you are asked to, otherwise you will have to go back and repeat your work.

http://www.pbs.org/wgbh/nova/physics/science-fire.html

Click "Launch Interactive"

1. What is combustion?
    _____
    _____

Load and watch the "On Fire" animation, then answer the questions below.

2. Whenever molecules rearrange their atoms during a chemical change,
    _____ is either released or _____ .

3. Describe oxidation.
    _____
    _____

4. Why does the temperature in an area that is rusting raise only a small amount?
    _____
    _____

5. What happens when materials oxidize so fast that the heat cannot dissipate?
    _____

Click "Strike a Match" and then read the entire section before attempting to strike the match – otherwise you will not be able to answer all the questions.

6. What 3 things are needed to initiate and sustain combustion?
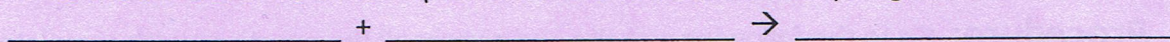   _____
    _____

7. How did you get the match to ignite?
    _____
    _____

    Click "Chain Reaction"

8. Write the equation for the combustion of Hydrogen.

_____ + _____ → _____

Read the section, and then click on "More about this equation"

9. Write the correct or balanced equation for the combustion of Hydrogen.

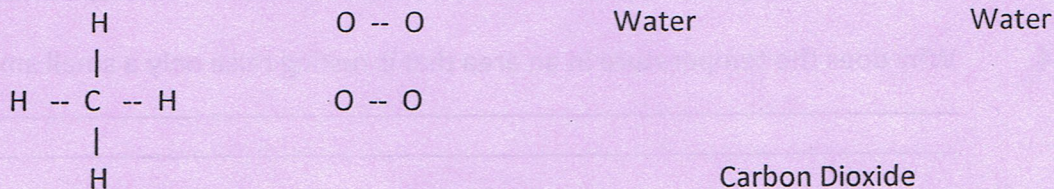_____ + _____ → _____

Drag the Hydrogen atom to move on.

10. Why does water form when lone Hydrogen and Oxygen atoms are present?

_____
_____

11. How many chemical reactions take place while methane gas forms? _____

Click on "Shuffle Atoms"

12. What is the end result when a molecule of methane reacts with two molecules of oxygen?

_____
_____

13. Separate the following molecules to make 2 Water and 1 Carbon Dioxide molecules. Draw them below.

```
        H                    O -- O          Water              Water
        |
   H -- C -- H               O -- O
        |
        H                                          Carbon Dioxide
```

Click on "Flame Experiment"

14. If solids and liquids do not burn, what does?

_____

15. Describe how candle wax burns.

_____
_____

Move the glass over the flame and then answer question 16.

16. What does the orange-red flame color come from?

_____
_____