

## Wednesday, September 19<sup>th</sup>, 2012

First day back after the teacher's strike.

Unit: Scientific Inquiry Topic: What is science?	Date: 9/19/2012 Class: Biology
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### Illinois State Objectives:

11.11.01 Understand and follow procedures relating to scientific investigations, including understanding the design and procedures used to test a hypothesis, organizing and analyzing data accurately and precisely, producing and interpreting data tables and graphs, performing appropriate calculations, applying basic statistical methods to the data, identifying appropriate conclusions, making predictions, and evaluating competing models.

11.11.02 Understanding the design and procedures used to test a hypothesis, organizing and analyzing data accurately and precisely, producing and interpreting data tables and graphs, performing appropriate calculations, applying basic statistical methods to the data, identifying appropriate conclusions, making predictions, and evaluating competing models.

### My Lesson Objectives:

- Students will know that science is a process.

Activities: (Include minutes)	Materials/Equipment:
<ul style="list-style-type: none"><li>• Bellringer: 10 minutes<ul style="list-style-type: none"><li>○ What is science?</li><li>○ How do scientists practice science?</li></ul></li><li>• Science Knowledge Survey: 15 minutes<ul style="list-style-type: none"><li>○ Quiz using scantron</li></ul></li><li>• Science Knowledge Survey: 10 minutes<ul style="list-style-type: none"><li>○ Discuss answers in lab groups</li></ul></li><li>• Science Knowledge Survey: 10 minutes<ul style="list-style-type: none"><li>○ Have the groups explain one question they disagreed upon &amp; why</li></ul></li><li>• Science Knowledge Survey: 5 minutes<ul style="list-style-type: none"><li>○ Give students the correct answers so they can self-assess where they are at.</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Worksheet with 25 questions</li></ul>

Assessment: (Embedded, Formal)

#### Embedded:

*Group & Class Discussion*

#### Formal:

*Pre-test/Quiz:*

They had to bubble in A for “agree” or B for “disagree”:

1. Science is primarily a search for truth.
2. Science can solve any problem or answer any question.
3. Science is primarily concerned with understanding how the natural world works.
4. Science can use supernatural explanations if necessary.
5. Astrology (predicting your future from the arrangement of stars and planets) is a science.
6. Science requires a lot of creative activity.
7. Science typically provides only temporary answers to questions.
8. A “hypothesis” is just an “educated guess” about anything.
9. Scientists can believe in God or a supernatural being and still do good science.
10. Science is most concerned with collecting facts.
11. Most engineers and medical doctors are actually scientists.
12. A scientific fact is absolute, fixed, permanent.
13. Science can be done poorly.
14. A scientific theory is merely a guess.
15. Scientists have solved most of the major mysteries of nature.
16. Science can study and explain events that happened millions of years ago.
17. Knowledge of what science is, what it can and cannot do, and how it works, is important for all educated people.
18. Modern scientific experiments usually involve trying something just to see what will happen, without predicting a likely result.
19. Anything done scientifically is always accurate and reliable.
20. Scientists have observed that nature apparently follows the same “rules” throughout the universe.
21. Scientists often try to test or disprove possible explanations.
22. Science can be influenced by the race, gender, nationality, or religion of the scientists.
23. All scientific problems must be studied with The Scientific Method.
24. Disagreement between scientists is one of the weaknesses of science.
25. Any study done carefully and based on observation is scientific.

**Answers:** B, B, A, B, B,  
A, A, B, A, B,  
B, B, A, B, B  
A, A, B, B, A,  
A, A, B, B, B

**\*\*Note:** My biggest issue with these answers was number 11. I think engineers and doctors are scientists. They use the scientific method to solve problems. They may not be contributing personal research to the scientific community-- but they are still scientists on their own.

*Homework: Worksheet on Observation vs. Inference*