

PAREF SOUTHRIDGE SCHOOL
Intermediate School
Science 4

Name: _____ Class No.: _____

Level and Section: _____ Date: _____

First Quarter, Worksheet 1 (Friday) S P N C D _____ = _____ %

General Instructions:

1. Read the article “Stand an Egg on Spring Equinox”: An internet blog by Spacedad2 (see page 2).
2. Answer the worksheet (refer to page 3) using statements from the article.
3. Use the “CONPTT” Grid below to answer the worksheet.

THE NATURE OF SCIENCE -- "CONPTT" GRID
IS IT REALLY SCIENCE?
 Prepared by Iowa Science Educators

CRITERIA	WITHIN THE REALM OF SCIENCE	OUTSIDE THE REALM OF SCIENCE
C ONSISTENT	Experimental results and observations are the same.	Experimental results and observations are <u>NOT</u> the same
O BSERVABLE	The phenomenon (event) or evidence for the event can be observed by the human senses or by extensions of those senses.	The phenomenon (event) or evidence for the event can <u>NOT</u> be observed by the human senses or by extensions of those senses.
N ATURAL	A natural cause or naturally occurring mechanism is used to explain how or why an event happens.	A natural cause or naturally occurring mechanism <u>CANNOT</u> be, or <u>IS NOT</u> used to explain how or why an event happens.
P REDICTABLE	Accurate predictions and conclusions are based on natural causes <u>NOT</u> on presupposed or assumed information.	Accurate predictions and conclusions are <u>NOT</u> based on natural causes but usually on presupposed or assumed information.
T ESTABLE	Controlled experiments can be designed to test the natural cause of the event (phenomenon).	Controlled experiments <u>CANNOT</u> be designed to test the natural cause of the event (phenomenon).
T ENTATIVE	Explanations (laws, theories, hypotheses) of the cause (mechanism) for the event are subject to change as evidence shows the need.	Explanations of the cause of the event in question are <u>NOT</u> subject to change.

Stand an Egg on Spring Equinox

An internet blog by Spacedad2

Instead of waiting for spring equinox, and all the news reporters and weatherpersons to run stories about standing an egg on end on the equinox, launch a preemptive effort, to derail any such nonsense before it starts.

It is preeminently important to have news and weather reports present real science and real truths, rather than promote myths and fantasy. We, as a people, must make intelligent decisions about science issues across the board, from genetic engineering of foods, to pesticide use, to nuclear power development, to whether global warming is a real danger, or whether killer asteroids are a real danger, to bird flu, to our daily use of washcloths and household water, and whether to use regular soap or bactericide soap, which can enhance the development of super germs. If we continue to allow news reports and weather staff to promote mythology, such as the 'stand an egg on its end during the equinox', how can we expect people in general to understand other scientific issues? We cannot continue to countenance the dissemination of irrational falsehoods, especially in news reports and weather reports.

Call and write to the news directors and weatherpersons at your local, regional, and national news organizations - both radio, and television, and implore them to NOT run any stories about standing an egg on its end on the equinox.

Explain how important it is for the future of the country that our population understands real science. Explain how it is possible to stand an egg on its end on ANY day of the year, at any time, and it is possible for anyone to prove that to themselves with any sturdy table and any egg, at any time. If they want to run a stand an egg on its end story anyway, have them do it on some other day, just to prove it is possible at any time. Refer to this website. But please, implore them to not continue to promote falsehoods and mythology in the name of news.

Please write and call your news reporters and directors this week. The spring equinox is only a few weeks away, and already news directors are planning egg-standing stories, so act quickly and maybe we can nip this in the bud.

NAME _____ CN. ___ DATE _____

WORKSHEET: IS IT SCIENCE? IS IT A SCIENTIFIC STATEMENT?

STATEMENT: (Write down the statement you wish to qualify as being scientific or non-scientific):

Before considering the six CONPTT criteria, indicate your opinion:

I think this statement is scientific non-scientific

INSTRUCTIONS: Refer to your written statement above. Using the six CONPTT tell whether your statement satisfies each criterion as scientific or non-scientific , and indicate whether this places the statement within or outside the realm of science.

CRITERIA	Explain or Demonstrate how each criterion is satisfied or not satisfied scientifically:
CONSISTENT	<input type="checkbox"/> Within <input type="checkbox"/> Outside the realm of science
OBSERVABLE	<input type="checkbox"/> Within <input type="checkbox"/> Outside the realm of science
NATURAL	<input type="checkbox"/> Within <input type="checkbox"/> Outside the realm of science
PREDICTABLE	<input type="checkbox"/> Within <input type="checkbox"/> Outside the realm of science
TESTABLE	<input type="checkbox"/> Within <input type="checkbox"/> Outside the realm of science
TENTATIVE	<input type="checkbox"/> Within <input type="checkbox"/> Outside the realm of science

On the basis of the CONPTT criteria, I now consider my statement to be....

scientific non-scientific

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First Quarter, Worksheet 2 (Monday)

S P N C D _____ = _____ %

Scientific Method

Directions: Johnny Gassenwhiffer took notes about the scientific method. However, his notes got mixed up. Help Johnny put his notes back in the correct order. Number each statement corresponding to the steps in the scientific method below.

As a reminder: these are the steps of the scientific method in the correct order.

1. Identify the problem
2. Make observations
3. State your hypothesis (a scientific guess)
4. Test your hypothesis
5. Collect and record data
6. Study the data
7. Make conclusions

It smelled like somebody farted!

Uncle Bill and his dog Beans were in the room.

Sometimes when Uncle Bill and Beans were together, the room smelled terrible and sometimes when Uncle Bill was alone, the room still smelled bad and when Beans was alone, the room was never stinky!

The room was smelly only when Uncle Bill was around.

Why did my living room smell so bad?

Uncle Bill can cut a really mean fart!

First, I smelled the room when Uncle Bill was alone and then I smelled the room when Uncle Bill and Beans were together in the room and then I smelled the room when Beans was alone.

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Name: _____

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First Quarter, Worksheet 3 (Tuesday)

S P N C D _____ = _____ %

Scientific Method In Action

Instructions:

1. Read cases #1 and #2.
2. Answer the questions below each case in a sentence.

Case #1

The Strange Case of Beriberi

In 1887 a strange nerve disease attacked the people in the Dutch East Indies. The disease was beriberi. Symptoms of the disease included weakness and loss of appetite, victims often died of heart failure. Scientists thought the disease might be caused by bacteria. They injected chickens with bacteria from the blood of patients with beriberi. The injected chickens became sick. However, so did a group of chickens that were not injected with bacteria.

One of the scientists, Dr. Eijkman, noticed something. Before the experiment, all the chickens had eaten whole-grain rice, but during the experiment, the chickens were fed polished rice. Dr. Eijkman researched this interesting case. He found that polished rice lacked thiamine, a vitamin necessary for good health.

1. State the Problem.

2. What was the hypothesis? (Clue: Hypothesis is a scientific guess)

3. How was the hypothesis tested?

4. Should the hypothesis be supported or rejected based on the experiment?

5. What should the new hypothesis be?

Case #2

How Penicillin Was Discovered

In 1928, Sir Alexander Fleming was studying Staphylococcus bacteria growing in culture dishes. He noticed that a mold called Penicillium was also growing in some of the dishes. A clear area existed around the mold because all the bacteria that had grown in this area had died. In the culture dishes without the mold, no clear areas were present.

Fleming hypothesized that the mold must be producing a chemical that killed the bacteria. He decided to isolate this substance and test it to see if it would kill bacteria. Fleming transferred the mold to a nutrient broth solution. This solution contained all the materials the mold needed to grow. After the mold grew, he removed it from the nutrient broth. Fleming then added the nutrient broth in which the mold had grown to a culture of bacteria. He observed that the bacteria died.

6. Identify the problem.

7. What was Fleming's hypothesis? (Review: Hypothesis is a scientific guess)

8. How was the hypothesis tested?

9. Should the hypothesis be supported or rejected based on the experiment?

10. This experiment leads to the development of what major medical advancement?

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First Quarter, Worksheet 4 (Wednesday)

S P N C D _____ = _____ %

Comparing a Cell to a Factory
The Cell as a System

Fill in the chart below while reading information at the following website:

A Busy Factory <http://www.beyondbooks.com/lif71/4a.asp>

In the second column of the chart, write the name of the organelle that functions most like the factory worker described in the first column. In the third column, using two or more sentences, write a brief description of the function of the organelle in the cell.

Job in the Factory	Cell Organelle	Function of the Organelle
Shipping/Receiving Department		
Chief Executive Officer (CEO)		
Factory floor		
Assembly line (where workers do their work)		
Workers in the assembly line		

Finishing/packaging department		
Maintenance crew		
Support beams (walls, ceilings, floors)		
Power plant		