8th and 7th grade
Science Notes for Week 2
Sept. 9-13

1. Design an experiment to answer: Do the new "bouncy shoes" make people jump more? Identify the variables

Independent variable- type of shoe

Dependent variable- the height of the jump

Control- barefeet

STEP 1- Get one person that will do the "jumping"

STEP 2- Have a person hold a yardstick, the jumper will jump next to this person so that the jump can be measured

STEP 3- Have the jumper, jump from a standing position, with the Bouncy Shoes, record height

STEP 4- Repeat STEP 3 using another type of athletic shoe

STEP 5- Repeat STEP 3 barefoot

STEP 6- REPEAT STEPS 3-5 two more times

7th Anchor Questions Week 2 (Sept. 9-13)
Questions Due: Friday, Sept. 13 Assessment date: Friday, Sept. 13

1. Write a procedure for the following question: Does lemon juice or milk clean pennies better?
2. List the basic steps of the scientific method
3. Explain what "oranges don't take naps" stands for
4. Explain what a "control" is in an experiment and why it is used
5. Explain two methods that you use to be organized with your schoolwork
6. SKILL: lab design; identifying dependent and independent variables

Vocabulary

Data	**Hypothesis**	**Procedure**	**Manipulated (independent) variables**
control	**Explain**	**Question/problem**	**Dependent variables**
inference	**control**	**Scientific method**	**Qualitative observation/data**
constant	**Trials**	**Conclusion**	**Quantitative observation/data**

1. Write a procedure for the following question: Does lemon juice or milk clean pennies better?

STEP 1- Get three pennies that are equally "dirty"
STEP 2- Get three cups and place one penny in each cup
STEP 3- Pour lemon juice in one cup, just enough to cover the penny
STEP 4- Pour milk in one cup, just enough to cover the penny
STEP 5- Pour water in one cup, just enough to cover the penny
STEP 6- Leave pennies and cups undisturbed overnight

8th Anchor Questions Week 2 (Sept. 9-13)
Questions Due: Friday, Sept. 13 Assessment date: Friday, Sept. 13

1. Design an experiment to answer: Do the new "bouncy shoes" make people jump more? Identify the variables and
2. Explain what "oranges don't take naps" stands for
3. List the basic steps of the scientific method
4. Explain what a "control" is in an experiment and why it is used
5. Explain two methods that you use to be organized with your schoolwork
6. SKILL: lab design; identifying dependent and independent variables

Vocabulary

Data	**Hypothesis**	**Procedure**	**Manipulated (independent) variables**
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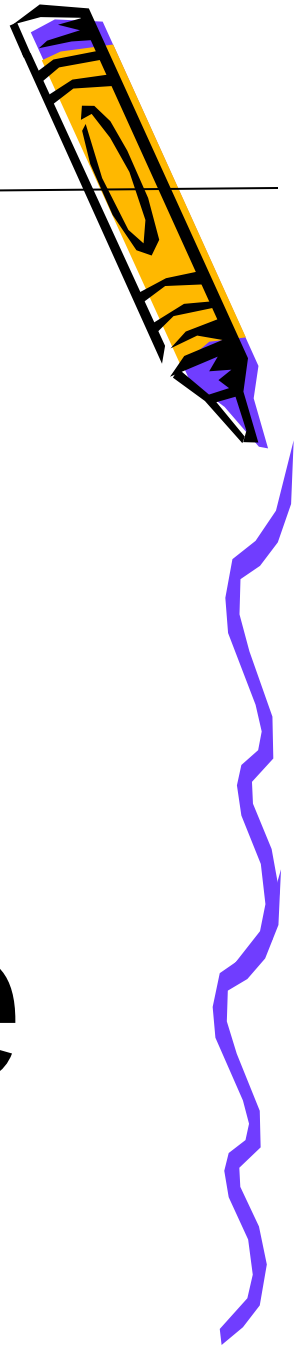
C-notes

What are Anchor Questions? 9.9.13

- **AQ tell you what we are learning for the week**
- **You must know the answers to the AQ by Friday**
- **AQ are due on FRIDAY!!!!**
- **The assessment for the week comes from the AQ**
- **Should be glued or taped in the notebook**



This should be page 5!

C- Notes 9.9.13

Example of c-note question: Where are the answers for the c-note questions?

- C- note questions are questions that you write ABOUT the c-notes…they are a question that can be answered USING the notes, right next to it or on the same page….

C- Notes 9.9.13

Example of c-note question: What must all c-note questions include?

- All c-notes must include the TITLE of the notes AND the DATE that they were taken

C-notes

What is Science?

- **Science tries to ANSWER questions using inferences, observation, measurements and data**
- **Science looks for EVIDENCE to find out the "truth"**
- ***science cannot prove negative questions or statements**
- **Example: There are NO fairies….**

What is an inference?

Inference- is an attempt to explain or interpret observations or to identify the cause of what was observed.

Basic Steps of the Scientific method

1. Question
2. Hypothesis
3. Procedure
4. Data
5. Conclusion

1. Question (Purpose or Problem): What you want to find out.
2. Hypothesis: What you believe the answer to the question is.
3. Procedure: The steps that you take to find out if your hypothesis is correct. This step also includes the MATERIALS you would need to perform the procedure
4. Data (and observations): Measurements, numbers, observations from the procedure
5. Conclusion: The answer to the original question now that the procedure has been done. In this step you also think about "what happened" and "why" (inference). This step may create more questions for further research.

What is observation?

It is looking with the brain…

- **Noticing changes**
- **Noticing appearance**
- **Noticing similarities**
- **Connecting with what you know**
- **Creating questions**

Assignment: Apple Observation 9.10.13

Your group has an apple, write three qualitative observations about that apple and two quantitative observations

Qualitative Observations

Quantitative Observations

You write the RED parts in your notebook

Organization Tips for Students

1. GOALS. Set realistic goals at the beginning of the school year, and break those large goals into mini-goals. Write these goals down on index cards and keep them in a highly visible place where you can see them every day. Writing down your goals makes them more concrete, and motivates you to keep working towards them
2. DON'T RUSH. Wake up early enough for school to arrive well ahead of time. If you need 30 minutes to get up, shower and dress, pad that time by waking up at least 45 minutes prior to your departure. To ensure you don't turn off your alarm clock and go back to sleep, place your clock at the far end of your room. This way, you actually have to get out of bed to turn it off, and you're most likely to stay up
3. PREPARE YOUR WARDROBE. Before you go to bed each night, choose, iron and lay out your clothes for the next day. This way, you'll be all set to dress and go in the morning.
4. AVOID CLUTTER. At the beginning of the school year, you have no clutter. Be careful not to build clutter as the year progresses. Create separate folders for school announcements, tests that have been graded, papers you must give to your parents and so on. As papers become outdated, such as an event that has passed, toss them immediately.
5. MAKE TO DO LISTS. Always spend a minimum of 15 minutes per day, preparing your To Do list for tomorrow. In doing so, you will know exactly what tasks you have to accomplish the next day.

6. EFFECTIVE STUDY AREA. Designate a quiet, well-lit area for studying. Don't study in front of the television, or in an area of your home where you're bound to be distracted. Hang a Do Not Disturb sign on your door. If you can't find a quiet spot at home, go to the library. In addition, you should study while sitting at a table or desk. Avoid studying in a very comfortable chair or a bed, which may cause you to feel drowsy.
7. GET YOUR BEAUTY SLEEP. Get a good night's rest. This will ensure you are alert and ready to learn the following day.
8. USE A STUDENT PLANNER. Use a good student planner or organizer. The ones that have pocket folders, dividers and planning calendars are ideal.
9. USE ONE CALENDAR. Use one calendar to plan all of your school and personal activities, rather than two or more. When you use more than one, you run the risk of scheduling conflicts and missed appointments. This is very important. Heed the old proverb, A man who wears two watches, never knows the correct time.
10. COLOR-CODE. You may consider color-coding similar activities on your calendar. For example, highlight all upcoming tests in yellow, study time in green and recreational activities in pink.
11. WRITE IT DOWN. When you learn of an upcoming test, event, or anything you must prepare for or attend, immediately jot it in your planner. Don't wait for later, or you may forget about it.

12. BREAK UP YOUR STUDY TIME. Determine how many study hours you need, and schedule study time in your planner. For example, if you need six hours of time to study for a test, you may break that time up into six sessions, of one hour each. Choose the six days, and make a Study Time notation in your calendar.
13. SCHEDULE CONSISTENT STUDY TIMES. Set aside time every day for study, and make it consistent. For example, set your study time for each afternoon from 4:00pm to 6:00pm. Whatever you do, avoid last minute studying and cramming
14. BREAK IT UP. Break up big tasks, into smaller, bite-sized jobs. For instance, if you have to study three chapters in your history book, study one chapter at a time each day. If you have to work on a project, break it down into three or four stages.
15. EAT YOUR BROCCOLI FIRST. Imagine eating your dessert before your brocolli. What would be left for you to look forward to? Just the same, do your homework for your most difficult subjects first. Then, everything else will be a breeze, and therefore, more enjoyable

HOW TO WRITE A GOOD HYPOTHESIS USING "IF… THEN… BECAUSE…"

An "If… then…because" statement in a hypothesis tells the readers what you believe will happen in an investigation when something is changed, so you can see the effect of the change.

- **IF**…tells the readers what will be changed. This is the *manipulated* (independent) *variable* in the investigation.
- **THEN**… tells the reader what will happen because of the change (manipulated variable) described in the If… statement. This is the *responding* (dependent) *variable* in the investigation.
- **BECAUSE**… tells the reader how you know this will occur. It should be based on something you have experienced, or perhaps something you infer.

Examples:

- **If** 7th graders and 8th graders complete the same math problems, **then** the 8th graders will have more answers correct, **because** they have studied math for one year longer than the 7th graders.
- **If** dry bread and moist bread are left in bags for two weeks, **then** the moist bread will grow mold more quickly than the dry bread, **because** mold is a living organism, and organisms need water to survive.
- **If** some students eat breakfast before school and others do not, **then** the ones who do eat breakfast will have better grades in their morning classes, **because** their brains have more energy to think.

Now, let's try this together. To warm up, identify the three types of variables below. Then use the variables to make a good hypothesis.

1. Melissa raises crickets at her pet store that she sells for reptile food. She thinks that crickets chirp more often when the temperature gets warmer. She decides to conduct an experiment to prove her theory.
    a. Independent (manipulated) variable_____
    b. Dependent variable _____
    c. Constants _____

    _____

Hypothesis: **If** _____(manipulated variable)
then _____ (dependent variable),
because_____

_____.

Identifying Variables- a variable is something that might affect the "experiment" …lets see some examples. Let's say you want to find out the answer to the question:

Does the amount of sleep affect school grades?

a)Make a list of what could affect school grades?

b)For this question what would you change in the experiment?

c)For this question what would you keep the same (constant) in the experiment?

Vocabulary Words Week 2

Word Bank

variable	Question	Dependent Variable	Quantitative Observation	Qualitative Observation
Control	Hypothesis	Trials	Independent Variable	Inference
Constant				

1. - _____the part of the experiment controlled or changed by the experimenter

2. - _____the part of the experiment that changes because of the independent variable, you observe or measure this part to collect data

3. - _____part of the experiment that remains the same throughout to prevent affecting the outcome

4. - _____standard of comparison, in the "natural" state

5. - _____educated guess or prediction

6. - _____use words to describe something's appearance such as color or texture

7. - _____use numbers to describe information about an object such as mass, length, or volume.

8. - _____is an attempt to explain or interpret observations or to identify the cause of what was observed.

9. - _____you are trying to answer this with your experiment

10. - _____ in science means that you repeat a part of an experiment over and over again in order to come as close as possible to the most accurate results.

11- _____ any factor that can affect the answer to the scientific question.

Vocabulary Words

1. **Independent Variable**- the part of the experiment controlled or changed by the experimenter
2. **Dependent Variable**- the part of the experiment that changes because of the independent variable, you observe or measure this part to collect data
3. **Constant**- part of the experiment that remains the same throughout to prevent affecting the outcome
4. **Control**- standard of comparison, in the "natural" state
5. **Hypothesis**- educated guess or prediction
6. **Qualitative Observation**- use words to describe something's appearance such as color or texture
7. **Quantitative Observation**- use numbers to describe information about an object such as mass, length, or volume.
8. **Inference**- is an attempt to explain or interpret observations or to identify the cause of what was observed.
9. **Question**- you are trying to answer this with your experiment
10. – **Trials** in science means that you repeat a part of an experiment over and over again in order to come as close as possible to the most accurate results.
11- **Variable** any factor that can affect the answer to the scientific question.

Chunk/Chew 1

- **Question (Purpose or Problem):** What you want to find out.
- **Hypothesis**: What you believe the answer to the question is.

Chunk/Chew 1

- **Procedure**: The steps that you take to find out if your hypothesis is correct. This step also includes the MATERIALS you would need to perform the procedure
- **Data**: Measurements, numbers, observations from the procedure.

Chunk/Chew 1

- **Conclusion**: The answer to the original question now that the procedure has been done. In this step you also think about "what happened" and "why" (inference). This step may create more questions for further research.