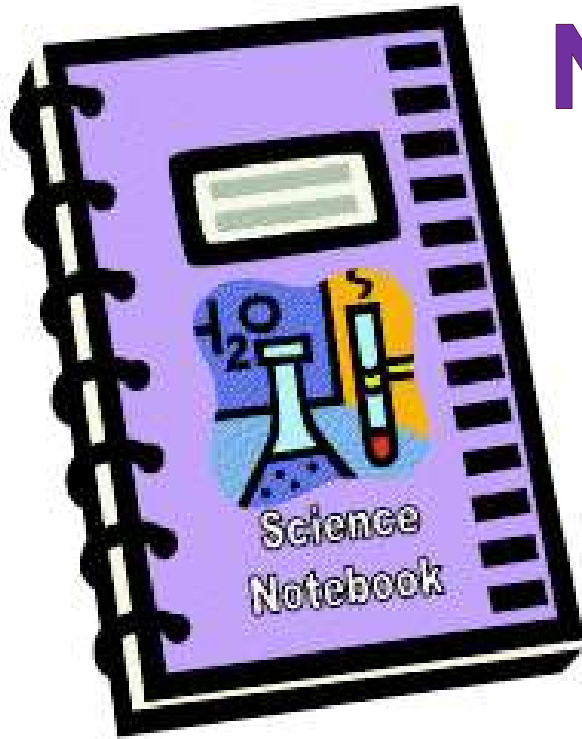


# INTERACTIVE SCIENCE NOTEBOOKS



PPT provided by  
Elizabeth Ridgeway LCE  
Lake Country Elementary, FL  
[Ridgewae@highlands.k12.fl.us](mailto:Ridgewae@highlands.k12.fl.us)  
NSTA 2014 Orlando

Presented by Susan Kirkland  
[skirkland@liberty.k12.ga.us](mailto:skirkland@liberty.k12.ga.us)

# PURPOSE

- ◉ Builds science content and process skills
- ◉ Increases student participation in science, math, writing, and art.
- ◉ Assess student achievement formatively
- ◉ **IT ACTIVELY ENGAGES THEM!**



# WHERE DO I BEGIN?

- What will students regularly write about in their notebook?
- What should be included with every student entry?
- What organizational tools and learning strategies should students use?
- What experiences will provide students with meaningful experiences?

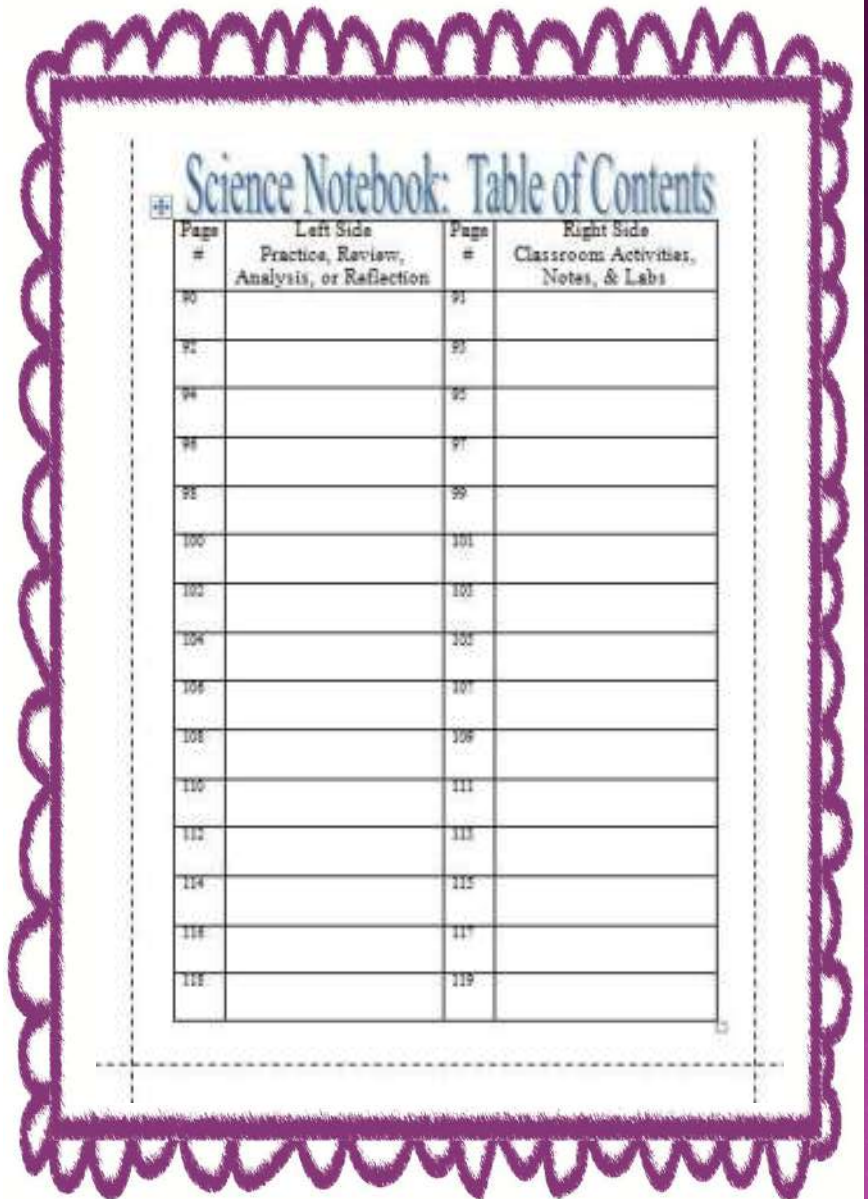
## WHAT DO STUDENTS NEED?

- ◉ Spiral Notebook or Composition Notebook
- ◉ Scissors
- ◉ Glue
- ◉ Colored pencils or crayons
- ◉ Pencil
- ◉ Highlighter
  
- ◉ **NO MARKERS!**



# SET UP

- Cover
- Expectations
- Number Pages
- Table of Contents
- Lab Safety
- Rubric



Science Notebook: Table of Contents

Page #	Left Side Practice, Review, Analysis, or Reflection	Page #	Right Side Classroom Activities, Notes, & Labs
90		91	
92		93	
94		95	
96		97	
98		99	
100		101	
102		103	
104		105	
106		107	
108		109	
110		111	
112		113	
114		115	
116		117	
118		119	

# SET UP

- ◉ Ribbon to hold place
- ◉ Reference Pages
- ◉ Envelope to hold vocab, unglued pieces, etc.
- ◉ “Word Wall”



# SET UP

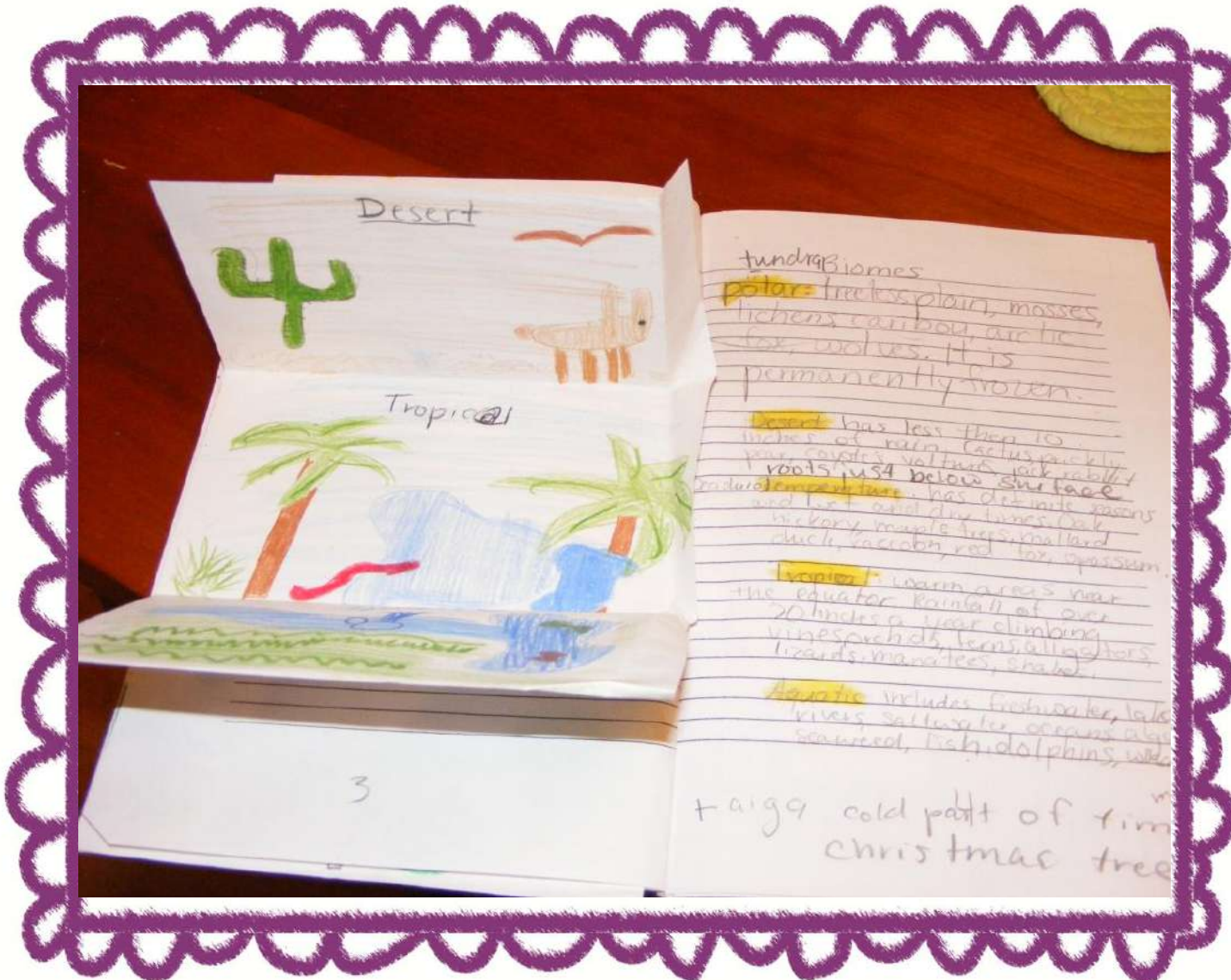
Left Side	Right Side
Predictions	Teacher Notes
Reflection/Connections	Chapter/Book Notes
Inquiry Activities	Vocabulary
Drawings/Diagrams	Handouts
Observations	Excerpts from a source
Foldables	Lab Procedures



**Your Side**

**My Side**

# LEFT SIDE, RIGHT SIDE



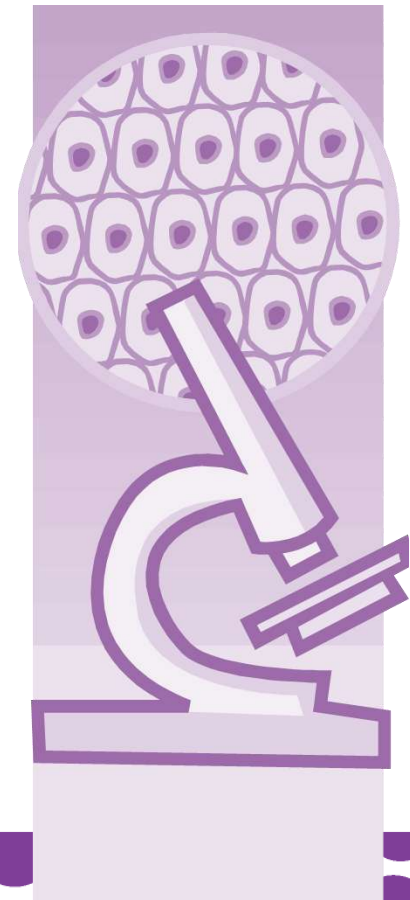


# NOW WHAT?

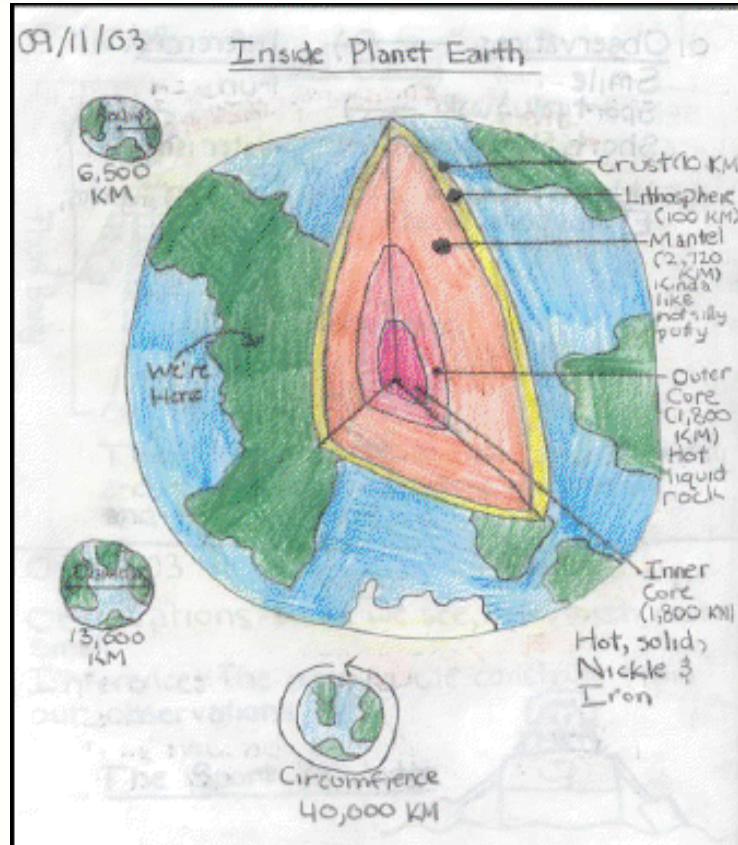


# WHAT CAN I DIAGRAM?

- ◉ Plant and Animal Cells
- ◉ Water Cycle
- ◉ Biomes
- ◉ Solids, Liquids, and Gasses
- ◉ Rock Cycle
- ◉ Eclipse and Earth's rotation



# DIAGRAMS: THE BASICS



**A: Accurate**

**B: Big**

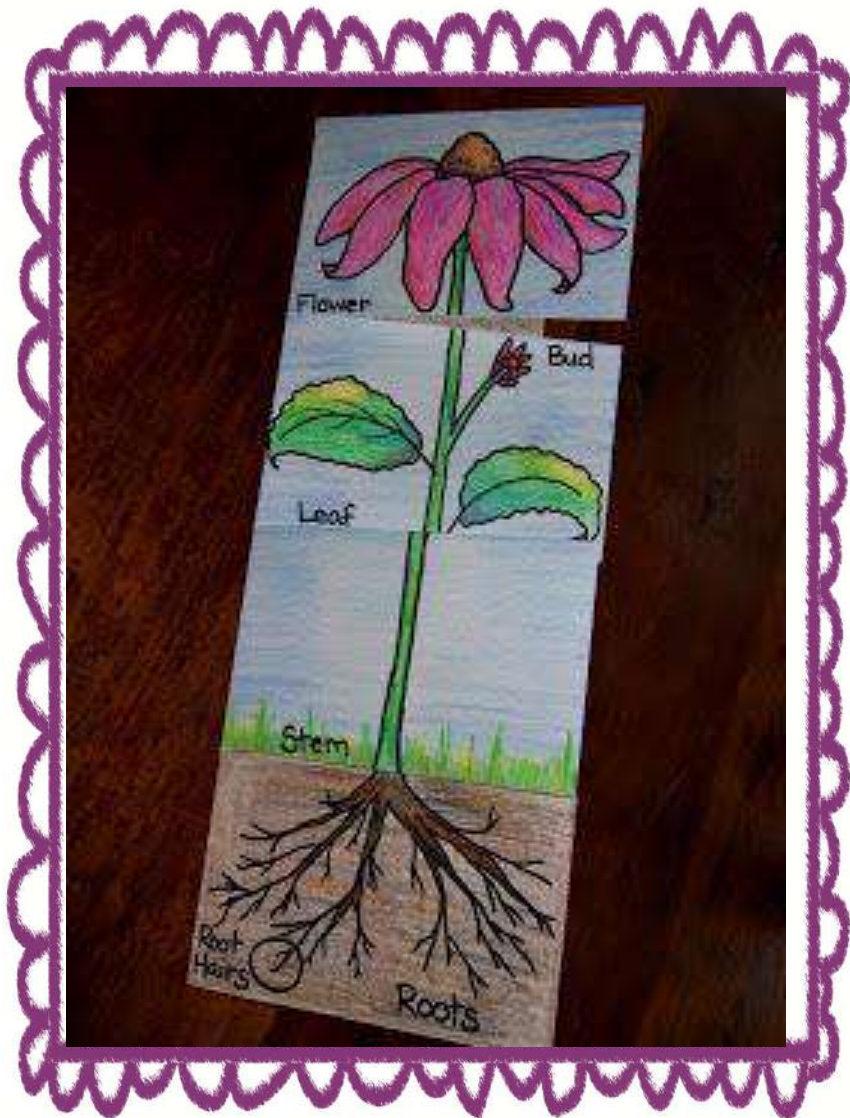
**C: Colorful**

**D: Detailed**

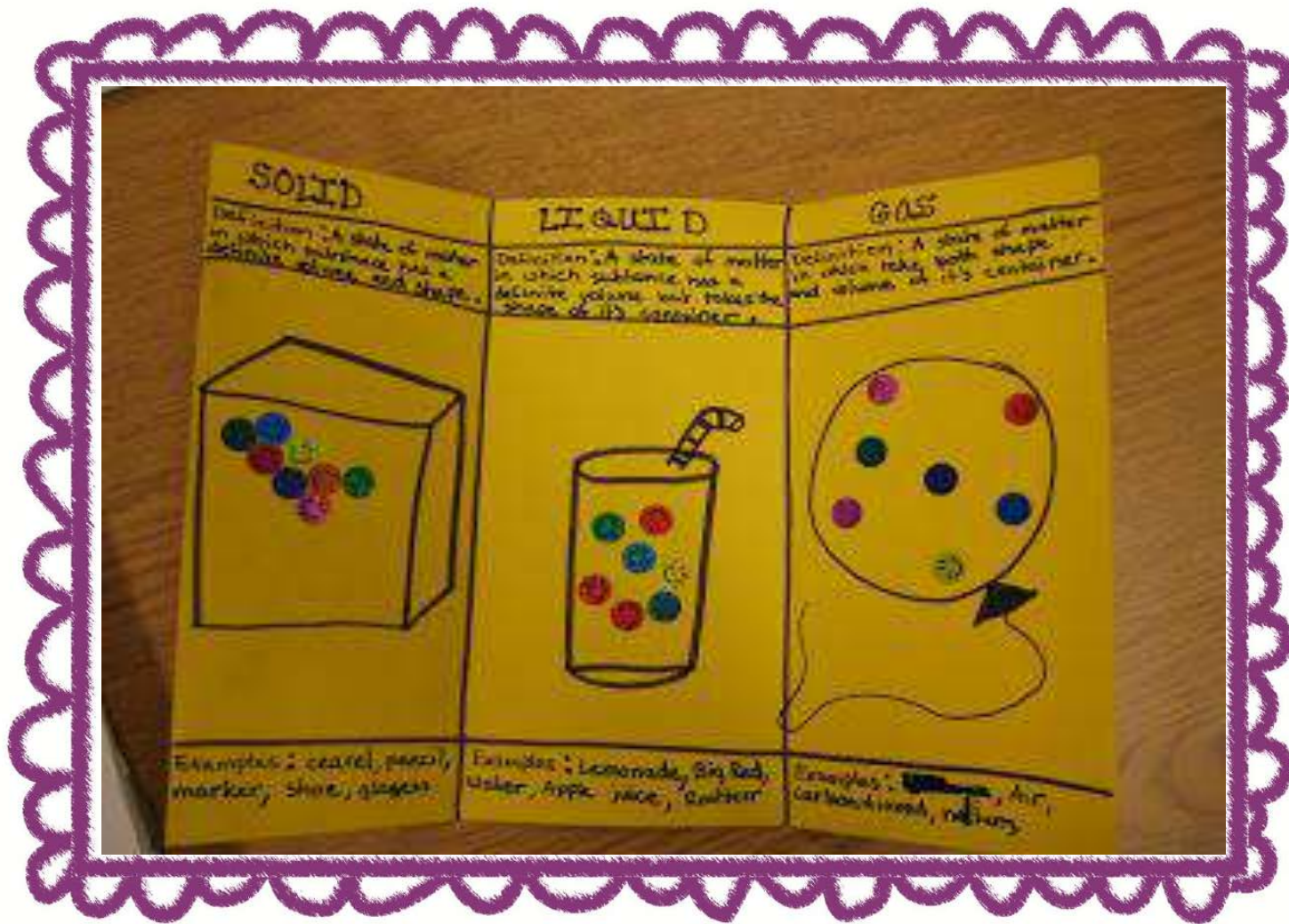
# DIAGRAM: FLAPS



# DIAGRAM: FOLDABLE



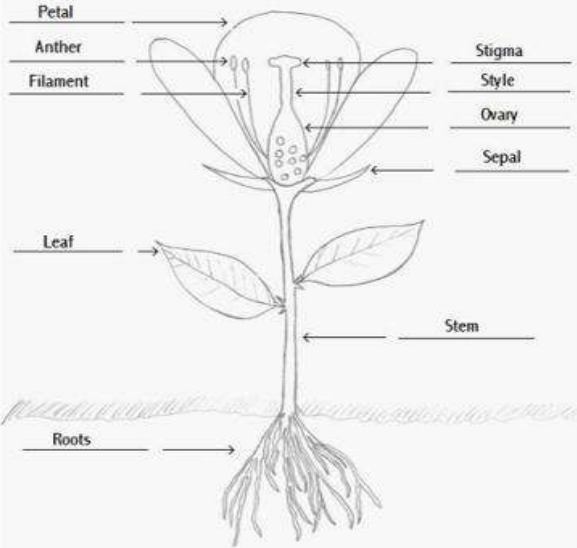
# DIAGRAM: BROCHURE



# DIAGRAMS: FILL IN

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

## parts Of A Plant

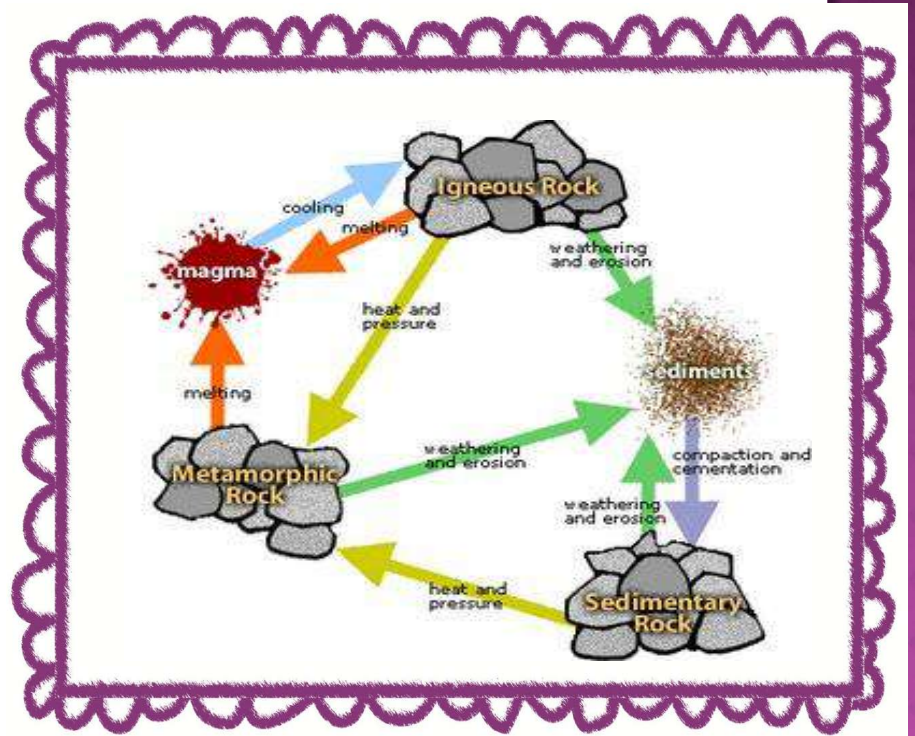


The diagram shows a cross-section of a plant with the following parts labeled:

- Petal
- Anther
- Filament
- Stigma
- Style
- Ovary
- Sepal
- Leaf
- Stem
- Roots

Word Bank

Anther	Leaf	Petal	Sepal	Stigma
Filament	Ovary	Roots	Stem	Style



# MOVE IT!





# DRAWINGS

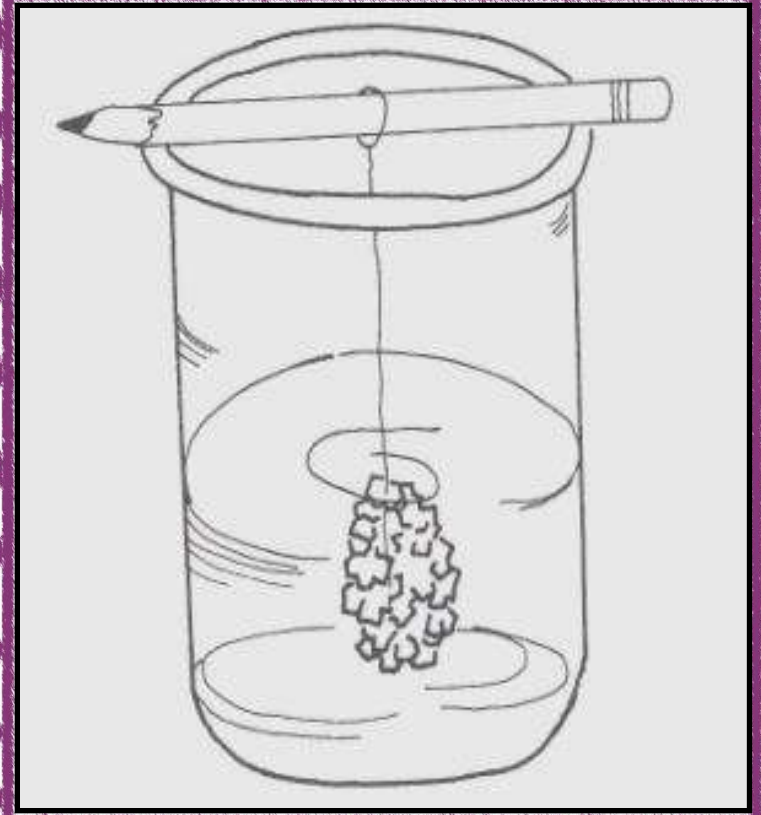
- ◉ Drawing for observation
- ◉ Technical drawings
  - Label all of it
- ◉ Drawing to understand vocabulary words



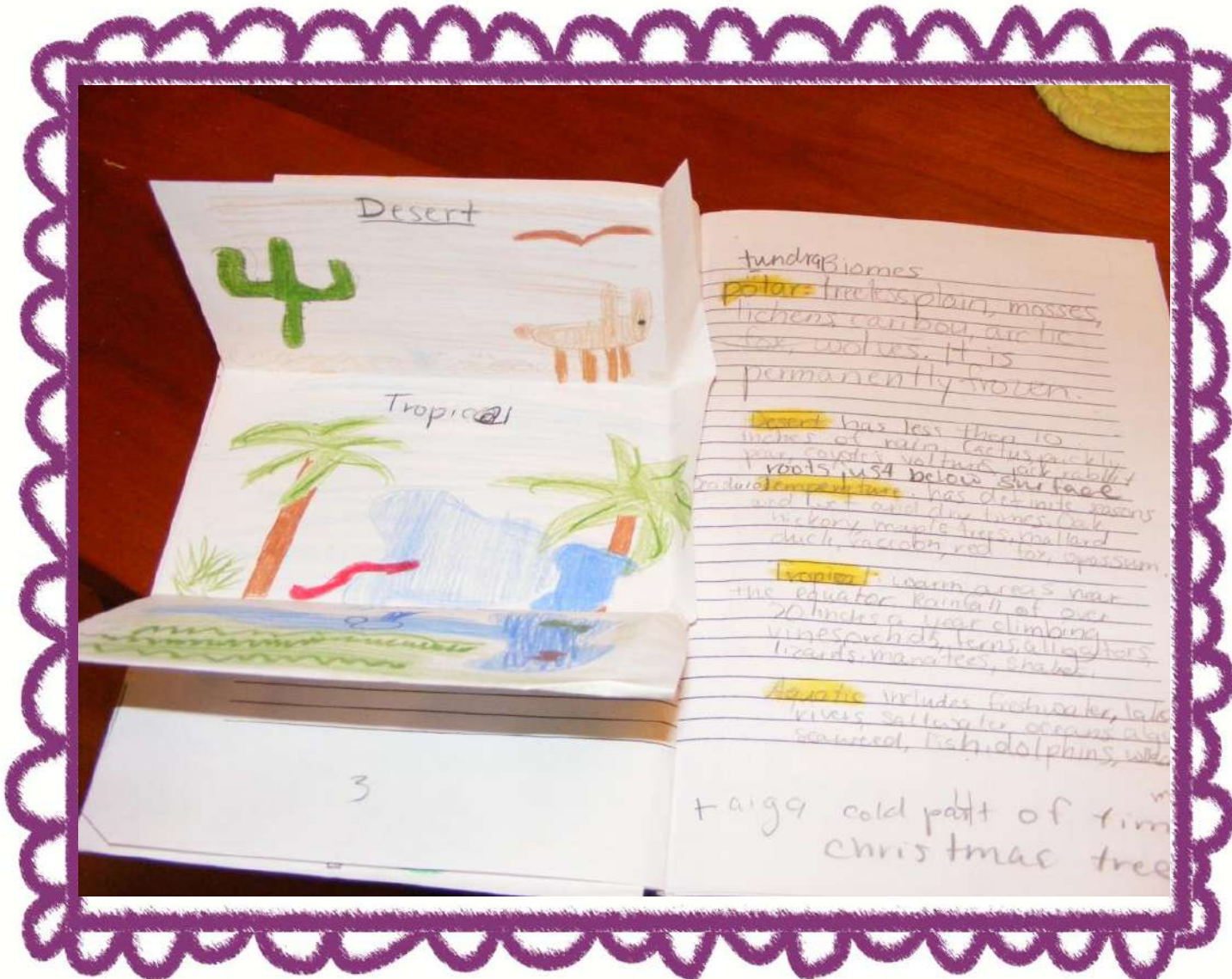
# DRAWINGS

Layers of the Earth

Model of the Earth



# DRAWING: BIOMES

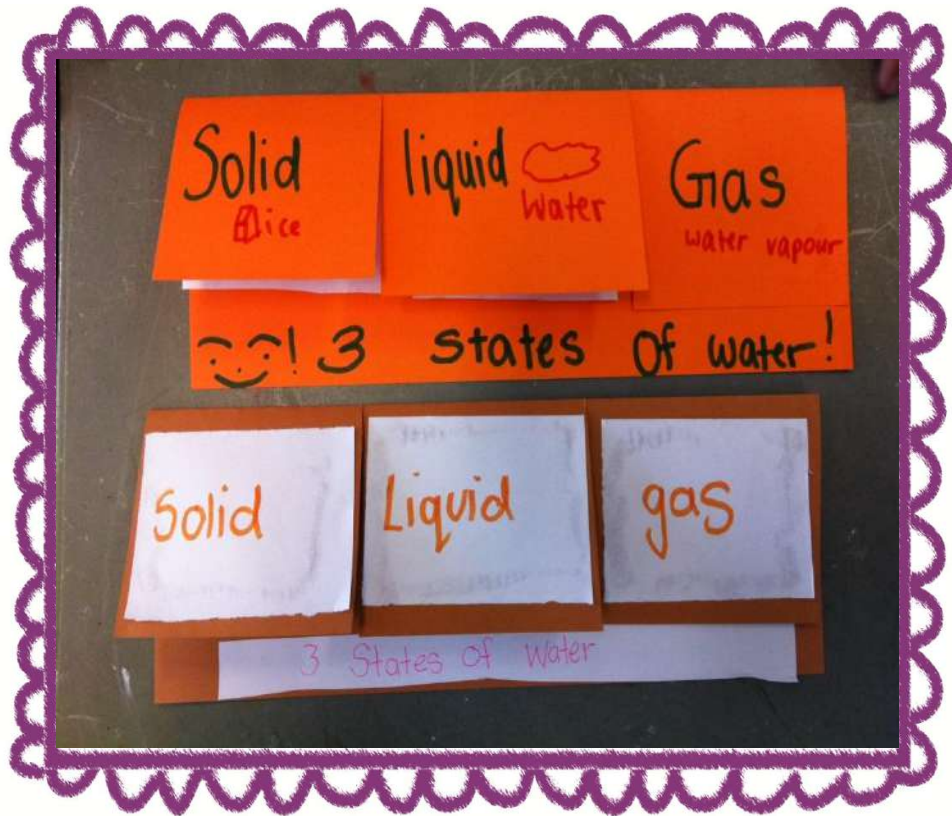


# FOLDABLES

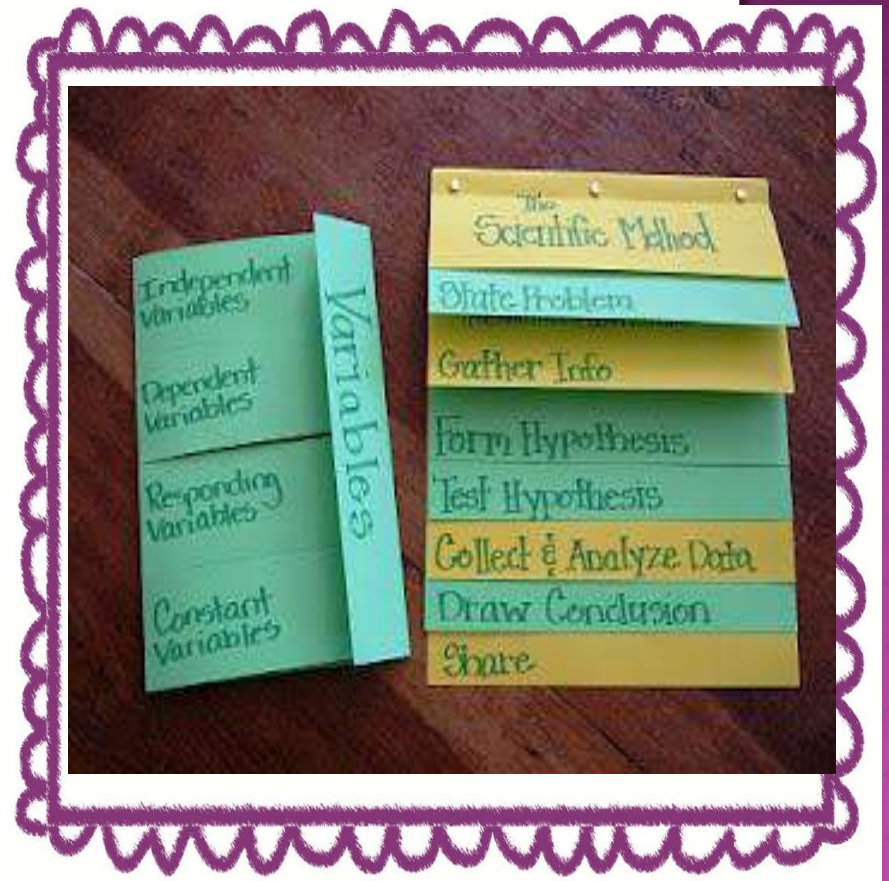
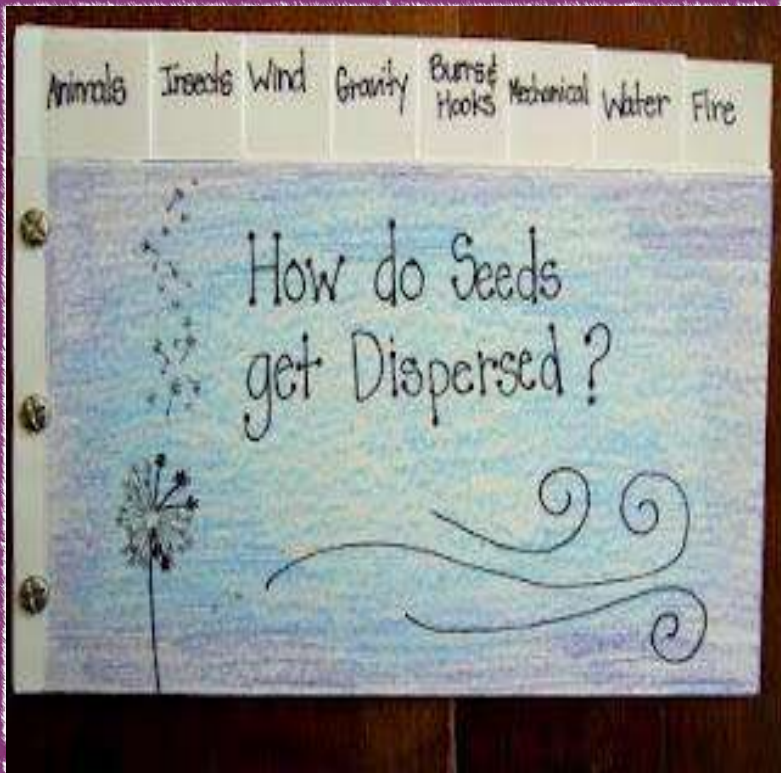
- ◉ 3-D interactive organizers
- ◉ Can be used as a self-check tool
- ◉ Can be used at any level
- ◉ Can be used with any subject
- ◉ Assessment tool



# FOLDABLES: TRI-FOLD, VENN, & 4-FOLD



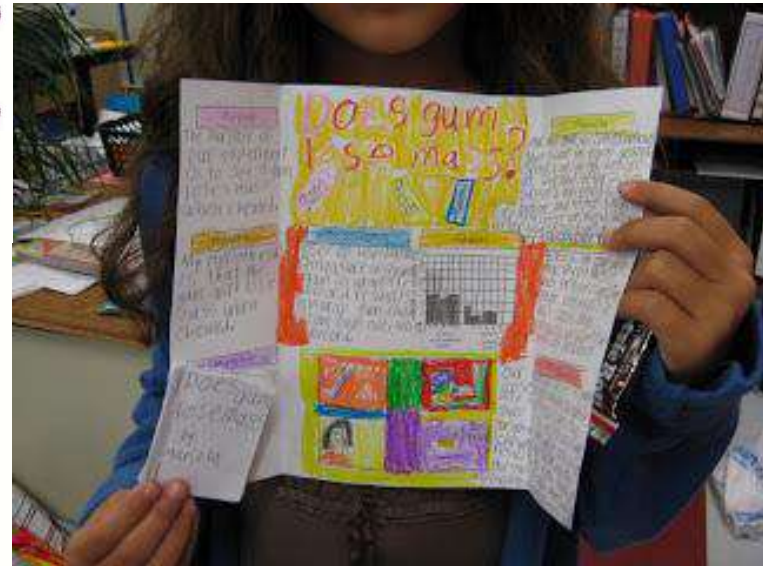
# FOLDABLES: MATCHBOOKS & LAYERS



# FOLDABLES: 8 PAGE BOOK



# MINI SCIENCE FAIR





# VOCABULARY

- ◉ Word Work
  - 4 Square
  - Link It
  - Cootie Catchers
- ◉ Foldables
- ◉ Visual Vocabulary
- ◉ Acrostics
- ◉ Cut & Paste



# VOCAB. ACROSTIC

Learning Goal: I will be able to name why gravity is important

Date

**G**reat force.

**R**eally glad we have it so that we don't float into space.


**A**pples fall from a tree because of gravity.

**V**ery important to keep things close to Earth.

**I**f you jump you will come back down.

**T**oo much of it would crush us.

**Y**ou don't have it in Outer Space.



**F** - found underground

**O** - older fossils usually found lower down

**S** - sedimentary rocks hold fossils

**S** - some are imprints

**I** - insects might be in amber

**L** - limestone is a good preserver of fossils

# WRITING

- Stations
- Worksheet to write down info
- Comic strip
- Summary
  - Water Cycle
  - Rock Cycle

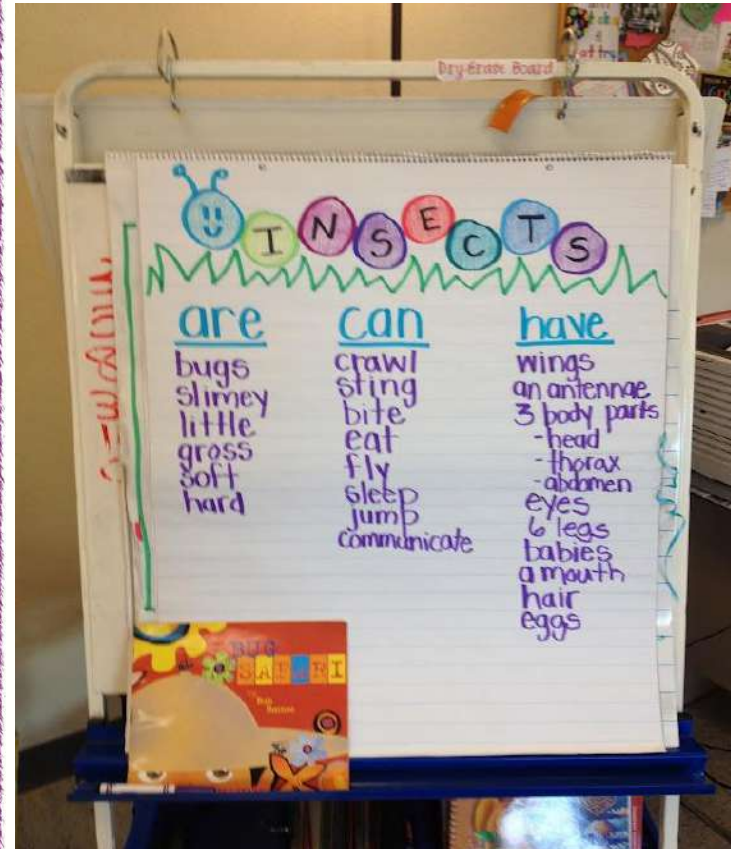
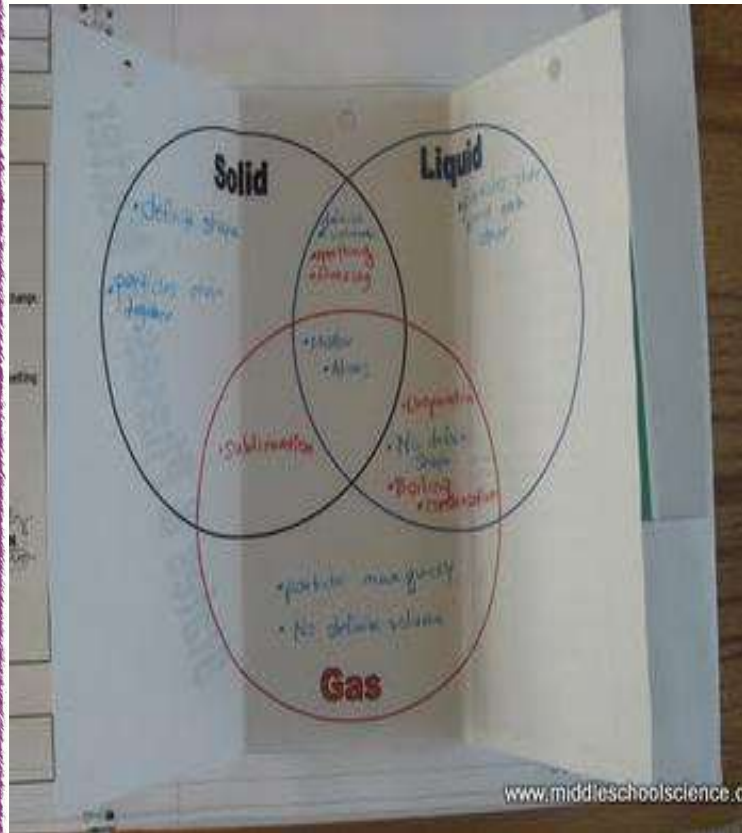


# GRAPHIC ORGANIZERS

- ◉ KWL
- ◉ Venn Diagrams
- ◉ Concept Maps
- ◉ Flow Charts
- ◉ Are, Can, Have



# GRAPHIC ORGANIZERS




# NOTES

- From Board
- From Anchor Charts
- From Chapter
- Teacher Prompts
- Cloze
- Sentence Stems




# NOTES

MAR 27 2012



We use rocks, minerals and soil everyday. (K10.B)




A haws is made of  
w rok bekus they has  
bricks and brick of moad  
an w rok

## Mixtures + Solutions

**Physical Change**  
A change in state, size or  
color


Change in size or  
shape



Ice → water

**Mixture**

**Solution**



Can be separated  
mixtures  
can be made  
from solids,  
liquids, or gases

↓  
Sugar  
Water

air

If they are mixed  
together, you can  
separate them

## EARTH

EARTH IS EXTRAORDINARY  
because it is the only  
planet we know of that  
has life on it.

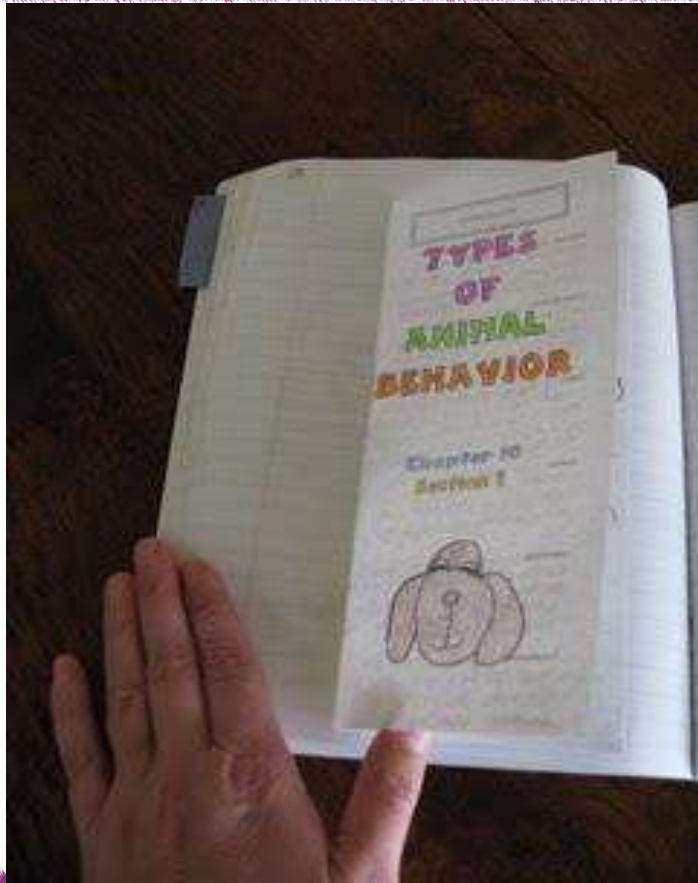


## MARS

MARS IS MARVELOUS  
because it is the only  
planet we know of that  
has a day like ours.



# NOTES



Facts of a gas:


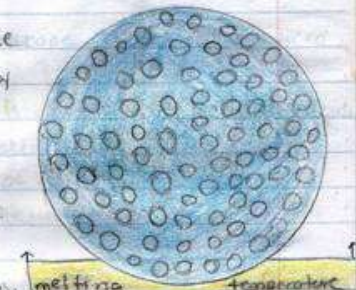
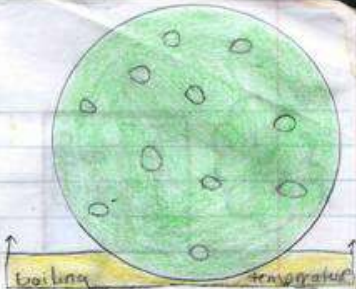
- \* The particles move fast and away from each other.
- \* The temperature

Facts of a liquid:

- \* The particles of a substance are further apart and slide by each other. (It can cling)
- \* The molecules move faster.
- \* The temperature increases.
- \* Molecules take the shape of their container.
- \* Liquids are denser than a gas.

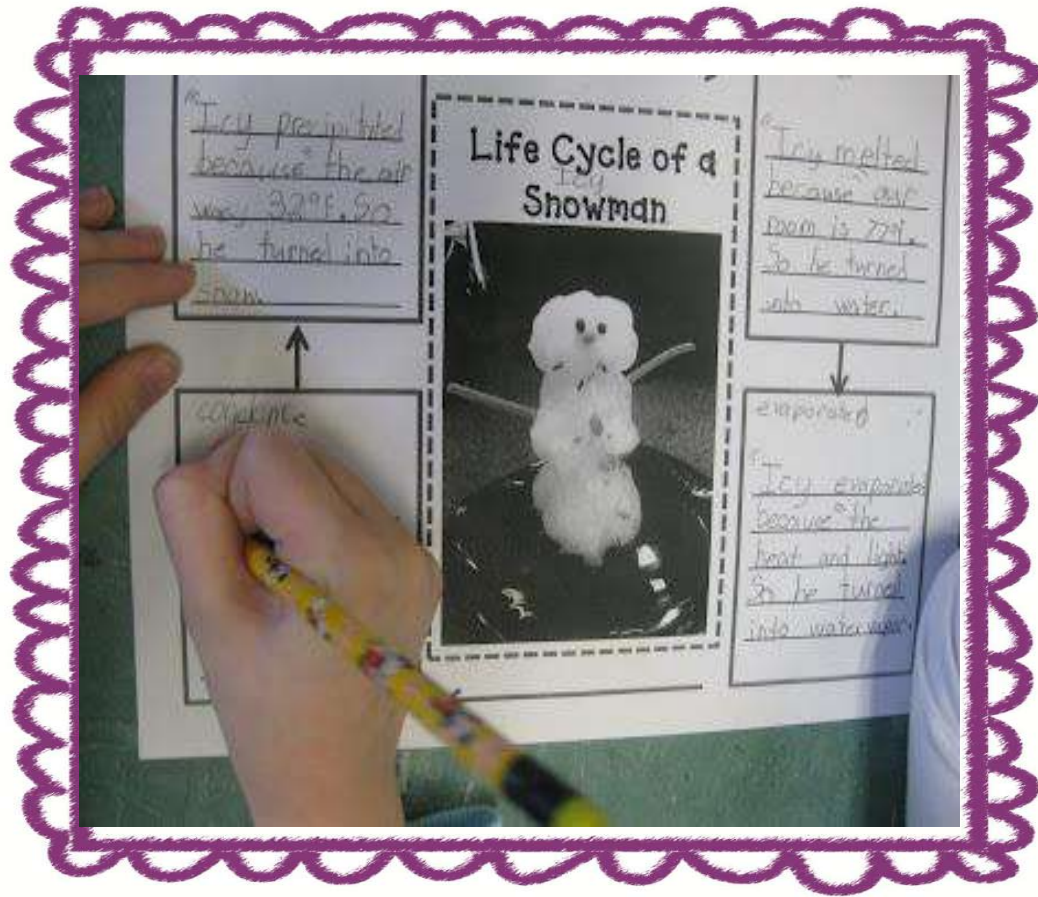
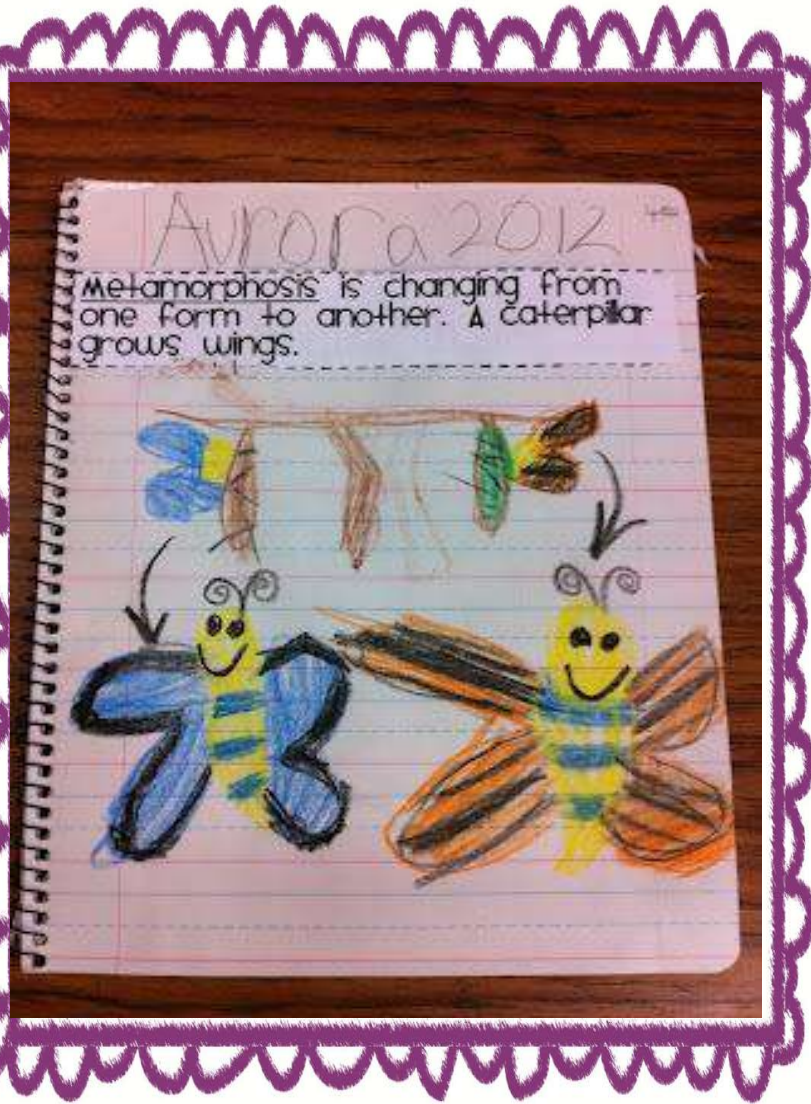
Facts of solids:

- \* Particles are close together.
- \* Molecules move slow.
- \* The temperature of the substance decreases.
- \* The substance contracts.
- \* A solid keeps its shape + volume.
- \* The particles are locked together.





# PROMPTS

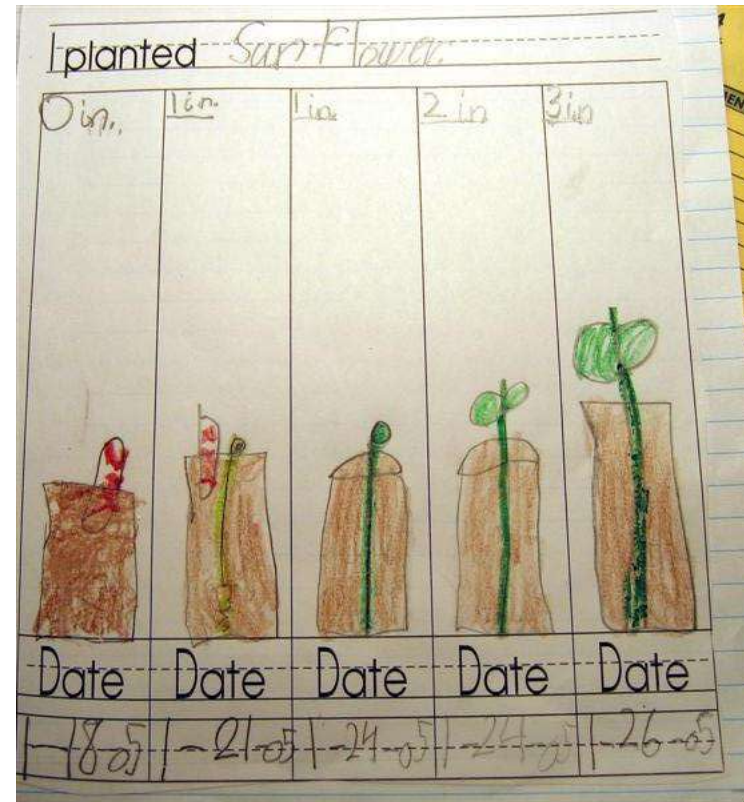


# REFLECTION: SENTENCE STEMS

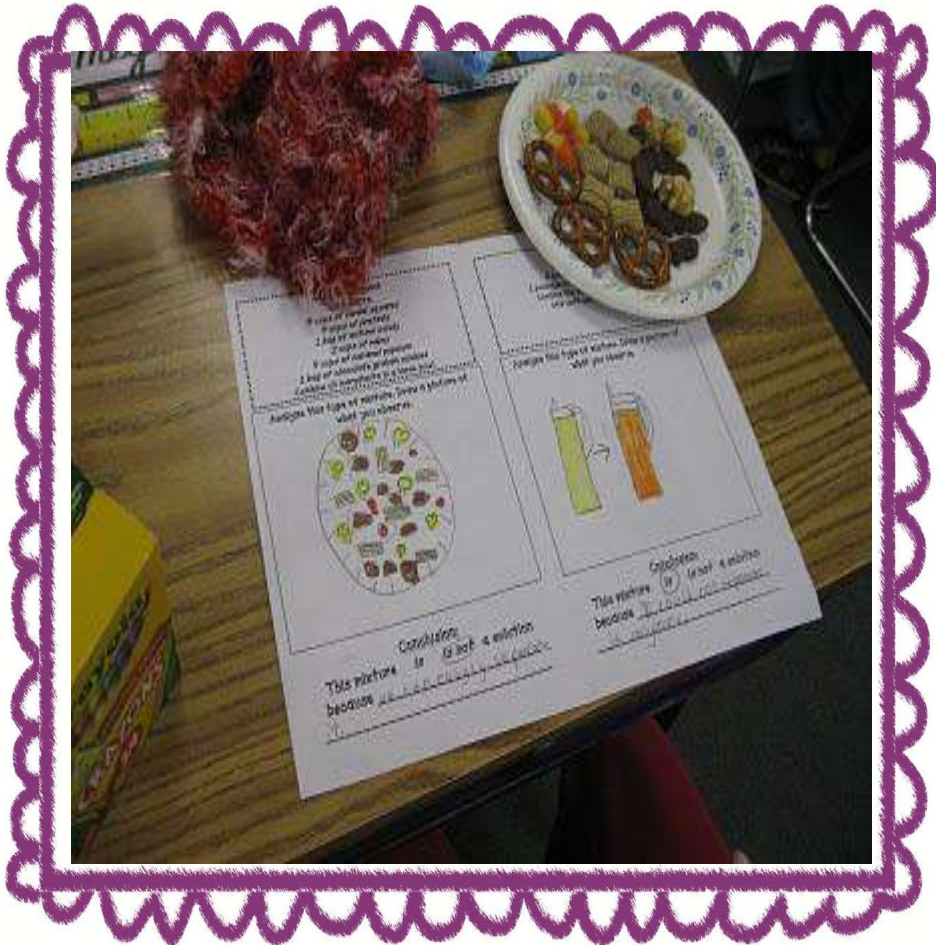
- My question: \_\_\_\_\_ (Question)
- Today I (or we) want to find out \_\_\_\_\_ . (Problem)
- I think \_\_\_\_\_ will happen because \_\_\_\_\_ . (Prediction)
- I noticed (or observed) \_\_\_\_\_ . (Observation)
- Today I learned \_\_\_\_\_ . (Conclusion)
- I wonder \_\_\_\_\_ . (Reflection)
- Questions I have now are \_\_\_\_\_ . (Next Steps/ New Questions)

# LABS AND SCIENCE EXPERIMENTS

- Teacher prepared
  - Procedures
  - Directions
- Worksheets
- Brochures
- Foldable



# LABS



## LAB REPORT

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

LAB TITLE: \_\_\_\_\_

LAB OBJECTIVE: \_\_\_\_\_

LAB PROCEDURE: \_\_\_\_\_

LAB RESULTS: \_\_\_\_\_

LAB CONCLUSION: \_\_\_\_\_

LAB DISCUSSION: \_\_\_\_\_

LAB REFERENCE: \_\_\_\_\_

LAB APPENDIX: \_\_\_\_\_

LAB INSTRUCTIONS:

This picture is great & awesome because it is a picture of a cell.

**LAB INSTRUCTIONS:**

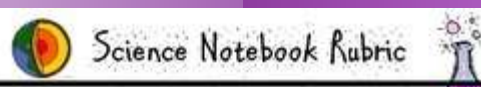
Change the liquid when you are done with your lab.

**LAB INSTRUCTIONS:**

This picture is great & awesome because it is a picture of a cell.

# ASSESSMENT

- Rubrics
  - Slips
  - Posted in Notebook
- LASER rubric
  - Yellow + Green
- Sticky Notes
- Grade BEFORE

 Science Notebook Rubric

Student Name: _____	4 Meets and Exceeds Criteria	3 Meets Criteria	2-1 Missing Information	0 Not Present
Date: _____				
<b>Focus Questions</b> (Circle to see log use)				
<b>Hypothesis/Prediction</b> (use complete sentences and relate to Focus)				
<b>Materials and Procedures</b> (All Materials and Procedures are listed in detail)				
<b>Results/Data</b> (Organized information like graphs, graphs or tables)				
<b>CONCLUSION</b> (Was your hypothesis proven or disproven?)				
<b>Reflection</b>				

Science Notebook Rubric

Student: \_\_\_\_\_

CATEGORY	Good! (3)	Good (2)	Almost (1)	Poor (0)	SCORE
<b>Neatness &amp; Organization</b>	neatwriting in neat notebook is organized in an orderly fashion/very neat	neatwriting is usually organized in an order for understand format	neatwriting is not very neat notebook organization is not neat to understand	neatwriting is sloppy and hard to read, notebook organization is difficult to follow	
<b>Content Accuracy</b>	written responses demonstrate an understanding of science concepts and proper vocabulary use	written responses demonstrate an understanding of science concepts and proper vocabulary use	written responses demonstrate a limited understanding of science concepts and proper vocabulary use	written responses demonstrate an inability to understand or understand of science concepts and proper vocabulary use	
<b>Required Elements</b>	Table of contents is written, pages are numbered, no page have been skipped, and titles are included	Table of contents is written, missing all pages are numbered and include a title, no skipped pages	Table of contents is not written, missing some page numbers and/or title, a few skipped pages	Table of contents has not been written, page are not numbered, several skipped pages	
<b>Illustrations &amp; Diagrams</b>	illustrations and diagrams are clear, accurate and labeled	illustrations are complete and clearly labeled	some illustrations are complete and clearly, accurate, and labeled, with some missing	illustrations are incomplete and inaccurate or missing	

Total      / 60      %

© Morgan Coupland Kappeler 2014

# DINA MIGHT FOLDABLES

# **Awesome Aquaponics for the Classroom – Cheap, Easy, and STEMabulous**



# Our Mission

To teach students to sustainability and environmental stewardship through the practices of recirculating aquaculture, aquaponics, and alternative energies.







## Sustainability through...

- Recirculating Aquaculture
- Aquaponics
- Habitat Restoration using native plants
- Alternative energies





- Aquaponics is Aquaculture + Hydroponics



# But...What is Aquaculture?

**Any** crop raised in water  
Fish (food and ornamental),  
plants (watercress, etc), turtles,  
clams, and even alligators!



graph by HBOI

# Ebb and Flow System



**START**

you  
Feed your fish



fish ingest food.

fish poo & food  
waste fall



plants  
absorb CO<sub>2</sub>  
& waste for  
their food,  
that fish naturally  
produce.

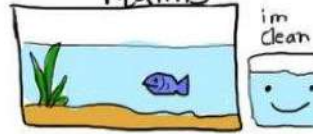
All  
Decomposed waste  
turns into **AMMONIA**



Repeat!!

**END**

you do  
Partial water  
Changes to keep  
fish happy and  
healthy



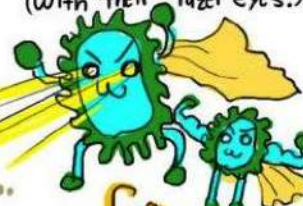
then  
Nitrates  
happen



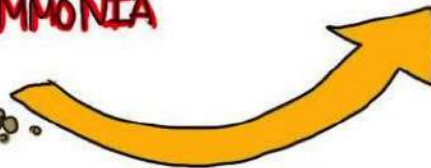
then  
Nitrites  
happen



"Good" Bacteria  
fight ammonia &  
eat them  
(with their lazer eyes.)



GO GO GO!!



Christina  
Lamson



# Float/Ebb and Flow System

- Easy to construct
- Readily available and cost effective materials
- Stand Alone system – requires no support



# Aeroponics System



# HYDROPONICS FOR THE CLASSROOM





# STEM-TASTIC FOLDABLES



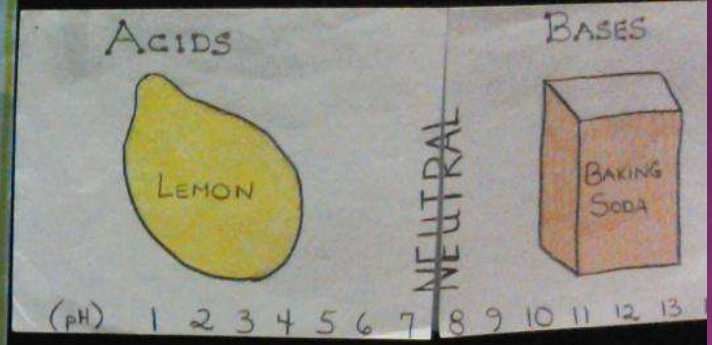
Call us today!  
 For training information and reservations, contact Sara Potter:  
 sara@dinah.com, (830)-995-3800, ext. 23 \*or visit www.dinah.com

- Fungi
  - Plant
  - Animal
- Vocabulary Terms

Metals conduct electricity

Poor conductors of heat

PERIODIC TABLE OF ELEMENTS



Metals      Nonmetals      Metalloids

Earth's Crust

Oxygen	46.6%
Silicon	27.72%
Aluminum	8.13%
Iron	5.0%



# Notebooking Central

Dinah Jike's

Foldable®



**Vocabulary**

Kingdom
fruit
genus
species

**Causes Effects**

**Heat Transfer**

WE HAVE THE BOOKS HERE

## Notebook Foldables®

Foldables® enhance comprehension and aid transfer.

**Mercury**

**Neptune**

Vocabulary Words A-M      Vocabulary Words N-Z

**Threats to the Tundra Home**

Global Warming
Oil Drilling
Overgrazing

**Plate Tectonics**

**C**ALCIUM      **C**ARBON      **B**ORON

**Grade Table**

Grade	Score
1st	85
2nd	78
3rd	92
4th	88
5th	95

**PROTOZOA**

**OIL AND NATURAL GAS FORMATION**

**Water Cycle**

**Health Issues**

Heart Disease
Diabetes
Cancer

**Dinah Zike's**  
 Dinah-Might Adventures, L.P.  
 Winner of Two Teachers' Choice Awards for 2011  
 Featured Exclusively in McGraw Hill Test  
**FOLDABLES<sup>®</sup>, VKVs<sup>®</sup>, and PROJECT EXPRESS**  
 3D Interactive Graphic Organizers    Visual Kinesthetic Vocabulary    Project / Book Boxes, Top Pockets and Project Pack

**What we offer...**  
**Dinah Zike Academy**  
**Professional Development Workshops**  
 We'll come to you!

Foldables: Enhance or Reinforce  
 Learning with a Kinesthetic Strategy

**What are Foldables?**  
 Foldables are three-dimensional graphic organizers that make data and concepts more meaningful with a kinesthetic integration.

Great for formative assessment!

**Onsite Teacher Training WORKSHOPS**  
 For your school, we offer individualized training sessions including:  
 - Modeling & Research Foldables™ across the curriculum  
 - Hands-on, inquiry-based, and student-centered learning  
 - Foldables and Learning Styles  
 - Foldables and Assessment

**TARGETED PROFESSIONAL DEVELOPMENT**  
 Create customized professional development for individual teachers with Foldables™. A focus on application, practice and collaboration. Hands-on, inquiry-based, and student-centered learning. Regional collaborations starting at your location with multiple schools.

**Six Kingdoms:**  
 • Kingdoms  
 • Protista  
 • Fungi  
 • Plantae  
 • Animalia  
 • Bacteria

**States of Matter**  
 Solid, Liquid, Gas, Plasma

Periodic Table of the Elements

1	2											11	12		
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20											21	22		
23	24	25	26	27	28	29	30	31	32	33	34	35	36		

**Earth's Crust**  
 Granite, Basalt, Limestone, Sandstone, Shale, Coal, Oil, Natural Gas

**Systems of the Human Body**  
 Digestive, Circulatory, Respiratory, Excretory, Reproductive, Integumentary, Muscular, Skeletal, Nervous, Endocrine

**Marie Curie**  
 1867-1934  
 Poland/France  
 Nobel Prize

**Plant Kingdom**  
 Monocots, Dicots

**Folding Books**  
 Project Express



oxygen

organism

cell

tissue

organ

system

organ system

NONRENEWABLE  
ENERGY  
RESOURCES

RENEWABLE  
ENERGY  
RESOURCES

Diversity of  
Placental Mammals



Six Kingdoms:

Archaea

Bacteria

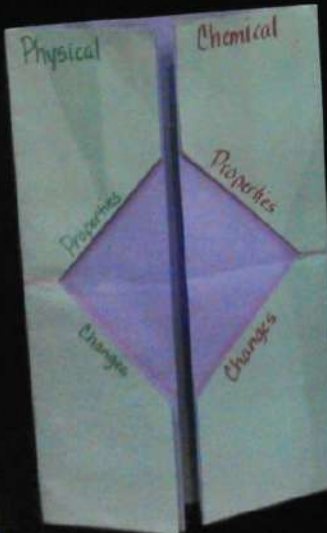
Protista

Fungi

Plant

Animal

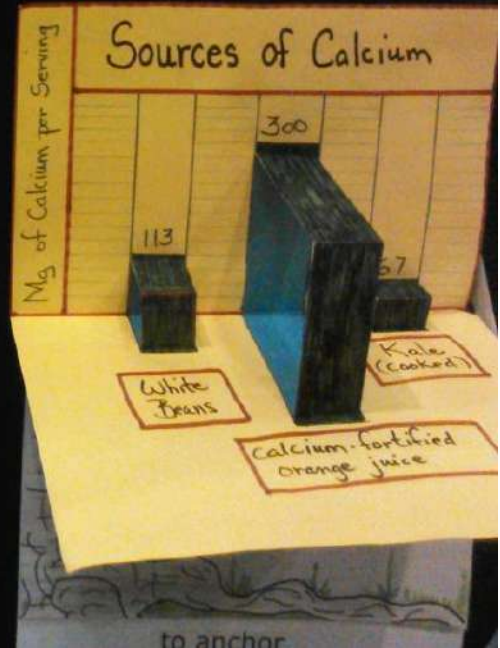
Vocabulary Terms



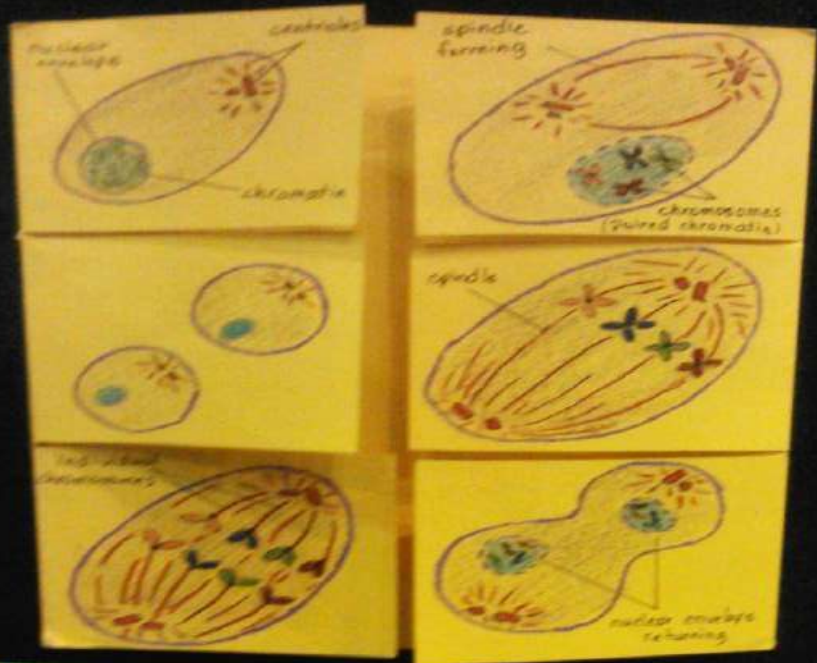
Cold Front

all that

to anchor

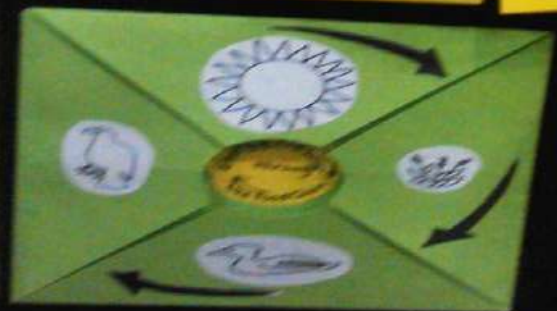


H He Li Be B C N O F Ne Na Mg Al Si P S Cl Ar K Ca Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Kr  
 Rb Sr Y Zr Nb Mo Ru Rh Pd Ag Cd In Sn Sb Te I Xe Ba La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn  
 Fr Ra Ac Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr Rf Db Sg Bh Hs Mt Uu Uub



erms  
 ms  
 rin  
 ma  
 leus  
 and  
 icle

Integumentary System



How DO LENSES WORK?

**LIGHT AND LENSE**

CONVEX

Telescope

Bifocals

Microscope

Who the appeared

Journal:

**Talking Rocks**

Photographs

Petroglyphs

Call us today!  
 For training information and reservations, contact Sara Potter:  
 sara@dinah.com, (830)-995-3800, ext. 23 \*or visit www.dinah.com

- Fungi
- Plant
- Animal

## Vocabulary Terms

Metals  
conduct

Poor  
conductors

PERIODIC TABLE OF ELEMENTS

ACIDS



BASES



NEUTRAL

(pH) 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Metals Nonmetals Metalloids

## Earth's Crust

Oxygen 46.6%  
 Silicon 27.72%  
 Aluminum 8.13%

chlorophyll observation



## Systems of the Human Body

Integumentary

Skeletal

Muscular

Lymphatic

Respiratory

Digestive

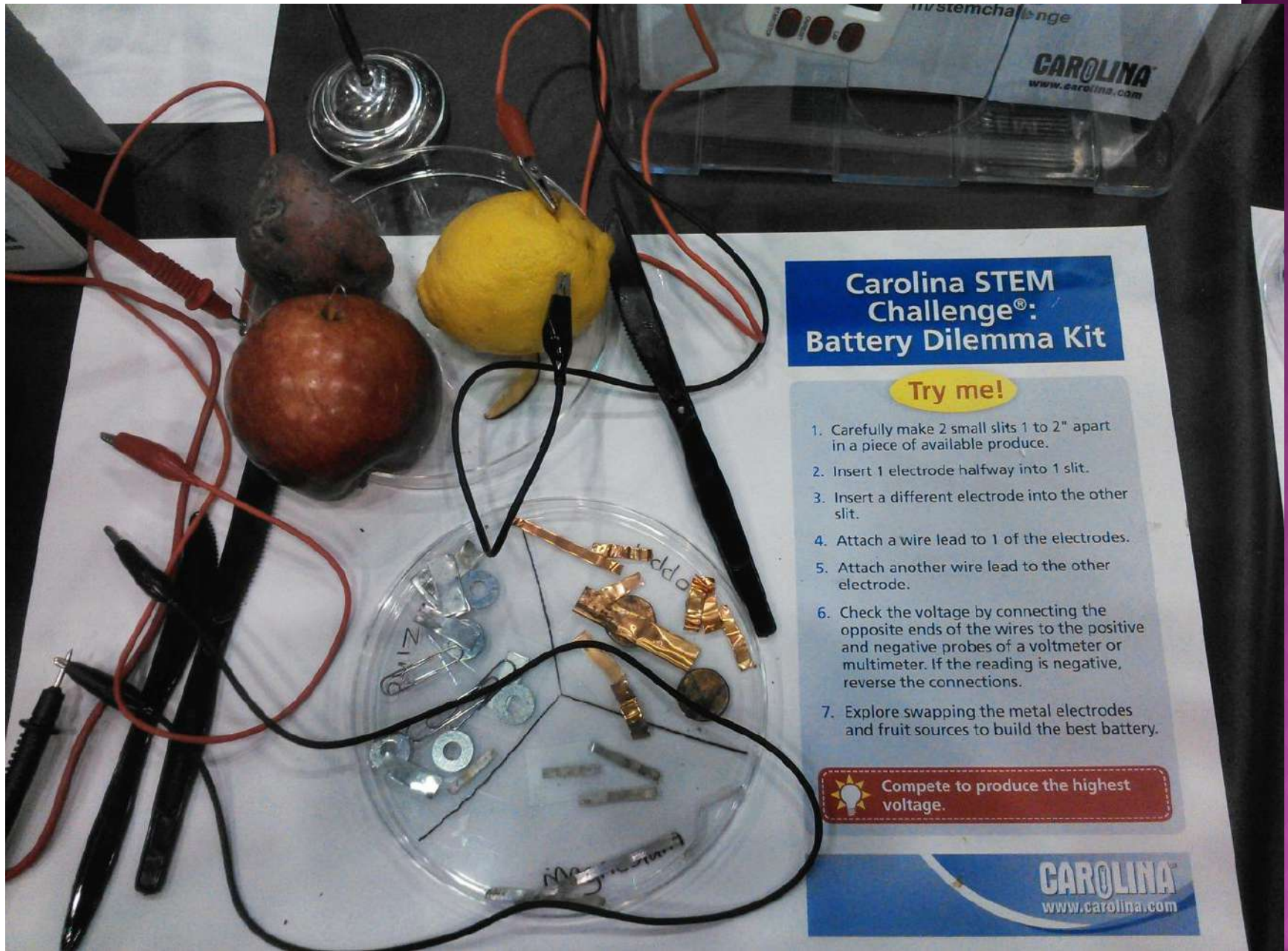
Nervous

Endocrine

Circulatory



# CAROLINA STEM CHALLENGE



## Carolina STEM Challenge®: Battery Dilemma Kit

### Try me!

1. Carefully make 2 small slits 1 to 2" apart in a piece of available produce.
2. Insert 1 electrode halfway into 1 slit.
3. Insert a different electrode into the other slit.
4. Attach a wire lead to 1 of the electrodes.
5. Attach another wire lead to the other electrode.
6. Check the voltage by connecting the opposite ends of the wires to the positive and negative probes of a voltmeter or multimeter. If the reading is negative, reverse the connections.
7. Explore swapping the metal electrodes and fruit sources to build the best battery.



Compete to produce the highest voltage.

**CAROLINA**  
www.carolina.com



Carolina Biological Supply Company  
2009  
Mick A. Clark  
Ph.D. and  
Carolyn Clark  
Ph.D.  
**CAROLINA**  
BIOLOGICAL SUPPLY COMPANY



## Carolina STEM Challenge®: How to Train Your Isopod Kit

Try me!

1. Determine which factors influence isopod behavior.
2. Choose a variable to test isopod preference.
3. Construct your choice chamber.
4. Observe and evaluate your experiment.

 Experience animal behavior and habitat or food preference.

# STEM AT WORK TEACHERS TURN!







