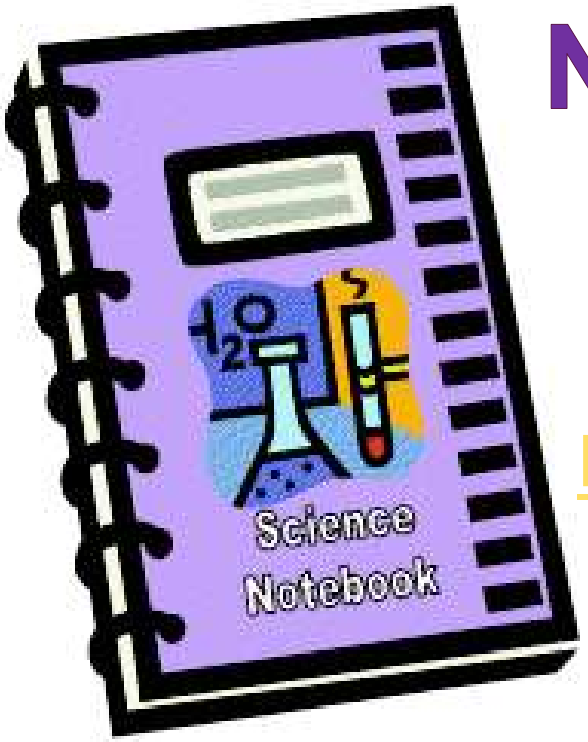
INTERACTIVE SCIENCE NOTEBOOKS



PPT provided by
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NSTA 2014 Orlando

Presented by Susan Kirkland
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?

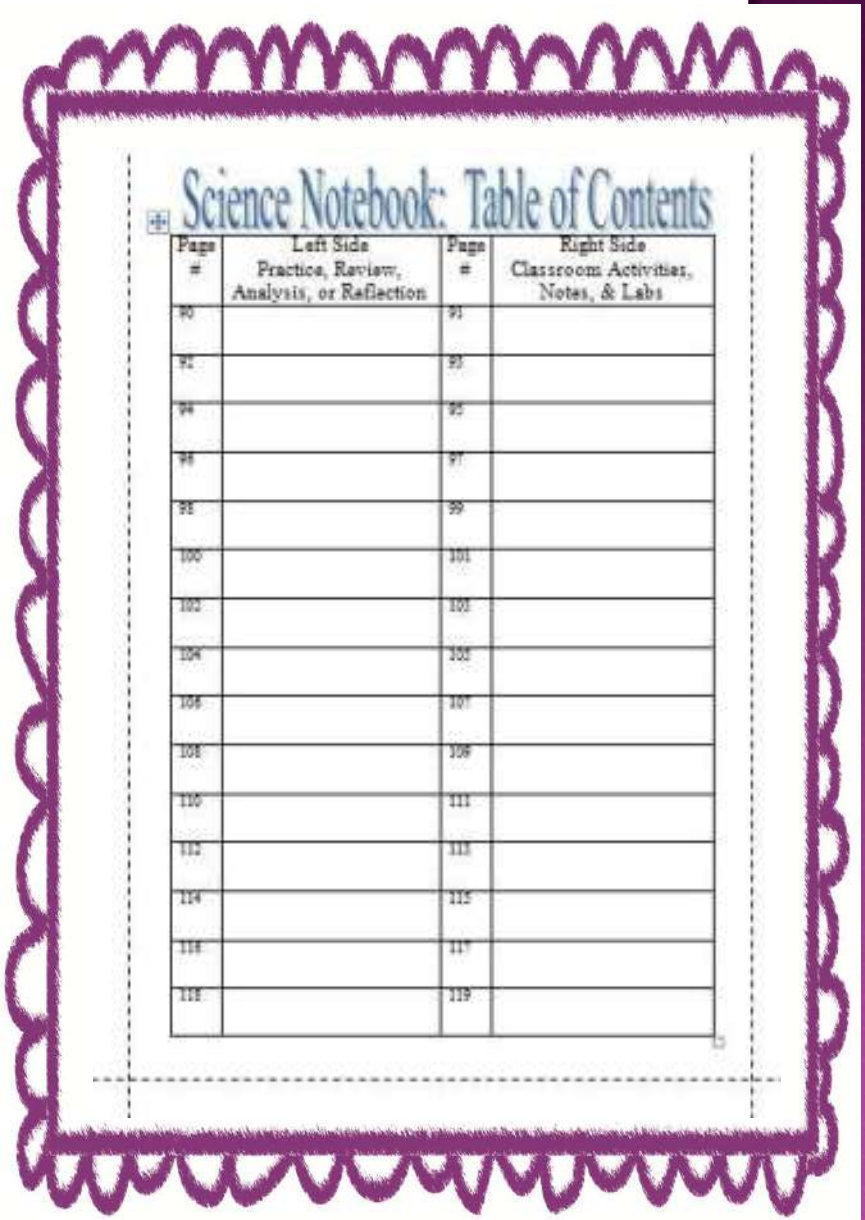
WHAT DO STUDENTS NEED?

- 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”

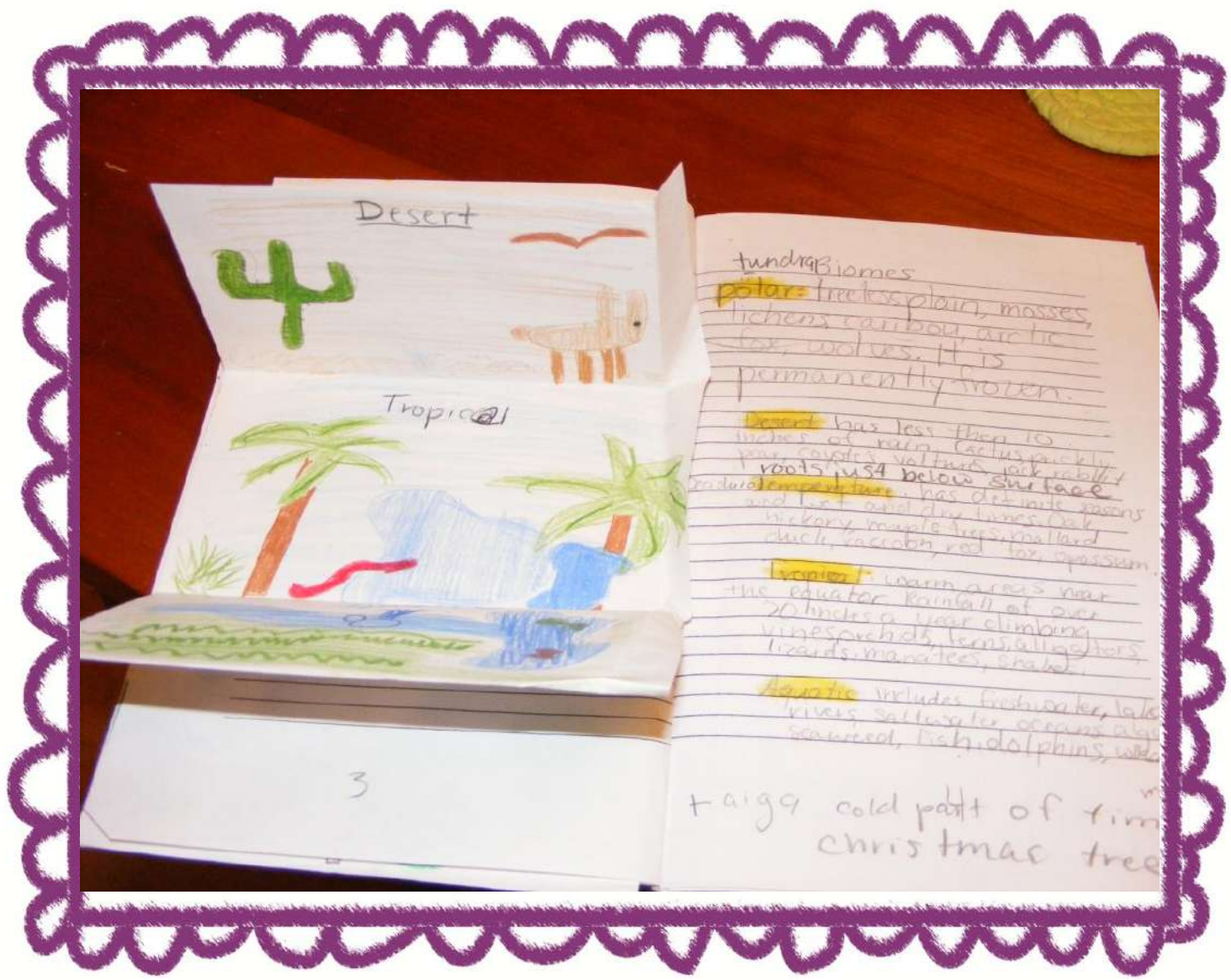
SET UP

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

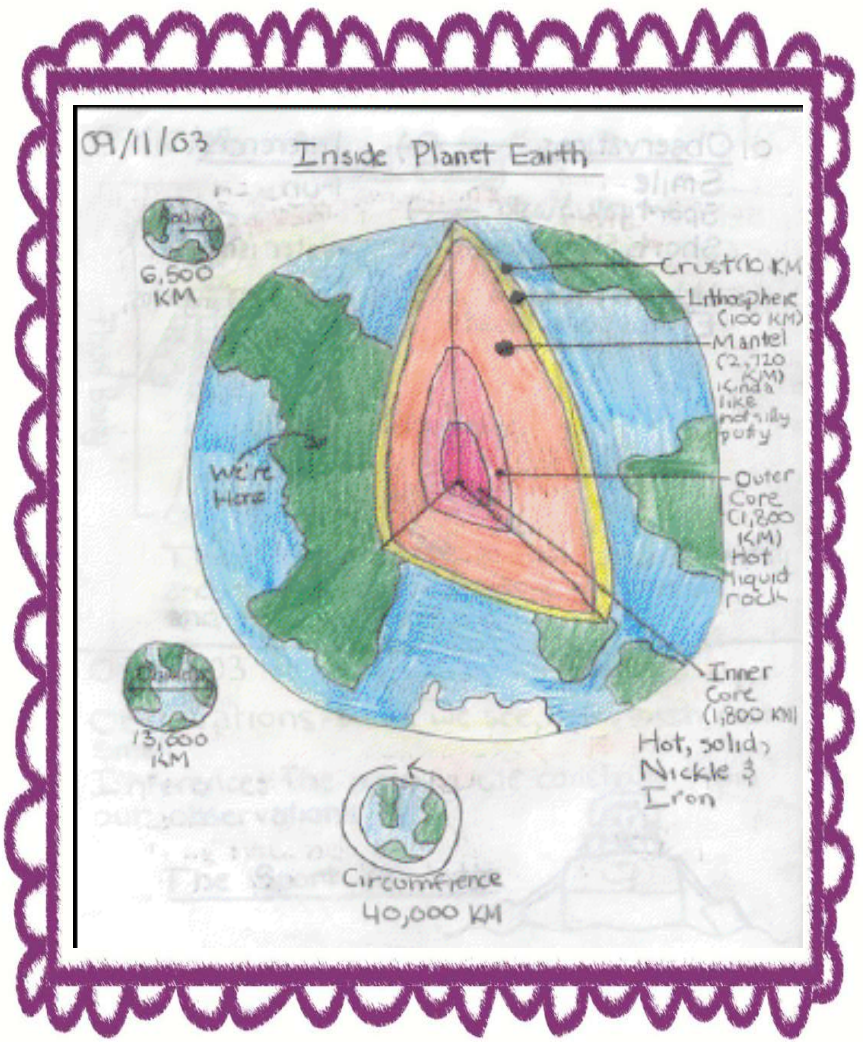


NOW WHAT?

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

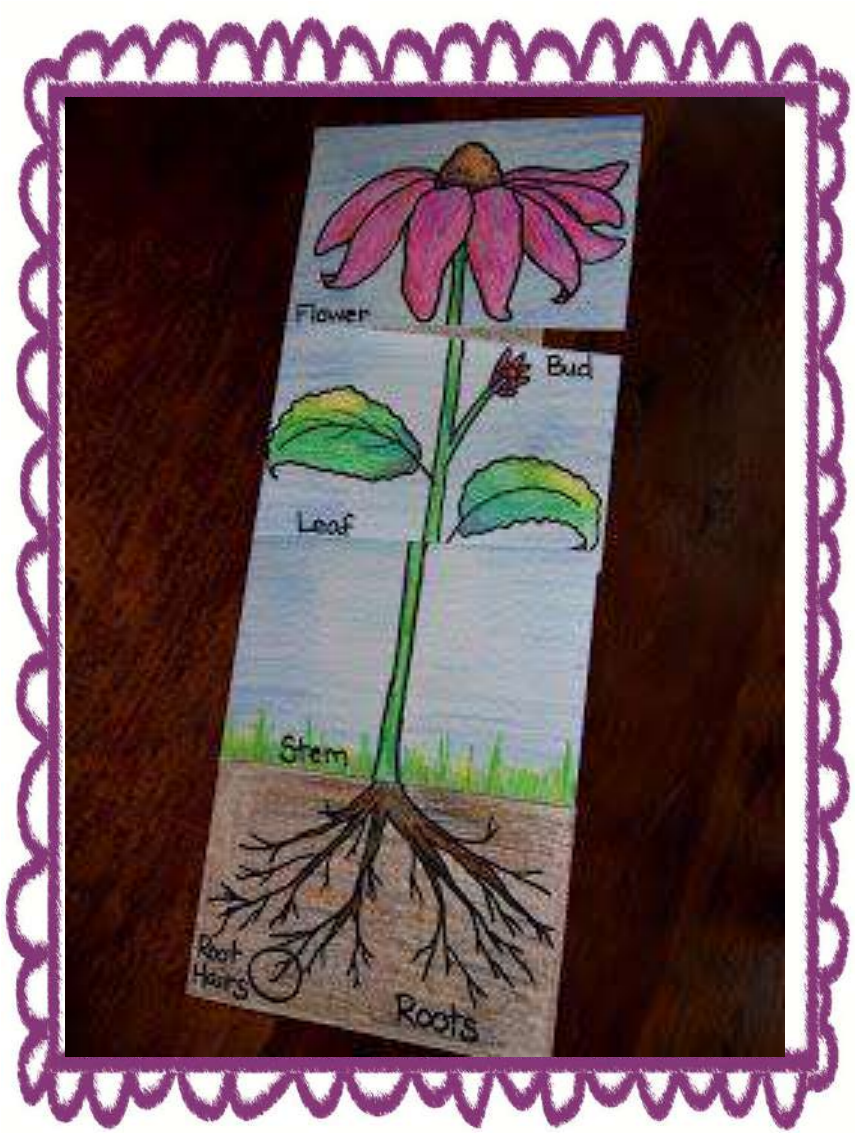
B: Big

C: Colorful

D: Detailed

DIAGRAM: FLAPS

Diagram: Foldable



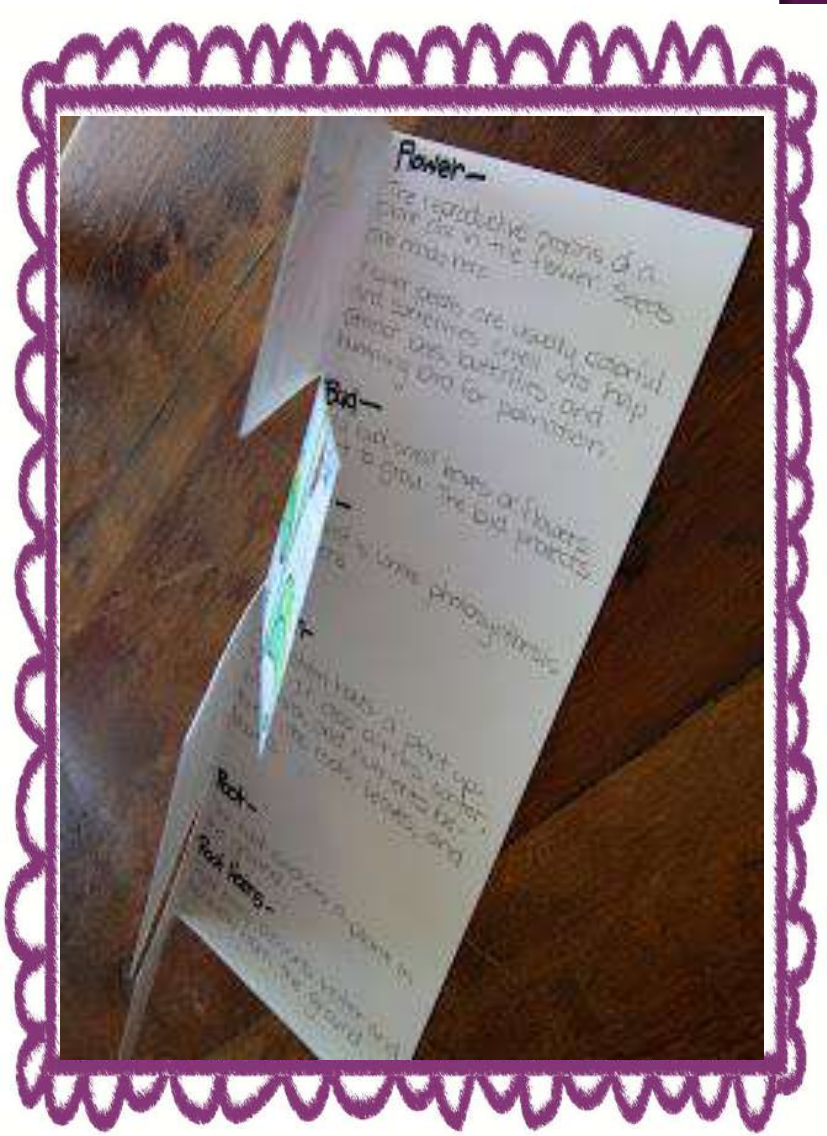
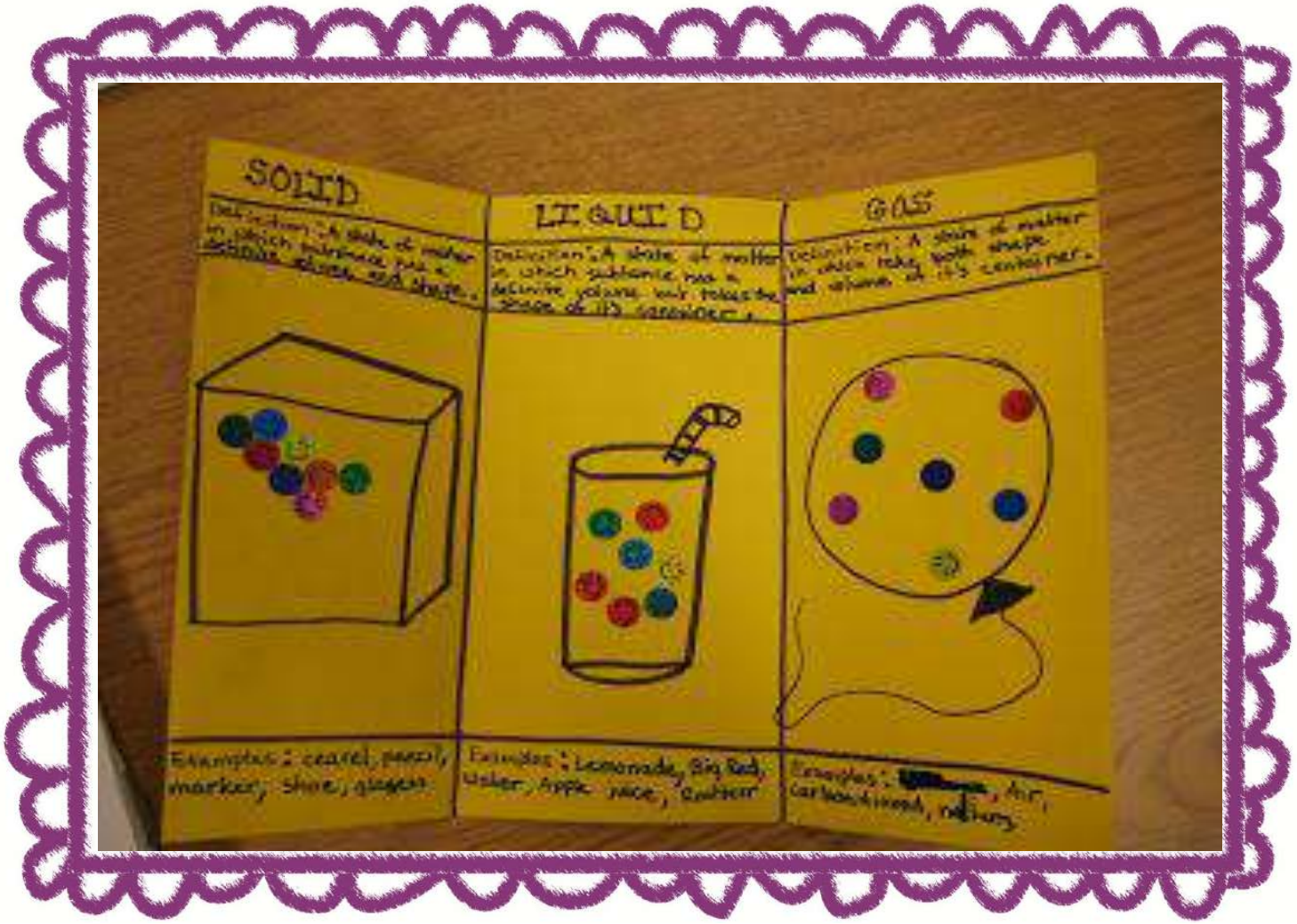
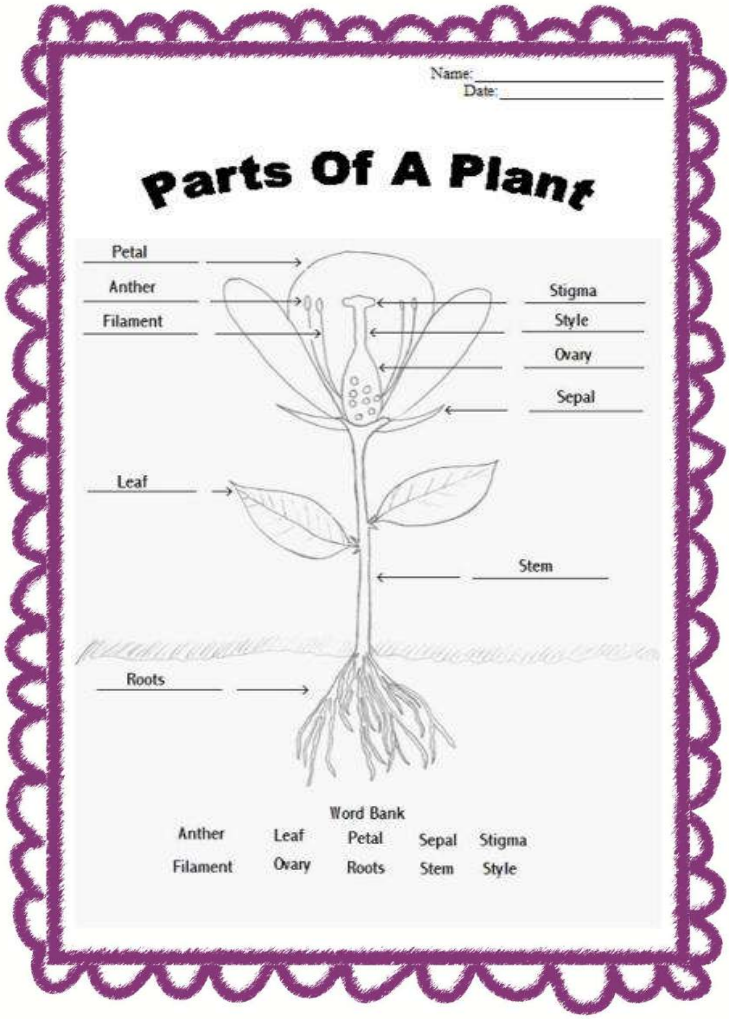
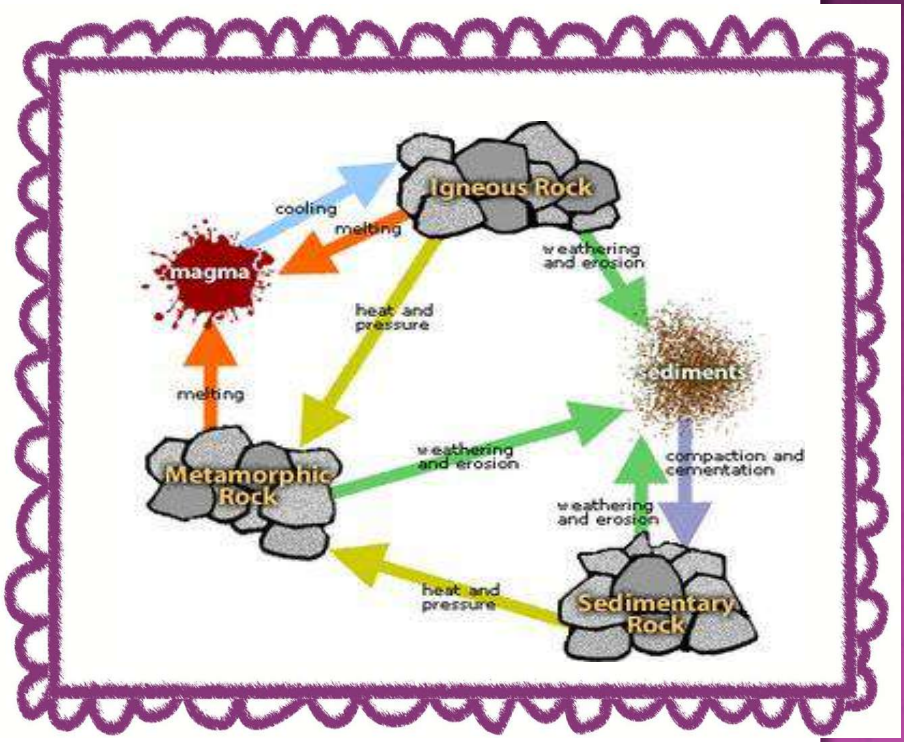


DIAGRAM: BROCHURE



DIAGRAMS: FILL IN



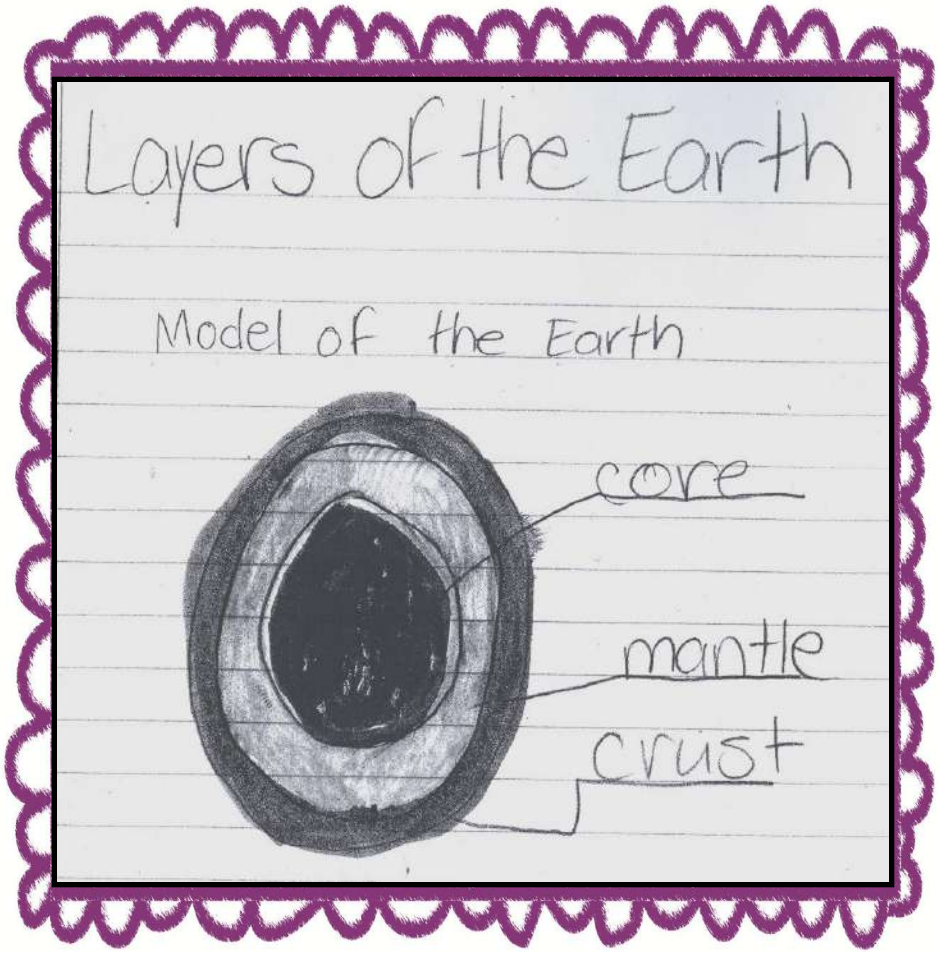


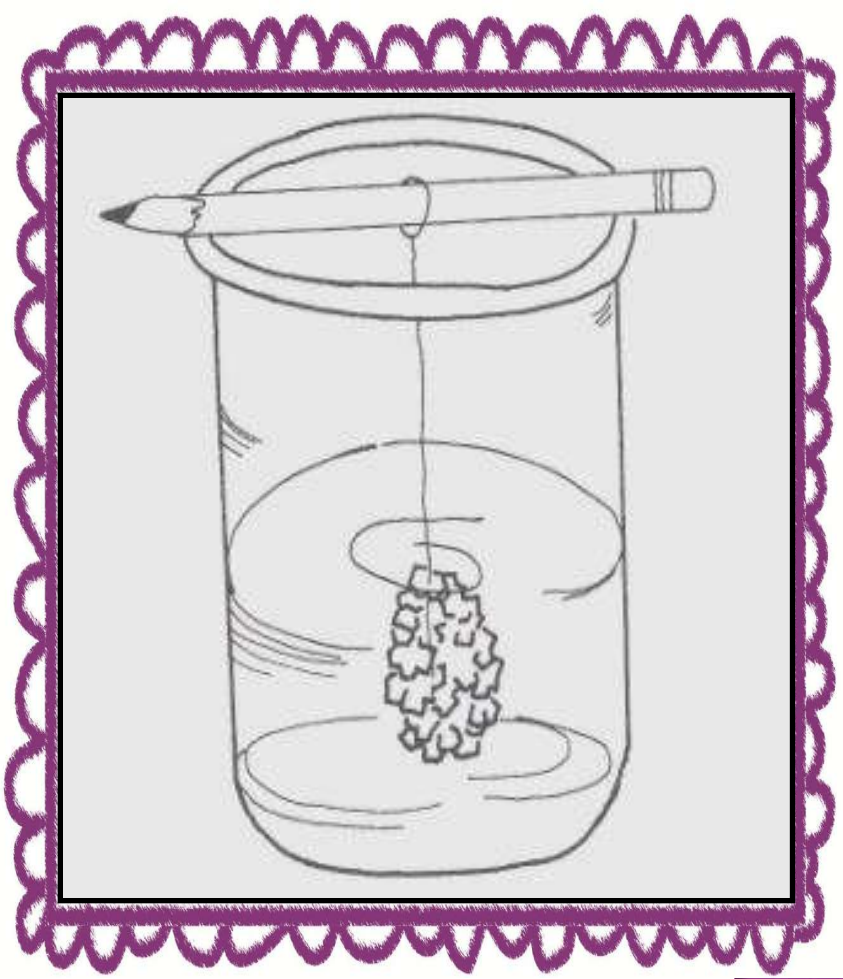
MOVE IT!

DRAWINGS

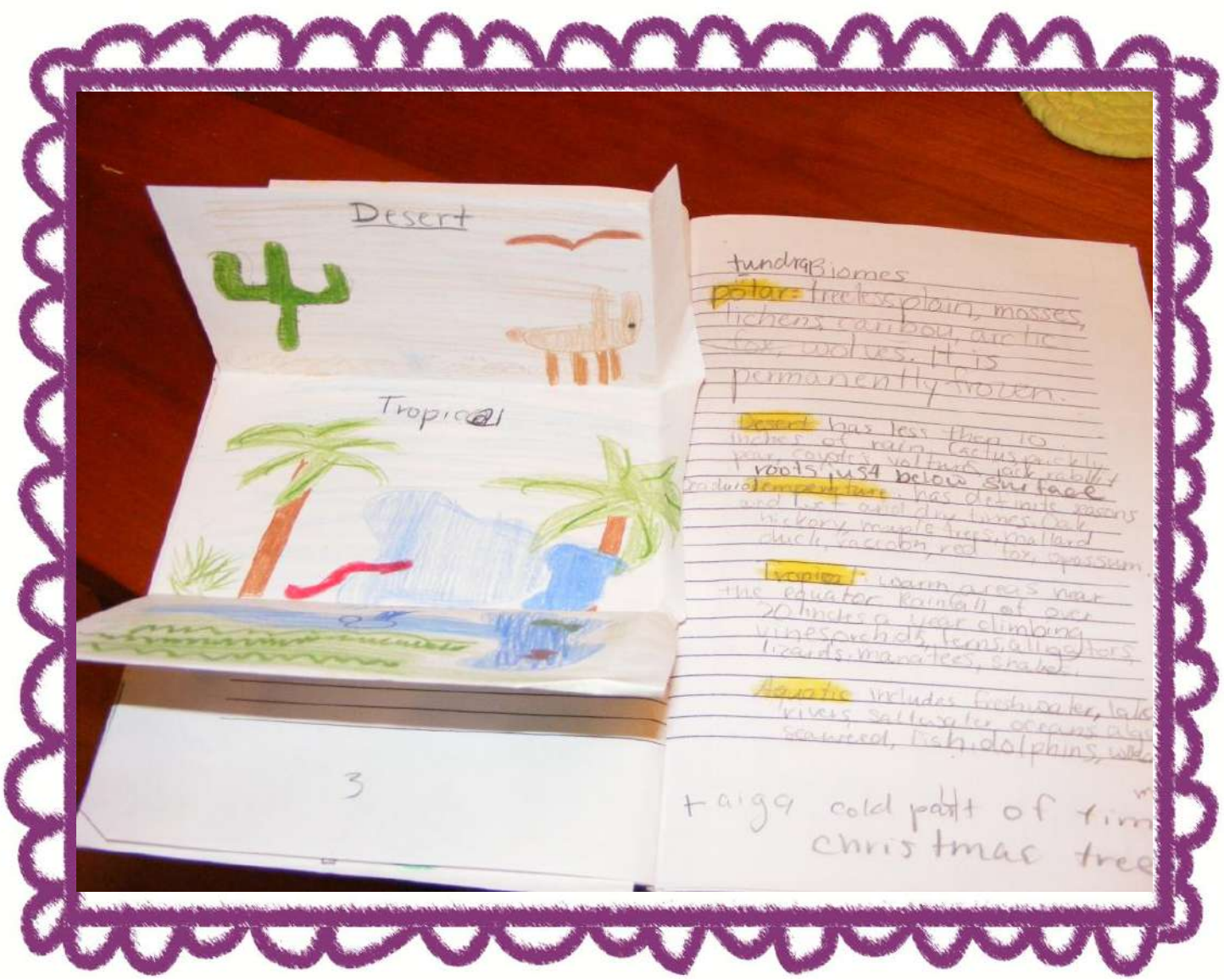
- Drawing for observation
- Technical drawings
  - Label all of it
- Drawing to understand vocabulary words

DRAWINGS



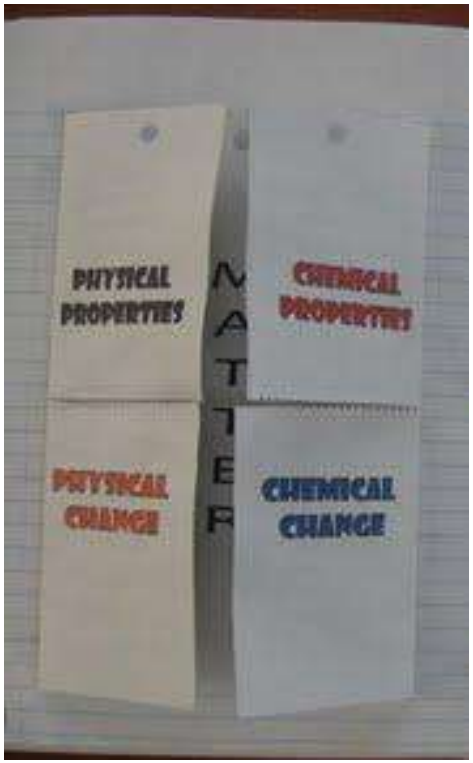


DRAWING: BIOMES

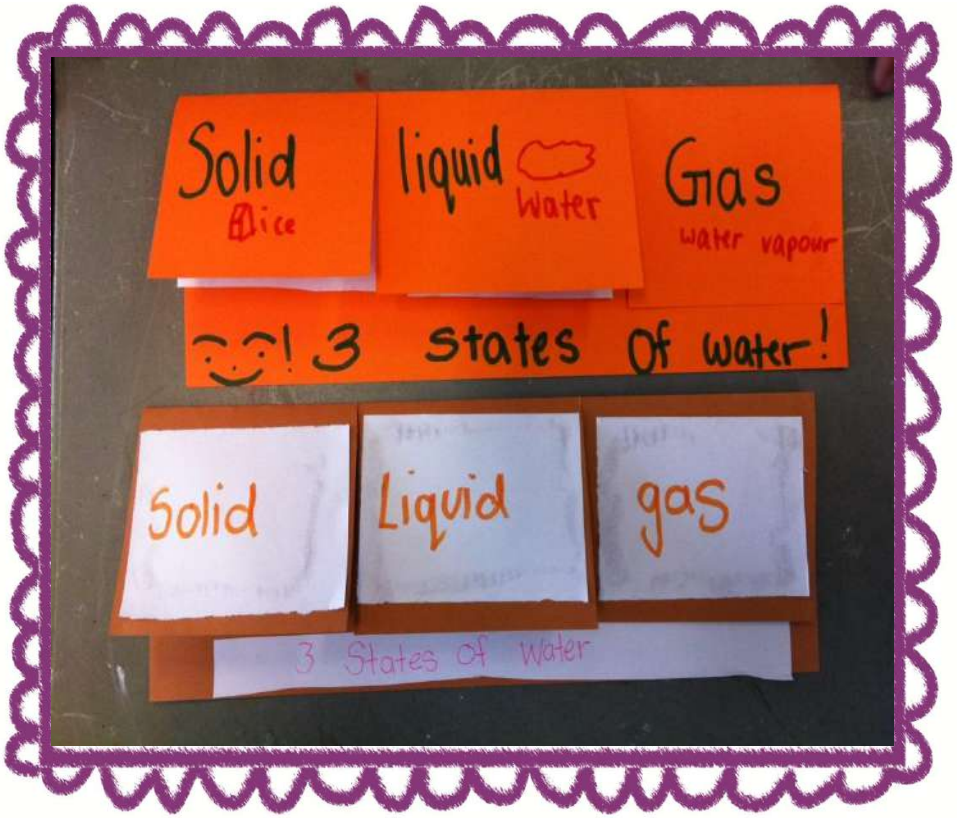


FOLDABLES

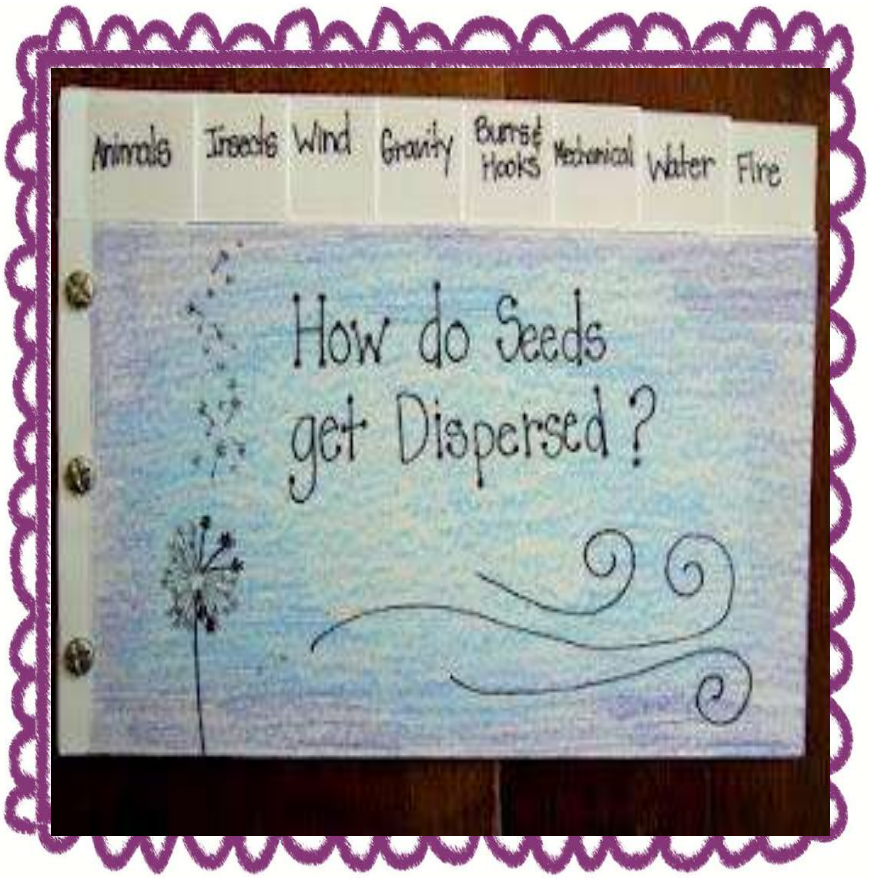
- 3-D interactive organizers
- Can be used as a self-check tool
- Can be used at any level
- Can be used with any subject
- Assessment tool

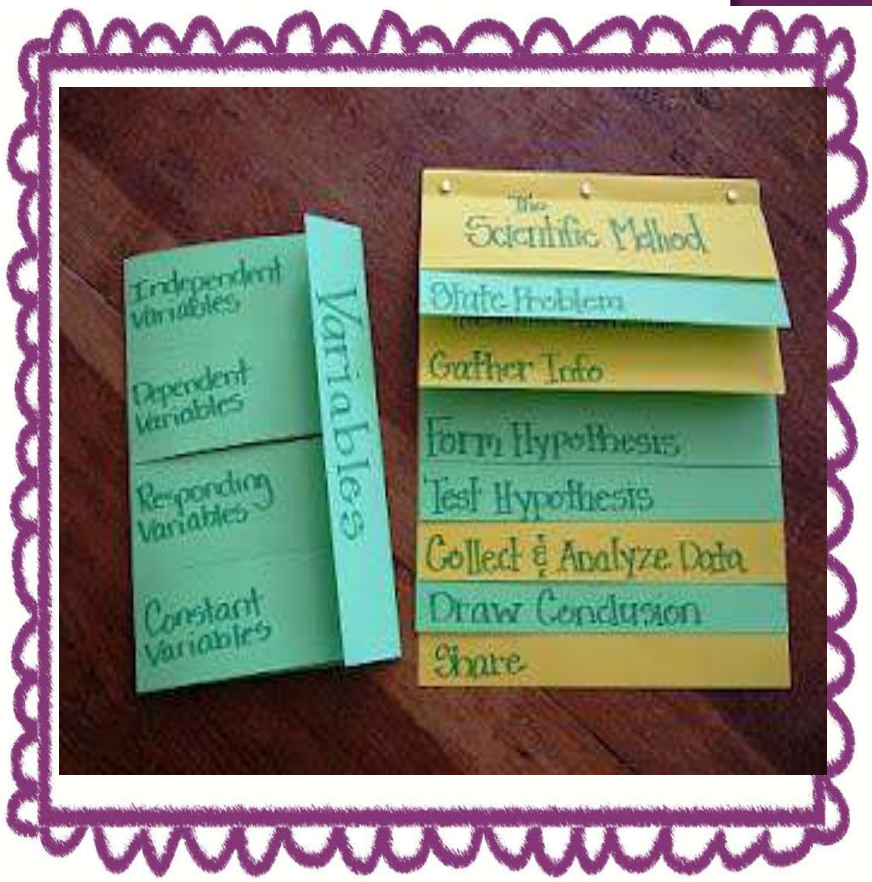


FOLDABLES: TRI-FOLD, VENN, & 4-FOLD

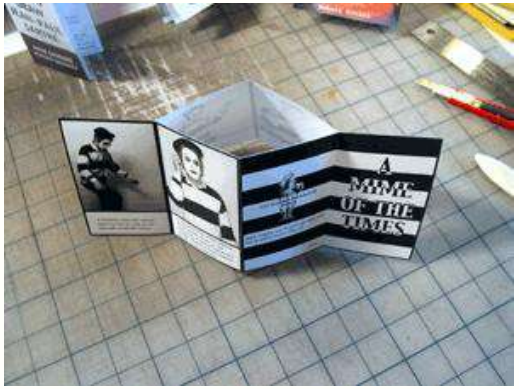


FOLDABLES: MATCHBOOKS & LAYERS





FOLDABLES: 8 PAGE BOOK

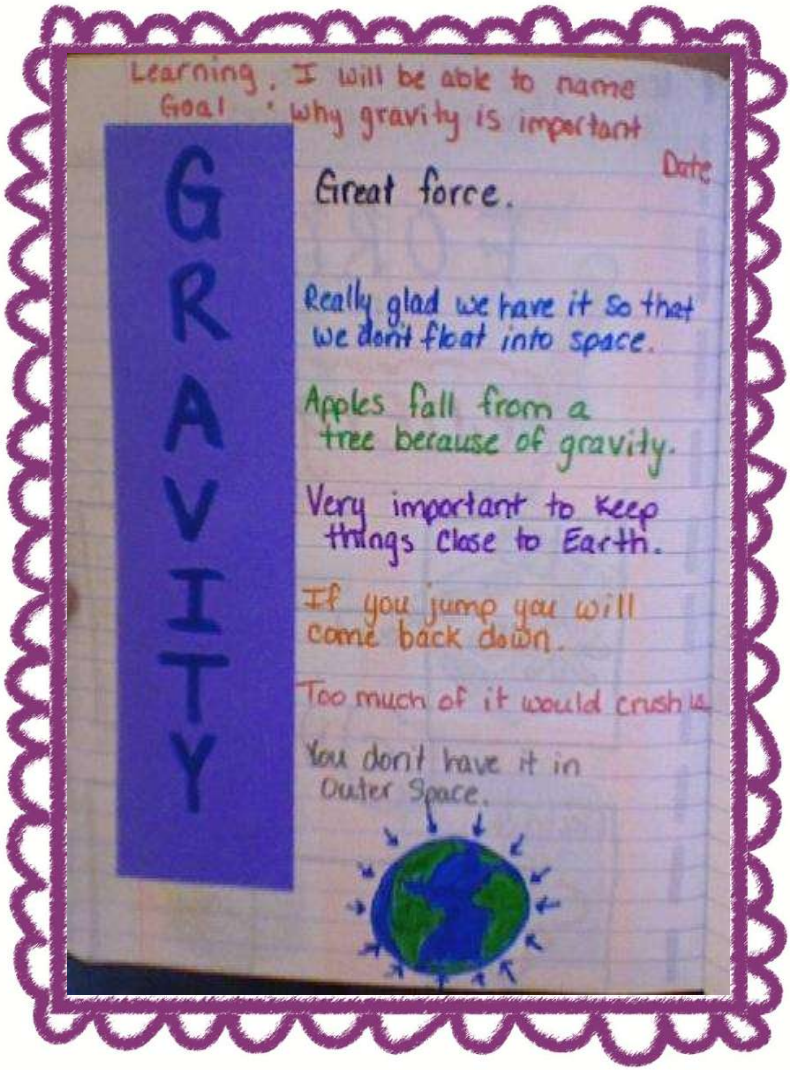


MINI SCIENCE FAIR

VOCABULARY

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

VOCAB: ACROSTIC



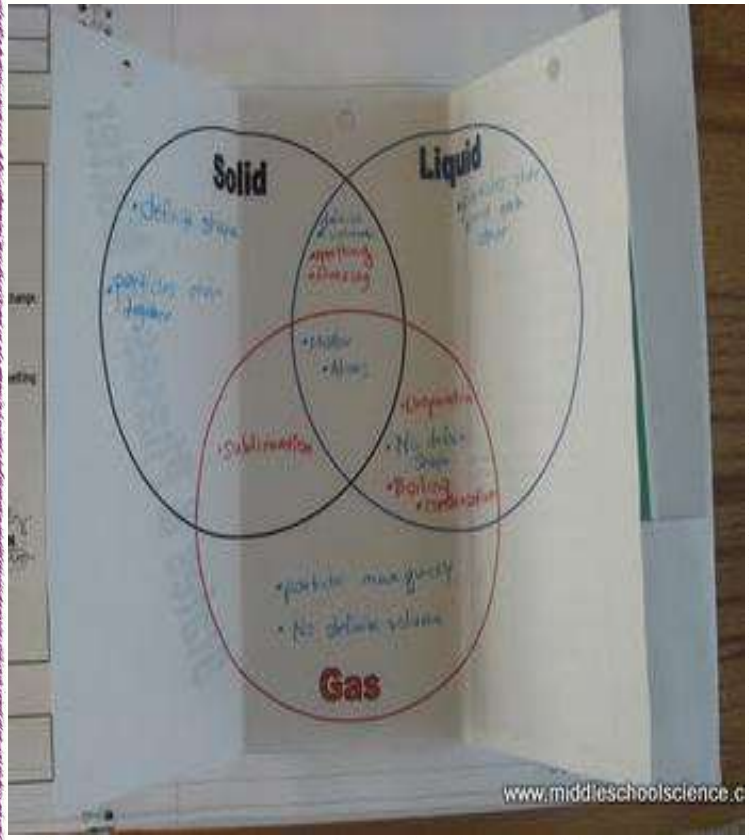
WRITING

- 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

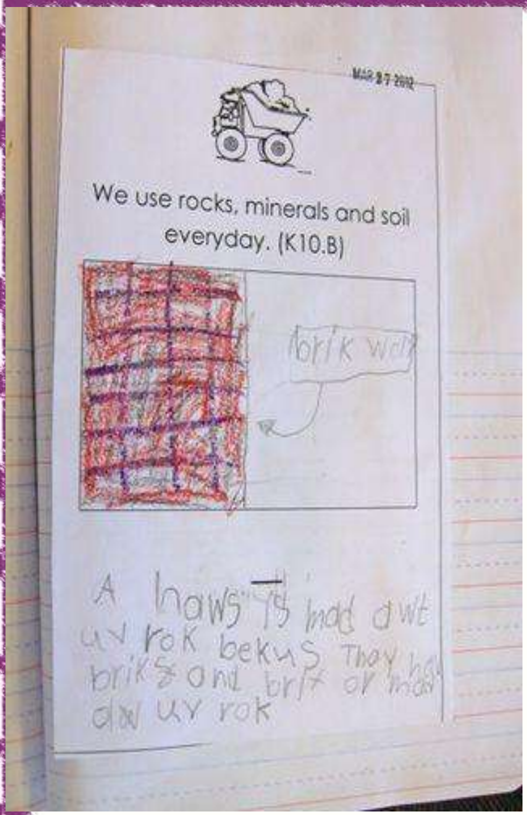
GRAPHIC ORGANIZERS

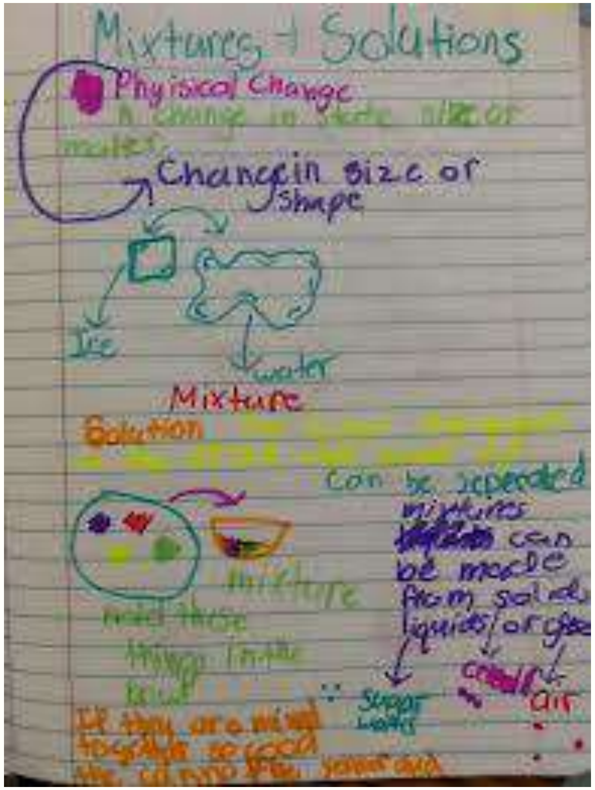


NOTES

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

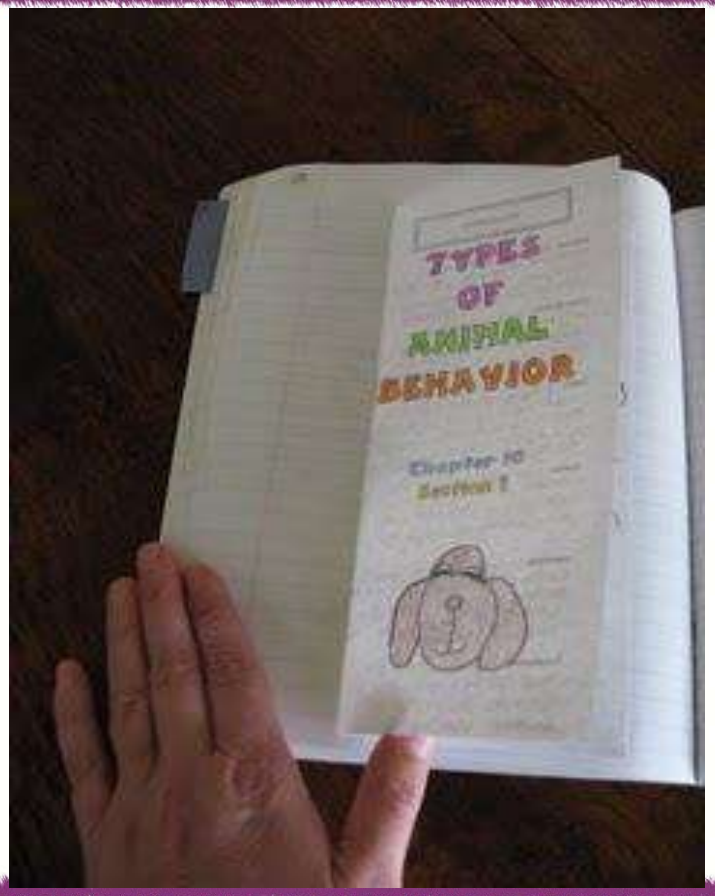
NOTES

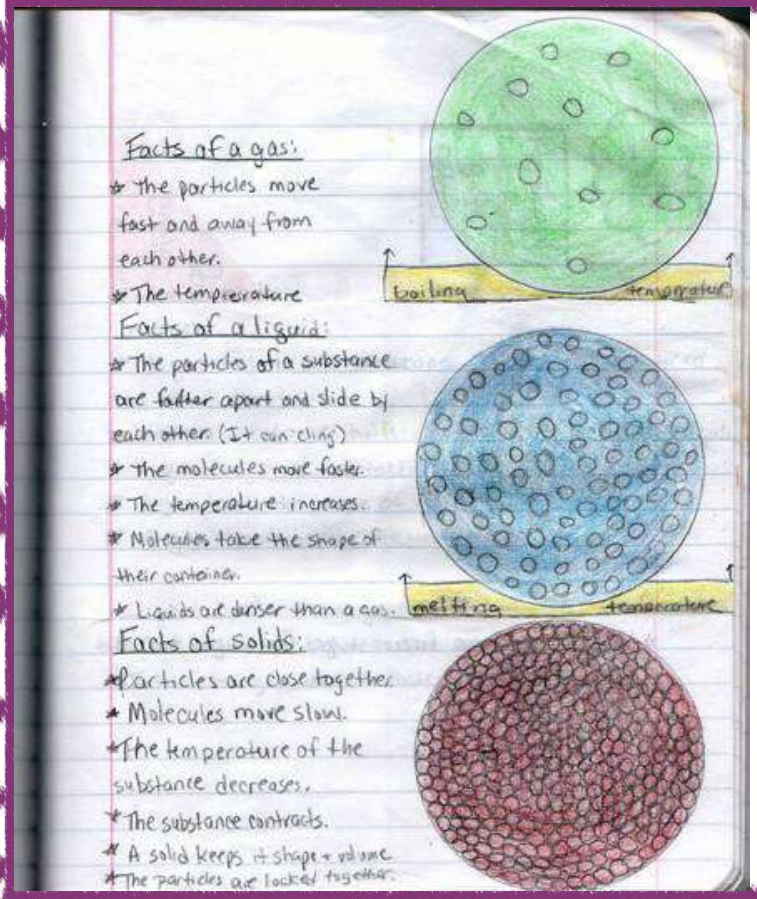

We use rocks, minerals and soil everyday. (K10.B)
brik wall


Mixtures + Solutions
Physical Change
Change in size or shape
Ice
water
Mixture
Solution

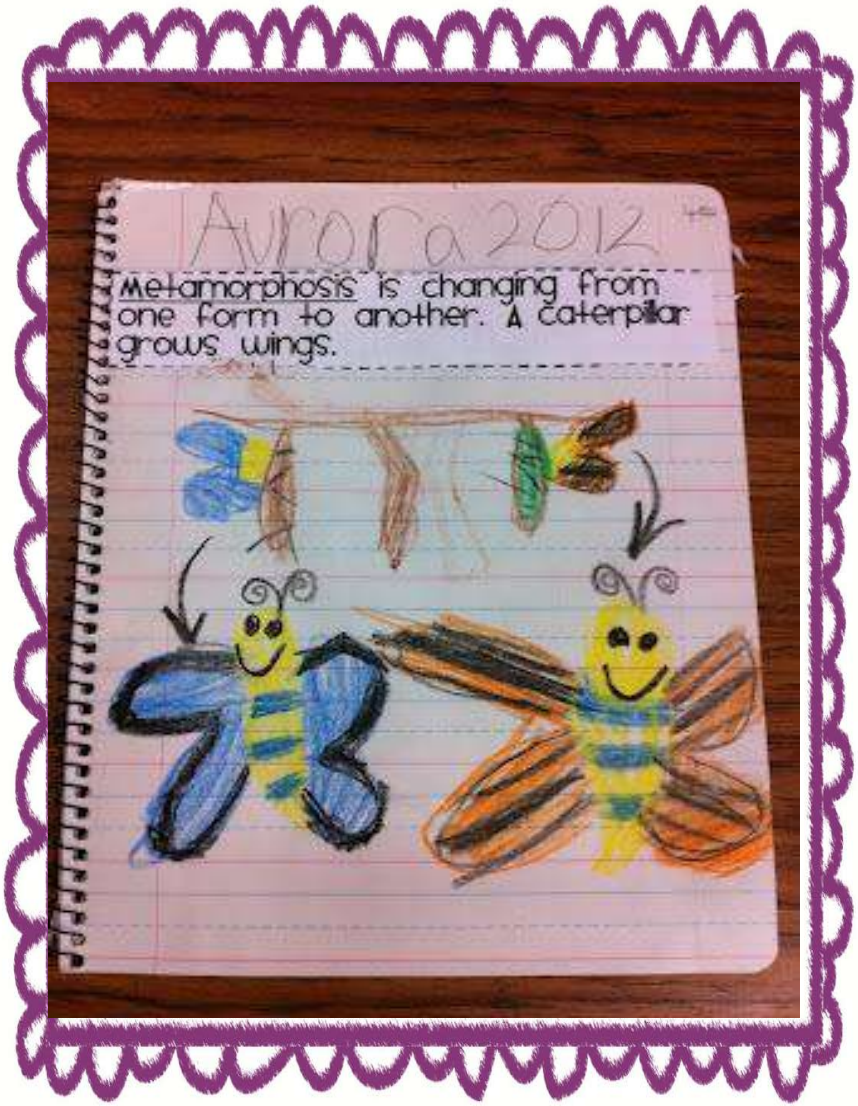

EARTH
MARS

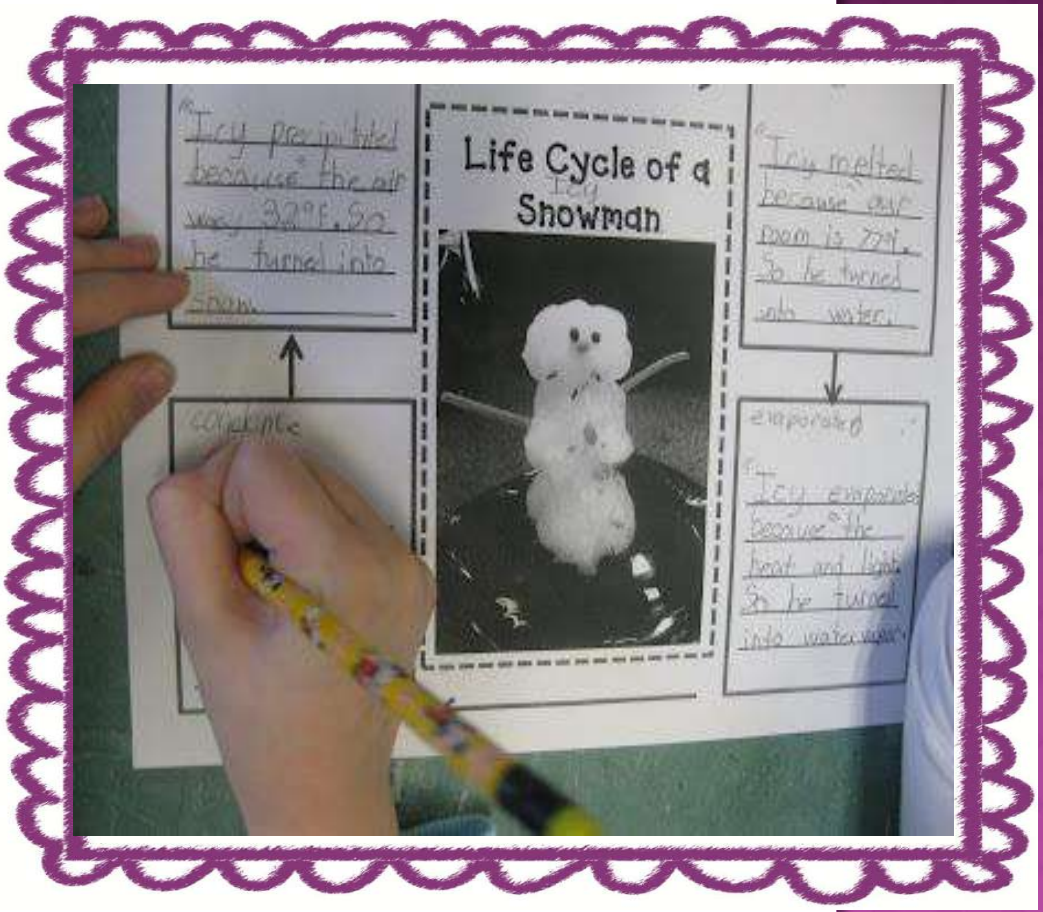
NOTES


TYPES
OF
ANIMAL
BEHAVIOR


Facts of a gas:
* The particles move fast and away from each other.
* The temperature
boiling
temperature
Facts of a liquid:
* The particles of a substance are farther 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.
melting
temperature
Facts of solids:
* Particles are close together.
* Molecules move slow.
* The temperature of the substance decreases.
* The substance contracts.
* A solid keeps it shape + volume.
* The particles are locked together.

PROMPTS


Aurora 2012
Metamorphosis is changing from one form to another. A caterpillar grows wings.

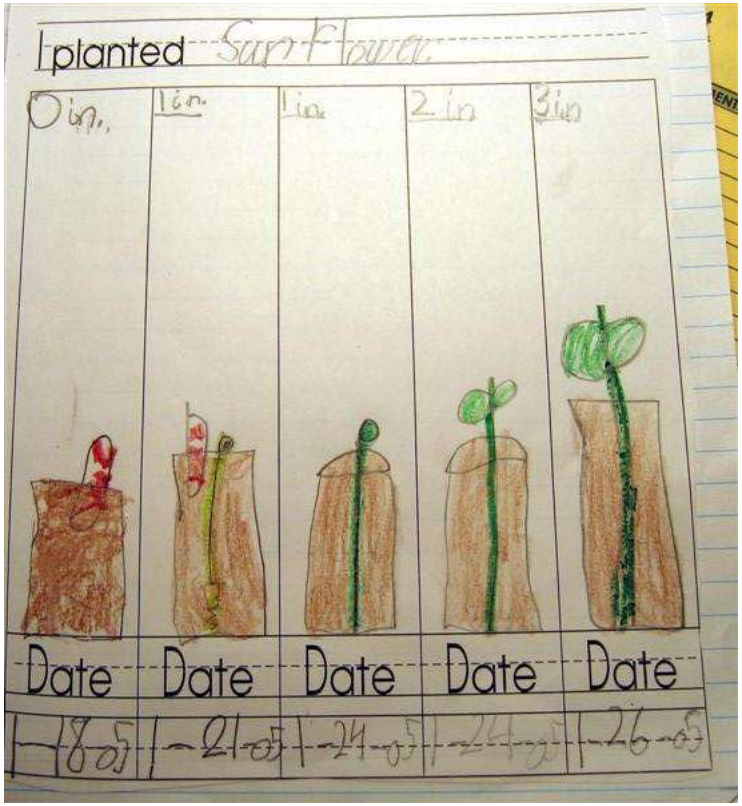

Life Cycle of a Snowman

REFLECTION: SENTENCE STEMS

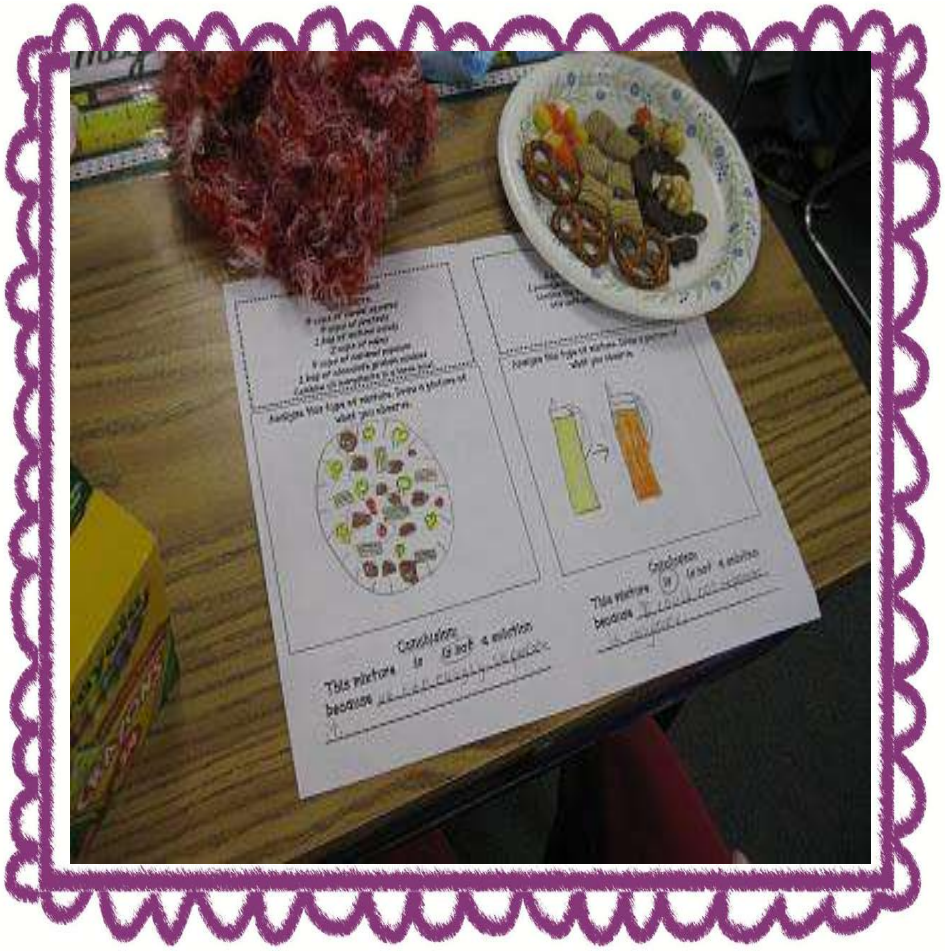
- My question:_____ (Question)
- Today I (or we) want to find out _____. (Problem)
- I think_____ will happen because _____. (Prediction)
- I noticed (or observed) _____. (Observation)
- Today I learned _____. (Conclusion)
- I wonder _____. (Reflection)
- Questions I have now are _____. (Next Steps/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

LABS AND SCIENCE EXPERIMENTS

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

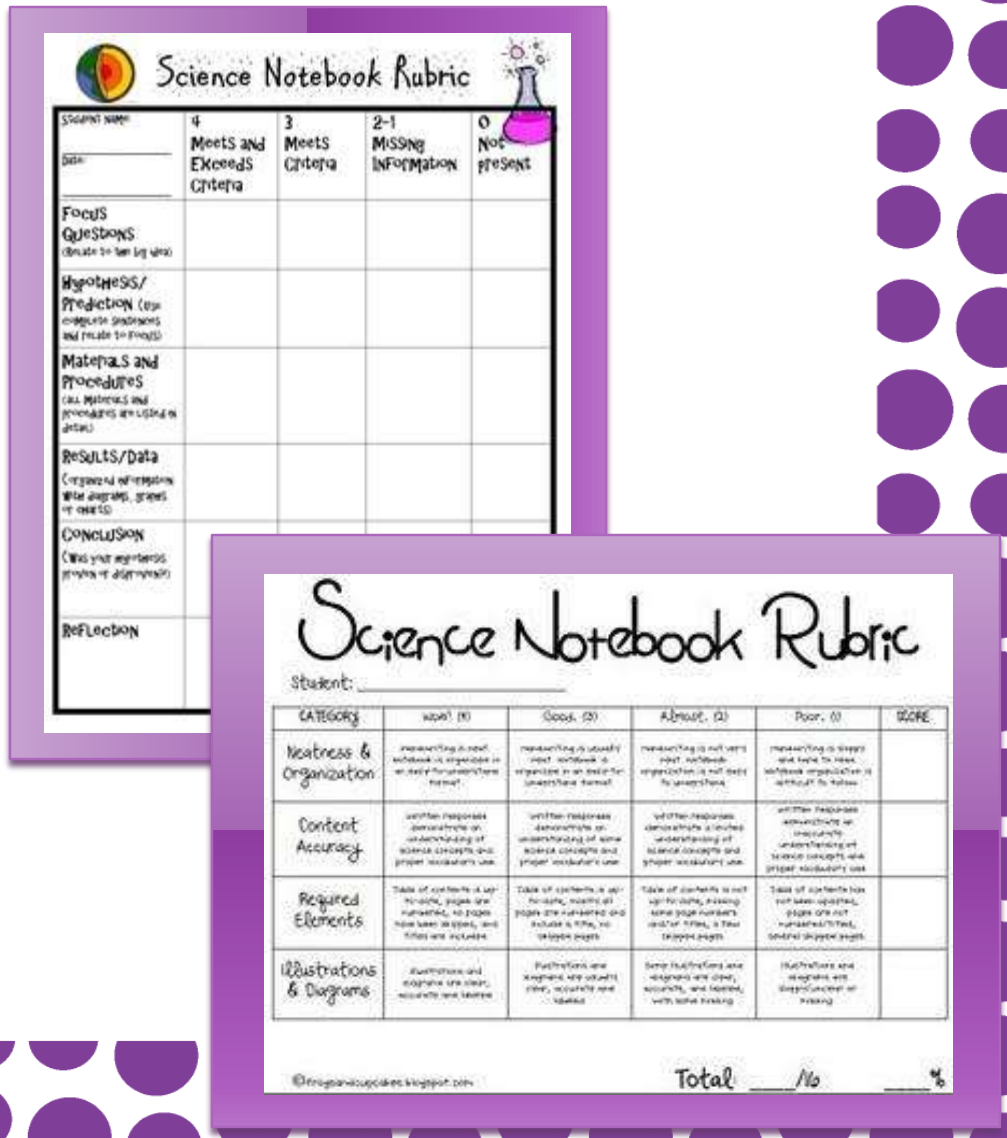


LABS



ASSESSMENT

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



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.

Sustainabiĩity h rough…

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

- Aquaponics is Aquaculture + Hydroponics

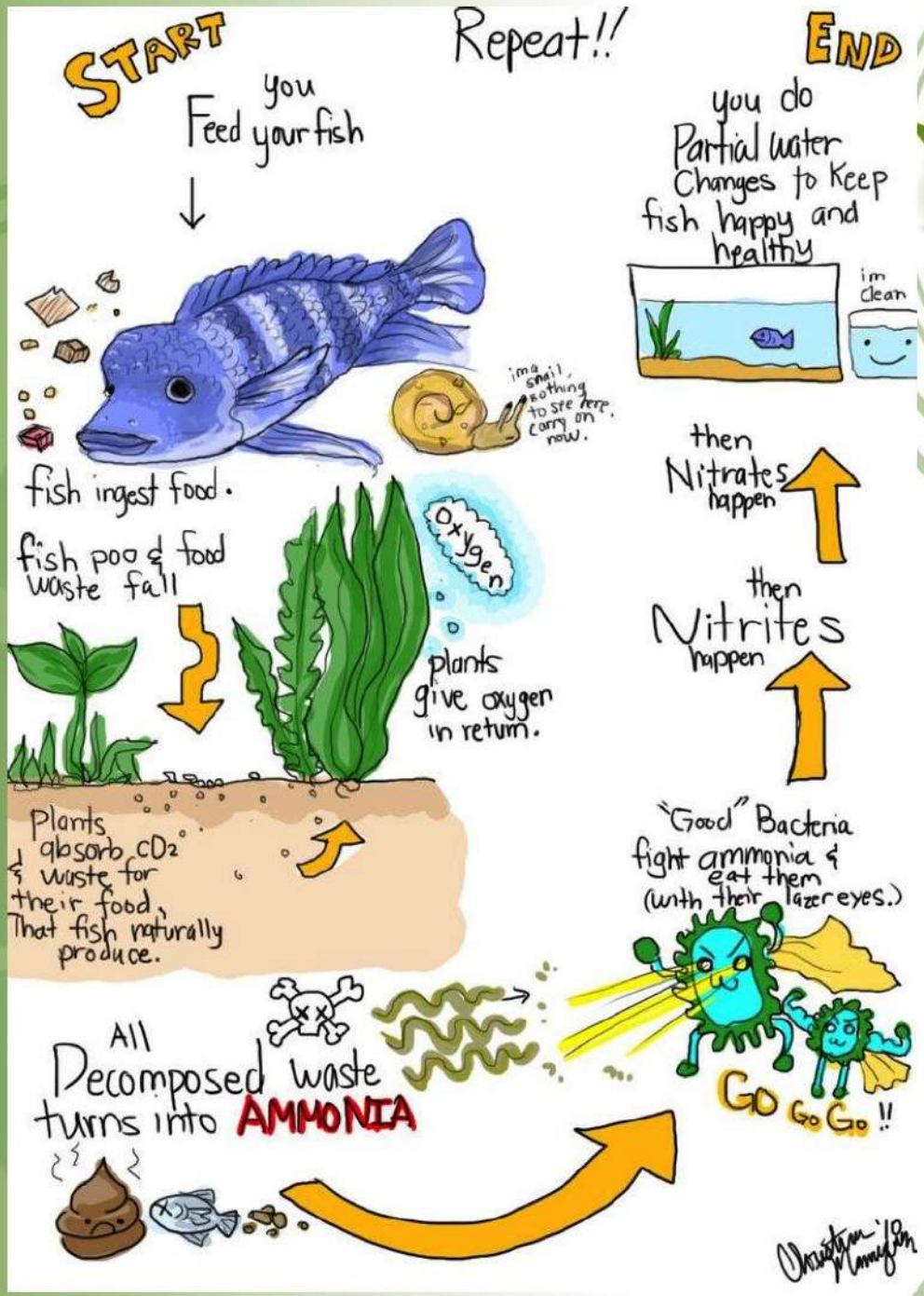
But…What is Aquaculture?

Any crop raised in water

Fish (food and ornamental), plants (watercress, etc), turtles, clams, and even alligators!

ph by HBOI

Ebb and Flow System


START
you
Feed your fish
fish ingest food.
fish poo & food waste fall
Plants absorb CO_2 & waste for their food, That fish naturally produce.
Oxygen
plants give oxygen in return.
All Decomposed waste turns into AMMONIA
"Good" Bacteria fight ammonia & eat them (with their lazer eyes.)
GO Go Go !!
then Nitrites happen
then Nitrates happen
you do Partial water Changes to keep fish happy and healthy
im clean
ima snail, nothing to ste here, carry on now.
Repeat!!
END

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

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

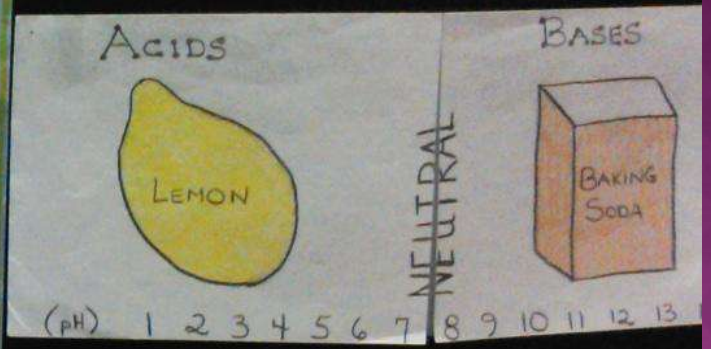
- Fungi
- Plant
- Animal

Vocabulary Terms

Metals conduct

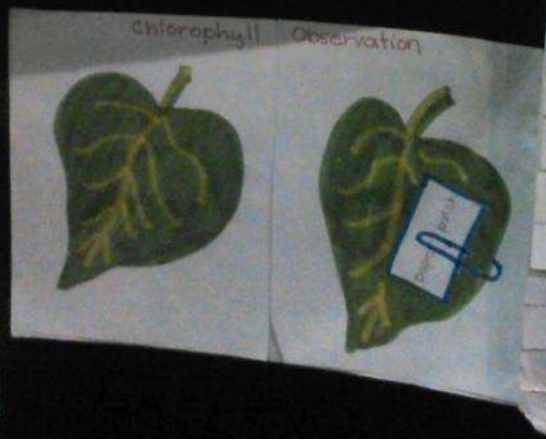
Poor conductors

Metals | Nonmetals | Metalloids

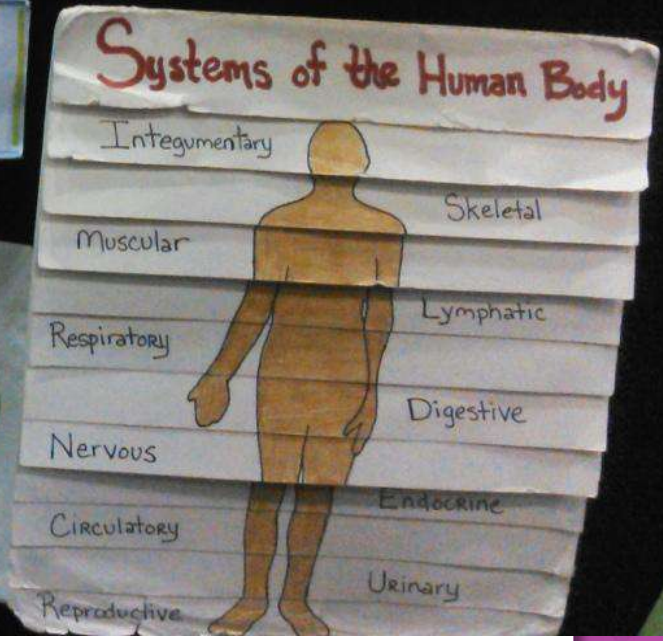


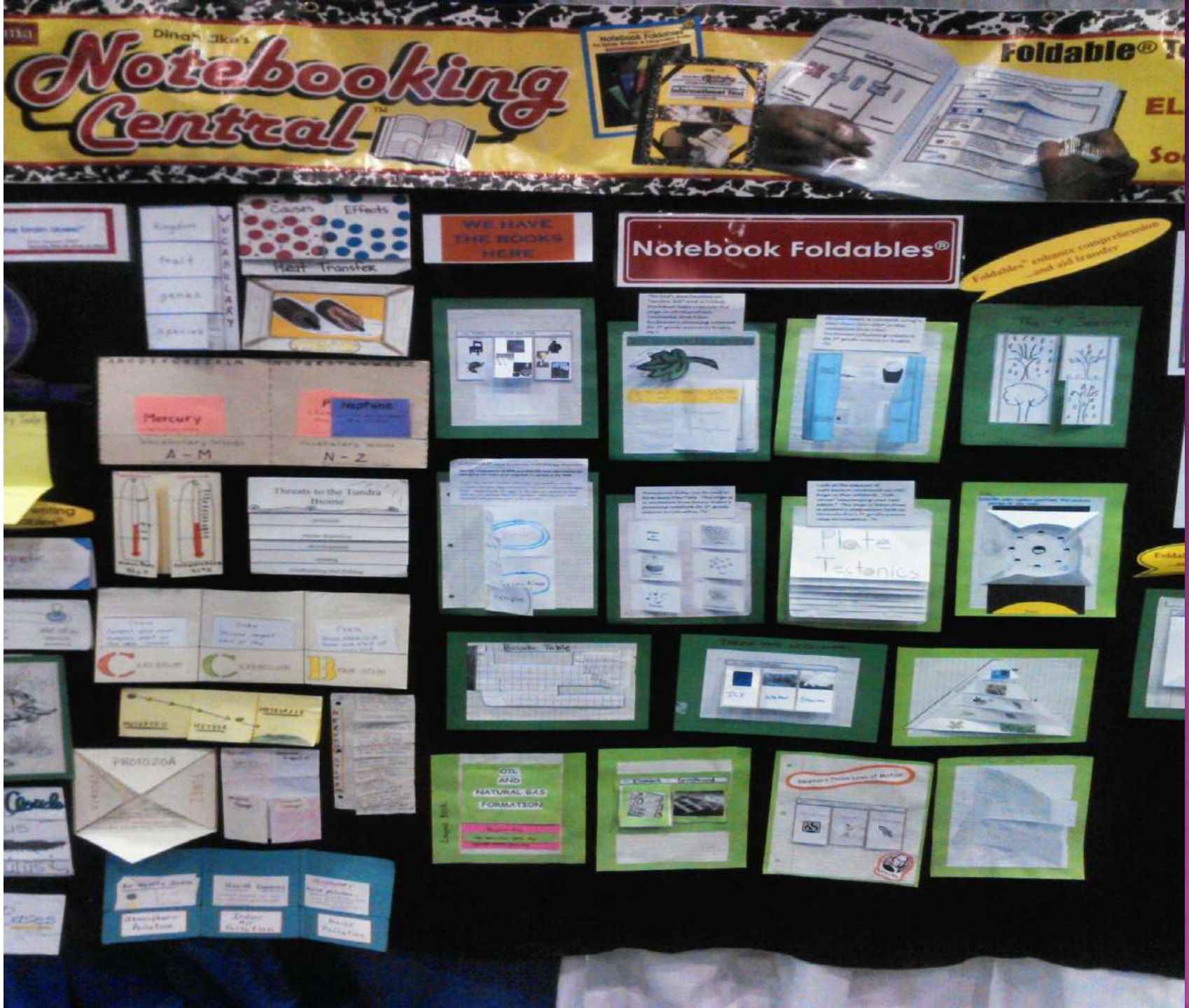
Earth's Crust

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



Systems of the Human Body




Notebooking Central
Foldable®
WE HAVE THE BOOKS HERE
Notebook Foldables®
Causes
Effects
Heat Transfer
Mercury
A – M
N – Z
Threats to the Tundra Biome
Plate Tectonics
PROTOZOA
OIL AND NATURAL GAS FORMATION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Workshops
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Great for formative assessment
WE HAVE THE BOOKS HERE
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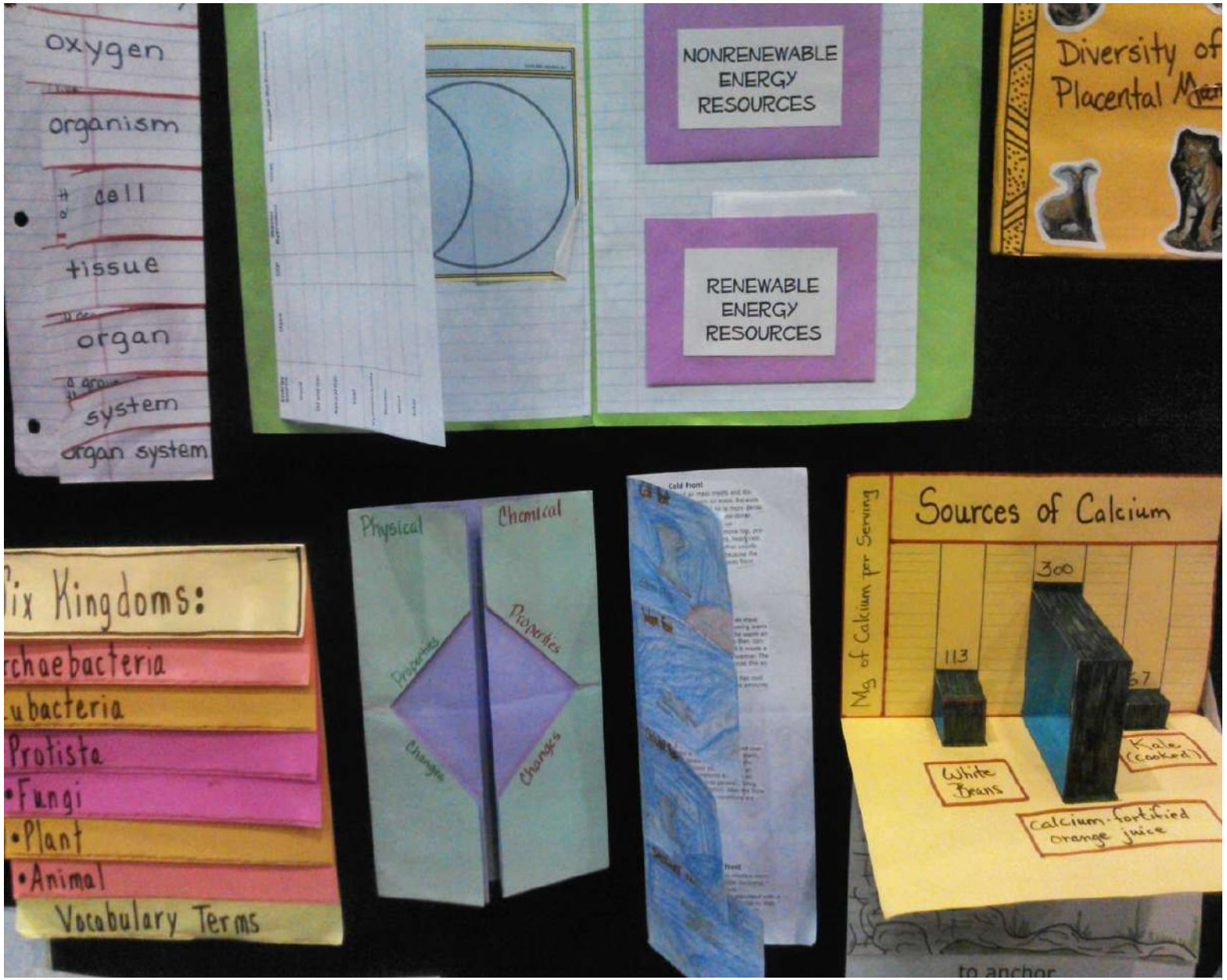
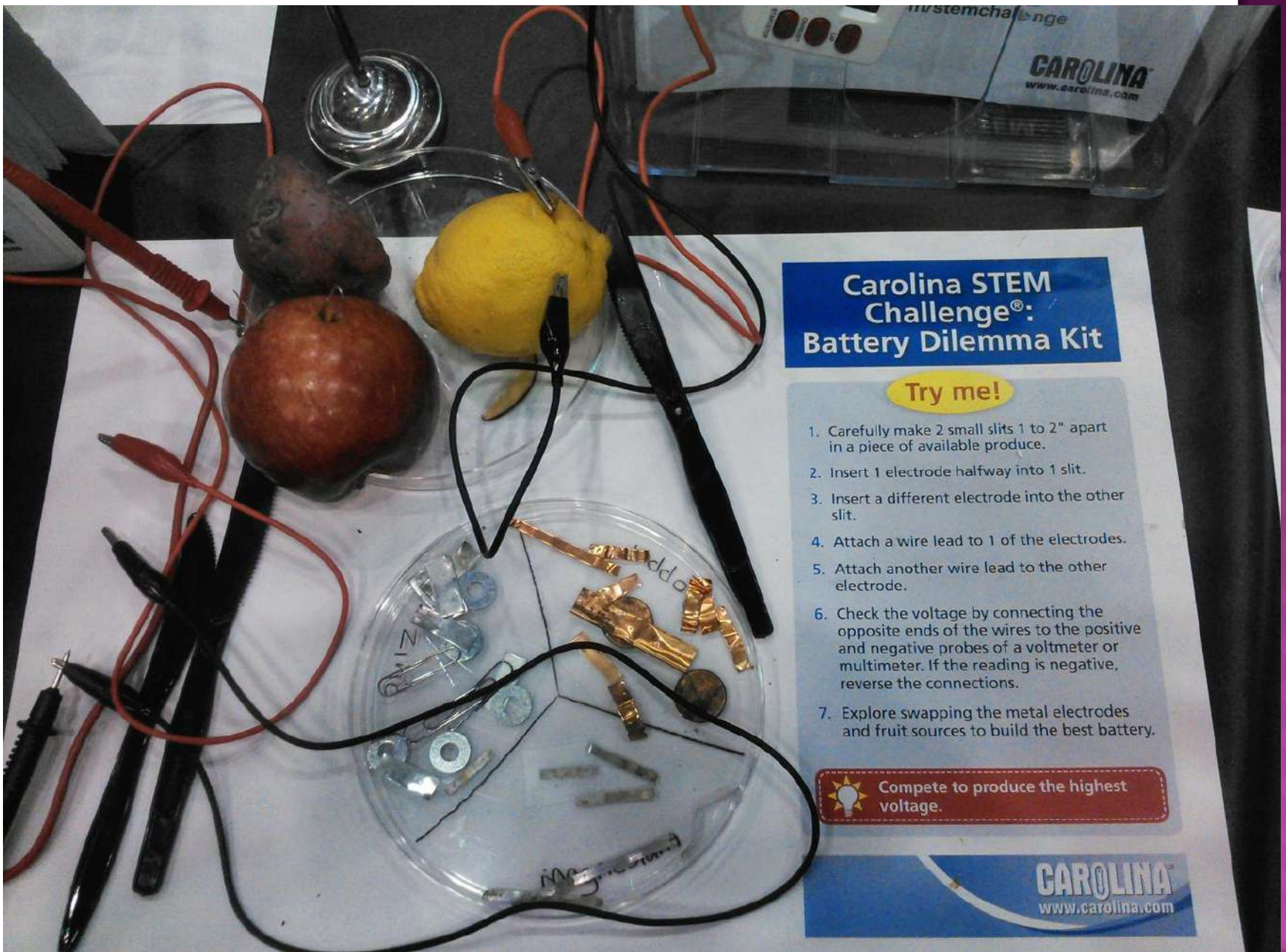
WORKSHOPS
TARGETED PROFESSIONAL DEVELOPMENT
Six Kingdoms:
Vocabulary Terms
Sources of Calcium
Periodic Table of the Elements
Metals Nonmetals Metalloids
Earth's Crust
Systems of the Human Body
Marie Curie
1867-1934
Talking Rocks
Stratosphere


oxygen
organism
cell
tissue
organ
system
organ system
NONRENEWABLE ENERGY RESOURCES
RENEWABLE ENERGY RESOURCES
Diversity of
Placental
Six Kingdoms:
Archaebacteria
Eubacteria
Protista
•Fungi
•Plant
•Animal
Vocabulary Terms
Physical
Chemical
Properties
Properties
Changes
Changes
Sources of Calcium
Mg of Calcium per Serving
300
113
57
White Beans
Kale (cooked)
Calcium-fortified orange juice


Pf Au Hg Tl Pb Bi Po At Rn
Db Sg Bh Hs Mt
centrioles
chromatin
spindle forming
chromosomes (paired chromatids)
cytokinesis
nuclear envelope reforming
Integumentary System
HOW DO LENSES WORK?
LIGHT AND LENSE
Telescope
Binoculars
Journal:
Talking Rocks
Petroglyphs


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
Metals
Nonmetals
Metalloids
ACIDS
BASES
LEMON
NEUTRAL
BAKING SODA
(pH) 1 2 3 4 5 6 7 8 9 10 11 12 13
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




Bark
Apple
Potato
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.
CAROLINA
www.carolina.com

STEM AT WORK
TEACHERS TURN!