



Grade 9 Lab Notebook

Science in Action 9

Index of Investigations, Challenges and Activities

Matter and Chemical Change

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1.0 Matter can be described and organized by its physical and chemical properties.			
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QuickLAB Organizing The Properties of Matter (p. 97)

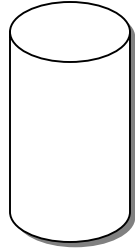
copper wire <hr/> <hr/> <hr/> <hr/>	vinegar <hr/> <hr/> <hr/> <hr/>
salad oil <hr/> <hr/> <hr/> <hr/>	aluminum foil <hr/> <hr/> <hr/> <hr/>
granite <hr/> <hr/> <hr/> <hr/>	graphite <hr/> <hr/> <hr/> <hr/>
rock salt <hr/> <hr/> <hr/> <hr/>	pepper <hr/> <hr/> <hr/> <hr/>
baking soda <hr/> <hr/> <hr/> <hr/>	rock salt <hr/> <hr/> <hr/> <hr/>

Group properties:

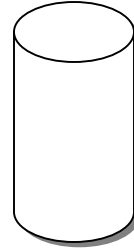
5. Similar properties used by other students to group the substances:

Different properties used by other students to group the substances

QuickLAB Observing A Physical Change (p. 98)



Before



After

Procedure:

Questions:

7. _____

8. _____

9. _____

Inquiry B-1
IDENTIFYING MYSTERY SUBSTANCES (p. 100-101)

Question: How can the properties of a substance be used to identify it?

Hypothesis: _____

Materials and Procedure: (p. 100-101)

Data Collection: Substance studied _____

Test	Type of Test	Description (Observations)
1	Appearance	_____
2	Crystal Shape	_____
3	Behavior in Water	_____
4	Behavior in Acid	_____
5	Behavior in Iodine	_____

Summary Chart:

Substance	State	Appearance	Crystal Shape	Behavior in Water	Behavior in Acid	Behavior in Iodine
salt						
baking soda						
corn starch						
sodium nitrate						
sodium thiosulfate						
Unknown 1						
Unknown 2						

Analyzing and Interpreting:

20. _____

21. _____

22. _____

23. _____

Forming Conclusions:

24. _____

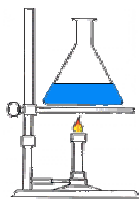
Applying and Connecting (p. 101)

Learn about **casein** and present an informative talk to your group, by sharing your research.

SKILL **PRACTICE**

Identifying Physical and Chemical Changes (p.105)

A



Boiling a solution

Physical Chemical

Evidence _____

B



Vinegar and Baking Soda

Physical Chemical

Evidence _____

C



Salt Dissolving in Water

Physical Chemical

Evidence _____

D



Fireworks

Physical Chemical

Evidence _____

E



Alka-Seltzer in water

Physical Chemical

Evidence _____

F



Leaves changing color

Physical Chemical

Evidence _____

Inquiry B-2

INVESTIGATING PHYSICAL AND CHEMICAL CHANGES (p. 106-107)

Question: What are some characteristics of physical and chemical changes?

Hypothesis:

Physical	Chemical

Materials and Procedure: (p. 106-107)

Data Collection:

Change	Observations before change	Predictions	Observations during change	Observations after change	Type of Change (phys. / chem.)
Sodium Carbonate and dilute Hydrochloric Acid					
Sugar and heat					
Copper (II) Sulfate and Sodium Carbonate					
Copper (II) Sulfate and Water					

Analyzing and Interpreting:


19. _____

20. _____

21. _____

22. _____

Forming Conclusions:

23. 

Give It A TRY
CREATING A TIME LINE STORY OF MATTER (p. 112)

8000 BC



TODAY

MODEL THAT RESULTED FROM THE 'NEW IDEA' ABOUT THE STRUCTURE OF MATTER ...

A large empty rectangular box with a black border, intended for drawing a model of matter structure.

SKILL PRACTICE
USING THE PERIODIC TABLE (p. 129)

Element	Atomic Number	Atomic Mass	# of protons	# of neutrons	# of electrons
vanadium					
nickel					
phosphorus					
bromine					
beryllium					
argon					
magnesium					
uranium					
silicon					
chromium					
titanium					

Inquiry B-3
BUILDING A PERIODIC TABLE (p. 130-131)

Question: How can you use a model to represent the patterns in the periodic table?

Hypothesis: _____

Materials and Procedure: (p. 130-131)

Part 1

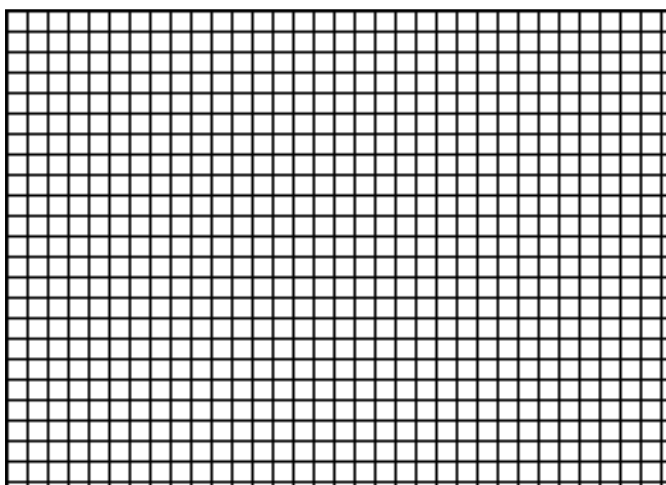
Share your ideas _____

Mass of Samples	1	2	3	4	5
1					
2					
3					
4					
5					

Data Collection: Class involvement will depend on whether this lab is done as a demo or as a station.

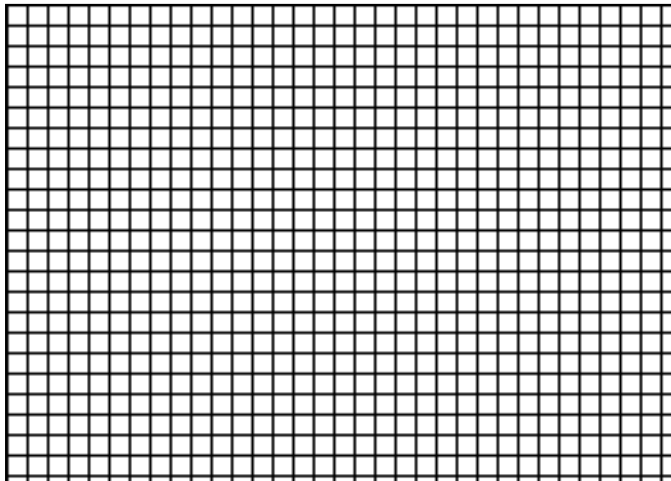
Analyzing and Interpreting:

13. Graph of Nut/Bolt Mass Vs Nut/Bolt Number



14. _____

**15. Graph of Atomic Mass
Vs Atomic Number**



16. _____

Forming Conclusions:

17. _____

Applying and Connecting:

Illustrate 2 examples of other Periodic Tables you have been able to find.

--	--

SKILL PRACTICE
EXPLORING PATTERNS IN THE PERIODIC TABLE (p. 129)

1. a) _____

b) _____

2. _____

3. a) _____

b) _____

4. a) _____

b) _____

5. a) _____

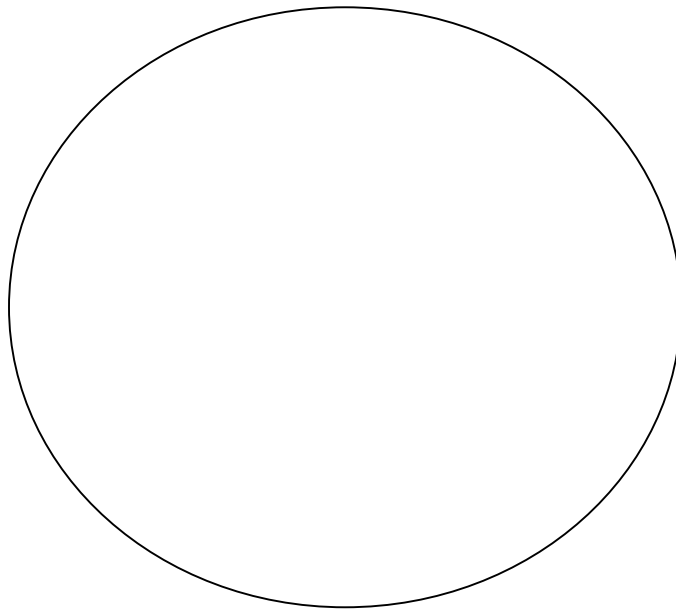
b) _____

c) _____

d) _____

6. _____

SKILL PRACTICE
MAKE A MODEL OF AN ATOM (p. 130)



QUICKLAB
COMMON CHEMICALS IN YOUR HOME (p. 140)

7.

8. _____

9. _____

SKILL PRACTICE
WORKING WITH COMPOUNDS (p. 142)

Compound	Elements in the Compound	Number of Atoms in each element	Drawing of Compound
$\text{CaO}_{(s)}$			
$\text{CaCl}_{2(s)}$			
$\text{Al}_2\text{O}_{(s)}$			
$\text{Na}_2\text{O}_{(s)}$			
$\text{AlCl}_{(s)}$			
$\text{KCl}_{3(s)}$			
$\text{NaOH}_{(s)}$			

QUICKLAB
USING BATTERIES TO INVESTIGATE A CHEMICAL REACTION (p. 145)

Illustrate what happened

7. _____

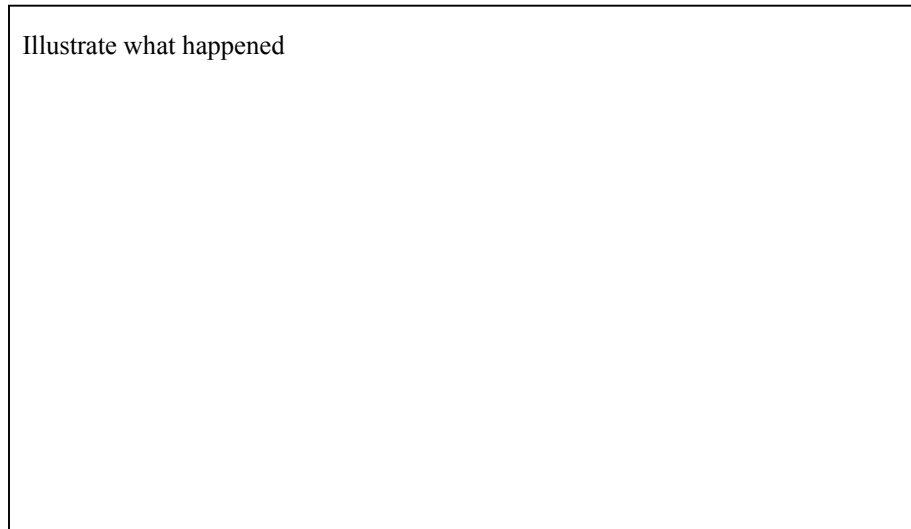
8. _____

9. _____

QUICKLAB

IONIC OR MOLECULAR COMPOUND? (p. 150)

Illustrate what happened



Observations

Questions:

7. _____

8. _____

Question: How can you use create models to illustrate molecular compounds?

Analyzing and Interpreting:

7. _____

8. _____

Forming Conclusions:

ROCKET SCIENCE (p. 157)

Illustrate each test firing of your rocket and identify the variable you changed

Test 1 Manipulated Variable	Test 2 Manipulated Variable	Test 3 Manipulated Variable

Questions:

6. _____

7. _____

8. _____

GIVE IT A TRY

IDENTIFY THE REACTION (p. 158)

Reaction 1

Reactants		Products	
Chemical word equation			

Reaction 2

Reactants		Products	
Chemical word equation			

Reaction 3

Reactants		Products	
Chemical word equation			

Inquiry B-6

OBSERVING CHEMICAL REACTIONS (p. 159)

Question: How will different materials react with each other?

Hypothesis: _____

Materials and Procedure: (p. 159)

Data Collection:

Reaction 1 – Sulfuric Acid and Magnesium Ribbon

Reactants		Products	
Chemical Change or Physical Change			
Evidence:			
Observations:			

Reaction 2 – Copper (II) Sulfate and Steel Wool

Reactants		Products	
Chemical Change or Physical Change			
Evidence:			
Observations:			

Reaction 3 – Iron (III) Chloride and Sodium Hydroxide

Reactants		Products	
Chemical Change or Physical Change			
Evidence:			
Observations:			

Inquiry B-7
REACTIONS FOR UPSET STOMACHS (p. 161)

Question 1 : Which Antacid medication works best?

Hypothesis: _____

Question 2 : What is the most effective way to take it?

Hypothesis: _____

Materials needed: _____

Your Procedural Design:

Inquiry B-8
CONSERVING MASS (p. 164)

Question: Does the mass of reactants and products change during a reaction?

Hypothesis: _____

Materials and Procedure: (p. 164)

Data Collection:

Before	After

Prediction _____

Observations:

Analyzing and Interpreting:

8. Evidence _____

9.

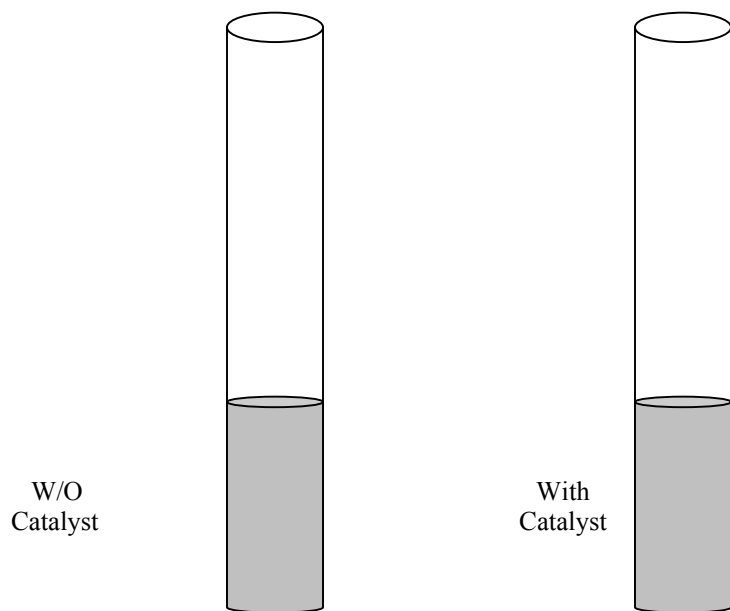
Mass Before	
Mass After	

10. _____

Forming Conclusions:

11. _____

QUICKLAB
HYDROGEN PEROXIDE AND THE CATALYST MANGANESE (IV) DIOXIDE (p. 187)



Questions:

6. _____

7. _____

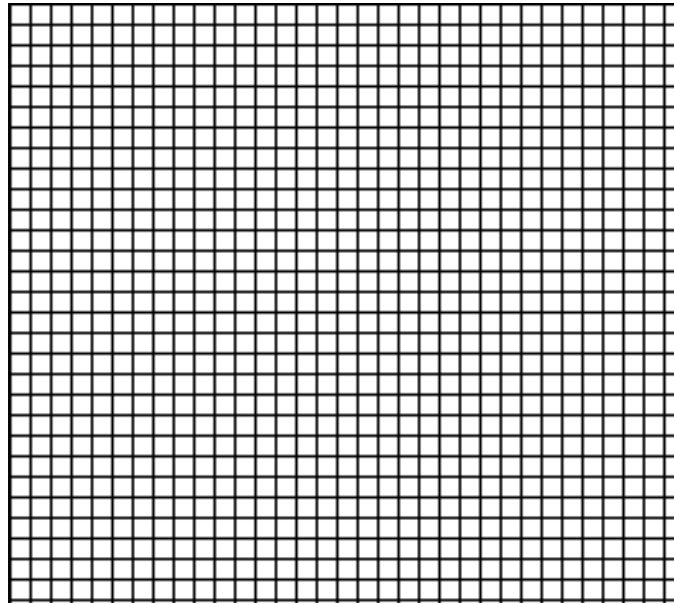
8. _____

9. _____

Analyzing and Interpreting:

11. _____

12.



13. _____

14. _____

15. _____

16. _____

Forming Conclusions:

17. _____

