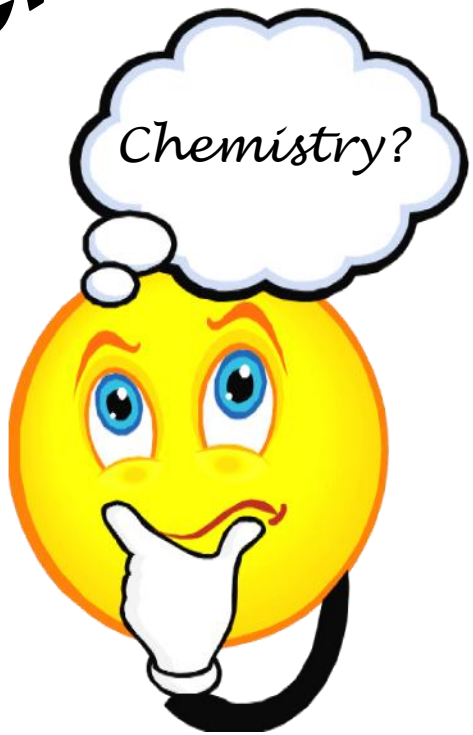
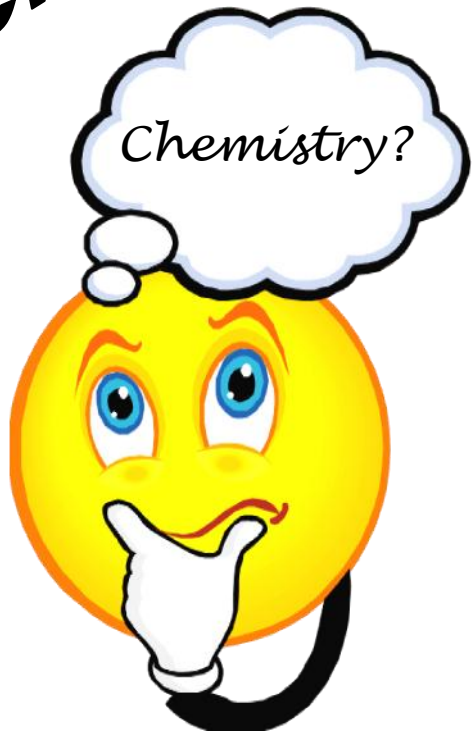
Prior Knowledge Review Centers



Name:	Period:	Seat #:

Prior Knowledge Review Centers



Name:	Period:	Seat #:

#1 Sink or Float?

1) Look at the objects on the green paper – *but don't touch them!!!*

2) Predict which objects will float or sink using the chart on the left:

PREDICTION	PREDICTION	RESULT	RESULT
Float	Sink	Float	Sink

3) Explain why you made the predictions above.

4) You may now *carefully* touch/hold each object. If you would like to change your predictions use a different color pen and change them in the chart above.

5) Explain why you did or did not change some of your predictions.

6) *CAREFULLY* place the objects from the green sheet into the water tank and then record the results in the chart above.

#1 Sink or Float?

1) Look at the objects on the green paper – *but don't touch them!!!*

2) Predict which objects will float or sink using the chart on the left:

PREDICTION	PREDICTION	RESULT	RESULT
Float	Sink	Float	Sink

3) Explain why you made the predictions above.

4) You may now *carefully* touch/hold each object. If you would like to change your predictions use a different color pen and change them in the chart above.

5) Explain why you did or did not change some of your predictions.

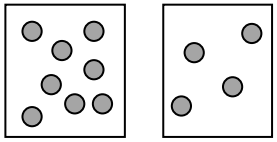
6) *CAREFULLY* place the objects from the green sheet into the water tank and then record the results in the chart above.

7) Read the orange piece of paper that is on the desk.

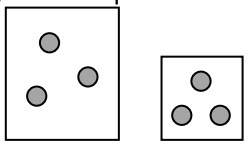
8) What is the definition of density?

9) What is the equation for density? What are the common units?

10) Which square is more dense? Why? Make sure to use the phrases volume and matter



11) Which square is more dense? Why? Make sure to use the phrases volume and matter



12) Using what you learned from the orange piece of paper, explain why some objects in the tray sank, and some floated.

13) Calculate the density of the square metal object on the blue sheet by using the tools on your table. Show your work. Would it float or sink?

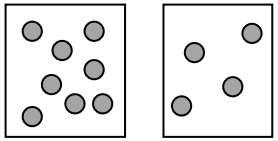
14) Ask Mrs. Farmer to come over to tell you about some of the objects, including the ones on the red “Don’t touch” sheet.

7) Read the orange piece of paper that is on the desk.

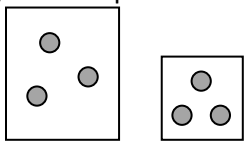
8) What is the definition of density?

9) What is the equation for density? What are the common units?

10) Which square is more dense? Why? Make sure to use the phrases volume and matter



11) Which square is more dense? Why? Make sure to use the phrases volume and matter



12) Using what you learned from the orange piece of paper, explain why some objects in the tray sank, and some floated.

13) Calculate the density of the square metal object on the blue sheet by using the tools on your table. Show your work. Would it float or sink?

14) Ask Mrs. Farmer to come over to tell you about some of the objects, including the ones on the red “Don’t touch” sheet.

#2 Safety First

The Bikini Bottom gang has been learning safety rules during science class. Read the paragraphs below to find the broken safety rules and highlight each one. How many can you find?

SpongeBob, Patrick, and Gary were thrilled when Mr. Krabbs gave their teacher a chemistry set! Mr. Krabbs warned them to be careful and reminded them to follow the safety rules they had learned in science class. The teacher passed out the materials and provided each person with an experiment book. SpongeBob and Gary flipped through the book and decided to test the properties of a mystery substance. Since the teacher did not tell them to wear the safety goggles, they left them on the table.

SpongeBob lit the Bunsen burner and then reached across the flame to get a test tube from Gary. In the process, he knocked over a bottle of the mystery substance and a little bit splashed on Gary.

SpongeBob poured some of the substance into a test tube and began to heat it. When it started to bubble he looked into the test tube to see what was happening and pointed it towards Gary so he could see. Gary thought it smelled weird so he took a deep whiff of it. He didn't think it smelled poisonous and tasted a little bit of the substance.

They were worried about running out of time, so they left the test tube and materials on the table and moved to a different station to try another experiment.

Patrick didn't want to waste any time reading the directions, so he put on some safety goggles and picked a couple different substances. He tested them with vinegar (a weak acid) to see what would happen even though he didn't have permission to experiment on his own. He noticed that one of the substances did not do anything, but the other one fizzed. He also mixed two substances together to see what would happen, but didn't notice anything. He saw Sponge-Bob and Gary heating something in a test tube and decided to do that test. He ran over to that station and knocked over a couple bottles that SpongeBob had left open. After cleaning up the spills, he read the directions and found the materials he needed.

The only test tube he could find had a small crack in it, but he decided to use it anyway. He lit the Bunsen burner and used tongs to hold the test tube over the flame. He forgot to move his notebook away from the flame and almost caught it on fire.

Before they could do another experiment, the bell rang and they rushed to put everything away. Since they didn't have much time, Patrick didn't clean out his test tube before putting it in the cabinet. SpongeBob noticed that he had a small cut on his finger, but decided he didn't have time to tell the teacher about it. Since they were late, they skipped washing their hands and hurried to the next class.

#2 Safety First

The Bikini Bottom gang has been learning safety rules during science class. Read the paragraphs below to find the broken safety rules and highlight each one. How many can you find?

SpongeBob, Patrick, and Gary were thrilled when Mr. Krabbs gave their teacher a chemistry set! Mr. Krabbs warned them to be careful and reminded them to follow the safety rules they had learned in science class. The teacher passed out the materials and provided each person with an experiment book. SpongeBob and Gary flipped through the book and decided to test the properties of a mystery substance. Since the teacher did not tell them to wear the safety goggles, they left them on the table.

SpongeBob lit the Bunsen burner and then reached across the flame to get a test tube from Gary. In the process, he knocked over a bottle of the mystery substance and a little bit splashed on Gary.

SpongeBob poured some of the substance into a test tube and began to heat it. When it started to bubble he looked into the test tube to see what was happening and pointed it towards Gary so he could see. Gary thought it smelled weird so he took a deep whiff of it. He didn't think it smelled poisonous and tasted a little bit of the substance.

They were worried about running out of time, so they left the test tube and materials on the table and moved to a different station to try another experiment.

Patrick didn't want to waste any time reading the directions, so he put on some safety goggles and picked a couple different substances. He tested them with vinegar (a weak acid) to see what would happen even though he didn't have permission to experiment on his own. He noticed that one of the substances did not do anything, but the other one fizzed. He also mixed two substances together to see what would happen, but didn't notice anything. He saw Sponge-Bob and Gary heating something in a test tube and decided to do that test. He ran over to that station and knocked over a couple bottles that SpongeBob had left open. After cleaning up the spills, he read the directions and found the materials he needed.

The only test tube he could find had a small crack in it, but he decided to use it anyway. He lit the Bunsen burner and used tongs to hold the test tube over the flame. He forgot to move his notebook away from the flame and almost caught it on fire.

Before they could do another experiment, the bell rang and they rushed to put everything away. Since they didn't have much time, Patrick didn't clean out his test tube before putting it in the cabinet. SpongeBob noticed that he had a small cut on his finger, but decided he didn't have time to tell the teacher about it. Since they were late, they skipped washing their hands and hurried to the next class.

The Do's and Don'ts of Lab Safety

1) Fill out the chart below after reading the Sponge Bob story.

2) Each broken safety rule should go in the "Don't" column. Make sure to number each one.

3) Counter each "Don't" with a "Do" rule. See the example provided.

Don't	Do
1) Don't forget to wear your safety goggles.	1) Always wear your safety goggles

The Do's and Don'ts of Lab Safety

1) Fill out the chart below after reading the Sponge Bob story.

2) Each broken safety rule should go in the "Don't" column. Make sure to number each one.

3) Counter each "Don't" with a "Do" rule. See the example provided.

Don't	Do
1) Don't forget to wear your safety goggles.	1) Always wear your safety goggles

#3 Types of Matter

1) Take a copy of the poem on the table. Glue down the top of the poem into the box below so that you have a copy of it in your book. Fold the poem up so it doesn't hang out of your book.

2) Read the poem, highlighting important statements.

3) According to the poem, what are the three forms in which matter is found?

Glue top of poem here

4) In which form is matter most commonly found?

5) What are the main differences between elements, compounds, and mixtures?

6) Why is it that when you mix salt and water together, "It will still be salty and wet?"

7) Hydrogen is an explosive gas, and oxygen supports combustion. How is it possible, then, for water, which is composed of hydrogen and oxygen, to put out fires? Quote the lines in the poem that explain this.

#3 Types of Matter

1) Take a copy of the poem on the table. Glue down the top of the poem into the box below so that you have a copy of it in your book. Fold the poem up so it doesn't hang out of your book.

2) Read the poem, highlighting important statements.

3) According to the poem, what are the three forms in which matter is found?

Glue top of poem here

4) In which form is matter most commonly found?

5) What are the main differences between elements, compounds, and mixtures?

6) Why is it that when you mix salt and water together, "It will still be salty and wet?"

7) Hydrogen is an explosive gas, and oxygen supports combustion. How is it possible, then, for water, which is composed of hydrogen and oxygen, to put out fires? Quote the lines in the poem that explain this.

8) Using page 9 in your notebook, write a haiku about either an element, a compound, or a mixture. Each person must write their own, not one per group!

9) Indicate whether each of the following describes an element, compound, or mixture:

Composed of more than one substance _____

Simple substance that can't be broken down _____

Has different properties than the substances that compose it _____

*Gold*_____ *Sugar*_____ *Air* _____

Oxygen _____ *Juice* _____ *Table salt*_____

10) Look at the beakers on the table. Identify if they are filled with an element, compound, or mixture.

A _____ B _____

C _____ D _____

11) Ask Mrs. Farmer to come tell you what is in each beaker.

12) What did you learn about identifying elements, compounds, and mixtures from what Mrs. Farmer told you?

8) Using page 9 in your notebook, write a haiku about either an element, a compound, or a mixture. Each person must write their own, not one per group!

9) Indicate whether each of the following describes an element, compound, or mixture:

Composed of more than one substance _____

Simple substance that can't be broken down _____

Has different properties than the substances that compose it _____

*Gold*_____ *Sugar*_____ *Air* _____

Oxygen _____ *Juice* _____ *Table salt*_____

10) Look at the beakers on the table. Identify if they are filled with an element, compound, or mixture.

A _____ B _____

C _____ D _____

11) Ask Mrs. Farmer to come tell you what is in each beaker.

12) What did you learn about identifying elements, compounds, and mixtures from what Mrs. Farmer told you?

#4 Density of Pennies

1) Using the balance, determine the mass of the 40 pennies minted prior to 1982. Record your result in the table.

2) Repeat step 1 with the 40 pennies minted after 1982. Record your result in the table.

3) Using the items on your table, calculate the volume of the 40 pennies minted prior to 1982. Detail your procedure below. (*hint – think water!)* Record your result in the table.

4) Repeat step 3 with the 40 pennies minted after 1982. Record your result in the table.

5) What is the equation for density? (*Read the orange sheet*)

6) What units for density will you use in this lab?

#4 Density of Pennies

1) Using the balance, determine the mass of the 40 pennies minted prior to 1982. Record your result in the table.

2) Repeat step 1 with the 40 pennies minted after 1982. Record your result in the table.

3) Using the items on your table, calculate the volume of the 40 pennies minted prior to 1982. Detail your procedure below. (*hint – think water!)* Record your result in the table.

4) Repeat step 3 with the 40 pennies minted after 1982. Record your result in the table.

5) What is the equation for density? (*Read the orange sheet*)

6) What units for density will you use in this lab?

7) Calculate the density of the pre-1982 pennies and the post-1982 pennies. Show your work below and then record your results in the table.

8) How did the densities of the two groups of pennies compare? How do you account for any difference?

9) Use the results of this investigation to formulate a hypothesis about the composition of the two groups of pennies.

10) Flip the green paper over and read it.

11) Was your hypothesis correct? What did you learn about the two groups of pennies from reading the sheet?

	Pre-1982 Pennies	Post-1982 Pennies
Mass (*grams)*		
Volume *(milliliters)*		
Density (*g/mL)*		

7) Calculate the density of the pre-1982 pennies and the post-1982 pennies. Show your work below and then record your results in the table.

8) How did the densities of the two groups of pennies compare? How do you account for any difference?

9) Use the results of this investigation to formulate a hypothesis about the composition of the two groups of pennies.

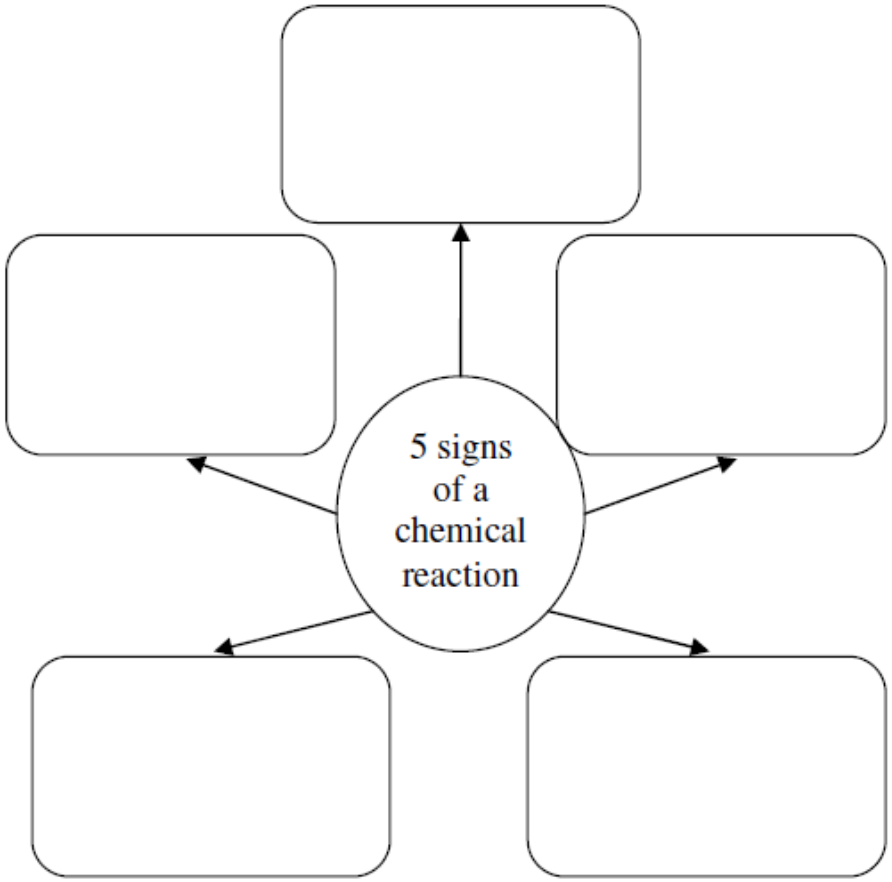
10) Flip the green paper over and read it.

11) Was your hypothesis correct? What did you learn about the two groups of pennies from reading the sheet?

	Pre-1982 Pennies	Post-1982 Pennies
Mass (*grams)*		
Volume *(milliliters)*		
Density (*g/mL)*		

#5 Signs of a Reaction

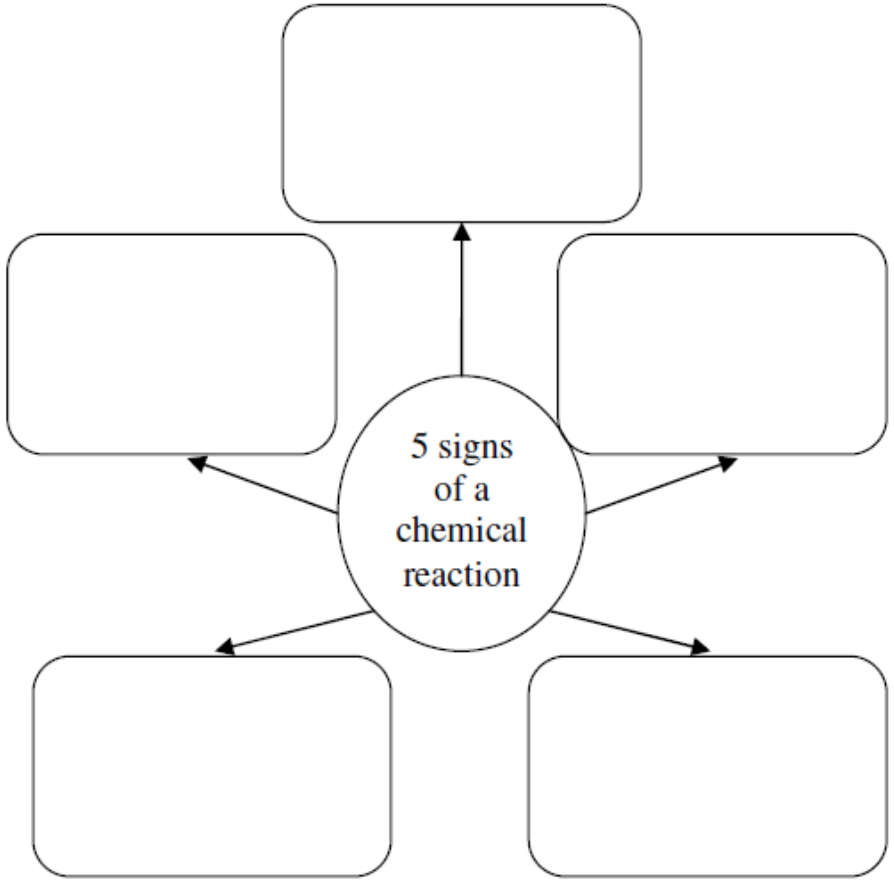
1) Read the blue sheet and fill out the diagram below with the type of sign you see and a detail in each box.



2) While wearing goggles carefully add chemicals to the empty test tubes in the combinations shown in the table.
DO NOT MIX ANYTHING OTHER THAN THE COMBINATIONS SHOWN!!!

#5 Signs of a Reaction

1) Read the blue sheet and fill out the diagram below with the type of sign you see and a detail in each box.



2) While wearing goggles carefully add chemicals to the empty test tubes in the combinations shown in the table.
DO NOT MIX ANYTHING OTHER THAN THE COMBINATIONS SHOWN!!!

3) As you mix, record your observations and indicate whether a reaction took place or not, and if it did, what kind of sign you saw. They should all be obvious! If you are unsure, ask Mrs. Farmer!

Combine	Observations	Reaction or No Reaction?	If Reaction – What sign?
A + B Red Zinc + HCl			
C + D Orange Iron + $CuSO_4$			
E + F Yellow $NaCO_3$ + $CaCO_3$			
G + H Green KCl + $NaCO_3$			
I + J Blue HCl + Water **** YOU MUST ADD THE ACID TO THE WATER! ADD I to J!****			

4) Everything gets dumped in the waste jug. Rinse the test tubes out very well with the squirt bottle and leave them in the rack for the next group.

3) As you mix, record your observations and indicate whether a reaction took place or not, and if it did, what kind of sign you saw. They should all be obvious! If you are unsure, ask Mrs. Farmer!

Combine	Observations	Reaction or No Reaction?	If Reaction – What sign?
A + B Red Zinc + HCl			
C + D Orange Iron + $CuSO_4$			
E + F Yellow $NaCO_3$ + $CaCO_3$			
G + H Green KCl + $NaCO_3$			
I + J Blue HCl + Water **** YOU MUST ADD THE ACID TO THE WATER! ADD I to J!****			

4) Everything gets dumped in the waste jug. Rinse the test tubes out very well with the squirt bottle and leave them in the rack for the next group.

#6 Properties and Changes

1) Every piece of matter has properties that describe it. Matter can also undergo different types of changes. Read the yellow sheet (front and back) to learn about the different types of properties and changes.

2) Using the chart below, fill in as much information as you can about the different types of properties and changes.

Physical Properties	**Physical Changes**
Chemical Properties	**Chemical Changes**

#6 Properties and Changes

1) Every piece of matter has properties that describe it. Matter can also undergo different types of changes. Read the yellow sheet (front and back) to learn about the different types of properties and changes.

2) Using the chart below, fill in as much information as you can about the different types of properties and changes.

Physical Properties	**Physical Changes**
Chemical Properties	**Chemical Changes**

3) Determine whether the following things are physical properties, physical changes, chemical properties, or chemical changes. Refer to your chart of information for help! When done, check answers on orange paper.

Hint with changes vs. properties:
Changes are things that <u>are</u> happening
Properties are things that can happen
Example: Iron <u>rusting</u> = chemical change. Iron <u>rusts</u> = chemical property.

#	Physical/Chemical Property/Change	Answer
1	Burning a log	
2	Bending a wire of Aluminum	
3	TNT reacts very, very fast when ignited	
4	The table top is black	
5	Boiling water	
6	Melting copper	
7	A decaying tree trunk	
8	Vinegar smells sour	
9	Iron rusting	
10	Acid reacts with water and gives off heat	
11	Water evaporating from sugar water	
12	Glucose and yeast ferment to make alcohol.	
13	Ice freezes at 0°Celsius and boils at 100° Celsius	
14	Digesting your lunch	
15	Grinding sand	
16	Freezing water to make ice	
17	Iron metal rusts when exposed to oxygen	
18	Zinc reacts with HCl and produces a gas	
19	Wood and alcohol are flammable	
20	Milk sours	
21	Water is absorbed by a paper towel	
22	Salt dissolves in water	
23	The density of an object is 3.2 g/mL	
24	A pellet of sodium hydroxide is sliced in two	
25	The metal object is hard, while the pillow is soft	
26	Li is put in water, catches fire and makes LiOH	

3) Determine whether the following things are physical properties, physical changes, chemical properties, or chemical changes. Refer to your chart of information for help! When done, check answers on orange paper.

Hint with changes vs. properties:
Changes are things that <u>are</u> happening
Properties are things that can happen
Example: Iron <u>rusting</u> = chemical change. Iron <u>rusts</u> = chemical property.

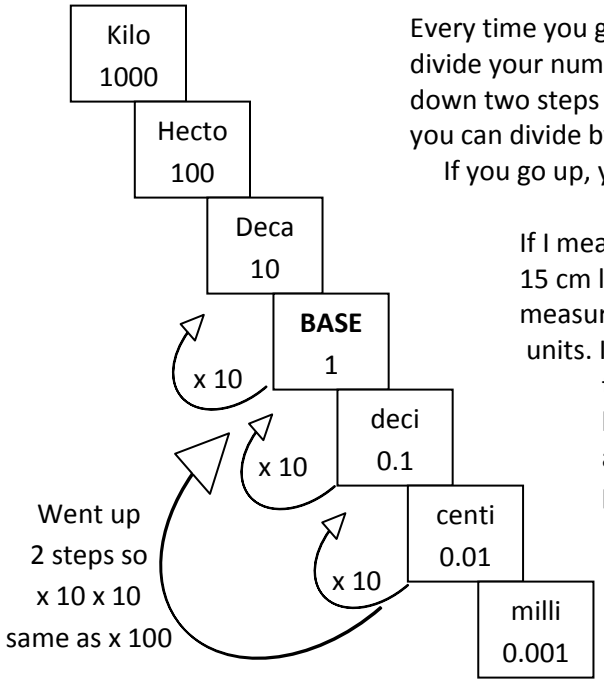
#	Physical/Chemical Property/Change	Answer
1	Burning a log	
2	Bending a wire of Aluminum	
3	TNT reacts very, very fast when ignited	
4	The table top is black	
5	Boiling water	
6	Melting copper	
7	A decaying tree trunk	
8	Vinegar smells sour	
9	Iron rusting	
10	Acid reacts with water and gives off heat	
11	Water evaporating from sugar water	
12	Glucose and yeast ferment to make alcohol.	
13	Ice freezes at 0°Celsius and boils at 100° Celsius	
14	Digesting your lunch	
15	Grinding sand	
16	Freezing water to make ice	
17	Iron metal rusts when exposed to oxygen	
18	Zinc reacts with HCl and produces a gas	
19	Wood and alcohol are flammable	
20	Milk sours	
21	Water is absorbed by a paper towel	
22	Salt dissolves in water	
23	The density of an object is 3.2 g/mL	
24	A pellet of sodium hydroxide is sliced in two	
25	The metal object is hard, while the pillow is soft	
26	Li is put in water, catches fire and makes LiOH	

#7 Metric Conversions

1) Read the yellow sheet. Give several examples of units and what they are used for.

2) What is the difference between a number and a measurement?

3) The metric system is based on increments of 10. Every time you change a unit you either multiply or divide by a factor of 10. In order to tell someone how much you multiplied or divided by you use a "prefix." A prefix comes at the beginning of the unit to tell you how it has been changed. You always start in the middle at "BASE." Think of it as the starting place, or home base – everything is relative to base. Base doesn't need a prefix. Look at the diagram below to see how this works. A number has been included as an example.



Every time you go down the staircase you divide your number by ten. So if you go down two steps you divide by 10 twice…or you can divide by 100…it's the same thing!

If you go up, you multiply.

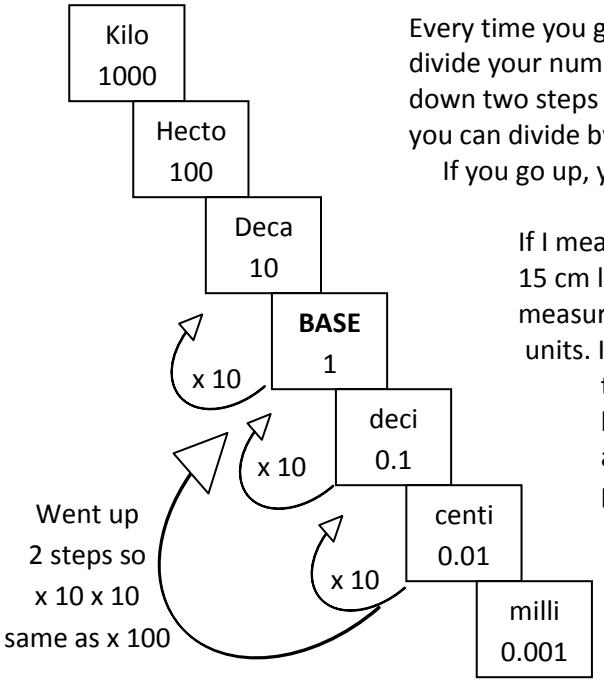
If I measure a piece of wood to be 15 cm long, I can then convert the measurement to use different units. I would just have to change the decimal place location by multiplying or dividing, and then I change the prefix.

#7 Metric Conversions

1) Read the yellow sheet. Give several examples of units and what they are used for.

2) What is the difference between a number and a measurement?

3) The metric system is based on increments of 10. Every time you change a unit you either multiply or divide by a factor of 10. In order to tell someone how much you multiplied or divided by you use a "prefix." A prefix comes at the beginning of the unit to tell you how it has been changed. You always start in the middle at "BASE." Think of it as the starting place, or home base – everything is relative to base. Base doesn't need a prefix. Look at the diagram below to see how this works. A number has been included as an example.



Every time you go down the staircase you divide your number by ten. So if you go down two steps you divide by 10 twice…or you can divide by 100…it's the same thing!

If you go up, you multiply.

If I measure a piece of wood to be 15 cm long, I can then convert the measurement to use different units. I would just have to change the decimal place location by multiplying or dividing, and then I change the prefix.

4) Here is a table of prefixes and their abbreviations:

Kilo	K
Hecto	H
Deca	D
BASE	None
deci	d
centi	c
milli	m

Notice how the prefixes that are larger than BASE have a capital letter, and the ones that are smaller than BASE have a lower case?

5) Here is a table of common BASE units, what they measure, and their abbreviations.

meter	Length	m
gram	Mass	g
liter	Volume	L
second	Time	s
joule	Energy	J
pascal	Pressure	P

The prefixes go in front of the unit abbreviations:

Kg = Kilogram = # grams x 1000

6) Look at the example below and then try to do the following conversions. Remember to use your ladder to tell you if you are going to be dividing or multiplying! Don't forget to put units on your answer! When you are finished check your answers on the green paper.

Convert 4 cm into Km: cm → Km is going up the ladder, so divide.
You go up 5 steps so divide by 10 five times
= 0.00004 Km

Convert 2 L into mL:

Convert 18 Km into mm:

Convert 6.5 HJ into J:

Convert 1000 s into ms:

Convert 300 mg into g:

4) Here is a table of prefixes and their abbreviations:

Kilo	K
Hecto	H
Deca	D
BASE	None
deci	d
centi	c
milli	m

Notice how the prefixes that are larger than BASE have a capital letter, and the ones that are smaller than BASE have a lower case?

5) Here is a table of common BASE units, what they measure, and their abbreviations.

meter	Length	m
gram	Mass	g
liter	Volume	L
second	Time	s
joule	Energy	J
pascal	Pressure	P

The prefixes go in front of the unit abbreviations:

Kg = Kilogram = # grams x 1000

6) Look at the example below and then try to do the following conversions. Remember to use your ladder to tell you if you are going to be dividing or multiplying! Don't forget to put units on your answer! When you are finished check your answers on the green paper.

Convert 4 cm into Km: cm → Km is going up the ladder, so divide.
You go up 5 steps so divide by 10 five times
= 0.00004 Km

Convert 2 L into mL:

Convert 18 Km into mm:

Convert 6.5 HJ into J:

Convert 1000 s into ms:

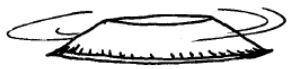
Convert 300 mg into g:

#8 Metric Olympics!

1) Read the blue paper on the desk. Explain why we use the metric system in science.

2) Using the materials and rules on the table, play the Metric Olympic Games!

3) Your goal is to be the person that has the smallest difference between your estimates and your actual measurements.

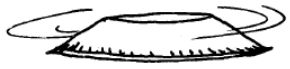
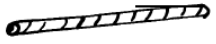
EVENT	ESTIMATE	ACTUAL	SCORE (DIFFERENCE)
1. PAPER PLATE DISCUS 	____ cm	____ cm	____
2. PAPER STRAW JAVELIN 	____ cm	____ cm	____
3. COTTON BALL SHOT PUT 	____ cm	____ cm	____
4. RIGHT HANDED MARBLE GRAB 	____ g	____ 3	____
5. LEFT-HANDED SPONGE SQUEEZE 	____ ml	____ ml	____
6. BIG FOOT CONTEST 	____ cm^2	____ cm^2	____
		TOTAL	____

#8 Metric Olympics!

1) Read the blue paper on the desk. Explain why we use the metric system in science.

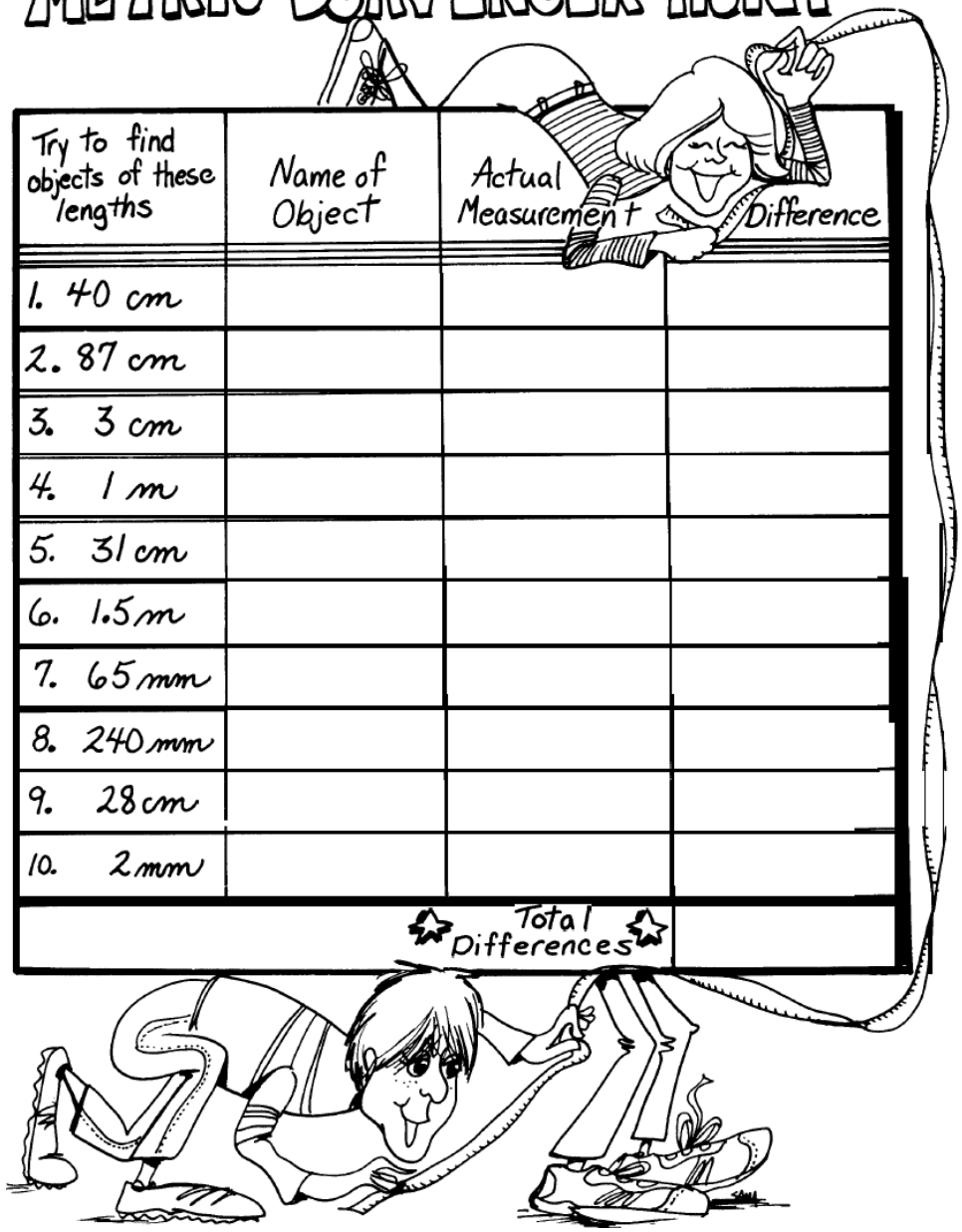
2) Using the materials and rules on the table, play the Metric Olympic Games!

3) Your goal is to be the person that has the smallest difference between your estimates and your actual measurements.

EVENT	ESTIMATE	ACTUAL	SCORE (DIFFERENCE)
1. PAPER PLATE DISCUS 	____ cm	____ cm	____
2. PAPER STRAW JAVELIN 	____ cm	____ cm	____
3. COTTON BALL SHOT PUT 	____ cm	____ cm	____
4. RIGHT HANDED MARBLE GRAB 	____ g	____ 3	____
5. LEFT-HANDED SPONGE SQUEEZE 	____ ml	____ ml	____
6. BIG FOOT CONTEST 	____ cm^2	____ cm^2	____
		TOTAL	____

4) Try to find objects that are the lengths specified. If you run out of time in class, take one of the paper rulers home and find objects around your house.

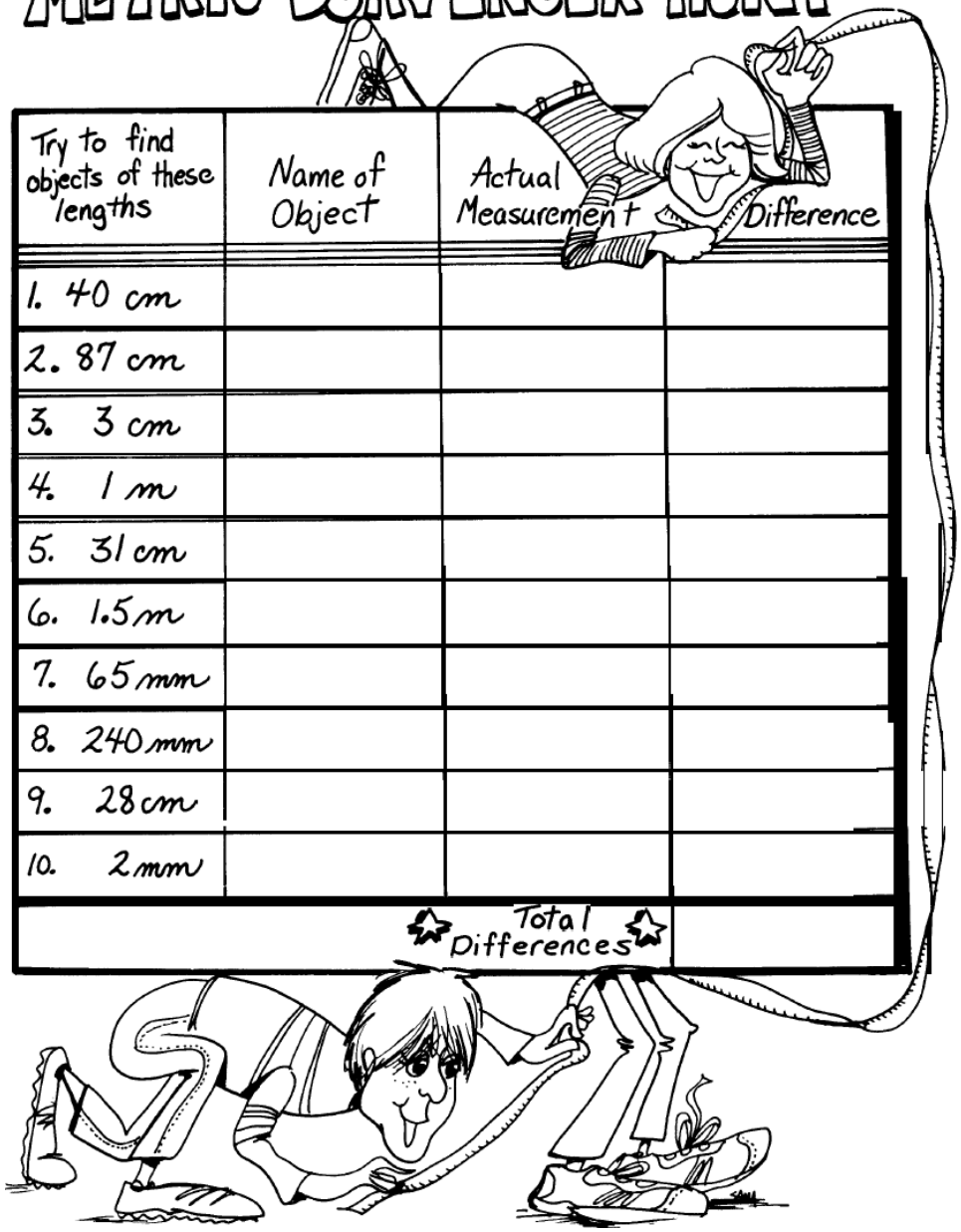
METRIC SCAVENGER HUNT



Try to find objects of these lengths	Name of Object	Actual Measurement	Difference
1. 40 cm			
2. 87 cm			
3. 3 cm			
4. 1 m			
5. 31 cm			
6. 1.5 m			
7. 65 mm			
8. 240 mm			
9. 28 cm			
10. 2 mm			
		Total Differences	

4) Try to find objects that are the lengths specified. If you run out of time in class, take one of the paper rulers home and find objects around your house.

METRIC SCAVENGER HUNT



Try to find objects of these lengths	Name of Object	Actual Measurement	Difference
1. 40 cm			
2. 87 cm			
3. 3 cm			
4. 1 m			
5. 31 cm			
6. 1.5 m			
7. 65 mm			
8. 240 mm			
9. 28 cm			
10. 2 mm			
		Total Differences	

#9 Sum It All Up

Use the front and back of this page to take a set of notes that sums up every topic you learned about and/or reviewed during this table review session. Pretend that it is a set of notes or a cheat sheet that you would get to use on a quiz or test. Break the information up into chunks. Include details, examples, definitions, helpful information.

#9 Sum It All Up

Use the front and back of this page to take a set of notes that sums up every topic you learned about and/or reviewed during this table review session. Pretend that it is a set of notes or a cheat sheet that you would get to use on a quiz or test. Break the information up into chunks. Include details, examples, definitions, helpful information.