Physics

August 20 –August 30, 2013

INTRODUCTION TO SCIENCE

Tuesday August 20	Introductory Handouts, Dice Game	
	HOMEWORK:	Partnership Agreement
		Read Chapter 1 Section 1 pp. 2-13
Wednesday August 21	Paper Ring Demo	
	Chapter 1 Section 1 The Nature of Science Lecture and Notes	
	HOMEWORK:	Chapter 1 Section 1 Review Worksheet
		Chapter 1 Section 1 Concept Review Worksheet
Thursday August 22	**Lab:** Making Observations	
	Chapter 1 Section 2 The Way Science Works Lecture and Notes	
	HOMEWORK:	Read Chapter 1 Section 2 pp 14-21
		Chapter 1 Section 2 Review Questions 1-10 page 21
		Read and understand how to perform Making Measurements Lab
-iday August 23	**LAB:** Making Measurements	
	HOMEWORK:	Finish Making Measurements Lab Handout
		Read Chapter 1 Section 3 pp 22-29
Monday August 26	Chapter 1 Section 3 Scientific Notation and Metric System Lecture and Notes	
	HOMEWORK:	Chapter 1 Section 3 Review Handout
		Chapter 1 Section 3 Concept Review
Tuesday August 27	Scientific Notation and Metric System Worksheets	
	HOMEWORK:	Finish Scientific Notation and Metric System Worksheet
Wednesday August 28	Scientific Notation and Metric System Worksheets Part 2	
	HOMEWORK:	Finish Scientific Notation and Metric System Worksheet
Thursday August 29	Review for Chapter 1 TEST	
	HOMEWORK:	Study for Chapter 1 TEST
Friday August 30	**Chapter 1 TEST**	
	HOMEWORK:	Read Chapter 11 Section 1 pp. 365–371

Personal Profile

Name: ______________________________

Birthday: ___________________________

Brothers/Sisters:

How many: ___________________________

Names/Ages: _________________________

Pets: ______________________________

Favorite:

Candy: _____________________________

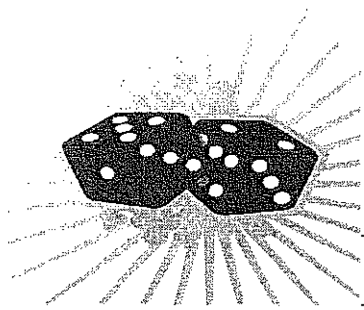
Band: ______________________________

Song: ______________________________

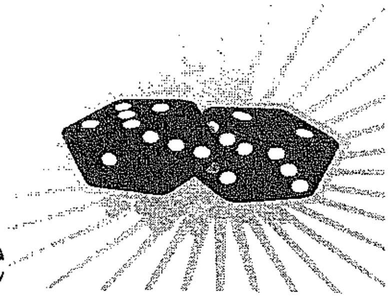
Favorite TV show: ____________________

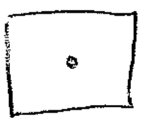
Movie of all time: ____________________

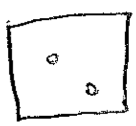
Tell me something about you that I would never have guessed on the first day of class.

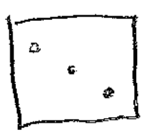


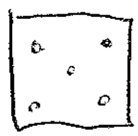
Dice Game

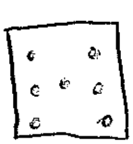












Paper Ring Demo

1. Cut along the two lines at the top of the page which will form two equal strips of paper. Take one strip of paper and tape ends together to form a ring.
2. Take second strip of paper place one end through center of previously made ring and then tape the ends together. You should now have a two link chain.
3. Hold the rings perpendicular to one another and grip both of them between your thumb and forefinger. You will need to tape the four corners of the intersection of the two rings.
4. Observe and record your observations of the shape of your rings.

5. Draw a line around the center of each ring so that they intersect each other in the middle.

6. Predict what shape will occur if you were to cut along one of the lines that you just drew. Draw what that shape will look like.

7. Cut along one of the lines.
8. Did your prediction prove to be true?

9. Now predict what shape will occur if you were to cut along the other line that you have drawn. Draw what that shape will look like.

10. Cut along the line.
11. Did your prediction prove to be true?

Assessment

1. Why was it important to properly follow the directions?

2. How does this exercise demonstrate the scientific process?

Chapter 1 Introduction to Science

CHAPTER OUTLINE

Section 1 The Nature of Science

Key Idea questions

> How do scientists explore the world?
> How are the many types of science organized?
> What are scientific theories, and how are they different from scientific laws?

How Science Takes Place

> How do scientists explore the world?

> How are the many types of science organized?

- Scientists investigate.
- Scientists plan experiments.
- Scientists observe.
- Scientists always test the results.

The Branches of Science

> How are the many types of science organized?

> Most of the time, natural science is divided into biological science, physical science and Earth science.

- science: the knowledge obtained by observing natural events and conditions in order to discover facts and formulate laws or principles that can be verified or tested
- The branches of science work together.
  - *biological science:* the science of living things
    - botany, ecology
  - *physical science:* the science of matter and energy
    - *chemistry:* the science of matter and its changes
    - *physics:* the science of forces and energy

– *earth science:* the science of the Earth, the atmosphere, and weather
  - geology, meteorology

- Science and technology work together.

  – *pure science:* the continuing search for scientific knowledge

  – Advances in science and technology depend on each other.

- technology: the application of science for practical purposes

Scientific Laws and Theories

> What are scientific theories, and how are they different from scientific laws?

> Theories explain why something happens, laws explain how something works.

- law: a descriptive statement of equation that reliably predicts events under certain conditions

- theory: a system of ideas that explains many related observations and is supported by a large body of evidence acquired through scientific investigation

- Experimental results support laws and theories.

  – Scientific theories are always being questioned and examined. To be valid, a theory must:
    - explain observations
    - be repeatable
    - be predictable

- Mathematics can describe physical events.

  – *qualitative statement:* describes something with words

  – *quantitative statement:* describes something with mathematical equations

- Theories and laws are always being tested.

- Models can represent physical events.
  - *model:* a representation of an object or event that can be studied to understand the real object or event
  - Scientists use conceptual, physical, and computer models to study objects and events.
- We use models in our everyday lives.

Name ______________________ Class ______________ Date ______________

Section 1 Review

SECTION VOCABULARY

law a descriptive statement or equation that reliably predicts events under certain conditions **science** the knowledge obtained by observing natural events and conditions in order to discover facts and formulate laws or principles that can be verified or tested	**technology** the application of science for practical purposes; the use of tools, machines, materials, and processes to meet human needs **theory** a system of ideas that explains many related observations and is supported by a large body of evidence acquired through scientific investigation

1. **Describe Relationships** How are science and technology related?

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2. **Explain** Why did Wilhelm Roentgen repeat his experiment before describing his results to others?

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3. **Compare** How are scientific theories and laws similar?

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4. **Describe** How is a scientific theory different from a guess or an opinion?

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5. **Apply Concepts** Fill in the blank spaces in the table below.

A scientist who studies...	**...works in the branch of...**
...how plants and animals interact...	...life science.
...how two chemicals react with each other...	
...what causes earthquakes...	
...how objects move...	

Name________________________________Class ___________________ Date ___________________

Skills Worksheet

Concept Review

Section: The Nature of Science

1. **Name** four branches of biological science.

____

____

2. **Define** the following terms:

   a. science

____

   b. technology

____

   c. scientific model

____

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3. **Describe** the difference between a scientific law and a scientific theory.

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4. **Describe** how mathematics and science are related.

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5. **Explain** why each of the following steps is important to scientific study.

   a. planning experiments

____

____

   b. testing results

____

____

Name ____________ Class ____________ Date ____________

Quick Lab

DATASHEET

Making Observations

MATERIALS

For each group

- candle
- fireproof container
- matches

SAFETY

PROCEDURE

1. Get an ordinary candle of any shape and color.
2. Record all the observations you can make about the candle.

____

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3. Light the candle, and watch it burn for 1 min. Use caution around open flame.
4. Record as many observations about the burning candle as you can.

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5. Share your results with your class, and find out what other types of observations were made.

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Section 2 The Way Science Works

Key Idea questions
> How can I think and act like a scientist?
> How do scientists measure things?

Science Skills

> How can I think and act like a scientist?

> Identifying problems, planning experiments, recording observations, and correctly reporting data some of the most important science skills.

- Scientists approach a problem by thinking logically.
- Critical thinking helps solve problems logically.
- critical thinking: the ability and willingness to assess claims critically and to make judgments on the basis of objective and supported reasons
- Scientists use scientific methods to solve problems.
- scientific method: a series of steps followed to solve problems including collecting data, formulating a hypothesis, testing the hypothesis, and stating conclusions
  - The scientific methods are general description of scientific thinking rather than an exact path for scientists to follow.
- Scientists test hypotheses.
- *hypothesis:* a possible explanation or answer that can be tested
  - Scientists test a hypothesis by doing a controlled experiment.
  - *controlled experiment:* an experiment in which the variables that could affect the experiment are kept constant (controlled) except for the that one you want to measure
  - *variable:* a factor that changes in an experiment in order to test a hypothesis

- Experiments test ideas.
  - No experiment is a failure.
  - The results of every experiment can be used to revise the hypothesis or plan tests of a different variable.
  - *Peer-reviewed research:* research that has been reviewed by other scientists
- Scientists use special tools.
- There are many tools used by scientists for making observations, including
  - *telescopes*
  - *spectroscopes*
  - *particle accelerators*

Units of Measurement

> How do scientists measure things?

> Scientists use standard units of measure that together form the International System of Units, or SI.

- SI units are used for consistency.
  - SI has seven base units.
  - *derived units:* combinations of the base units
- SI prefixes are for very large and very small measurements.
  - The prefixes are multiples of 10.

- You can convert between small and large numbers.
  - To convert to a smaller unit, multiply the measurement by the ratio of units so that you get a larger number.
  - To convert to a larger unit divide the measurement by the ratio of units so that you get a smaller number.
- Measurements quantify your observations.
- length: a measure of the straight-line distance between two points
- mass: a measure of the amount of matter in an object
- volume: a measure of the size of a body or region in three-dimensional space
- weight: a measure of the gravitational force exerted on an object

Name_______________________________ Class ________________ Date ________________

Skills Practice Lab **DATASHEET A**

Making Measurements

In scientific investigations, you must collect data correctly so that you can reach valid conclusions. In this laboratory exercise, you will practice this skill by using laboratory tools to measure familiar objects.

WHAT YOU'LL DO

Measure temperature, length, mass, and volume.

Organize data into tables and graphs.

WHAT YOU'LL NEED

- balance, platform or triple-beam
- basketball, volleyball, or soccer ball
- beaker, small
- block or box, small
- graduated cylinder, 100 mL
- graph paper
- meterstick or metric ruler, marked with centimeters and millimeters
- rock or irregularly shaped object, small
- sodium chloride (table salt)
- sodium hydrogen carbonate (baking soda)
- string
- test tubes
- thermometer, wall

SAFETY

PROCEDURE

Preparing for Your Experiment

1. In this lab, you will:
   - Use a thermometer to measure temperature.
   - Use a meterstick to measure length.
   - Use a balance to measure mass.
   - Use a graduated cylinder to measure volume.
   - Find volume using liquid displacement.

Measuring Temperature

2. Take a temperature measurement in degrees Celsius (°C).
   - When your teacher tells you to read the room temperature during the lab, go to the wall thermometer.
   - Read the temperature in degrees Celsius (°C).
   - Be sure that no one else is recording the temperature at the same time.
   - On the board, record your reading and the time you read the temperature.
   - Later, you will make a graph of the temperature readings made by the class.

Measuring Length

3. For Trial 1, take measurements in centimeters.
   - Use a meterstick or metric ruler to measure the length of a block or box in centimeters.
   - Record the measurements in the table below.
   - Measure the width of the block or box, and record the width.
   - Measure the height of the block or box, and record the height.
   - Using the equation below, figure the volume of the block in cubic centimeters (cm^3):

$$volume = length\ (cm) \times width\ (cm) \times height\ (cm)$$

$$V = l \times w \times h$$

$$V = ?\ cm^3$$

   - Write the volume in the table.

4. For Trial 2 and Trial 3, repeat the measurements in step 3 two more times.
   - Record the measurements in your data table.
   - Find the average of your measurements. (**Hint:** Add the values of each column and divide by 3.)
   - Find the average of the volume that you calculated. (**Hint:** Add all three of the volumes that you calculated, and divide by 3.)

DATA TABLE: DIMENSIONS OF A RECTANGULAR BLOCK

	Length (cm)	Width (cm)	Height (cm)	Volume (cm^3)
Trial 1				
Trial 2				
Trial 3				
Average				

5. Measure the circumference of a ball.
   - Wrap a piece of string all the way around the ball.
   - Mark the end point of the string.
   - Unwrap the string and lay the string on a straight surface, such as a table.
   - Use a meterstick or metric ruler to measure the string to the end point.
   - Record your measurements in centimeters in the data table below.
   - Using a different piece of string each time, make two more measurements of the circumference of the ball.
   - Record your data in the table.
6. Find the differences from the average.
   - Find the average of the three values. (**Hint:** Add the values of the circumference for all three trials, and divide by 3.)
   - Look to see if any of the three values are different from the average.
   - For each circumference that is different from the average, subtract the higher number from the lower number.
   - Write the answers in the table.

DATA TABLE: CIRCUMFERENCE OF A BALL

	Circumference (cm)	Difference from average (cm)
Trial 1		
Trial 2		
Trial 3		
Average		

Measuring Mass

7. Find the mass of the beaker.
   - Place a small beaker on the balance.
   - Make sure to set the balance to zero before you start.
   - Measure the beaker's mass.
   - Measure to the nearest 0.01 g if you are using a triple-beam balance.
   - Measure to the nearest 0.1 g if you are using a platform balance.
   - Record the value in the data table below.
8. Find the mass of the sodium chloride.
   - Move the balance rider to a setting that will give a value 5 g more than the mass of the beaker.
   - Add sodium chloride (table salt) to the beaker a little at a time until the balance just begins to swing.
   - You now have about 5 g of salt in the beaker.
   - Wait until the balance stops moving.
   - Record in your table the total mass of the beaker and the sodium chloride (to the nearest 0.01 g or 0.1 g).
   - Subtract the mass of the beaker from the total mass to find the mass of the sodium chloride.

9. Repeat steps 7 and 8 two times.
   - Record your data in the table.
   - Find the averages of your measurements.
   - Record the averages in your data table.

DATA TABLE: MASS OF SODIUM CHLORIDE

	Mass of beaker and sodium chloride (g)	Mass of beaker (g)	Mass of sodium chloride (g)
Trial 1			
Trial 2			
Trial 3			
Average			

10. Find the mass of sodium hydrogen carbonate.
    - Repeat steps 7, 8, and 9 using sodium hydrogen carbonate (baking soda).
    - Record your data in the table below.

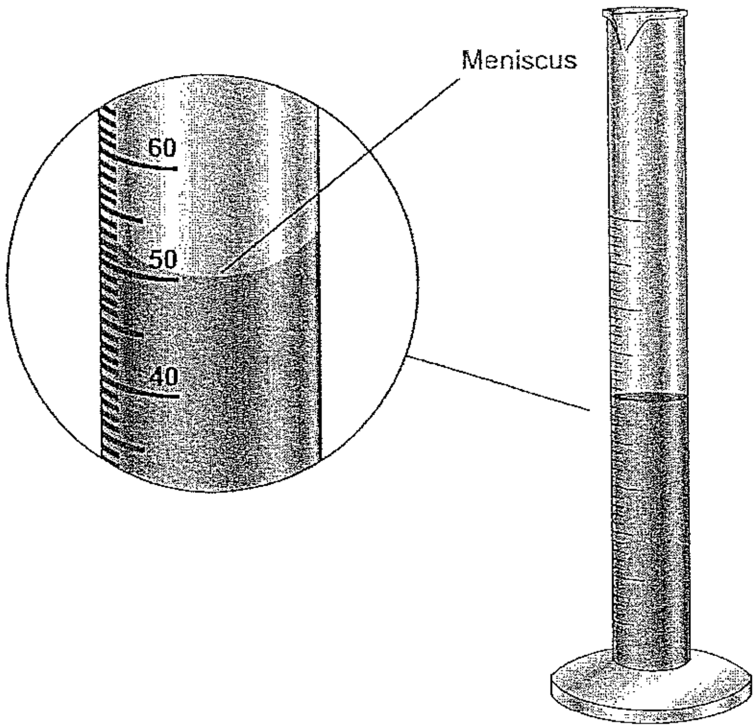
DATA TABLE: MASS OF SODIUM HYDROGEN CARBONATE

	Mass of beaker and sodium hydrogen carbonate (g)	Mass of beaker (g)	Mass of sodium hydrogen carbonate (g)
Trial 1			
Trial 2			
Trial 3			
Average			

Measuring Volume

11. Measure volume by reading a graduated cylinder.
    - Fill one of the test tubes with tap water.
    - Pour the water into a 100 mL graduated cylinder.

12. Look at the illustration. The top of the column of water in the graduated cylinder will have a downward curve.



- This curve is called a *meniscus.*
- Take your reading at the bottom of the meniscus.
- Record the volume of the test tube in the data table below.
- Measure the volumes of the other test tubes.
- Record their volumes in the table.
- Find the average volume of the liquid in the three test tubes. (**Hint:** Add all three volumes together and divide by 3.)
- Record the average in the table.

DATA TABLE: LIQUID VOLUME

	Volume (mL)
Test tube 1	
Test tube 2	
Test tube 3	
Average	

Measuring Volume by Liquid Displacement

13. Measure volume by liquid displacement
   - Pour about 20 mL of tap water into the 100 mL graduated cylinder.
   - Record the "water only" volume as exactly as you can in the data table.

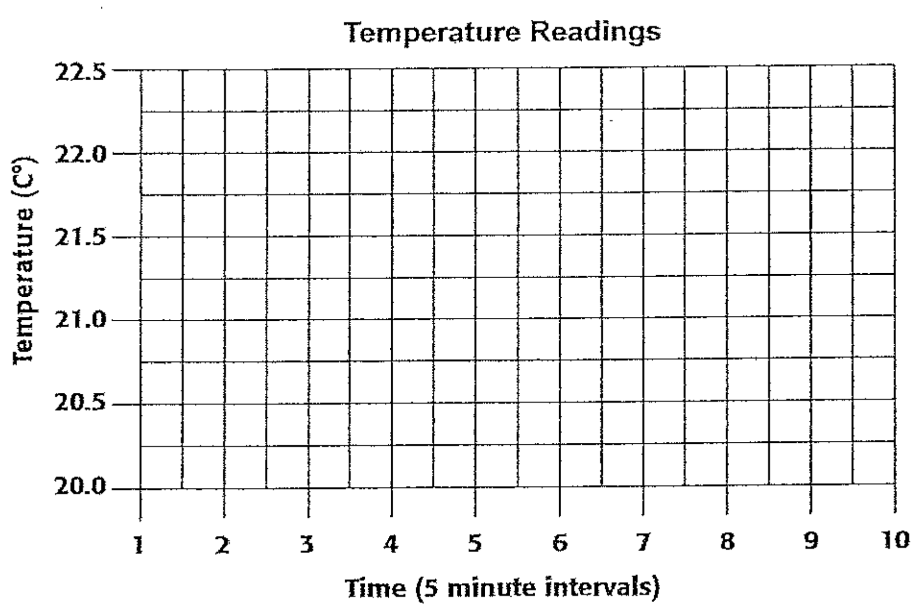
14. Gently drop a small object, such as a rock, into the graduated cylinder.
    - Be careful not to splash any water out of the cylinder.
    - To prevent splashing, you may tilt the cylinder slightly and let the object slide down the side.
    - Measure the volume of the water and the object.
    - Be sure to read the volume at the meniscus.
    - Record the total volume in your data table.
    - Find the volume of the object by subtracting the volume of the water from the total volume.
    - Record the volume of the object in the data table.

DATA TABLE: VOLUME OF A SOLID

	Total volume (mL)	Volume of water only (mL)	Volume of object (mL)
Trial 1			
Trial 2			
Trial 3			
Average			

ANALYSIS

1. **Graphing Data** Make and use a line graph.
    - Use the grid below, or a separate piece of graph paper.
    - Make a line graph of the temperatures that were measured with the wall thermometer during the lab.



- Did the temperature change during the class period?

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- If so, find the average temperature. (**Hint:** Add all temperatures and divide by number of temperatures.)

____

- Determine the greatest number of degrees above the average.

____

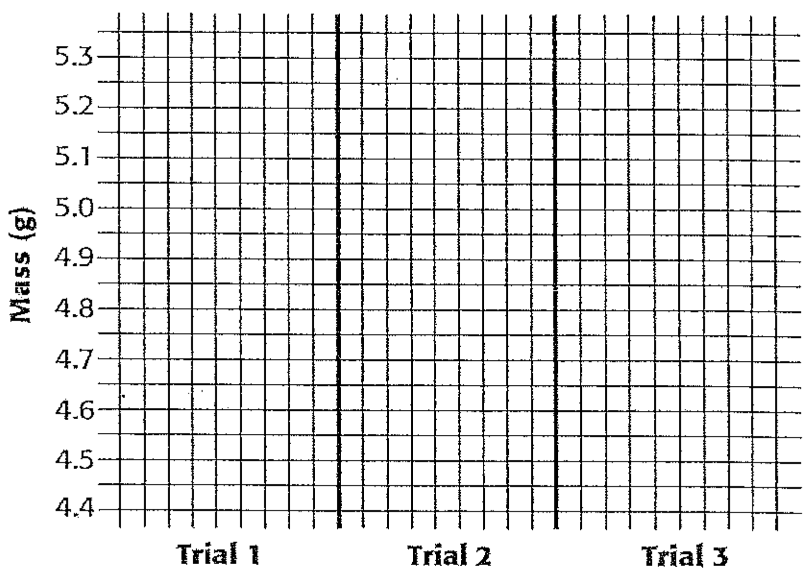
- Determine the greatest number of degrees below the average.

____

COMMUNICATING YOUR RESULTS

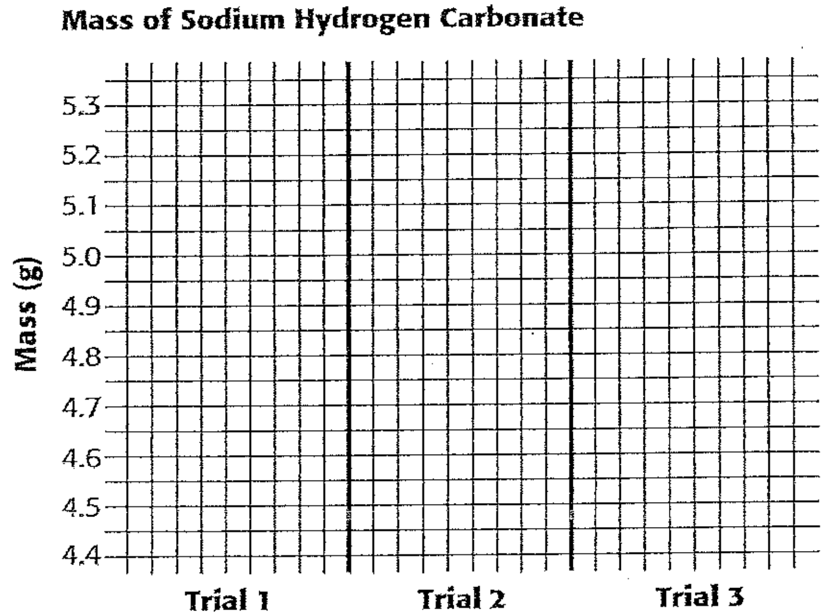
2. **Drawing Conclusions**
   - Use the grid below, or a separate piece of graph paper to make a bar graph showing the data from the three calculations of the mass of sodium chloride.

Mass of Sodium Chloride



- On the left side, list masses in grams from about 4.4 to 5.3.
- Across the bottom of the graph, place Trial 1, Trial 2, and Trial 3.
- Show the information using three bars on the graph.
- Draw a line across the three bars to show the location of the average value.

- Use the grid below, or another piece of graph paper to make a separate bar graph for the sodium hydrogen carbonate masses.



- Look at your graphs. Do you think you measured the sodium chloride or the sodium hydrogen carbonate more correctly?

____

3. **Applying Concepts** Suppose that one of your test tubes holds 23 mL. You need to use about 5 L of a liquid.
   - Describe how you could estimate 5 mL.

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4. **Analyzing Methods** Why is it better to line up the meterstick with the edge of the object at the 1 cm mark rather than at the end of the stick? (**Hint:** Think about how metersticks often look at the ends.)

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____

5. **Analyzing Methods** Why do you think that using string to measure the circumference of the ball is better than using a flexible metal measuring tape?

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EXTENSION

In this lab, you did not investigate time. Time is another basic measurement of science. How could you measure the time required for a certain pendulum to swing back and forth once?

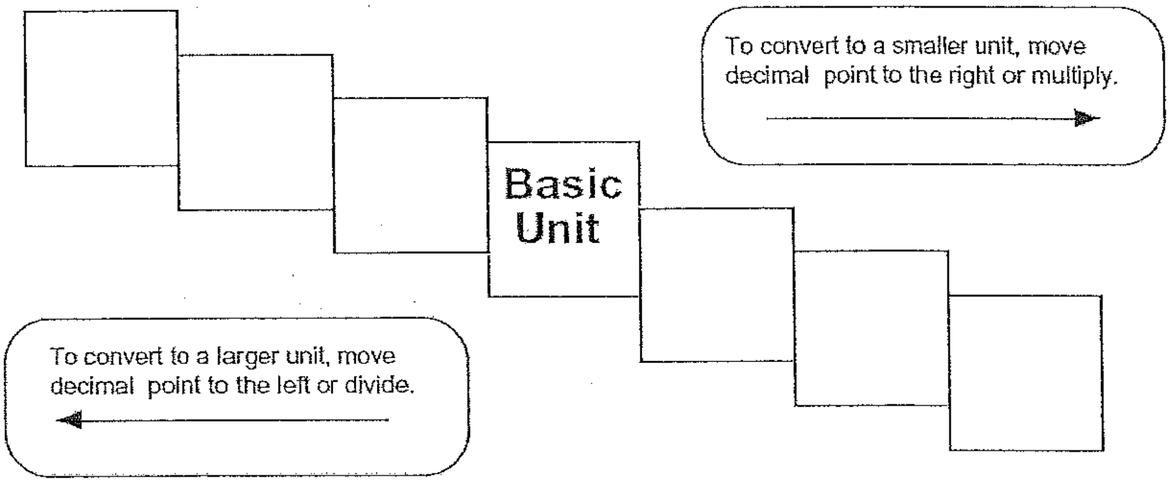
- You must be able to measure the distance that the pendulum swings.
- You may need to use a timepiece that can measure fractions of a second.
- For the most accurate measurements, you may need to repeat your measurements several times and find an average.

Metric Mania

Name_______________________________

Metric Conversions

Fill in the boxes in the stair step diagram.



Try these conversions, using the ladder method.

1000 mg = _______ g   1 L = _______ mL   160 cm = _______ mm

14 km = _______ m   109 g = _______ kg   250 m = _______ km

Compare using <, >, or =.

56 cm ◯ 6 m   7 g ◯ 698 mg

Metric Mania

Name______________________________

Metric Conversions

Write the correct abbreviation for each metric unit.

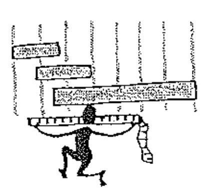
1) Kilogram _____
2) Meter _____
3) Gram _____
4) Milliliter _____
5) Millimeter _____
6) Liter _____
7) Kilometer _____
8) Centimeter _____
9) Milligram _____

Try these conversions, using the ladder method.

10) 2000 mg = _______ g
11) 104 km = _______ m
12) 480 cm = _____ m
13) 5.6 kg = _____ g
14) 8 mm = _____ cm
15) 5 L = _______ mL
16) 198 g = _______ kg
17) 75 mL = _____ L
18) 50 cm = _____ m
19) 5.6 m = _____ cm
20) 16 cm = _______ mm
21) 2500 m = _______ km
22) 65 g = _____ mg
23) 6.3 cm = _____ mm
24) 120 mg = _____ g

Compare using <, >, or =.

25) 63 cm ◯ 6 m
26) 536 cm ◯ 53.6 dm
27) 5 g ◯ 508 mg
28) 43 mg ◯ 5 g
29) 1,500 mL ◯ 1.5 L
30) 3.6 m ◯ 36 cm



T. Trimpe 2000 http://sciencespot.net/

Worksheet # 1 Name: ____________________

Provide the Scientific Notation or the Value:

1. 570,000 = ____________

2. 13 = ____________

3. 29 = ____________

4. 9,230,000 = ____________

5. 3,800 = ____________

6. 266,000 = ____________

7. 924,000 = ____________

8. 43 = ____________

9. 2,800,000 = ____________

10. 870 = ____________

11. 6.263×10^6 = ____________

12. 4.4×10^4 = ____________

13. 5×10^3 = ____________

14. 7×10^1 = ____________

15. 8×10^2 = ____________

16. 7.68×10^5 = ____________

17. 2.16×10^5 = ____________

18. 3.4×10^1 = ____________

19. 6.7×10^2 = ____________

20. 2.3×10^3 = ____________

Worksheet # 2 Name: ______________________

Provide the Scientific Notation or the Value:

1. 77 = ______________

2. 120,000 = ______________

3. 86,000 = ______________

4. 3,800 = ______________

5. 7,500,000 = ______________

6. 880 = ______________

7. 190,000 = ______________

8. 5,400 = ______________

9. 8,600 = ______________

10. 474,000 = ______________

11. 8.9×10^3 = ______________

12. 1.49×10^5 = ______________

13. 4.6×10^1 = ______________

14. 3.2×10^4 = ______________

15. 4.536×10^6 = ______________

16. 1.9×10^1 = ______________

17. 9.401×10^6 = ______________

18. 7.4×10^4 = ______________

19. 5.8×10^3 = ______________

20. 5.4×10^4 = ______________

Worksheet # 5 Name: ____________________

Provide the Scientific Notation or the Value:

1. 8,900,000 = __________

2. 6,500 = __________

3. 200 = __________

4. 66 = __________

5. 77,000 = __________

6. 810,000 = __________

7. 4,120,000 = __________

8. 98,000 = __________

9. 4,800,000 = __________

10. 68 = __________

11. 1.7×10^2 = __________

12. 1.46×10^5 = __________

13. 5.6×10^3 = __________

14. 8.8×10^1 = __________

15. 6.03×10^5 = __________

16. 7.1×10^2 = __________

17. 2.4×10^4 = __________

18. 2.5×10^6 = __________

19. 4×10^2 = __________

20. 4.7×10^4 = __________

Section 3 Organizing Data

Key Idea questions

> Why is organizing data an important science skill?
> How do scientists handle very large and very small numbers?
> How can you tell the precision of a measurement?

Presenting Scientific Data

> Why is organizing data an important science skill?

> Because scientists use written reports and oral presentations to share their results, organizing and presenting data are important science skills.

- *Line graphs* are best for continuous change.
  - *dependent variable:* values depend on what happens in the experiment
    - Plotted on the x-axis
  - *independent variable:* values are set before the experiment takes place
    - Plotted on the y-axis
- *Bar graphs* compare items.
  - A bar graph is useful for comparing similar data for several individual items or events.
  - A bar graph can make clearer how large or small the differences in individual values are.
- *Pie graphs* show the parts of a whole.
  - A pie graph is ideal for displaying data that are parts of a whole.
  - Data in a pie chart is presented as a percent.

Writing Numbers in Scientific Notation

> How do scientists handle very large and very small numbers?

> To reduce the number of zeros in very big and very small numbers, you can express the values as simple numbers multiplied by a power of 10, a method called scientific notation.

- scientific notation: a method of expressing a quantity as a number multiplied by 10 to the appropriate power
- Some powers of 10 and their decimal equivalents are shown below.
  - $10^3 = 1{,}000$
  - $10^2 = 100$
  - $10^1 = 10$
  - $10^0 = 1$
  - $10^{-1} = 0.1$
  - $10^{-2} = 0.01$
  - $10^{-3} = 0.001$
- Use scientific notation to make calculations.
- When you use scientific notation in calculations, you follow the math rules for powers of 10.
- When you multiply two values in scientific notation, you add the powers of 10.
- When you divide, you subtract the powers of 10.

Using Significant Figures

> How can you tell the precision of a measurement?

> Scientists use significant figures to show the precision of a measured quantity.

- precision: the exactness of a measurement
- significant figure: a prescribed decimal place that determines the amount of rounding off to be done based on the precision of the measurement
- Precision differs from accuracy.

- accuracy: a description of how close a measurement is to the true value of the quantity measured
- Round your answers to the correct significant figures.
- When you use measurements in calculations, the answer is only as precise as the least precise measurement used in the calculation.
- The measurement with the fewest significant figures determines the number of significant figures that can be used in the answer.

Name ______________________ Class ____________ Date ____________

Section 3 Review

SECTION VOCABULARY

accuracy a description of how close a measurement is to the true value of the quantity measured

precision the exactness of a measurement

scientific notation a method of expressing a quantity as a number multiplied by 10 to the appropriate power

significant figure a prescribed decimal place that determines the amount of rounding off to be done based on the precision of the measurement

1. **Evaluate** A student measures her height with a meter stick and finds that she is about 1.5 m tall. How can she measure her height with greater accuracy and precision?

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2. **Compare** Fill in the blank spaces in the table below.

Example of Data to Be Displayed	Best Type of Graph to Use
changes in the mass of a rock over time	
the fractions of different gases in the atmosphere	
the maximum speed of several different cars	
how the height of a rocket changes with time	
the relative amounts of different minerals in a rock	

3. **Apply Concepts** A student measures the length, width, and height of a fish tank. She finds that the fish tank is 105 cm long, 75 cm wide, and 80.5 cm high. What is the volume of the fish tank? Show your work. Use scientific notation and show the correct number of significant figures in your answer.

Name_______________________________ Class _______________ Date _______________

Skills Worksheet

Concept Review

Section: Organizing Data

1. **Convert** the following measurements from scientific notation to long form:

_______________ a. 2.54×10^{-3} cm

_______________ b. 9.5×10^{4} km

_______________ c. 3.3×10^{-1} L

_______________ d. 7.445×10^{2} g

2. **Convert** the following measurements to scientific notation:

_______________ a. 325 kg

_______________ b. 0.00046 m

_______________ c. 7,104 km

_______________ d. 0.0028 L

3. **Find** the number of significant digits in each of the following:

_______________ a. 0.00326

_______________ b. 39,010

_______________ c. 77,900.1

_______________ d. 1.5300

4. **Identify** the type of graph best suited to display the following:

a. the amount of iron ore in four different countries

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b. the major gases found in Earth's atmosphere

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c. the price of crude oil since 1990

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5. **Explain** how measurements can be precise but not accurate.

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Name: ______________________________

Test Preparation Checklist

Gather information

Subject _Physics_____________ Date of Test _Friday 8/31 /12_______________

Topics -__Introduction to Science_________________________________

Chapters - _1____

Dates of lecture - _8/21/12 – 8/31/12___________________

Other information covered (videos, handouts, assignments, etc.) -

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What types of questions will be on the test? Numbers indicate how many questions.

______ true/false __X__ multiple choice _____ matching

__X__ short answer __X__ fill-in-the-blank __X__ essay

Number of questions___25______ Number of points ___30_______

Plan

From the list below, mark any study strategy that you believe will be of use to you in preparing for this test.

______ Complete study guide, if provided
______ Record or take notes from test review session
______ Reread lecture notes aloud
______ Read lecture notes onto a tape
______ Rewrite lecture notes
______ Highlight lecture notes
______ Summarize lecture notes (find and note main ideas)
______ Update lecture notes with a friend's notes
______ Update lecture notes with information from your text book
______ Reread textbook and paraphrase the material
___ paragraphs ___ sub-heading sections ___ overview ___ chapter summary
______ Define key terms from textbook
______ Outline textbook chapters
______ Write (or record) answers to section and chapter review questions (or problems)
______ Make up a test (include a variety of questions)
______ Teach material to someone else
______ Draw a picture or diagram of what you are studying
______ Make a timeline
______ Study with a friend

______

Study Log

When you study for a test, make sure you do something other than just read. For example, write, draw, read aloud, tape, talk, highlight. Be creative. When you are actively involved in your study strategy, you will remember more of the material and understand it better.

Date	How long?	What did you do?

Analysis (Fill out after tests are returned) Grade on Test ___________

What worked well for you in preparing for this test? ______________________________

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What will you do differently next time (besides "study more")? ____________________

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Did you utilize any additional resources for this test? YES NO
If you answered yes, what resources did you use? ______________________________

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