_____

Name _____

Date _____

Hour _____

NTI DAY #5

(weather-closed school day)

PACKET FIVE

(Science/ Mrs. Klausman)

General Directions:

Due to weather, Harrison County Schools are closed. In an effort to utilize this day on the school calendar, your child is assigned and should work on this "packet" of school work today. It will count as a grade for this subject. The work attached is specific to the subject listed above.

Please contact your child's teacher of this subject at 234-7110 in the event you/your student have questions on this packet. Staff and teachers reported to HCMS today and are available should you have questions.

Harrison County Schools

Non-Traditional Instruction

Snow Plan 2019-2020

Due to the large number of weather related days of school closures, the Kentucky Department of Education has granted permission to school districts across the state to implement *"Non-Traditional Instruction"* (NTI) days. The Harrison County Board of Education approved all Harrison County Schools the opportunity during the 2019-2020 school year.

WHAT IS NON-TRADITIONAL INSTRUCTION? (NTI)

Non-Traditional Instruction allows for learning at home when students miss regular instruction due to weather/extraordinary circumstances. Students will have the chance for skill review, remediation, and enrichment through technology or paper packets. The work that is assigned on a NTI day will be that of review or enrichment. Examples of work will be informational reading, math fact fluency, project based learning, college and career readiness, etc.

WHEN WILL A NTI DAY BE CALLED?

A NTI day will be used if it is determined that a large majority of the roads are safe to travel, but an extra day or two is needed for some of our *'hard to melt'* roads. When a NTI day is called, students will work from home on their assigned lessons found in their NTI packet or online. Harrison County Schools may use up to 10 NTI days. The number of days missed due to weather will help determine how many NTI days are enacted.

HOW WILL I KNOW HARRISON COUNTY SCHOOLS ARE HAVING A NTI DAY?

A School Messenger one call will be made to all parents and staff announcing a NTI day. Lexington television stations, WCYN radio and the Cynthiana Democrat will also be alerted. Harrison County Schools will place this information on its website, as well as on Facebook and Twitter. You can always call your child's school or the Harrison County Board Office to ask if the day missed is a regular snow day or a NTI day.

WHAT IS THE ACCOUNTABILITY OF MY STUDENT ON A NTI DAY?

Students will be required to complete all tasks assigned during a NTI day. Each day's NTI assignments will be due TWO WEEKS from the day we return to school (**for example**, a NTI day is called for Feb. 4th, we return to school on Feb. 5th, that day's NTI assignment would be due Feb. 19). ** Advanced Placement Courses/Dual Credit courses are exempted from this schedule, as their deadlines are determined by instructor, on a course by course basis.*

The completion of the NTI assignments counts for the student's attendance that day. The completion of the NTI work means one less summer makeup day for students will have to be enacted.

WHEN WILL MY CHILD'S TEACHER BE AVAILABLE ON A NTI DAY?

Staff will be available from 9:00 a.m. until 11:30 a.m. and from 12:30 p.m. until 3:00 p.m. Teachers will be available via e-mail or students can call their school and leave a message for their teacher to call them back. Other forms of communication may be used at the discretion of the teacher.

Periodic Table of the Elements

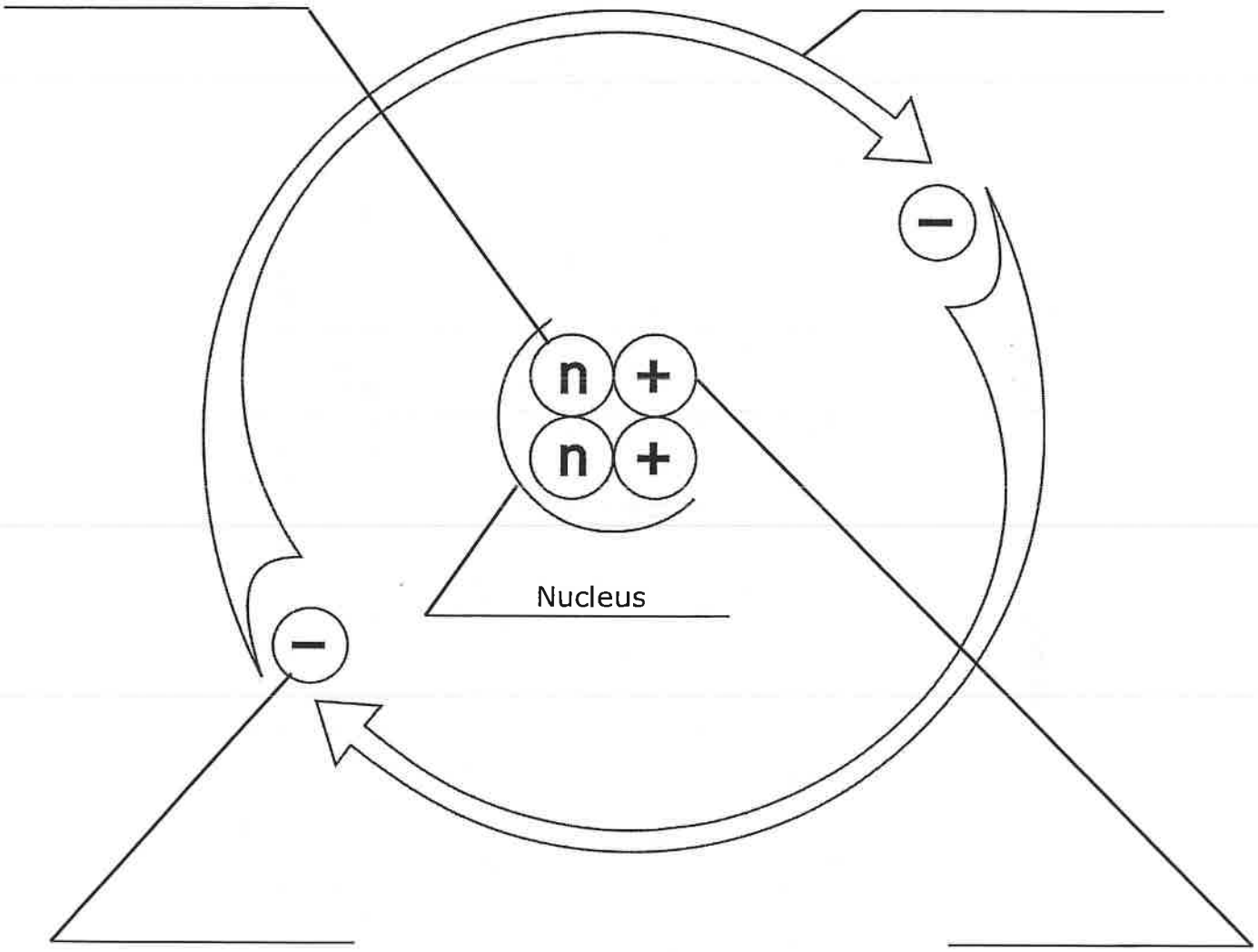
1 IA 1A	2 IIA 2A	3 IIIB 3B	4 IVB 4B	5 VB 5B	6 VIB 6B	7 VIIB 7B	8	9 VIII 8	10	11 IB 1B	12 IIB 2B	13 IIIA 3A	14 IVA 4A	15 VA 5A	16 VIA 6A	17 VIIA 7A	18 VIIIA 8A
1 H Hydrogen 1.008																	2 He Helium 4.003
3 Li Lithium 6.941	4 Be Beryllium 9.012											5 B Boron 10.811	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
11 Na Sodium 22.990	12 Mg Magnesium 24.305											13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Ar Argon 39.948
19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.867	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.631	33 As Arsenic 74.922	34 Se Selenium 78.971	35 Br Bromine 79.904	36 Kr Krypton 83.798
37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.95	43 Tc Technetium 98.907	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.906	46 Pd Palladium 106.42	47 Ag Silver 107.868	48 Cd Cadmium 112.414	49 In Indium 114.818	50 Sn Tin 118.711	51 Sb Antimony 121.760	52 Te Tellurium 127.6	53 I Iodine 126.904	54 Xe Xenon 131.294
55 Cs Cesium 132.905	56 Ba Barium 137.328	57-71	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.217	78 Pt Platinum 195.085	79 Au Gold 196.967	80 Hg Mercury 200.592	81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium [208.982]	85 At Astatine 209.987	86 Rn Radon 222.018
87 Fr Francium 223.020	88 Ra Radium 226.025	89-103	104 Rf Rutherfordium [261]	105 Db Dubnium [262]	106 Sg Seaborgium [266]	107 Bh Bohrium [264]	108 Hs Hassium [269]	109 Mt Meitnerium [278]	110 Ds Darmstadtium [281]	111 Rg Roentgenium [280]	112 Cn Copernicium [285]	113 Nh Nihonium [286]	114 Fl Flerovium [289]	115 Mc Moscovium [289]	116 Lv Livermorium [293]	117 Ts Tennessine [294]	118 Og Oganesson [294]

Lanthanide Series	57 La Lanthanum 138.905	58 Ce Cerium 140.116	59 Pr Praseodymium 140.908	60 Nd Neodymium 144.243	61 Pm Promethium 144.913	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925	66 Dy Dysprosium 162.500	67 Ho Holmium 164.930	68 Er Erbium 167.259	69 Tm Thulium 168.934	70 Yb Ytterbium 173.055	71 Lu Lutetium 174.967
Actinide Series	89 Ac Actinium 227.028	90 Th Thorium 232.038	91 Pa Protactinium 231.036	92 U Uranium 238.029	93 Np Neptunium 237.048	94 Pu Plutonium 244.064	95 Am Americium 243.061	96 Cm Curium 247.070	97 Bk Berkelium 247.070	98 Cf Californium 251.080	99 Es Einsteinium [254]	100 Fm Fermium 257.095	101 Md Mendelevium 258.1	102 No Nobelium 259.101	103 Lr Lawrencium [262]

Name _____ Date ____ / ____ / ____

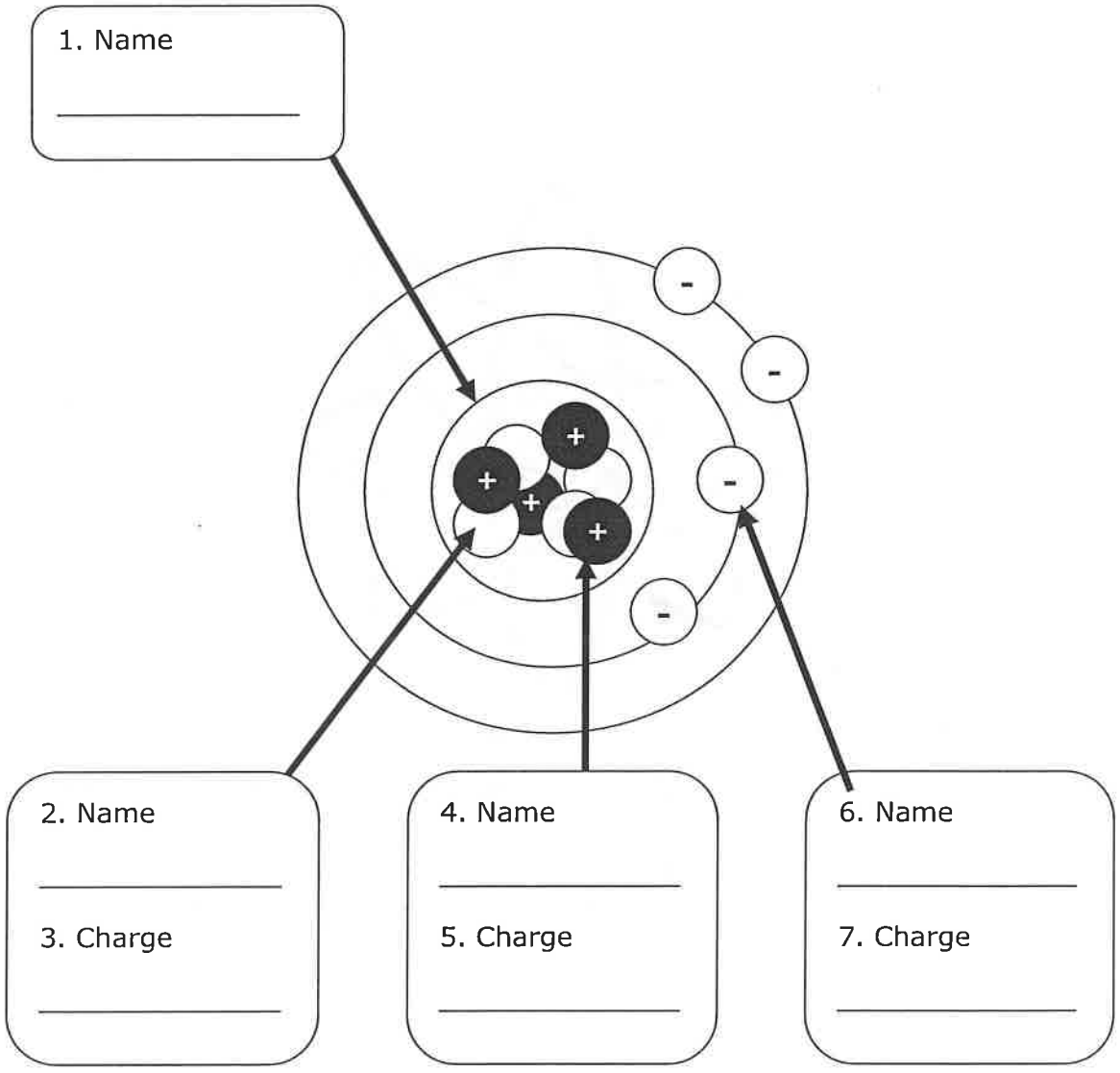
ANATOMY OF AN ATOM

Every atom (except the hydronium ion) has two main components, a NUCLEUS with PROTONS and NEUTRONS and one or more ORBITS (or SHELLS) that contain one or more electrons. Provide these five labels on the appropriate blanks for the helium atom depicted below.



Name _____ Date _____

Parts of a 2-Dimensional Atom



Name _____ Date _____

Parts of a 3-Dimensional Atom

1. Name

_____

2. Charge

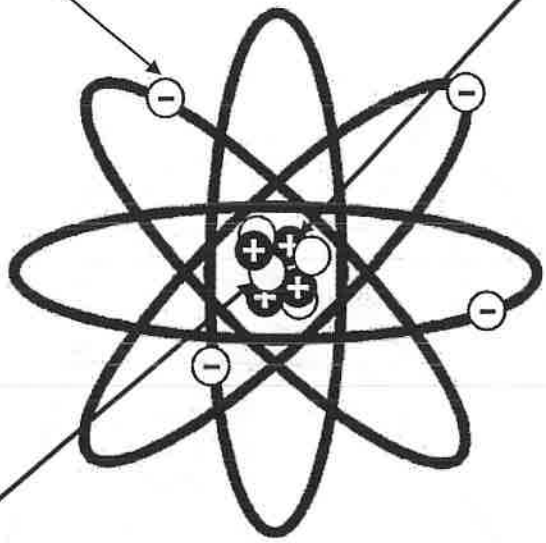
_____

3. Name

_____

4. Charge

_____



5. Name

_____

6. Charge

_____

7. How many **protons** does this atom have?

_____

8. How many **electrons** does this atom have?

_____

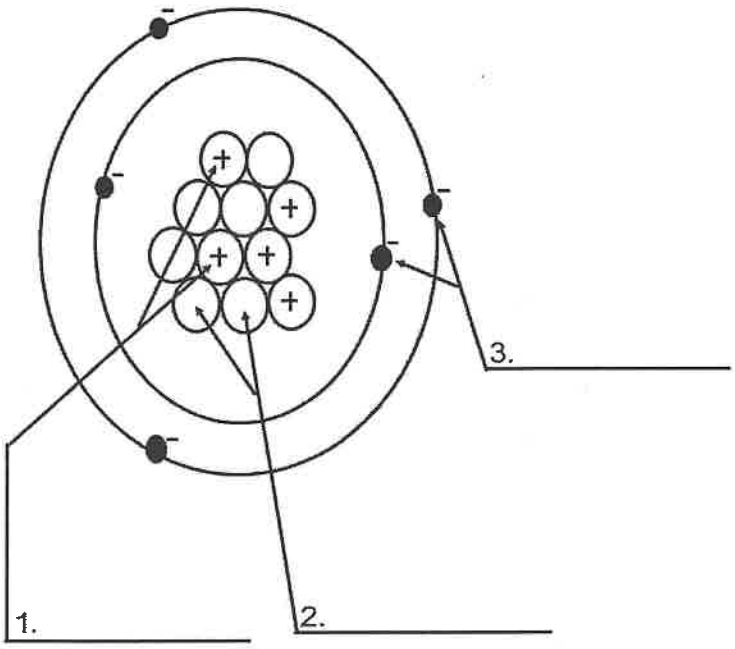
9. How many **neutrons** does this atom have?

_____

Name_____ Period_____

Atomic Structure Worksheet

Label the parts of an atom on the diagram below.



4. What type of charge does a proton have?

5. What type of charge does a neutron have?

6. What type of charge does an electron have?

7. Which two subatomic particles are located in the nucleus of an atom?

8. If an atom has 35 protons in the nucleus, how many electrons will it have orbiting the nucleus?

9. What is the atomic number of the atom in the diagram above?

10. What is the atomic mass/mass number of the atom in the diagram above?

11. How many protons are in the nucleus of an atom with an atomic number of 15?

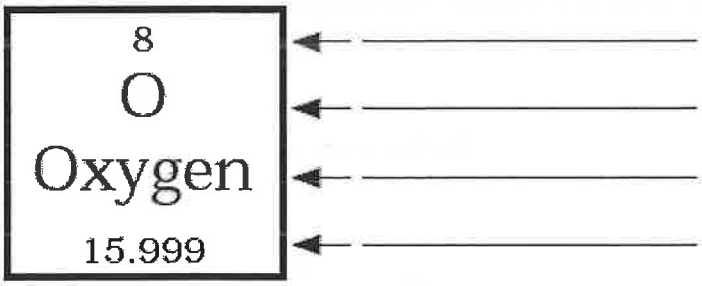
12. How many electrons are in the nucleus of an atom with an atomic number of 20?

13. How many neutrons are in the nucleus of an atom with an atomic number of 25? (use Periodic Table for mass)

14. What is the mass number of an atom with 3 protons, 4 neutrons, and 3 electrons?

15. How many neutrons are in the nucleus of an atom that has an atomic mass of 36 and an atomic number of 25?

The Atoms Family
Atomic Math Challenge

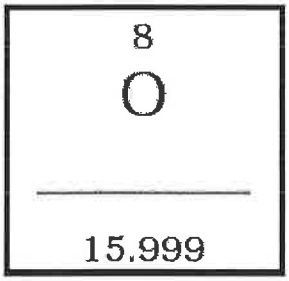


Atomic number equals the number of

_____ **or** _____

Atomic mass equals the number of

_____ + _____



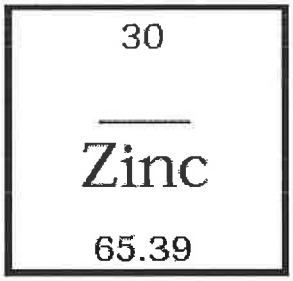
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



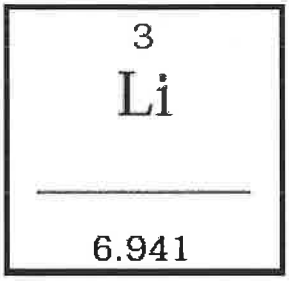
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



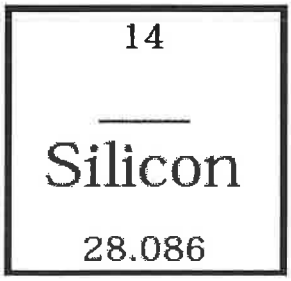
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



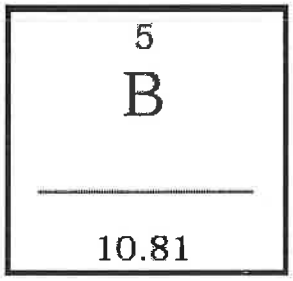
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



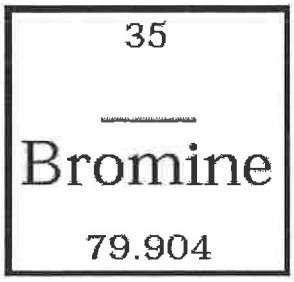
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



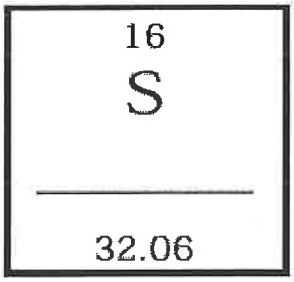
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



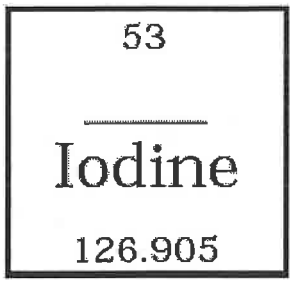
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



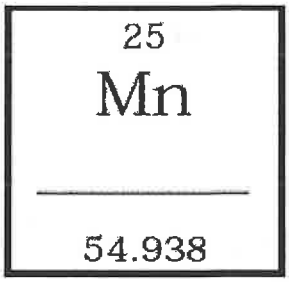
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



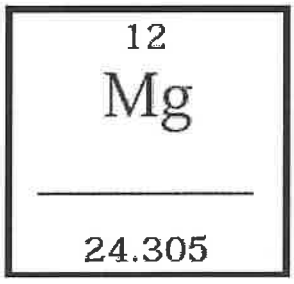
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



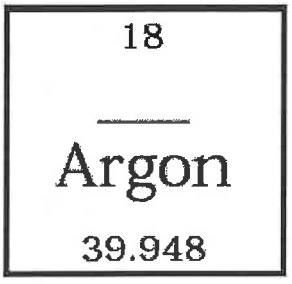
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



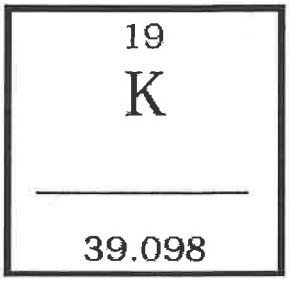
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



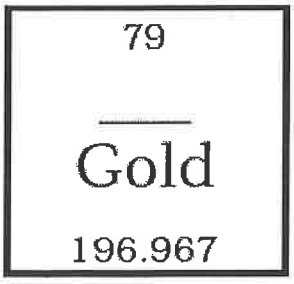
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



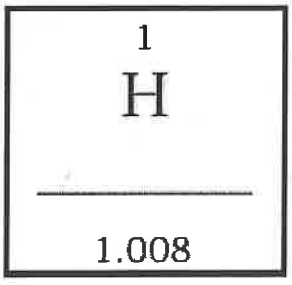
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



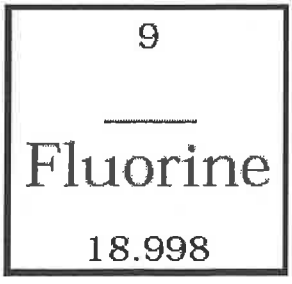
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____

Name _____ Date _____

Atomic Structure Practice Sheet 1

1. How many protons and neutrons are present is an atom of calcium (Mass # = 40)?

Protons = _____

Neutrons = _____

2. How many protons and neutrons are present is an atom of krypton (Mass # = 84)?

Protons = _____

Neutrons = _____

3. How many protons and neutrons are present is an atom of tin (Mass # = 119)?

Protons = _____

Neutrons = _____

4. How many protons and neutrons are present is an atom of tungsten(Mass # = 184)?

Protons = _____

Neutrons = _____

5. How many protons and neutrons are present is an atom of titanium (Mass # = 48)?

Protons = _____

Neutrons = _____

6. What is the name, symbol, that contains 12 protons and 10 electrons?

Name = _____

Symbol = _____

7. What is the name, symbol, and , that contains 15 protons and 18 electrons?

Name = _____

Symbol = _____

8. What is the mass number, symbol, and that contains 35 protons, 45 neutrons and 36 electrons?

Mass Number = _____

Symbol = _____

9. What is the mass number, symbol, atom that contains 19 protons, 20 neutrons and 19 electrons?

Mass Number = _____

Symbol = _____

Charge = _____

10. What is the mass number, symbol, and that contains 87 protons, 136 neutrons and 86 electrons?

Mass Number = _____

Symbol = _____

NAME _____ PERIOD _____ DATE _____

ATOMIC STRUCTURE

Directions: Become more familiar with the atomic structure of some common substances by completing the chart below. For each substance, you have been given enough information to fill in all the blanks.

TO NEAREST WHOLE NUMBER

Substance	Symbol	Atomic Number	Mass Number	Number of Protons	Number of Neutrons	Number of Electrons
Helium	He	2	4			
Magnesium	Mg	12			12	
Zinc		30	65			
Bromine	Br		80			35
Aluminum				13	14	
Uranium	U				146	92
Sodium	Na	11			12	
Krypton	Kr				48	36
Calcium			40	20		
Silver	Ag			47	61	

pg 5

Protons, Neutrons, and Electrons Practice Worksheet

Use the periodic table to find the numbers of protons, neutrons, and electrons for atoms of the following elements.

Name of Element	Mass Number	Atomic Number	Protons	Neutrons	Electrons
Boron	11	5	5	6	5
Sodium	24	11			
Gallium			31	37	
	89				39
Copper		29		35	
	98		43		
	207				
Ytterbium				103	70
	227		89		
				54	
Thallium	204	81			
		100		157	
	259				
				0	
Carbon	12				
			7		
					56
			2		2
Calcium					
					14
Argon		18			
			12		12
			106	159	

Name: _____ Section: _____

Observations and Inferences Practice

Directions: Refer to each of the scenarios or pictures below and list any observations made by the individuals. Once you have listed the observations you should try to come up with an inference (or inferences) based on those observations.

1. After Kristen walked out of her house she heard a siren and smelled smoke.

Observations	Inference(s)

2. Timothy noticed that after Mr. Smith gave Jessica her quiz she said, "I cannot believe this" and a few tears rolled down her face.

Observations	Inference(s)

3.

Observations	Inference(s)

4. Jill was playing with her baby sister and noticed that she stopped making noises. After looking closely at her sister she saw that her face was "scrunched" together and turning red.

Observations	Inference(s)

5.

Observations	Inference(s)

6. Create your own scenario/story or draw a picture in the space below and complete the table as you did for the previous questions.

Observations	Inference(s)

Name_____Class____Date_____

Science Worksheet: Inferences

An inference is a logical explanation about things that that we observe.

Example

Observation: When I went into class, the ground outside was dry, but now when I go outside for recess I notice the ground is wet.

Inference: It was raining when I was in class.

Complete the following inferences and observations. There may be more than one logical answer for these. Try and give the most likely explanation!

Problem #1

Observation: I am sitting in my bedroom working on the computer at night. Suddenly the lights and computer go off leaving me in darkness. My iPod is still going though.

Inference: _____

Problem # 2

Observation: I am sitting in the lounge room on the couch patting my dog and eating a sandwich. The phone rings, so I put down my sandwich on the coffee table and go and answer it. When I come back the dog and the sandwich are gone.

Inference:_____

Problem # 3

Observation: I am inside and I can hear my brother playing cricket in the backyard with his friend. I hear someone hit the ball really hard and then hear glass shattering.

Inference: _____

Problem #4

Observation: An intense storm passes over my house brining lots of rain. A few days later I notice a brown stain appear on the ceiling in my kitchen.

Inference:_____

Problem # 5

Observation: It is mid-summer and I go away for a holiday for two weeks. Before I go, I water my vegetable garden one last time and notice that everything is green and healthy. When I get back from my holiday, I notice that all the vegetables have gone brown and are dead.

Inferences:_____

Problem #6

Observation: I am in the lab timing how long it takes to boil 100 mL of water in a beaker over a Bunsen burner. I observe it takes 5:15 mins to boil the water. I want to get the most accurate answer possible so I repeat the test again making sure everything is the same. This time it takes 7:05 mins to boil the water. I think this is unusual so I repeat the experiment a third time and it takes 5:20 mins.

What could we infer about the differences in the times observed?_____

_____

_____

Problem #7

Observation: I am in the lab seeing if adding sugar to water affects how long it takes the water to boil. In the first test I boil 100 mL of **water only** in a beaker over a Bunsen burner and observe it takes 5:15 mins to boil. Next I add **2 grams of sugar** to 100 mL of water and stir to dissolve, then boil making sure everything is the same. This time it takes 7:05 mins to boil the sugar-water mix. Next I add **4 grams of sugar** to 100 mL of water. This time it takes 10:35 mins to boil the sugar-water mix.

What could we infer about the effect sugar has on the boiling time of water?_____

_____

_____

Problem #8

Observation: I want to know what effect salt has on the growth of grass. So I measure out 3 equal sized squares of grass out the back of the Green Building. The first square of lawn I water with **5 litres of pure water** from a watering can every day. The second square of lawn I water with **5 litres of pure water with 2 grams of salt mixed in**, every day. The third square of lawn I water with **5 litres of pure water with 4 grams of salt mixed in**, every day. I measure the height of the grass after 14 days and note the following observations. The first square is green and 15 cm high. The second square is greeny-yellow and 6 cm high. The third square is yellowy-brown and looks dead and is only 2cm high.

What could we infer about the affect salt has on the growth of grass?_____

_____

_____

Name Period Date

LESSON 4 | CRITICAL THINKING

Recognizing Bias

"Do you like this painting?" This question seeks your opinion but does not imply that the person asking it would like a particular answer. It is a neutral question. Have you read a question or statement that sounds neutral, but is really supporting one side of an argument or one point of view? What if the question above were worded, "Isn't this the greatest painting that you have ever seen?" The person asking the question expects you to answer that it is. That is bias. Bias means that a statement or question shows a preference for or against an idea, an object, or a person. Information that is biased is not reliable.

In order to determine if something you read is biased or not, you should ask questions about the source of information. Possible questions include:

- Have any facts been omitted?
- Have any opinions been included as well as facts?
- Is it worded to create a positive or a negative impression?
- If the words were changed, would my impression change?
- What additional information do you need?

Asking questions like these will help you determine whether the author is trying to influence your opinion. Read each biased statement or question below. Circle the words that make it biased. Decide if those words make the statement positive or negative.

1. This is by far the best dinner I've ever had.

   _____

2. Our economy is in shambles; only a miracle could fix it.

   _____

3. That experiment is riddled with error, as any three-year-old could tell you.

   _____

4. A brilliant scientist, Dr. Jones rightfully deserves the top award this organization can give.

   _____

5. Have you been listening to me, or have you been wasting time reading that useless pamphlet?

   _____

Name Period Date

PRACTICE RECOGNIZING BIAS

Bias can appear in many types of writing, including newspaper articles, advertisements, and opinion surveys.

As you read the following opinion survey results, think about how they may be biased. Bias can show up in the way the question is asked as well as the how the results are interpreted. Although these survey were written as examples, they are similar to actual reported surveys.

Survey 1.

Keeping in mind that recent power shortages have disrupted business and everyday life, do you think that we should build more power plants? If so, should we consider building clean, efficient nuclear power plants?

	Yes	No
Build more power plants?	74%	26%
Build nuclear plants	62%	38%

Conclusion People strongly support building power plants, especially nuclear power plants. This poll indicates that our government officials need to pay attention to the public and allow new plants to be built.

Survey 2.

There have been several major accidents at nuclear power plants. They also create dangerous waste that cannot be destroyed. Should we build more nuclear power plants or should we cut demand for electricity through conservation?

	Yes	No
Build nuclear power plants?	40%	60%
Conserve electricity?	60%	40%

Conclusion: People clearly are opposed to building nuclear power plants. Most of the people surveyed believe that conservation is the answer to our power problems.

Name _____ **Period** _____ **Date** _____

Answer the following questions about the surveys. Think about whether the way the question was asked would influence your opinion.

6. What opinions are included in the questions asked in the surveys?

   Survey 1 _____

   Survey 2 _____

7. What additional information would you need in order to give a good answer to the questions?

   Survey 1 _____

   Survey 2 _____

8. Are the questions worded to favor a particular opinion? If so, what opinion does each favor?

   Survey 1 _____

   Survey 2 _____

9. Does the wording of the question affect how you might answer?

   Survey 1 _____

   Survey 2 _____

10. Did the wording of the question affect how the people surveyed answered the question? Explain your answer.

    _____

    _____

11. Write an unbiased survey question about building nuclear power plants.

    _____

    _____

    _____

Simpsons use the Scientific Method Name_____Hr_____

Date_____

Identify the Controls and Variables.

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<td> 
Smithers thinks that a special juice will increase the productivity of workers. He creates two groups of 50 workers each and assigns each group the same task (in this case, they're supposed to staple a set of papers). Group A is given the special juice to drink while they work. Group B is not given the special juice. After an hour, Smithers counts how many stacks of papers each group has made. Group A made 1,587 stacks, Group B made 2,113 stacks.</td>
<td>Identify the-

1. Control Group

2. Independent Variable

3. Dependent Variable

4. What should Smithers' conclusion be?

5. How could this experiment be improved?</td>
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<td> 
Homer notices that his shower is covered in a strange green slime. His friend Barney tells him that coconut juice will get rid of the green slime. Homer decides to check this out by spraying half of the shower with coconut juice. He sprays the other half of the shower with water. After 3 days of "treatment" there is no change in the appearance of the green slime on either side of the shower.</td>
<td>6. What was the initial observation?

Identify the-
7. Control Group

8. Independent Variable

9. Dependent Variable

10. What should Homer's conclusion be?</td>
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Bart believes that mice exposed to microwaves will become extra strong (maybe he's been reading too much Radioactive Man). He decides to perform this experiment by placing 10 mice in a microwave for 10 seconds. He compared these 10 mice to another 10 mice that had not been exposed. His test consisted of a heavy block of wood that blocked the mouse food. He found that 8 out of 10 of the microwaved mice were able to push the block away. 7 out of 10 of the non-microwaved mice were able to do the same.

Identify the-

11. Control Group

12. Independent Variable

13. Dependent Variable

14. What should Bart's conclusion be?

15. How could Bart's experiment be improved?

Krusty was told that a certain itching powder was the newest best thing on the market, it even claims to cause 50% longer lasting itches. Interested in this product, he buys the itching powder and compares it to his usual product. One test subject (A) is sprinkled with the original itching powder, and another test subject (B) was sprinkled with the Experimental itching powder. Subject A reported having itches for 30 minutes. Subject B reported to have itches for 45 minutes.

Identify the-

16. Control Group

17. Independent Variable

18. Dependent Variable

19. Explain whether the data supports the advertisements claims about its product.

Lisa is working on a science project. Her task is to answer the question: "Does Rogooti (which is a commercial hair product) affect the speed of hair growth". Her family is willing to volunteer for the experiment.

20. Describe how Lisa would perform this experiment. Identify the control group, and the independent and dependent variables in your description.

Vocabulary

Independent (Manipulated) Variable: The variable changed by the scientist. In a controlled experiment, there is only one independent variable. As the scientist changes the independent variable, he or she observes what happens.

Dependent (Responding) Variable: The variable that changes in response to the change the scientist makes to the independent variable. The new value of the dependent variable is *caused by* and *depends on* the value of the independent variable. For example, if you increase the temperature in the room (independent variable), a dog might pant faster (dependent variable).

Controlled (Constant) Variables: The controlled variables are "things" that the experimenter wants to remain the same and constant throughout the experiment. Controlled variables are all other things in the experiment that are kept constant so that they do not have an affect or influence on the dependent variable.

Control Group: This is a group that is not being experimented on and is called the control group. The reason that this group is not being exposed to the independent variable is so that you can compare your experimental results back to this group. Simply said it is so you can compare the group that has changed to the group that stayed the same. All quality science experiments use a control group.

Experimental Group: The experimental group is the group that receives a treatment or has been exposed to something. In other words the scientist has changed an independent variable for this group and makes observations for dependent variables.