NEWCASTLE HIGH SCHOOL
Pre-AP Biology Summer Packet

This packet is due on 8/15/2017.
Do not staple this packet; bring it to school in a folder or paper clip it.

Welcome to Pre-AP Biology! You have chosen a challenging but worthwhile biology course. While I have taken the time to attempt to make this course as enjoyable for you and me, be aware that this class will require studying EVERY DAY, HOMEWORK, and OUT OF CLASS ASSIGNEMENTS. You will be expected to study and be prepared for class every day. There is a possibility of a quiz every day. (Notice the EVERY DAY?)

In order to demonstrate your level of commitment to Pre-AP Biology, you will first need to complete a series of summer assignments. Because most of you are unfamiliar with my teaching practices, please know that I avoid assigning "busy work" at all costs, and this practice begins with this summer assignment. You should consider it meaningful and worthy of your time since there will be a Summer Packet Quiz on the first full week of class.

I hope you have a great summer and if you have any questions, please e-mail me at ksheets@newcastle.k12.ok.us. I normally check my e-mail once or twice a week in the summer and will respond ASAP.

1. SET UP YOUR JOURNAL

Create a Pre-AP Biology Journal using a composition notebook. This should be a new composition notebook with no writing and contain at least 100 pages. It can be any color you choose. Remember this is not a spiral! Once you have your journal, use the instructions below to complete the setup.

a. DESIGN YOUR COVER PAGE:
Students will need to design a cover page for their journal that includes their name and course year (2017-2018). This cover needs to reflect the student and the subject of biology. The cover needs to be colorful and include pictures which can be drawn, photos and/or clippings from magazines.

b. COVER SHEET
The first page of your Journal will be the cover sheet. This sheet will include the student's name and course year.

c. TABLE OF CONTENTS:
Students need to set up and maintain a Table of Contents which will include the DATE, TITLE of the subject covered and PAGE NUMBER. This will be the next three pages of your journal front and back.

d. REFERENCE SECTION:

1. Root words - The root words page in this packet will be taped into the next two pages of your journal for reference. Use them on the root word practice page that you will turn in.
2. Graphing - The graphing Guidelines page will be taped into your journal right after the Root Word pages as a reference. Use the guidelines on the graphing practice that will be turned in at the start of classes.
3. Metric Conversion - The Metric Conversion Ladder is the next thing to be taped into your notebook. Use these Rules on the metric conversion page that will be turned in at the start of classes.
4. Science Safety - The Science Safety Rules and Icons are the last thing to be taped into your reference section. Review these guidelines and use them on the safety practice page that is due at the start of classes.

2. ITEMS TO BE COMPLETED AND TURNED IN ON THE FIRST DAY OF CLASS

a. Student Biography page
b. Root Word Practice
c. Science Safety Project
d. Metric Conversions Page
e. Graphing Practice

Name_____date_____hour_____score_____

Pre-AP Student Biography Page BIO

Write a short biography below answering the following questions. This will allow me to get to know you better and get a sense of your writing ability.

1. What is your full name?
2. Where were you born?
3. What languages do you speak?
4. What are your strengths and weakness in school?
5. What are your favorite and least favorite subjects in school and why?
6. What are your interests outside of school?
7. Do you know what type of career you would like to work towards? If yes, which one?
8. What would you like to learn in Biology this year?
9. How do you learn best? (visual, kinesthetic, auditory)
10. What type of teacher would be best for your learning style?
11. Do you work well on your own, in partnerships or small groups?

Name_____date_____hour_____score_____

Pre-AP Science Prefix and Suffix Practice BIO

Using the Science Prefix and Suffix reference pages, determine the meanings of the following words:

Example: cardiology – heart study or science (study of the heart)

1. phototropism—
2. arthropod—
3. echinoderm—
4. epiglottis—
5. multicellular—
6. hypodermic—
7. anthropology—
8. hypothermic—
9. gymnosperm—
10. pseudopod—
11. photograph—
12. autograph—
13. neuralgia—
14. decapod—
15. hepatitis—
16. cytology—
17. zoology—
18. microbiology—
19. geology—
20. biology—

Notice that several prefixes can mean the same thing:

21. What are two prefixes that mean ONE or SINGLE? _____ _____
22. What are two suffixes that mean CUT or CUT OUT? _____ _____
23. What are two prefixes that mean ABOVE or ON? _____ _____
24. What are two prefixes that mean TWO? _____ _____

Just knowing one part of a word gives you a clue to the whole word:

25. Would you want to be careful when touching an animal called an ECHINDNA? Yes or No
26. What does a CARNIVORE eat? _____
27. Is a NEONATE a tiny baby or an old person? _____
28. Is a CRANIOTOMY a serious surgery? Yes No
29. An ALBINO rabbit is what color? _____
30. Does an AMPHIBIAN live on land or water? _____
31. If a medicine is CONTRAINDICATED for you, should you take it? Yes No
32. A DERMATOLOGIST works with what part of the body? _____
33. How does a tiny animal called a ROTIFER travel through the water? _____ (hint: look up rota)
34. If you visited the Elysian Park ARBORETUM, what would you expect to see? _____
35. In 1969, where did the LUNAR mission land? _____
36. What is another name for a CHRONOMETER? _____
37. Why do they call this symbol (*) an ASTERISK? _____

Using the prefixes and suffixes, create 10 words of your own and give their definitions. Each word must contain at least 2 parts, a prefix and a suffix, 2 prefixes, or 2 suffixes.

38.

39.

40.

41.

42.

43.

44.

45.

46.

47.

Pre-AP Biology Summer Safety Project

Purpose: To investigate the effects of unsafe laboratory practices. **Due: August 15th, 2017**

Procedure: With a medium of your choice (ex: YouTube video, cartoon strip, story) demonstrate a situation that could arise from practicing unsafe laboratory procedures.

If you know of another student taking a Pre-AP Biology class, you may pair up. Only two people per project

Guidelines:

1. Using the safety rules on the Safety Contract, choose at least FOUR rules to address in your presentation.
2. Demonstrate the wrong safety procedures **and** the correlating correct safety procedures.
3. Be Creative! Humor is a plus!
4. Some or all of these may be presented to the class or other classes as I see fit.

Example Story:

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 did-n't have permission to experiment on his own. He noticed that one of the substances did not do any-thing, but the other one fizzed. He also mixed two substances together to see what would happen, but didn't notice anything. He saw SpongeBob 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 Sponge-Bob 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.

Example Picture/Drawing:

Name_____date_____hour_____score_____

Metric Conversion Practice BIO

Using the conversion ladder provided convert the following amounts.

1. **1 g = _____ mg**
2. **_____ mm = 1 cm**
3. **1 kL = _____ L**
4. **_____ cm = 1 m**
5. **1 g = _____ kg**
6. **1 m = _____ mm**
7. **_____ mg = 10.56 g**
8. **1 km = _____ mm**
9. **_____ ml = 1 L**
10. **1.2kg = _____ g**
11. **4 cm =_____ mm**
12. **800 m = _____ km**
13. **550 mg = _____ g**
14. **250 mL = _____ L**
15. **_____ cm = 4.5 m**
16. **35.7 g = _____ mg**
17. **_____ kg = 23.5 g**
18. **1357.9 mm = _____ m**
19. **2468.5 g = _____ kg**
20. **0.97532 km = _____ mm**

_____21. **Sarah rides her bike 3.5 km to the store. Kim rides 852 meters to the same store. Who rides further?**

_____22. **Sam's plant grew 325 mm during his experiment. Trey's plant grew 43.6 cm. Who's plant grew the tallest?**

_____23. **Kelsey's puppy ate 3.89 kg of puppy food in one week. Robby's dog ate 3986 grams of puppy food in the same week. Whose puppy ate more food?**

_____24. **Jose's fish tank holds 43.2 L of water. Terin's fish tank holds 324 dL of water. Who's fish tank holds the most water?**

_____25. **Desi takes 250 mg of medicine twice a day. Rochelle takes 1.5 grams of the same medicine 3 times each day. Who has the highest dosage of medicine?**

CIRCLE EACH UNIT THAT IS THE LARGEST OF THE GROUP.

26. millimeter or centimeter
27. kilometer or decimeter
28. liter or milliliter
29. centigram or gram
30. milligram or kilogram
31. meter or millimeter or centimeter
32. milligram or kilogram or gram
33. dekagram or milligram or centigram
34. centimeter or decimeter or meter
35. milligram or gram or centigram
36. liter or milliliter or kiloliter
37. mg or g or cg
38. km or m or cm
39. kg or mg or cg
40. cL or kL or mL

WHAT IS THE BEST UNIT TO MEASURE EACH OF THESE ?

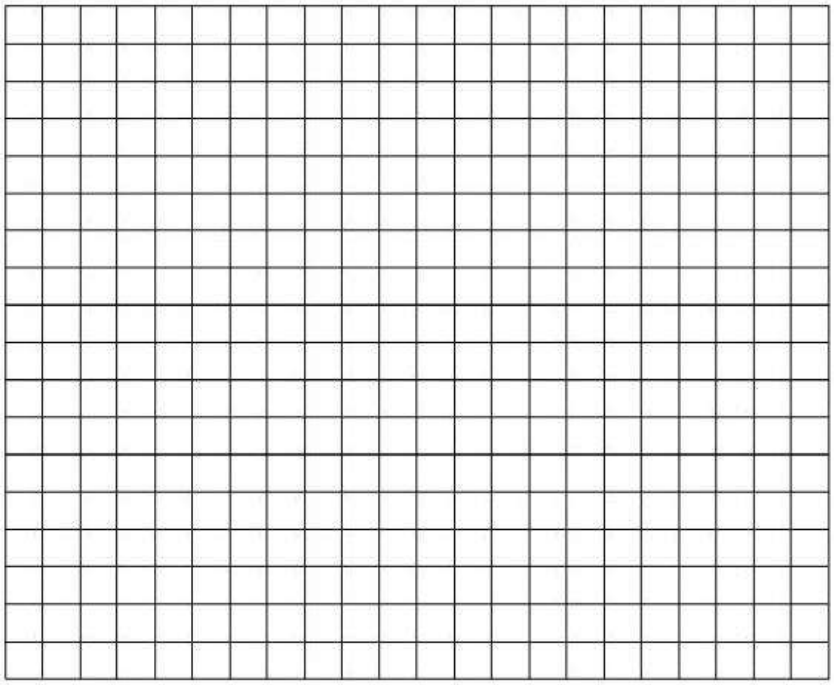
41. Amount of water in fish tank.	milliliter	liter	kiloliter
42. Mass of a pencil.	milligram	gram	kilogram
43. Thickness of a dime	millimeter	meter	kilometer
44. Amount of soda in a can	liter	milliliter	kiloliter
45. Height of door.	kilometer	meter	centimeter
46. Length of a dollar bill	meter	millimeter	centimeter
47. Distance to the restroom	millimeter	meter	kilometer
48. Carton of milk at lunch	liter	kiloliter	milliliter
49. Mass of an ant	gram	kilogram	milligram
50. Your mass	gram	kilogram	milligram

Name_____date_____hour_____score_____

Graphing Practice BIO

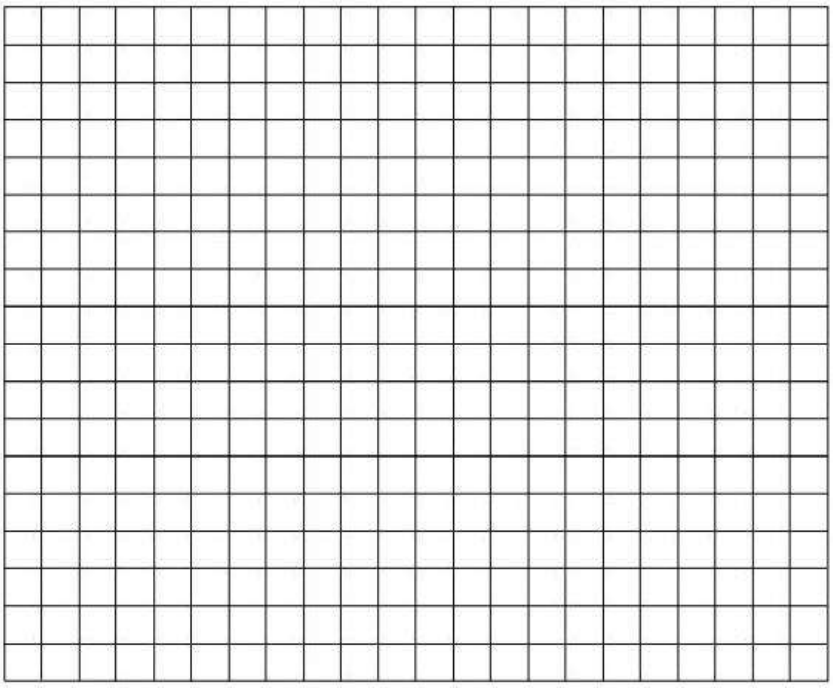
Make a line graph for the set of Rainforest data below. The data reflects the amount of rainfall during a 10 hour period. Follow the graphing guidelines discussed earlier.

Rainfall (ml)	Time (hr)
2	1
1	2
3	3
5	4
6	5
2	6
13	7
1	8
1	9
2	10



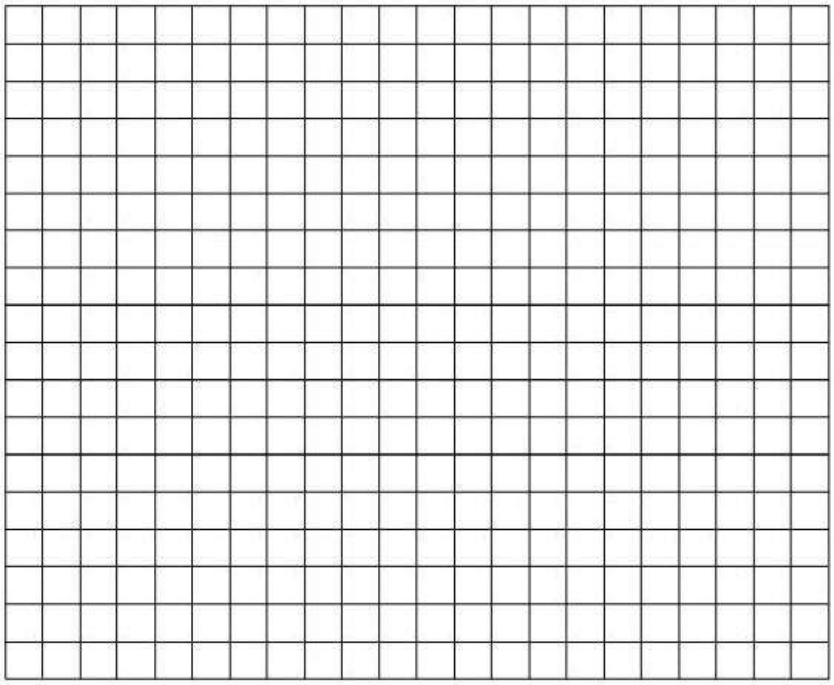
Make a line graph for the set of Rainforest data below. The data reflects temperature during a 10 hour period. Follow the graphing guidelines discussed earlier.

Temperature (^{O}C)	Time (hr)
32	1
33	2
35	3
36	4
37	5
39	6
41	7
40	8
35	9
34	10



Graph the data below. Make a double bar graph. Color code your bars and include a key for your graph. Be sure to follow the graphing guidelines discussed earlier.

Month	Mean Daily Max. Temp (°C)	Mean Daily Min. Temp (°C)
January	31.7	18.7
February	30.9	18.6
March	29.2	16.6
April	25.1	12.6
May	20.2	8.9
June	16.6	6.1
July	16.1	4.7
August	17.8	5.8
September	21.1	8.5
October	24.8	12.1
November	27.9	14.7
December	31.1	12.1



GRAPH CONSTRUCTION

LINE GRAPHS

- show relationship between 2 sets of numerical data.
- How does ___ affect ____?

BAR GRAPHS

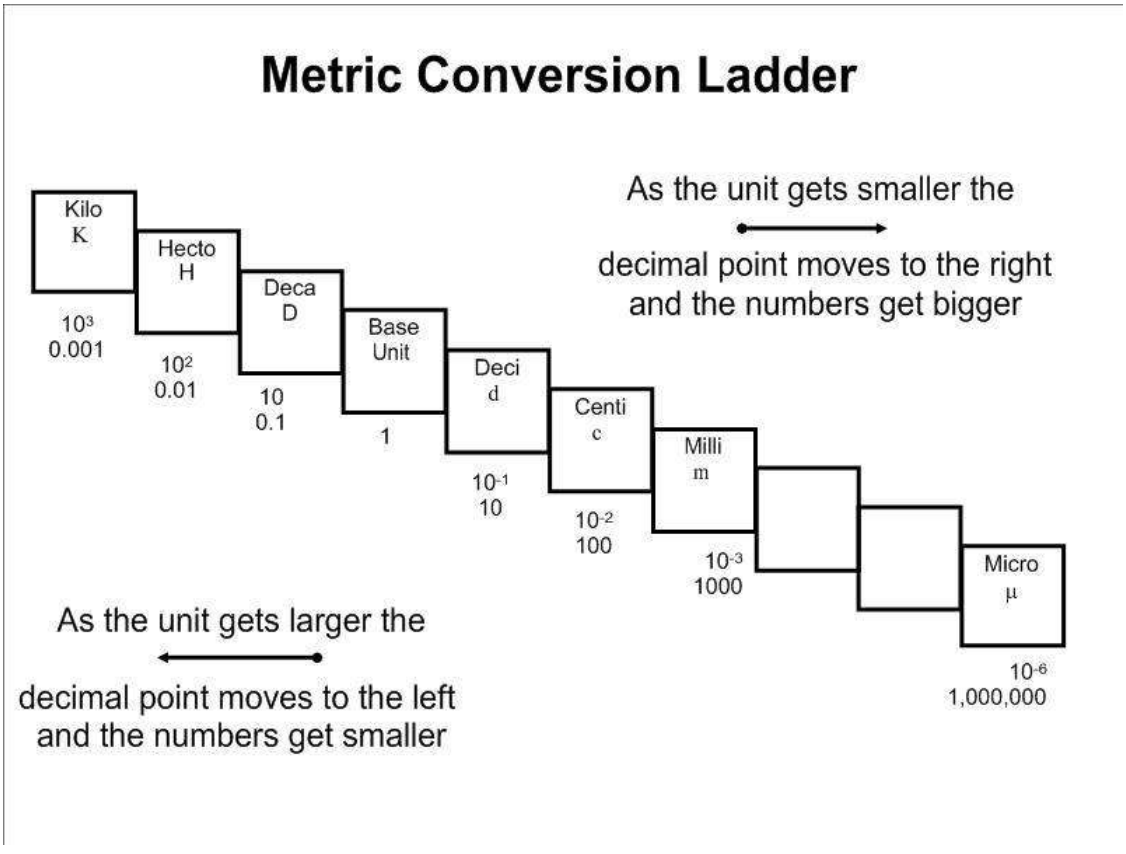
- show relationship between categories and 1 set of numerical data.

VARIABLES

- Independent variable (IV)
  - factor changed by investigator.
- Dependent variable (DV)
  - factor that responds to what the investigator does.
  - DEPENDS on what is changed by investigator.

CONSTRUCTING A LINE GRAPH.

1. Identify the variables as dependent or independent.
2. label Independent variable on X axis
3. label Dependent Variable on Y axis
4. Determine numbering intervals for variables. Use as much space as you can on the graph (up and down).
5. Plot points and connect them.
6. Create a descriptive title.



SCIENCE PREFIX AND SUFFIXES

Cut out and tape in Reference Section of your journal

PREFIX	MEANING
a-	without, lacking
ab-	away from
adipo-	fat
alb-	white
amphi-/amp-	of both kinds
andr-	male
angio-	vessel (blood)
ante-	before
anthropo-	humans
anti-	against
aqua-	water
arbor-	tree
arthro-	jointed
aster-	star
audi-	hear, sound
auto-	self
bi-	two, twice
bio-	life, living
bronch-	windpipe (lungs)
card-	heart
carn-	meat
cell-	storeroom
cephalo-	head
chlor-	green
chrom-	color
chron-	time
coel-	hollow
com-/con-/co-	with, together
contra-	against
cran-	head
cyt-	cell
de-	from, away
deca-	ten
derm-	skin
den-	tooth
di-	two, double
dia-	through, across

PREFIX	MEANING
dis-/dif-	apart from, deprive
e-/ef-/ex-	out, out of, from
echin-	spiny
ect-	outside
en-	in
encephal-	brain
epi-	on, above
extra-	outside, beyond
gastro-	stomach
gene-	origin, birth
geo-	earth
glottis-	mouth of windpipe
gymno-	uncovered
hepato-	liver
hetero-	different
hiber-	winter
homo-	same, alike
hydro-	water
hyper-	over, above
hypo-	below, under, less
inter-	between
intra-	within, during, inside
ichty-	fish
immunis-	free
leuc-	white
lith-	stone
luna-	moon
macro-	large
meta-	change
micro-	small
mono-	single
multi-	many
morph-	form
neo-	new
non-	not
neur-	nerve
oculo-	eye
odont-	tooth

PREFIX	MEANING
olf-	smell
omni-	all
opthal-	eye
oss-/ost-	bone
phag-	eat
photo-	light
plasm-	form
pneumo-	lungs
pre-	before
prot-/proto-	first
pseudo-	fake, false
retro-	backward, back
rota-	turn, wheel
rupt-	break, burst
sub-	under, beneath
super-/sur-	above, upon
tele-	at a distance
therm-	temperature
trans-	across, beyond
tri-	three
trop-	turning
ventr-	belly
uni-	one
zo-	animal
SUFFIX	**MEANING**
-able/ -ible	able to, capable of
-algia	pain
-ectomy	cut out
-graph	instrument for making records
-ism	act of, condition
-itis	inflammation (swelling) or disease
-meter	measure
-ology/ -logy	study of, science of
-phyll	leaf
-pod/ -ped	foot, feet
-scope	look, observe
-sect	cut
-sperm	seed

Example of how to use this list

Word: TELESCOPE

Step 1. Look up the first part of the word under the PREFIX LIST
tele = at a distance

Step 2. Look for the rest of the word under the SUFFIX LIST
scope = look or observe

So, the whole word means “distance-look” or to look at something at a distance.

Note

1. The order of the words may not always seem right; don’t worry about that.
2. Sometimes you can only find one part of a word but that can be a good clue about the meaning
3. You may have extra letters like o or a or i between two parts of a word—they don’t mean anything
4. If you don’t see a word in the suffix list, check the prefix list. Sometimes, words can be both a prefix and a suffix.

Science Safety Rules

One of the first things a scientist learns is that working in the laboratory can be an exciting experience. But the laboratory can also be quite dangerous if proper safety rules are not followed at all times. To prepare yourself for a safe year in the laboratory, read over the following safety rules. Then read them a second time. Make sure you understand each rule. If you do not, ask your teacher to explain any rules you are unsure of.

Dress Code

1. Many materials in the laboratory can cause eye injury. To protect yourself from possible injury, wear safety goggles whenever you are working with chemicals, burners, or any substance that might get into your eyes. Never wear contact lenses in the laboratory.

2. Wear a laboratory apron or coat whenever you are working with chemicals or heated substances.

3. Tie back long hair to keep your hair away from any chemicals, burners and candles, or other laboratory equipment.

4. Remove or tie back any article of clothing or jewelry that can hang down and touch chemicals and flames. Do not wear sandals or open-toed shoes in the laboratory. Never walk around the laboratory barefoot or in stocking feet.

General Safety

5. Be serious and alert when working in the laboratory. Never “horse around” in the laboratory.

6. Be prepared to work when you arrive in the laboratory. Be sure that you understand the procedure to be employed in any laboratory investigation and the possible hazards associated with it.

7. Read all directions for an investigation several times. Follow the directions exactly as they are written. If you are in doubt about any part of the investigation, ask your teacher for assistance.

8. Never perform activities that are not authorized by your teacher. Obtain permission before “experimenting” on your own.

9. Never handle any equipment unless you have specific permission.

10. Take extreme care not to spill any material in the laboratory. If spills occur, ask your teacher immediately about the proper cleanup procedure. Never simply pour chemicals or other substances into the sink or trash container.

11. Never eat or taste anything or apply cosmetics in the laboratory unless directed to do so. This includes food, drinks, candy, and gum, as well as chemicals. Wash your hands before and after performing every investigation.

12. Know the location and proper use of safety equipment such as the fire extinguisher, fire blanket, first-aid kit, safety shower, and eyewash station.

13. Notify your teacher of any medical problems you may have, such as allergies or asthma.

14. Keep your laboratory area clean and free of unnecessary books, papers, and equipment.

First Aid

15. Report all accidents, no matter how minor, to your teacher immediately.

16. Learn what to do in case of specific accidents such as getting acid in your eyes or on your skin. (Rinse acids off your body with lots of water.)

17. Become aware of the location of the first aid kit. Your teacher should administer any required first aid due to injury. Or your teacher may send you to the school nurse or call a physician.

18. Know where and how to report an accident or fire. Find out the location of the fire extinguisher, phone, and fire alarm. Report any fires to your teacher at once.

Heating and Fire Safety

19. Never use a heat source such as a candle or burner without wearing safety goggles.

20. Never heat a chemical you are not instructed to heat. A chemical that is harmless when cool can be dangerous when heated.

21. Maintain a clean work area and keep all materials away from flames.

22. Never reach across a flame.

23. Make sure you know how to light a Bunsen burner. (Your teacher will demonstrate the proper procedure for lighting a burner.) If the flame leaps out of a burner toward you, turn the gas off immediately. Do not touch the burner. It may be hot. And never leave a lighted burner unattended.

24. Point a test tube or bottle that is being heated away from you and others. Chemicals can splash or boil out of a heated test tube.

25. Never heat a liquid in a closed container. The expanding gases produced may blow the container apart, injuring you or others.

26. Never pick up a container that has been heated without first holding the back of your hand near it. If you can feel the heat on the back of your hand, the container may be too hot to handle. Use a clamp, tongs, or heat-resistant gloves when handling hot containers.

Using Chemicals Safely

27. Never mix chemicals for the "fun of it." You might produce a dangerous, possibly explosive, substance.

28. Never touch, taste, or smell a chemical that you do not know for a fact is harmless. Many chemicals are poisonous. If you are instructed to note the fumes in an investigation, gently wave your hand over the opening of a container and direct the fumes toward your nose. Do not inhale the fumes directly from the container.

29. Use only those chemicals needed in the investigation. Keep all lids closed when a chemical is not being used. Notify your teacher whenever chemicals are spilled.

30. Dispose of all chemicals as instructed by your teacher. To avoid contamination, never return chemicals to their original containers.

31. Be extra careful when working with acids or bases. Pour such chemicals over the sink, not over your work bench.

32. When diluting an acid, pour the acid into water. Never pour water into the acid.

33. Rinse any acids off your skin or clothing with water. Immediately notify your teacher of any acid spill.

Using Glassware Safely

34. Never force glass tubing into a rubber stopper. A turning motion and lubricant will be helpful when inserting glass tubing into rubber stoppers or rubber tubing. Your teacher will demonstrate the proper way to insert glass tubing.

35. Never heat glassware that is not thoroughly dry. Use a wire screen to protect glassware from any flame.

36. Keep in mind that hot glassware will not appear hot. Never pick up glassware without first checking to see if it is hot.

37. If you are instructed to cut glass tubing, fire polish the ends immediately to remove sharp edges.

38. Never use broken or chipped glassware. If glassware breaks, notify your teacher and dispose of the glassware in the proper trash container.

39. Never eat or drink from laboratory glassware. Clean glassware thoroughly before putting it away.

Using Sharp Instruments

40. Handle scalpels or razor blades with extreme care. Never cut material toward you; cut away from you.

41. Be careful when handling sharp, pointed objects such as scissors, pins, and dissecting probes.

42. Notify your teacher immediately if you cut yourself or receive a cut.

Handling Living Organisms

43. No investigations that will cause pain, discomfort, or harm to mammals, birds, reptiles, fish, and amphibians should be done in the classroom or at home.

44. Treat all living things with care and respect. Do not touch any organism in the classroom or laboratory unless given permission to do so. Many plants are poisonous or have thorns, and even tame animals may bite or scratch if alarmed.

45. Animals should be handled only if necessary. If an animal is excited or frightened, pregnant, feeding, or with its young, special handling is required.

46. Your teacher will instruct you as to how to handle each species that may be brought into the classroom.

47. Treat all microorganisms as if they were harmful. Use antiseptic procedure, as directed by your teacher, when working with microbes. Dispose of microbes as your teacher directs.

48. Clean your hands thoroughly after handling animals or the cage containing animals.

49. Wear gloves when handling small mammals. Report animal bites or stings to your teacher at once.

End-of-Investigation Rules

50. When an investigation is completed, clean up your work area and return all equipment to its proper place.

51. Wash your hands after every investigation.

52. Turn off all burners before leaving the laboratory. Check that the gas line leading to the burner is off as well.

Safety Symbol Guide

All the investigations in this laboratory manual have been designed with safety in mind. If you follow the instructions, you should have a safe and interesting year in the laboratory.

The safety symbols appear first next to the Safety section of an investigation and then next to certain steps in an investigation where specific safety precautions are required. The symbols alert you to the need for special safety precautions. The description of each symbol indicates the precaution(s) you should take whenever you see the symbol in an investigation.

Safety Symbols

These symbols alert you to possible dangers.

Safety Goggles: Always wear safety goggles to protect your eyes in any activity involving chemicals, flames, or heating, or the possibility of broken glassware.

Laboratory Apron: Wear a laboratory Ill apron to protect your skin and clothing.

Breakage: You are working with breakable able materials, such as glassware. Handle breakable materials with care. Do not touch broken glassware.

Heat-resistant Gloves: Use hand protection when handling hot materials. Hot equipment or hot water can cause burns. Do not touch hot objects with your bare hands.

Plastic Gloves: Wear disposable plastic gloves to protect yourself from chemicals or organisms that could be harmful. Keep your hands away from your face. Dispose of the gloves according to your teacher's instructions at the end of the activity.

Heating: Use a clamp or tongs to pick up hot glassware. Do not touch hot objects with your bare hands.

Sharp Object: Pointed-tip scissors, scalpels, knives, needles, pins, or tacks can cut or puncture your skin. Always direct a sharp edge or point away from yourself and others. Use sharp instruments only as directed.

Electric Shock: Avoid the possibility of electric shock. Never use electrical equipment around water, or when equipment is wet or your hands are wet. Be sure cords are untangled and cannot trip anyone. Disconnect the equipment when it is not in use.

Corrosive Chemical: Avoid getting acids or other corrosive chemicals on your skin or clothing, or in your eyes. Do not inhale the vapors. Wash your hands when you are finished with the activity

Poison: Do not let any poisonous chemical come in contact with your skin, and do not inhale its vapors. Wash your hands when you are finished with the activity.

Physical Safety: When an experiment involves physical activity, take precautions to avoid injuring yourself or others. Follow instructions from your teacher. Alert your teacher if there is any reason you should not participate in the activity.

Animal Safety: Treat live animals with care to avoid harming the animals or yourself. Working with animal parts or preserved animals also may require caution. Wash your hands when you are finished.

Plant Safety: Handle plants only as directed by your teacher. If you are allergic to certain plants, tell your teacher before doing an activity in which plants are used. Avoid touching poisonous plants or plants with thorns. Wash your hands when you are finished with the activity.

Flames: You may be working with flames from a Bunsen burner, candle, or matches. Tie back loose hair and clothing. Follow instructions from your teacher about lighting and extinguishing flames.

No Flames: Flammable materials may be present. Make sure no flames, sparks, or exposed heat sources are present.

Fumes: When poisonous or unpleasant vapors may be involved, work in a ventilated area. Avoid inhaling vapors directly. Only test an odor when directed to do so by your teacher, and use a wafting motion to direct the vapor toward your nose.

Disposal: Chemicals and other used materials must be disposed of safely. Follow the instructions from your teacher.

Hand Washing: Wash your hands thoroughly. Use antibacterial soap and warm water. Lather both sides of your hands and between your fingers. Rinse well.

General Safety Awareness: You may see this symbol when none of the other symbols appears. In this case, follow the specific instructions provided. You may also see this symbol when you are asked to develop your own procedure. Have your teacher approve your plan before you go further.