Bellville High School
Summer Assignments for AP Environmental Science 2022-2023

Introduction: Welcome to AP Environmental Science, aka... "APES"! This course is designed to be equivalent to a one semester college course in environmental science. APES is about understanding the interrelationships of the natural world, the influence of human interactions, and discussing a broad range of environmental problems. While this is primarily a science course, it will touch on areas of economics, politics, government, ethics along with a variety of scientific domains, making it a very interdisciplinary course. The nine major units for the course include:

1. Ecosystems
2. Biodiversity
3. Populations
4. Earth Systems & Resources
5. Land & Water Use
6. Energy Resources and Consumption
7. Atmospheric Pollution
8. Aquatic and Terrestrial Pollution
9. Global Change

I am excited to teach this course for the 2022-2023 school year! There will be a significant amount of rigorous coursework throughout the year. Sometimes students get the idea that AP Environmental Science is "easy", but this is certainly incorrect. The class is not as calculation heavy as AP Physics or AP Chemistry, but it still involves a great deal of critical thinking, reading, writing, and design that makes it uniquely challenging. The course material is not difficult to understand because it relates to the world around you, BUT it is an AP course because of the volume of information that you are expected to master by the end of the course. This means that you will be doing independent reading and using supplied resources at home so class time can be reserved for keynote lectures, labs and activities.

Requirements:

Part 1. Cover Page & Join Google Classroom & Join Remind
Part 2. The Flinn Safety Contract
Part 3. A 3" 3 ring binder and 10 dividers
Part 4. World Geography - 3 World Maps
Part 5. Analysis/Review

The due date for all parts of the summer assignment is August 16th, 2022.

Students can pick-up paper copies of the Summer Assignment at the front office or by contacting Mrs. McEnerney via email at nmcenerney@bellvillebrahmas.org.

Part 1: Make a cover page for Binder: The cover page should have the following on it: APES, your first and last name, a Environmental Science joke/cartoon, and use at least four colors. The joke/cartoon may be one of your own design, or one you print from the internet. If you print one from the internet, be sure to add the URL or name of the source such as *"Far Side"* by Gary Larson.

Join Google Classroom: the class code is **nawguf3**
Join Remind: the class code is remind.com/join/cc966bc or **text @cc966bc to 81010**

Part 2: Flinn Contract: Have the attached contract signed and dated by both you and a parent/guardian. You can find a copy to print on the Google Classroom.

Part 3: Binder and tabs: The 3 in. binder should have the cover page in the front and 10 dividers we will label on the first day of class.

Part 4: World Geography for APES:

Supplies Needed: Pens with black, red, and blue ink; colored pencils; internet access, maps, textbooks.

A good working knowledge of basic world geography is important. This year in APES, we will talk about many different things that have happened around the world. You will learn the location of some of these events, as well as refreshing your knowledge of political and physical features of the globe. Follow the directions for labeling on each of the maps provided. Use the internet and any textbook resources you have to help you.

Map 1. Identify and Label on the World Political Map:

a. Equator color red & label, then Prime Meridian color dark blue & label
b. Seven Major Continents label with blue ink: N America, S America, Africa, Asia, Europe, Oceania, Antarctica.
c. Color all of the ocean light blue around the continents.
d. Label the following countries in black ink: US, Japan, Mexico, India, China, Costa Rica, Saudi Arabia, Australia, the State of Alaska, Greenland, Iceland, Indonesia, Borneo, New Zealand, Dem Rep Congo, Tasmania, The Philippines, Madagascar'
e. Label with red ink the following abbreviations for places of environmental significance

3MI - Three Mile Island, PA	MIN - Minamata, Japan	3GD - Three Gorges Dam, China	HUD - Hudson Bay
BHO - Bhopal, India	LAR - Larsen Ice Shelf	GPGP - Great Pacific Garbage Patch	MUM - Mumbai, India
CHY - Chernobyl, Ukraine	ARC - The Arctic	FCT - Fertile Crescent	GBR - Great Barrier Reef
ALB - Alberta, Canada	LON - London, England	QNL - Queensland, Australia	FUK - Fukushima, Japan
PWS - Prince William Sound	AMZ - Amazon Rainforest, Brazil	MED - Mediterranean Sea	DWH - Deep Water Horizon spill
BEJ - Beijing, China	YUC - Yucca Mountain, NV	RED - Red Sea	EVG - The Everglades
NO - New Orleans, LA	ANWR - Arctic Nat'l Wildlife Refuge	GRG - Gorongosa Nat'l park	

Map 2. Identify and Label on the World Physical Map:

a. **Label the Equator red and Prime Meridian dark blue.** Continents and oceans have been labeled for you, but still know them!
b. **RIVERS trace in BLUE and label:** Amazon, Nile, Yangtze, Ganges, Mississippi, Colorado, Columbia, Rio Grande
c. **LAKES & SEAS trace in BLUE and label:** Hudson Bay, Great Lakes, Chesapeake Bay, Bering Sea, Gulf of Mexico, Ogallala Aquifer (aka High Plains Aquifer), Persian Gulf, Aral Sea, Caspian Sea, Mediterranean Sea, Red Sea, Lake Victoria, Lake Baikal
d. **PARKS & MOUNTAINS trace in BROWN and label:** Appalachians, Rockies, Andes, Alps, Himalayas, Yucca Mountain (NV), Denali, San Andreas Fault, Grand Canyon, Yellowstone National Park, Yosemite National Park, Glacier National Park, the Mid-Atlantic Ridge, Gorongosa, Amazon Rainforest, ANWR, Everglades
e. **ISLANDS shade in PURPLE and label:** Madagascar, Haiti, Galapagos Islands, Hawaiian Islands, Borneo, Philippines, Japan, Midway Island, Great Barrier Reef

Map 3. Color Code the World Climate Map

These major biomes will likely be found in more than one country. **Use colored pencils to create a key and color the appropriate areas. Trace the boundaries and fill in the color.**

Be sure to include the following biomes: Tropical Rainforests, Tropical Savannas, Tropical Deserts, Temperate Deciduous Forests, Temperate Prairies, Chaparral, Temperate Deserts, Coniferous Forests, and Tundra.

Part 5: Analysis/ Review:

On notebook paper write your answer- no typed responses, by giving a brief description of the environmental significance of the following locales. Sometimes that might be hard to determine, so your goal will be to find the most important fact(s). Why did we choose this place? What happened, what is unique, endangered, exploited, dangerous? **You only need a couple of sentences, but be specific. Include your reference.** Use this example:

Example: What catastrophe devastated New Orleans and the Gulf Coast in 2005?

Hurricane Katrina was one of the deadliest hurricanes to hit the US, killing over 1800 people in August of 2005. It was a Category 4 hurricane, the sixth strongest recorded, and was nearly 75 miles wide. Katrina caused extensive flooding and threats to human health and sanitation. *www.livescience.com*

1. What happened....

a. At Three Mile Island?

b. In Bhopal India?

c. In Chernobyl, Ukraine?

d. In Fukushima, Japan?

e. In Minamata, Japan?

f. In Prince William Sound, Alaska?

g. At the Deep Water Horizon oil rig in the Gulf of Mexico?

2. Why do we study...

a. Antarctica?

b. The Arctic?

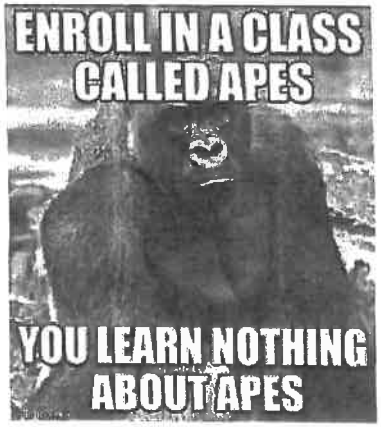
c. The Amazon Rainforest?

d. The Arctic National Wildlife Refuge (ANWR)?

e. Gorongosa National Park?

f. The Everglades in Florida?

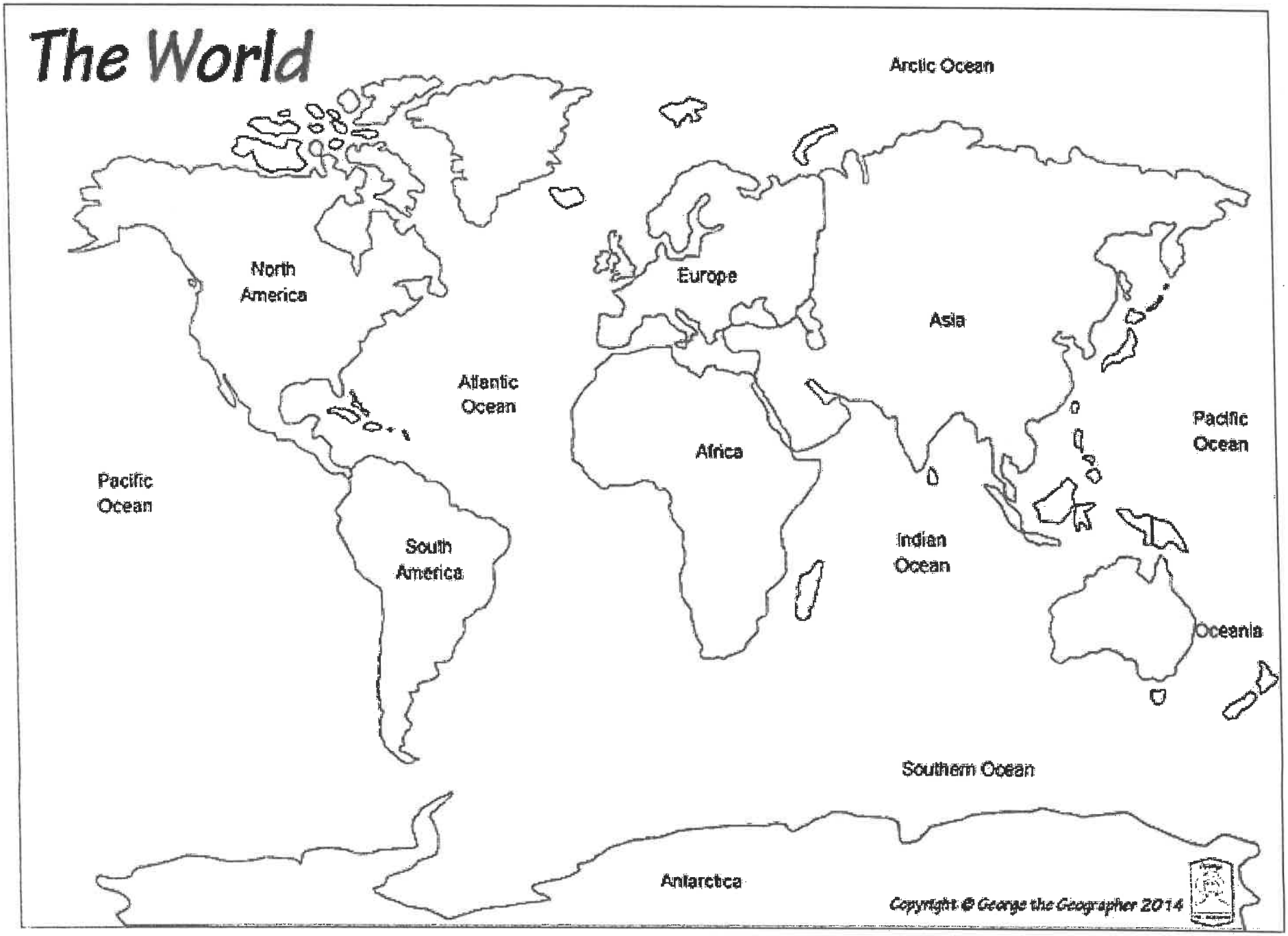
g. The Great Pacific Garbage Patch?



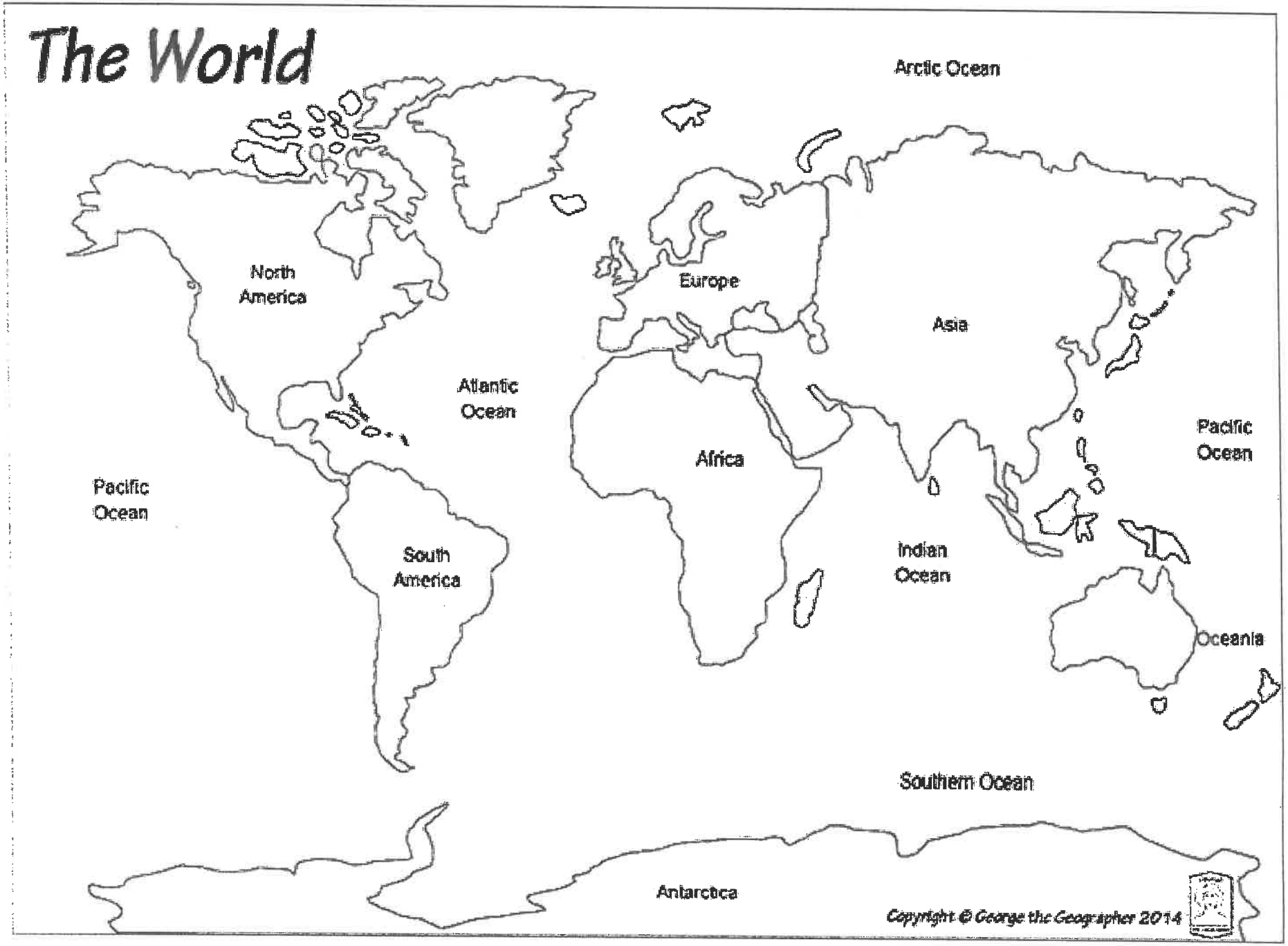
https://teachingapscience.com/review-for-the-ap-exam/ape-pic/

Map 1 - World Political Map

Map 2 - World Physical Map



Map 3 - World Climate Map



FLINN SCIENTIFIC

Student Safety Contract

School Name _____ **Teacher** _____

PURPOSE

Science is a hands-on laboratory class. You will be doing many laboratory activities which require the use of hazardous chemicals. Safety in the science classroom is the #1 priority for students, teachers, and parents. To ensure a safe science classroom, a list of rules has been developed and provided to you in this student safety contract. These rules must be followed at all times. Two copies of the contract are provided. One copy must be signed by both you and a parent or guardian before you can participate in the laboratory. The second copy is to be kept in your science notebook as a constant reminder of the safety rules.

GENERAL RULES

1. Conduct yourself in a responsible manner at all times in the laboratory.
2. Follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, ask the instructor before proceeding.
3. Never work alone. No student may work in the laboratory without an instructor present.
4. When first entering a science room, do not touch any equipment, chemicals, or other materials in the laboratory area until you are instructed to do so.
5. Do not eat food, drink beverages, or chew gum in the laboratory. Do not use laboratory glassware as containers for food or beverages.
6. Perform only those experiments authorized by the instructor. Never do anything in the laboratory that is not called for in the laboratory procedures or by your instructor. Carefully follow all instructions, both written and oral. Unauthorized experiments are prohibited.
7. Be prepared for your work in the laboratory. Read all procedures thoroughly before entering the laboratory.
8. Never fool around in the laboratory. Horseplay, practical jokes, and pranks are dangerous and prohibited.
9. Observe good housekeeping practices. Work areas should be kept clean and tidy at all times. Bring only your laboratory instructions, worksheets, and/or reports to the work area. Other materials (books, purses, backpacks, etc.) should be stored in the classroom area.
10. Keep aisles clear. Push your chair under the desk when not in use.
11. Know the locations and operating procedures, where appropriate, for all safety equipment including first aid kit, eyewash station, safety shower, fire extinguisher, and fire blanket. Know where the fire alarm and exits are located.
12. Always work in a well-ventilated area. Use the fume hood when working with volatile substances or poisonous vapors. Never place your head into the fume hood.
13. Be alert and proceed with caution at all times in the laboratory. Notify the instructor immediately of any unsafe conditions you observe.
14. Dispose of all chemical waste properly. Never mix chemicals in sink drains. Sinks are to be used only for water and those solutions designated by the instructor. Solid chemicals, metals, matches, filter paper, and all other insoluble materials are to be disposed of in the proper waste containers, not in the sink. Check the label of all waste containers twice before adding your chemical waste to the container.
15. Labels and equipment instructions must be read carefully before use. Set up and use the prescribed apparatus as directed in the laboratory instructions or by your instructor.
16. Keep hands away from face, eyes, mouth and body while using chemicals or preserved specimens. Wash your hands with soap and water after performing all experiments. Clean all work surfaces and apparatus at the end of the experiment. Return all equipment clean and in working order to the proper storage area.
17. Experiments must be personally monitored at all times. You will be assigned a laboratory station at which to work. Do not wander around the room, distract other students, or interfere with the laboratory experiments of others.
18. Students are never permitted in the science storage rooms or preparation areas unless given specific permission by their instructor.
19. Know what to do if there is a fire drill during a laboratory period; containers must be closed, gas valves turned off, fume hoods turned off, and any electrical equipment turned off.
20. Handle all living organisms used in a laboratory activity in a humane manner. Preserved biological materials are to be treated with respect and disposed of properly.
21. When using knives and other sharp instruments, always carry with tips and points pointing down and away. Always cut away from your body. Never try to catch falling sharp instruments. Grasp sharp instruments only by the handles.
22. If you have a medical condition (e.g., allergies, pregnancy, etc.), check with your physician prior to working in lab.

CLOTHING

23. Any time chemicals, heat, or glassware are used, students will wear laboratory goggles. There will be no exceptions to this rule!
24. Contact lenses may be worn provided adequate face and eye protection is provided by specially marked, non-vented safety goggles. The instructor should know which students are wearing contact lenses in the event of eye exposure to hazardous chemicals.
25. Dress properly for lab activities. Long hair, dangling jewelry, and loose or baggy clothing are hazardous. Long hair must be tied back and dangling jewelry and loose or baggy clothing must be secured. Shoes must completely cover the foot. No sandals allowed.
26. Lab aprons have been provided for your use and should be worn during laboratory activities.

ACCIDENTS AND INJURIES

27. Report any accident (spill, breakage, etc.) or injury (cut, burn, etc.) to the instructor immediately, no matter how trivial it may appear.
28. If you or your lab partner are hurt, immediately yell out "Code one, Code one" to get the instructor's attention.
29. If a chemical splashes in your eye(s) or on your skin, immediately flush with running water from the eyewash station or safety shower for at least 20 minutes. Notify the instructor immediately.
30. When mercury thermometers are broken, mercury must not be touched. Notify the instructor immediately.

HANDLING CHEMICALS

31. All chemicals in the laboratory are to be considered dangerous. Do not touch, taste, or smell any chemicals unless specifically instructed to do so. The proper technique for wafting chemical vapors will be demonstrated to you.
32. Check the label on chemical bottles twice before removing any of the contents. Take only as much chemical as you need.

IN10494

FLINN SCIENTIFIC

Student Safety Contract
Continued

33. Never return unused chemicals to their original containers.
34. Never use mouth suction to fill a pipet. Use a rubber bulb or pipet pump.
35. When transferring reagents from one container to another, hold the containers away from your body.
36. Acids must be handled with extreme care. You will be shown the proper method for diluting strong acids. Always add acid to water, swirl or stir the solution and be careful of the heat produced, particularly with sulfuric acid.
37. Handle flammable hazardous liquids over a pan to contain spills. Never dispense flammable liquids anywhere near an open flame or source of heat.
38. Never remove chemicals or other materials from the laboratory area.
39. Take great care when transporting acids and other chemicals from one part of the laboratory to another. Hold them securely and walk carefully.

HANDLING GLASSWARE AND EQUIPMENT

40. Carry glass tubing, especially long pieces, in a vertical position to minimize the likelihood of breakage and injury.
41. Never handle broken glass with your bare hands. Use a brush and dustpan to clean up broken glass. Place broken or waste glassware in the designated glass disposal container.
42. Inserting and removing glass tubing from rubber stoppers can be dangerous. Always lubricate glassware (tubing, thistle tubes, thermometers, etc.) before attempting to insert it in a stopper. Always protect your hands with towels or cotton gloves when inserting glass tubing into, or removing it from, a rubber stopper. If a piece of glassware becomes "frozen" in a stopper, take it to your instructor for removal.
43. Fill wash bottles only with distilled water and use only as intended, e.g., rinsing glassware and equipment, or adding water to a container.
44. When removing an electrical plug from its socket, grasp the plug, not the electrical cord. Hands must be completely dry before touching an electrical switch, plug, or outlet.
45. Examine glassware before each use. Never use chipped or cracked glassware. Never use dirty glassware.
46. Report damaged electrical equipment immediately. Look for things such as frayed cords, exposed wires, and loose connections. Do not use damaged electrical equipment.
47. If you do not understand how to use a piece of equipment, ask the instructor for help.
48. Do not immerse hot glassware in cold water; it may shatter.

HEATING SUBSTANCES

49. Exercise extreme caution when using a gas burner. Take care that hair, clothing and hands are a safe distance from the flame at all times. Do not put any substance into the flame unless specifically instructed to do so. Never reach over an exposed flame. Light gas (or alcohol) burners only as instructed by the teacher.
50. Never leave a lit burner unattended. Never leave anything that is being heated or is visibly reacting unattended. Always turn the burner or hot plate off when not in use.
51. You will be instructed in the proper method of heating and boiling liquids in test tubes. Do not point the open end of a test tube being heated at yourself or anyone else.
52. Heated metals and glass remain very hot for a long time. They should be set aside to cool and picked up with caution. Use tongs or heat-protective gloves if necessary.
53. Never look into a container that is being heated.
54. Do not place hot apparatus directly on the laboratory desk. Always use an insulating pad. Allow plenty of time for hot apparatus to cool before touching it.
55. When bending glass, allow time for the glass to cool before further handling. Hot and cold glass have the same visual appearance. Determine if an object is hot by bringing the back of your hand close to it prior to grasping it.

QUESTIONS

56. Do you wear contact lenses?
☐ YES ☐ NO
57. Are you color blind?
☐ YES ☐ NO
58. Do you have allergies?
☐ YES ☐ NO

If so, list specific allergies _____

_____

AGREEMENT

I, _____
_____(student'sname)have read and agree to follow all of the safety rules set forth in this contract. I realize that I must obey these rules to ensure my own safety, and that of my fellow students and instructors. I will cooperate to the fullest extent with my instructor and fellow students to maintain a safe lab environment. I will also closely follow the oral and written instructions provided by the instructor. I am aware that any violation of this safety contract that results in unsafe conduct in the laboratory or misbehavior on my part, may result in being removed from the laboratory, detention, receiving a failing grade, and/or dismissal from the course.

_____
Student Signature

_____
Date

Dear Parent or Guardian:

We feel that you should be informed regarding the school's effort to create and maintain a safe science classroom/laboratory environment.

With the cooperation of the instructors, parents, and students, a safety instruction program can eliminate, prevent, and correct possible hazards.

You should be aware of the safety instructions your son/daughter will receive before engaging in any laboratory work. Please read the list of safety rules above. No student will be permitted to perform laboratory activities unless this contract is signed by both the student and parent/guardian and is on file with the teacher.

Your signature on this contract indicates that you have read this Student Safety Contract, are aware of the measures taken to ensure the safety of your son/daughter in the science laboratory, and will instruct your son/daughter to uphold his/her agreement to follow these rules and procedures in the laboratory.

_____
Parent/Guardian Signature

_____
Date