



Exercise 1 - Home Laboratory Review

Q24 Data Table 1: Lab Safety Equipment Alternatives

(SAMPLE ANSWER BELOW)

Item	Function	Substitution
Fire extinguisher	Device used to control small fires in an emergency situation	No Substitute
Spill containment kit	Consists of absorbent material that can be ringed around a chemical spill until the spill can be neutralized	Paper towels, kitty litter or sand
Eyewash station	Sink with two faucets directed at eyes	Shower or sink
Safety goggles	Eye protection	No Substitute
Laboratory shower	Shower head in the lab	Shower or sink
Fume hood	Area containing an exhaust fan to expel noxious fumes from a laboratory	Open doors or windows, microwave or exhaust hood that vents outside
First aid kit	Kit containing bandages and other supplies	No Substitute

Q25 Exercise Question 1

Which safety items are you currently lacking in your planned work area? What is your plan for acquiring these items before using your kit?

(SAMPLE ANSWER BELOW)

Students answers will vary but should include safety items from the data table that students need acquires and how they plan to acquire them.

Q26 Exercise Question 2

What location have you selected for conducting science experiments in your home?
What, if any changes do you plan to make to the location before using your kit?

(SAMPLE ANSWER BELOW)

Student answers will vary based on their working environment. Answers should include a working environment choice and any changes they need to make for safety purposes.

Exercise 2 – Safety Hazards

Q28 Data Table 2: Lab Safety Interactive

(SAMPLE ANSWER BELOW)

#	Safety Hazard	Correct Lab Safety Procedure
1	There is a bag on the floor of the lab causing a tripping hazard.	All walkways and floor space in the lab area should be clear.
2	The scientist in this picture does not have their long hair and beard tied up.	All loose and long hair should be tied up to avoid flames, chemicals and microorganisms used in experiments.
3	A chemical has been spilled and left unattended on the lab floor.	All chemical spills should be cleaned up immediately using proper neutralizing and disposal techniques.
4	Papers have been left under an open flame.	When an open flame is being used the workspace should be cleared of flammable materials.
5	A drink is sitting on the lab bench next to a computer.	There should not be any food or drink in the lab.
6	A container of flammable liquid has spilled and been left on the lab bench next to open flames.	When open flames are in use all flammable chemicals should be removed from the lab space to a safe area.
7	A broken test tube has been left unattended on the lab bench.	All broken glass should be swept up and disposed of in a place/container that is safe and will

#	Safety Hazard	Correct Lab Safety Procedure
		prevent others from accidentally harming themselves.
8	A scientist is eating a sandwich over their experiment in the lab.	Food and drinks should not be brought into the lab space.
9	An open flame has been left unattended.	Experiments and open flames should never be left unattended.
10	A scientist is holding a cat in the lab space.	All experiments should be performed in a space away from pets and children.
11	A scientist is directly smelling a chemical from an Erlenmeyer flask.	Proper wafting technique should be used at all times when determining odor of a chemical or solution.
12	A scientist is performing an experiment without proper eye protection.	PPE should be worn in the lab while performing experiments.

Q29 Exercise Question 1

Identify three potential hazards in your planned work area for performing Science Interactive experiments and describe the safe practices associated with each potential hazard.

(SAMPLE ANSWER BELOW)

Student answers may vary based on their work space. Answers should include potential hazards in their workspace and how they might fix those hazards.

Q30 Exercise Question 2

Describe how you plan to secure your work area and lab kit from children and pets.

(SAMPLE ANSWER BELOW)

Student answers will vary based on their working environment. Answers should include a working environment choice and any changes they need to make for safety purposes.

Exercise 3 – Safety Data Sheets

Q32 Data Table 3: Sodium Hydroxide SDS Information

(SAMPLE ANSWER BELOW)

Items	SDS Information
Physical State	Odorless liquid
Route of Exposure & Symptoms	Inhalation, eye contact, skin contact, ingestion: may cause eye redness, tearing, and burns, skin redness and burns, coughing, and burns to the GI and respiratory tracts, nausea, vomiting, and diarrhea
Protective Equipment	Safety goggles or face shield, rubber or neoprene gloves, long-sleeved shirt, and if respiratory irritation occurs then respirator should be worn.
First Aid Procedures	Call poison control center immediately for treatment advice. Eye Contact - Hold eye open and rinse slowly and gently with water for 15-20 minutes, remove contact lenses after the first 5 minutes and continue rinsing. Skin Contact - Take off contaminated clothing and rinse skin with water for 15-20 minutes. Inhalation - Move to fresh air and call doctor if breathing is affected. Ingestion - sip a glassful of water if able to swallow. Do not induce vomiting unless told to do so by poison control center.
Fire-fighting Measures	Use extinguishing methods appropriate to local circumstances and surrounding environment. Do not use water spray to fight fire.
Chemical Reactivity	Reactive with other household chemicals including toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and chlorinated compounds.

Safe Storage	Store away from children and pets, reclose cap tightly, store in upright, cool, dry area away from direct sunlight.
Safe Disposal	Dispose in accordance with federal, state, and local regulations. Do not contaminate food or feed by disposal of this product.
Environmental/Ecotoxicity	Very toxic to aquatic life with long lasting effects. Do not allow product to enter groundwater, storm drains, lakes, or streams.
Spill Cleanup Procedures	Absorb and containerize. Wash residual down to sanitary sewer after contacting sanitary treatment facility to determine ability to process washed-down material.

Q33 Exercise Question 1

Describe three sources for SDS related to chemicals provided in Science Interactive lab kits.

(SAMPLE ANSWER BELOW)

- *Finding the SDS on the science interactive website.*
- *Searching "Safety Data Sheet" and the name of the chemical on the Internet.*
- *Requesting more information from your instructor.*

Q34 Exercise Question 2

How can you determine the proper disposal protocols for remaining chemicals in your kit?

(SAMPLE ANSWER BELOW)

Student can check the SDS. As well, students should dispose of chemicals in compliance with applicable laws, including state and local rules, regulations and/or ordinances.

Exercise 4 – Safety Agreement Contract

Q36 Data Table 4: Part 1 and Part 2 of the Safety Contract

(SAMPLE ANSWER BELOW)

Part	Agreement
Part 1: It is impossible to control students' use of Science Interactive products, related kits, and students' work environments. The author(s) of Science Interactive digital content, the instructors and institutions that adopt it, and Science Interactive, Inc. - the publisher and producer of Science Interactive- authorize the use of these educational products only on the express condition that the purchasers and users accept full and complete responsibility for all and any liability related to their use of same. Please review this document several times until you are certain you understand and will fully abide by its terms.	I agree: Student Initials
Part 2: I am a responsible adult who has read, understands, and agrees to fully abide by all safety precautions prescribed in Science Interactive labs for laboratory work and for the use of Science Interactive kits. Accordingly, I recognize the inherent hazards associated with science experimentation; I will always experiment in a safe and prudent manner; and I unconditionally accept full and complete responsibility for any and all liability related to my purchase and/or use of a science Science Interactive kit or any other science products or materials provided by Science Interactive, INC.	I agree: Student Initials