
NTI Day 1 Assignment**Lesson 1 Review****Content Standard A: Scientific Inquiry and Lab Safety and Tools****Class: Chemistry****Teacher: K. Kelly**

1. Beatrice is trying to come up with her own recipe for brownies. She is encountering several problems. Which of the following of Beatrice's problems could be solved through a scientific investigation?

- A. How much baking soda is needed to make the brownies rise to double their original volume?
 - B. Should Beatrice make her brownies fudge-like or cake-like?
 - C. Would the brownies taste better if 10 oz. or 12 oz. of chocolate was added to the mix?
 - D. Should Beatrice mix the brownie batter by hand or with an electric mixer?
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2. Johnny was given an assignment at school to find information about the following scientific question:

Do plant cells experience random mutations during germination?

He found the following table at a university's website:

Plant Reproduction Timetable

species	germination period (days)
arbutus	30
asimina	30-90
carica (papaya)	14-30
castenea (pumila)	28
gaultheria	30
hibiscus	14-21
litchi (chinensis)	16-30
theobroma (cacao)	7-14

Is this information that Johnny found relevant to the question he is trying to answer?

- A. Yes; the length of germination will indicate whether mutations occur.
- B. Yes; the word "germination" is in both the question and the table.
- C. No; the length of germination will not tell whether mutations occur.

D. No; germination has nothing to do with the question.

3. Which of the following describes a way in which mathematics can be used in a scientific investigation?

- A.** Sarah determines the correct number of significant figures to report the mass of her sample.
 - B.** Kayla calculates the molarity of the substance that she is using in her experiment.
 - C.** Jake graphs the results of his science experiment and determines the slope of the trend line.
 - D.** all of these
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4. The results of historical and current scientific research significantly influence which of the following?

- I. the results of new scientific research
- II. the design of new scientific investigations
- III. the evaluation of new scientific theories
- IV. the precision of new scientific data

- A.** I only
 - B.** I, II, and IV only
 - C.** I, II, III, and IV
 - D.** II and III only
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5. Jenny was worried about how some pollutants in a lake near her home were affecting the levels of dissolved oxygen in the water, so she designed the following experiment.

First, she collected five 10-gallon aquariums and filled each with water from her tap. Then, she tested the initial oxygen level of the tap water.

Next, she put a tablespoon of different pollutants, including gasoline, cooking oil, paint, and lawn fertilizer, in each of four of the tanks. She stirred those four tanks for 1 minute each to help the pollutant dissolve or spread out in the tank.

Finally, she tested the oxygen level in each tank once every hour and recorded her results in the table below.

Tank	Pollutant in water	Initial O₂ level (without pollutants)	O₂ level after 1 hour	O₂ level after 2 hours	...
1	none				
2	gasoline				
3	cooking oil				

4	paint				
5	lawn fertilizer				

What is the dependent variable in Jenny's experiment?

- A. pollutant in each tank
 - B. levels of O₂ in each tank
 - C. initial oxygen level in tank without pollutant
 - D. amount of pollutant put in each tank
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6. Nancy is moving into a new apartment. The apartment is on the second floor. Nancy has a piano that she would like to move into the apartment, but the piano won't fit through the door. Nancy will have to bring the piano in through the apartment's balcony, but she is not sure how to do this.

Which of the following is a testable hypothesis that Nancy could make in order to conduct an experiment concerning her problem?

- A. Nancy should hire professional movers to get her piano into her apartment.
 - B. It will take 45 N of upward force in order to lift the piano to the second floor balcony.
 - C. Can a pulley system be used to safely lift the piano to the second floor balcony?
 - D. How can Nancy get the piano up to the second floor balcony?
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7. Cindy hypothesizes that if she adds salt to a weak acid, then its pH will be lowered. She develops the following experiment to test her hypothesis. Which of the following steps could compromise the validity of her experiment?

1. Fill two beakers with 50 mL of the same weak acid.
2. Add salt to the first beaker.
3. Add water to the second beaker.
4. Measure the pH of the solution in each beaker.

- A. step 2
 - B. step 4
 - C. step 1
 - D. step 3
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8. Which of the following is true about scientific inquiries?

- A. Scientific inquiries never require any mathematical knowledge or the application of mathematics.
- B. Scientific inquiries are never based on previous scientific research and data.

- C. Scientific inquiries are usually guided by previous scientific principles and knowledge.
- D. Scientific inquiries usually do not require accuracy or precision when gathering data.
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9. Idriss would like to perform an experiment in which he records how a solution's temperature changes every minute over the course of 5 minutes. Which of the following tables would best help Idriss organize the data he collects?

Time (m)	Temperature
0	
5	
10	
15	
20	
25	

W.

Time (m)	Temperature
0:00	
0:10	
0:20	
0:30	
0:40	
0:50	

X.

Temperature	Time (m)
0	
5	
10	
15	
20	
25	

Y.

Time (m)	Temperature
0	
1	
2	
3	
4	
5	

Z.

- A. Z
- B. X
- C. Y
- D. W
-

10. Dr. Grey discovers a new drug that she hypothesizes will increase fat storage in rabbits. She designs an experiment to test her hypothesis.

Dr. Grey separates twelve rabbits into two equal groups and measures their body fat individually. She gives one group of rabbits the drug but does not give the drug to the other group. She keeps everything else about the rabbits' living environment the same, including the amount of water and food provided. After a month, she measures the body fat of the rabbits in both groups.

What is the control in Dr. Grey's experiment?

- A. the group of rabbits that are given the drug
- B. the body fat of the rabbits
- C. the group of rabbits that are not given the drug
- D. the quantity of experimental drug used

11. Raul skipped lunch before lab. He has a bag of chips from the snack machine he would like to eat. What is the safest way for him to eat his chips?

- A.** eat his chips on an empty lab bench
 - B.** eat his chips in the lab standing away from the lab benches
 - C.** eat his chips outside the lab after his hands are washed
 - D.** eat his chips at his lab bench after cleaning it thoroughly
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12. The teacher assigns you to light a Bunsen burner using the safest technique. What sequence of events do you follow to complete the assignment?

- A.** Turn on the gas for one minute, check the valve, and light the match.
 - B.** Check that the valve is half open, light the match, and turn on the gas to the appropriate level.
 - C.** Turn on the gas, sniff the burner to ensure the presence of gas, light the match, and adjust the valve.
 - D.** Fully open the valve on the burner, turn on the gas, and light the match.
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13.



A chemical is labeled with the warning sign above. The chemical should be kept away from

- A.** acids and bases.
 - B.** living things.
 - C.** water.
 - D.** open flames.
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14. Gwen would like to find out the volume of a metal screw. What tool could Gwen use in order to measure the screw's volume?

- A. eyedropper
 - B. spring scale
 - C. graduated cylinder
 - D. balance
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15. Prior to using a triple beam balance, it is necessary to

- A. make sure that the riders are all set to zero.
 - B. make sure that the balance is calibrated to zero.
 - C. make sure that the pan is clean and dry.
 - D. all of these
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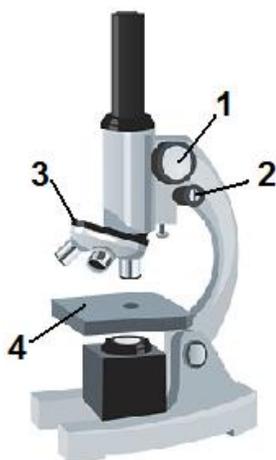
16. Which of these best describes when splash goggles should be worn?

- A. when mixing highly reactive liquids
 - B. when mixing any two liquids
 - C. when mixing toxic liquids
 - D. when mixing acids with bases
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17. Doug wants to find out how increasing a gas's pressure can affect the gas's temperature. What tool will Doug need in order to conduct his experiment?

- A. treadmill
 - B. light microscope
 - C. spring scale
 - D. thermometer
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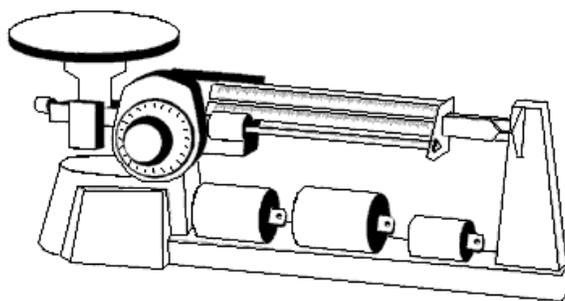
18. Examine the picture below.



What is the purpose of the part labeled with the number 3?

- A. site where slides or specimens are placed
 - B. makes large adjustments when focusing specimens
 - C. changes the magnification of the specimens
 - D. makes minor adjustments when focusing specimens
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19. Examine the picture of the laboratory tool below.



For what can this tool be best used?

- A. for measuring liquid volume
 - B. for distributing precise, small amounts of liquid
 - C. for measuring mass
 - D. for measuring ambient temperatures
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20. From which of the following lab events will the goggles protect your eyes?

- A. A hot beaker is removed from the Bunsen burner setup and placed on the counter.

- B.** A piece of loose sleeve is dipped into chemicals from an experiment.
- C.** A chemical splashes while being poured into a beaker.
- D.** A scalpel slips and heads downward during a dissection.