

Mr. Tyler's Physical Science A Course Pre-Test

Directions: The following questions are meant to assess your current knowledge level. Remember this is a Pre-Test. That means you are graded on effort, not score. You are more than likely absolutely brand new to science. You may not know much yet. That is ok! That is what this course is for. I just want to see what the group's current knowledge level is so I can better lesson plan for us. Please try your hardest.

1.

Which of the following presents a safety hazard while working in the science laboratory?

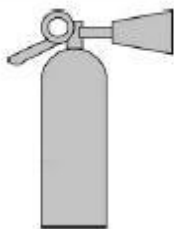
- A knowing how to use equipment
- B wearing safety goggles
- C following directions
- D working alone

2.

What is the proper safety response to a trash-can fire in a lab?

- A throw chemicals on the fire
- B leave the room to seek help
- C watch the fire to see if it spreads
- D use the appropriate fire extinguisher

3.



The safety equipment shown above is used in situations involving

- A chemical spills.
- B fire.
- C broken glass.
- D physical injuries.

Content Objective 1.1

4.

Shannon wanted to see if a solid substance is an acid or a base. In what order should she do the following steps?

- A. Test with blue litmus paper.
- B. Dissolve the substance in water.
- C. Look at any changes in the color of the litmus paper.
- D. Grind some of the substance to make a powder.

- A A D B C
- B B A C D
- C C B A D
- D D B A C

Content Objective 1.2

5.

Two substances are mixed in four beakers, and a thermometer is placed in each beaker. The thermometers are checked every minute for five minutes, and the temperature is recorded in the table.

Temperature in Beakers Over Time

Time (minutes)	Beaker A (°C)	Beaker B (°C)	Beaker C (°C)	Beaker D (°C)
0	20	20	20	20
1	21	19	21	20
2	22	18	22	20
3	20	18	23	20
4	20	17	24	20
5	20	16	25	20

Which beaker shows the greatest temperature change over five minutes?

- A Beaker A
- B Beaker B
- C Beaker C
- D Beaker D

6.

A very large redwood tree is measured to be about 100 units tall. Which unit is the most appropriate to use?

- A millimeters
- B centimeters
- C meters
- D kilometers

7.

The fine lead used in mechanical pencils has a diameter of about

- A 0.5 centimeters
- B 5.0 centimeters
- C 0.5 millimeters
- D 5.0 millimeters

8.

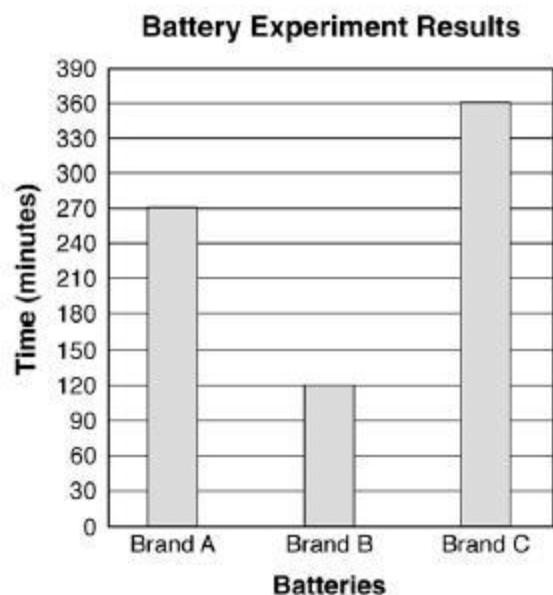


The most appropriate scientific units for measuring the volume of the liquid in the petri dish would be

- A milliseconds.
- B milliliters.
- C millimeters.
- D milligrams.

9.

Alex tested three brands of batteries to learn which would last the longest in a flashlight. He placed two brand “A” batteries in a flashlight, turned the flashlight on, and measured the time that the light shined. He repeated the experiment with battery brands “B” and “C” using the same flashlight. He recorded the data on the bar graph below.



Which of these is an accurate conclusion that Alex can make about the batteries he tested?

- A Brand “C” batteries lasted twice as long as brand “A” batteries.
- B Brand “C” batteries lasted three times longer than brand “B” batteries.
- C The light was twice as bright with brand “A” batteries than with brand “B” batteries.
- D The light shined three times farther with brand “C” batteries than with brand “B” batteries.

10.

Characteristics of Several Objects

Object	Mass (g)	Volume (cm ³)	Sink or Float
red ball	30.0	40.0	float
bottle	4.0	9.0	float
paper clip	1.0	0.4	sink
wooden block	12.8	16.0	float
magnet	2.2	0.2	sink
gold earring	1.5	1.7	float
ruler	14.0	12.0	sink
pink eraser	6.0	4.5	sink

Water mass = 20 g
Water volume = 20 cm³

Which conclusion is best supported by the data in the table?

- A Metal objects are more likely to float in water.
- B The color of an object determines if it will sink or float in water.
- C The shape of an object determines if it will sink or float in water.
- D An object floats in water if its mass is less than its volume.

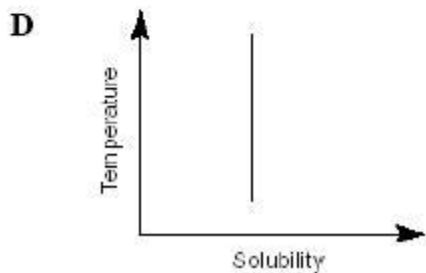
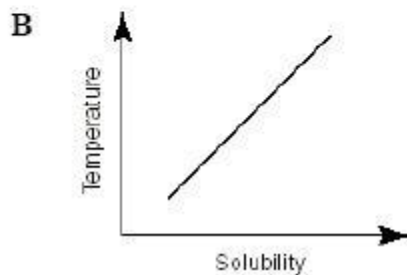
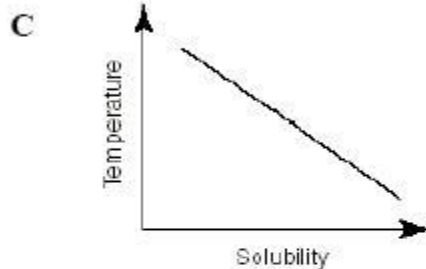
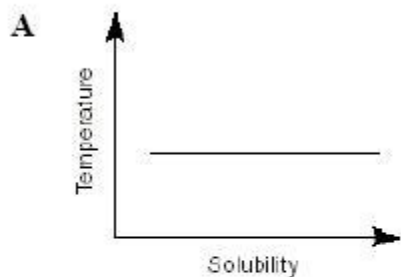
11.

Taylor stirs 2 grams of salt into a cup of water. He then tries to get the salt back by evaporating the water. In this experiment, the mass of salt recovered would be the same as the initial mass because

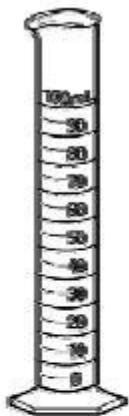
- A some of the salt evaporates with the water
- B salt does not evaporate with water
- C a chemical change occurred
- D salt does not dissolve in water

12.

Soft drinks go “flat” as they warm. Which graph best illustrates the relationship between temperature and the solubility of gases in a soft drink?



13.



This tool is used to measure

- A time.
- B temperature.
- C volume.
- D mass.

14.

Use the following information to calculate the volume of an irregularly shaped rock specimen:

- I. Place 250 mL of water in a graduated cylinder.
- II. Place the rock specimen in the graduated cylinder.
- III. The water level in the graduated cylinder then rises to a level of 318 mL.

The volume of the rock specimen is

- A 68 mL.
- B 250 mL.
- C 318 mL.
- D 568 mL.

15.

Sandy heated 20 grams of liquid hydrogen peroxide until it was completely broken down into liquid water and oxygen gas. Which of these best describes the total mass of water and oxygen that was produced?

- A more than 20 grams since heat was added
- B 20 grams since no matter was added or removed
- C less than 20 grams since oxygen gas is very light
- D more than 20 grams since there are two new substances

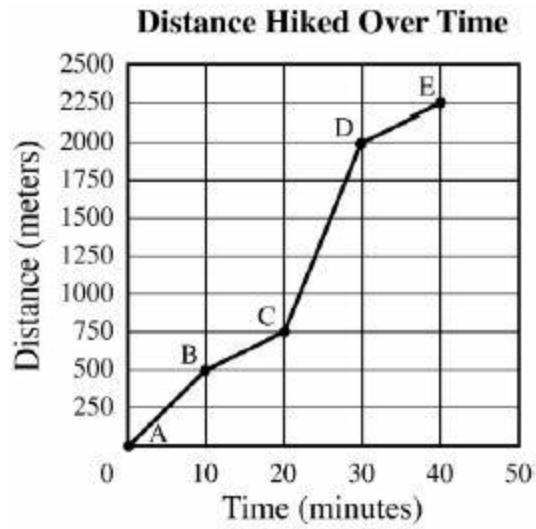
16.

An experiment was performed to test the effects of different types of fertilizers on the number of tomatoes produced by one type of tomato plant. What is the experimental (independent) variable in this investigation?

- A color of plant
- B type of fertilizer
- C number of tomatoes
- D type of plant

Content Objective 2.1

17.

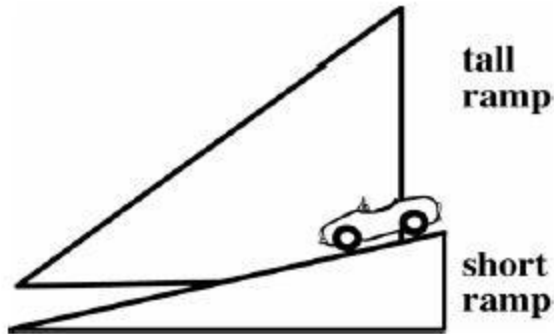


What is the speed of the person from point C to point D?

- A $25 \frac{\text{m}}{\text{min}}$
- B $125 \frac{\text{m}}{\text{min}}$
- C $200 \frac{\text{m}}{10 \text{ min}}$
- D $500 \frac{\text{m}}{10 \text{ min}}$

18.

The picture below shows the equipment used in an experiment to determine the effect of ramp height on the total distance a toy car travels.



The students performed four steps in their experiment:

1. Put the car at the top of the shorter ramp.
2. Let the car go until it stops.
3. Measure the distance the car traveled.
4. Record the distance in a chart.

Which step should be completed next?

- A Decide which ramp will make the car go farther.
- B Place the car at the top of the taller ramp.
- C Put a new surface on the ramp.
- D Change the wheels on the car.

Content Objective 3.1

19.



Botanists identify violets by their flowers and leaves.
A common blue violet is shown above.

Which plant shown below is another type of violet?

A



C



B



D



20.

Identification Key

Step	Horse Characteristics	Identification
1a	wild horse	go to 2
1b	domestic horse	go to 3
2a	found in North America	Mustang
2b	found in France	Camargue
3a	height greater than 150 centimeters	go to 4
3b	height less than 150 centimeters	go to 5
4a	spotted skin	Appaloosa
4b	skin not spotted	Tennessee walking horse
5a	very small nostrils	Shetland Pony
5b	flaring nostrils	Pony of the Americas

Which of these are all characteristics of the Shetland Pony?

- A domestic, height greater than 150 centimeters, very small nostrils
- B domestic, height less than 150 centimeters, flaring nostrils
- C domestic, height less than 150 centimeters, very small nostrils
- D domestic, height greater than 150 centimeters, spotted skin

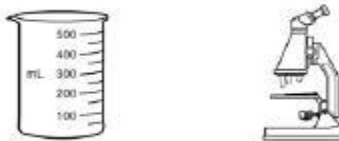
21.

Students were classifying leaves by measuring their length and studying the shape and pattern of their veins. Which pair of tools would be most appropriate for this activity?

A



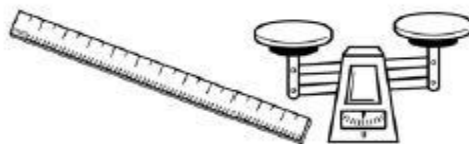
C



B



D

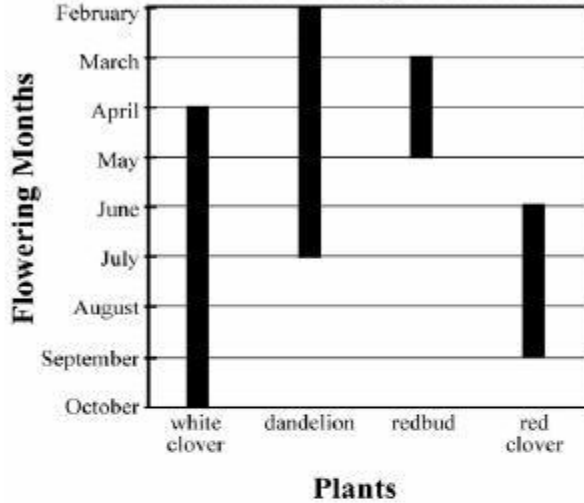


Content Objective 3.2

22.

The graph shows the months of flowering for some plants.

Months of Flowering for Some Plants



Months of Flowering for Some Plants

Plant	Flowering Begins	Number of Flowering Months
white clover	April	6
dandelion	February	
redbud	March	2
red clover	June	3

Which number will complete the chart?

- A 3
- B 4
- C 5
- D 6

23.

Jeremy conducted an experiment that compared the effects of different sounds on the growth of bean plants. He planted bean seeds of the same type and size in three containers using the same type of soil in each container. He placed the containers in the locations shown below.

Bean Seedling Locations and Sounds

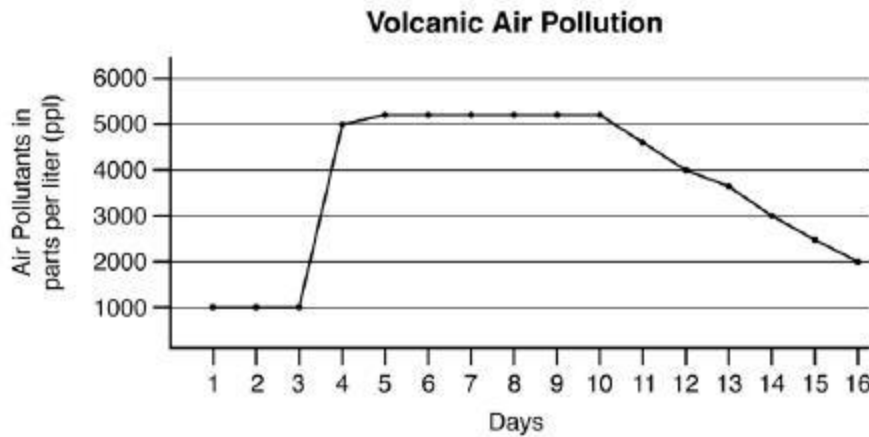
Container	Location and Sounds
1	bedroom with 4 hours of pop music per day
2	living room with 4 hours of television per day
3	empty room with no sound

Jeremy gave each plant the same amount of water at the same time each day. After two weeks, Jeremy observed that the plant in the living room was the largest and had the most leaves. Jeremy concluded that bean plants grow the fastest when exposed to television sounds. Which is the greatest error that Jeremy made in his experimental design?

- A Jeremy did not control other variables that might affect plant growth.
- B Jeremy did not control for the variables of soil type or amount of water.
- C Jeremy did not plant the beans from seeds.
- D Jeremy did not use enough different types of music.

24.

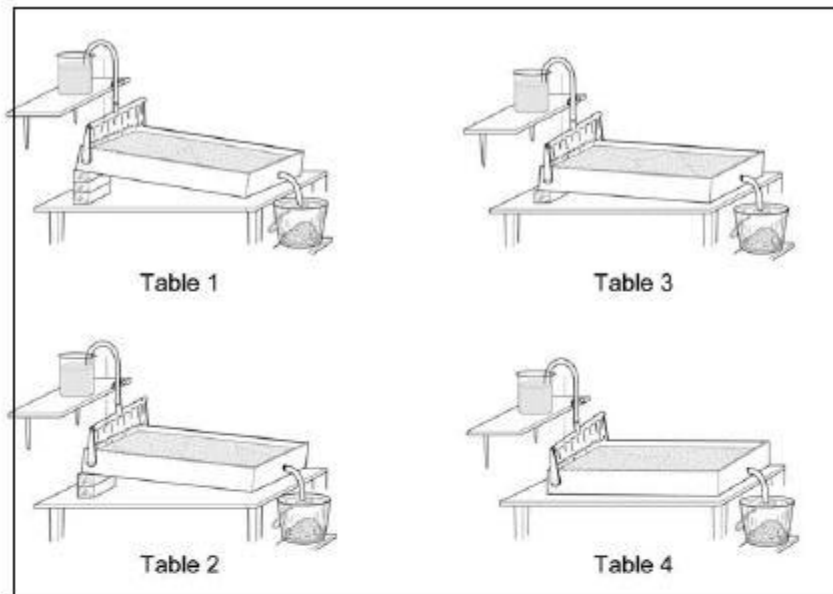
Scientists collected this pollution data before, during, and after a volcanic eruption. Pollution data are measured in particles per liter.



When did the eruption occur?

- A between days 3 and 4
- B between days 5 and 6
- C between days 10 and 11
- D between days 14 and 15

25.



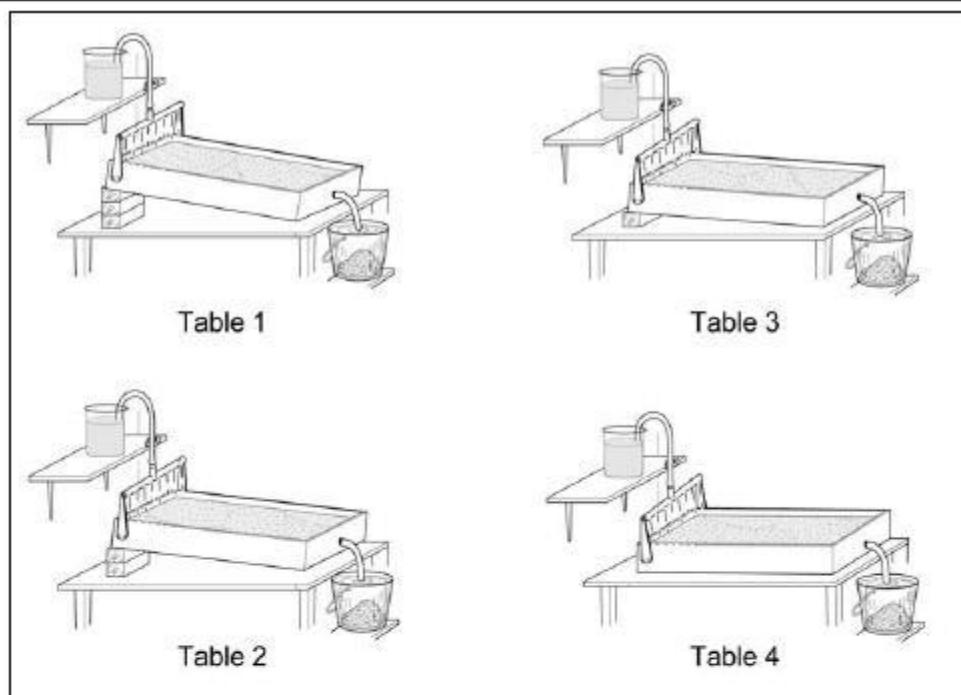
Procedure

1. Construct 4 identical stream tables, using the same amount of sand in each table.
2. Angle each stream table as shown above.
3. Pour 1 liter of water from the same height onto each stream table.
4. Collect water and sand eroded from the table into the buckets.
5. Dry the eroded sand.
6. Measure the mass of the sand eroded from each table.
7. Record results.

Students performed this experiment to test the effects of the slope of the stream table on the amount of sand eroded. What is the experimental (independent) variable in this experiment?

- A slope of the tables
- B amount of sand eroded
- C volume of water collected in buckets
- D volume of water poured on the tables

26.



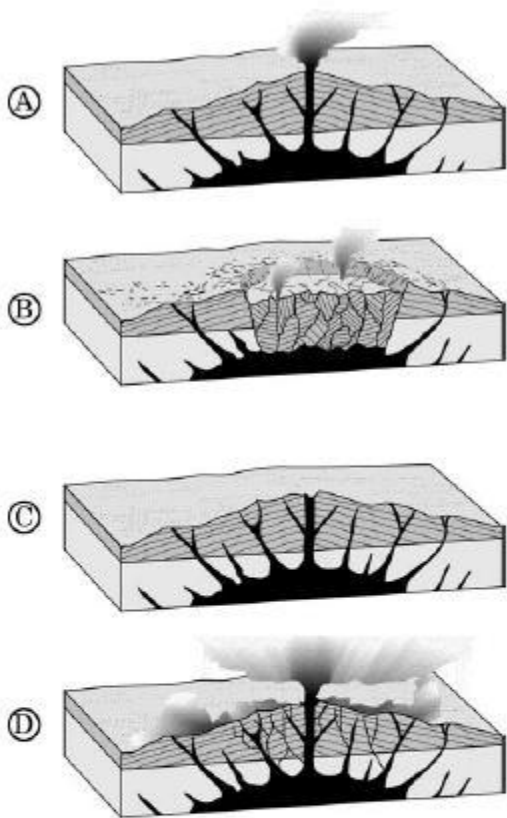
Procedure

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3. Pour 1 liter of water from the same height onto each stream table.
4. Collect water and sand eroded from the table into the buckets.
5. Dry the eroded sand.
6. Measure the mass of the sand eroded from each table.
7. Record results.

What must be held constant in this experiment?

- A time of day
- B slope of the table
- C student recording results
- D volume of water poured on the tables

27.



Which list identifies the order of events that formed a volcanic crater?

- A CBDA
- B BACD
- C CADB
- D DBAC

Content Objective 4.2

28.

The chart shows whether different objects will scratch rocks.

Hardness

Rock	Is Scratched By			
	Fingernail (2.2)	Penny (3.0)	Glass (5.5)	Quartz (7.0)
W	no	no	yes	yes
X	no	no	no	no
Y	no	no	no	yes
Z	yes	yes	yes	yes

Which list shows these rocks in order from the hardest to the softest?

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

29.

Characteristics of a Few Minerals

Mineral	Color	Streak	Hardness	Specific Gravity
talc	white	white	1	2.8
fluorite	purple	colorless	4	3.3
quartz	colorless	colorless	7	2.6
topaz	blue	colorless	9	3.6

These minerals are arranged according to their

- A color.
- B streak.
- C hardness.
- D specific gravity.

30.

Chemistry of a Few Minerals

Mineral	Chemical Formula
Quartz	SiO_3
Topaz	Al_2SiO_4
Talc	$\text{Mg}_3\text{H}_2\text{Si}_4\text{O}_{12}$
Feldspar	KAlSi_3O_8

All these minerals belong to the same group because each contains the element

- A silicon (Si).
- B aluminum (Al).
- C hydrogen (H).
- D potassium (K).

ANSWER KEY for 8th grade science sample test questions

1. D
2. D
3. B
4. D
5. C
6. C
7. C
8. B
9. B
10. D
11. B
12. C
13. C
14. A
15. B
16. B
17. B
18. B
19. D
20. C
21. B
22. C
23. A
24. A
25. A
26. D
27. C
28. B
29. C
30. A