

STUDENT NAME _____ TEACHER _____
NINTH GRADE QUARTER THREE ASSESSMENT

Today you will be taking the NINTH grade QUARTER THREE assessment. This test is designed to test your skills and knowledge in science. It has questions taken from science classes, as well as about experiments. You should make sure to read each question carefully, including the information given at the beginning of each section. Examine the diagrams to help you understand the questions as well. Some questions may refer to diagrams or information from the previous page.

For the multiple choice sections, make sure to place your answers on your Scantron sheet.

Make sure the Scantron has your full name, neatly written.

For the open ended questions, make sure to read all the information, and write your answer clearly in the space provided

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1. (D24) Which chemical substance does NOT commonly come from factories and industry to pollute water areas (lakes and rivers)?
 - A) Sodium
 - B) Nitrates
 - C) Mercury
 - D) Phosphates

 2. (D20) The water cycle is one example of a pattern of change that occurs in nature. Which of the following processes is **most** similar to the pattern of change that occurs in the water cycle?
 - A) The mutation of a gene
 - B) The evolution of a species
 - C) The breakdown and formation of rocks
 - D) The decay of radioactive material

 3. (D26) Which of the following is true about recycling glass and aluminum?
 - a. Energy is created in the recycling process.
 - b. Recycled glass and aluminum always have different properties from the original materials.
 - c. Recycling glass and aluminum reduces the amount of resources taken from the Earth.
 - d. It takes more energy to recycle aluminum than to extract it from the ground.



4) (D12) Which is NOT a possible solution to acid rain?

- A) Installing scrubbers on factory smokestacks
- B) Adding bases to lakes to neutralize acids
- C) Reduce the amount of sulfur in fossil fuels that are burned
- D) Change the height of the smokestacks

5. (D18) Which is not a scientific harmful risk of using landfills to store waste?

- A) Chemicals from the landfills could seep into groundwater.
- B) Heavy metals from waste could enter the soil and become part of the plants and the food supply
- C) Chemical gases, such as methane, could enter the air near the landfill
- D) The site cannot be used for other uses, such as a parking lot or golf course.

6. (D19Q2) Which is probably the most reliable or credible source of scientific information about a scientific issue, such as acid rain?

- A) A presentation by a politician.
- B) An article in a scientific journal with results of research.
- C) A website from a college student.
- D) A talk radio show.

A group of students were investigating which soils were best to neutralize acid rain. They poured an acid solution through the soils with different size grains, and timed how long it took to percolate into a cup. They repeated each trial, and measured the pH of the final solution.

7)(DINQ5) Which is the **best** description of their **independent variable** in this experiment?

- a) The pH of the final solution
- b) The amount of soil used in each trial
- c) The grain size of soil used in each trial
- d) The time it took for the acid to filter through the soil

8) (DINQ7) In order to draw a valid conclusion, it is **most** important that the group

- a) Use the same amount of acid solution each time
- b) Keep the size of the cup the same each time.
- c) Measure the pH of the solution before starting.
- d) Use the same person to time each trial.

9) (DINQ6) What is the best reason for the group performing three trials?

- a) To control variables
- b) To increase reliability
- c) To increase mass
- d) To decrease pH

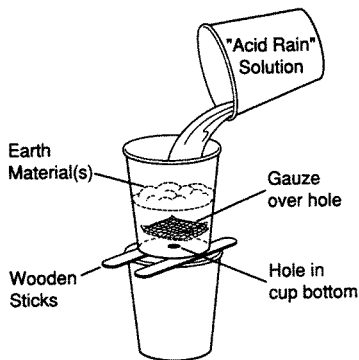
10)(DINQ8) The best type of graph to determine the size of grains of an unknown soil sample would be:

- a) A bar graph, with soil grain size in millimeters for each trial.
- b) A bar graph, with the size of the cup plotted for each trial.
- c) A line graph, with time of percolation plotted vs. pH of the final solution
- d) A line graph, with soil grain size in millimeters plotted vs time of percolation.



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Use the information on the next pages to answer the four open-ended experimentation questions. Answer the questions in the space provided. Make sure to write clearly and neatly, while answering the question fully. Remember to answer the question, then WRITE a good explanation. You can always add diagrams or charts if you think it will help explain your answer.



A group of students prepared a vinegar-and water solution to simulate acid rain. After determining the pH, they poured the solution through cups that contained various earth materials such as sand, potting soil, and crushed limestone. The students measured the amount of the solution that percolated, passed through, a hole in the bottom of each cup in a set amount of time, and they tested the pH of the drippings.

pH Scale		
↑ Increasingly Basic	14	
	13	
	12	
	11	Household ammonia
	10	
	9	
↓ Neutral	8	
	7	Pure water
↓ Increasingly Acidic	6	
	5	
	4	
	3	Vinegar
	2	
	1	
	0	

The results of the group's experiment are shown in the following table.

Earth Materials	pH of 'acid rain' before percolation	Amount of 'acid rain' percolated in three minutes	pH of percolated 'acid rain'
Sand	3.0	30 mL	3.5
Potting soil	3.0	20 mL	3.5
Crushed limestone	3.0	90 mL	5.0
All three Earth materials	3.0	50 mL	5.5

Use these results to answer the following questions:

