

		Score and Description->	0 (includes blank)	1	2	3
<p>GRADE 9 Q3 ASSESSMENT KEY 0708</p> <p>1 A D24 2 C D20 3 C D26 4 D D12 5 D D18 6 B DINQ2 7 C DINQ5 8 A DINQ7 9 B DINQ6 10 D DINQ8</p> <p>GRADE 9 Q3 OPEN ENDED QUESTIONS SCORING RUBRIC</p>	Question	CT State Standard	The response, although may be on topic, is an unsatisfactory answer to the question. It may fail to address the question, or it may address the question in a very limited way. There may be no evidence of elaboration, extension, higher-order thinking, or relevant prior knowledge. There may be evidence of serious misconceptions	This response is a marginal answer to the question. While it may contain some elements of a proficient response, it is inaccurate, incomplete, and/or inappropriate. There is little if any evidence of elaboration, extension, higher-order thinking or relevant prior knowledge. There may be evidence of significant misconceptions.	This response is a proficient answer to the question. It is generally correct, complete, and appropriate although minor inaccuracies may appear. There may be limited evidence of elaboration, extension, higher-order thinking, and relevant prior knowledge, or there may be significant evidence of these traits but other flaws (e.g., inaccuracies, omissions, and inappropriateness) may be more than minor.	This response is an excellent answer to the question. It is correct, complete, and appropriate and contains elaboration, extension, and/or evidence of higher-order thinking and relevant prior knowledge. There is no evidence of misconceptions. Minor errors will not necessarily lower the score.
61	<p>What are the variables that should have been controlled or kept constant in the experiment? Explain why it is important to control variables in an experiment.</p>	<p>DINQ5. Identify independent and dependent variables, including those that are kept constant and those used as controls. <i>This item is intended to assess students' understanding of the need to conduct controlled experiments when investigating the effect of one variable on another. A good answer would explain that is important to have only one difference, that is the cause or independent variable of type of materials, between the three groups. Important variable that need to be controlled are : the amount of acid rain solutuion poured through, the type or pH concentration of the initial acid rain solution, the amount (by mass or volume) of the earth material used, the size of the hole in the cup, and others such as the rate at which it was poured and the amount of gauze used</i></p>	<p><i>States no constants needed, or all variables incorrect. A 0 answer may not identify any important variables, or list a non important one (size of collecting cup), and have an incorrect justification.</i></p>	<p><i>. A 1 answer may list only one important variable and not justify the need for controlling them. Misidentifies one of the variables. Only some constant properties correctly identified, or no explanation as to the reason for controlling variables.</i></p>	<p><i>A 2 answer may identify several variables, yet not discuss the reason for controlling them Lists some important properties to keep constant., some explanation of need for constants</i></p>	<p><i>Identifies both variables correctly, Lists most . A 3 answer indentifies at least two or three of these variables, as well as explain the need for accuracy/validity.. Discusses reason for controlling variables as knowing the cause for the effect, referring to making a valid conclusion</i></p>

62	Do you think you have enough information to replicate this group's experiment? If you think you do not, tell what other information you would need?	<p>DINQ4 Design and conduct appropriate types of scientific investigations to answer different questions.</p> <p><i>This item is intended to assess students' understanding of what constitutes a complete and appropriate experimental design. In this case, students do not have all of the information that they need to repeat the experiment. The important information that they need includes how much earth material was used (by mass or volume), how much acid rain solution was used, and perhaps others, such as the size of the hole in the cup, and others such as the rate at which it was poured and the amount of gauze.</i></p>	<p><i>A 0 response may state all information is given with little explanation.</i></p>	<p><i>used A 1 answer may list some of the important information provided but not list the other information needed, or only on e poorly elaborated piece of information needed</i></p>	<p><i>. A 2 answer may discuss the need to keep the amounts constant, but not list it as a piece of information needed. It may list non important pieces of information, such as the grain size or pH of the materials and be less elaborate.</i></p>	<p><i>A 3 answer clearly identifies at least two or three important pieces of information needed.</i></p>
63	The group concluded that sand and potting soil have the same ability to neutralize acidity because in each case the pH went from 3.0 to 3.5 Based on this group's experiment and results, do you think the group's conclusions is valid? Explain why or why not.	<p>DINQ9. Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.</p> <p><i>This item assesses students' ability to draw conclusions based upon data and to consider the validity of those conclusions. For this experiment, the groups' conclusion should not be considered valid because while both the sand and potting soil changed the pH of the acid rain solution from 3.0 to 3.5, the sand allowed more solution to pass through in the given time (thus having more neutralizing ability). It is also unclear as to whether the group controlled important variables such as those described in Item 2 (amounts of acid rain solution and earth materials). This experiment also only includes one trial, which casts doubt on the reliability of the results.</i></p>	<p><i>. A 0 answer may indicate agreement with the validity of the conclusions.</i></p>	<p><i>A 1 answer may show some understanding of the amount of percolation amount/rate issue, but have misconceptions or fail to mention any concerns</i></p>	<p><i>. A 2 answer may mention only one or the other of these points with poor elaboration.</i></p>	<p><i>A 3 answer would explain the sand neutralizing more acid, and mention variable concerns.</i></p>

64.	<p>A process (phytoremediation) has been developed that uses plants to remove contaminants from soils and water. Suppose a contaminated area (Brownfield site) in your town is being considered for this process. Identify at least three questions that would need to be answered before starting such a program.</p>	<p>DINQ1 Identify questions that can be answered through scientific investigation <i>Possible Correct Responses:</i> <i>What is/were the sources of contamination? What are/were the contaminants of concern? What is the extent of the affected property? How deep does the contamination extend into the sediment? What are the potential effects on the local ecosystem/food webs? What type of ecological restoration is being sought (recreation, residential, etc)? What is the timeframe needed for total restoration? What is the cost associated with this program compared to other programs? What special resources (Tools, people, etc.) are required?</i></p>	<p><i>The response provides little or no accurate and relevant information.</i></p>	<p><i>The response provides at least one valid and relevant questions that would need to be answered before the town undertakes a phytoremediation program.</i></p>	<p><i>The response provides at least two valid and relevant questions that would need to be answered before the town undertakes a phytoremediation program.</i></p>	<p><i>The response provides at least three valid and relevant questions that would need to be answered before the town undertakes a phytoremediation program.</i></p>
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