



SECTION 5

TEST II SAMPLE CONSTRUCTED-RESPONSE ASSIGNMENTS

This section of the Georgia Assessments for the Certification of Educators® (GACE™) Preparation Guide is designed to assist you in responding to the constructed-response assignments on the test. Included in this section are:

- ▶ Constructed-response assignment directions
- ▶ Sample constructed-response assignments
- ▶ Assignment response sheets
- ▶ An example of a strong response to each sample assignment
- ▶ Scoring criteria that will be used in evaluating your response to each assignment

For each sample assignment, you may want to take the following steps to prepare for the test:

- Review the constructed-response assignment directions.
- Print the assignment and the assignment response sheet.
- Use scrap paper to make notes, write an outline, or otherwise prepare your response.
- Use the assignment response sheet to record your response. The assignment response sheet reflects the amount of space available on an actual test.
- After you complete the assignment, review the sample strong response, your response, and the scoring criteria.

Please note that a periodic table and a set of constants and formulas are provided for this test. Please refer to these materials as needed in responding to the sample test questions and assignments. These materials are located in the Assessment Reference Materials section at the end of this preparation guide.

A scientific calculator may be used for this test as needed in responding to the sample test questions and assignments. Please refer to the current GACE registration bulletin for information about the use of calculators at the test administration.

CONSTRUCTED-RESPONSE ASSIGNMENT DIRECTIONS

A sample of the directions for the constructed-response assignments is shown in the box below.

CONSTRUCTED-RESPONSE ASSIGNMENT DIRECTIONS

For each constructed-response assignment in this section, you are to prepare a written response of up to one page and record it in the area provided on the appropriate Assignment Response Sheet in your answer document.

Read each assignment carefully before you begin to write. Think about how you will organize what you plan to write. You may use any blank space provided in this test booklet following each assignment to make notes, write an outline, or otherwise prepare your response. *However, each of your final responses must be written on the appropriate Assignment Response Sheet in your answer document.*

Your responses will be evaluated based on the following criteria:

- **Purpose:** The extent to which the response fulfills the purpose of the assignment in relation to relevant GACE framework objectives
- **Application of Content Knowledge and Skills:** The extent to which the response accurately and effectively applies content knowledge and skills in relation to relevant GACE framework objectives
- **Supporting Evidence:** The extent to which the response includes appropriate, specific supporting evidence of content knowledge and skills in relation to relevant GACE framework objectives

Evaluation of each response will be based on the criteria above, not on your writing ability. However, your response must be communicated clearly enough to permit a valid judgment of your knowledge and skills. Your responses should be written for an audience of educators in the field.

Your responses should be your original work, written in your own words, and not copied or paraphrased from some other work. Please write legibly. You may not use any reference materials during the test. Remember to review your work and make any changes you think will improve your responses.

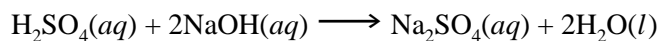
The selected-response section of the answer document containing your name will be removed from your written responses to maintain your anonymity during the scoring process. Do not write your name on any other portion of the answer document, and do not separate any of the sheets from the document.

Please turn the page and begin the constructed-response assignment section of the test.

CONSTRUCTED-RESPONSE ASSIGNMENT ONE

■ Sample Constructed-Response Assignment One

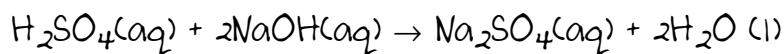
Use the information below to complete the assignment that follows.



A balanced chemical equation is shown above.

- Identify the type of reaction and describe the chemical change(s) occurring during this type of chemical reaction; and
- calculate the mass in grams of Na_2SO_4 that would be produced if 1.50 mol of NaOH reacts with an excess of sulfuric acid. Show your work.

■ Strong Response to Sample Constructed-Response Assignment One



The balanced equation above is an example of a neutralization reaction. When sulfuric acid (H_2SO_4) is mixed with the base sodium hydroxide (NaOH), the product will be a salt and water. These products have none of the characteristic properties of either the original acidic or basic solutions. Sulfuric acid is a strong acid and sodium hydroxide is a strong base. When the two are mixed in the proper proportions, the pH will be about 7; thus the solution is neutralized.

To determine the mass of Na_2SO_4 that would be produced if 1.50 moles of NaOH reacts with an excess of H_2SO_4 , the number of moles of Na_2SO_4 that would be produced must be calculated as follows:

Since 1.50 moles of NaOH is 0.75 of the 2 moles in the original equation, then

$$0.75 \times 1 \text{ mole of } \text{Na}_2\text{SO}_4 = \boxed{0.75 \text{ mol of } \text{Na}_2\text{SO}_4}$$

Calculate the formula mass of Na_2SO_4

$$2(23.0) + 32.1 + 4(16.0) = \boxed{142.1 \text{ g}}$$

Round off 142.1 g to $\boxed{142 \text{ g}}$

Determine the number of grams of Na_2SO_4 in 0.75 moles of Na_2SO_4

$$(0.75 \text{ mol}) \times \frac{142 \text{ g}}{\text{mol}} = \boxed{106.5 \text{ g of } \text{Na}_2\text{SO}_4}$$

Finally, round off 106.5 g to $\boxed{106 \text{ g of } \text{Na}_2\text{SO}_4}$

CONSTRUCTED-RESPONSE ASSIGNMENT TWO

■ Sample Constructed-Response Assignment Two

Use the information below to complete the assignment that follows.

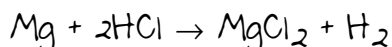
A chemist wants to determine the effect that the concentration of a solution has on the rate of a chemical reaction.

- Describe an appropriate investigative design that would allow a valid scientific conclusion to be drawn about this topic.

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■ Strong Response to Sample Constructed-Response Assignment Two

The reaction of magnesium with different concentrations of HCl can be used to demonstrate the effect of solution concentration on rate of reaction. In the reaction hydrogen gas is produced and bubbles will be observed.



In general, the rate of a reaction can be expressed either as the rate of disappearance of the reactant or the appearance of the product. For demonstrating the effect of concentration on reaction rate, this experiment has the advantage of having a reactant (magnesium strip) that is easy to observe as it disappears.

The procedure is as follows:

Prepare hydrochloric acid solutions of 1.0 M, 0.5 M, and 0.1 M.

Cut and clean (rub with steel wool) 3 pieces of magnesium ribbon. Pieces should have similar widths and lengths, and the mass of each piece should be the same.

Find the mass of each using an electronic balance.

Place 15 mL of each concentration of HCl solution into separate test tubes. Add one piece of the prepared magnesium ribbon to each test tube and record the time from appearance of first gas bubble until all of the magnesium ribbon has disappeared and bubbling stops. Repeat the procedure four more times and find the average for each concentration of HCl.

The average time for each reaction to go to completion can be compared to the concentration of the different HCl solutions by graphing the data or recording it on a spreadsheet.

CRITERIA FOR SCORING YOUR RESPONSE

Each response will be evaluated based on the following criteria.

PURPOSE	The extent to which the response fulfills the purpose of the assignment in relation to relevant GACE framework objectives
APPLICATION OF CONTENT KNOWLEDGE AND SKILLS	The extent to which the response accurately and effectively applies content knowledge and skills in relation to relevant GACE framework objectives
SUPPORTING EVIDENCE	The extent to which the response includes appropriate, specific supporting evidence of content knowledge and skills in relation to relevant GACE framework objectives

Each response is rated on a three-point scale. The three score points of the score scale correspond to varying degrees of performance that are related to the above criteria.

Score	Description
3	<p>The "3" response reflects thorough understanding of relevant content knowledge and skills as defined in relevant GACE framework objectives.</p> <ul style="list-style-type: none"> • The response fully achieves the purpose of the assignment. • The response demonstrates an accurate and effective application of relevant content knowledge and skills. • The response provides appropriate, specific supporting evidence of relevant content knowledge and skills.
2	<p>The "2" response reflects general understanding of relevant content knowledge and skills as defined in relevant GACE framework objectives.</p> <ul style="list-style-type: none"> • The response largely achieves the purpose of the assignment. • The response demonstrates a generally accurate, generally effective application of relevant content knowledge and skills. • The response provides some appropriate and general supporting evidence of relevant content knowledge and skills.
1	<p>The "1" response reflects limited or no understanding of relevant content knowledge and skills as defined in relevant GACE framework objectives.</p> <ul style="list-style-type: none"> • The response partially achieves or fails to achieve the purpose of the assignment. • The response demonstrates limited, inaccurate, and/or ineffective application of relevant content knowledge and skills. • The response provides limited or no appropriate, specific supporting evidence of relevant content knowledge and skills.

Please note: A response that is unrelated to the assigned topic, illegible, not primarily in the target language, or lacking a sufficient amount of original work to score will be considered **unscorable**. If there is no response to the assignment, then the response will be considered **blank**.