

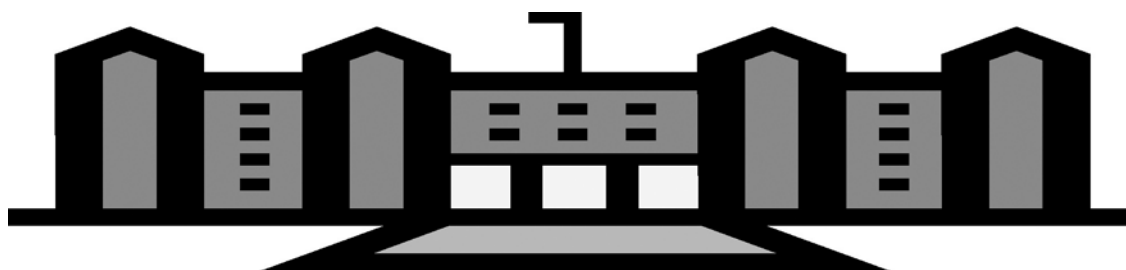


# **Preparing for the Tests as part of the Application Process**

**Roberto Clemente Middle School**  
**Upcounty Center Program**  
Humanities and Communication  
Mathematics, Science, and Computer Science

**Eastern Middle School**  
Humanities and Communication Magnet Program

**Takoma Park Middle School**  
Mathematics, Science,  
Computer Science Magnet Program





**Inside this packet you will find information to help you answer the following questions about the magnet tests:**



**Why should I take the tests?..... 1**



**What's on the tests?..... 1**



**How can I best prepare for the tests? .... 2**



**What do the test questions look like?.... 4**



**How can I practice?..... 5**





## Why should I take the tests?

Taking the tests is part of the application process for entry into four Montgomery County Public Schools middle school special programs: The Mathematics, Science, Computer Science magnet programs at Takoma Park Middle School and Roberto Clemente Middle School and The Humanities and Communication magnet programs at Eastern Middle School and Roberto Clemente Middle School.

The tests enable the selection committee to identify your strengths as a thinker and problem-solver, as well as assessing your verbal and mathematical skills. The test results are not the only information considered when the programs' selection committees meet to select students for the incoming sixth grade class in each school. They also look at your elementary school grades, your teachers' recommendations, and your application form. They want to understand what special qualities or strengths as a learner have enabled you to succeed in elementary school.



## What's on the test?

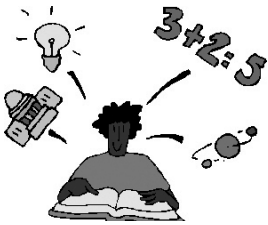
On the testing date you will take a series of tests, depending on which programs you applied to. If you applied to one program, you will take 3 tests. If you applied to both programs, you will take a fourth test. There are sample items from each of the tests later in this booklet.

The Mathematics, Science, Computer Science programs require three tests: a spatial reasoning test, a reading comprehension test, and a mathematical reasoning test.

The Humanities and Communications programs also require three tests: a spatial reasoning test, a reading comprehension test, and an essay. You will write a one-page essay in response to a writing prompt that you will receive at the testing site. The essay will help the committee get to know you as a person and will enable them to assess your written communication skills.

You will have different amounts of time to work on each test. You have 40 minutes for the spatial reasoning test, 40 minutes for the reading comprehension test, 20 minutes for the mathematical reasoning test for Science, Mathematics, Computer Science applicants, and 30 minutes for the essay for Humanities and Communication applicants.

Each item on the multiple-choice tests has only one correct answer. Your score will be based on the number of correct answers, and **points will not be deducted for wrong answers**. Therefore, it is in your best interest to try to answer every question.



## How can I best prepare for the test?

You have already done the most important preparation by studying hard at school, reading regularly, and stretching yourself to do challenging work. The skills in reading, reasoning, mathematics, and writing that you have developed over the past up to this point will help you on test day.

Here are some tips to increase the likelihood that you will do your best on the test.

1. Read the instructions carefully.
2. Review the sample items that follow. If the samples and their explanations are not clear, consult with your math or English teacher for assistance. Your teachers may want to develop similar items to practice with students in your class. Cramming or attending test preparation courses

will do little to significantly improve your scores and will take time away from the important studying you need to do for your classes.

3. Rest well the night before the test; eat a good breakfast on the test day.
4. Plan to arrive before the designated time so that you will be relaxed when you enter the test room. Some nervousness is normal, but do not put so much emphasis on the test that you freeze.
5. It is permissible to bring a water bottle and/or a small, quiet, non-messy snack.
6. Do not bring a calculator or a calculator watch. They may not be used during the test. Also, please do not bring alarm watches as they can be distracting to others.
7. Plan your time. Keep in mind how much time you have to work on a particular test. Look up periodically to see how much time remains. These strategies will help you maintain a reasonable testing pace for each test. You will have a small break between each test.
8. Keep your eyes on your own paper so that proctors will not mistake wandering eyes for attempts at cheating.
9. If you finish early, go back and review your answers. Check that you have carefully filled in the correct answer on the answer sheet. Look closely for other careless mistakes, such as marking an answer next to the incorrect question number. Be sure that you have attempted to answer every question because there is no additional penalty for incorrect answers. Your score is based on the total number of correct answers.
10. Do not become upset or distracted by difficult questions. No one is expected to get all the answers correct. After a reasonable attempt at the questions, go on to other test items and then return to work on the difficult questions at the end of the test. Make sure that you indicate items you have skipped on your test booklet. Also, when you skip an item, check that you have placed your next answer beside the correct item number.



## What do the test questions look like?

The following are descriptions of the different tests. Actual sample items and explanations follow.

### **A. Spatial Reasoning (For all applicants): 40 minutes**

These 36 items are all pictures. There is no reading or writing. You will get to try 12 practice items before you take the actual test. The practice items don't count towards your score. You will be presented with a series of pictures and you will have to determine, from a set of pictures, which is next in the sequence. This test is the advanced version of a test called the Raven that you probably took in second grade as part of the Global Screening Process.

### **B. Reading Comprehension (For all applicants): 40 minutes**

These 30 questions are multiple-choice. Four of the texts will be expository, meaning you will be reading for information. The fifth text is a poem. The sixth text is a narrative. Some of the items can be answered by thinking about the text as it is written. However, many of the questions require you to read between the lines and think about the information in a different way. You have to be careful not to impose your own feelings when choosing a response. All responses are based on the text, but sometimes the answers have the information worded slightly differently than what is in the actual text.

### **C. Mathematical Reasoning**

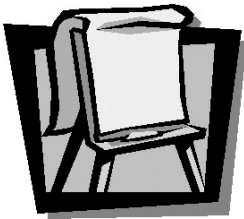
#### ***(For Math/Science/Computer Science applicants): 20 minutes***

These 50 items are called quantitative comparison. That means that you will be presented with 2 quantities, one in column A and one in column B. You will have to determine if the quantity in Column A is bigger, if the quantity in Column B is bigger, if they are equal, or if you cannot determine the answer with the information you were given. In most cases you will have to do more than one step to determine the value of each quantity before you can compare them.

### D. Essay

**(For Humanities and Communication applicants): 30 minutes**

The writing prompt will be a personal response essay. You do not have to come prepared with any particular content knowledge. In other words, you do not have to study historical events or scientific inventions. The essay is not about testing the factual knowledge that you may or may not have. Instead, the selection committee wants to get to know you as a person, and wants to see the skill with which you communicate your ideas in written form. In this booklet, you are provided with a sample prompt, but not a sample response. This is because there is no one correct way to respond. You will need to use the thinking, planning, and writing skills you have practiced over the years to develop a response that best reflects you personally.

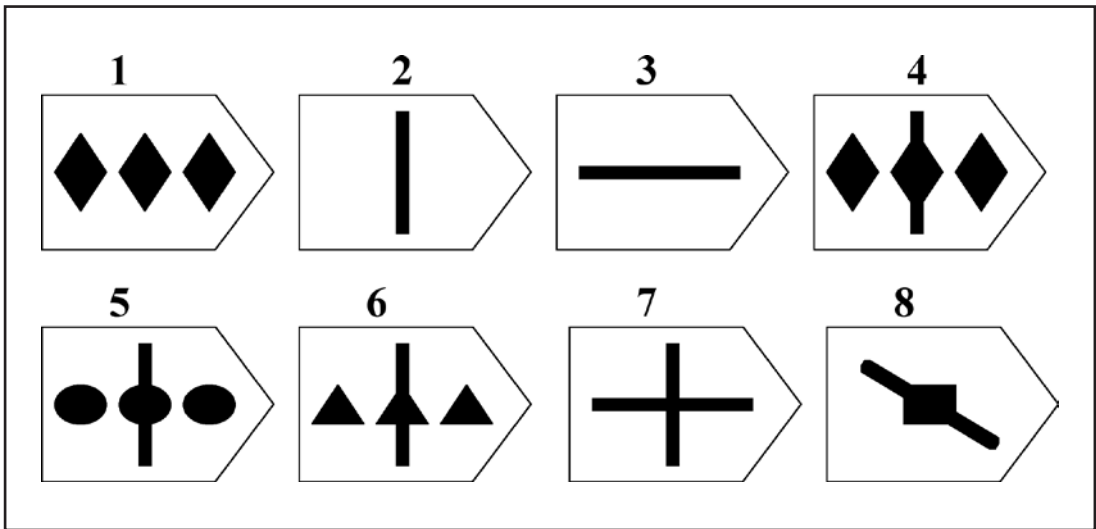
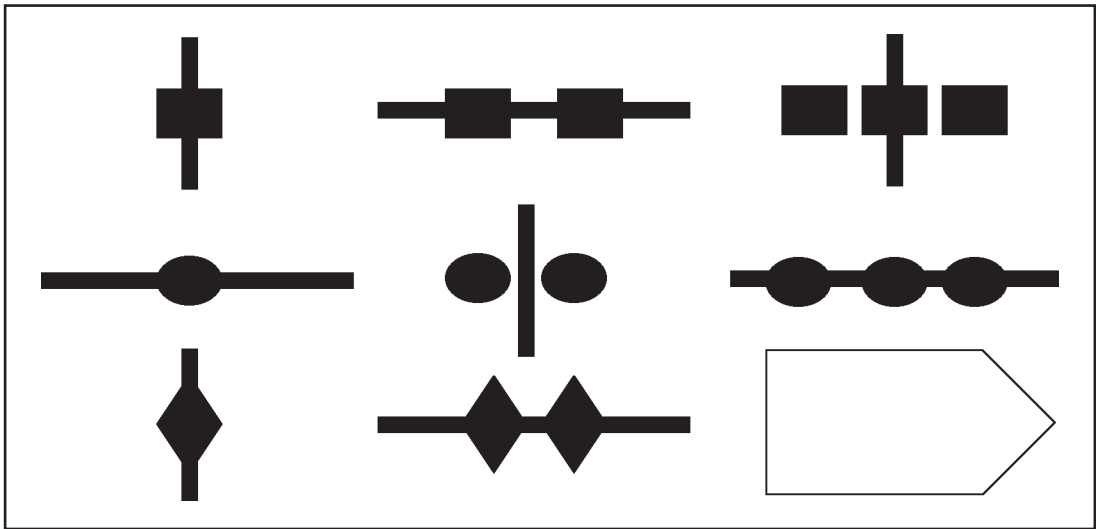


## How can I practice?

Please review the following sample items carefully. The samples are presented to you so that you can understand the format of the test. **The questions do not reflect the exact content of the test.** The preparation you receive by completing the practice items and reviewing the explanations of the answers ensures that, on the day of the test, the committee is getting an accurate picture of the concepts you understand and the skills you have, instead of simply seeing how well you understand directions. At the top of each page of questions, you will find a table of helpful hints. Use these ideas to understand better how to answer those specific types of questions.

# Sample Spatial Reasoning Item

<p>Look for patterns. Think logically.</p>	<p>Review all of the answer choices and eliminate those that are definitely wrong.</p>	<p>Pay close attention to detail. The correct answer matches <i>vertically and horizontally.</i></p>	<p>Don't get stuck on one problem. Keep moving.</p>
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## Sample Spatial Reasoning Item: Understanding the Answer

The correct answer for this item is number 4. To understand why this is the correct response, you need to consider the many patterns that exist in the matrix. One of the patterns is an increasing shape pattern. Across each row, starting from the left, the shapes have an increasing pattern in which one shape is added each time. A second pattern involves the rotation of a line. You can look across a row or down a column and see that the line is rotated 90 degrees each time. You might have also noticed some other patterns across diagonals, such as increasing or decreasing numbers of shapes or how the line is not rotated. Using this information, you can determine that the missing picture must have combination of 3 diamonds and a vertical line.

On testing day, you will have 12 practice items prior to taking the actual test. The examiner will then review a number of the answers. These items do not count towards your overall score. Then, you will complete as many of the 36 actual test items that you can in 40 minutes. You will record your responses on a Scantron-style answer sheet by bubbling in responses.

## Sample Reading Comprehension Questions

The answers come from the passage—not your own personal experience.	Every word counts.	Read the questions and answers carefully.	An answer can be true and still be the wrong answer for that particular question.	
The passage must support your answer.	Try eliminating choices you know are false.	Double-check the other choices.	Pace yourself.	Go back to any questions you skipped.

Read the passage entitled “Solar Energy” on the back of this page. Use the information to answer the questions below. Base your answers only on what you have read in the passage.

- **Which of the following best tells what this passage is about?**
  - a) which solar energy design is most economical
  - b) the problems associated with collecting solar energy
  - c) why solar energy is the best form of energy
  - d) two ways to collect solar energy
  - e) a history of solar energy
  
- **Which of the following is the most likely reason an active design would be chosen over a passive design?**
  - a) An active design is less expensive.
  - b) A structure does not have windows that can face the sun.
  - c) An active design works more efficiently.
  - d) It is too difficult to install stone and ceramic tiles for a passive design.
  - e) A passive design is too unreliable.
  
- **The electric pump and hose system (lines 21-22) allows**
  - a) liquid to run through the building to heat the rooms.
  - b) liquid to cool the flat-plate collector.
  - c) the active design to be more efficient.
  - d) warm air to circulate through the building.
  - e) cool air to circulate through the building.
  
- **In what sequence do the following events occur to collect solar energy in a passive design?**
  - I. Sunlight heats the walls and floors.
  - II. The building is positioned to face the sun.
  - III. Heat is released at night.
  - a) I, II, III
  - b) I, III, II
  - c) III, I, II
  - d) II, III, I
  - e) II, I, III

## Solar Energy

Solar energy is the direct use of the Sun's energy to heat living spaces. People have used this type of energy for thousands of years. In the last fifty years scientists have renewed their investigation into the use of solar energy as an alternative energy source. They have developed several designs that are

5 able to collect the sun's energy and convert it to heat for use in homes and commercial buildings.

A passive solar energy design uses the building's shape, materials, and its orientation to the sun to collect and store the sun's energy. The building is positioned with large windows facing the sun so that it can receive and store

10 heat from the sun during the winter. During the summer, the windows are designed to close or block the sun's energy. On cool, sunny days, sunlight passes through the south facing windows and heats the wall and floors. Stone and ceramic tiles are used as flooring to absorb and retain the sun's heat. At

15 night the walls and floors slowly release the heat. Heat may also be stored by placing liquid inside containers placed in the rooms, the walls, or the floor to absorb the sun's energy by day and release it by night.

An active design is used where windows cannot face the sun. This design uses a flat-plate collector to capture and store the sun's heat. The collector consists of an insulated box which is placed on the roof or somewhere

20 else where it can be warmed by the sun's energy. Inside the box is a long, curved tube filled with liquid. The tube is connected to an electric pump and hose system that runs into the building. As the liquid is heated, it is pumped through the system. The liquid gives up its heat as it passes through the cooler rooms, warming them. Then the cooled liquid returns to the flat-plate

25 collector where it is heated once again by the sun's energy.

## Sample Reading Comprehension Questions: Understanding the Answers

- **Which of the following best tells what this passage is about? The correct response is D, two ways to collect solar energy.**

Start by reviewing each of the responses. A, B, and C all contain ideas not brought up in the reading selection. There is no mention of money, problems with the designs, or a discussion of advantages and disadvantages. That leaves D and E. It is tempting to choose E because the first paragraph does describe some of the background to solar energy collection. However, the focus of the reading is on the two different designs. Therefore, D is the best answer. This is one of those situations where you must select the best answer, even though more than one answer might seem correct.

- **Which of the following is the most likely reason an active design would be chosen over a passive design? The correct response is B, a structure does not have windows that can face the sun.**

In this case, you need to be sure to base your response on the information in the reading. You might know a lot about solar energy collection and so you might be tempted to choose one of the other responses. However, the only response that is based on the reading is B. Line 17 specifically states, "An active design is used where windows cannot face the sun."

- **The electric pump and hose system (lines 21-22) allows The correct answer is A, liquid to run through the building to heat the rooms.**

In this case, you are directed back to specific lines in the reading. You should immediately look for clues in that area of the reading. There is no information in the reading about efficiency or circulating air, so you can rule out C, D, and E. This type of question can also be tricky because of the technical language involved, such as flat-plate collector. The flat plate

collector is mentioned at the beginning and end of the paragraph, but there is no information about using liquid to cool it, only that the cooled liquid gets reheated by the flat-plate collector. However, in lines 23-24, it says, “The liquid gives up its heat as it passes through the cooler rooms, warming them.” From this sentence you can infer, or conclude, that it means something similar to response A.

- **In what sequence do the following events occur to collect solar energy in a passive design? The correct answer is E: II, I, III.**

A good way to approach this type of problem is NOT to look at the responses first. Instead, put them in the order you think is correct. The question directs you back to the paragraph about passive design. It is there that you can find information to help you. You don't have to rely on your memory! Just reread the text. Once you have decided on an order, look to see if your order is one of the responses. If it is, great! If it isn't, think about which part you are sure about. For example, if you were sure “II” has to be first, use that idea to eliminate responses that don't have “II” as the first item. Then you can check the remaining answers against what you read in the text.

## Sample Quantitative Comparison Questions (Science, Mathematics, Computer Science Programs)

Frequently you don't have to finish your calculations to determine an exact answer. You just have to know enough about the quantities to determine which one is greater.	Memorize the four answer choices for these types of questions: A = A is bigger B = B is bigger C = A and B are equal D = not enough information or more than one of the other answer choices is correct	If two of the answers A, B, or C can be true for a particular question, then the answer to that question is D.
Think of the columns as a balanced scale. Try to figure out which side is heavier—eliminate any quantities that are the same on both sides of the scale.	Try evaluating quantities by substituting values for variables. Remember to check the columns for any information about what the values can or cannot be.	When substituting values, be sure to check the special cases such as 0, 1, at least one number between 0 and 1, a number greater or numbers greater than 1, negative numbers.

- **Mark A** if the quantity in **Column A** is greater;
- **Mark B** if the quantity in **Column B** is greater;
- **Mark C** if the two quantities are **equal**;
- **Mark D** if the relationship **cannot be determined** from the information given.

### Column A

$$\frac{1}{3} \times \frac{4}{7} \times \frac{8}{9}$$

$$\frac{1}{58} - \frac{1}{63}$$

Distance traveled by an airplane going 200 miles per hour.

35% of 50

The number of cents in  $8n$  dimes if  $n > 0$

### Column B

$$\frac{4}{7} \times \frac{1}{3} \times \frac{5}{9}$$

$$\frac{1}{57} - \frac{1}{65}$$

Distance traveled by an airplane going 190 miles per hour.

50% of 35

The number of cents in  $3n$  quarters if  $n > 0$

## Sample Quantitative Comparison Questions: Understanding the Answers

$\frac{1}{3} \times \frac{4}{7} \times \frac{8}{9}$	$\frac{4}{7} \times \frac{1}{3} \times \frac{5}{9}$
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**The correct response is A, the amount in Column A is larger.**

When comparing these two expressions, you should immediately notice that portions of each expression are the same. Therefore, you only really need to compare the portions that are not the same, in this case  $\frac{8}{9}$  and  $\frac{5}{9}$ . Using some number sense will save you a great deal of time instead of completing calculations.

$\frac{1}{58} - \frac{1}{63}$	$\frac{1}{57} - \frac{1}{65}$
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**The correct response is B, the amount in Column B is larger.**

Since finding a common denominator would be too time consuming to do the actual calculations, try using what you know about fractions. For the first fraction in each expression, Column B has a larger amount ( $\frac{1}{57} > \frac{1}{58}$ ). For the second fraction in each expression, Column B has a smaller amount ( $\frac{1}{65} < \frac{1}{63}$ ). Therefore, it makes sense that the amount in Column B is larger since you are subtracting the smallest amount from the largest amount.

<b>Distance traveled by an airplane going 200 miles per hour.</b>	<b>Distance traveled by an airplane going 190 miles per hour.</b>
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**The correct response is D, it cannot be determined.**

For this item, you might be tempted to select A because the plane is flying faster. However, you have not been given the amount of time each plane was traveling. Suppose the first plane only flew for one hour and the second plane flew for two hours. Since you cannot assume that each plane traveled the same amount of time, the answer cannot be determined.

<b>35% of 50</b>	<b>50% of 35</b>
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**The correct response is C, the amounts are equal.**

Before doing any computation, think about what you know from the problem.

In either column you have  $35 \times 50$  involving 2 decimal points (for the %).

Therefore, the expressions must be equal.

<b>The number of cents in 8n dimes, <math>n &gt; 0</math></b>	<b>The number of cents in 3n quarters, <math>n &gt; 0</math></b>
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**The correct response is A, the amount in Column A is larger.**

To do the calculations, consider the number of cents in each coin:

$$10(8n) = 80n \quad \text{vs.} \quad 25(3n) = 75n$$

Since  $n$  is common in both expressions, you can simply compare 80 and 75.

# Sample Essay Writing Prompt

## *Humanities and Communication Programs*

### *Writing Prompt: Treasured Item*

Everyone, even adults, has a special item that holds great meaning long after the item has outlived its usefulness. The item could be a treasured toy, a book, an article of clothing, something given by a cherished grandparent or friend. And long after the book has been read or the toy has been played with, it still holds great meaning, full of memories of people, events, places, etc.

Think of such an item that you own, or one that is owned by someone close to you (like your mom or dad). Identify the item and describe it. (How does it look, feel, smell, etc.?) Explain its significance—why does it hold meaning to its owner? Did the occasion for which the item was given mark an important event or passage in the life of the owner? Did it acquire its importance over long use? Or, what other way might the item have become important to its owner?

Now write a letter to a friend that describes the item, identifies the memorable quality of the item, and reveals its significance.

#### **Directions:**

1. You only have 30 minutes to complete the text.
2. Create a web or other graphic organizer which helps you plan your writing. Write this organizer in the space provided on the next page. **This is required.**
3. Briefly look at the scoring rubric to see how your paper will be evaluated. You will not have adequate time to revise and re-write your paper, so be sure you have made the necessary corrections to your first draft. You may cross out or add words if you wish. Allow time at the end to proofread.
4. Write your essay on the following lined pages. If you need more paper, raise your hand to request additional sheets from your proctor.
5. Write your name on each page of this text and any additional pages needed to finish your essay.

# Writing Prompt Rubric

## *Humanities and Communication Program*

Your score will be based on 1 being the weakest and 5 being the strongest.

<b>IDEAS AND DEVELOPMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Writer expresses a central idea					
Writer addresses each aspect of the prompt					
Writer gives substantive and Interesting details					
<b>ORGANIZATION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Writer shows evidence of planning (web or graphic organizer)					
Writer develops properly structured paragraphs including topic sentences and presents details in logical and effective sequence					
Writer establishes transitions					
Writer includes appropriate introductory and concluding sentence					
<b>WRITING CONVENTIONS AND MECHANICS</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Spelling, capitalization, and punctuation are generally correct					
<b>VOICE</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Writing indicates writer's engagement with topic					
Writing indicates an awareness of audience and purpose					
<b>SENTENCE FLUENCY</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Sentences are varied in length and sophistication					
Writer uses correct sentence structure					
<b>WORD CHOICE</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Writer uses natural and expressive language					
Writer uses a sophisticated vocabulary					

Total Score \_\_\_\_\_

## Web Or Graphic Organizer

*Use the space below to plan your writing assignment.*

### Sample Essay Writing Prompt: Understanding How to Respond

- When you begin the essay section of the test, read the prompt carefully.
- Before writing your essay response, think and plan. You will have thirty minutes for this section of the test.
- Develop your ideas fully with interesting details. A one-paragraph response with generalizations is not a fully developed, interesting response. A good response to the prompt might include vivid details about the item and the feelings you have as you remember it. An especially good response might help us understand some important changes that occurred in your life as a result of the item.
- Review the rubric to see specifically how you will be scored. You will have a copy of this rubric to review again on the testing day.
- Make sure that the essay reflects who you are as a student and as a human being. Remember that the selection committee will use this essay to form a fuller picture of you.
- Use language that is lively and expressive. The members of the committee want to see the skill with which you write.
- Reread your essay to check for errors in expression or rambling organization.

# Notes





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