



# AB 250 Work Group

---

## Types of Assessment Items

May 22, 2012

**Linda Hooper, Ph.D.**  
Education Research and Evaluation Consultant  
High School and Physical Fitness Assessment Office



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Presentation Overview

- Understand the purpose of an item
- Explain the anatomy of an item
- Provide characteristics and limitations of the different types of items
- Provide samples of different item types



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Purpose of an Item

- Assess a student's knowledge, skills, and abilities (KSAs)
- Elicit responses that provide insight to the student's KSAs



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Anatomy of an Item

Kevin uses  $1\frac{1}{4}$  cups of milk to make 1 cake.



What is the total amount of milk Kevin needs to make 6 of these cakes?



**Options** {

- A. 6 cups
- B.  $6\frac{1}{4}$  cups
- C.  $7\frac{1}{2}$  cups
- D. 9 cups

**Distractors**

The diagram shows four options (A, B, C, D) grouped by a large left-facing curly bracket labeled 'Options'. Lines connect options A, B, and D to the word 'Distractors'. A blue arrow labeled 'KEY' points to option C.



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Types of Items

- Selected-Response
- Constructed-Response
- Technology-Based
- Performance Task



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Selected-Response Items

## Characteristics:

- Can be answered quickly
- Student provided with possible responses and selects correct or best answer
- One correct answer or multiple correct answers
- Objective and reliable scoring (i.e., quick, easy, and accurate)
- Broad sampling of content (i.e., larger number of items can be included in a single test)



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Selected-Response Items (cont.)

## Limitations:

- Subject to guessing
- Limited ability to reveal student's reasoning process
- Difficult to assess higher-order thinking



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Selected-Response Sample Items

## Multiple-choice with one-correct answer\*:

*Stimulus Text:*

*Read the following paragraph from the passage about radon, and then answer the question.*

There are several proven methods to reduce radon in your home, but the one primarily used is a vent pipe system and fan, which pulls radon from beneath the house and vents it to the outside. This system, known as a soil suction radon reduction system, does not require major changes to your home. Sealing foundation cracks and other openings makes this kind of system

more effective and cost-efficient. Similar systems can also be installed in houses with crawl spaces. Radon contractors can use other mitigation methods that may also work in your home. The right system depends on the design of your home and other factors.

*Item Stem:*

What does the word "mitigation" mean as it is used in this paragraph?

*Options:*

- A. activation
- B. installation
- C. alleviation
- D. preparation



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Selected-Response Sample Items (cont.)

**Multiple-choice with multiple-correct answers\*:**

Select **all** of the expressions that have a value between 0 and 1.

(A)  $8^7 \cdot 8^{-12}$

(B)  $\frac{7^4}{7^{-3}}$

(C)  $\left(\frac{1}{3}\right)^2 \cdot \left(\frac{1}{3}\right)^9$

(D)  $\frac{(-5)^6}{(-5)^{10}}$

\*SBAC Math Grade 8



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Constructed-Response Items

## Characteristics:

- More time need to administer
- Student to provide own response
- Many ways to solve or arrive at solution
- Require more analytical thinking and reasoning
- Scored by reader or artificial intelligence



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Constructed-Response Items (cont.)

## Limitations:

- Additional time needed to respond to item
- Scoring
  - Development of rubric or scoring rules
  - Additional time needed to score
- Decrease in the reliability of scores
- Assesses limited content area



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Constructed-Response Sample Items

## SBAC ELA Grade 3

*Stimulus Text:*

*Read the paragraph and complete the task that follows it.*

Children should choose their own bedtime. There are things to do, and most have homework. Some people need more sleep, but children like talking to friends. The time to go to bed should be children's decision when they are tired they go to bed earlier. There are activities to go to, so children learn to be responsible.

*Item Prompt:*

Rewrite the paragraph by organizing it correctly and adding ideas that support the opinion that is given.

*Scoring Notes:*

The Response may include, but is not limited to:  
I think children should be allowed to choose their own bedtime. Children need a way to learn how to be responsible. Picking a bedtime is a good way to become more responsible. Children should think about the activities they have to do and how much homework they have when deciding what time to go to bed. Thinking about these things when deciding on a bedtime shows responsibility. Also, some people need more sleep than others, so this is something children can think about when they choose a bedtime. Making good choices helps children to be more responsible.

	Scoring Rubric
3	<p>The response:</p> <ul style="list-style-type: none"> <li>gives the essential elements of a complete interpretation of the prompt</li> <li>addresses many aspects of the task and provides sufficient relevant evidence to support development</li> <li>is focused and organized, consistently addressing the purpose, audience, and task</li> <li>includes sentences of varied length and structure</li> </ul>
2	<p>The response:</p> <ul style="list-style-type: none"> <li>gives some of the elements of an interpretation of the prompt</li> <li>addresses some aspects of the task and provides some evidence to support development</li> <li>has a focus but lacks strong organization and inconsistently addresses the purpose, audience, and task</li> <li>includes sentences of somewhat varied length and structure</li> </ul>
1	<p>The response:</p> <ul style="list-style-type: none"> <li>gives minimal elements of an interpretation of the prompt</li> <li>addresses few aspects of the task and provides little relevant evidence to support development</li> <li>lacks focus and organization and generally does not address the purpose, audience, and task</li> <li>includes sentences with little variety in length and structure</li> </ul>
0	The response does not meet any of the criteria.

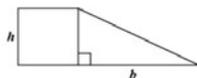


**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Constructed-Response Sample Items (cont.)

## SBAC Math Grade 11

The figure below is made up of a square with height,  $h$  units, and a right triangle with height,  $h$  units, and base length,  $b$  units.



The area of this figure is 80 square units.

Write an equation that solves for the height,  $h$ , in terms of  $b$ . Show all work necessary to justify your answer.

$h =$  \_\_\_\_\_

*Sample Top-Score Response:*

$$\begin{aligned}h^2 + \frac{1}{2}bh &= 80 \\h^2 + \frac{1}{2}bh + \frac{1}{16}b^2 &= 80 + \frac{1}{16}b^2 \\ \left(h + \frac{1}{4}b\right)^2 &= 80 + \frac{1}{16}b^2 \\ h + \frac{1}{4}b &= \sqrt{80 + \frac{1}{16}b^2} \\ h &= \sqrt{80 + \frac{1}{16}b^2} - \frac{1}{4}b\end{aligned}$$

*Scoring Rubric:*

*Responses to this item will receive 0-2 points, based on the following:*

**2 points:** The student has a solid understanding of how to solve problems by using the structure of an expression to find ways to rewrite it. The student makes productive use of knowledge and problem-solving strategies by correctly rearranging a formula to highlight a quantity of interest.

**1 point:** The student demonstrates some understanding of how to solve problems by using the structure of an expression to find ways to rewrite it. The student makes one or two minor errors in computation, such as combining a set of terms incorrectly when completing the square.

**0 points:** The student demonstrates inconsistent understanding of how to solve problems by using the structure of an expression to find ways to rewrite it. The student makes little or no use of knowledge or problem-solving strategies and does not attempt to complete the square when rearranging the formula.

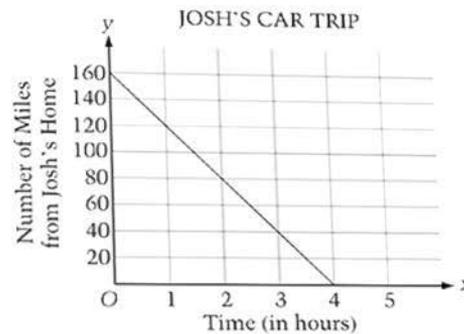


**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Constructed-Response Sample Items (cont.)

## NAEP Grade 8

The linear graph below describes Josh's car trip from his grandmother's home directly to his home.



(a) Based on this graph, what is the distance from Josh's grandmother's home to his home?

(b) Based on this graph, how long did it take Josh to make the trip?

(c) What was Josh's average speed for the trip? Explain how you found your answer.



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Constructed-Response Sample Items (cont.)

## GSE in U.S. History

### **GSE in U.S. History**

This portion of the examination will give you an opportunity to analyze and synthesize historical evidence, to demonstrate a chain of reasoning, and to justify your conclusions. You will have 22 minutes to complete your answer.

#### **Directions**

1. Read the essay topic, paying close attention to all parts of the topic.
2. Plan your essay carefully before you begin to write. You may use the "Notes" areas to plan your essay. Notes written in the "Notes" areas will not be scored. Only the writing on the lined pages of the answer document will be scored.
3. Write your essay on the proper pages.
4. Your essay should be clear and well organized. Stay focused on the topic and support your ideas with sufficient facts and reasons. Avoid unsupported generalizations.

**Respond to the following prompt in a well-written and logically organized essay. Address all parts of the prompt and include specific details and/or examples to support your response.**

*Analyze the impact of television on American political events and behavior in the 1950s and 1960s. Describe television coverage of political events and issues. Evaluate the role of television in shaping American political attitudes and behavior.*



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Technology-Based Items

## Characteristics:

- Provides a variety of media (i.e., video, animation, and sound) as stimuli for items
- Can be used in conjunction with selected-response or constructed-response items
- Scored by reader or artificial intelligence



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Technology-Based Items (cont.)

## Limitations:

- Must have computer or tablet
  - Item delivery system and
  - System to collect student responses
- Scoring
  - Development of rubric or scoring rules
  - Development of scoring program



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Technology-Based Selected-Response Sample Items

*Stimulus Text:*

*Below is an excerpt from American Indian Stories, an autobiography published in 1921, and notes for a summary of the excerpt.*

**"The Legends"**  
**From American Indian Stories**  
By Zitkala-Sa

At the arrival of our guests I sat close to my mother, and did not leave her side without first asking her consent. I ate my supper in quiet, listening patiently to the talk of the old people, wishing all the time that they would begin the stories I loved best. At last, when I could not wait any longer, I whispered in my mother's ear, "Ask them to tell an Iktomi story, mother."

Soothing my impatience, my mother said aloud, "My little daughter is anxious to hear your legends." By this time all were through eating, and the evening was fast deepening into twilight.

As each in turn began to tell a legend, I pillowed my head in my mother's lap; and lying flat upon my back, I watched the stars as they peeped down upon me, one by one. The increasing interest of the tale aroused me, and I sat up eagerly listening to every word. The old women made funny remarks, and laughed so heartily that I could not help joining them.

The distant howling of a pack of wolves or the hooting of an owl in the river bottom frightened me, and I nestled into my mother's lap. She added some dry sticks to the open fire, and the bright flames leaped up into the faces of the old folks as they sat around in a great circle.

## SBAC ELA Grade 8

Summary of events:

1. Zitkala's guests arrive.
2. Zitkala's mother asks the guests for a story.
3. The guests take turns telling stories.
4. The guest and family eat dinner.
5. Zitkala becomes afraid.
6. Zitkala laughs with the old women.

*Item Stem:*

The notes for a summary need to be arranged correctly into the order in which the events occur in the passage. Click on each sentence and move it to arrange the sentence into correct chronological order.

*Key and Distractor Analysis:*

Summary of events: {1, 4, 2, 3, 6, 5} = 1 points  
{1,4,2,\*\*5} = .5 points

Correct order of summary:  
Summary of events: 1, 4, 2, 3, 6, 5

Zitkala's guests arrive.  
The guest and family eat dinner.  
Zitkala's mother asks the guests for a story.  
The guests take turns telling stories.  
Zitkala laughs with the old women.  
Zitkala becomes afraid.



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Technology-Based Selected-Response Sample Items (cont.)

## SBAC Math Grade 5

Classify each product below as less than  $\frac{5}{8}$ , equal to  $\frac{5}{8}$ , or greater than  $\frac{5}{8}$  by moving each expression to the correct box.

$\frac{5}{8} \times \frac{1}{4}$	$\frac{5}{8} \times \frac{13}{6}$	$\frac{5}{8} \times 1\frac{1}{16}$	$\frac{5}{8} \times \frac{7}{8}$	$\frac{5}{8} \times \frac{6}{6}$	$\frac{5}{8} \times 3$
----------------------------------	-----------------------------------	------------------------------------	----------------------------------	----------------------------------	------------------------

Less Than $\frac{5}{8}$	Equal to $\frac{5}{8}$	Greater Than $\frac{5}{8}$

*Sample Top-Score Response:*

Less than $\frac{5}{8}$	Equal to $\frac{5}{8}$	Greater than $\frac{5}{8}$
$\frac{5}{8} \times \frac{1}{4}$ $\frac{5}{8} \times \frac{7}{8}$	$\frac{5}{8} \times \frac{6}{6}$	$\frac{5}{8} \times \frac{13}{6}$ $\frac{5}{8} \times 1\frac{1}{16}$ $\frac{5}{8} \times 3$



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Technology-Based Selected-Response Sample Items (cont.)

## SBAC ELA Grade 11

*Stimulus Text:*

Read these paragraphs from a student's report and then answer the question.

### Year-round Schools

Year-round schools are a better way to educate students than the traditional nine-month schedule. Students are more likely to remember information over short breaks than they are during a long summer vacation. One study conducted by a group that runs year-round schools showed that their students had higher test scores than students who attended schools with a traditional schedule. Many teachers say they have to spend September and October reviewing material taught the previous year.

Some people argue that students shouldn't have to go to school any longer than they already do, but with year-round schools students get the same amount of time off, it is just at different times during the year. Short vacations throughout the year give students and teachers much needed breaks and help keep them from burning out. This schedule actually gives families more freedom to plan trips since they aren't limited to traveling in the summer. In addition, ski resort owners say that a longer break in winter is beneficial because people can spend more time skiing. My friend says that students won't mind attending school in the summer if they get to relax during their other breaks.

*Item Stem:*

Evaluate whether the evidence used in these paragraphs is relevant and comes from a credible source. Click on the highlighted statements and drag them to the appropriate boxes below.

Not a credible source	Not relevant to the argument	Credible and relevant

*Key and Distractor Analysis:*

Not a credible source	Not relevant to the argument	Credible and relevant
<p>their students had higher test scores than students who attended schools with a traditional schedule.</p> <p>students won't mind attending school in the summer if they get to relax during their other breaks.</p>	<p>that a longer break in winter is beneficial because people can spend more time skiing.</p>	<p>they have to spend September and October reviewing material taught the previous year.</p>



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Technology-Based Constructed-Response Sample Items

## SBAC ELA Grade 4

*Stimulus Text:*

*Read the passage below, which comes from a short story about a boy's visit to a zoo, and then answer the question that follows.*

Stephen leaned against the wooden fence, resting his chin on the top. He could see the small herd of deer grazing near the group of trees inside their enclosure. They were so beautiful! Their brown coats reminded him of the inside of a caramel-filled chocolate bar.

Then, suddenly, a white shape emerged from behind the trees. It was a goat, just like the others, but this one had a beautiful white coat. His classmate Joanna tapped him on the arm and said knowingly, "It's an **albino** goat. I read about them in a book."

*Item Prompt:*

Click on the word in the passage that comes from the Latin word *albus*, which means *white*.

*Key and Distractor Analysis:*

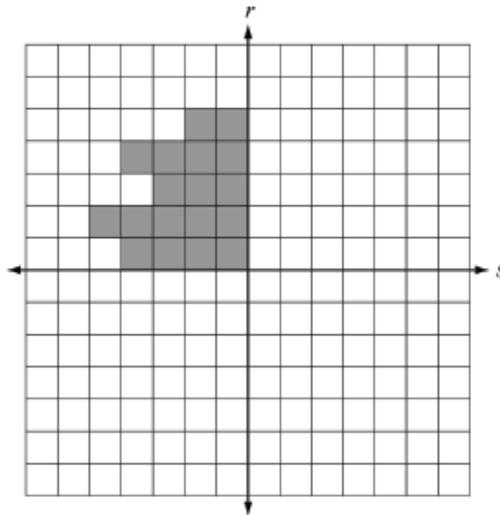
Student selects *albino*, 1 correct = 1 point  
Student does not select *albino*, 0 correct = 0 points



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Technology-Based Constructed-Response Sample Items (cont.)

Part of a figure is shaded on the grid below. Complete the figure by shading squares. Lines  $r$  and  $s$  are lines of symmetry for the completed figure.



[Quadrant 2 will be locked so students are not able to shade additional squares.]

Shade squares to complete the figure. Click on a square to shade it. Click on the square again to remove the shading if you need to. Make sure that lines  $r$  and  $s$  are lines of symmetry for the completed figure.

## SBAC Math Grade 4

### Scoring Rubric:

Responses to this item will receive 0–2 points, based on the following:

- 2 points:** The student demonstrates thorough understanding of recognizing lines of symmetry by correctly completing the design with lines  $r$  and  $s$  as lines of symmetry as shown.
- 1 point:** The student demonstrates partial understanding of recognizing lines of symmetry by completing the design with either line  $r$  or line  $s$  as a line of symmetry, but not both. **OR** The student demonstrates understanding of symmetry but makes an error in completing the figure by one or two squares.
- 0 points:** The student demonstrates little or no understanding of recognizing lines of symmetry by completing the design with neither line  $r$  nor line  $s$  as a correct line of symmetry.



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Performance Task

## Characteristics:

- Allows for multiple approaches
- Measures higher order thinking skills
- Provides opportunities to evaluate student reasoning and process
- Provides realistic contexts



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Performance Task (cont.)

## Limitations:

- Requires human scoring
- Extended period of time to administer
- Assesses limited content area



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Performance Task

## Sample Items

### SBAC ELA Grade 9

**Student Directions:****Part 1 (35 minutes)****Your assignment:**

You will read a short story and article, watch a video, review research statistics, and then write an argumentative essay about your opinion on virtual schools.

**Steps you will be following:**

In order to plan and compose your essay, you will do all of the following:

1. Read a short story and article, watch a video, and review research statistics.
2. Answer three questions about the sources.
3. Plan and write your essay.

**Directions for beginning:**

You will now read the sources and watch a video. Take notes, because you may want to refer back to your notes while writing your essay. You can refer back to any of the sources as often as you like.

(short story)

(article 1)

(video)

(research statistics)

**Questions**

Use your remaining time to answer the questions below. Your answers to these questions will be scored. Also, they will help you think about the sources you've read and viewed, which should help you write your essay. You may click on the appropriate buttons to refer back to the sources when you think it would be

helpful. You may also refer to your notes. Answer the questions in the spaces provided below them.

1. Analyze the different opinions expressed in "The Fun They Had" and the "Virtual High School Interview" video. Use details from the story and the video to support your answer.
2. What do the statistics from "Keeping Pace with K-12 Online Learning" suggest about the current trends of virtual schools in the U.S.? Use details from the charts to support your answer.
3. Explain how the information presented in the "Virtual High School Interview" video and the article "Virtual Schools Not for Everyone" differs from the information in the research statistics? Support your answers with details from the video and the articles.

**Part 2 (85 minutes)**

You will now have 85 minutes to review your notes and sources, and to plan, draft, and revise your essay. You may also refer to the answers you wrote to the questions in part 1, but you cannot change those answers. Now read your assignment and the information about how your essay will be scored, then begin your work.

**Your Assignment**

Your parents are considering having you attend a virtual high school. Write an argumentative essay explaining why you agree or disagree with this idea. Support your claim with evidence from what you have read and viewed.



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Performance Task

## Sample Items – Session 1

### SBAC Math Grade 4

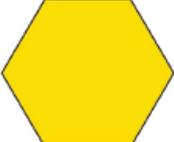
The Task:

**Session 1**

**Art Project with Pattern Blocks**

Use the pattern blocks that your teacher gives you to help you with this task. There are five parts to this task, and you must work through them in order.

Be sure you have the following pattern blocks before you begin.



**Yellow Hexagon**



**Red Trapezoid**



**Blue Rhombus**



**Green Triangle**

**Part A**

Each yellow hexagon pattern block represents one whole. The other colored pattern blocks represent a fraction of the whole yellow hexagon.

Write the fraction of the yellow hexagon each colored shape represents.

1 yellow hexagon represents   1   yellow hexagon.

1 red trapezoid represents          yellow hexagon.

1 blue rhombus represents          yellow hexagon.

1 green triangle represents          yellow hexagon.

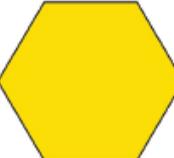
**Part B**

Use the pattern block shapes to make a picture for an art project.

These rules for making your picture must be followed:

- At least one of each shape must be included in the picture.
- The shapes may touch the edges of other shapes.
- The shapes must not overlap each other.

Click on a shape and then click in the space below to put a shape in the picture. Continue as many times as necessary.



**Yellow Hexagon**



**Red Trapezoid**



**Blue Rhombus**



**Green Triangle**

Click on the turn button if you need to turn your shape.

Click on the trash can and then click on the shape if you want to delete a shape.





**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Performance Task

## Sample Items – Session 1 (cont.)



### *Part C*

Count all the colored shapes you used in your picture. Write the total number of each colored shape you used in the picture.

\_\_\_ yellow hexagon(s)                      \_\_\_ blue rhombus (rhombi)

\_\_\_ red trapezoid(s)                      \_\_\_ green triangle(s)

When all of the shapes of one color are combined, they represent a fraction or a mixed number of yellow hexagons. Complete the sentences below showing these fractions or mixed numbers.

\_\_\_ red trapezoid(s) represents \_\_\_ yellow hexagon(s).

\_\_\_ blue rhombus (rhombi) represents \_\_\_ yellow hexagon(s).

\_\_\_ green triangle(s) represents \_\_\_ yellow hexagon(s).

**This is the end of Session 1. You will not be able to go back to Parts A, B, or C once you click "Submit."**



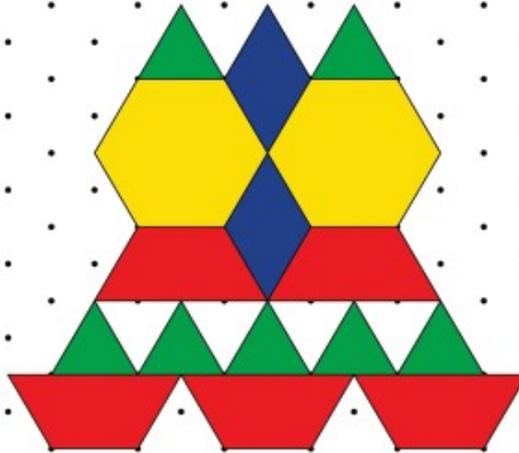
**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Performance Task

## Sample Items – Session 2

### Session 2 Part D

For his art project, Carter used 2 yellow hexagons, 5 red trapezoids, 2 blue rhombi, and 7 green triangles. A picture of Carter's art project is shown below.



Carter thinks that he can use 7 green triangles and 2 blue rhombi to show that  $\frac{7}{6}$  is greater than  $\frac{2}{3}$  ( $\frac{7}{6} > \frac{2}{3}$ ). Use pictures, numbers, and/or words in the space below to show whether Carter's thinking is correct or not.

Carter also thinks he can use 2 yellow hexagons and 2 blue rhombi to show that  $\frac{2}{1}$  is equal to  $\frac{2}{3}$  ( $\frac{2}{1} = \frac{2}{3}$ ).

- He says that the sizes of the shapes do not matter.
- He counts the number of each shape and uses this number as the numerator in each fraction.
- He says that the fractions are equal because the numerators are equal.

Use pictures, numbers, and/or words in the space below to show whether Carter's thinking is correct or not.



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Performance Task

## Sample Items – Session 2 (cont.)

### Part E

Use the pattern block shapes to make a new picture. This picture must represent a value that is equal to  $5\frac{1}{6}$  yellow hexagons.

The other rules still apply:

- At least one of each shape must be included in the picture.
- The shapes may touch the edges of other shapes.
- The shapes must not overlap each other.

Click on a shape and then click in the space below to put a shape in the picture. Continue as many times as necessary.



**Yellow Hexagon**



**Red Trapezoid**



**Blue Rhombus**



**Green Triangle**

Click on the turn button if you need to turn your shape.



Click on the trash can and then click on the shape if you want to delete a shape.



S



Explain how you know the shapes in your picture represent  $5\frac{1}{6}$  yellow hexagons.

End of Session 2



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Contact Information

Linda Hooper, Ph.D.

Research and Evaluation Education Consultant  
High School and Physical Fitness Assessment Office

Phone: 916-319-0345

E-mail: [lhooper@cde.ca.gov](mailto:lhooper@cde.ca.gov)



**TOM TORLAKSON**  
State Superintendent  
of Public Instruction

# Questions?