

# **Writing Quality Questions for Common Formative Assessments**

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**Solution Tree**



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## Targets for Today:

- Become familiar with strategies to write constructed response items that elicit information about student learning, allowing teachers and teams to know what to do next for their students.
- Learn how to develop rubrics to score questions in a way that provides information to the teacher, collaborative team, and the students.
- Explore ways to write selected response questions that will help teams determine what concepts students need more time to learn.

## Critical Questions Teams Ask

1. What do we want students to know and do?
2. How will we know if they can?
3. What will we do if they can't?
4. What will we do for those who already can?

(DuFour, DuFour, Eaker, Many, & Mattos, *Learning by Doing: A Handbook for Professional Learning Communities at Work*, 2016)

## Common Formative Assessment

“Common formative assessments are team-designed, intentional measures used for the purpose of monitoring student attainment of essential learning targets throughout the instructional process.”

—Bailey, Jakicic, & Spiller, *Collaborating for Success With the Common Core*, 2012, p. 100

## Reliability

The assessment tells you **with confidence** whether students are ready to move on or if they need more time and support. Can you rely on the information from the assessment to make decisions about what to do next for students.

## **You Accomplish More Reliable Teacher-Created Assessments By:**

1. Having enough items for each target so that a student isn't able to guess the answers and appear "proficient" or misread items and appear "not proficient."
2. Assuring that items are constructed with good format to minimize misunderstanding or guessing.

## **Why Use Constructed-Response Items?**

- 1.
- 2.
- 3.
- 4.

## **Writing Quality Constructed Response Items**

- Make the question and nature of the response clear to the student.
  - Provide clear expectations for student responses.
  - Set a context for the expected reasoning if needed to more deeply understand what (s)he is being asked to do.
- Don't offer choices that allow students to pick questions they know more about over questions they know little about.
- Develop a scoring rubric for the students that explains proficiency expectations, e.g., the student must provide two pieces of text evidence to show how the character changes.
- Provide adequate space for responses.

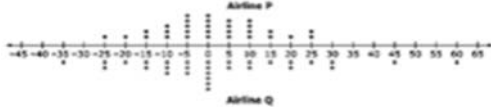
## Examples—Clear Expectations

<p><b>ELA</b></p> <p>The author of this text is making a case to move to all electric cars by 2020. Find three examples of specific data he provides explaining why he believes this is necessary. For each example provide:</p> <ul style="list-style-type: none"><li>-A quotation directly from the text</li><li>-Page number on which it appears.</li></ul>	<p><b>Social Studies</b></p> <p>Examine this letter from a Civil War soldier, Tilton Reynolds, to his mother Juliana Reynolds. After reading his account of his visit across the line to a camp in the South, describe how the conditions for soldiers from the North are different from soldiers from the South. Provide at least three areas of difference and include a citation about how you know.</p>
<p><b>Math</b></p> <p>Look at Figure Q and Figure R below:</p> <div data-bbox="233 842 615 1031" data-label="Figure"><p>Figure Q      Figure R</p><p><input type="checkbox"/> = 1 square centimeter</p></div> <p>Mia said Figure Q and Figure R have equal areas and equal perimeters. She supported her thinking by saying that any two figures made of an equal number of unit squares always have equal areas and equal perimeters.</p> <p>Is Mia correct in her thinking? Explain why you say so with a written explanation as well as with pictures and numbers.</p>	<p><b>With Your Team: Write a constructed response question that you might use in your work:</b></p>

### Providing Feedback:

- Use descriptive rather than evaluative feedback
- Provide the feedback about the learning target(s) being assessed.
- Limit “corrective feedback” to what can be absorbed at a given time.
- Provide feedback that is specific enough so that the student knows what to do next, but not so specific that it gives away the answer.

## Examples—Setting the Context

<p><b>ELA</b></p> <p>In class we studied how authors convince their readers to agree with them. One of the ways we studied was how the author uses rhetoric.</p> <p>Read this article about taking vitamins and supplements, Explain how the author uses rhetoric to convince the reader to take vitamins and supplements.</p> <p>Challenge question: Can an author convince a reader to believe something that is NOT accurate by the facts and details (s)he uses?</p>	<p><b>Science</b></p> <p>Read this article about how fireworks are made. Use the diagram on page 34 explaining luminescence, explain what happens to the energy in the atoms of firework compounds to make them appear different colors and give off different types of light.</p>
<p><b>History</b></p> <p>After analyzing the primary source documents provided, consider what information Truman had about the consequences of the atomic bomb when he chose to use it on Japan.</p> <p>Cite three places in these texts to support your answer.</p>	<p><b>Math</b></p> <p>The dot plot below compares the # of minutes 30 flights made by two airlines arrived before or after their scheduled arrival times.</p>  <ul style="list-style-type: none"> <li>• Negative numbers represent the minutes the flight arrived <b>before</b> its scheduled time.</li> <li>• Positive numbers represent the minutes the flight arrived <b>after</b> its scheduled time.</li> <li>• Zero indicates the flight arrived <b>at</b> its scheduled time.</li> </ul> <p>Based on these data, from which airline will you choose to buy your ticket? Use the ideas of center and spread to justify your choice.</p>
<p><b>P.E.</b></p> <p>Using your knowledge of the 5 components of fitness, identify and explain which component would be the most beneficial for a person training for the 26.2 Boston Marathon.</p>	<p><b>Context May Be:</b></p> <ul style="list-style-type: none"> <li>• Reference to something learned in class.</li> <li>• Information narrowing the focus of the question.</li> <li>• Information that helps the student see connections in a novel way.</li> </ul>

## Consider the Stimulus

- The stimulus is the information provided to the student prior to the question.
- In math, it may include graphs or charts to interpret.
- In ELA it may include a piece of text or video.
- In science, it may include tables or graphs, or an experimental design.
- In social studies it may contain primary or secondary source documents.

## Considerations for Math Stimulus

- Providing stimulus information often raises the rigor, e.g., asking students to analyze charts or graphs to gather information.
- Be cautious about providing too many distracting pieces of stimulus information.

## Considerations for ELA Stimulus

- The passage must reflect the learning target being assessed, e.g., firsthand/secondhand account, two articles on the same topic or event, an argument.
- The passage must be the appropriate Lexile level (measure of text complexity.)
- The passage must be an appropriate length which means it may be an excerpt.

## Benchmarks for PARCC

Grade Band	Flesh-Kincaid	Lexile
2–3	1.98–5.34	420–820
4–5	4.51–7.73	740–1010
6–8	6.51–10.34	925–1185
9–10	8.32–12.12	1050–1335
11–CCR	10.34–14.2	1185–1385

Grade Band	Minimum/Maximum Passage Length
3–5	200–800 words
6–8	400–1,000 words
9–11	500–1,500 words

## Benchmarks for SBAC

Grade	Lexile
3	450–790
4–5	770–980
6–8	950–1155
9–10	1080–1350
11	1215–1355

Grade Band	Maximum Passage Length
3	650
4	750
5	750
6	950
7	950
8	950
HS	1100

### Finding Texts

- Begin with Appendix B from CCSS
- newsela.com
- ReadWorks.org
- Upfront magazine
- NY Times Learning Blog
- Time for Kids, National Geographic
- edsitement.neh.gov
- AmChem magazine

### Finding Math Tasks

- “Google” the standard number: e.g., 1.OA.2
- insidemathematics.com
- illuminations.nctm.org
- ccsstoolbox.com
- <http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default.htm>
- [http://learnzillion.com/common\\_core/math/k-8](http://learnzillion.com/common_core/math/k-8)
- illustrativemathematics.org



## Using Rubrics with Common Formative Assessments

- Each learning target should have a separate criterion on the rubric.
- The team must develop a common understanding of what the expectation is for each level of response often guided by strong and weak work.
- Be aware that some constructed response questions have only “correct” and “incorrect” answers.

	<b>Beyond Proficiency</b>	<b>Proficiency</b>	<b>Partial Proficiency</b>	<b>No Proficiency</b>
<b>Learning Target 1</b>				
<b>Learning Target 2</b>				

	<b>Beyond Proficiency</b>	<b>Proficiency</b>	<b>Partial Proficiency</b>	<b>No Proficiency</b>
Describe the difference information provided in both a firsthand and secondhand account	Using a secondhand account of an event or topic, the student can rewrite it as a firsthand account showing how the information provided will change.	The student can list information provided from a firsthand and secondhand account and can summarize the differences.	The student can list details from each account but is unable to summarize them to show the differences.	The student is unable to list details about the information provided in each account.

	<b>Beyond Proficiency</b>	<b>Proficiency</b>	<b>Partial Proficiency</b>	<b>No Proficiency</b>
Mathematical Explanation	Gives a complete written explanation of what was done as well as why it was done. Provides some alternate thinking about how this might apply in other situations.	Gives a complete written explanation of what was done as well as why it was done. May include a diagram with a complete explanation.	Cannot thoroughly explain what was done and why. The explanation is vague, difficult to understand, or doesn't completely match the process.	Is unable to explain the solution.

**Create a Rubric for the Constructed Response Question You Wrote:**

	<b>Beyond Proficiency</b>	<b>Proficiency</b>	<b>Partial Proficiency</b>	<b>No Proficiency</b>

## What Is Wrong With These Questions?

- In a human skin cell
  - There are 13 chromosomes.
  - There are 18 chromosomes.
  - There are 23 pairs of chromosomes.
  - There are 46 pairs of chromosomes.
- Why would parents seek information from a genetic counselor?
  - To know what their child will look like in the future
  - Birthdate
  - Whether their child will develop cancer sometime in his or her lifetime
  - Find out the hair color
  - If the child will have certain genetic disorders
- Which option has these numbers listed from least to greatest?
  - 3.15,  $7/2$ ,  $\pi$
  - $7/2$ ,  $\pi$ , 3.15
  - $\pi$ , 3.15,  $7/2$
- In what ways is a persuasive essay different from other types of essays?
  - It usually includes both facts and opinions.
  - Its goal is to affect reader's thoughts and emotions.
  - It tries to persuade readers to do or believe something.
  - It attempts to explain how to make or do something.
- Chicago Bears : football :: \_\_\_\_\_ : baseball
  - New York Mets
  - Chicago Blackhawks
  - Los Angeles Lakers
  - Tampa Bay Buccaneers
- Can you relate the parts of the cell to your school? Match each cell part function with the corresponding school area.

_____ cell wall	a. supply or storeroom
_____ vacuole	b. doors or windows
_____ chloroplast	c. principal's office
_____ nucleus	d. bricks of the building
_____ cell membrane	e. cafeteria
- True or false?  
\_\_\_\_\_ If you heat water and it turns into water vapor, it is called condensation; if you turn ice into water vapor, it is called evaporation.

# Test-Item Quality Checklist

## General Guidelines for All Formats

1. Unwrap/unpack standards into learning targets and write questions around the most important targets.
2. Create an assessment planning chart to ensure adequate cognitive demand and number of questions asked per target.
3. Remember the goal is to know whether students know the material, not whether they can use good test-taking strategies to guess the right answer.
4. Provide a sufficient number of items to know whether a student learned, but not so many that the assessment takes too long.

## Multiple-Choice Guidelines

1. Make sure that each item assesses only one target.
2. State the whole question in item stem.
3. Put the answer choices in an order that makes sense, e.g., largest to smallest, alphabetical.
4. Be sure there is only one correct or best answer.
5. Keep response options brief and parallel in:
  - a. Length
  - b. Grammatical construction
6. Limit use of *all* or *none of the above*.
7. Use *always* and *never* with caution.
8. Questions can have different numbers of responses; don't add answers just to make them even.

## True–False, Matching, and Completion or Fill-In Guidelines

1. True–false items
  - a. Make them entirely true or entirely false as stated.
  - b. Avoid negatives which make questions ambiguous.
  - c. Make sure there is only one target per question.
2. Matching items
  - a. Provide clear directions for the match to be made. Indicate if a response can be used more than once or if an item has more than one match.
  - b. Include no more than 10 items.
  - c. Put the responses on the left and the trigger on the right.
  - d. Include only homogeneous items. Do not mix dates, events, and names in a single exercise.
  - e. Provide more responses than trigger items.

3. Completion or fill-in items
  - a. Ask a question.
  - b. Provide one blank per item.
  - c. Do not make length a clue.
  - d. Put blank toward the end.

### **Constructed-Response Guidelines**

1. Creating questions
  - a. Make the context and the expectations clear to the student.
  - b. Don't provide options that allow students to choose areas in which they feel most competent. (You want to know what they really know!)
2. Scoring
  - a. Establish scoring criteria in advance.
  - b. Set a policy about non-achievement factors, i.e., writing skills.
  - c. Score collaboratively, if possible.
  - d. Score all responses to one exercise at a time. (It's faster!)

### **Formatting and Arranging Assessment Items**

1. Be consistent in the presentation of an item type.
2. List the learning target being assessed.
3. Avoid crowding too many questions onto one page.

### **Writing Directions**

1. Write clear, explicit directions for each item type.
2. Indicate how the answer should be expressed (e.g., should *true* or *false* be written, or *T* or *F*? Should numbers be rounded to the nearest 10th? Should units such as months, meters, or grams be included in the answer?)

### **Producing the Test**

1. Type test and make sure copies are readable.
2. Proof carefully and double check the answer key.
3. Ask a colleague to review or take important tests.

(Ainsworth, 2006; Stiggins, Arter, Chappuis, & Chappuis, 2004; Gareis & Grant, 2008; and Popham, 2003)

## Multiple Choice

### Writing Good Question Stems:

- The stem should include a complete thought or question.
- Do not use negatives as they may confuse students who actually know the information.
- Don't give away the answer in the stem.
- If you use **most likely** or **best**, make sure to emphasize the words.

### Writing Good "Distracters"

- Each answer should be reasonable.
- Use parallel grammar and similar length.
- Don't overuse "all of the above" and "none of above."
- Use a logical order for the answers.
- Make sure the correct answer is the **ONLY** correct answer.

## Matching Items

- Provide clear directions.
- Use a maximum of 10 items.
- Keep the list homogeneous.
- Place longer responses on the left with shorter answers on the right.
- Use an uneven number of items.
- Keep the list in a logical order.

## True-False Items

- Make sure there is only one target per item and that the item is either entirely true or entirely false.
- Don't use ***always*** or ***never***.
- Avoid negatives as they can create ambiguity for some students.

## References

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