



GLO Workbook

*A Step-By-Step Approach To Designing
Guaranteed Learning Opportunities
For All Students*

Name: _____

School/District: _____

Software Login: _____

Software Password: _____

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Introduction to GLOs

What is a GLO?

Guaranteed Learning Opportunities (GLOs) are assignments and/or learning experiences that all students complete regardless of the teacher or school to which they are assigned. Each GLO includes:¹

- **Cover Page:** a description of the Power Standard(s) that the GLO addresses plus hints about how to implement and prepare students for the Performance Task.
- **Performance Task:** the assignment, learning experience, or assessment tool that measures student mastery of the **Power Standard(s)**—the school’s most critical learning standards.²
- **Shared Rubric:** the rubric developed and used by all teachers to evaluate student work related to the Performance Task. Teachers norm the rubric by scoring a selection of student work collected by each teacher.
- **Student Exemplars:** samples of student work from each performance level on the rubric.

Note: You will have one GLO package for each Performance Task.

Why Create GLOs?

By creating, analyzing, and implementing a small number of GLOs per course (4-8), schools can ensure that all students have had equitable opportunities to master the Power Standards. In other words, GLOs provide teachers, students, parents, and the community with some sense of a viable and guaranteed curriculum that is available to **all** students.

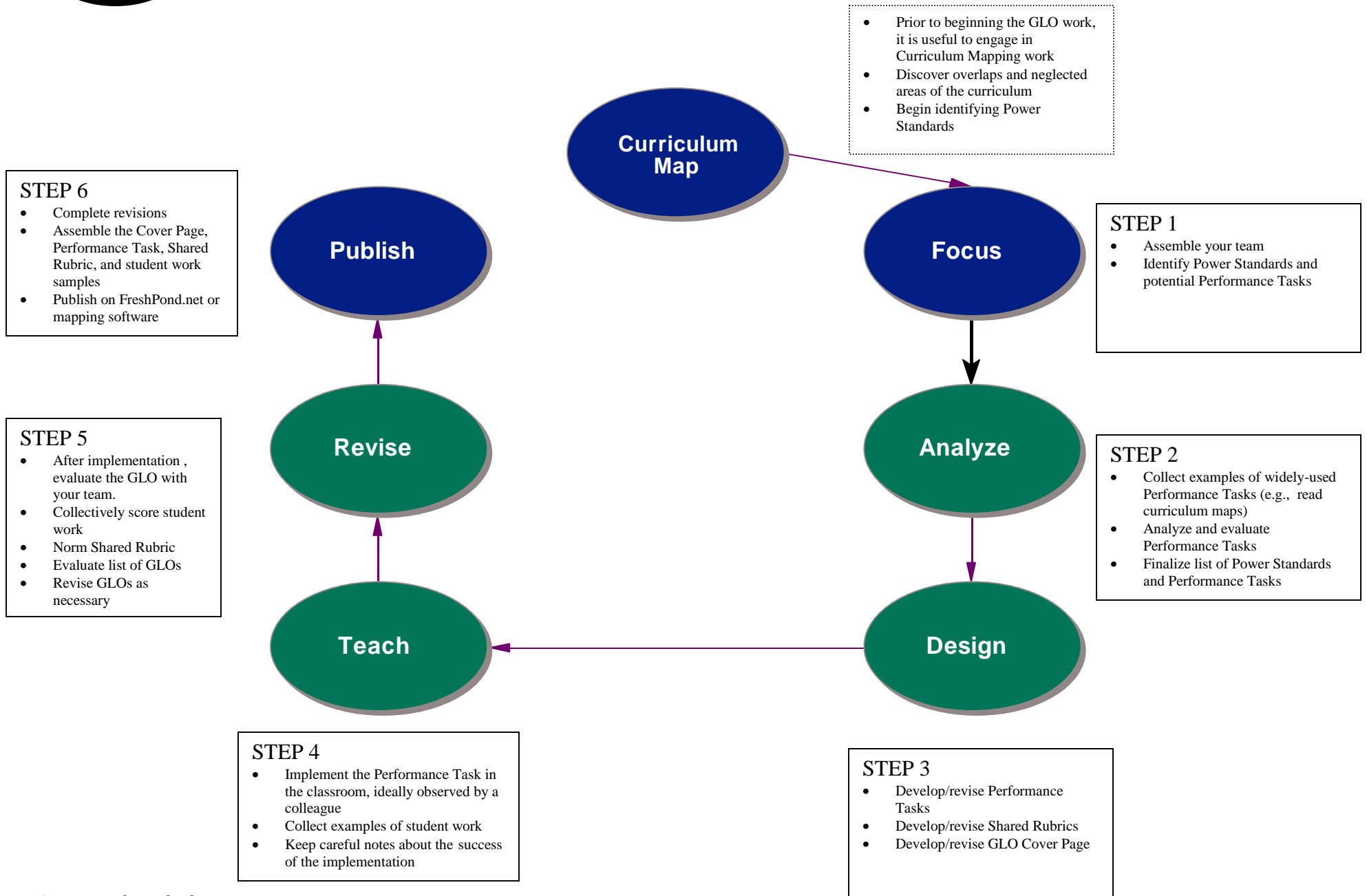
How are GLOs Typically Created?

Schools that create and implement GLOs typically do so as part of a curriculum mapping initiative. After teachers have created individual grade-level or subject-specific curriculum maps, they generally use the steps illustrated by the diagram on the following page. Note: It is possible to create GLOs separately from a curriculum mapping initiative.

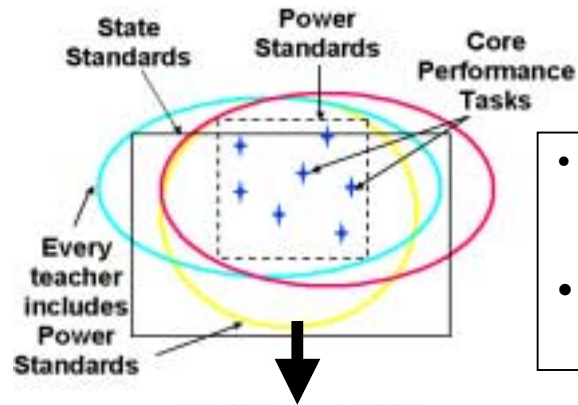
¹ The concept of GLOs was inspired by the concept of “graduation portfolios.” For one such example see, <http://www.san-marino.k12.ca.us/~smhs/FacultyResources/documents/PortfolioPacket2003.pdf>. The portfolio assignments typically include scoring rubrics. An improvement on the idea (and an inspiration to FreshPond’s GLOs) comes from the “Tasks” published by Exemplars™. Each task includes a Performance Task, a Rubric, samples of student work (“benchmark papers”), and an excellent Cover Page that provides hints about what to expect and how to implement the Task in the classroom. www.exemplars.com.

² Douglas Reeves argues for “Power Standards” in *Standards are Not Enough: Essential Transformation for School Success*. *NASSP Bulletin*, Vol. 84, No. 620, 5-19

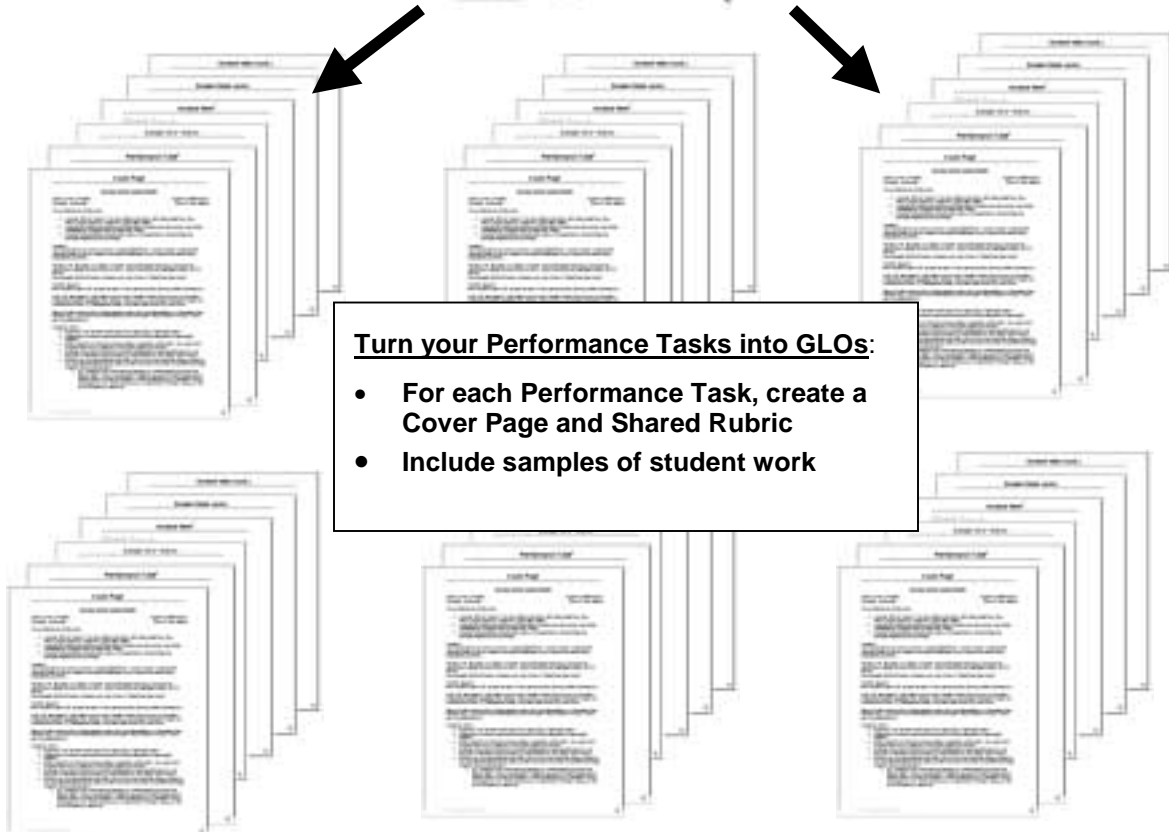
The GLO Cycle



Overview of the Relationship Between Power Standards and GLOs



- Identify Power Standards and Performance Tasks
- Make sure each Power Standard is measured by at least one Performance Task



Creating GLOs—A Step By Step Process

Step 1: Focus (cont.)

List Potential Performance Tasks

- Use the right hand column of the table on page 16 (“Master List of ...”) to list the Performance Tasks that could be used to measure student mastery of the Power Standards that you listed in the left hand column.

Hint: Draw lines to show the connections between your Power Standards and your Performance Tasks.



Master List of Power Standards and Performance Tasks	
Grade Level	Task #1
Power Standards	Performance Tasks
Power Standard 1	Task 1
	Task 2
	Task 3

Use the right hand column of the table on page 12 to list your Power Standards.

- A single Performance Task could be used to measure multiple Power Standards and visa versa.
- A Performance Task could be as simple as a 30-minute math word problem assigned to all 4th grade students or as complex as a multi-media interdisciplinary research report assigned to all 10th grade students.
- Validate your list of Performance Tasks by consulting The Performance Task on page 18.

The Performance Task Rubric	
1. Readability and Vocabulary: The performance task is clearly readable and contains the appropriate vocabulary and content for the grade level.	1 2 3 4
2. Authenticity: The task is a real-world problem that requires the use of the standards being assessed.	1 2 3 4
3. Quality: The task is a high-quality problem that requires the use of the standards being assessed.	1 2 3 4
4. Appropriateness: The task is appropriate for the grade level and content area.	1 2 3 4
5. Time: The task is a high-quality problem that requires the use of the standards being assessed.	1 2 3 4
6. Performance: The task is a high-quality problem that requires the use of the standards being assessed.	1 2 3 4
7. Student Task Statement: The task is a high-quality problem that requires the use of the standards being assessed.	1 2 3 4
8. Teacher and Student Roles: The task is a high-quality problem that requires the use of the standards being assessed.	1 2 3 4

Use the Performance Task Rubric on page 4 to list your Power Standards.

Step 2: Analyze—Finalize Your List of Power Standards and Performance Tasks

Collect samples of Performance Tasks

Collect examples of the Performance Tasks that you listed on the *Master List of Power Standards and Performance Tasks* (page 16). Each member of your team should be assigned to gather the material for one or more of the Performance Tasks, including pre-existing rubrics and samples of student work.

This Performance Task is a question on the 4th grade math MCAS test.

Sample Performance Task¹

Tacos (4th Grade Math)

Instructions
Be sure to read all parts of each question carefully, make each response as clear, complete, and accurate as you can, check your answers.

Murray's parents took him and his sister to a restaurant for dinner. Murray and his sister ordered tacos.

Taco Dinner			
Shells	Fillings	Toppings	Drinks
Hard	Beef	Cheese	Lemonade
Soft	Chicken	Lettuce	Water
	Bean	Tomato	
		Onions	

a. Murray's sister orders a hard-shell chicken taco with lemonade. She wants to choose 3 toppings on the menu shown. List all the possible combinations of 3 toppings that can be made from the 4 choices on the menu.

b. Murray has to decide what kind of taco and drink he wants. List all the possible combinations of 1 shell, 1 filling, and 1 drink he can make from the choices on the menu. (Do not include toppings.)

c. Do you think you have found all the possible combinations? Explain your answer.

This is "Sophie's" solution to the Performance Task included in this GLO. Sophie scored a 4 on the included Rubric – be sure to include examples of your students work who fall at levels of the Rubric.

February 25, 2009

Math

a. List all combinations for taco & 4 toppings

The combinations are C=cheese L=lettuce
 C L T
 C T O
 C L O
 O L T
 T=tomato O=onions

b. List all the combinations for 1 shell, 1 filling, 1 dr

The combinations are: H=hard S=soft B=Beef
 ABC...SBC C=chicken Be=Bean L=lemon
 H BW SBW W=water
 HCL SCL
 HCLW SCW
 H BCL SBW
 H BCLW SBEL

c. NO, I do not think I found all the possible combinations because we didn't do the combinations for the shell, fillings, toppings, and drink. We only did the combinations for the shell, filling and the drinks. We also did it for the toppings.

Be sure to include a Rubric or Assessment Tool with your Performance Task.

Scoring Guide

Score	Description
4	The response shows complete understanding of how to list combinations given a list of possible choices and accurately calculate the total number of combinations.
3	The response shows good understanding of how to list combinations given a list of possible choices and calculate the number of combinations.
2	The response shows basic understanding of how to list combinations given a list of possible choices and calculate the number of combinations.
1	The response shows a minimal understanding of how to list combinations given a list of possible choices.
0	The response shows no real understanding of how to list combinations given a list of possible choices and calculate the number of combinations.
Blank	No Response.

The Performance Tasks in your GLOs can come from many sources:

- Assessments, worksheets, or tests from commercial resources, especially text books and the support materials that often accompany them
- Established assignments that you already use in class
- Sample tasks from standardized or state tests
- New tasks you design specifically for the purpose of creating GLOs

Step 2: Analyze (cont.)

Analyze—Which Performance Tasks best measure mastery of your Power Standards?

1. Assign a team member to “present” each proposed Performance Task to the team with an explanation of how it measures student mastery of the accompanying Power Standard and how it might need to be revised.
2. Following each presentation, analyze and evaluate the Performance Task.
 - Refer to *Performance Task* on page 18.
 - Employ a formalized discussion format like the Peer Review Protocol that guarantees that each Performance Task is thoroughly examined by all members of your team.
 - Can the Performance Task be used in its current form or will it need to be revised so that it more accurately and reliably assesses student mastery of your Power Standards?
3. After all the presentations, revise your *Master List of Power Standards and Performance Tasks* (page 16):
 - Is every Power Standard assessed at least once? Remember, it is possible that one task measures multiple Power Standards and *visa versa*.
 - Which Performance Tasks should be included in your GLOs?
 - Which Performance Tasks are lacking a Shared Rubric? Who is responsible for providing or creating one?
 - Which Performance Tasks will need to be revised? Who is responsible for completing the revisions?
 - Will you need to create new Performance Tasks in order to adequately and reliably assess student mastery of your Power Standards?
 - When are revisions due? Who is going to collect and assemble them?

The Peer Review Protocol



Before Meeting: circulate GLO and Power Standard

1. Review agenda, select note-taker, etc. (2 min)
2. Present GLO and target Power Standard(s) (<5 min)
3. Ask clarifying questions (<5 min)
4. Silent writing time (<3 min)
5. Discuss using *Performance Task Rubric* (<20 min)
6. Silent writing time (<3min)
7. Reflect/summarize important observations (5 min)

Step 3: Design—Create Your GLOs

In Step 2 you decided which Performance Tasks you were going to use to assess your Power Standards. If you haven't already done so, assign team members to complete the development of each of the Performance Tasks and the accompanying Shared Rubric and Cover Pages.

Develop the Performance Tasks

- Make it classroom-ready: Performance Tasks should be written and published in a format that could be easily reproduced and distributed to students.

Develop the Shared Rubric³

- Validate your Shared Rubric by consulting The Rubric Checklist on page 19.
- Your initial Rubric should be a *working draft*. Don't waste time trying to make it perfect at this point in the process; your Rubric will need revision once you use it with actual student work.
- Brainstorm the descriptors that differentiate between each level of student performance.
 - What would it look like if students successfully completed the Performance Task? What would you want to see?
 - Try brainstorming descriptors for the work of a student whose mastery of the Power Standards is secure. Then do the same for students whose mastery is emerging and developing.

Rubric Descriptor Brainstorming

Emerging	Developing	Secure

³ McTighe and Wiggins' *Understanding by Design: Professional Development Workbook* has some useful guidelines for creating rubric including the diagram shown here (pages 182-183).

Step 3: Design (cont.)

- Choose between creating a **holistic rubric** (provides an overall impression of each level of student performance—more often used as an evaluation tool) or an **analytical rubric** (judges each aspect of the student performance separately—more often used as an instructional tool).

Holistic Rubric for Graphic Display of Data

3	All data are accurately represented on the graph. All parts of the graph (units of measurement, rows) are correctly labeled. The graph contains a title that clearly tells what the data show. The graph is very neat and easy to read.
2	Data are accurately represented on the graph or the graph contains minor errors. All parts of the graph are correctly labeled or the graph contains minor inaccuracies. The graph contains a title that generally tells what the data show. The graph is generally neat and readable.
1	The data are inaccurately represented, contain major errors or are missing. Only some parts of the graph are correctly labeled, or labels are missing. The title does not reflect what the data show, or the title is missing. The graph is sloppy and difficult to read.

Analytic-Trait Rubric for Graphic Display of Data

	title	labels	accuracy	neatness
weight:	10%	20%	50%	20%
3	The graph contains a title that clearly tells what the data show.	All parts of the graph (units of measurement, rows) are correctly labeled.	All data are accurately represented on the graph.	The graph is very neat and easy to read.
2	The graph contains a title that generally tells what the data show.	Some parts of the graph are inaccurately labeled.	Data representation contains minor errors.	The graph is generally neat and readable.
1	The title does not reflect what the data show or the title is missing.	Only some parts of the graph are correctly labeled or labels are missing.	The data are inaccurately represented, contain major errors or are missing.	The graph is sloppy and difficult to read.

Develop the Cover Page for Your GLO

How will you prepare the students for the Performance Task? How will you introduce it? The more that you collaborate with your team on this step, the more you can guarantee that students have been equally prepared for the GLO.

The Cover Page should include teacher notes, hints, and lesson plans about how to prepare students for the Performance Task, including a rationale and context for the GLO, as well as a description of the standards that the GLO addresses.

Step 4: Teach

Implement the Performance Task in the Classroom

- Keep careful notes during the implementation of the Performance Task; you will want to revise the GLO based on your classroom experiences.
- If possible, invite a colleague to observe your classroom while you implement the Performance Tasks.

Collect Samples of Student Work

- Gather and make copies of un-scored samples of student work from all performance levels—try to have at least one sample from each performance level articulated by the rubric (e.g., poor work, average work, above average work).
- Remove student names and do not write on them; you will be collectively scoring and examining these samples later.

Step 5: Revise

Score Student Work Together—Use Exemplars to “Norm” the Shared Rubric.

1. Number and distribute the samples of student work that you and your team collected during the implementation of your Performance Tasks (try to have a mix of work from different classrooms).
2. Give each team member ample time to score 4-5 samples of student work.
3. Discuss the scores, making direct references to the Rubric. You may discover that you need to clarify the language of the Rubric so that it is an accurate and reliable tool for scoring student work.
4. Repeat with additional batches of student samples until you have established a shared understanding of excellence. In other words, your scores on any one piece of student work should be no more than .5 of a grade point off each other (e.g., scores for the same piece of student work should vary no more than a “B” to a “B+”).
5. Select 2-3 samples of student work to exemplify student performance from each level of the Rubric and set them aside to be published with the completed GLO.

Revise the Performance Task, Cover Page, and Rubric

- Compare notes about the implementation process.
 - Are you still happy about your initial list of Power Standards and Performance Tasks? Do you need to add any? Remove any?
 - Are you happy with the Performance Task and Shared Rubric? Did they accurately measure student mastery of the Power Standard? (see *Performance Task* on page 18 for other considerations)
 - How does the implementation of the Performance Task(s) need to be changed? What else should be included on your Cover Page?
- Revise the Performance Task, Shared Rubric, or Cover Page as necessary.

Step 6: Publish

Publish each GLO on FreshPond.net, similar district website, or with your curriculum mapping software. If GLOs get published in paper form, make sure the electronic version is easily accessible so that it can be readily edited.

Each completed GLO package should include (in this order):

- **Cover Page:** a description of the Power Standard(s) that the GLO addresses plus hints about how to implement and prepare students for the Performance Task
- **Revised Performance Task:** the assignment, learning experience, or assessment tool that measures student mastery of the **Power Standard(s)**—the school’s most critical learning standards.
- **Revised Shared Rubric:** the rubric developed and used by all teachers to evaluate student work related to the Performance Task. At this point, your team will have “normed” the rubric by scoring a selection of student work collected by each teacher.
- **Student Exemplars:** samples of student work from each performance level on the rubric.



NOTE: You will have one GLO package for each Performance Task and no more than 10 GLOs per course.

Tools

Master List of Power Standards and Performance Tasks

Grade level: _____

Subject: _____

Power Standards	Performance Tasks

Power Standards Checklist

1. **Essentialness:** Is this Power Standard non-negotiable? Is this the most engaging, essential, and/or enduring concept, skill, habit of the mind, and/or content?

e.g., Does your Power Standard complete the following statements?

- | | 1 | 2 | 3 | 4 |
|--|----|---|---|-----|
| • If our students learn nothing else, we should guarantee that each student learns at least _____. | No | | | Yes |
| • I would feel embarrassed or guilty if my students did not learn ____. | | | | |
| • If you forced me to abandon half my course, I would keep ____. | | | | |
-

2. **Standards and State Test Alignment:** Is this Power Standard overtly aligned with your district and state's standards and curriculum objectives? Do the required standardized tests assess mastery of this Power Standard?

e.g., Most teachers can hunt and peck through standards to justify almost any choice of lesson. But, is there a small set of MOST IMPORTANT standards for each subject area?

Please note: a Power Standard might not be assessed by State tests. For example, there may be something that your district/school/grade level feels it is essential for your students to learn that does NOT align with state standards. Does your school have a theme or philosophy that requires lessons outside the typical curriculum?

	1	2	3	4
	No			Yes

3. **Vertical Alignment and Utility:** Is mastery of this Power Standard required for the next level of instruction? Will mastering this standard help students succeed beyond the course? Will students be able to apply what they know in many other contexts?

e.g., Students must master paragraphing before learning about the five-paragraph essay. Similarly, the ability to read tables and graphs may help science students understand water salinity, but it is also useful with other scientific concepts and in courses besides science.

	1	2	3	4
	No			Yes

4. **Appropriateness:** Is this Power Standard appropriate for the intended pupils' experiences, interests, levels of comprehension, and grade level?

Note: sometimes appropriateness is in conflict with Alignment; this is a problem teachers need to resolve.

	1	2	3	4
	No			Yes

5. **Targeted:** Is this Power Standard specific enough to guide teaching and assessment? Are the learning goals clear to both teacher and student?

	1	2	3	4
	No			Yes

NOTE: Think ESSENTIAL...a list of Power Standards is necessarily BRIEF.

Performance Task Checklist

<p>1. Reliability and Validity: Does the Performance Task accurately measure student mastery of the targeted Power Standard and not some other unrelated skill or knowledge? Does it measure learning of all aspects of the Power Standard or only those that are easiest to measure?</p> <p>e.g., When you ask students to write an essay about X, are you measuring their knowledge of X or their writing ability? Is an essay the best way to measure their understanding of X?</p>	1 No	2	3	4 Yes
<p>2. Authenticity: Does the Performance Task mirror tasks that students will have to perform in other contexts?</p> <p>e.g., Will mastery of this Performance Task prepare students for success on state tests, real-life tasks, or other school assignments?</p>	1 No	2	3	4 Yes
<p>3. Clarity: Will students understand what to do? Are there aspects of the task that will confuse them? Can you imagine students <u>reasonably</u> misinterpreting the directions?</p>	1 No	2	3	4 Yes
<p>4. Appropriateness: Is the task suitable for the students that will use the materials?</p> <p>e.g., In addition to vocabulary, content, and concept-level, consider the students' experiences, interest levels, levels of comprehension, age, and maturation level.</p>	1 No	2	3	4 Yes
<p>5. Bias: Is the task free from statements of bias and stereotyping concerning gender, ethnicity, race, sexuality, religion, etc.?</p>	1 No	2	3	4 Yes
<p>6. Presentation: Is the task professionally organized and written?</p> <p>e.g., consider layout, ease of use, appearance, spelling, grammar, etc.</p>	1 No	2	3	4 Yes
<p>7. Higher Order Thinking: Is there a reasonable balance of complexity amongst your choices of Performance Tasks?</p> <p>e.g., some of your GLOS will necessarily contain lower order "drill and skill" tasks. For example, students may be asked to label a map, define a list of terms, or quickly compute a list of problems. But those lower order tasks MUST be balanced by "higher order" Performance Tasks that test your students' ability to analyze, evaluate, compose, construct, etc.</p> <p>In other words, a Performance Task could be as simple as a 30-minute math word problem assigned to all 4th grade students or as complex as a multi-medium interdisciplinary research report assigned to all 10th grade students.</p>	1 No	2	3	4 Yes
<p>8. Variety and Learning Styles: Does your list of Performance Tasks provide opportunities for students to exhibit their understanding through a variety of learning styles, mechanisms, and formats?</p>	1 No	2	3	4 Yes

NOTE: The "G" in GLO stands for "Guaranteed"...the longer you make your list "required" Performance Tasks, the greater the chance they will not all be implemented.

Rubric Checklist

1. Validity: Could a student get a high score without demonstrating a complete understanding of the Power Standard?	1 No	2	3	4 Yes
2. Integrity: Is the rubric loyal to the Power Standard? That is, does the rubric unfairly score aspects of student performance unrelated to the Power Standard? e.g., Are students being scored lower or higher for format, length, etc., rather than for quality or mastery of the Power Standard?	1 No	2	3	4 Yes
3. Accuracy: Does the rubric precisely describe the qualities of each level of student performance? Does the rubric employ <u>parallel descriptors</u> that accurately differentiate between the degrees of student performance?	1 No	2	3	4 Yes
4. Scope: Does the rubric measure learning of all aspects of the Power Standard or only those that are easy to measure?	1 No	2	3	4 Yes
5. Utility: Is this rubric easy to use? The rubric needs to save time, It should be easy for teachers (and students) to use.	1 No	2	3	4 Yes

Template for GLO Cover Page

Title:

Grade Level:

Subject:

Duration:

Time of Year:

Power Standards Addressed:

Context:

What to Expect:

Teaching Hints:

Sample Lists of Power Standards and Performance Tasks

English Grade 9

Grade level: 09


Subject: L.A.

Power Standards	Performance Tasks
<p>(A) Paragraph writing</p> <ul style="list-style-type: none"> • topic sentences • transitions 	<ul style="list-style-type: none"> • Correctly place <u>TP</u> marks in a block of text • Reorganize a mixture of sentences into a <u>TP</u>
<p>(B) Grammar</p> <ul style="list-style-type: none"> • Parts of speech 	<p>Diagram a series of sentences (nouns, verbs, etc)</p>
<p>(C) Literary themes</p>	<ul style="list-style-type: none"> • Read text and identify major themes • Pick own choice of text and write expository <u>TPs</u> explaining them <p style="text-align: right;">or film!</p>
<p>(D) Research paper/process</p> <ul style="list-style-type: none"> • outline 	<p>Create "topic sentence outline" of research topic</p>
<p>(E) Literary genre</p> <ul style="list-style-type: none"> • exposure to... • recognize ... 	<p style="text-align: center;">?</p>
	<p>"Translate" short story into other genres</p> <p style="text-align: center;">(C + E)</p>
	<p>Identify samples of each genre</p> <ul style="list-style-type: none"> - label sample w/ genre type - explain <u>why</u> it is an example of that genre
<p>(F) Exposure to English Canon: be able to recognize</p> <ul style="list-style-type: none"> • Romeo + Juliet • Odyssey • Moby Dick • Huckleberry Finn • Call of the Wild 	<ul style="list-style-type: none"> • Read passage + identify source? • Read synopsis of each and identify?
	<p>(C) Recreate story in a different setting and explain why there is consistent</p>
	<p>(A)</p>

Music Kindergarten

Grade level: K Subject: Music Names: Sherri Buxton / Mary Gray

% of Master Map complete? 100% 75% 50% 25%

Power Standards	Proposed GLO	Status?
singing	Perform in public simple songs as an ensemble	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
playing instruments	Perform in class: Play rhythm sticks as an ensemble, keeping a common steady beat	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
reading music	Follow symbols for steady beat for 16 beats while chanting or singing.	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
improvisation	Make vocal and/or instrumental sounds to accompany a simple story or poem.	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
		<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> Notice the alignment between the Power Standards and the proposed Performance Tasks. </div>		<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
		<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
		<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie

* We Couldn't log on to change global copy.

Science Grade 6

Grade level: 6th Subject: Science Names: Ellie Baker Connie West

% of Master Map complete? 100% 75% 50% 25%

Power Standards	Proposed GLO	Status?
① Classify organisms into the currently recognized Kingdoms according to characteristics they share.	Create a taxonomic Key select and	<input checked="" type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
⑬ Give examples in which organisms interact and have different functions w/in an ecosystem	Research a biome to find out characteristics of the biome and organisms that live there write a children's book.	<input type="checkbox"/> Not developed <input checked="" type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input checked="" type="checkbox"/> Samples of student work <input checked="" type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
⑭ Explain the roles and relationships...		<input checked="" type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
⑰ Identify ways in which ecosystems have changed.	H.I.P.P.O dilemma letter writing campaign	<input checked="" type="checkbox"/> Not developed <input checked="" type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
		<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
		<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
		<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie

This is still a work in progress but note that this team will use some Performance Tasks that they already have (#13) and others that they will need to create (#17).

Math Grade 4

Grade level: 4 Subject: Math Names: Friswell / Mottor

% of Master Map complete? 100% 75% 50% 25%

	Power Standards	Proposed GLO	Status?
1	to perform all four operations with larger numbers	12 problem computation assessment	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
2	demonstrate understanding of place value of whole numbers to 999,999 & decimals to hundredths	Teacher makes list of 5 numbers with a given digit in a different place. Students name the place and value of the digit.	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
3	Collect data & create a graph	1. develop a survey question 2. conduct a survey 3. organize data into table or chart 4. display the data	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
4	compute elapsed time including A.M. & P.M.	use a schedule to answer questions about elapsed time	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
5	read a multi-step word problem & create a plan for solving	use question from MC AS question	<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
			<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
			<input type="checkbox"/> Not developed <input type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie

This team is using a healthy mix of complex multiple-day Performance Tasks (#3) and simple in-class assignments (#1, #5)

Science Grade 10

Grade level: 10 Subject: SCIENCE Names: FRANK S-K ; E FURLONG ; L. ALLEN

% of Master Map complete? 100% 75% 50% 25%

Power Standards	Proposed GLO	Status?
Cells (membranes, organelles, etc.)	cell city / pizza parlor analogy	<input type="checkbox"/> Not developed <input checked="" type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
Mendelian genetics	mono- + dihybrid Punnett squares	<input type="checkbox"/> Not developed <input checked="" type="checkbox"/> Performance Task
DNA Replication + Protein Synthesis	create a model (diagram) of protein synthesis (transcription/translation)	<p>This team has finished Step One. Upon analysis of their proposed GLOs they may want to add another Power Standard: "Create non-linguistic representations (models) of scientific concepts."; almost all of their Performance Tasks require students to be able to visualize the concept being tested.</p>
Organic Compounds	structure / fx / role of the 4 compounds; story; construct an organism	
Nitrogen Cycling in Ecosystems	diagram flowchart of processes + systems + symbiotic interactions	
Evolutionary Adaptations from H ₂ O to Land	model amphibian/reptilian/mammalian kinesthetic posturing * discuss other physiological adaptations	
Human A+P Systems	- identify structural + functional unit of human systems	
		<input type="checkbox"/> Passed in to Debbie <input type="checkbox"/> Not developed <input checked="" type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie
		<input type="checkbox"/> Not developed <input checked="" type="checkbox"/> Performance Task <input type="checkbox"/> Common Rubric <input type="checkbox"/> Samples of student work <input type="checkbox"/> Cover sheet/lesson plan <input type="checkbox"/> Posted on Master Map <input type="checkbox"/> Passed in to Debbie

Sample GLO

Cover Page

The Taco Dinner Combo Problem

Grade Level: 4th Grade
Duration: 15 minutes

Subject: Mathematics
Time of Year: March

Power Standards Addressed:

- **Analyze Data in Tables:** Construct, draw conclusions, and make predictions from various representations of data sets, particularly tables.
- **Analyze Possible Combinations of Data Sets:** List and count the number of possible combinations of objects from multiple sets of data
- **Explain mathematical reasoning to others:** use organization, clear writing, and accurate mathematical terminology.

Context:

This Performance Task comes from the 4th grade 2002 MCAS. It asks students to utilize their reasoning skills to list the number of possible combinations from a “menu” of possible Taco ingredients and drinks.

Because this task calls on students to explain their mathematical reasoning, it presents an opportunity to grade “process” and “solution”...which is essential for preparing students for the MCAS.

We changed the MCAS rubric to have a more overt focus on “Explaining Reasoning.”

What to Expect:

Most students will do fine on parts “a” and “b;” they will dutifully list all the possible combinations.

Part “c” is fairly difficult. About 50% of our students clearly understood the question but had a difficult time clearly explaining their thinking. Almost none of our students’ answers included the mathematical “rules” or “operating principles” that might have guided their reasoning.

Many just didn’t present their thinking clearly—many don’t use abbreviations or summarize their answers (e.g., they just list the combination but don’t provide a topic sentence such as, “there are 12 combinations”).

Teaching Hints:

- Implement this task after reviewing how to read graphs, tables and charts.
- Review how to answer open-response questions before attempting to teach data analysis.
- Give students lots of practice using a variety of problem solving skills. e.g., have them visualize the solution, draw the solution, and create a “to-do” lists.
- Build up your student tolerance for working independently; keep lengthening the time they are not allowed to ask for help (e.g., start with 5 min, then 10 min, then 15 min)
- Model your own mathematical reasoning in front of the class (and then have students do it). Don’t fish for help from the class, just talk out loud as you solve the problem and have students record your process.
 - e.g., What do I see? What are they asking for? What format should the final answer take? Who is my audience? What do they want? What information do I need in order to solve this problem? Which information is on the page? Which information is not? Which information is unnecessary? What am I going to need to do? (What is my task list?)

Performance Task⁴

The Taco Dinner Combo Problem (4th Grade Math)

Instructions

Be sure to read all parts of each question carefully, make each response as clear, complete, and accurate as you can, check your answers.

Murray's parents took him and his sister to a restaurant for dinner. Murray and his sister ordered tacos.

Taco Dinner			
Shells	Fillings	Toppings	Drinks
Hard Soft	Beef Chicken Bean	Cheese Lettuce Tomato Onions	Lemonade Water

- Murray's sister orders a hard-shell chicken taco with lemonade. She wants to choose 3 toppings on the menu shown. List all the possible combinations of 3 toppings that can be made from the 4 choices on the menu.
- Murray has to decide what kind of taco and drink he wants. List all the possible combinations of 1 shell, 1 filling, and 1 drink he can make from the choices on the menu. (Do not include toppings.)
- Do you think you have found all the possible combinations that can be made from the table above? Explain your answer.

⁴ Include a Performance Task in your GLO packet that you can hand "as-is" to your students.
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Rubric

The Taco Dinner Combo Problem (4th Grade Math)

Score	Description
4	Completely accurate and clear. The student shows thorough and complete understanding of how to list combinations given a list of possible choices and accurately calculate the total number of combinations. The student's thinking is exceptional clear and made easy to follow through the use of highly effective examples, logical organization, and neat presentation.
3	Generally accurate and clear. The student shows an almost complete understanding of how to list combinations given a list of possible choices and calculate the number of combinations. Any inaccuracies do not affect the overall result. The student's thinking is generally clear; the response uses examples and is effective, organized, and legible.
2	Somewhat inaccurate and confusing. Although some errors may detract from results, the response demonstrate basic understanding of how to list combinations given a list of possible choices and calculate the number of combinations, The student's thinking lacks clarity and is difficult to follow without giving the student the benefit of the doubt. The reader is distracted by the lack of examples, lack of organization, and the carelessness of the presentation.
1	Inaccurate and impossible to follow. The response a minimal understanding of how to list combinations given a list of possible choices. he student's reasoning is unclear, disorganized, and careless.
0	No response, no understanding, or off task completely. Student does not answer the question or demonstrate how to list possible choices and calculate the number of combinations.

Student Work⁵

“Sophie”—Score: 4

February 25, 2004

Math

1) a. List all combinations for taco & 4 toppings

The combinations are: C = cheese L = lettuce

T = tomato O = onions

C L T

C T O

C L O

O L T

b. List all the combinations for 1 shell, 1 filling, 1 dr.

The combinations are: H = hard S = soft B = Beef

A B C S B L

C = chicken B E = Bean L = Lemons

H B W S B W

W = water

H C L S C L

H C W S C W

H B E L S B E W

H B E W S B E L

c. NO, I do not think I found all the possible combinations because we didn't do the combinations for the shell, fillings, toppings, and drinks. We only did the combinations for the shell, filling and the drinks. We also did it for the toppings.

⁵ Sample student work found in this packet is taken from the 2002 4th grade math MCAS – www.doe.mass.edu/student/2002
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Student Work (cont.)

“David”—Score 3

- Ⓐ. cheese, lettuce onions
- tomato, lettuce, cheese
 - onions, cheese, tomato
 - lettuce, onions, tomato
- Ⓑ.
- Hard shell, Beef, lemonade
 - Soft shell, Beef, lemonade
 - Hard shell, chicken, lemonade
 - Soft shell, chicken lemonade
 - Hard shell, bean, lemonade
 - Soft shell, bean, lemonade
 - Hard shell, beef, water
 - Soft shell, beef, water
 - Hard shell, chicken, water
 - Soft shell, chicken, water
 - Hard shell, bean, water
 - Soft shell, bean, water

Ⓒ I am sure about all of my possible combinations because I checked off each, shell, filling, topping, or drinks. Also I know because I listed them and I wrote them in order.

“Alex”—Score: 2

Cheese Lettuce + tomato <hr style="width: 80%; margin: 0;"/> Soft shell + beef + water or Lemonade <hr style="width: 80%; margin: 0;"/> hard shell + Bean + Lemonade or water	Soft shell + chicken + Lemonade or water <hr style="width: 80%; margin: 0;"/> hard shell + beef + Lemonade or water	Soft shell + bean + water or Lemonade <hr style="width: 80%; margin: 0;"/> hard shell + chicken + Lemonade or water
--	--	--

I got all of these combinations by looking at the menu and then putting each one together like soft shell put all the fillings in that and a drinks then I did the fillings then do the drinks. All and all that's how I got my combinations.

Student Work (cont.)

“Robin” —Score: 1

a Cheese Tomato lettuce

b	Soft	taco shell,	filling	beandrink	water
	hard	shell		beef	lemonade
	soft	shell	beef		lemonade
	hard	shell	chicken		lemonade
	soft	shell	beef		lemonade
	hard	shell	bean		water
	hard	shell	beef		water
	hard	shell	chicken		water
	soft	shell	beef		water
	soft	shell	chicken		water

c Yes I did every shell with every thing and I did 5 open shells.

“Pat” —Score: 0

(A) Muffars Sister can choose 3 fillings and 3 toppings.

(B) Muffy can choose seven fillings shells and drinks. (C) I think I have found many of the combinations I might not know or few.