Smarter Balanced Assessment Consortium:
Mathematics Performance Task Specifications
(Design, Development and Scoring Plan)
TABLE OF CONTENTS

DESIGN
SPECIFICATIONS............................................................................................................................Error! Bookmark not defined.

A. Key Features of Mathematics Performance Tasks................................................................ Error! Bookmark not defined.

B. Gatekeeper Criteria for Performance Tasks.............................................................................4
C. Criteria Descriptors.....................................................................................................................5

TASK DEVELOPMENT AND SCORING SPECIFICATIONS..............................................................8

D. Task Type Considerations........................................................................................................8
E. Blueprint......................................................................................................................................9
F. Content Clusters........................................................................................................................11
G. Independence/Interdependence of Items within a Performance Task........................................14
H. Suggested Topics for Performance Tasks in Pilot.................................................................15
I. Suggestions for Design Teams..................................................................................................15
J. Time Allotment..........................................................................................................................15
K. Response Types........................................................................................................................15

APPENDIX A..................................................................................................................................18

APPENDIX B..................................................................................................................................18
DESIGN SPECIFICATIONS

A performance task (PT) is an item type designed to provide students with an opportunity to demonstrate their ability to apply their knowledge and higher-order thinking skills to explore and analyze a complex, real-world scenario. A mathematics performance task elicits evidence of students’ ability to “bring it all together” to develop a solution plan to the central challenge of the task.

The first section of this document defines A) key features, B) gatekeeper criteria, and C) criteria descriptors to guide the development and review of performance tasks for the Smarter Balanced Assessment Consortium. The two task types (equivalent to genres in ELA) in mathematics are Plan and Design and Evaluate and Recommend. Technical considerations for each task type are found in sections D–K of this document. The design specifications in this document are for performance tasks in mathematics and work in tandem with other Consortium-approved specifications, including mathematics content specifications, grade-level areas of emphases, universal design, general accessibility and bias guidelines, metadata requirements, and style guidelines for mathematics text, equations, and artwork.

A. Key Features of Mathematics Performance Tasks
(adapted from Smarter Balanced Performance Task Specifications document)

Performance tasks should:

- integrate knowledge and skills across multiple Claims and Targets—a key component of college and career readiness.
- measure capacities such as depth of understanding, research skills, and/or complex analysis with relevant evidence.
- require student-initiated planning, management of information/data and ideas, and/or interaction with other materials.
- reflect a grade level, developmentally appropriate real-world task and/or scenario-based problem.
- allow for multiple approaches.
- represent content that is relevant and meaningful to students.
- allow for demonstration of important knowledge and skills, including those that address twenty-first-century skills, such as critically analyzing and synthesizing information presented in a variety of formats, media, etc.
- require scoring that focuses on the essence of the Claim(s) and Targets for which the task was written.
- be feasible for the school/classroom environment.
B. Gatekeeper Criteria for Performance Assessments

A set of cross-cutting criteria have been developed to guide the development and review of Performance Tasks. The term gatekeeper indicates these as essential components of a quality PT. Performance Tasks that do not meet these criteria would not be accepted into the PT item pool. The gatekeeper criteria are listed below.

<table>
<thead>
<tr>
<th>Aligned with Claims and Standards</th>
<th>PTs should go to the heart of the key Claims and Common Core State Standards for Mathematics:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>o Students can solve a range of complex, well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies. (Claim 2)</td>
</tr>
<tr>
<td></td>
<td>o Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others. (Claim 3)</td>
</tr>
<tr>
<td></td>
<td>o Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems. (Claim 4)</td>
</tr>
<tr>
<td>Developmentally Appropriate</td>
<td>PT topics, tasks, and scoring should be appropriate for the age and developmental experience base of the students.</td>
</tr>
<tr>
<td>Engaging</td>
<td>Topics should be chosen to be of relevance and interest to students, and tasks should engage them in solving a relevant problem or making a decision they would care about.</td>
</tr>
<tr>
<td>Accessible</td>
<td>Topics and tasks should minimize sources of bias, allow for multiple pathways, and provide appropriate scaffolds or supports while keeping in mind that sources and response type need to allow access for students with different English language proficiency and students with disabilities.</td>
</tr>
<tr>
<td>Purposeful and Coherent</td>
<td>Tasks should have an authentic purpose, and the components should be connected to achieving that goal.</td>
</tr>
</tbody>
</table>
C. Criteria Descriptors

Of primary consideration is that performance tasks go to the heart of the Claims and Common Core State Standards for Mathematics (CCSSM). Then, the PTs should follow the criteria described below as they pertain to the choice of topic, task, scoring, and classroom activities.

Topic/Setting/Scenario

- Developmentally Appropriate (age, grade, complexity, and content).
  - Driving Question: Is the task matched at the **appropriate level** for students?
    - The topic should be developmentally appropriate. That is, it should be based on direct experiences the students will likely have had at this age level. This also requires consideration of what students from different cultural and economic backgrounds may have experienced.
    - The topic should also be framed in a way that is appropriate to the cognitive, social, and emotional levels of the student (e.g., more concrete in earlier years; not emotionally disturbing for the age level of the students).

- Engaging (relevant, of interest, builds on curiosity)
  - Driving Question: Would students **want** to do the task?
    - The topic should be engaging to students. That is, the topic should be relevant to concerns that would be typical of students at this age, dealing with activities they would be likely to engage in or issues that could be of interest to many students at this age.
    - The topic should build on the natural curiosity of students.

- Accessible (minimize bias, linguistic complexity, open-ended)
  - Driving Question: **Can** students access the task?
    - The topic should be accessible to students from a wide range of experiences and minimize bias that could disadvantage a particular socio-economic, cultural, gender group, or one living in a particular geographical location.
    - Allowing choices with respect to the topic itself or the approach to the topic/task is one way to increase accessibility.
    - Given that the context of PTs is rich, complex, and will be new novel for many students, any relevant hidden rules, underlying assumptions, or background knowledge or construct irrelevant vocabulary related to the context should be made explicit to the student through the classroom activity or the task itself.

- Purposeful and Coherent
  - Driving Question: Do students have a **coherent goal or purpose**?
    - The topic of the PT should offer a clear purpose and an authentic challenge in which the student must accomplish a meaningful goal.
    - The scenarios for the performance task should provide a realistic, engaging, and authentic purpose for responding to the prompts.

Task: Student Role/ Stimulus/Prompts

- Developmentally Appropriate (age, grade, complexity, and content).
- Driving Question: Is the task matched at the **appropriate level** for students?
o The task should be developmentally appropriate to a range of students and use content drawn from earlier grade levels (up to the current grade level) so that students can focus on the complex application of higher-order skills (problem-solving, critiquing of reasoning, modeling, and analyzing data).

o The student’s role in the scenario should be appropriate for the target grade level, age, and content.

o The prompts should be developmentally appropriate in complexity (i.e., reflect how much articulation of thinking a student can do). The expectation of explication should be developmentally appropriate.

o Engaging (relevant, of interest, builds on curiosity)

o Driving Question: Would students want to do the task?

  o The student should have a leading role in the task to develop a plan, model, design, critique, and/or recommend.

  o Within the given constraints, students should have a set of choices and decisions to make, and they should have an opportunity to follow through on the implications of their choices.

  o The task should build on the natural curiosity of students at their age span or engage them in a question that is likely to evoke genuine interest or provide a familiar context in which they can relate. Tasks should not be trivial, uninteresting to a student at this age, or obscure.

o Accessible (minimize bias, linguistic complexity, open-ended)

o Driving Question: Can students access the task?

  o The task should allow for a range of responses in depth, complexity, and mathematical sophistication.

  o As students weigh evidence and make choices, the task should allow for a range of acceptable answers, appropriate to the choices they make.

  o The prompts should allow for multiple ways for students to solve the problem and to display their reasoning (i.e., textual explanations, graphs, equations, tables).

  o The collection of sources should be sufficiently varied in format (including texts with a reading level at or below grade level, tables, data displays, and other visual sources) to allow for different entry points into the mathematics.

  o To allow for multiple ways of representing student thinking, tasks can allow for choices in the use of technology-enhanced tools (graphing a line, manipulating an object, building a picture graph). At the same time, such tools should not be required unnecessarily, as they raise accessibility concerns for students unfamiliar with technology (these will typically be students in under-resourced schools) or students for whom ease of use is an issue (e.g., visually impaired, motor skills).

  o The task should be worded in clear, simple, and unambiguous ways (avoiding the use of unfamiliar or unessential vocabulary and overly complex sentence structures). However, the task should include sufficiently clear and vivid language to convey the richness of the context or complexity of the scenario. Language can be made more accessible by ready access to visual representations and definitions of words or phrases (e.g., by allowing students to click on words for a definition).

  o The task should clearly request the information on which scoring will depend.

  o For construct irrelevant terms that need defining, tasks should include a pop-up glossary.

---

English language learner considerations:

- Provide directions that maximize clarity and minimize the potential for confusion.
- Use vocabulary that is widely accessible to all students, and avoid homonyms and unfamiliar vocabulary that is not directly related to what is being measured.
- Keep sentence structures as simple as possible while expressing the intended meaning.
- Do not use cultural references that are not equally familiar to all students or idiomatic expressions.
- Avoid sentence structures that may be confusing or difficult to follow, such as the use of passive voice, sentences with multiple clauses, or double negatives.
- Minimize the use of low-frequency, long, or morphologically complex words and long sentences.

Purposeful and Coherent

Driving Question: Do students have a coherent goal or purpose?

- The task should communicate to the student the overall purpose of the task and what they will be expected to accomplish.
- The prompts should be clearly related to accomplishing the overall purpose of the task and remain within the context of the given scenario.
- The prompts should follow a logical progression, building toward the culminating prompt (final design, written evaluation, or recommendation).
- The culmination of the task should represent a feasible solution to the overall problem in the scenario.

Scoring

- Developmentally Appropriate (age, grade, complexity, and content).
- Driving Question: Is the task matched at the appropriate level for students?
  - Scoring guides should use criteria and expectations geared to the developmental level of the students.
  - For example, elementary-grade level students’ explanations of their reasoning should not be expected to be highly formalized and fully elaborated. (Students are still acquiring the language of mathematics.)

- Accessible (minimize bias, linguistic complexity, open-ended)
- Driving Question: Can students access the task?
  - Scoring guidelines should be based on information directly requested in the prompt. (Do not score on what you did not ask.)
  - Scorers should be instructed to look for the mathematical meaning of students’ explanations rather than the way (grammar, syntax) they express themselves in Standard English.
  - Where permitted by Smarter Balanced guidelines, scoring guidelines should allow for the use of other languages in their responses.
  - Scoring guides should provide a full range of sample responses to account for multiple solutions, solution strategies, and/or explanations of reasoning.
  - Scoring guides should allow for the awarding of partial credit.

Purposeful and Coherent

Driving Question: Do students have a coherent goal or purpose?
To reflect the fact that students are completing a coherent task with multiple parts, the following scoring guidelines should apply:

- Students should not be penalized on multiple prompts for errors that occur in one answer and are reflected in later answers.
- In cases where a response to one item is used to respond to another item, students should be awarded credit for correct reasoning.

**Classroom Activity**

The Classroom Activity is part of a performance task that precedes the scored individual component of the task. The main purpose of the Classroom Activity is to ensure that all students have a common understanding, at a minimal level, of the contextual elements of a performance task, so they are not disadvantaged in demonstrating the skills the task intends to assess. Contextual elements may include: an understanding of the setting or situation in which the task is placed, potentially unfamiliar concepts that are associated with the scenario (e.g., how stocks are traded on the stock market; how fines are calculated for speeding tickets), and key terms or vocabulary students will need to understand in order to meaningfully engage with and complete the performance task. Key terms are identified based on an analysis of vocabulary and/or concepts central to the performance tasks within a given topic in order to determine whether they meet one of the following criteria:

- They are on the upper end of grade-level appropriateness; or
- They are unique to the context of the topic and may be unfamiliar based on a student's background or culture.

**TASK DEVELOPMENT AND SCORING SPECIFICATIONS**

Task writers should ensure that the mathematics of the task is correct, and should use precise mathematical language.

**D. Task Type Considerations**

Plan and Design:
- For plan-and-design tasks, design constraints and parameters should be clearly labeled and explained in the prompt or the classroom activity, if necessary.

Evaluate and Recommend:
- For evaluate-and-recommend tasks, data sets should be drawn from authentic data sets. If they are mocked up, they should conform to reasonable estimates.
- The audience and format of the recommendation should be clearly stated (e.g., “Write a letter to your school principal with your recommendation.”)
E. Blueprint

1. Item Set
Each performance task should contain a set of six items (total points not critical). (Scoring guide should allow for partial credit. An item may be worth 0-3 points, with guidelines for awarding 0, 1, 2, or 3 points, but no half points.)

Figure 1. PT Variation: Change of some aspect of scenario or prompts

2. Scaffolding and Stimuli Presentation
Grades 3–5 PTs should be appropriately scaffolded, while higher grades will exhibit less scaffolding with each increasing grade.

When presenting stimuli, the following guidelines apply:

- There should be a reference (using bold font as an indicator) that connects items to the specific stimulus resource required for a response. The name of the resource should be bold in both the stem and stimulus (e.g., Use Table 1 to answer this question).
- The number of resources (tables/graphics) within the stimulus of a PT should be limited for grades 3–5, as follows:
o Grade 3 – two or fewer
o Grades 4–5 – three or fewer

3. Independent vs. Interdependent Items

Guidelines for the first two items:
• The items must be independent and discrete (i.e., not needed to score subsequent parts of the task and not dependent on each other).
• The items should provide entry into the task. Here, “entry” means having low to low-medium difficulty and possibly addressing some underlying mathematical information necessary for completing the rest of the task in a way that may be independent from the task itself.
• The items can be part of the overall storyline of the performance task or items designed to measure student’s mathematical understanding of some aspect of the stimulus.
• At grades 3–8, the first two items should be response types that are machine-scored.
• At grades 9–11, use discretion in selecting response types that can be machine or hand-scored based on the intended construct being measured.

Guidelines for the remaining four items:
• The final four items in all performance tasks will be hand-scored.
• The final four items cannot depend on either of the first two items.
• The final four items should be interconnected and cohesive and may be interdependent with each other but not dependent on either of the first two items.
• Scoring guides for the final four (interdependent) items should explicitly prevent students from being penalized multiple times if a mistake made on an initial item is correctly carried through subsequent PT items.

4. Prompts: The performance task prompts should contribute scores to each claim according to the following distribution. There should be a total of six items.

<table>
<thead>
<tr>
<th>Claim/Score Reporting Category</th>
<th>PT Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Concepts and Procedures</td>
<td>0</td>
</tr>
<tr>
<td>2. Problem Solving</td>
<td>1–2</td>
</tr>
<tr>
<td>3. Communicating Reasoning</td>
<td>2</td>
</tr>
<tr>
<td>4. Modeling and Data Analysis</td>
<td>2–3</td>
</tr>
<tr>
<td>Total</td>
<td>6 items</td>
</tr>
</tbody>
</table>
F. Content Clusters

This document provides Common Core State Standards clusters by grade level for performance tasks (PTs). The CCSS clusters offer productive opportunities for development of tasks grounded in relevant, real-world scenarios. PTs, by their nature, should draw on content across grades, domains, clusters, and standards.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Common Core State Standards Clusters</th>
<th>Clarifications</th>
</tr>
</thead>
</table>
| 3     | **3.OA Operations and Algebraic Thinking**  
Represent and solve problems involving multiplication and division.  
Multiply and divide within 100.  
Solve problems involving the four operations, and identify and explain patterns in arithmetic.  
**3.NBT Number and Operations in Base Ten**  
Use place value understanding and properties of operations to perform multi-digit arithmetic.  
**3.MD Measurement and Data**  
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.  
Represent and interpret data.  
Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.  
**3.G Geometry**  
Reason with shapes and their attributes. | |
| 4     | **4.OA Operations and Algebraic Thinking**  
Use the four operations with whole numbers to solve problems.  
Generate and analyze patterns.  
**4.NBT Number and Operations in Base Ten**  
Use place value understanding and properties of operations to perform multi-digit arithmetic.  
**4.NF Number and Operations—Fractions**  
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.  
**4.MD Measurement and Data**  
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.  
Represent and interpret data.  
**4.G Geometry**  
Draw and identify lines and angles, and classify shapes by properties of their lines and angles. | |
| 5 | 5.NBT Number and Operations in Base Ten  
Perform operations with multi-digit whole numbers and with decimals to hundredths. | 5.NF Number and Operations–Fractions  
Apply and extend previous understandings of multiplication and division to multiply and divide fractions. | 5.MD Measurement and Data  
Convert like measurement units within a given measurement system.  
Represent and interpret data.  
Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. |
| 5.G Geometry  
Graph points on the coordinate plane to solve real-world and mathematical problems. |
| 6 | 6.RP Ratio and Proportional Relationships  
Understand ratio concepts and use ratio reasoning to solve problems. | 6.EE Expressions and Equations  
Reason about and solve one-variable equations and inequalities.  
Represent and analyze quantitative relationships between dependent and independent variables. | 6.G Geometry  
Solve real-world and mathematical problems involving area, surface area, and volume. |
| 6.SP Statistics and Probability  
Summarize and describe distributions. |
| 7 | 7.RP Ratio and Proportional Relationships  
Analyze proportional relationships and use them to solve real-world and mathematical problems. | 7.EE Expressions and Equations  
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. |
| 7.G Geometry  
Draw, construct, and describe geometrical figures and describe the relationships between them.  
Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. |
| 8 | **8. SP Statistics and Probability**  
Draw informal comparative inferences about two populations.  
Investigate chance processes and develop, use, and evaluate probability models. |
| 8 | **8. EE Expressions and Equations**  
Understand the connections between proportional relationships, lines, and linear equations.  
Analyze and solve linear equations and pairs of simultaneous linear equations.  
Use linear equations with rational number coefficients.  
More in-depth investigations using simultaneous equations should be reserved for high school. |
| 8 | **8. Functions**  
Use functions to model relationships between quantities.  
This cluster will often support tasks in Probability and Statistics.  
Tasks written to this cluster should have a clear dependency relationship but might not have associated empirical data. |
| 8 | **8. Geometry**  
Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.  
Shapes can include previous grade-level applications. |
| 8 | **8. Probability and Statistics**  
Investigate patterns of association in bivariate data.  
Examples include informal fitting of lines and informal assessment of fit. |
| **HS** | **N-Q Quantities**  
Reason quantitatively and use units to solve problems. |
| **HS** | **A-SSE Seeing Structure in Expression**  
Write expressions in equivalent forms to solve problems. |
| **HS** | **A-CED Creating Equations**  
Create equations that describe numbers or relationships. |
| **HS** | **A-REI Reasoning with Equations and Inequalities**  
Solve systems of equations.  
Represent and solve equations and inequalities graphically. |
| **HS** | **F-IF Interpreting Functions**  
Interpret functions that arise in applications in terms of the context.  
Analyze functions using different representations. |
| **HS** | **F-BF Building Functions**  
Build a function that models a relationship between two quantities. |
<table>
<thead>
<tr>
<th>F-LE Linear, Quadratic, and Exponential Models</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct and compare linear, quadratic, and exponential models and solve problems.</td>
<td></td>
</tr>
<tr>
<td>Interpret expressions for functions in terms of the situation they model.</td>
<td></td>
</tr>
<tr>
<td><strong>F-TR Trigonometric Functions</strong></td>
<td></td>
</tr>
<tr>
<td>Model periodic phenomena with trigonometric functions.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>G-SRT Similarity, Right Triangles, and Trigonometry</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Define trigonometric ratios and solve problems involving right triangles.</td>
<td></td>
</tr>
<tr>
<td><strong>G-MG Modeling with Geometry</strong></td>
<td></td>
</tr>
<tr>
<td>Apply geometric concepts in modeling situations.</td>
<td></td>
</tr>
<tr>
<td><strong>G-GMD Geometric Measurement and Dimension</strong></td>
<td></td>
</tr>
<tr>
<td>Explain volume formulas and use them to solve problems.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S-ID Interpreting Categorical and Quantitative Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Summarize, represent, and interpret data on a single count or measurement variable.</td>
<td></td>
</tr>
<tr>
<td>Summarize, represent, and interpret data on two categorical and quantitative variables.</td>
<td></td>
</tr>
<tr>
<td><strong>S-IC Making Inferences and Justifying Conclusions</strong></td>
<td></td>
</tr>
<tr>
<td>Understand and evaluate random processes underlying statistical experiments.</td>
<td></td>
</tr>
<tr>
<td>Make inferences and justify conclusions from sample surveys, experiments, and observational studies.</td>
<td></td>
</tr>
<tr>
<td><strong>S-CP Conditional Probability and the Rules of Probability</strong></td>
<td></td>
</tr>
<tr>
<td>Understand independence and conditional probability and use them to interpret data.</td>
<td></td>
</tr>
<tr>
<td><strong>S-MD Using Probability to Make Decisions</strong></td>
<td></td>
</tr>
<tr>
<td>Calculate expected values and use them to solve problems.</td>
<td></td>
</tr>
<tr>
<td>Use probability to evaluate outcomes of decisions.</td>
<td></td>
</tr>
</tbody>
</table>

**G. Independence/Interdependence of Items within a Performance Task**

Performance tasks will have interdependent items, a necessity given the desire to include student decision making and feature multiple solution pathways as part of PT development. However, the first two items will be independent, discrete tasks (machine scoreable for grades 3–6 and either hand or machine scoreable for grades 7–HS). The last four items should be interdependent with each other, but not dependent upon either of the first two items. Scoring guides for interdependent items should explicitly prevent students from being penalized multiple times if a mistake made on an initial item is correctly carried through the rest of the PT. In other words, the scoring guide should award full credit if an incorrect response from a previous item is correctly used in subsequent items. (Refer to E. Blueprint– 3. Independent vs. Interdependent Items for further discussion.)
H. Suggested Topics for Performance Tasks in Pilot
See Appendix A.

I. Suggestions for Design Teams

Performance task design teams, comprised of content and accessibility members, should be the primary strategy used to develop performance tasks, as our experience has shown that working in isolation will not result in high quality, engaging tasks. Lessons learned from our development process include the following:

- Brainstorm task ideas and stimuli with at least one other person before beginning the development process.
- Consider development of the two unique variants of the task (to create the full bundle) when drafting the initial main performance task.
  - Share the core mathematical ideas and organizing theme for the family of performance tasks outside of the two people before beginning actual development.
- Recommend multiple opportunities to share the task with a peer for feedback during the development process.
- Ask a third person who has not been involved with the development process to review and provide feedback on the task.
- Seek feedback from individuals with diverse perspectives.

This multiple iteration process helps to ensure that the task has the right balance of rigorous content, student engagement, and meets the specifications.

J. Time Allotment

An individual PT for grades 3–8 or high school may require up to 90 minutes of administration time in addition to time allocated for a classroom activity. This time includes:

**Target Timing (without Classroom Activity):**
- Grade 3–5: 60 minutes
- Grade 6–8: 60 minutes
- High School: 90 minutes

**Classroom Activity:** up to 30 minutes

K. Response Types (See Appendix B for more information)

Performance Tasks will have following response types:

- Drag and Drop
- Equation/Numeric
- Fill-in Table
- Graphing
- Hot Spot
- Multiple Choice, single correct response
- Multiple Choice, multiple correct responses
- Short Text
## Appendix A: Suggested Topics

<table>
<thead>
<tr>
<th>Category</th>
<th>You are going to . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plan and Design</strong></td>
<td><strong>Evaluate and Recommend</strong></td>
</tr>
<tr>
<td><strong>Animals</strong></td>
<td>Animal cage&lt;br&gt;Animal tank&lt;br&gt;Animal terrarium</td>
</tr>
<tr>
<td><strong>Arts</strong></td>
<td>Monument&lt;br&gt;Sculpture&lt;br&gt;Tangram designs</td>
</tr>
<tr>
<td><strong>Budget</strong></td>
<td>Budget for a class trip&lt;br&gt;Road trip&lt;br&gt;Weekly schedule (time budget)</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td>Bake sale&lt;br&gt;School spirit-wear sale&lt;br&gt;Club/team fundraiser</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>House&lt;br&gt;Room&lt;br&gt;Building&lt;br&gt;Building a tree house</td>
</tr>
<tr>
<td><strong>Crafts</strong></td>
<td>Jewelry box</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Game&lt;br&gt;A class trip to an art museum&lt;br&gt;A class trip to a science museum&lt;br&gt;Cafeteria design&lt;br&gt;Auditorium design</td>
</tr>
<tr>
<td><strong>Entertainment</strong></td>
<td>Class party&lt;br&gt;Dinner party&lt;br&gt;Holiday party&lt;br&gt;Designing a video game</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>Community garden&lt;br&gt;Landscaping&lt;br&gt;Tree planting</td>
</tr>
</tbody>
</table>
### Outdoor Activities

<table>
<thead>
<tr>
<th>Plan and Design</th>
<th>Evaluate and Recommend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking trip</td>
<td>Playground design</td>
</tr>
<tr>
<td>School/community garden</td>
<td>Hiking trails</td>
</tr>
<tr>
<td>Landscaping the campus</td>
<td></td>
</tr>
<tr>
<td>Butterfly garden</td>
<td></td>
</tr>
<tr>
<td>Container garden</td>
<td></td>
</tr>
<tr>
<td>Geocaching</td>
<td></td>
</tr>
</tbody>
</table>

### Science

<table>
<thead>
<tr>
<th>Plan and Design</th>
<th>Evaluate and Recommend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amusement park attraction</td>
<td>Relative humidity</td>
</tr>
<tr>
<td>Derby car contest</td>
<td>Temperature and heat transfer</td>
</tr>
<tr>
<td>Paper airplane contest</td>
<td>Evaporation rate</td>
</tr>
<tr>
<td>Interior decorating</td>
<td>Finding dew point</td>
</tr>
<tr>
<td>Water bottle</td>
<td>Population growth</td>
</tr>
<tr>
<td>Soda can</td>
<td>Government statistics</td>
</tr>
<tr>
<td>A robot</td>
<td>Shipping packages</td>
</tr>
<tr>
<td></td>
<td>Planting crops</td>
</tr>
</tbody>
</table>

### Sports

<table>
<thead>
<tr>
<th>Plan and Design</th>
<th>Evaluate and Recommend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track meet</td>
<td>Bike tour</td>
</tr>
<tr>
<td>Olympics</td>
<td>Athletic equipment order</td>
</tr>
<tr>
<td>Obstacle course</td>
<td>Gymnasium floor redesign</td>
</tr>
<tr>
<td>Bike race</td>
<td>Exercise Plan</td>
</tr>
<tr>
<td>Urban adventure</td>
<td></td>
</tr>
<tr>
<td>5K/10K race</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix B: Response Types

<table>
<thead>
<tr>
<th>Number</th>
<th>Available Response Types</th>
<th>Item Type Name</th>
<th>Available Scoring Types</th>
<th>Accessibility Rendering/Format</th>
<th>Description Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drag and Drop</td>
<td>GI</td>
<td>automatic with machine rubric</td>
<td>do not use if item can be written in standard format; keyboard accessible, non-braillable; limit use in pool</td>
<td>drag-and-drop single or multiple elements</td>
</tr>
<tr>
<td>2</td>
<td>Equation/ Numeric</td>
<td>EQ</td>
<td>automatic with machine rubric</td>
<td>standard</td>
<td>enter equation or numeric response</td>
</tr>
<tr>
<td>3</td>
<td>Fill-in Table</td>
<td>TI</td>
<td>hand-scored</td>
<td>standard</td>
<td>keyboard alphanumeric entry</td>
</tr>
<tr>
<td>4</td>
<td>Graphing</td>
<td>GI</td>
<td>automatic with machine rubric</td>
<td>no accessible format (non-braillable); limit use in pool</td>
<td>plot points and/or draw lines</td>
</tr>
<tr>
<td>5</td>
<td>Hot Spot</td>
<td>GI</td>
<td>automatic with machine rubric</td>
<td>do not use if item can be written in standard format; keyboard accessible, non-braillable; limit use in pool</td>
<td>select text</td>
</tr>
<tr>
<td>6</td>
<td>Multiple Choice, single correct response</td>
<td>MC</td>
<td>automatic with key</td>
<td>standard</td>
<td>four-option multiple-choice</td>
</tr>
<tr>
<td>7</td>
<td>Multiple Choice, multiple correct responses</td>
<td>MS</td>
<td>automatic with key(s)</td>
<td>standard</td>
<td>multiple-option multiple-choice</td>
</tr>
<tr>
<td>8</td>
<td>Short Text</td>
<td>SA</td>
<td>hand-scored</td>
<td>standard</td>
<td>keyboard alphanumeric entry</td>
</tr>
</tbody>
</table>