

# Introduction to Performance Assessments

## Performance Assessments Overview

Performance assessments (PAs) were designed to be high-quality, authentic learning experiences that elicit evidence of skills and acquired knowledge, while being flexible to encourage alternative approaches. The required content within each PA is intended to be an integrated set of skills that will help students to access and apply higher levels of cognitive complexity.

During the performance assessment, students should be able to

- synthesize information from several different sources to build a coherent argument (LP1);
- engage in conversations with other students to help strengthen their collective understanding of the issue (LP2);
- think critically about the viability of their model and its accuracy (LP3);
- decide which information is relevant to include in the communication they develop (LP4);
- explore an issue that is often central to the teenage experience (LP6); and
- have opportunities to create graphs using graphing software and create a final product that may leverage different technologies (LP7).

Performance assessments are one of the forms of evidence provided by students when they complete any of the eight badges focused on mathematical modeling and application (M102, M103, M104, M111, M112, M113, M151, and M212). In each of these eight badges, a performance assessment is combined with a portfolio of evidence and a concepts and skills assessment to show a broad range of evidence of student growth and achievement.

## Performance Assessments and the Modeling Cycle

The modeling cycle featured in these performance assessments is a process of 1) identifying a problem, 2) creating models, 3) analyzing the story told by those models, and 4) reporting the results to the appropriate audience.<sup>1</sup> In these performance assessment tasks, students engage with the mathematical modeling cycle to make sense of ideas and phenomena in the world, using tasks that are relevant and encourage student agency. The models students encounter can be very simple or more elaborate, but all require students to access and use tools from the various mathematical sciences.

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<sup>1</sup> From “Progressions for the Common Core State Standards for Mathematics” [Draft manuscript], by Common Core Standards Writing Team, 2019, p. 6 ([http://mathematicalmusings.org/wp-content/uploads/2022/05/modeling\\_02082019.pdf](http://mathematicalmusings.org/wp-content/uploads/2022/05/modeling_02082019.pdf)).

## **Performance Assessment Versions and Content**

Each performance assessment has both a student version and a teacher version. The teacher version includes the content of the student version with additional information to support teachers in the successful implementation of these performance assessments. Teacher versions also include citations for the source materials used to provide background information for the task scenario, while student versions will only include links to resources pertinent to their work on the task.

Student versions feature information before and after the modeling cycle components to support student success on the task. The introductory information progresses from a zoomed-out focus on the larger contexts and the mathematical modeling cycle incorporated into the task then moving to more specific examples, applications, and considerations of the problem students will be solving. After the task, students often have the opportunity to extend their learning by tackling a more complex facet of the task or exploring an additional, yet related, real-world problem involving similar mathematical concepts.

## **Performance Assessment Version Uses**

Student versions are intended to be either printed out or used online. Some tasks with multiple options include multiple student versions. In other tasks, there is one student version with multiple parts to provide students with a choice of topics. Teachers are encouraged to read through the student versions and plan accordingly.

Questions and Actions are text features throughout the student versions of the tasks to help students keep track of their progress. Generally, in the Launch section, there is space for students to record their responses to these questions; elsewhere, this space will vary, and often, students will be presented with questions to ponder, discuss with a partner, and/or use to help them conceptualize the problem and its solution, but not necessarily respond to in writing.

Each new section of the student version features a brief overview of what students will be asked to do in that section. At the end of some sections, there is a Checklist for students to use to prepare for a consultation with their teacher. This is an opportunity for students to check the accuracy of their work and receive feedback from their teacher before continuing to more mathematically complex facets of the task. Teachers are encouraged to consider their students' needs and anticipate how they might best manage classroom time and logistics if multiple students/groups of students arrive at a certain Checklist at the same time.

If a task features a product that students create, a Checklist will be provided to help students ensure they have addressed all required elements of their product. If there is no other rubric provided in the task, teachers are encouraged to use this final Checklist as a rubric for the student’s product.

Teacher versions include pertinent design notes to build an understanding of the mathematical foundations and intentions of the tasks. These design notes include information about the mathematical modeling cycle inherent to each task. Connections to Learning Principles are featured on the first page of every teacher version. Teachers are encouraged to attend to the Learning Principles when planning the engagement strategies for each task.

In the teacher versions, Teacher Notes appear in red font and can include instructional next steps. These may include possible misconceptions and suggestions for how to respond to them, differentiation options, scaffolding or guiding questions, extensions, and identified areas where students may need additional support. For each question students must respond to in writing, and for every table or problem students must solve, the teacher version includes sample student responses or an answer key in blue font. The Checklists from the student versions of the task are modified slightly in the teacher versions—they offer a template/space for teachers to record notes, feedback, and observations about that particular part of the task.