

## Transcript – Algebra I: Amplifying an Instructional Task

In this activity we are going to amplify a typical Algebra I task that reflects the revised TEKS. This process will amplify the task to one that connects multiple student expectations and our mathematical process standards.

The task that we are looking at addresses student expectation A(7)(A), which asks students to graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including  $x$ -intercept,  $y$ -intercept, zeros, maximum value, minimum value, vertex, and the equation of the axis of symmetry.

The original task is included in your journal, titled *Amplifying an Instructional Task Algebra I Example*. Take some time to consider how a student would complete the task. Ask yourself, “How does this task address the student expectation?” Would you consider this a simple task or one that connects process standards and multiple student expectations?

## Transcript – What to Consider When Amplifying an Instructional Task

What should we consider as we amplify an instructional task? There are several approaches that could be used to amplify the task. We might consider whether there are other student expectations in the same strand or across other strands that relate to the topic. Another option is to look at the mathematical process standards for connections to the given student expectation. Is there a real-world context that fits the mathematics? In addition, we may want to ask how the task would change if the context changes. We would also want to consider our students’ needs.

How could meaningful collaboration or support affect successful completion of the task?

The answers to these questions give many different options and ideas for amplifying a task. The next page in your journal is a template to help you think about how you might amplify the task you just completed.

## Transcript – Amplifying an Instructional Task Template

The idea behind this template is not to create another form for teachers to fill out, but to have a process or a set of guiding questions in place to amplify the tasks they are already using.

The top section of the template has questions regarding the task you have chosen.

The bottom section of this template is completed for the task we are looking at today. Take a few moments to read through the template. What do you notice?

The goal behind this first column is to analyze the task that we have. Our task is straight forward and represents a typical starting point in many instructional materials. We begin amplifying the original task by identifying the process and content standards presented in the original task.

As we amplify our tasks, we look to the strand or strands of the student expectations for the original task and other revised student expectations to identify additional related mathematical ideas.

What process standards complement the identified content standards?

The next column looks at the context of the problem. If the task we are starting with is already situated within a real-world context, what else could we explore, or what could be an extension? If the original task is not within a context, what contexts will allow us to explore the mathematical idea? We can also look at the mathematical context. What other representations could be used to present the problem? Answering these questions will provide opportunities to enrich the original task.

The final column examines considerations related to student needs. When providing a task, how could we provide entry points for the task to meet the needs of a struggling student? What about the needs of an English language learner? What about an advanced student? Would these options meet the needs of an advanced mathematics student who is struggling with English?

The amplified task handout provides a sample of how the original task has been amplified using the brainstorming template. Take a moment to work through the four examples provided in your journal. What do you notice as you work the examples? You may want to refer back to the template as you work the tasks and jot down notes as needed. Identify as many of the considerations as possible.

## Transcript – Examining Amplified Tasks

Now that you have had the opportunity to complete the four amplified tasks, let's look at some of the pieces you may have noticed. The most immediate adjustment you can see is that a context has been added to the problem. Students must now be able to relate the key attributes of a quadratic function to a contextual situation such as relating the highest profit to the vertex or maximum value of this function. Additionally, the students are given a verbal description and information in tabular form, making use of multiple representations from our mathematical process standards. We must consider that student thinking about the task given context may be different from when the algebraic or graphical representations are presented first.

Task B has been identified as a scaffolded task. What scaffolds do you notice? This task is still amplified from its original form, and differentiation of the task has been added for struggling learners. Although the information given is the same as in the amplified task, students are provided a graphical representation of the information from the table. There is some guidance provided with the additional questions being asked to help students find the highest profit possible. The depth and complexity of the

question have not been compromised with this differentiation. It allows accessibility to the content for struggling learners.

In Task C, a different variation of a scaffolded task, we see that a bank of words has been provided to the students. The words provided are some of the key attributes of quadratic functions. We hope that students will consider these terms as they work toward determining what amount that should be charged per ticket in order to yield the highest profit. Again, we see that the depth and complexity of this task are not compromised. The addition of the word bank makes the task accessible for English language learners, as well as other students who struggle with verbal and written communication. It also provides the opportunity for students to engage with precise mathematical language.

When considering the students as we amplify tasks, we must not forget the advanced students. Task D exemplifies an enriched task that asks students to go beyond the knowledge and skills necessary to complete the amplified task. Students completing this task should recognize that by changing the cost of the auditorium and giving away part of the profit made at the fundraiser, parameter changes are being made to the graphed relationships.

These activities are one example of amplifying an Algebra I task. You will have the opportunity to amplify a given task using this process in a later module.