

Transcript – Algebra II: Amplifying an Instructional Task

In this activity, we are going to take a typical Algebra II task that reflects the revised TEKS and use a process to amplify the task to one that connects multiple student expectations and process standards.

We are looking at a task that addresses student expectation 2A(2)(C), which asks students to describe and analyze the relationship between a function and its inverse—as in quadratic and square root or logarithmic and exponential—including the restrictions on domain, which will restrict its range.

The original task is included in your journal, titled *Amplifying an Instructional Task – Algebra II 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 multiple process standards and 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 or ideas for amplifying a task. The next page in your journal or handout has a template to help you think about how you might amplify the task you just completed.

Take a moment to review the Algebra II example.

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 contains questions to consider 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 given task is straightforward 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 existing tasks, we can 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 considered as 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? An English language learner? 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 could be amplified using our 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 made 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 amplified task has changed the mathematical context by providing a different starting point for the functions for which you will need to find the inverse. Additionally, the task is requiring the use of composition of functions to verify inverses, and one of the questions calls for the function to be transformed prior to the inverse being found.

Task B has been identified as a scaffolded task. How so? This task is still amplified from its original form, but differentiation of the task has been added for struggling learners. Friendlier numbers and a graph have been used to create the quadratic function being represented. In the second example, a hint box is provided to direct student thinking toward the different transformations that can be made. The depth and complexity of the question have not been compromised. This differentiation allows accessibility to the content for struggling learners by providing additional information in a convenient location.

In Task C, which is also labeled as a scaffolded task, we see that students are prompted to have a discussion. To facilitate that conversation, several sentence starters have been provided to the students. The sentence starters allow students to focus their thinking on what the question is actually asking. Again, we see that the depth and complexity of this task are not compromised. This addition 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. In Task D we see an enriched task which asks students to go beyond the knowledge and skills necessary to complete the amplified task. The third question here requires students to analyze the function and its inverse and to determine when they are equal.

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