

Backwards Learning: Supplemental Examples

EXAMPLE A: The culminating assessment task that a middle school teacher developed for a unit on weather, and the Backwards Learning Organizer that one of his students completed after reviewing this task, are shown below.

Weather Unit: Culminating Assessment Task

A local weather channel has decided to sponsor a forecasting contest for middle school students. The contest requires looking at several pieces of atmospheric data and determining the areas in the United States that are most at risk for severe weather on a particular day.

Students will need to look at temperature maps, water vapor maps, and front and pressure maps—and then synthesize the information into a weather alert. The weather alert will need to identify the area under threat of severe weather, detail the type of weather that can be expected in the identified area, and explain the cause for the alert. It must also explain how the weather conditions might affect people's daily plans.

<p>What is my task? To organize a severe weather alert for a certain area of the United States describing the type of weather, the cause for the alert, & how it will affect people's daily lives.</p>	<p>What do I need to know? I need to know about the climate & weather patterns in the area, & how often severe weather occurs & what the areas that severe weather could cause the most damage are, knowing about the pressure in the area, what a front is</p>
	<p>What do I need to be able to do? I need to be able to read & analyze a chart, map or graph. I need to be able to understand weather patterns. I need to be able to organize a weather alert based on what I have analyzed</p>

Backwards Learning: Supplemental Examples (continued)

EXAMPLE B: At the start of a unit on three-dimensional figures, a mathematics teacher presented her students with the culminating assessment task shown below. After giving them a few minutes to examine the task and ask questions, she had them complete Backwards Learning Organizers. The organizer that one student completed is shown on the next page.

Note: You might want to use this student's work as a model to show your own students the different kinds of things that they can include in their action plans (e.g., work with a partner, take notes on a text, do practice problems, ask for help when needed).

MathCorp

Dear distinguished mathematician,

We would like to commission you to design and sketch a monument for a math garden that we are developing. The garden will have several different sections (one devoted to famous mathematicians, one to famous number sequences, etc.), and each section will have its own monument. The section that we need your help with is the three-dimensional (3-D) figure section, and the monument that you will be designing will be constructed of solid marble.

Before submitting your completed design portfolio, please ensure that you have satisfied the following criteria:

1. Your design must include at least one of each of the following 3-D figures: triangular prism, rectangular prism, triangular pyramid, rectangular pyramid, cylinder, and cone.
2. You must calculate the volume of your monument and show your work.
3. You must identify the total number of bases, faces, edges, and vertices in your monument.
4. You must include a brief explanation of the thinking that went into your design. To prove that you are an expert on 3-D figures and their volumes, your explanation should include at least six relevant vocabulary terms.

We look forward to seeing your work on our desks three weeks from today.

Maddie Maddox

President, MathCorp

SOURCE: Adapted from *Styles and Strategies for Teaching High School Mathematics: 21 Techniques for Differentiating Instruction and Assessment* (p. 3) by E. J. Thomas, J. R. Brunsting, and P. L. Warrick, 2010, Thousand Oaks, CA: Corwin Press. © 2010 by Thoughtful Education Press. Adapted with permission.



Backwards Learning: Supplemental Examples (continued)

Backwards Learning Organizer

Name: Leela

Date: October 22

ASSESSMENT TASK: At the end of this lesson or unit, what will I be asked to do or create?

Design a monument for the 3-D figures section of a new math garden that includes one of every kind of figure mentioned in the task. I will need to calculate the volume of my monument and also how many bases, faces, edges, and vertices it has. I'll also have to explain my design concept using at least six vocabulary words.

KNOWING GOALS

What will I need to know and understand?

- What each of the six kinds of figures looks like
- The volume formulas for those six figures
- The meanings of the key vocabulary terms from this unit
- How people go about designing monuments and whether there are guidelines I should follow when designing mine

DOING GOALS

What will I need to be able to do?

- Sketch the different kinds of 3-D figures.
- Calculate the volume of each figure and combine the volumes to get a total volume.
- Count bases, faces, edges, and vertices.
- Describe and justify my design in writing using at least six terms from the unit.

ACTION PLAN: What is my plan for completing this task successfully? What steps will I take?

- I will read and summarize the key points from my text, especially the volume formulas for these figures.
- I will look up the definitions of the unit vocabulary words in my textbook's glossary and in my teacher's math dictionary. I will record the definitions in my math notebook using words and diagrams.
- I will get ideas for my design by looking for pictures of outdoor monuments online or in the library.
- I will use the problems at the end of the chapter to practice calculating the volumes of these figures. I may practice with my friend Gillian.
- I will ask my teacher for help if I can't figure something out myself.
- I will participate and make notes during classroom lessons and activities.
- I will review the list of criteria before submitting my work to make sure I've included everything.

- Where will I look for information?
- How can I develop these skills/behaviors?
- Who can help me?
- What learning or study strategies will I try?

