Hawai'i State Alternate Assessments

HSA-Alt Teacher Resource Guide—Grade 5 Mathematics Classroom Embedded Assessment

The HSA-Alt Classroom Embedded Assessment (CEA) is a non-mandatory assessment option available to HSA-Alt-identified students. The CEA is designed for students who have an established communication system. Although non-responsive students are allowed to take the assessment, the assessment is ideally suited for students who are able to attend to stimuli, engage in activities, and demonstrate understanding through actions, gestures, symbols, signs/signing, a communication device, or speech.

The CEA offers a model of standards-based instruction and supports, leading to progress toward year-end targets for learning found in the HSA-Alt Range PLDs. Each CEA testlet is aligned to a single standard and features scripted instructional activities and assessment items at five performance levels in prerequisite, well-below, approaching, meets, and exceeds level of performance for students.

CEA testlets include teaching activities and performance tasks, which are available to download in the General Resources section in TIDE. It is recommended that teachers download the testlets and read them with the accompanying Teacher Resource Guides.

As a classroom assessment, the CEA offers greater flexibility than a summative assessment. The CEA may be individualized in the following ways to meet student needs:

- Teachers may select the most appropriate performance level for administration of each CEA for each student. Teachers can administer one or more levels for each session based on the student's instructional level.
- Teachers have up to five opportunities to administer each subject area CEA during the testing window (October 3, 2022–July 21, 2023). The complexity level of each administration may be the same or higher than the previous administration.
- It is recommended that teachers provide the same accommodations on the CEA as are utilized during classroom instruction. The scripted language and materials in the CEA may be modified to support student comprehension.
- For some students, an individually administered assessment may not be necessary. Teachers may administer the CEA to these students in small groups using PDF testlets, which include teaching activities and performance task items. PDF testlets are available at www.hitide.org.

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Selected Hawaii Common Core State Standard and CEA Targets

Common Core State Standard (CCSS)				
CCSS.Math.Content.5.MD.C.5a: Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes (i.e., to represent the associative property of multiplication).				
Essence Statement				
Find the volume Find the volume of right rectangular prisms with whole-number side-lengths by packing.				
Skill Levels				
Prerequisite Skill	**Well Below PLD[1]**	**Approaching PLD**	**Meets PLD**	**Exceeds PLD**
Count cubes in different orientations to build an understanding of volume as the number of cubes that fill an object.	Identify the number of unit cubes that make up the base of the rectangular prism, given a visual.	Identify rectangular prisms with the same base area, given a visual. Suggested scaffolds: concrete materials or grid paper.	Find the volume of a rectangular prism that is packed with unit cubes. Prioritized focus: volumes of 12 cubic units or less.	Identify the rectangular prism with the same volume, given a rectangular prism with unit cubes shown.

1. PLD: Performance Level Descriptor

Performance Level Materials and Supports

Prerequisite Level: Materials List

Materials List:
- 4 one-inch cubes

Well Below Level: Materials List

Materials List:
- 6 one-inch cubes
- One-inch grid paper (available on the HSA-Alt portal)
- Felt tip pens

Approaches Level: Materials List

Materials List:
- 10 one-inch cubes
- Primary ruler with inches
- One-inch grid paper (available on the HSA-Alt portal)
- One piece of prepared grid paper that has one one-inch square colored in

Meets Level: Materials List

Materials List:
- 12 one-inch cubes

Materials List:
- 24 one-inch cubes
- Two sorting trays to hold two sets of cubes

Academic Vocabulary Used in This Testlet

base. The bottom face of a prism, technically the base of a prism is identified through its pairing with an opposite parallel face that is congruent (the same shape and size)

base area. How much flat space is found inside the base of a prism; how many squares are needed to cover the flat bottom surface of a prism

cube. Prism with six square faces (all equal faces)

edge. Where two faces meet in a 3-D shape

face. Flat surface found in a 3-D shape

prism. A 3-D geometric solid with two bases that are identical and parallel

rectangular prism. A six-sided prism with rectangles for all the faces

three-dimensional. Solid; having three dimensions: length, width, and height

two-dimensional. Flat; having two dimensions: length and width or base and height (triangle)

vertex (vertices). Corner(s) of a 2-D shape where the sides meet or for a 3-D shape, where the edges meet

volume. How much space is found inside a three-dimensional form

Standard Core Concept

Volume is the amount of space inside a three-dimensional form. Three-dimensional forms are differentiated from two-dimensional forms by the fact that they have a third dimension (height). This third dimension allows 3-D forms to hold a liquid. To find the volume of a three-dimensional form you can measure the amount of liquid it holds, or you can find out how many unit cubes fit inside the form. A unit cube has a side length of one unit and a volume of one cubic unit. The activities in this testlet use cubes with a side length of one inch and a volume of one cubic inch.

Associated Below Grade-Level Standards

Mathematics K.G.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Mathematics 1.G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as "right rectangular prism.")

Mathematics 2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring.)

Mathematics 3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Excludes compound units such as cm^3 and finding the geometric volume of a container.)

Accommodating Individual Student Needs on the CEA

It is highly recommended that students receive the same accommodations on the CEA as they receive during classroom instruction.

Manipulatives

Manipulatives and concrete objects may aid student understanding, engagement, and ability to focus on the concepts in this testlet. Cubes, a geoboard with rubber bands, and/or boxes that can be filled in with cubes to form prisms may be substituted for graphics on this testlet. Digital manipulatives may also be used in place of graphics.

Physical Action

Encourage the student to interact with instruction and make choices using a preferred mode of communication. If the student is not able to interact with the instruction verbally or physically (e.g., manipulating or pointing to objects or graphics), consider other ways that the student could indicate a choice. Always make sure to provide enough wait time for the student to respond.

Picture Symbols, Sign Language, Augmentative and Alternative Communication (AAC) Devices

Ensure that the student is able to use a preferred mode of communication (verbalizing, pointing, gesturing, selecting picture symbols, using sign language or an AAC device) when interacting with the testlet. Pre-teach key vocabulary using the following strategies:

1. Introduce key vocabulary with associated graphics (illustrations or picture symbols).
2. Post the graphics in a place that is convenient for student viewing.
3. Repeat the vocabulary on a regular basis, using verbal cues.
4. Provide the student with opportunities to practice using the vocabulary.

Tactile Materials, Including Tactile Graphics and Tactilely Enhanced Objects

Tactile materials may be used to represent the concept of volume for a student with a visual impairment or a student who learns best through touch. For example, raised line graph paper and cubes with braille or velcro dots may be used throughout the testlet. Students with visual impairments may also be provided with a box that can be filled in with cubes to form a prism.

Strategies

To build an understanding of volume, place four one-inch cubes together in a single row to form a rectangular prism. Point out the fact that there are no spaces in the rectangular prism. Ask the student count the number of cubes in the rectangular prism.

To identify the base of a rectangular prism, build a 3 x 3 x 1 rectangular prism. Place the prism on grid paper. Add several rows to the top of the prism. Point to the bottom row, and explain that this is the base of the prism. Help the student trace around the rectangular prism, then remove the prism and have the student count the number of squares inside the rectangle that the student has drawn. Explain that there are three cubes in the base of the prism.

To find the volume of a rectangular prism that is packed with cubes, help the student build a rectangular prism with two layers and four cubes in each layer. Have the student count the number of cubes that form the rectangular prism. Have the student practice making different rectangular prisms and finding the volume of each.

To identify prisms with the same volume, have the student form different rectangular prisms using the same number of one-inch cubes. Then ask the student to find the volume of each rectangular prism to verify that each prism has the same volume.

Resources

Hawaii TIDE site: https://www.hitide.org
HSA-Alt CEA resources are available in General Resources > Download Forms at the bottom of the page.

HSA-Alt Participation Guidelines: https://hsa-alt.alohahsap.org/resources/resources-2022-2023/hsa-alt-participation-guidelines-2022-2023

Burnes, J. J., & Clark, A. K. (2021). Characteristics of students who take Dynamic Learning Maps® alternate assessments: 2018–2019 (Technical Report No. 20-01). University of Kansas, Accessible Teaching, Learning, and Assessment Systems (ATLAS). https://dynamiclearningmaps.org/sites/default/files/documents/publication/Characteristics_of_Students_Who_Take_DLM_AAs.pdf

Universal design for Learning Instructional Units, NCSC's ELA and mathematics instructional units for students with significant cognitive disabilities. https://wiki.ncscpartners.org/index.php/UDL_Instructional_Units