MATHEMATICS NVACS CONNECTORS GUIDANCE

Guidance for Nevada's teachers and high schools regarding the implementation of the Mathematics requirements for the Alternative Diploma for students with significant cognitive disabilities

Nevada Department of Education
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Introduction

This guidance document is designed to assist Nevada's schools and teachers in the implementation of the Nevada Academic Content Standards (NVACS) Connectors in the mathematics subject area. The mathematics NVACS Connectors are organized under the conceptual category for which they are aligned, and include: 1.) Number and Quantity; 2.) Algebra; 3.) Geometry; 4.) Statistics and Probability; and 5.) Functions. Each section of this guidance document is organized as follows:

1. **Primary Heading** - *Identifies mathematics conceptual category*

Clusters and Standards:

Mathematics Cluster – *Identifies the mathematics learning objectives the NVACS Connectors target*
Recommended Minimum Access Point – *Suggests a minimum point of access for students pursuing attainment of the NVACS Connectors*
Definitions of Terms – *Defines terms within the Recommended Minimum Access Points for clarification and to ensure broad consideration of students' ability to access the NVACS Connectors*

Mathematics NVACS Connectors

NVACS No. – *Identifies the number for the mathematics NVACS from which the mathematics NVACS Connectors are derived*
NVACS Connectors – *Identifies the NVACS Connector to guide content and instruction*

***Note:* Underline text in red has an accompanying mathematical definition in the glossary of terms at the end of this document**

The Nevada Department of Education's Office of Special Education recognizes that students with significant cognitive disabilities (SCD) represent a broad diversity of abilities and support needs. In an effort to assist IEP teams in decision making and planning for the Alternative Diploma, we have developed the aforementioned Recommended Minimum Access Points as guidance. These recommended access points for students with SCD are intended to promote the broadest level of student access while also ensuring a high level of rigor in student programming.

1. **Mathematics Conceptual Category: Number and Quantity**

Clusters and Standards:

Mathematics Cluster: Reason quantitatively and use units to solve problems
Recommended Minimum Access Point: Student can use numbers or *representations of numbers** to *access* problem solving tasks**
***representations of numbers* -** How numbers are represented to students should consider a variety of representational forms, including: manipulatives, other real objects, pictures, etc.
***access* -** A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
***problem solving tasks* -** Problem solving tasks that are mathematical should not be limited to typical written or text-based representations.

Mathematics NVACS Connectors:

HSN.Q.A.1
Choose the appropriate **scale** to display a given set of data

Mathematics Cluster: • Extend the properties of exponents to rational exponents • Use properties of rational and irrational numbers
Recommended Minimum Access Point: Student *can compare** two or more numbers or *representations of two or more numbers**
***can compare* -** The ways in which students express a comparison will likely vary. Methods of expression and representation of comparative choices should be given the broadest range of consideration to ensure student access.
***representations of two or more numbers* -** How numbers are represented to students should consider a variety of representational forms, including: manipulatives, other real objects, pictures, etc.

Mathematics NVACS Connectors:

HSN.RN.B.3
Identify a sum of two numbers as rational, irrational, or an integer

2. Mathematics Conceptual Category: Algebra

Clusters and Standards:

Mathematics Cluster: Interpret the structure of expressions
Recommended Minimum Access Point: Student can *access** a *simple mathematical expression** through numbers or *representations of numbers**
***access* -** A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
***simple mathematical expression* -** (e.g., 9 + 5)
***representations of numbers* -** How numbers are represented to students should consider a variety of representational forms, including: manipulatives, other real objects, pictures, etc.

Mathematics NVACS Connectors:

HSA.SSE.A.1 & HSA.SSE.A.1.a
Given an expression that models a simple context, interpret parts of an expression such as terms and coefficients

HSA.SSE.A.2
Identify equivalent expressions

Mathematics Cluster: Perform arithmetic operations on polynomials
Recommended Minimum Access Point: Student can *access** numbers through *other forms of representation**
***access* -** A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
***other forms of representation* -** A key component of a polynomial is a variable (letter representation of an unknown number). Foundational to the below standard is then the understanding that numbers can be represented through various forms of representation. Other forms of numerical representation should be given the broadest consideration when teaching this skill and will likely include: manipulatives, other real objects, pictures, etc.

HAS.APR.A.1
Add simple polynomials

Mathematics Cluster: Create equations that describe numbers and relationships
Recommended Minimum Access Point: Student can use *representations of lines** to *access* real-world problem solving scenarios**
representations of lines - All standards within this cluster that are algebraic are tied to linear equations and representations. Therefore the use of lines is an essential element of instruction. The broadest consideration should be given to how lines are represented to students and used for problem solving. Lines exist in many forms and perform many functions.
access - A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
real-world problem solving scenarios - Real-world problem solving scenarios can take many forms and should not be limited to those scenarios communicated through text and graphic depiction. Real-world problem solving indicates opportunity for lessons within contextual environments.

Mathematics NVACS Connectors:

HSA.CED.A.1
Solve problems using linear equations and linear inequalities

HSA.CED.A.2
Identify a graph representing a given linear relationship

Mathematics Cluster: Understand solving equations as a process of reasoning and explain the reasoning
Recommended Minimum Access Point: Student can use *representations of lines** to *access* real-world problem solving scenarios**
representations of lines - All standards within this cluster that are algebraic are tied to linear equations and representations. Therefore the use of lines is an essential element of instruction. The broadest consideration should be given to how lines are represented to students and used for problem solving. Lines exist in many forms and perform many functions.
access - A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
real-world problem solving scenarios - Real-world problem solving scenarios can take many forms and should not be limited to those scenarios communicated through text and graphic depiction. Real-world problem solving indicates opportunity for lessons within contextual environments.

Mathematics NVACS Connectors:

HSA.REI.C.5
Identify the solution of a system of two linear equations represented graphically

3. Mathematics Conceptual Category: Geometry

Clusters and Standards:

Mathematics Cluster: Understand similarity in terms of similarity transformations
Recommended Minimum Access Point: Student can *access** problems that contain variability in size and form
***access* -** A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.

Mathematics NVACS Connectors:

HSG.SRT.A.1, HSG.SRT.A.1.a, and HSG.SRT.A.1.b
Given a line segment and its **dilation**, identify the **scale factor** of the dilation

HSG.SRT.A.2
Identify similar figures using transformations

Mathematics Cluster: Visualize relationships between two-dimensional and three-dimensional objects
Recommended Minimum Access Point: Students can *show recognition** of visual changes in three-dimensional objects
***show recognition* -** Showing recognition of something is an expressive act and therefore a student's method of expression should be given the broadest consideration (e.g., assistive technology, eye gaze, gesture, etc.).

HSG.GMD.B.4
Identify three-dimensional objects based on their cross-sections

4. Mathematics Conceptual Category: Statistics and Probability

Clusters and Standards:

Mathematics Cluster: Summarize, represent, and interpret data on a single count or measurement variable
Recommended Minimum Access Point: Student can *access* various forms of data**
access - A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
various forms of data - Data can be represented in a variety of ways, including pictorially, through manipulatives and objects, etc. Representations of data should not be restricted to conventional displays such as bar graphs, scatter plots, etc. Foremost to data representation should be student understanding of graphic or physical representations used.

Mathematics NVACS Connectors:

HSS.ID.A.1
Identify and/or generalize data with plots on the real number line (dot plots and histograms), given a data set

Mathematics Cluster: Interpret linear models
Recommended Minimum Access Point: Student can *access* representations of lines** that describe *real-world occurrences**
access - A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
representations of lines - Linear models, as they are discussed within this cluster, should consider broadly how lines are used to provide information in real-world settings and scenarios. Linear models in this context provide significant latitude for use in teaching how lines can inform a variety of lived occurrences.
real-world occurrences - Data representations of real-world or familiar occurrences will provide more saliency to students.

Mathematics NVACS Connectors

HSS.ID.C.7
Given a graph and a real-world situation, interpret the slope of a linear model

Mathematics Cluster: Make inferences and justify conclusions from sample surveys, experiments, and observational studies
Recommended Minimum Access Point: Student can *access* various forms of data** that describe *real-world occurrences**
access - A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
various forms of data - Data can be represented in a variety of ways, including pictorially, through manipulatives and objects, etc. Representations of data should not be restricted to conventional displays such as bar graphs, scatter plots, etc. Foremost to data representation should be student understanding of graphic or physical representations used.
real-world occurrences - Data representations of real-world or familiar occurrences will provide more saliency to students.

Mathematics NVACS Connectors

HSS.IC.B.5
Use data from an experiment to answer questions about effect of a treatment on **the control group**

HSS.IC.B.6
Determine important information from data-based reports

5. Mathematics Conceptual Category: Functions

Clusters and Standards:

Mathematics Cluster: Interpret functions that arise in applications in terms of the context
Recommended Minimum Access Point: Student can *access** problems with *representations and forms of lines**
***access* -** A student's ability to access curriculum materials should be considered within the broadest range of possible options and should consider: adaptations, modifications, and alternative versions of presentation and response.
***representations and forms of lines* -** The below standards are tied to linear representations. Therefore, the use of lines is an essential element of instruction. The broadest consideration should be given to how lines are represented to students and used for problem solving. Lines exist in many forms (e.g., a parabolic line) and perform many functions.

Mathematics NVACS Connectors:

HSF.IF.B.4
Identify key features for a linear or quadratic function, given a graph or table

HSF.IF.B.5
Identify an appropriate **domain** of a function, given a table or a graph

Using the NVACS Connectors to Inform Implementation

The Nevada Revised Statute (NRS) requires students pursuing the Alternative Diploma to attain a minimum number of high school credits (Table 1). The Mathematics NVACS Connectors should be used to inform the content of mathematics classes necessary to obtain the required credits that are specified within the NRS. The NRS prescribes a minimum requirement of 3 mathematics credits.

Table 1.

Credit Minimums for Graduating Cohorts 2022 and After

Required Course	Minimum Number of Units
Social Studies	2.0
Arts and Humanities, Junior Reserve Officers' Training Corps (Level III or Level IV) or Career and Technical Education	1.0
College and Career Ready Flex Credit (see notes below for details)	2.0
English Language Arts	4.0
Health Education	0.5
Mathematics	3.0
Physical Education	2.0
Computer Education and Technology	0.5
Science	2.0
Electives	6.0
TOTAL	**23 Units**

Note. The course of study in college and career ready flex credit must include:

(a) Level II or Level III course of study in a program area prescribed pursuant to NAC 389.803 *(Career and Technical Education courses that are Level II and Level III fulfill this requirement)*;
(b) Fourth year of mathematics;
(c) Third year of social studies; **or**
(d) Third year of science.

According to NRS 389.018 the mathematics course of study for a high school student must include, without limitation, Algebra I and Geometry. The NVACS Connectors provide standards for both algebra and geometry that can inform the development of Algebra I and Geometry credited courses. Beyond these two courses, schools and IEP teams have more flexibility in determining how they will meet the third mathematics credit requirement for students with SCD. Nevada Administrative Code (NAC) 389.450 states that in addition to Algebra I and Geometry, the mathematics course of study for a high school student may include:

- Basic Mathematics;

- Mathematics for Everyday Living;
- Prealgebra;
- Algebra II;
- Trigonometry;
- Analytic Geometry;
- Precalculus;
- Calculus; and
- Probability and Statistics

Considerable flexibility exists for school districts in determining how the third mathematics credit will be provided. To integrate functional skills within the mathematics curriculum, schools may choose to offer students with SCD a Mathematics for Everyday Living course that fulfills the third mathematics credit, or they may include the student in a Prealgebra class and provide modified content (Figure 1). If a school develops a Mathematics for Everyday Living class, or a similar class, the curriculum should contain both functional and academic skills that are appropriately rigorous.

It is also important to note that one of the two required college and career ready flex credits can be a fourth year of mathematics, and therefore may require schools to offer a fourth, year-long course in mathematics for students with SCD. Delivery of the content required to meet the NVACS Connectors may occur in the general education setting with modified content, or it may occur in a segregated special education setting, depending on the least restrictive environment (LRE) determinations made by the IEP team.

Figure 1.

Example Four Year Course of Study Based on 2022 Requirements

Period	Freshman Year	Sophomore Year	Junior Year	Senior Year
1st Period	ELA I (1 Credit)	ELA II (1 Credit)	ELA III (1 Credit)	ELA IV (1 Credit)
2nd Period	Other Approved Math Area (1 Credit)	Algebra I (1 Credit)	Geometry (1 Credit)	
3rd Period	Biology (1 Credit)	Physical Science (1 Credit)	Elective Credit (1 Credit)	
4th Period	Economics (.5 Credit) American Government (.5 Credit)	American History (1 Credit)	Elective Credit (1 Credit)	
5th Period	Health Education (.5 Credit) / Computer Science and Applications (.5 Credit)	Physical Education (1 Credit)	Physical Education (1 Credit)	
6th Period	Culinary I (1 Credit)	Culinary II (1 Credit) *Flex Credit	Culinary III (1 Credit) * Flex Credit	
7th Period	Elective Credit (1 Credit)	Elective Credit (1 Credit)	Elective Credit (1 Credit)	Elective Credit (1 Credit)

Glossary of Terms:

Dilation: To resize something. In mathematics it means to make larger or smaller.

Domain: All the values that go into a function.

Scale: The ratio of the length in a drawing (or model) to the length on the real thing.

Scale Factor: The ratio of any two corresponding lengths in two similar geometric figures.

Treatment on the Control Group: The control group (sometimes called a *comparison group*) is used in an experiment as a way to ensure that your experiment actually works. It's a way to make sure that the treatment you are giving is causing the experimental results, and not something outside the experiment.