HSA-Alt Science (NGSS) Grades 5 and 8 and 11

Test Design and Blueprints

Hawai'i State Alternate Science Assessments (HSA-Alt Science) are intended to provide all students with a fair, valid, and reliable test of their science knowledge and skills. The Next Generation Science Standards (NGSS) were adopted by the Hawai'i Board of Education in February 2016 and are to be fully implemented by school year (SY) 2019-2020. As a result, beginning with school year 2019-2020, the HSA-Alt Science will be linked to the Next Generation Science Standards.

Key Changes:

- The assessments will be administered in grades **5**, 8 and 11.
- The NGSS, http://nextgenscience.org, serve as the foundation of the assessments.
- Items are based upon the HSA-Alt Science (NGSS) Range Performance Level Descriptors 2019-2020.
- The Grade 5 Test will cover Essence Statements and performance level descriptors for upper elementary (grades 3 to 5).
- The Grade 8 Test will cover Essence Statements and performance level descriptors for middle school (grades 6 to 8).
- The Grade 11 Test will cover Essence Statements and performance level descriptors for high school life science as well as three from earth science (ESS2-6, 2-7, and 3-3).
- For SY 2019-2020 **only**, because the tests are operational field test, student results will not be available until after achievement standard setting in July 2020.

Test Design

Each student's test will consist of 40 operational items, which contribute to student scores, and 10-15 field test items. The field test items do not impact student scores. Students will see a variety of subject domains throughout their test. Students in grades 5 and 8 will be presented items from the life, physical, and earth space sciences. Students in grade 11 will be presented items from the life sciences and a limited number from the earth sciences — related to interactions between living things and the Earth such as human impacts on the environment.

The tests will be presented in an adaptive manner for all online assessments; therefore, the items are selected one at a time based on the blueprint and how the student answers previous items. This means that tests will be uniquely adaptive for each student, maximizing the information obtained from student responses for students at all ability levels. The test will be one segment and will have field test items embedded.

Test Blueprints

Grade 5	Min	Max
Discipline - Physical Science (Total Essence Statements = 14)	**12**	**15**
PS 1 Matter and Its Interactions		
PS 2 Motion and Stability: Forces and Interactions		
PS 3 Energy		
PS 4 Waves and Their Applications in Technologies for Information Transfer		
Discipline - Life Science (Total Essence Statements = 12)	**12**	**15**
LS 1 From Molecules to Organisms: Structure and Processes		
LS 2 Ecosystems: Interactions, Energy, and Dynamics		
LS 3 Heredity: Inheritance and Variation of Traits		
LS 4 Biological Evolution: Unity and Diversity		
Discipline - Earth and Space Science (Total Essence Statements = 13)	**12**	**15**
ESS 1 Earth's Systems		
ESS 2 Earth and Human Activity		
ESS 3 Earth's Place In the Universe		
Total Operational Items	**40**	**40**
Total Embedded Field Test Items	**10**	**15**
Total Items	**50**	**55**

Grade 8	Min	Max
Physical Science (Total Essence Statements = 15)	**12**	**15**
PS 1 Matter and Its Interactions		
PS 2 Motion and Stability: Forces and Interactions		
PS 3 Energy		
PS 4 Waves and Their Applications in Technologies for Information Transfer		
Life Science (Total Essence Statements = 16)	**12**	**15**
LS 1 From Molecules to Organisms: Structure and Processes		
LS 2 Ecosystems: Interactions, Energy, and Dynamics		
LS 3 Heredity: Inheritance and Variation of Traits		
LS 4 Biological Evolution: Unity and Diversity		
Earth and Space Science (Total Essence Statements = 15)	**12**	**15**
ESS 1 Earth's Systems		
ESS 2 Earth and Human Activity		
ESS 3 Earth's Place In the Universe		
Total Operational Items	**40**	**40**
Total Embedded Field Test Items	**10**	**15**
Total Items	**50**	**55**

High School	Min	Max
LS 1 From Molecules to Organisms: Structures and Processes (Total Essence Statements = 7)	**12**	**15**
HS-LS1-1, 2, 3 Structure and Function		
HS-LS1-4 , 5, 6, 7 Growth and Development of Organisms		
LS 2 Ecosystems: Interactions, Energy and Dynamics (Total Essence Statements = 10)	**12**	**15**
HS-LS2-1, 2 Interdependent Relationships in Ecosystems		
HS-LS2-4, 5 Cycles of Matter and Energy Transfer in Ecosystems		
HS-LS2-6, 7 Ecosystem Dynamics, Functioning, and Resilience		
HS-LS2-8 Social Interactions and Group Behavior		
HS-ESS2-6 Weather and Climate		
HS-ESS3-3 Human Impacts on Earth Systems		
LS 3 and 4 Heredity and Biological Evolution (Total Essence Statements = 10)	**12**	**15**
HS-LS3-1 Structure and Function		
HS-LS3-2 Variation of Traits		
HS-LS4-1 Evidence of Common Ancestry and Diversity		
HS-LS4-2, 3 Natural Selection		
HS-LS4-4, 5, 6 Adaptation		
HS-ESS2-7 Weather and Climate		
Total Operational Items	**40**	**40**
Total Embedded Field Test Items	**10**	**15**
Total Items	**50**	**55**