



Introduction to the Spring 2020 ISAT Science Assessments

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Which grades are required to administer the spring 2020 ISAT Science summative assessments?

The Idaho State Board of Education approved a temporary rule to move the science assessment administered in middle school from grade 7 to grade 8 and to replace the high school end-of-course Biology and Chemistry assessments with a comprehensive science assessment administered in grade 11, beginning in spring 2020.

On October 16th, 2019 the Board of Education approved this final decision.

- Elementary ISAT Science: Grade 5
- Middle School ISAT Science: Grade 8 ^{NEW}
- High School ISAT Science: Grade 11 ^{NEW}

The [ISAT Science Assessment web page](#) on the SDE website has also been updated to reflect this decision.

The requirement to assess 95% of our students during the spring 2020 testing window is still in effect.

Do SY2019-20's seniors that move into the district need to take the High School ISAT Science if they did not take an old end-of-course Biology or Chemistry ISAT Science test?

No.

The Board of Education approved the replacement of the high school end-of-course Biology and Chemistry assessments with a comprehensive science assessment that will be administered at grade 11.

Participation is calculated based on the juniors enrolled on the school's/ district's roster as of the first Friday in May 2020.

The requirement to assess 95% of our students during the spring 2020 testing window is still in effect.

Do SY2019-20's eighth graders and juniors need to take the Middle School and High School ISAT Science tests, respectively even though they took the old grade 7 and an end-of-course ISAT Science test the previous year?

Yes.

SY2019-20's eighth graders will be required to take the Middle School ISAT Science test, even though they took the old Grade 7 ISAT science test the previous year.

SY2019-20's juniors will be required to take the High School ISAT Science test, even though they took old end-of-course Biology or Chemistry ISAT science test the previous year.

What are the testing dates for the ISAT Science assessments?

Table 1: Interim Testing Window

ISAT Science Spring 2020 <u>Interim</u> Grade Bands	Testing Window Opens	Testing Window Closes
Elementary, Middle School, and High School	Tuesday, September 3, 2019	Wednesday, March 11, 2020

Table 2: Summative Testing Window

ISAT Science Spring 2020 <u>Summative</u> Testing Grades	Testing Window Opens	Testing Window Closes
Grades 5, 8, and 11	Monday, March 16, 2020	Friday, May 15, 2020

What do the SY2019-20 ISAT Science blueprints tell us?

Overall, test blueprints summarize the hierarchy of levels within published standards, and the number and types of questions aligned to those standards, that could appear on a specific assessment.

There are two types of blueprints published on the SDE ISAT Science Assessment web page:

- Interim Assessment Blueprints
- Summative Assessment Blueprints

A specific grade level blueprint for each of those assessments is available. Elementary school interim and summative assessments include clusters and standalones aligned to grade 3, 4, and 5 Idaho State Science Standards (ISSS). The middle and high school interim and summative assessments include clusters and standalones aligned to those grade banded ISSSs, respectively.

Interim Assessment Blueprints

- [SY2019-2020 Elementary School Interims](#)
- [SY2019-2020 Middle School Interims](#)
- [SY2019-2020 High School Interims](#)

For the SY2019-20, there are

- fourteen (14) elementary school interims,
- nineteen (19) middle school interims,
- twenty (20) high school interims.

Within the grade bands, all of the content areas (Earth and Space Sciences, Life Science, and Physical Science (Chemistry & Physics at high school)) are represented.

Each interim test is comprised of one cluster that is aligned to one ISSS. The ISSS are three-dimensional (science and engineering practice, crosscutting concept, and disciplinary core idea), and each of the dimensions are identified in the interim blueprints.

Figure 1. shows a portion of the middle school interim blueprint.

Figure 1: SY2019-20 Middle School Interim

SY2019-20 Science Interims Middle School Page 1 of 3

Number	Science Sample Test	Assessment Grade	Grade Band	Science and Engineering Practice	Crosscutting Concept	Science Domain	Science Domain + Unit	Supporting Content	Standard
A 1	B Modular: Science - Middle School Earth Space Science - History of Earth 2	C 8	Middle (6-8)	D Developing and Using Models	E Stability and Change	F Earth and Space Sciences	ESS2: Earth's Place in the Universe	The Universe and Its Stars & Earth and the Solar System	ESS2-MS-1
2	Modular: Science - Middle School Earth Space Science - History of Earth 1	8	Middle (6-8)	Constructing Explanations and Designing Solutions	Scale, Proportion and Quantity	Earth and Space Sciences	ESS1: Earth's Place in the Universe	History of Earth	ESS1-MS-4

Table 3: Figure 1 Key

A	Each of the interims have been numbered in the blueprint. This numbering can be used for tracking purposes. The number does not indicate the intended order of interim test administrations.
B	The name of the interim as it appears in the Test Administration (TA) application and the Assessment Viewing Application (AVA).
C	Specific grade that should be chosen from the drop down in the Assessment Viewing Application (AVA) to access the interims. The grade band of the students that are encouraged to take the interim.
D	The first dimension of an ISSS. The Science and Engineering Practice describes the science task or activity the student will engage in while completing the interim test (cluster).
E	The second dimension of an ISSS. The Crosscutting Concept describes the methods and thought processes in which scientists (and Idaho science students) will engage in to explain the natural world.
F	The hierarchy of the aligned ISSS. In increasing specificity an ISSS has three hierarchical levels: Science Domain -> Science Domain + Unit -> Idaho State Science (Standard).

Summative Assessment Blueprints

- [SY2019-2020 Elementary School Science Blueprint](#)
- [SY2019-2020 Middle School Science Blueprint](#)
- [SY2019-2020 High School Science Blueprint](#)

The SY2019-2020 ISAT Science test will be a field test. Students will not receive a score or individual score report for this field test.

Even though this is a field test, the requirement to assess 95% of our students during the spring 2020 testing window is still in effect.

The summative blueprints reflect the number of clusters and standalones a student could receive on his/her science assessment. Students could receive a cluster or standalone aligned to any of the ISSS. More specifically, a student could have 0 clusters or standalones (Minimum) aligned to the PS1-MS-1 standard or 1 cluster or standalone aligned to that standard (Maximum) on his/her test.

Even though students could be administered a cluster or standalone aligned to any ISSS, there are specific parameters for the number of clusters and standalones a student will have on his/her test at the Science Domain level and thus total test length.

At elementary school:

- Physical Science: 2 clusters + 4 standalones
- Life Science: 2 clusters + 4 standalones
- Earth and Space Sciences: 2 clusters + 4 standalones
- **Total Summative Field Test: 6 clusters + 12 standalones.**

At middle school:

- Physical Science: 2 clusters + 4 standalones
- Life Science: 2 clusters + 4 standalones
- Earth and Space Sciences: 2 clusters + 4 standalones
- **Total Summative Field Test: 6 clusters + 12 standalones.**

At high school:

- Physical Sciences (Chemistry & Physics): 2 clusters + 5 standalones
- Life Science: 2 clusters + 4 standalones
- Earth and Space Sciences: 2 clusters + 4 standalones
- **Total Summative Field Test: 6 clusters + 13 standalones.**

What is a cluster?

To determine a student’s mastery of the three-dimensional ISSSs, the ISAT Science assessment will include clusters.

Each cluster begins with a phenomenon (a discrete observation about the natural world), or an engineering/design problem. The cluster engages the student in a grade-appropriate, meaningful scientific activity that allows the student to demonstrate his/her ability to think like a scientist and explain the phenomenon or solve the engineering/design problem. A cluster task statement provides the student with a description of the overall purpose of the cluster. The associated interactions in the cluster align to at least two or three of the dimensions (SEP, DCI, CCC) of the aligned ISSS.

Figure 2. shows a model of a cluster.

Figure 2: Model of a Cluster

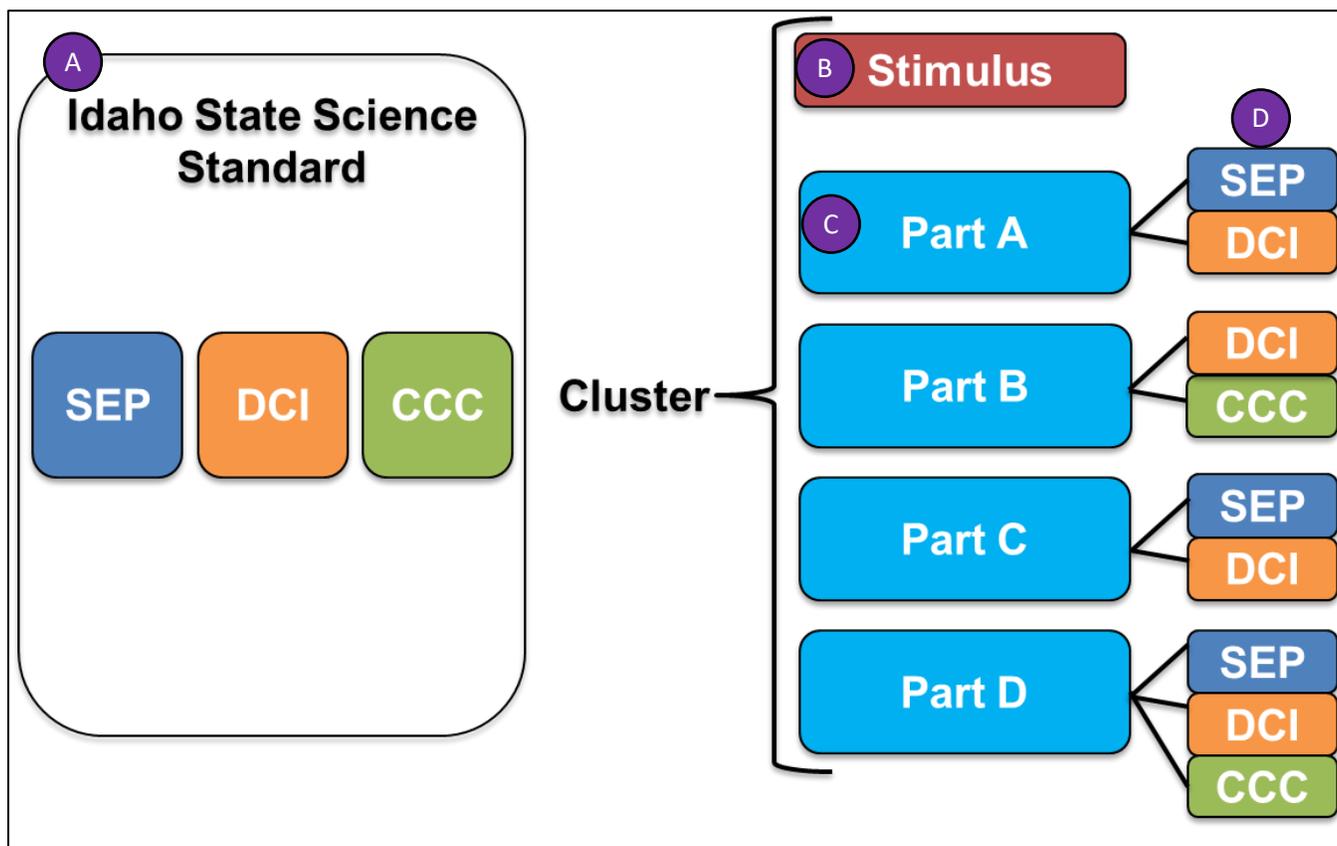


Table 4: Figure 2 Key

A	Each cluster is aligned to one ISSS. Each ISSS is three-dimensional, with a science and engineering practice, a disciplinary core idea (Science Domain), and a crosscutting concept.
B	The stimulus begins with the phenomenon or design/ engineering problem. The stimulus can also include, text, graphics, tabular or graphical data, and/or animations. The student will analyze this information when engaging with the associated interactions.
C	The associated interactions are given their own letter. In the cluster model shown in Figure 2, there are four associated interactions. This is just an example. Clusters can have greater or fewer associated interactions.
D	Each of the associated interactions will be aligned to two or three of the dimensions imbued within the aligned ISSS.

Figure 3 shows a middle school cluster that is aligned to LS2-MS-5 and appears on the New Science Sample Test.

A

Willow populations in Yellowstone National Park have increased since wolves were reintroduced to the park in 1995.

Willows are small trees that grow best in marshlike environments. After studying the Yellowstone food web shown in Diagram 1 and the population data for the park shown in Table 1, students arrive at two different hypotheses.

Diagram 1. Yellowstone Food Web

```

graph TD
    Aspen --> MuleDeer
    Aspen --> Beaver
    Aspen --> Elk
    Willow --> MuleDeer
    Willow --> Beaver
    Willow --> Elk
    MuleDeer --> Wolves
    Beaver --> Wolves
    Elk --> Wolves
    
```

Table 1. Yellowstone Population Data

	Wolves	Elk	Beaver	Mule Deer
1995	31	16,791	10	2,014
2004	171	8,335	120	2,014

Note: These data are approximate.

Hypothesis 1:
When wolves were reintroduced to Yellowstone, the wolves preyed upon the elk, which allowed the beavers to eat more willow. This led to more beavers and beaver dams. Beaver dams create marsh environments that willows do well in, allowing the willow's population to increase.

Hypothesis 2:
When wolves were reintroduced to Yellowstone, they preyed upon all animal species that ate plants. With fewer plant-eating animals eating willows, fewer willow plants were eaten and the population of willow plants increased.

Your Task

In the questions that follow, you will analyze and evaluate these two competing hypotheses.

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Part A

Click on each box and select a word/phrase that completes the table with the Yellowstone population data from 1995 and 2004 and the hypothesis those data support.

Table 2. Summary of Yellowstone Population Data and Supported Hypotheses

	Data	Hypothesis Supported
Elk population	<input type="text"/>	<input type="text"/>
Beaver population	<input type="text"/>	<input type="text"/>
Mule deer population	<input type="text"/>	<input type="text"/>

Part B

Which hypothesis is best supported by the evidence?

Ⓐ All of the evidence is consistent with Hypothesis 1.
 Ⓑ All of the evidence is consistent with Hypothesis 2.
 Ⓒ Most of the evidence is consistent with Hypothesis 1.
 Ⓓ Most of the evidence is consistent with Hypothesis 2.
 Ⓔ The evidence does not favor either hypothesis.

Part C

Aspen trees are shown in Diagram 1. Moose and bison are two plant-eating animal species that are not shown in Diagram 1 but are also part of the Yellowstone food web.

Based on Hypothesis 2, click on each box to select a word/phrase to make a prediction about what would happen to the moose, bison, and aspen tree populations after the reintroduction of wolves.

Table 3. Population Predictions

Species	Population after Wolf Reintroduction	Reason for Impact on Population
Moose	<input type="text"/>	<input type="text"/>
Bison	<input type="text"/>	<input type="text"/>
Aspen tree	<input type="text"/>	<input type="text"/>

Part D

Based on Hypothesis 1, and the information in Diagram 1, Table 1, and Table 3 from part C, click on each box to select **two** different predictions.

Table 4. Population Predictions

Prediction Number	Prediction Statement
1	<input type="text"/>
2	<input type="text"/>

Table 5: Figure 3 Key

A	The stimulus begins with the phenomenon and includes text, graphics and tabular data.
B	The cluster task statement informs the student of the overall purpose of the cluster.
C	The associated interactions, are lettered A to D.

What is a standalone?

In addition to clusters, the ISAT Science summative assessment will include standalones.

Each standalone begins with a phenomenon (a discrete observation about the natural world), or an engineering/design problem. The standalone engages the student in a brief, grade-appropriate, scientific activity that allows the student to demonstrate his/her ability to think like a scientist and explain the phenomenon or solve the engineering/design problem. The standalone is aligned to at least two or three of the dimensions (SEP, DCI, CCC) of the aligned ISSS.

Figure 4 shows a middle school standalone that is aligned to LS3-MS-1 and appears on the New Science Sample Test.

Figure 4: Middle School Standalone

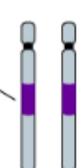
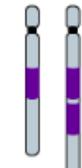
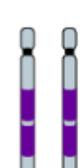
7☰

GUEST

Flies with bar-eyed phenotypes cannot see as well as those with wild type phenotypes.

The genotypes and phenotypes of three flies are shown in Figure 1.

Figure 1. Genotypes and Phenotypes of Three Flies

Genotype	Chromosomes	Phenotype
Wild type B^1B^1	 B gene	Wild Type 
Heterozygous Bar B^1B^2		Bar-eyed 
Homozygous Bar B^2B^2		Bar-eyed 

Source: Scitable by nature EDUCATION

Click on each blank box to select the statements that complete the chain of events explaining how the bar-eyed mutation reduces a fly's eyesight.

Chain of Events

Step	Event
1	<input style="width: 100%;" type="text"/>
2	<input style="width: 100%;" type="text"/>
3	<input style="width: 100%;" type="text"/>
4	The eyesight of a fly is reduced.

How much time will each cluster/standalone/ test take to complete?

Table 3 summarizes estimated range of time (in minutes) an elementary, middle school and high school student will take to answer a cluster, a standalone, and an entire summative test.

Table 6: Test Time Estimates

	Estimated Time on a Cluster (minutes)*	Estimated Time on a Standalone (minutes)	Estimated Time for All Clusters on Summative Test (minutes)	Estimated Time for All Standalones on Summative Test (minutes)	Total Estimated Summative Test Time (minutes)
Elementary School	8-10	1-4	48-60	12-48	60-108
Middle School	8-10	1-4	48-60	12-48	60-108
High School	8-12	1-3	48-72	13-39	61-111

*Since each interim test is comprised of one cluster, this time estimate is also for each interim test.

What will be reported from the spring 2020 summative assessment?

The 2019-2020 ISAT Science test will be a field test. Students will not receive a score or individual score report for this field test.

However, the requirement to assess 95% of our students during the SY2019-20 testing window is still in effect.

How can I access the New Science Sample Test?

The New Science Sample Test is available via the [ISAT Portal](#). A Guest User can login under a Guest Session and take the elementary, middle school or high school sample test as many times as necessary.

As you are taking a New Science Sample Test, you can check which scoring assertions you got correct. After answering at least one interaction in the cluster, click on the Content Text menu, and click Score Item. A pop-up box will appear that contains the scoring assertions and a green check or red X indicating which scoring assertions you got correct or incorrect, respectively.

Figure 5 shows the location of the Context Menu for the second cluster on the high school Science Sample Test.

Figure 5: Context Menu to Score Item

A piece of lithium is added to a beaker of water and it begins to fizz while a piece of sodium metal is added to another beaker of water and it gives off an orange flame and white smoke.

Lithium and sodium are both alkali metals. Lithium metal, when combined with water, produces lithium hydroxide and hydrogen gas:

Figure 1. Reaction of Lithium and Water

$$2 \text{Li}_{(s)} + 2 \text{H}_2\text{O}_{(l)} \rightarrow 2 \text{LiOH}_{(aq)} + \text{H}_{2(g)}$$

States of Matter Key

- (aq) aqueous
- (g) gas
- (l) liquid
- (s) solid

Part A

Based on your observations in Animation 1 and Animation 2, select all of the properties that can be identified in the reactions of lithium and sodium with water.

- flammability
- boiling point
- reactivity with water
- electrical conductivity
- oxidation state
- electronegativity

The context menu is open, showing options: Tutorial, Mark for Review, Notepad, Score Item (highlighted), Highlight Selection, and Strikethrough.

Figure 6 shows the pop-up box that contains the scoring assertions.

Figure 6: Scoring Assertion Pop-Up Box

A piece of lithium is added to a beaker of water and it begins to fizz while a piece of sodium metal is added to another beaker of water and it gives off an orange flame and white smoke.

Lithium and sodium are both alkali metals. Lithium metal, when combined with water, produces lithium hydroxide and hydrogen gas:

Figure 1. Reaction of Lithium and Water

$$2 \text{Li}_{(s)} + 2 \text{H}_2\text{O}_{(l)} \rightarrow 2 \text{LiOH}_{(aq)} + \text{H}_2$$

States of Matter Key

- (aq) aqueous
- (g) gas
- (l) liquid
- (s) solid

Click on the small gray arrow to run the animation and see how lithium metal reacts when combined with water.

Animation 1. Reaction of Lithium Metal

Scoring Results for Item #2

Your response earned 1 point of a possible 13

Achieved	Max	Score Rationale
		The student selected "flammability" and none of the incorrect answers. This indicates an ability to record observations made in the reactions of lithium and sodium as shown in the animation. ✓
		The student selected "reactivity with water" and none of the incorrect answers. This indicates an ability to record observations made in the reactions of lithium and sodium as shown in the animation. ✗
		The student selected "valence electrons," indicating understanding of the outer electron states of alkali metals. ✗

Close

How can I administer the science interims?

The science interims can be administered in a standardized or non-standardized method.

- [Test Administration \(TA\) application](#) = Standardized
- [Assessment Viewing Application \(AVA\)](#) = Non-Standardized

Test Administration (TA) Application

The TA application is available on the [ISAT Portal](#).

A standardized administration of an interim using the TA app, can provide an administration similar to that of the summative assessment. A test session is started and students can individually login to that test session using the Secure Browser.

An [Interim Assessment Implementation Planning Checklist](#) is available on the ISAT Portal. It provides the necessary and required steps to administer an interim assessment via the TA app.

Results from a SY2019-2020 science interim administered via the TA app are available via AIRWays Reporting on the [ISAT Portal](#). A detailed [User Guide](#) and [Quick Guide](#) are available for AIRWays Reporting.

Assessment Viewing Application (AVA)

AVA is available on the [ISAT Portal](#).

A non-standardized administration of an interim using AVA can provide educators an opportunity to conduct an individual, small group, or an entire classroom test-taking activity. Educators can display the interim to the class and have the students individually, or in small groups, or as an entire class work through an interim.

AVA also provides educators a platform to review an interim assessment prior to a standardized administration.

A detailed [User Guide](#) is available for AVA.

Document Version Control & Tracking

Table 7: Version Control and Tracking

Version Number	Date	Updates
1	11/4/2019	Document created.
2	11/5/2019	Hyperlinks added.
3	11/6/2019	Added Qs&As concerning seniors and last year's Gr7 & sophomores on p2.