CALIFORNIA SCIENCE TEST (CAST)

An FAQ for Educators

Acronym And Phrasing Key

3D (three-dimensional)	DCI + SEP + CCC
CAASPP	California assessment of student performance and progress
CAST	California science test
CCC	Crosscutting concepts
CDE	California Department of Education
DCI	Disciplinary core ideas
LEA	Local education agency
PE	Performance expectation
SEP	Science and engineering practices

Preparing Students For The CAST

Because the CAST assesses students' three-dimensional understanding of the CA NGSS, this is not a test you can "cram for" or "teach to." The best way to prepare students is to:

Align Instruction

The best preparation for the CAST is to support administrators and teachers in aligning classroom instruction to the shifts and *innovations* of the CA NGSS, in particular, making sense of phenomena and designing solutions to problems and three-dimensional learning. Within a CA NGSS-aligned classroom, students work to explain phenomenon and solve problems as they build an increasingly deeper understanding of the three-dimensions (DCIs, SEPs, and CCCs). Students provided consistent opportunity to engage in such learning are best able to engage in the CAST.

Align Curriculum And Assessment

In addition to instruction, instructional materials used with students as well as classroom assessments need to be aligned to the NGSS.

Classroom Instruction

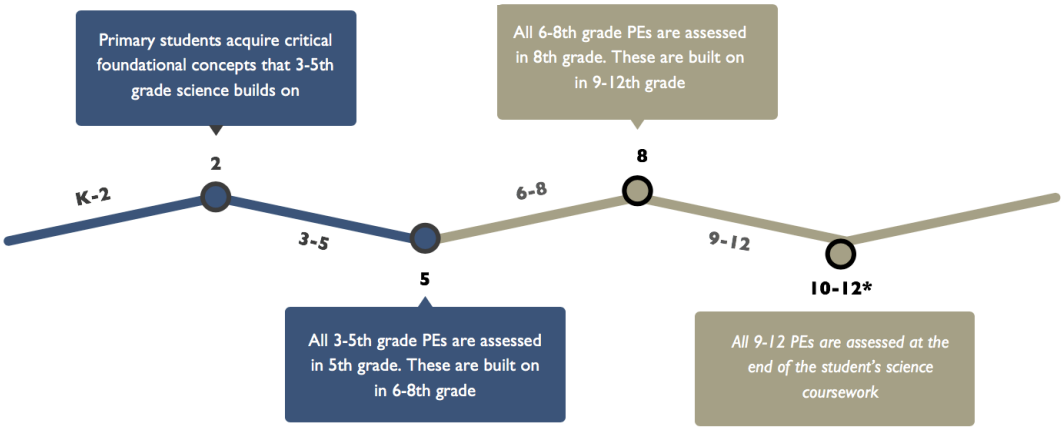
- CA Science Framework Chapter 11 on Instructional Strategies for CA NGSS Teaching and Learning in the Twenty-first Century *(https://www.cde.ca.gov/ci/sc/cf/documents/scifwchapter11.pdf)*
- For information on instructional materials, see CSTA's page here *(https://cascience.org/ngss/instructional-materials)*

Classroom Assessment

- Using 3D Interim Assessment to Support Coherence, Equity, and a Shared Understanding of Learning STEM Teaching Tool *(http://stemteachingtools.org/brief/65)*
- Achieve's assessment resources here *(https://www.nextgenscience.org/assessment-resources/assessment-resources)*
- CA Framework Chapter 9 on Assessment: *(https://www.cde.ca.gov/ci/sc/cf/documents/scifwchapter9.pdf)*
- The NGSS 3-D Assessment Modules developed by our statewide science community of practice and housed at Stanislaus County Office of Education *(https://www.stancoe.org/division/instructional-support-services/ science-stem/assessment)*

Recognize That This is The Responsibility of All Grades, K-12

The CA NGSS are intentionally designed to be coherent, K-12. Recognize that ALL classrooms where science is taught, K-12, need to shift to align instruction, curriculum and assessment, to teach their full science program. The CAST is administered at the end of the grade-band of instruction and includes foundational ideas built in K-2, and all Performance Expectations (PEs) from grades 3-5, 6-8, and high school. Preparation is the responsibility of all grades (not just 5th, 8th, or the high school year the student takes the test).



The CA NGSS is designed to coherently build all three-dimensions from kindergarten through twelfth grade.
*Individual LEAs determine when high school students are assessed (either 10th, 11th or 12th grade) with the recommendation being at the end of the year in which they complete their high school science course work.

- The 5th-grade CAST assess all performance expectations (PEs) from grades 3 - 5 and includes foundational concepts that are addressed in kindergarten through grade two (K-2).
- The 8th-grade CAST assess all performance expectations (PEs) from grades 6 - 8.
- The high school CAST assess all performance expectations (PEs) from grades 9 - 12.

Provide Testing Platform Practice

It is important that all 5th, 8th, and high school students who will take the CAST have the opportunity to familiarize themselves with the testing platform by using the *CAST training and practice tests:*

- Familiarize 5th-grade students with the accessibility supports such as the *Desmos calculator* (this is the same calculator used in the Smarter Balance Math Assessment). Familiarize 8th-grade and high school students with the accessibility supports such as *Desmos scientific calculator, periodic table*, and reference sheets (*grade 8* and *high school*) available as resources within the CAST (periodic table and reference sheets can also be made available in print format).
- Familiarize students with how to use and access the accessibility supports within the test system. Test preparation should include students practicing these within the testing platform so that they are comfortable with how to access the tools available to them.

Provide Opportunities to Engage With Practice Tests

CDE offers no cost online practice and training tests available through the portal on the *CAASPP website*. The practice and training tests were updated for the first operational administration of the CAST in 2019 and include all of the *accessibility supports and reference tools* that are available with the CAST.

Practice Test vs Training Test

The practice tests provide students with grade band-specific testing experiences that are similar in structure and format to what they will experience on the CAST. The training tests, in contrast, simply provide students with the opportunity to quickly become familiar with the types of questions and interface features.

Fall 2018 Release	5th-Grade	8th-Grade	High School
Practice Tests *How to start a practice test*.	32 discrete items* and three performance tasks (one for each domain**)	33 discrete items and three performance tasks (one for each domain)	32 discrete items and three performance tasks (one for each domain)
Training Tests *How to start a training test*.	two discrete items and one performance task	three discrete items - two of which are multi-part - and one performance task	one discrete item and one performance task

* Discrete items are stand-alone questions such as multiple choice, matching or constructed response, just to name a few.

** Domain refers to the science discipline being assessed. These include Life Sciences, Physical Sciences and Earth and Space Sciences.

Practice and Training tests can be accessed at *http://www.caaspp.org/practice-and-training/index.html.*

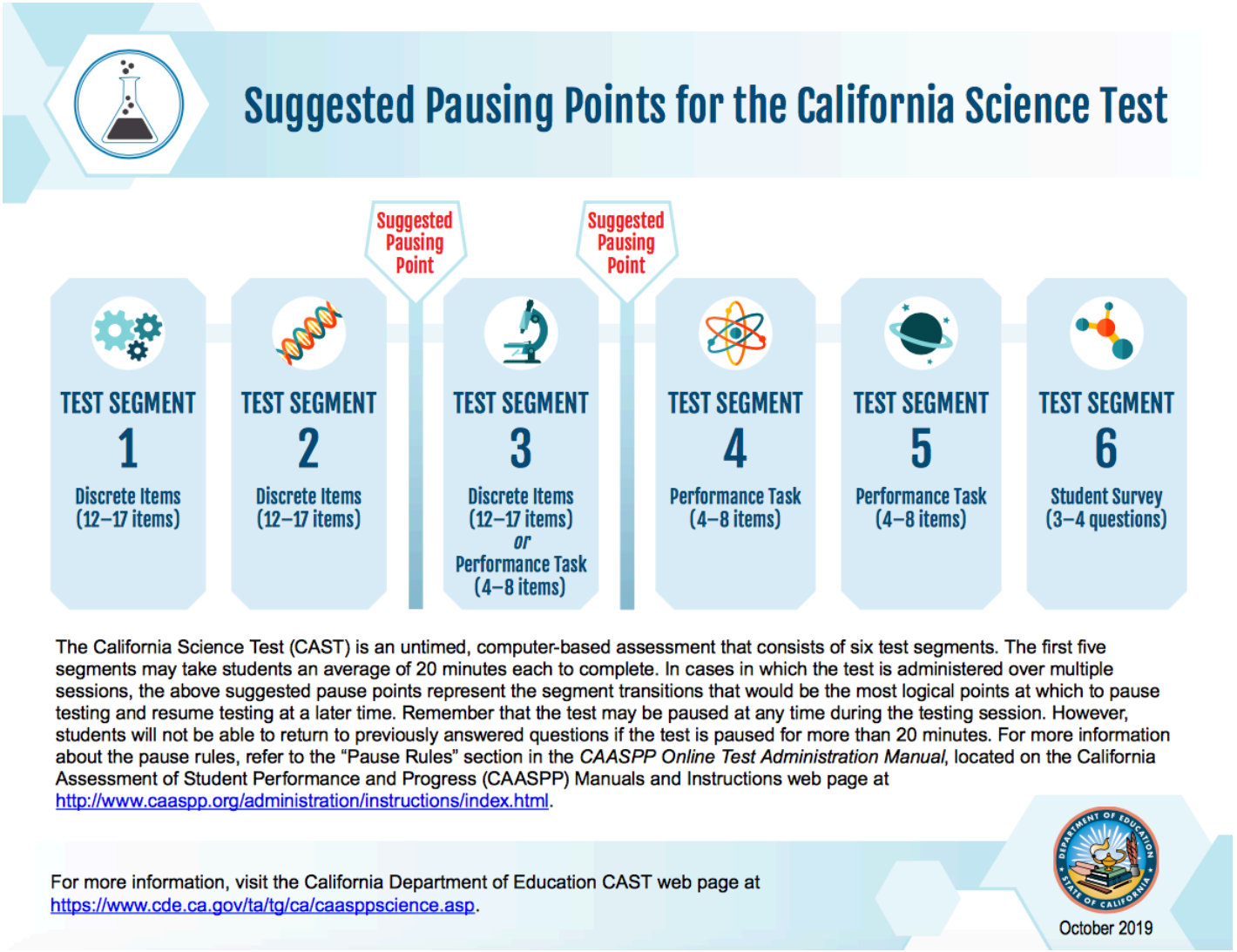
Administrator Preparation Considerations

Time Needed For The CAST

The CAST is an untimed test that is designed to take approximately two hours to complete. Some students may require less time, some students may require more.

The test can be administered over more than one class period or over a number of days. Spreading the test out over multiple testing periods is recommended by the CDE to reduce student fatigue. However, it's always best to know your student population and take into consideration what their needs are as you consider timing structures.

To help plan for this, the CDE developed a resource for the 2019-2020 CAST: "*Suggested Pausing Points for the California Science Test.*" Each segment, 1-5, identified on the document may take students approximately 20 minutes to complete (based on average results of the 2019 CAST).



Pausing Considerations

There are several options to pause students during testing administration. Students can pause the test themselves (you can direct students to pause the assessment when they complete Segment 2, for example), and test administrators can pause students individually or as a whole class.

Where a student is within a segment and pause duration is important:

Student Return Time	Pausing while in a segment	Pausing at end of segment
Within 20 minutes	Student may continue to review items in their current segment if they resume testing within 20 minutes.	Student will be presented with the next segment.
After 20 minutes	Student will be returned to the point of the test where they have an uncompleted item (but will not be able to review earlier items in the segment).	Student will be presented with the next segment.

For a quick guide to pausing, access the "*Suggested Pausing Points for the California Science Test*." For detailed pause rules, review pages 58–60 of the *2018–19 CAASPP Online Test Administration Manual.*

Testing Room

Before administering the CAST, teachers should prepare the testing area by removing or covering up science instructional materials that might assist students such as CA NGSS posters that list the practices and crosscutting concepts and statements such as: "I can use evidence of cause and effect to decide the type of relationships between them and to predict future change."

Page 35 of the *2019-2020 CAASPP Online Test Administration Manual* outlines the Requirements of the Test Environment before Testing. It states "Instructional materials must be removed or covered, including but not limited to information that might assist students in answering questions that is displayed on bulletin boards, chalkboards or dry-erase boards, or on charts (e.g., wall charts that contain literary definitions, maps, mathematics formulas, etc.)."

There may be a question as to what qualifies as an instructional material that would be subject to removal based on the guidance above. If there is a question, the best option is to consider it as such and cover or remove it before test administration.

Quick Tip!
Use this rule of thumb: when in doubt, remove it.
Consider administering the CAST in a room that is not used for science to avoid this issue.

CAST Structure

The 2019-2020 CAST is a single test that, from the test-taker perspective, consists of six segments (see the "Suggested Pausing Points for the California Science Test" figure above). These six segments are a part of the overall blueprint structure envisioned as three parts. The number of questions in the 2019-2020 CAST will be the same as it was in the 2018-2019. In January of 2020, however, the State Board of Education approved of a revised CAST structure proposed by the California Department of Education to help adjust for the amount of time students were actually taking on the test. Data suggested students took more time on discrete items than performance tasks. Those changes will be in effect in the subsequent 2020-2021 CAST.

Here is a summary of what can be expected on the 2019-2020 CAST and the revised 2020-2021 CAST
(Please note: Field test segment can be any segments from 1 through 5 and is randomly assigned to the student. The test is organized where all of the stand-alone items are administer contiguously then the performance tasks are administered.):

Segments	2019-2020 CAST	2020-2021 CAST
Segments 1 and 2 consist of stand-alone items	Grades 5, 8, and high school: • 32-34 discrete items	• Grade 5: 26 discrete items • Grade 8: 28 discrete items • High School: 32 discrete items
Segment 3 may consist of either stand-alone items or a performance task		
Segments 4 and 5 consists of two performance task	Grades 5, 8, and high school: • 2 performance tasks from different science domains (with 4-6 items per performance task)	Grades 5, 8, and high school: • 3 performance tasks, one from each science domain (with 4-6 items per performance tasks)
Segment 6 consists of brief student survey		

Revised CAST blueprint (Jan 2020) can be found at: *https://www.cde.ca.gov/ta/tg/ca/documents/castblueprint0120.pdf*

Interpreting CAST Results

CAST results can now be found on the public reporting website: *https://caaspp-elpac.cde.ca.gov/caaspp/* by selecting the science box. The website provides the CAST results presented at four levels: state, county, district, and school as well as by student groups.

The CAST results are a baseline measure of how a district or school is performing in science. The CAST cannot provide information on student performance by PE or by dimension (DCI, SEP, CCC) because result would not be valid nor reliable. It is more appropriate for this detailed information to come from a multiple measures of the student's performance in individual classrooms.

Meaning of CAST results

What it is	What it is not
A measure of a science instructional program at a school.	A holistic measure of student proficiency in science.
Students' CAST results reveal only a snapshot of how well they did on one day at the end of the grade band and should be considered along with other available information such as classroom tests, assignments, and grades.	A holistic measure of student proficiency in science.
A measure of three-dimensional understanding of science and engineering (core ideas, concepts, and practices).	A measure of knowledge of science facts.
A measure of performance of all science domains in a grade-band: • Grades 3-5 in 5th grade (build on foundations in K-2), • Grades 6-8 in 8th grade, and • High school in at the end of the students science program.	A measure of one year of science or one domain of science.

CAST Claims

According to the CAST Blueprint, January 2020, the CAST has four claims:

- one overall claim for the entire assessment, and
- three separate science domain claims.

Domains	Description
3D Overall	Students can demonstrate performances associated with the expectations of the California Next Generation Science Standards, through the integration of Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts across the domains of Physical Sciences, Life Sciences, Earth and Space Sciences, and Engineering, Technology, and Application of Science.
3D Physical Sciences	Students can demonstrate performances associated with the expectations in the disciplinary area of Physical Sciences within the California Next Generation Science Standards, through the integration of Sciences and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts.
3D Life Sciences	Students can demonstrate performances associated with the expectations in the disciplinary area of Life Sciences within the California Next Generation Science Standards, through the integration of Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts.
3D Earth and Space Sciences	Students can demonstrate performances associated with the expectations in the disciplinary area of Earth and Space Sciences within the California Next Generation Science Standards, through the integration of Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts.

This figure shows the claim statements for the CAST as described in the 2020 revised CAST Blueprint.
Source: *https://www.cde.ca.gov/ta/tg/ca/documents/castblueprint0120.pdf*

Support

More Information and Help With CAST

California Assessment of Student Performance and Progress
Telephone 916.445.8765
Email caaspp@cde.ca.gov
Twitter @CDEAssessment

CAST web page: *https://www.cde.ca.gov/ta/tg/ca/caasppscience.asp*
CAST Item Specifications: *https://www.cde.ca.gov/ta/tg/ca/castitemspecs.asp*
CAA for Science web page: *https://www.cde.ca.gov/ta/tg/ca/caascience.asp*

Subscribe to the Assessment Spotlights by sending a blank email message to: *subscribe-caaspp@mlist.cde.ca.gov*

Help With Implementing The NGSS

CSTA encourages schools and districts needing professional learning support in the NGSS to reach out to our partners in the CA NGSS Collaborative:

- California Science Project: *https://csmp.ucop.edu/csp*
- CCSESA Curriculum and Instruction-Science Leads (for referral to your local County Office of Education science lead): *https://ccsesa.org/cisc/slcl-subcommittee-leads-co-leads/sci-science/*
- K-12 Alliance @WestEd: *http://k12alliance.org/*

NGSS Resources

Resources are identified on our website here: *https://cascience.org/ngss/resources*