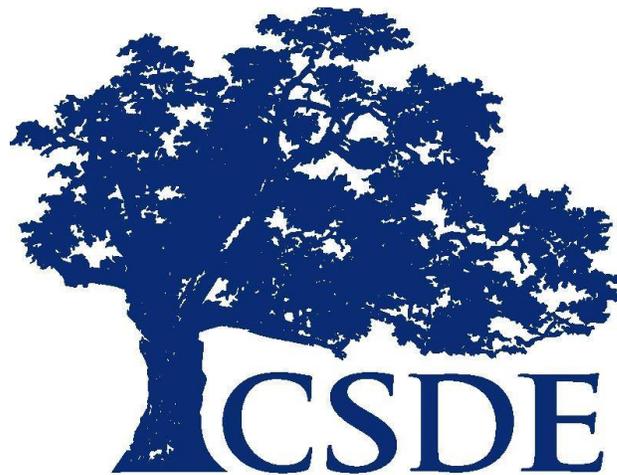


Connecticut Mastery Test
and
Connecticut Academic Performance Test
Science
Program Overview



CONNECTICUT STATE
DEPARTMENT OF EDUCATION

**Copyright © 2016 by the Connecticut State Board of Education
in the name of the Secretary of the State of Connecticut**

TABLE OF CONTENTS

| | |
|---|----|
| Background Information | 1 |
| Standards Assessed..... | 2 |
| Test Designs | 3 |
| Special Populations | 5 |
| Reporting and Interpreting Results..... | 6 |
| Appendix A: Standard CMT and CAPT Science Individual Student Reports | 8 |
| Appendix B: CMT and CAPT Skills Checklist Science Profiles | 11 |
| Appendix C: Performance Level Literals for the Standard CMT and CAPT Science | 14 |
| Appendix D: Performance Level Literals for the CMT and CAPT Skills Checklist Science | 17 |
| Appendix E: Raw Score-to-Scale Score Conversion Tables | 18 |

BACKGROUND INFORMATION

Connecticut General Statutes (Section 10-14n) mandate that the State Board of Education shall administer an annual statewide assessment in science to all public school students enrolled in Grades 5, 8 and 10. This document provides an overview of the Connecticut Mastery Test (CMT) in science administered at Grades 5 and 8 and the Connecticut Academic Performance Test (CAPT) in science administered in Grade 10. Together, these assessments enable the measurement of progress toward the educational outcomes that have been established for Connecticut students as reflected in the state's science curriculum frameworks.

The purposes of the CMT and CAPT Science are to:

- establish high performance standards for all public school students on a comprehensive range of important skills and knowledge;
- emphasize the application and integration of skills and knowledge in realistic contexts;
- promote better instruction and curriculum by providing information on student, school, and district strengths and weaknesses; and
- provide an expanded measure of accountability for Connecticut's educational system.

More detailed information and resources about the CMT and CAPT Science can be found at the Connecticut State Department of Education (CSDE) Web site (www.ct.gov/sde) at the following link: <http://www.sde.ct.gov/sde/cwp/view.asp?a=2748&q=335456>. General questions about the CMT and CAPT Science should be directed to the Student Assessment Office at 860-713-6890 or ctstudentassessment@ct.gov.

STANDARDS ASSESSED

The CMT and CAPT Science are based on the [Connecticut Core Science Curriculum Framework](#) adopted in 2004. This framework articulates the main conceptual themes and content standards that all students are expected to learn in their elementary, middle and high school science classes. Further, the framework describes the specific performances that are assessed on the state science assessments.

Decisions regarding the main science themes and the sequencing of the content standards were guided by the *National Science Education Standards* (National Research Council, 1996), *Project 2061 Benchmarks for Science Literacy* (American Association for the Advancement of Science, 1993). The CSDE along with input from Connecticut science educators used these guiding documents to develop our state's science standards. School districts may choose to go beyond the scope of the core concepts, but all students should have opportunities to learn the science described in this framework.

The science framework is based on the idea that all students should be scientifically literate. Being scientifically literate requires that a person have an essential understanding of key science ideas, along with a fluency in the language and terms used to describe them. Throughout the science framework, fundamental concepts from the life, physical and earth sciences are woven together in order to support the holistic understanding required of a scientifically literate individual.

Scientific literacy requires the ability to apply critical thinking skills when dealing with science-related issues. The framework was therefore designed to target the age-appropriate inquiry skills that should be infused in the learning of each of the content standards. Further, in limiting the number of content standards required to be taught, the framework allows for the implementation of a hands-on/minds-on science program in which students and teachers have time for in-depth explorations that build an understanding of the way in which scientific knowledge is created, validated and communicated.

The CMT and CAPT Science assess students' understanding of important scientific concepts, as well as their application of those concepts to realistic problems. In addition, experimentation and the ability to use scientific reasoning to solve problems are a major focus of the tests. The elementary school CMT Science assesses scientific knowledge and skills described in the framework's expected performances for Grade 3-5, while the middle school CMT Science assesses the Expected Performances for Grades 6-8. The CAPT Science assesses scientific knowledge and skills described in the framework's Expected Performances for Grades 9-10.

The Connecticut statewide testing programs are thought of in terms of generations. This allows the testing programs to be periodically evaluated and revised as necessary. A "generation" of a test typically spans about five to seven years. During those years, equivalent forms of the test are administered and scoring procedures are standardized to ensure that results can be interpreted in the same way from year to year. The initial CMT Science was administered in spring 2008 as part of the fourth generation of the test and is planned to continue through spring 2018. The first generation of the CAPT Science spanned from 1995 to 2000 and the second generation from 2001 to 2006. The third generation of the CAPT Science started with the spring 2007 test administration and is planned to continue through spring 2018. In November 2015 the Connecticut State Board of Education adopted the [Next Generation Science Standards](#). These new standards will serve as the basis for future science assessments.

TEST DESIGNS

The information presented below details the design of each of the tests in terms of the number and types of items and points associated with each item. In addition, the time for testing and reporting categories are noted.

Elementary School CMT Science (Grade 5)

The elementary school CMT Science includes 39 test items: 36 selected-response (SR) items and three constructed-response (CR) items. Of the 36 selected-response items, 18 assess Content Knowledge and 18 assess Scientific Inquiry, Literacy and Numeracy. The three constructed-response items assess Content Knowledge. Testing time is 65 minutes and is completed in one session.

| | Content Knowledge | | Scientific Inquiry, Literacy and Numeracy | Total Points |
|------------------|-------------------|-----------|--|--------------|
| | SR Items* | CR Items* | SR Items* | |
| Life Science | 6 | 1 | 6 | 14 |
| Physical Science | 6 | 1 | 6 | 14 |
| Earth Science | 6 | 1 | 6 | 14 |
| Totals | 21 Items | | 18 Items | 42 Points |

*Each selected-response item is worth 1 point. Each constructed-response item is worth 2 points.

Reporting Categories: An overall science score is reported along with subscores in Life Science, Physical Science, Earth Science, Content Knowledge and Scientific Inquiry, Literacy and Numeracy.

Middle School CMT Science (Grade 8)

The middle school CMT Science includes 48 test items: 45 selected-response (SR) items and three constructed-response (CR) items. Of the 45 selected-response items, 30 assess Content Knowledge and 15 assess Scientific Inquiry, Literacy and Numeracy. The three constructed-response items assess Scientific Inquiry, Literacy and Numeracy. Testing time is 70 minutes and is completed in one session.

| | Content Knowledge | Scientific Inquiry, Literacy and Numeracy | | Total Points |
|------------------|-------------------|--|-----------|--------------|
| | SR Items* | SR Items* | CR Items* | |
| Life Science | 10 | 5 | 1 | 17 |
| Physical Science | 10 | 5 | 1 | 17 |
| Earth Science | 10 | 5 | 1 | 17 |
| Totals | 30 Items | | 18 Items | 51 Points |

*Each selected-response item is worth 1 point. Each constructed-response item is worth 2 points.

Reporting Categories: An overall science score is reported along with subscores in Life Science, Physical Science, Earth Science, Content Knowledge and Scientific Inquiry, Literacy and Numeracy.

CAPT Science (Grade 10)

The CAPT Science includes 65 test items: 60 selected-response (SR) items and five constructed-response (CR) items. Of the 60 selected-response items, 40 assess Content Knowledge and 20 Scientific Inquiry, Literacy and Numeracy. The five constructed-response items assess Scientific Inquiry, Literacy and Numeracy. Testing time is 100 minutes and is divided into two sessions.

| Content Strand | Content Knowledge | Scientific Inquiry, Literacy and Numeracy | | Total Points |
|---------------------------------------|-------------------|---|-----------|--------------|
| | SR Items* | SR Items* | CR Items* | |
| I. Energy Transformations | 8 | 4 | 1 | 15 |
| II. Chemical Structures & Properties | 8 | 4 | 1 | 15 |
| III. Global Interdependence | 8 | 4 | 1 | 15 |
| IV. Cell Chemistry and Biotechnology | 8 | 4 | 1 | 15 |
| V. Genetics, Evolution & Biodiversity | 8 | 4 | 1 | 15 |
| Totals | 40 Items | 20 Items | 5 Items | 75 Points |

*Each selected-response item is worth 1 point. Each constructed-response item is worth 3 points.

Reporting categories: An overall science score is reported along with subscores for each of the five content strands, as well as Content Knowledge and Scientific Inquiry, Literacy and Numeracy.

Scoring of the CMT and CAPT Science

The CMT and CAPT Science each consist of two item types: selected-response and constructed-response that are scored in different ways. Selected-response items are scored by machine as either correct or incorrect. Constructed-response items are scored by readers who have been trained to carefully apply consistent scoring criteria. Scoring rubrics define the characteristics of student responses at each score point. Exemplars of student responses at each score point are selected to create anchor, practice and qualifying sets used to train scorers. Committees of Connecticut educators assist the CSDE in defining these scoring rubrics and identifying exemplars of student responses. Careful monitoring of inter-rater reliability and other important parameters is built into the scoring process.

Curriculum-Embedded Science Performance Tasks

[Curriculum-embedded science performance tasks](#) are available for Grades 3 through 10. Teachers are encouraged to administer these performance tasks in their science curricula at the appropriate time. Items on the CMT and CAPT Science are related to these curriculum-embedded science performance tasks. The elementary school CMT Science includes two to three selected-response items aligned to each of the Grade 3-5 performance tasks. The middle school CMT Science includes three constructed-response items aligned to the Grade 6-8 performance tasks. The CAPT Science includes five constructed-response items aligned to the Grade 9-10 performance tasks.

SPECIAL POPULATIONS

All students enrolled in Connecticut public schools in Grades 5, 8 and 10 must participate in the CMT and CAPT Science. This includes students identified as eligible for special education services under the Individuals with Disabilities Education Act (IDEA), students identified as disabled under Section 504 of the Rehabilitation Act of 1973 and students who are identified as English learners (EL). Test accommodations for the standard CMT and CAPT Science are available for these groups of students. Additionally, states are mandated to provide alternate assessments for those students with disabilities who are unable to participate in the standard assessment, even with accommodations. These alternate assessments are known as the [CMT and CAPT Skills Checklist Science](#) and are described below. The student's participation in the standard version of the CMT or CAPT Science or the CMT or CAPT Skills Checklist Science is decided by the individualized education program (IEP) Team and is reflected in the student's IEP. The CSDE has developed the [Assessment Guidelines](#) which provides more detailed information about the assessment of students with special needs.

Test Accommodations for the Standard CMT and CAPT Science

Test accommodations refers to procedures in the areas of presentation, response and other areas that provide equitable access during the assessment for students with disabilities. These include such features as extended time, computer response, Text-To-Speech, and Braille and Large Print versions of the tests. Test accommodations are provided to allow students with disabilities the opportunity to demonstrate their aptitude and achievement in testing situations rather than reflect their impairments. Although, test accommodations provide students with an equal opportunity to demonstrate their skills and knowledge, they do not guarantee equal outcomes. Test accommodations should not affect how scores are interpreted.

CMT and CAPT Skills Checklist Science

The CMT and CAPT Skills Checklist Science are designed for use with students with significant cognitive impairments who participate in the general curriculum, but require intensive individualized direct instruction in multiple settings. The CMT and CAPT Skills Checklist Science are completed by the student's primary teacher in collaboration with other team members. These professionals have knowledge about the student's current levels of performance in the areas assessed by the Checklist.

The CMT Skills Checklist Science at Grade 5 assesses Grade Level Academic Skills from four areas that correspond to the Grade 5 science standards: Energy Transfers and Transformations, Structure and Function, Earth and the Solar System, and Science and Technology in Society.

The CMT Skills Checklist Science at Grade 8 assesses Grade Level Academic Skills from four areas that correspond to the Grade 8 science standards: Forces and Motion, Heredity and Evolution, Earth in the Solar System, and Science and Technology in Society.

The CAPT Skills Checklist Science at Grade 10 assesses Grade Level Academic Skills from two areas that correspond to the Grade 10 science standards: Cell Chemistry and Biotechnology and Genetics, Evolution and Biodiversity.

The U.S. Department of Education has allowed states to establish an additional set of performance standards for those students with significant cognitive disabilities who participate in an alternate assessment. Connecticut has developed performance standards for the CMT and CAPT Skills Checklist Science: Basic, Proficient and Independent.

REPORTING AND INTERPRETING RESULTS

In order to provide relevant information to educators, parents, and other citizens, a wide array of reports are available. These reports are designed to serve different purposes for various stakeholders. Some reports focus on individual student results, some provide information to educators regarding the strengths and weaknesses of their programs, and some are designed to hold schools and districts accountable for the achievement of their students. Results for the 2016 CMT and CAPT Science are available at edsight.ct.gov.

Student Results

Each student who takes the CMT or CAPT Science receives a score report that indicates his or her results in relation to the established performance levels. Interpretive information is included in the report to help students and their parents understand the meaning of the scores. Sample student reports for the CMT and CAPT Science are available in Appendix A.

School, District and State Results

The CMT and CAPT Science results are provided to educators in school districts in a wide variety of ways, some reporting student-level data and some reporting summary information at the school, district and state levels. Summary reports are presented in terms of average scores and the percentage of students achieving each of the five performance levels. All of these reports are intended to provide feedback to educators and to help teachers and administrators reflect on the strengths and weaknesses of their educational programs. Summary results at the school, district and state levels are also available for various subgroups of students.

Scale Scores

Each student who completes the standard CMT or CAPT Science receives a total scale score. A total science scale score ranging from 100 to 400 is reported. Scale scores are based on the raw scores (i.e., number of points earned). These raw scores are converted to scale scores to ensure accurate comparisons of student performance across different forms of the test by adjusting for slight differences in difficulty between test forms. Established psychometric procedures are used to ensure that a given scale score represents the same level of performance regardless of the test form. For example, if a student receives a scale score of 270 on one form of the test and another student earns a 270 on a later form of the same test, the scaling process ensures that both scores represent the same level of performance. The 2016 CMT and CAPT Science raw score-to-scale score conversion tables are found in Appendix E.

Based on this, scale scores are especially suitable for comparing the performance of different groups of students in the same grade from year-to-year and for maintaining the same performance standard across the years. While scale scores are comparable across forms within the same grade, they are **not** comparable across grades. For instance, a scale score on the elementary school CMT Science should not be compared with a scale score on the middle school CMT Science.

Performance Levels

For the standard CMT and CAPT Science, there are five performance levels: Below Basic, Basic, Proficient, Goal, and Advanced. The following table summarizes the scale scores for each of the five levels on the standard CMT and CAPT Science.

| Standard Tests | Below Basic | Basic | Proficient | Goal | Advanced |
|-------------------------------|-------------|---------|------------|---------|----------|
| Elementary School CMT Science | 100-187 | 188-212 | 213-247 | 248-299 | 300-400 |
| Middle School CMT Science | 100-201 | 202-220 | 221-243 | 244-298 | 299-400 |
| CAPT Science | 100-189 | 190-214 | 215-264 | 265-294 | 295-400 |

For the CMT and CAPT Skills Checklist Science, there are three performance levels: Basic, Proficient, and Independent. The following table summarizes the raw scores for each of the three levels on the CMT and CAPT Skills Checklist Science.

| Skills Checklist Science | Basic | Proficient | Independent |
|--------------------------|-------|------------|-------------|
| Grade 5 | 0-15 | 16-41 | 42-60 |
| Grade 8 | 0-11 | 12-31 | 32-48 |
| Grade 10 | 0-13 | 14-38 | 39-60 |

Interpreting the Results

Since the grade-level test forms are equated in difficulty across years and represent the same “measuring stick,” it is valid to compare results across years. For example, Grade 5 Science performance levels in 2015 may be compared to Grade 5 Science performance levels in 2016. The level of achievement required for a student to reach a particular scale score or performance level in a specific grade and content area is equal across the years within the generation, regardless of which test form is used. Overall scale score and performance-level results may also be compared across years at the subgroup level. For example, the performance of females can be compared to the performance of males across years.

Raw scores are reported for each of the content strands, as well as for each dimension (Content Knowledge or Scientific Inquiry, Literacy and Numeracy). Since these scores are not equated using scale scores, caution should be used when making comparisons across years. Subscores for content strands and dimensions may be tracked over several years and school or district performance compared to state averages to determine general trends and inform decisions about science education programs.

Assessment of individual students in terms of their strengths and weaknesses in learning science should always be based on multiple, valid measures including grades on classroom assignments, projects and quizzes or tests. Results from the CMT and CAPT Science may be helpful in informing educational decisions, but should never be used as the main or sole criterion for making decisions about students’ science education.

Appendix A

Standard CMT and CAPT Science Individual Student Reports



Connecticut Mastery Test
Elementary School Science
Student Report

JANE DOE
DEMO SCHOOL, DEMO DISTRICT

GRADE: 5
Date of Birth: 11/01/2004
SASID: 99999999

This report provides JANE's scores for the Connecticut Mastery Test Elementary School Science (CMT Science) administered in March 2016. JANE's score can be compared to the school and district average scores in science. The CMT Science is only one indicator of student performance. These results should be used along with other information, such as classwork and other tests, when making educational decisions.

CMT Science Overview

The CMT Science is a cumulative test administered at Grade 5. It assesses science knowledge and abilities described in the Core Science Curriculum Framework Expected Performances for Grades 3, 4, and 5 (CSDE, 2004). CMT Science includes multiple-choice and three short written-response questions related to concepts in life science, physical science, and earth science, as well as scientific inquiry, literacy, and numeracy skills learned over several years.

Scale Scores and Performance Levels

Overall scores on the CMT Science are reported as raw scores and as scale scores. The raw score indicates the number of points the student earned out of a total of 42 points. A formula is used to convert the raw score into a scale score between 100 and 400. Scale scores allow accurate comparisons of student performance across different forms of the test from year to year. The overall scale score is reported within one of the following five performance levels: Advanced, Goal, Proficient, Basic, and Below Basic. The Goal Range includes the two highest performance levels, Advanced and Goal. Scoring in the Goal range is a challenging, yet reasonable, expectation for Connecticut students.

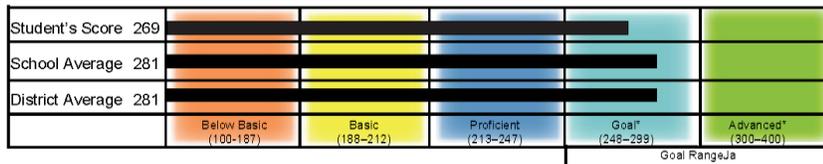
Content Strands and Dimensions

Raw scores are reported for each of the following content strands: Physical Science, Earth Science, and Life Science. Raw scores are also reported for the following dimensions: Content Knowledge; and Scientific Inquiry, Literacy, and Numeracy Skills.

JANE's TOTAL SCIENCE SCALE SCORE = 269

(Score Range 100–400)

Jane scored at the Goal level on the CMT Science. Students who score at this level demonstrate a strong understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 3-5. Generally, these students demonstrate competency to analyze and evaluate the quality of data and apply content knowledge to effectively communicate their understanding of the natural world.



| CONTENT STRANDS | MAX SCORE | STUDENT'S SCORE |
|------------------|-----------|-----------------|
| Physical Science | 14 | 13 |
| Earth Science | 14 | 9 |
| Life Science | 14 | 11 |

| DIMENSIONS | MAX SCORE | STUDENT'S SCORE |
|--|-----------|-----------------|
| Content Knowledge | 24 | 19 |
| Scientific Inquiry, Literacy, and Numeracy | 18 | 14 |

Jane's total Science raw score = 33 out of 42

* = Within Goal Range

For More Information

Specific questions about individual student results on the CMT Science should be directed to local school personnel. Detailed information related to the CMT Science is available on the Connecticut State Department of Education Web site (www.ct.gov/sde). The CMT Science results at the state, district, and school levels are available at <http://edsight.ct.gov>.



Connecticut Mastery Test
Middle School Science
Student Report

JANE DOE
DEMO SCHOOL; DEMO DISTRICT

GRADE: 8
Date of Birth: 01/01/2002
SASID: 999999999

This report provides JANE's scores for the Connecticut Mastery Test Middle School Science (CMT Science) administered in March 2016. JANE's score can be compared to the school and district average scores in science. The CMT Science is only one indicator of student performance. These results should be used along with other information, such as classwork and other tests, when making educational decisions.

CMT Science Overview

The CMT Science is a cumulative test administered at Grade 8. It assesses science knowledge and abilities described in the Core Science Curriculum Framework Expected Performances for Grades 6, 7, and 8 (CSDE, 2004). CMT Science includes multiple-choice and three short written-response questions related to concepts in life science, physical science, and earth science, as well as scientific inquiry, literacy, and numeracy skills learned over several years.

Scale Scores and Performance Levels

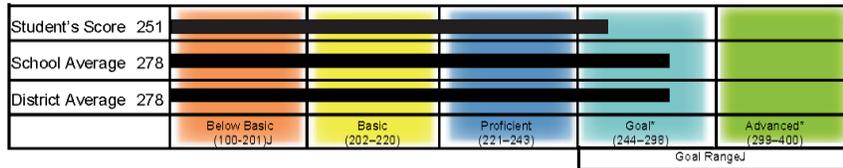
Overall scores on the CMT Science are reported as raw scores and as scale scores. The raw score indicates the number of points the student earned out of a total of 51 points. A formula is used to convert the raw score into a scale score between 100 and 400. Scale scores allow accurate comparisons of student performance across different forms of the test from year to year. The overall scale score is reported within one of the following five performance levels: Advanced, Goal, Proficient, Basic, and Below Basic. The Goal Range includes the two highest performance levels, Advanced and Goal. Scoring in the Goal range is a challenging, yet reasonable, expectation for Connecticut students.

Content Strands and Dimensions

Raw scores are reported for each of the following content strands: Physical Science, Earth Science, and Life Science. Raw scores are also reported for the following dimensions: Content Knowledge; and Scientific Inquiry, Literacy, and Numeracy Skills.

JANE's TOTAL SCIENCE SCALE SCORE (Score Range 100–400)

Jane scored at the Goal level on the CMT Science. Students who score at this level demonstrate a strong understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 6-8. Generally, these students demonstrate competency to analyze and evaluate the quality of data and apply content knowledge to effectively communicate their understanding of the natural world.



| CONTENT STRANDS | MAX SCORE | STUDENT'S SCORE |
|------------------|-----------|-----------------|
| Physical Science | 17 | 11 |
| Earth Science | 17 | 12 |
| Life Science | 17 | 12 |

| DIMENSIONS | MAX SCORE | STUDENT'S SCORE |
|--|-----------|-----------------|
| Content Knowledge | 30 | 21 |
| Scientific Inquiry, Literacy, and Numeracy | 21 | 14 |

Jane's total Science raw score = 35 out of 51

* = Within Goal Range

For More Information

Specific questions about individual student results on the CMT Science should be directed to local school personnel. Detailed information related to the CMT Science is available on the Connecticut State Department of Education Web site (www.ct.gov/sde). The CMT Science results at the state, district, and school levels are available at <http://edsight.ct.gov>. JANE



Connecticut
Academic Performance Test
Science Student Report
 Third Generation

JANE DOE
DEMO DISTRICT, DEMO SCHOOL
GRADE: 10
Date of Birth: 09/09/1999
SASID: 999999999

This report provides Jane's scores for the Connecticut Academic Performance Test (CAPT) administered in March 2016. Jane's score can be compared to the school and district average scores in science. The CAPT Science is only one indicator of student performance. These results should be used along with other information, such as classwork and other tests, when making educational decisions.

CAPT Science Overview

The CAPT Science is a cumulative test administered at Grade 10. It assesses science knowledge and abilities described in the Core Science Curriculum Framework Expected Performances for Grades 9 and 10 (CSDE, 2004). The CAPT Science includes 60 multiple-choice and five short written-response questions related to concepts in life science, physical science, and Earth science, as well as scientific inquiry, literacy, and numeracy skills learned over several years.

Scale Scores and Performance Levels

Overall scores on the CAPT Science are reported as raw scores and as scale scores. The raw score indicates the number of points the student earned out of 75 possible points. A formula is used to convert the raw score into a scale score between 100 and 400. Scale scores allow accurate comparisons of student performance across different forms of the test from year to year. The overall scale score is reported within one of the following five performance levels: Advanced, Goal, Proficient, Basic, and Below Basic. The Goal Range includes the two highest performance levels, Advanced and Goal. Scoring in the Goal Range is a challenging, yet reasonable, expectation for Connecticut students.

Content Strands and Dimensions

Raw scores are reported for each of the following content strands (1) Energy Transformations; (2) Chemical Structures and Properties; (3) Global Interdependence; (4) Cell Chemistry and Biotechnology; and (5) Genetics, Evolution, and Biodiversity. Raw scores are also reported for the following dimensions: Science Content Knowledge and Scientific Inquiry, Literacy, and Numeracy Skills.

JANE'S TOTAL SCIENCE SCALE SCORE = 145

(Score Range: 100–400)

Jane scored at the **Below Basic** level on the Science test. Generally, students who score at this level demonstrate a limited understanding of the scientific concepts and inquiry skills expected of Connecticut high school students. These students usually cannot use problem-solving skills or communicate their understanding of the natural world.

| | | | | | | |
|------------------|-----|-------------------------------|--------------------|-------------------------|-------------------|----------------------------|
| Student's Score | 145 | | | | | |
| School Average | 0 | | | | | |
| District Average | 0 | | | | | |
| | | Below Basic (189 or below) | Basic (190–214) | Proficient (215–254) | Goal (265–294) | Advanced (295 or above) |
| | | Goal Range | | | | |

| Content Strands | Score Range | Student's Score | Dimensions | Score Range | Student's Score |
|---------------------------------------|-------------|-----------------|---|-------------|-----------------|
| Energy Transformations | 0–15 | 2 | Content Knowledge | 0–40 | 7 |
| Chemical Structures and Properties | 0–15 | 0 | Scientific Inquiry, Literacy, and Numeracy | 0–35 | 4 |
| Global Interdependence | 0–15 | 4 | | | |
| Cell Chemistry and Biotechnology | 0–15 | 5 | | | |
| Genetics, Evolution, and Biodiversity | 0–15 | 0 | | | |
| | | | Jane's Total Science Raw Score = 11 out of 75 | | |

For More Information

Specific questions about individual student results on the CAPT Science should be directed to local school personnel.

The Connecticut State Department of Education Web site includes extensive resources related to the CAPT Science. To find this information, log on to www.ct.gov/sde and click on the Student Assessment link. For the CAPT Science results at the state, district, and school levels, go to <http://edsight.ct.gov>.

Appendix B

CMT and CAPT Skills Checklist Science Profiles



Connecticut Mastery Test Skills Checklist Profile

Second Generation

JANE M. DOE

Grade: 5
Date of Birth: 03/07/2005
SASID: 999999999
Test Date: 03/2016

School: DEMO SCHOOL
School Code: 1231111
District: DEMO SCHOOL DISTRICT
District Code: 123

Science Scale Results - Proficient Level

Jane's TOTAL SCIENCE SCORE = 29 (Score Range: 0-60)

| | | |
|----------------------|---------------------|----------------------|
| | ✦ | |
| Basic 15 or Below | Proficient 16-41 | Independent 42-60 |

Proficient: Students who perform at this level **complete** academic tasks and activities derived from grade five science content **inconsistently** and/or **only with prompt support** (a cue, a model, physical guidance, etc.).

A ✦ indicates the rating that Jane received for each science scale indicator.
For more information about this profile, contact Jane's teacher(s).

Energy Transfer and Transformations

- A.1.1 Use object to produce sound with high & low pitch
- A.1.2 Distinguish between high pitch and low pitch sound
- A.1.3 Produce a loud sound and a soft sound
- A.1.4 Given sound from object, determine louder/softer
- A.1.5 Recognize whether a sound is near or far
- A.1.6 Identify the source of a given sound
- A.2.1 Order objects by light that shines through them
- A.2.2 Identify objects that do/don't let light through
- A.2.3 Identify objects that reflect or absorb light
- A.2.4 Create a shadow
- A.2.5 Identify a shadow in the classroom or outdoors
- A.2.6 Identify two sources of light in the classroom

| | | |
|---|---|---|
| 0 | 1 | 2 |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |

Score Range Jane's Score
Energy Transfer and Transformations 0-24 12

Earth and the Solar System

- A.1.1 Describe Earth movement for night/day
- A.1.2 Using light source show day/night on globe
- A.1.3 Use a ball or round object to demonstrate rotation
- A.1.4 Using photos, identify 2 elements of day/night
- A.1.5 Order photos in day/night sequence
- A.1.6 Using photos, show day/night

| | | |
|---|---|---|
| 0 | 1 | 2 |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |

Score Range Jane's Score
Earth and the Solar System 0-12 6

Structure and Function

- A.1.1 Explain how senses let you know fire is nearby
- A.1.2 Match model sound to given sound
- A.1.3 Match model smell to given smell
- A.1.4 Use sense of touch to identify the matching object
- A.1.5 Match 3 sense organs to their function
- A.1.6 Identify 3 of the 5 sense organs

| | | |
|---|---|---|
| 0 | 1 | 2 |
| | ✦ | |
| | ✦ | |
| ✦ | | |
| | ✦ | |
| | ✦ | |
| | ✦ | |

Score Range Jane's Score
Structure and Function 0-12 5

Science and Technology in Society

- D.1.1 Identify the best tool to match a visual task
- D.1.2 Identify item that helps people see more clearly
- D.1.3 Identify the focused image and the unfocused image
- D.1.4 Identify one tool that makes things look larger
- D.1.5 Given photos of same objects, identify the larger
- D.1.6 Identify what helps the person to see better

| | | |
|---|---|---|
| 0 | 1 | 2 |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |
| | ✦ | |

Score Range Jane's Score
Science and Technology in Society 0-12 6

Key: 0 = does not demonstrate skill
1 = demonstrates inconsistently or only with support
2 = demonstrates independently and consistently

Copyright © 2016 by the Connecticut State Board of Education in the name of the Secretary of the State of Connecticut

00005-00005



Connecticut Mastery Test Skills Checklist Profile

Second Generation

JOHN M. DOE

Grade: 8
 Date of Birth: 11/11/2001
 SASID: 1111111111
 Test Date: 03/2016

School: DEMO SCHOOL
 School Code: 1231111
 District: DEMO SCHOOL DISTRICT
 District Code: 123

Science Scale Results - Proficient Level

John's TOTAL SCIENCE SCORE = 23 (Score Range: 0-48)

| | | |
|----------------------|---------------------|----------------------|
| | + | |
| Basic 11 or Below | Proficient 12-31 | Independent 32-48 |

Proficient: Students who perform at this level **complete** academic tasks and activities derived from grade eight science content **inconsistently** and/or **only with prompt support** (a cue, a model, physical guidance, etc.).

A + indicates the rating that John received for each science scale indicator.
 For more information about this profile, contact John's teacher(s).

Forces and Motion

- A.1.1 Predict movement direction where force is added
- A.1.2 Predict surfaces requiring more force for movement
- A.1.3 Predict which objects require more force to move
- A.1.4 Show how to change direction of a rolling object
- A.1.5 Show how to change speed of a rolling object
- A.1.6 Student will apply a force to make an object move

| | | |
|---|---|---|
| 0 | 1 | 2 |
| + | + | + |

| | | |
|-------------------|--------------------|---------------------|
| | Score Range | John's Score |
| Forces and Motion | 0-12 | 6 |

Earth in the Solar System

- A.1.1 Identify photos showing winter and summer in CT
- A.1.2 Show eclipse using Earth, moon & sun
- A.1.3 Given depictions of 3 moon phases, place in order
- A.1.4 Show day and night using sun & Earth
- A.1.5 Given photos of sun, moon & Earth, identify each
- A.1.6 Given photos of the 4 seasons, identify each

| | | |
|---|---|---|
| 0 | 1 | 2 |
| + | + | + |

| | | |
|---------------------------|--------------------|---------------------|
| | Score Range | John's Score |
| Earth in the Solar System | 0-12 | 4 |

Heredity and Evolution

- A.1.1 Given photo, identify what represents fertilization
- A.1.2 Describe how the sperm gets to the egg
- A.1.3 Locate where eggs and sperm are produced
- A.1.4 Match the sperm and the egg with correct gender
- A.1.5 Identify female/male reproductive system
- A.1.6 Identify 5 familiar individuals as male or female

| | | |
|---|---|---|
| 0 | 1 | 2 |
| + | + | + |

| | | |
|------------------------|--------------------|---------------------|
| | Score Range | John's Score |
| Heredity and Evolution | 0-12 | 5 |

Science and Technology in Society

- A.1.1 Given photos of 3 bridges, name strength features
- A.1.2 Describe how to make a sagging bridge stronger
- A.1.3 Describe result of too much weight on bridge
- A.1.4 Identify bridge that can support the most weight
- A.1.5 Identify materials used to build a bridge
- A.1.6 Describe forces that would make a bridge fall

| | | |
|---|---|---|
| 0 | 1 | 2 |
| + | + | + |

| | | |
|-----------------------------------|--------------------|---------------------|
| | Score Range | John's Score |
| Science and Technology in Society | 0-12 | 8 |

Key: 0 = does not demonstrate skill
 1 = demonstrates inconsistently or only with support
 2 = demonstrates independently and consistently

Copyright © 2016 by the Connecticut State Board of Education in the name of the Secretary of the State of Connecticut

00005-00005

APPENDIX C

Performance Level Literals for the Standard CMT and CAPT Science

A performance level literals are included on the Individual Student Report. The literals are intended to help parents and educators understand the general characteristics of students who score at a particular performance level.

| Elementary School CMT Science (Grade 5) | |
|---|---|
| Performance Level | Performance Level Literal |
| Advanced | Generally, fifth-grade students who score at this level demonstrate an exceptional understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 3–5. These students demonstrate superior competency to analyze and evaluate the quality of data and apply content knowledge to effectively communicate their understanding of the natural world. |
| Goal | Generally, fifth-grade students who score at this level demonstrate a strong understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 3–5. These students demonstrate competency to analyze and evaluate the quality of data and apply content knowledge to effectively communicate their understanding of the natural world. |
| Proficient | Generally, fifth-grade students who score at this level demonstrate an adequate understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 3–5. These students demonstrate some competency to analyze and evaluate the quality of data and apply content knowledge to communicate their understanding of the natural world. |
| Basic | Generally, fifth-grade students who score at this level demonstrate partial understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 3–5. These students demonstrate limited competency to analyze and evaluate the quality of data and apply content knowledge to communicate their understanding of the natural world. |
| Below Basic | Generally, fifth-grade students who score at this level demonstrate a limited understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 3–5. These students do not demonstrate competency to analyze and evaluate the quality of data and apply content knowledge to communicate their understanding of the natural world. |

Performance Level Literals for the Standard CMT and CAPT Science

A performance level literals are included on the Individual Student Report. The literals are intended to help parents and educators understand the general characteristics of students who score at a particular performance level.

| Middle School CMT Science (Grade 8) | |
|-------------------------------------|--|
| Performance Level | Performance Level Literal |
| Advanced | Generally, eighth-grade students who score at this level demonstrate an exceptional understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 6–8. These students demonstrate superior competency to analyze and evaluate the quality of data and apply content knowledge to effectively communicate their understanding of the natural world. |
| Goal | Generally, eighth-grade students who score at this level demonstrate a strong understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 6–8. These students demonstrate competency to analyze and evaluate the quality of data and apply content knowledge to effectively communicate their understanding of the natural world. |
| Proficient | Generally, eighth-grade students who score at this level demonstrate an adequate understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 6–8. These students demonstrate some competency to analyze and evaluate the quality of data and apply content knowledge to communicate their understanding of the natural world. |
| Basic | Generally, eighth-grade students who score at this level demonstrate partial understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 6–8. These students demonstrate limited competency to analyze and evaluate the quality of data and apply content knowledge to communicate their understanding of the natural world. |
| Below Basic | Generally, eighth-grade students who score at this level demonstrate a limited understanding of the scientific concepts and inquiry skills described in the Core Science Curriculum Framework for Grades 6–8. These students do not demonstrate competency to analyze and evaluate the quality of data and apply content knowledge to communicate their understanding of the natural world. |

Performance Level Literals for the Standard CMT and CAPT Science

A performance level literals are included on the Individual Student Report. The literals are intended to help parents and educators understand the general characteristics of students who score at a particular performance level.

| CAPT Science (Grade 10) | |
|-------------------------|---|
| Performance Level | Performance Level Literal |
| Advanced | Generally, students who score at this level demonstrate an exceptional understanding of the scientific concepts and inquiry skills expected of Connecticut high school students. These students possess an advanced ability to use problem-solving skills and effectively communicate their understanding of the natural world. |
| Goal | Generally, students who score at this level demonstrate a strong understanding of the scientific concepts and inquiry skills expected of Connecticut high school students. These students possess a well-developed ability to use problem-solving skills and effectively communicate their understanding of the natural world. |
| Proficient | Generally, students who score at this level demonstrate an adequate understanding of the scientific concepts and inquiry skills expected of Connecticut high school students. These students possess an ability to use problem-solving skills and communicate their understanding of the natural world. |
| Basic | Generally, students who score at this level demonstrate a partially developed understanding of the scientific concepts and inquiry skills expected of Connecticut high school students. These students have difficulty using problem-solving skills and communicating their understanding of the natural world. |
| Below Basic | Generally, students who score at this level demonstrate a limited understanding of the scientific concepts and inquiry skills expected of Connecticut high school students. These students usually cannot use problem-solving skills or communicate their understanding of the natural world. |

APPENDIX D

Performance Level Literals for the CMT and CAPT Skills Checklist Science

A performance level literals are included on the Skills Checklist Science Profile. The literals are intended to help parents and educators understand the general characteristics of students who score at a particular performance level.

| CMT Skills Checklist Science (Grade 5) | |
|---|--|
| Performance Level | Performance Level Literal |
| Independent | Students who perform at this level fully complete academic tasks and activities derived from Grade 5 content consistently and independently. |
| Proficient | Students who perform at this level complete academic tasks and activities derived from Grade 5 content inconsistently and/or only with prompt support (e.g., a cue, a model, physical guidance, etc.). |
| Basic | Students who perform at this level have difficulty completing academic tasks and activities derived from Grade 5 content, even with prompt support (e.g., a cue, a model, physical guidance, etc.). |

| CMT Skills Checklist Science (Grade 8) | |
|---|--|
| Performance Level | Performance Level Literal |
| Independent | Students who perform at this level fully complete academic tasks and activities derived from Grade 8 content consistently and independently. |
| Proficient | Students who perform at this level complete academic tasks and activities derived from Grade 8 content inconsistently and/or only with prompt support (e.g., a cue, a model, physical guidance, etc.). |
| Basic | Students who perform at this level have difficulty completing academic tasks and activities derived from Grade 8 content, even with prompt support (e.g., a cue, a model, physical guidance, etc.). |

| CAPT Skills Checklist Science (Grade 10) | |
|---|---|
| Performance Level | Performance Level Literal |
| Independent | Students who perform at this level fully complete most modified academic tasks and activities derived from Grade 10 content in science as defined in the Connecticut Science Curriculum Framework. These students generally perform academic tasks consistently and independently over time without instructional support, i.e., cues, prompts, modeling, etc. (For additional information please refer to the Checklist Folder that accompanies the score report.) |
| Proficient | Students who perform at this level partially complete modified academic tasks and activities derived from Grade 10 content in science as defined in the Connecticut Science Curriculum Framework. Their performance is characterized by inconsistency over time and/or the need for instructional support, i.e., cues, prompts, modeling, etc. (For additional information please refer to the Checklist Folder that accompanies the score report.) |
| Basic | Students who perform at this level have difficulty completing modified academic tasks and activities derived from Grade 10 content in science as defined in the Connecticut Science Curriculum Framework even when provided with instructional support, i.e., cues, prompts, modeling, etc. Their performance is characterized by limited progress over time and difficulty applying newly learned skills to different settings or new situations. (For additional information please refer to the Checklist Folder that accompanies the score report.) |

Appendix E

2016 CMT and CAPT Science Raw Score-to-Scale Score Conversion Tables

2016 CMT Science Grade 5 Scale-Score Conversion Table (Form U)

| COMPOSITE RAW SCORE | SCALE SCORE | PERFORMANCE LEVEL |
|---------------------|-------------|-------------------|
| 0 | 100 | 1 |
| 1 | 100 | |
| 2 | 100 | |
| 3 | 100 | |
| 4 | 100 | |
| 5 | 106 | |
| 6 | 115 | |
| 7 | 124 | |
| 8 | 132 | |
| 9 | 139 | |
| 10 | 145 | |
| 11 | 151 | |
| 12 | 157 | |
| 13 | 163 | |
| 14 | 168 | |
| 15 | 173 | |
| 16 | 178 | |
| 17 | 183 | |
| 18 | 188 | 2 |
| 19 | 193 | |
| 20 | 198 | |
| 21 | 203 | |
| 22 | 207 | |
| 23 | 212 | |
| 24 | 217 | 3 |
| 25 | 222 | |
| 26 | 227 | |
| 27 | 232 | |
| 28 | 237 | |
| 29 | 243 | 4 |
| 30 | 249 | |
| 31 | 255 | |
| 32 | 262 | |
| 33 | 269 | |
| 34 | 276 | |
| 35 | 284 | |
| 36 | 294 | |
| 37 | 304 | 5 |
| 38 | 316 | |
| 39 | 331 | |
| 40 | 352 | |
| 41 | 384 | |
| 42 | 400 | |

2016 CMT Science Grade 8 Scale Score Conversion Table (Form U)

| COMPOSITE RAW SCORE | SCALE SCORE | PERFORMANCE LEVEL |
|---------------------|-------------|-------------------|
| 0 | 100 | 1 |
| 1 | 100 | |
| 2 | 100 | |
| 3 | 100 | |
| 4 | 101 | |
| 5 | 112 | |
| 6 | 121 | |
| 7 | 128 | |
| 8 | 135 | |
| 9 | 142 | |
| 10 | 148 | |
| 11 | 153 | |
| 12 | 158 | |
| 13 | 163 | |
| 14 | 168 | |
| 15 | 172 | |
| 16 | 177 | |
| 17 | 181 | |
| 18 | 185 | |
| 19 | 189 | |
| 20 | 193 | |
| 21 | 197 | |
| 22 | 201 | |
| 23 | 204 | 2 |
| 24 | 208 | |
| 25 | 212 | |

| COMPOSITE RAW SCORE | SCALE SCORE | PERFORMANCE LEVEL |
|---------------------|-------------|-------------------|
| 26 | 216 | 2 |
| 27 | 220 | |
| 28 | 223 | 3 |
| 29 | 227 | |
| 30 | 231 | |
| 31 | 235 | |
| 32 | 239 | |
| 33 | 243 | |
| 34 | 247 | 4 |
| 35 | 251 | |
| 36 | 256 | |
| 37 | 260 | |
| 38 | 265 | |
| 39 | 270 | |
| 40 | 275 | |
| 41 | 281 | |
| 42 | 287 | |
| 43 | 293 | |
| 44 | 300 | 5 |
| 45 | 308 | |
| 46 | 318 | |
| 47 | 329 | |
| 48 | 342 | |
| 49 | 361 | |
| 50 | 391 | |
| 51 | 400 | |

2016 CAPT Science Scale Score Conversion Table (Form HS23)

| COMPOSITE RAW SCORE | SCALE SCORE | PERFORMANCE LEVEL |
|---------------------|-------------|-------------------|
| 0 | 100 | 1 |
| 1 | 100 | |
| 2 | 100 | |
| 3 | 100 | |
| 4 | 100 | |
| 5 | 103 | |
| 6 | 112 | |
| 7 | 120 | |
| 8 | 127 | |
| 9 | 134 | |
| 10 | 140 | |
| 11 | 145 | |
| 12 | 150 | |
| 13 | 155 | |
| 14 | 159 | |
| 15 | 163 | |
| 16 | 167 | |
| 17 | 171 | |
| 18 | 174 | |
| 19 | 178 | |
| 20 | 181 | |
| 21 | 184 | |
| 22 | 188 | |
| 23 | 191 | 2 |
| 24 | 194 | |
| 25 | 197 | |
| 26 | 199 | |
| 27 | 202 | |
| 28 | 205 | |
| 29 | 208 | |
| 30 | 211 | |
| 31 | 213 | |
| 32 | 216 | 3 |
| 33 | 219 | |
| 34 | 221 | |
| 35 | 224 | |
| 36 | 227 | |
| 37 | 229 | |

| COMPOSITE RAW SCORE | SCALE SCORE | PERFORMANCE LEVEL |
|---------------------|-------------|-------------------|
| 38 | 232 | 3 |
| 39 | 234 | |
| 40 | 237 | |
| 41 | 240 | |
| 42 | 243 | |
| 43 | 245 | |
| 44 | 248 | |
| 45 | 251 | |
| 46 | 254 | |
| 47 | 256 | |
| 48 | 259 | |
| 49 | 262 | |
| 50 | 265 | 4 |
| 51 | 268 | |
| 52 | 271 | |
| 53 | 275 | |
| 54 | 278 | |
| 55 | 281 | |
| 56 | 285 | |
| 57 | 289 | |
| 58 | 292 | |
| 59 | 296 | 5 |
| 60 | 300 | |
| 61 | 305 | |
| 62 | 309 | |
| 63 | 314 | |
| 64 | 320 | |
| 65 | 325 | |
| 66 | 331 | |
| 67 | 338 | |
| 68 | 346 | |
| 69 | 354 | |
| 70 | 364 | |
| 71 | 376 | |
| 72 | 392 | |
| 73 | 400 | |
| 74 | 400 | |
| 75 | 400 | |