

**Agenda Item:** Connecticut Mastery Test & Connecticut Academic Performance Test  
Science Results

**Meeting Date:** September 28, 2015

**From:** Donna Nestler-Rusack, Ed.D.  
Assistant Superintendent for Teaching and Learning

This report presents the Spring 2015 results for the Science Connecticut Mastery Test (CMT) that was administered in grades 5 and 8 and the Science Connecticut Academic Performance Test (CAPT) that was administered in grade 11.

## 2015 CMT Science Results

The Fourth Generation Science CMT is the standard assessment administered to all students in Grades 5 and 8. The content of the test measures students’ understanding of life, earth, and physical scientific concepts; application to real-world issues; scientific inquiry; and scientific reasoning to solve problems. The test includes multiple-choice and open ended questions.

This year in science Grade 5 had an eight percentage point increase, while grade 8 showed a one percentage point decrease from 2014.

The table below summarizes the percentage of students at or above goal for science since 2006.

### Overall Results: Percentage of Students by Content Area At/Above Goal for 2006-2015

Grade Level	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Grade 5 Science	NA	NA	78	89	86	89	92	81	76	84
Grade 8 Science	NA	NA	92	90	88	89	84	88	90	89

A total of 278 fifth graders were tested, with 96.0% of the students scoring at or above proficiency and 83.8% of the students scoring at or above goal. In grade 8, 275 students were tested and 93.8% of the students scored at or above proficiency and 89.1% scored at or above goal.

The table below indicates the percentage of students performing in each of the five performance levels: Level 1 (Below Basic), Level 2 (Basic), Level 3 (Proficient), Level 4 (Goal), and Level 5 (Advanced). Levels 4 and 5 are considered “Mastery” by the state and Level 3 is considered “Proficient” by the federal No Child Left Behind (NCLB) Act. The majority of our students reach the “At/Above Grade Level” bands.

### Percent of Students by Performance Level

Grade	Level 1 Below Basic	Level 2 Basic	At/Above Grade Level		
			Level 3 Proficient	Level 4 Goal	Level 5 Advanced
5	2.9	1.1	12.2	60.1	23.7
8	2.5	3.6	4.7	54.5	34.5

The next section of tables detail student performance in the areas of special education, English Language Learners (ELL), free/reduced meals, and gender. The percentage of students performing in each of the five performance levels: Level 1 (Below Basic), Level 2 (Basic), Level 3 (Proficient), Level 4 (Goal), and Level 5 (Advanced) are listed in addition to the percentage of students performing at or above proficiency and at or above goal.

**Percent of Special Education Learners by Performance Levels**

Grade	# Tested	Below Basic	Basic	Proficient	Goal	Advanced	% At/Above Proficiency	% At/Above Goal
5	24	12.5	4.2	25.0	50.0	8.3	83.3	58.3
8	21	28.6	4.8	23.8	38.1	4.8	66.7	42.9

**Percent of English Language Learners by Performance Levels**

Grade	# Tested	Below Basic	Basic	Proficient	Goal	Advanced	% At/Above Proficiency	% At/Above Goal
5	6	66.7	0.0	16.7	16.7	0.0	33.4	16.7
8	2	0.0	50.0	50.0	0.0	0.0	50.0	0.0

**Percent of Free/Reduced Meals by Performance Levels**

Grade	# Tested	Below Basic	Basic	Proficient	Goal	Advanced	% At/Above Proficiency	% At/Above Goal
5	14	7.1	7.1	50.0	28.6	7.1	85.7	35.7
8	9	0.0	0.0	11.1	88.9	0.0	100	88.9

**Percent of Students by Gender by Performance Levels**

Group	Grade	# Tested	Below Basic	Basic	Proficient	Goal	Advanced	% At/Above Proficiency	% At/Above Goal
All	5	278	2.9	1.1	12.2	60.1	23.7	96.0	83.8
Male	5	152	4.6	0.7	11.8	61.2	21.7	94.7	82.9
Female	5	126	0.8	1.6	12.7	58.7	26.2	97.6	84.9
All	8	275	2.5	3.6	4.7	54.5	34.5	93.7	89.0
Male	8	129	0.8	3.9	4.7	56.6	34.1	95.4	90.7
Female	8	146	4.1	3.4	4.8	52.7	34.9	92.4	87.6

The state has placed Avon in District Reference Group (DRG) B. The table below compares the performance of Avon with DRG A and similar DRG B school districts. These scores represent the percentage of students scoring at or above goal in the area of science.

**Comparison of 2015 CMT Science At/Above Goal Among DRG A/B Districts**

<b>DRG</b>	<b>Group</b>	<b>Science 5</b>	<b>Science 8</b>
A	Darien	79.9	92.3
A	Easton	79.8	83.3
A	New Canaan	86.8	90.1
A	Redding	78.3	86.6
A	Ridgefield	78.8	84.9
A	Weston	90.2	81.1
A	Westport	84.3	89.3
A	Wilton	87.9	89.4
<b>B</b>	<b>Avon</b>	<b>83.8</b>	<b>89.1</b>
B	Bethany	58.7	--
B	Brookfield	80.1	81.1
B	Cheshire	72.5	85.6
B	Fairfield	76.3	79.1
B	Farmington	91.2	85.7
B	Glastonbury	83.8	83.1
B	Granby	87.6	85.2
B	Greenwich	73.4	80.1
B	Guilford	76.7	77.9
B	Madison	80.6	89.1
B	Monroe	82.2	83.5
B	New Fairfield	75.4	79.1
B	Orange	76.7	--
B	Simsbury	81.6	86.3
B	South Windsor	73.3	81.0
B	Trumbull	80.7	82.8
B	West Hartford	71.0	77.2
B	Regional #15	71.6	78.2

**Ranking for Avon DRG A: 5/9                      5/9**  
**Ranking for Avon DRG B: 3/19                    1/17**

## 2015 CAPT Science Results

The Third Generation CAPT test assesses 10<sup>th</sup> grade students on important scientific knowledge and skills from the areas of life science, physical science, and earth science. Student's knowledge about scientific inquiry, literacy, and numeracy are imbedded in the assessment. The test is comprised of multiple choice and open-ended items that assess five equally weighted content strands:

- Energy Transformations
- Chemical Structures and Properties
- Global Interdependence
- Cell Chemistry and Biotechnology
- Genetics, Evolution and Biodiversity

The table below displays student performance in the area of Science for all students, special education, English Language Learners (ELL), free and reduced meals, and gender. The percentage of students performing in each of the five performance levels: Level 1 (Below Basic), Level 2 (Basic), Level 3 (Proficient), Level 4 (Goal), and Level 5 (Advanced) are listed in addition to the percentage of students performing at or above proficiency and at or above goal. The percentage of all students at or above proficiency remained the same while the percentage of all students at or above goal increased three percentage points from last year.

Group	# Tested	% Below Basic	% Basic	% Proficient	% Goal	% Advanced	% At/Above Proficiency	% At/Above Goal
All	254	1.6	2.4	16.9	20.9	58.3	96.1	79.2
SPED	24	12.5	16.7	33.3	16.7	20.8	70.8	37.5
ELL	1	0	0	0	100	0	100.0	100.0
F/R Meals	11	9.1	18.2	18.2	18.2	36.4	72.7	54.5
Male	121	1.7	1.7	14.9	19.8	62.0	96.7	81.8
Female	133	1.5	3.0	18.8	21.8	54.9	95.5	76.7

### Percentage of Students At/Above Goal for 2006-2015

Content	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Science	81	78	76	70	76	75	76	83	76	79

### Percentage of Students At/Above Proficiency for 2006-2015

Content	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Science	98	97	97	96	97	97	96	97	96	96

Avon has been placed by the state in District Reference Group (DRG) B. The tables below compare the performance of Avon with DRG A and similar DRG B school districts. These scores represent the percentage of students scoring at or above goal and at or above proficiency in science.

**Avon (DRG B) Compared to DRG A Districts**

Group	At/Above Goal	At/Above Proficiency
<i>Avon</i>	<i>79.1</i>	<i>96.1</i>
Darien	74.6	98.8
New Canaan	87.1	98.8
Ridgefield	79.8	98.8
Weston	74.5	95.6
Wilton	76.4	97.9
Region 9	78.6	98.5
<b>Ranking</b>	<b>3/7</b>	<b>6/7</b>

**Avon Compared to Like DRG B Districts**

Group	At/Above Goal	At/Above Proficiency
<b>Avon</b>	<b>79.1</b>	<b>96.1</b>
Brookfield	75.3	94.3
Cheshire	65.7	93.9
Fairfield	69.8	94.1
Farmington	68.5	93.8
Glastonbury	70.7	94.8
Granby	46.5	90.3
Greenwich	69.0	92.4
Guilford	74.5	97.0
Madison	65.2	93.7
Monroe	72.3	94.8
New Fairfield	68.5	93.6
Newtown	73.7	97.1
Simsbury	81.2	96.2
South Windsor	70.4	94.9
Trumbull	75.2	95.5
West Hartford	71.3	92.8
Region 5	73.0	93.2
Region 15	70.2	93.5
<b>Ranking</b>	<b>2/19</b>	<b>4/19</b>

## **SUMMARY:**

The 2014 CMT Science results showed the percentage of 5<sup>th</sup> grade students scoring at or above goal in science continuing the decline that began in 2012. In order to address this decline, a number of changes were implemented for the 2014-15 school year. First, the inconsistencies in the amount of time spent on direct instruction across the classrooms was addressed by creating a daily fifty minute science block. Second, six instead of twelve 5<sup>th</sup> grade teachers were responsible for delivering science instruction to all students. And third, the identified areas of study in the present curriculum were developed into units and common assessments applied. Finally, the science teachers used the data from the 2014 CMT science content standards to determine the areas of strengths and weaknesses to inform their instruction. Based on these changes, an 8% increase in students scoring at or above goal in science was realized.

In 8<sup>th</sup> grade, the percentage of students at or above goal has remained relatively stable between 2013 and 2015. The science teachers continue to administer a pretest to all 8<sup>th</sup> grade students to identify their levels of performance and knowledge in the areas of science process skills, earth science, biology and physical science. The results of the pretest are used to inform and guide instruction throughout the school year. Students who perform below the established benchmark, are provided additional support and remediation in the classroom throughout the school year.

In grade ten, the percentage of students at or above goal showed a 3% increase this year. Previous analysis of individual strands for students who did not reach goal showed that chemistry concepts was the area where students struggled most. The science department, as part of their curriculum review and revision has worked to address this identified area in grades 6-10 and it appears that these changes in curriculum and instruction are starting to yield positive results.