

BRIEFING



center for
Educational
Performance
& Accountability

EFFECTIVE IMPLEMENTATION OF THE COMMON CORE STATE STANDARDS:

THE IMPORTANCE OF GETTING IT RIGHT

June 2013

Florida is one of 46 states to adopt the Common Core State Standards (CCSS), a state-by-state effort to improve teaching and learning in our schools and prepare students for an increasingly competitive global workforce.

Based on international assessments, U.S. students have lost ground when compared to high-performing students in other countries, making the U.S. vulnerable in the international marketplace. As an example, the 2007 *Trends in International Mathematics and Science Study* (TIMSS) indicated that the top U.S. 8th grade math students rank between the 50th and 75th percentile of students in top-performing countries.

The new standards should help close the gap, as states with standards similar to the Common Core have had significantly higher performance on the National Assessment of Educational Progress (NAEP) tests.

Prior to the development of the CCSS, most states either adopted their own unique set of curriculum standards or allowed local schools to make those decisions. As a result, student

expectations varied significantly by region or zip code.

Sunshine State Standards

Florida's original Sunshine State Standards were developed by content specialists and classroom teachers based on a consensus of expected knowledge and skills at specific levels of education. As a result, the standards were all-inclusive in nature, making it difficult for teachers to cover all content and to determine which content was most essential. Moreover, the extensive content coverage did not allow for in-depth understanding or consider the time needed to allow for student mastery of critical concepts. Without a solid foundation of essential skills in mathematics and literacy in the early grades, students will struggle as content becomes increasingly rigorous. Research has shown that when students are routinely unsuccessful, they "drop out," either literally or figuratively.

NOTE: This lack of student mastery of essential mathematics concepts in early grades is evident in Florida's student performance on the Algebra I end-of-course assessment. In the 2010-11 SY, only 55% of Florida students passed the Algebra I end-of-course exam.

What's Different About CCSS?

The CCSS are structured so that the essential building blocks of academic content can be mastered, thus providing a foundation for the continuous pursuit of more demanding content.

Although the CCSS maintain the importance of literature-rich fiction, the new standards stress the importance of building knowledge through content-rich nonfiction. This skill will serve students well in a world of continuously changing information and a workforce that requires command of informational text.

In 1950, 60% of jobs were attainable with only a high school diploma; that figure has shrunk to 20% today and only 30% of high school graduates between 2006 and 2011 have found full-time employment. For those who have, wages are often near the poverty level.

In the area of mathematics, the CCSS are focused on a more narrow yet critical scope of content and provide more coherent links to later mathematics concepts. They also provide ample opportunity for deep understanding, problem solving/procedural skills, analytic thinking, and communication, all of which are skills that students apply naturally to everyday life.

For annotated examples of how students will be expected to answer assessment questions within the new standards, see pages 4-7 of this Briefing.

Preparation for College and Careers

The standards were developed to ensure that all students are college and career ready. Although students may opt for immediate entry into the workforce upon graduation from high school, most emerging workforce occupations will require some level of postsecondary training or college.

Accordingly, the CCSS are designed for content mastery and this will serve to alleviate the high percentages of students who must be provided remedial instruction upon college entry. They also correlate to skills essential to employers, such as teamwork and collaboration, use of data, research skills, use of technology, and communication skills.

Statewide Support from All Sectors

Having adopted the CCSS, the real work of effective implementation begins.

Standards in and of themselves will not raise student achievement. However, implementing the CCSS successfully, in effect transforming teaching and learning as we know it in our public schools, can.

This is a monumental task that will require unwavering support from all sectors of Florida's communities – business, parents, research organizations, policy makers, and K-20 educators. In order to gain their support and commitment, they will need to understand the rationale for and the research behind the new CCSS, which will require coordinated communication and outreach efforts. The message must clearly convey the importance of the CCSS in supporting a robust economy, using multiple methods of delivering the message so that all Floridians are committed to the effort.

Many factors will contribute to Florida's success in implementing the CCSS, including critical areas such as professional development for teachers, instructional materials and digital content aligned to CCSS, assessments, and targeted funding. These specific topics will be analyzed and discussed in future *Briefings* from the TaxWatch Center for Educational Performance & Accountability.

In order for Florida to be an educational leader and provide the workforce talent to strengthen and transform our economy, Floridians from every sector must commit to support our students and teachers in unprecedented changes in teaching and learning. Florida TaxWatch welcomes the challenge and is committed to serving as a voice of leadership.

Examples of CCSS Mathematics Standards:

The following pages show several annotated student answers to the question below on the right, one at the performance level of “expert” and one at “novice.”

The difference between the performance levels is significant, but pales in comparison to the current standards, which are illustrated by the below left test question.

5TH GRADE FRACTIONS – OLD STANDARDS (L) VS CCSS (R)

Apple Crumb Pie

Crumb

3/4 cup flour
1/3 cup sugar
1/4 cup butter

Filling

4 cups sliced apples
1/3 cup sugar
1/2 cup raisins

How much total sugar must Pierre use to make the pie crumb and filling?

- a: $\frac{7}{12}$ cup
- b: $\frac{2}{6}$ cup
- c: $\frac{3}{4}$ cup
- d: $\frac{2}{3}$ cup

Stuffed with pizza

Tito and Luis are stuffed with pizza! Tito ate one-fourth of a cheese pizza. Tito ate three-eighths of a pepperoni pizza. Tito ate one-half of a mushroom pizza. Luis ate five-eighths of a cheese pizza. Luis ate the other half of the mushroom pizza. All of the pizzas were the same size. Tito says he ate more pizza than Luis because Luis did not eat any pepperoni pizza. Luis says they each ate the same amount of pizza. Who is correct? Show all of your mathematical thinking.

The following pages are re-printed from an instructional publication from the New York City Department of Education.

Grade 5 Math: "Stuffed with Pizza"

Example of "Expert" level answer - page 1 of 2

PIS	R/P	Com.	Con.	Rep.	AIL
E	E	E	E	E	E

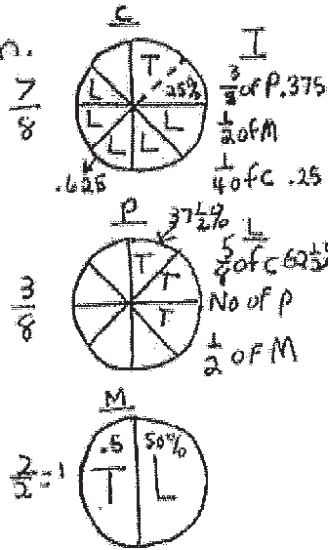
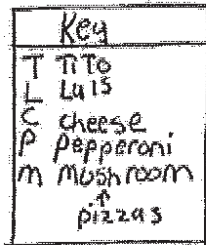
Expert, Student 1
Name _____

Grade 5

Stuffed with Pizza

Tito and Luis are stuffed with pizza! Tito ate one-fourth of a cheese pizza. Tito ate three-eighths of a pepperoni pizza. Tito ate one-half of a mushroom pizza. Luis ate five-eighths of a cheese pizza. Luis ate the other half of the mushroom pizza. All the pizzas were the same size. Tito says he ate more pizza than Luis because Luis did not eat any pepperoni pizza. Luis says they each ate the same amount of pizza. Who is correct? Show all your mathematical thinking.

I will find who is correct, Tito or Luis.
I will make a diagram.



Tito ate

$$\frac{3}{8} + \frac{1}{2} + \frac{1}{8} = ?$$

$$\frac{3}{8} + \frac{4}{8} + \frac{1}{8} = \frac{8}{8} = 1$$

Luis ate

$$\frac{5}{8} + \frac{1}{2} = ?$$

$$\frac{5}{8} + \frac{4}{8} = \frac{9}{8} = 1\frac{1}{8}$$

Answer: Luis was right because they both ate $1\frac{1}{8}$ pizza

you have to find how to have 8 in the denominator so you add equivalent fractions

The student models with mathematics. The area model/diagram of the pizzas is accurate, labeled, and a key defines Tito, Luis, and the types of pizzas. The student uses the diagram to record some of her/his extended thinking to percents and decimals.

The student is able to make sense and persevere in solving the problem. The student demonstrates correct reasoning of proportional reasoning of a whole, correctly assigns each boy pizza pieces, and finds the correct equivalent fractions to state a correct answer. The student verifies her/his answer with decimals and percents and brings prior knowledge of statistics to the solution.

The student uses precise mathematical terms: amount, diagram key, denominator, equivalent fractions, most, ratio, total, mode, minimum, most likely, least, whole, percents, decimals, as well as fraction, decimal, and percent notation to help construct a viable argument.

on to competitions

Grade 5 Math: "Stuffed with Pizza"
 Example of "Expert" level answer - page 2 of 2

The student looks for and makes use of the structures in the problem. The student makes a number of connections in her/his solution and also verifies her/his answer by using percents and decimals to represent the fractions used in the diagram. The student states, "I know I am right that they are the same total amount."

Connections Follow the dots

- They ate $2\frac{3}{8} = 2\frac{3}{8}$ pizza in all
- $\frac{6}{8}$ of pizza is left or $\frac{3}{4}$
- Luis eats the most of 1 pizza - the C one
- I can do ratio. If there are 24 total slices then Tito eats $\frac{3}{24}$ P

4 out of 24 $\frac{1}{6}$ M $\frac{2}{24}$ C L eats $\frac{5}{24}$ C $\frac{2}{24}$ P $\frac{4}{24}$ M

- It is most likely Tito likes M pizza the most and P pizza the least
- $\frac{1}{2}$ M is 50% of a pizza so is $\frac{1}{2}$ L That is .5
- $\frac{5}{8}$ C is $\frac{62.5}{100}$ That is $62\frac{1}{2}\%$

Luis made 15 C
Tito's minimum 15 C

- $\frac{1}{4}$ C = .25 That is 25%
- $\frac{3}{8}$ P is $\frac{37.5}{100}$ That is $37\frac{1}{2}\%$
- $\frac{1}{8}$ is $\frac{12.5}{100}$ or $12\frac{1}{2}\%$

Tito eats 12.5
12.5
+12.5
37.5 or $37\frac{1}{2}\%$ of P pizza

- I can verify with multiplication $\frac{1}{8} = 12\frac{1}{2}\%$ or 12.5%

Tito eats $1\frac{1}{8} = \frac{1.000 - \text{whole}}{.125} = \frac{1}{8}$

Luis eat $1\frac{1}{8} = \frac{1.00 - \text{whole}}{.125} = \frac{1}{8}$

I know it is right that they ate the same total amount

- I can verify with percents

Luis	Tito
C 62.5%	C 25.0%
M 50.0%	P 37.5%
<u>112.5%</u>	<u>112.5%</u>

same again I like using decimals and percents this way who knew!

$\frac{12.5}{2.5} = 5$ $\frac{12.5}{2.5} = 5$

6.25 37.5

The end

The student shows evidence in adding fractions with unlike denominators by replacing given fractions with equivalent fractions. (5.NF.1). The student solves a word problem involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators by using fraction models or equations to represent the problem, or use benchmark fractions and number sense to estimate mentally and assess the reasonableness of the answer (5.NF.2).

Grade 5 Math: "Stuffed with Pizza"

Example of "Novice" level answer

Exemplars Rubric: Novice
CCLS Content Rubric: Apprentice

This student is a Novice according to the Exemplars Rubric and an Apprentice according to the CCLS Content Standards Rubric (both included in the supporting materials).

Name _____

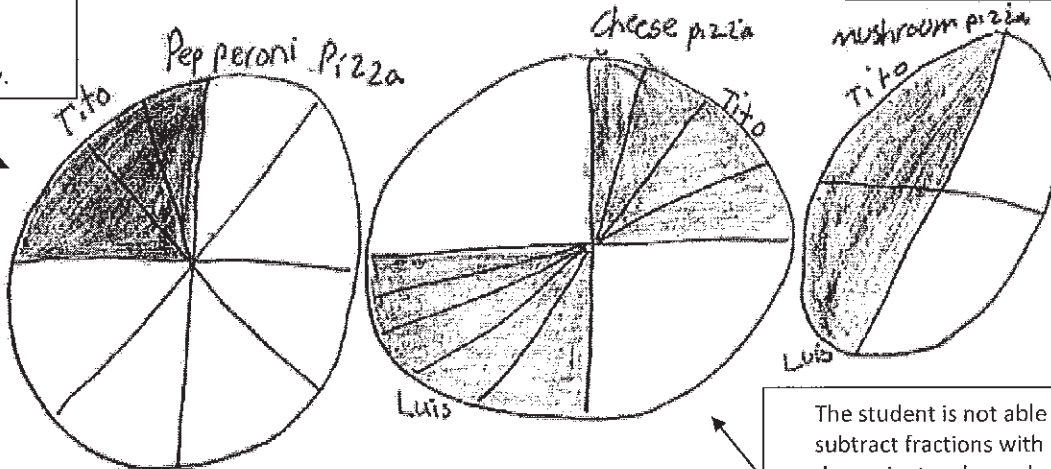
Stuffed with Pizza

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The student attempts to model with mathematics but the area model/diagram is not equally proportioned or shaded correctly.

I think Tito ate a lot then Luis

The student is not able to discern that the problem requires an understanding of fractional parts to a whole and comparing parts of the whole each boy eats. The student's answer is not correct.



answer
I was wrong
Tito ate 8 and
Luis ate 6 pieces

The student is not able to add and subtract fractions with unlike denominators by replacing given fractions with equivalent fractions. (5.NF.1). The student is not able to solve a word problem involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators by using fraction models or equations to represent the problem, or use benchmark fractions and number sense to estimate mentally and assess the reasonableness of the answer (5.NF.2).

The student is not able to search for the regularity and trends embedded in the problem.

The student does not use any precise mathematical terms to support her/his argument.

ABOUT FLORIDA TAXWATCH

As an independent, nonpartisan, nonprofit taxpayer research institute and government watchdog, it is the mission of Florida TaxWatch to provide the citizens of Florida and public officials with high quality, independent research and analysis of issues related to state and local government taxation, expenditures, policies, and programs. Florida TaxWatch works to improve the productivity and accountability of Florida government. Its research recommends productivity enhancements and explains the statewide impact of fiscal and economic policies and practices on citizens and businesses.

Florida TaxWatch is supported by voluntary, tax-deductible memberships and private grants, and does not accept government funding. Memberships provide a solid, lasting foundation that has enabled Florida TaxWatch to bring about a more effective, responsive government that is accountable to the citizens it serves for the last 33 years.

THE FLORIDA TAXWATCH CENTER FOR EDUCATIONAL PERFORMANCE & ACCOUNTABILITY

The Florida TaxWatch Center for Educational Performance and Accountability (CEPA) was established to address the profound fiscal and economic impact that PreK-20 education has on Florida's competitiveness. CEPA works directly with Florida's business community and educational research organizations to advocate sound education policy to promote high academic achievement, develop and deploy reliable assessment tools, maximize the return on taxpayer investment, and help foster a more competitive Florida.

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The findings in this *Briefing* are based on the data and sources referenced. Florida TaxWatch research is conducted with every reasonable attempt to verify the accuracy and reliability of the data, and the calculations and assumptions made herein. Please feel free to contact us if you feel that this paper is factually inaccurate.

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