

Using Data to Drive Standards-based Instruction

Deep Dive #1

Special Board Session
September 21, 2010

Session Goals

- Review the ‘Using Data’ strategy within the context of our strategic roadmap
- Highlight current tools to support data-based instructional decision making strategy
- Take a deep dive into one of the Board goals
 - 8th grade Algebra

Overview of all the pieces – For LAUSD

Inspirational

Vision
Every LAUSD student will receive an education in a safe, caring environment, and every student will be college-prepared and career-ready

Mission
LAUSD will provide high quality instruction and a coherent and rigorous curriculum in every classroom to facilitate student learning and achievement

Goals
1. 100% graduation 2. Proficiency+ for All 3. 100% Attendance 4. Engaged Parents/Families 5. Safe Schools

Theory of Change
Personalized learning (student, educators, family & community)

Strategies
1. Using Data to Drive Standards Based Instruction 2. Supporting All Employees 3. Budgeting for Student Achievement 4. Creating and Supporting Quality Schools

Metrics / Objectives
The specific metrics & objectives under each strategy that will help us realize our goals

Operational Plan
<In development with Leadership Team> How we will achieve our objectives

Set by the Board and Superintendent

Operational

Theory of Change

We envision an organization where we know every child and adult by name and face and we personalize the learning experience for all students and adults.



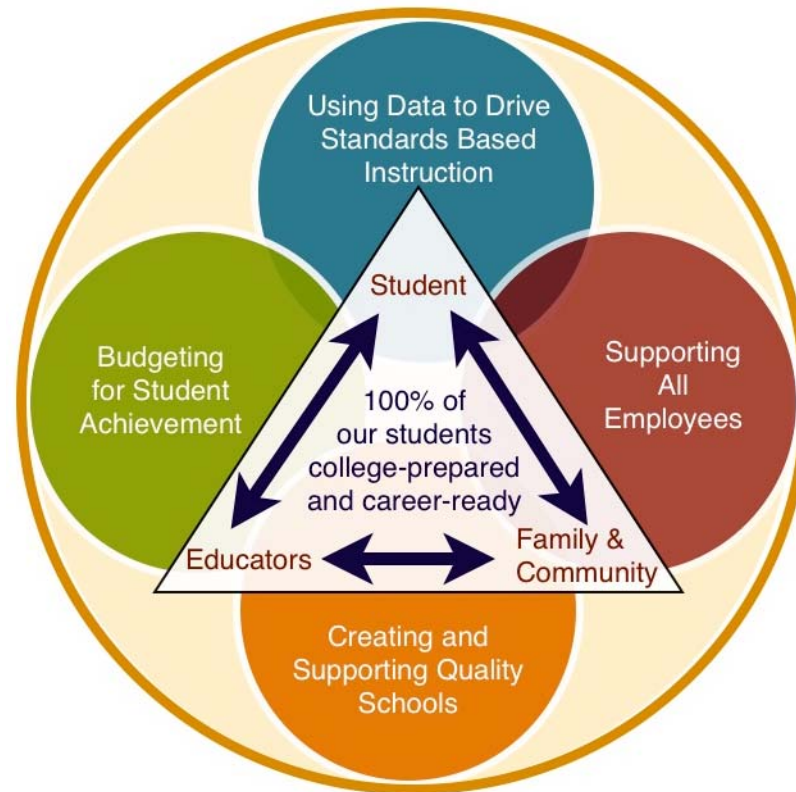
Student – personalized learning experience based on the needs and talents of our students

Educators – personalized learning experience based on the needs and talents of our employees. We are all teachers and learners including administrators, classified staff, and support staff

Family & Community – personalized learning experience based on the needs and talents of our families and community members.

Strategies

LAUSD has four interconnected strategies that will help us meet our goals and ensure all students are college-prepared and career-ready.



We will make the District budget more transparent, align resources for greater impact and equity, and give schools the ability to target resources to meet their school specific needs, bringing funding and decision-making closer to schools and classrooms.

We will analyze multiple data points to differentiate the service and support we deliver to schools. In addition, we will capture and share best practices across all of our schools regardless of school models.

Use data to drive standards – based, effective instruction for all students, coupled with support and intervention, when students need extra assistance or accelerated learning.

We are accountable for our students' success. We will use data to personalize the supports that all of our employees need to be efficient and successful, from professional development and training, to creating measurable performance goals.

Strategy: Using Data to Drive Standards-Based Instruction

Definition

Use data to drive standards-based, effective instruction for all students, coupled with support and intervention, when students need extra assistance or accelerated learning.

Three Cultures that Need to Change

- **From Excuse to Accountability**
- **From Compliance to Performance**
- **From Uniformity to Differentiation Based on Talent and Need**

~~Paradigm~~ Culture Shift

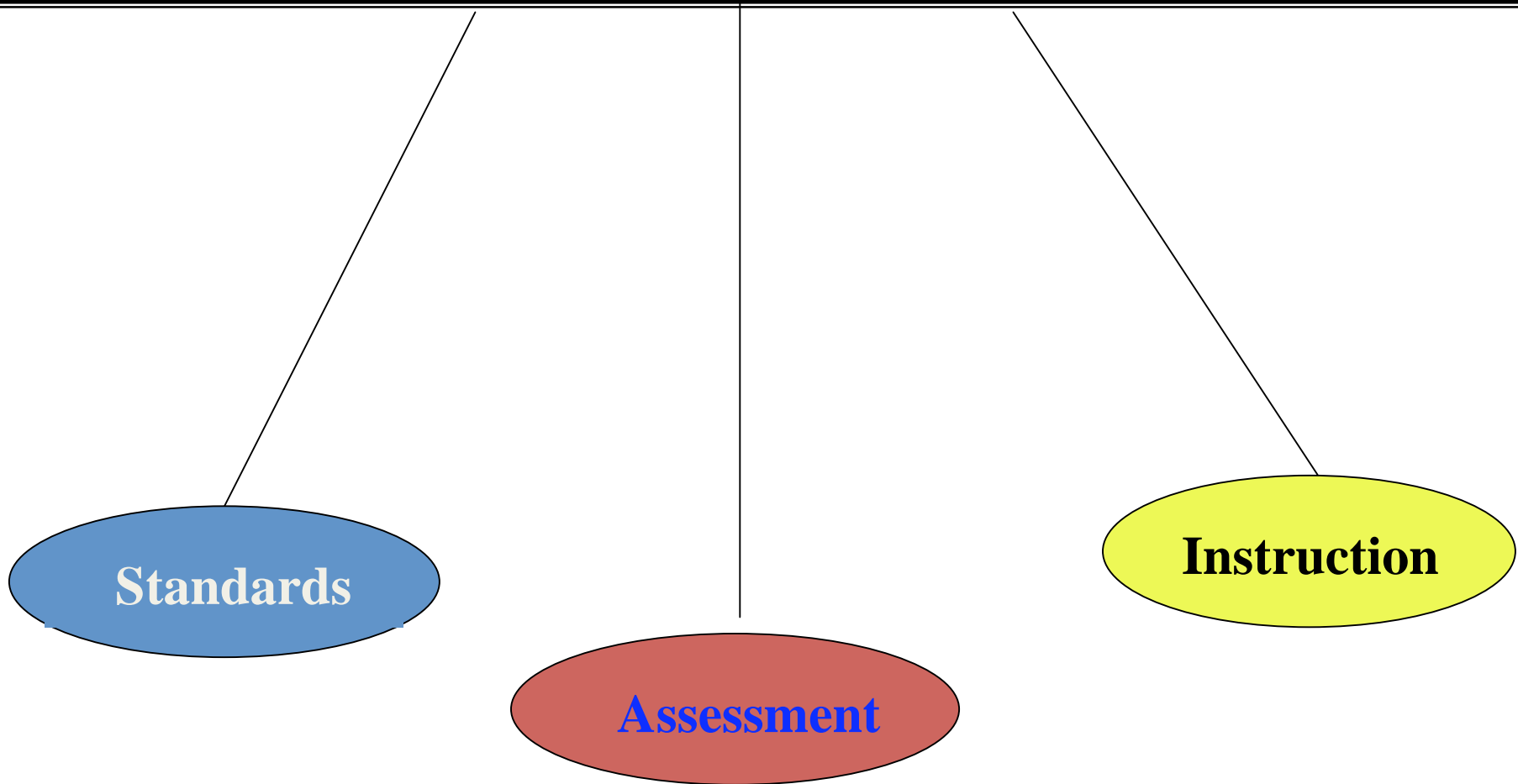


- Eligibility focus
 - Diagnose and Place
 - *Get label*
- Outcome focus
 - Problem Solving
 - Response to Instruction & Intervention
 - *Get help*

If We're Honest With Ourselves

- What we have been doing has not been predictably effective for ALL of our kids
- If we want to become more effective, we can't do the same things harder, faster or longer
- We need to do different things that are more effective

Basic Tenets of Educational Reform Include...



A C C O U N T A B I L I T Y

Accountability Must Be Reciprocal`

Meaning...

**The system invests in capacity development
in return for more accountable
performance.**

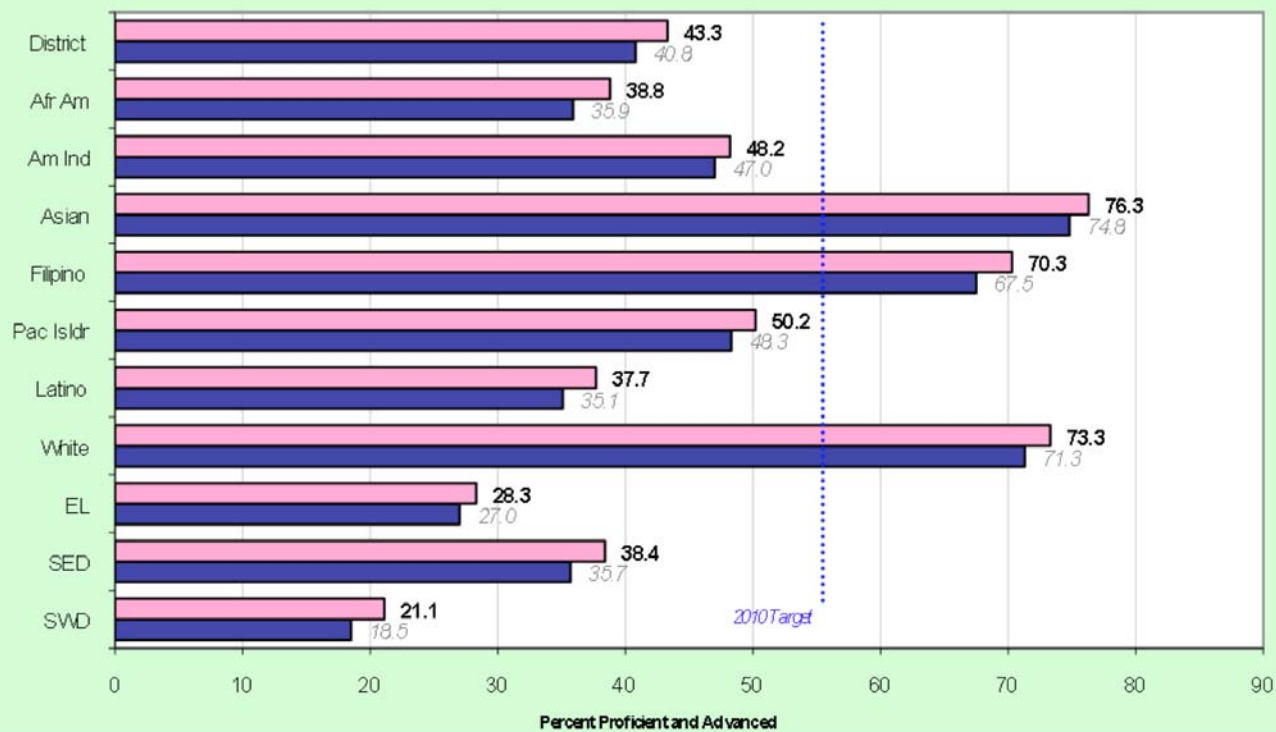
Common Language,
Common Understanding

Where are we now?

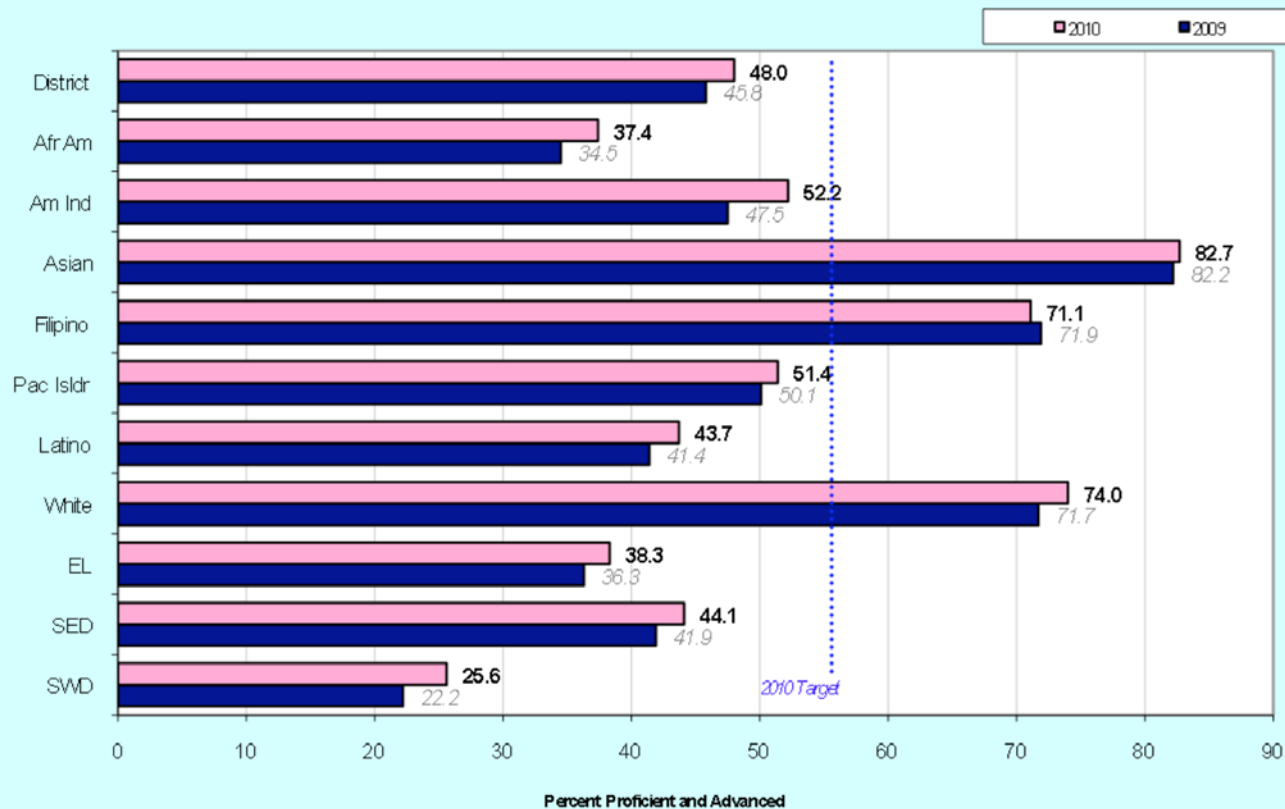
- Celebrate our growth!
- Goal = Proficiency for All
- Need to move students over the Goal line
- Accelerated vs. incremental growth

English Language Arts

2010 2009



Mathematics



Change Model



Consensus

Infrastructure

Implementation

Infrastructure Tools

- MyData
- The Accountability Matrix
- Tiering of Schools
- Teaching & Learning Framework
 - Lesson Design
- Instructional Reviews
- New Assessment System
- Teacher and Administrator evaluation system

Elementary

- **Kindergarten Readiness**
 - **Screening**
 - Recognition & Response
 - **Integrated ECE District-wide Data System**
 - **Quality Rating System**
 - Parent Engagement – Opening Doors (Abriendo Puertas)
 - Transition Kindergarten
 - Articulation and Transition to Kindergarten
 - Transition Toolkit

Elementary

- **Reading by 9**
 - **20:20:20 assessments**
 - **Development of a K-5 standards-based Instructional Guide**
 - Currently, we do not have one
 - Currently, everything is aligned to a program not standards
 - **New K-5 Periodic Assessments**
 - Our current SOAR periodic assessments do not target discrete grade level standards. Therefore, it is difficult to track student progress (EL, SEL, RFEP, or English Only) towards the standards assessed on the CST.
 - **K-2 diagnostic assessments**
 - **K-5 Standards-based progress monitoring tools**
 - **Grade 4-6th Intensive Reading Program next year**

Middle School

- **8th grade Algebra**
 - 5th and 8th grade diagnostics
 - Mind Institute Math Intervention
 - **End of Course Exam for Algebra**
 - Required math interventions (e.g. ALEKS)
- **ELA**
 - **Under development – 5th and 8th grade diagnostics**
 - Intervention Literacy programs with universal access

High School

- **A-G**
 - **MyData** – real time data
 - On-track to graduate
 - # Enrolled in A-G prep classes
 - Performance in A-G classes
 - All administrators taking a Master Schedule Institute
 - During the day intervention opportunities
 - Required math interventions (e.g. ALEKS)
 - **Practice CAHSEE**
 - On-line courses for recoupment and acceleration
 - Virtual on-line High School

High School

- **Suspension/Expulsions/Dropouts/Transfers**
 - D.O. Committee –
 - Online courses during the school day
 - Online summer school
 - Virtual High School
 - Recoupment and Acceleration
 - **Attendance Improvement Center**
 - **Reconnection Mobile Unit**

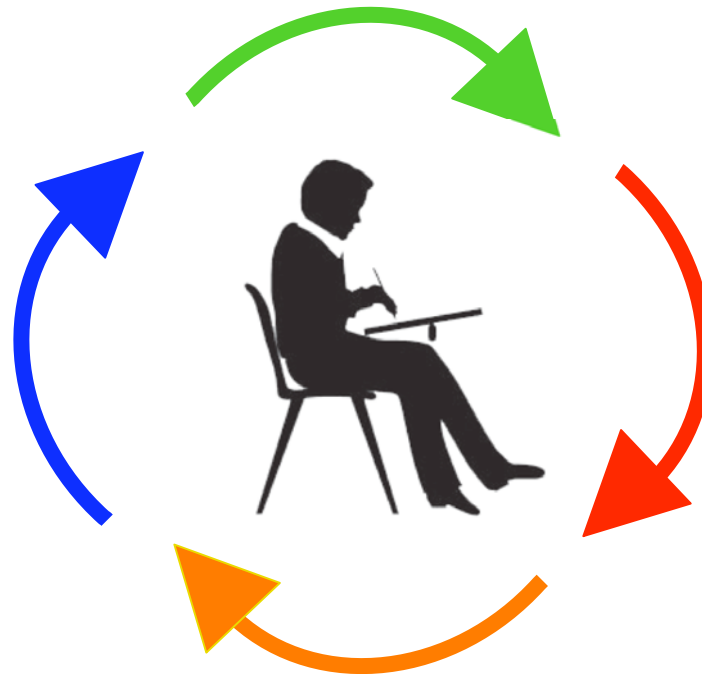
Board's District Goals

- 100% Graduation
- Proficiency for All
 - Elementary (i.e. kindergarten readiness & 3rd grade reading)
 - **Middle (8th grade algebra and ELA)**
 - High School (A-G, suspensions/dropouts/transfers)
- Attendance
 - Students
 - Employees
- Parent/Family Engagement
- Safety

Using Data to Drive Standards Based Instruction Problem Solving Process

Define the Problem

- Defining Problem/Directly Measuring Behavior



Problem Analysis

- Validate Problem
- Identify Variables that Contribute to Problem
- Develop Plan

Implement Plan

- Implement As Intended
- Progress Monitor
- Modify as Necessary

Evaluate

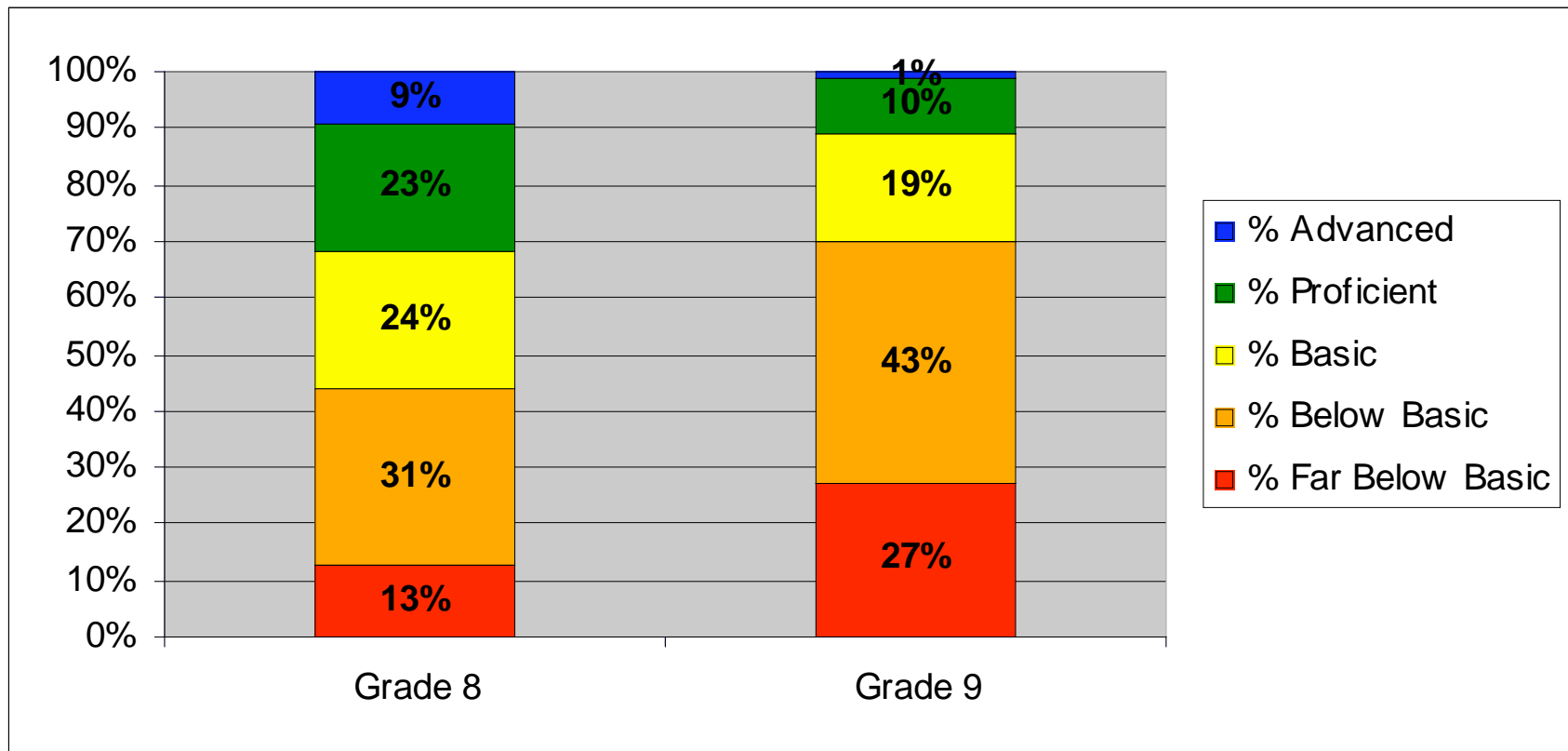
- Response to Instruction and Intervention (RtI²)

Identify the Problem:

Proficiency in Algebra

In 2009-10:

- 31% of 8th Graders were Proficient or Above
- 11% of 9th Graders were Proficient or Above



Define the Problem

- About 50% of 8th graders take Algebra.
 - Only 31% of those 8th graders are proficient or above.
- Students who take Algebra in 9th grade have much lower proficiency rates.
 - Only 11% of 9th graders are proficient or above.
- How can we raise proficiency in Algebra among 8th graders?

Problem Analysis

- Are we teaching the Algebra I contents standards assessed by the CST?
- What are the students' areas of strengths and deficits as they begin Algebra I?
- What is the impact of earlier math instruction?
- What does the math pedagogy look like, sound like?
- How is student progress monitored?

Problem Analysis

- **Are we teaching the Algebra I content standards assessed by the CST?**
- What are the students' areas of strengths and deficits as they begin Algebra I?
- What is the impact of earlier math instruction?
- What does the math pedagogy look like, sound like?
- **How is student progress monitored?**

What gets tested on the Algebra I CST?

Algebra 1, CST Blueprints		
Strand	# of Items	%
Number Properties, Operations, & Linear Equations	17	26%
Graphing & Systems of Linear Equations	14	22%
Quadratics & Polynomials	21	32%
Functions & Rational Expressions	13	20%
Total Number of Items	65	100%

What Does it Take to Reach Proficiency on the Algebra CST?

Grade 8 Algebra	# Items	State – Avg # Minimally Proficient	State – Avg % Minimally Proficient
Total Number of Items	65		
Number Properties, Operations, & Linear Equations	17	12	72%
Graphing & Systems of Linear Equations	14	8	59%
Quadratics & Polynomials	21	12	56%
Functions & Rational Expressions	13	6	44%

How Did Our Students Perform?

From MyData, we can examine the content strands for Algebra for each of the performance bands.

myData | My Dashboard | Classroom | **School** | Search | Site Map | Usage

CA Standards Tests, School | Welcome, cynthia.lim! | Dashboards | Answers | More Products | My Account | Log Out

Performance Levels | **Content Strands** | Annual Change | Trends | Page Options

Filters

Local District: [Dropdown]
Preferred Location (Campus): [Dropdown]
School or Magnet: [Dropdown]
Location Code: [Dropdown]
Cost Center Code: [Dropdown]
ES or MS or HS: Y [Dropdown] [Go]

CST Subscore Summary
For Selected Year of Assessment

School Year: 2009-2010
CST Subject: MATHEMATICS

Summarize by: Performance Level [Dropdown]

CST Test	Performance Level	# Tested	# Valid Scores	# Items	Average Scaled Score	Average # Correct	Average % Correct
ALGEBRA I	FAR BELOW BASIC	14,155	13,966	65	238	15.6	24.0%
	BELOW BASIC	25,410	25,232	65	277	22.6	34.8%
	BASIC	14,298	14,264	65	323	32.0	49.3%
	PROFICIENT	11,013	11,013	65	381	43.8	67.4%
	ADVANCED	4,053	4,052	65	475	56.4	86.8%

Report ID: AC

Average
Number and
Percent of
Correct
Responses by
Performance
Band for all 8th
Graders
Districtwide

Performance Level	Test Name	# Items	Average # Correct	Average % Correct
ADVANCED	ALGEBRA I	65	56	86.8%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	16	91.5%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	13	90.5%
	QUADRATICS & POLYNOMIALS (ALG I)	21	19	88.5%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	10	74.1%
BASIC	ALGEBRA I	65	32	49.3%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	11	63.4%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	7	47.4%
	QUADRATICS & POLYNOMIALS (ALG I)	21	10	47.1%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	5	36.3%
BELOW BASIC	ALGEBRA I	65	23	34.8%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	8	45.5%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	5	32.5%
	QUADRATICS & POLYNOMIALS (ALG I)	21	7	31.4%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	4	28.6%
FAR BELOW BASIC	ALGEBRA I	65	16	24.0%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	5	30.5%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	3	22.9%
	QUADRATICS & POLYNOMIALS (ALG I)	21	5	21.3%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	3	20.9%
PROFICIENT	ALGEBRA I	65	44	67.4%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	13	78.4%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	10	70.1%
	QUADRATICS & POLYNOMIALS (ALG I)	21	14	67.9%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	6	49.4%

What
patterns do
we see?

In every performance band, Functions and Rational Expressions have the lowest percentage of correct answers.

Performance Level	Test Name	# Items	Average # Correct	Average % Correct
ADVANCED	ALGEBRA I	65	56	86.8%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	16	91.5%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	13	90.5%
	QUADRATICS & POLYNOMIALS (ALG I)	21	19	88.5%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	10	74.1%
BASIC	ALGEBRA I	65	32	49.3%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	11	63.4%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	7	47.4%
	QUADRATICS & POLYNOMIALS (ALG I)	21	10	47.1%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	5	36.3%
BELOW BASIC	ALGEBRA I	65	23	34.8%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	8	45.5%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	5	32.5%
	QUADRATICS & POLYNOMIALS (ALG I)	21	7	31.4%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	4	28.6%
FAR BELOW BASIC	ALGEBRA I	65	16	24.0%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	5	30.5%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	3	22.9%
	QUADRATICS & POLYNOMIALS (ALG I)	21	5	21.3%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	3	20.9%
PROFICIENT	ALGEBRA I	65	44	67.4%
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	13	78.4%
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	10	70.1%
	QUADRATICS & POLYNOMIALS (ALG I)	21	14	67.9%
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	6	49.4%

What standards are covered in Functions and Rational Expressions?

CA Standards Blueprints for Algebra

Reporting Cluster	CALIFORNIA CONTENT STANDARDS: ALGEBRA I	# of Items
	Symbolic reasoning and calculations with symbols are central in algebra. Through the study of algebra, a student develops an understanding of the symbolic language of mathematics and the sciences. In addition, algebraic skills and concepts are developed and used in a wide variety of problem-solving situations.	
	Algebra I	65
	Standard Set 1.0 Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable:	
Number Properties, Operations & Linear Equations	1.1 Students use properties of numbers to demonstrate whether assertions are true or false.	1/2**
Number Properties, Operations & Linear Equations	2.0* Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.	4
Number Properties, Operations & Linear Equations	3.0 Students solve equations and inequalities involving absolute values.	1
Number Properties, Operations & Linear Equations	4.0* Students simplify expressions prior to solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.	3
Number Properties, Operations & Linear Equations	5.0* Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.	6

Examples of Functions and Rational Expression Standards

- 13.0*-- Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.
- 15.0* --Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.

What Do We Do With This Information?

- *Classroom perspective:*
 - What methods did we use in teaching these concepts?
 - Did we devote enough time to them?
 - How do we check for understanding?
 - Where are the areas of misunderstanding for students?
- *School Level perspective:*
 - Is this pattern school-wide or in a few classrooms?
 - Are teachers teaching these standards?
- *Local District/Central Office perspective:*
 - How are we addressing this in professional development?
 - Do we have tools to help teachers focus on these standards?

Develop and Implement Plan

- *Classroom perspective:*
 - Examine data in real time, make adjustments, as necessary
 - Tiered & differentiated intervention for struggling students
 - Reinforce key standards
- *School level perspective:*
 - Organize opportunities for teachers to share practices, examine strengths and weaknesses across classrooms
 - Create time for teachers to meet in grade level teams or department teams
 - Guide collaborative teams and data dialogues
- *Local District/Central Office level*
 - Plan for and encourage timely discussion of the data
 - Create the infrastructure and tools for examining data

What Tools Are Available for Monitoring?

- Periodic assessments three times per year, aligned with standards
- Progress monitoring assessments – short assessments that can be created by teachers using an item bank or short, pre-made assessments aligned to standards
- End of Course Algebra I exam
- MyData rosters that combine multiple measures

Progress Monitoring Assessments

The screenshot shows a web browser window displaying the 'Comprehensive Assessment Portals' website. The page has a blue header with the LAUSD logo on the left and the 'ASSESSMENT CENTER' logo on the right, which includes the text 'Hello CYNTHIA' and links for 'Sign Out' and 'Support'. The main content area is titled 'Portal Page' and contains three sections: 'LAUSD Periodic Assessments', 'LAUSD Progress Monitoring Assessments', and 'LAUSD Diagnostic Assessments'. The 'LAUSD Progress Monitoring Assessments' section is circled in red. It includes a description of the tools and a list of specific measures. The browser's taskbar at the bottom shows 'Done', 'Internet', and a zoom level of '75%'.

ASSESSMENT CENTER
Hello CYNTHIA
Sign Out | Support

Portal Page

LAUSD Periodic Assessments

The periodic assessments parallel the California State Content Standards and the District's Instructional Guides. Included are:

- Periodic assessments 3x per year in designated content areas
- Algebra End-of-Course

Click [here](#) to enter the LAUSD Periodic Assessments

LAUSD Progress Monitoring Assessments

The progress monitoring assessments tools includes brief assessments (8-10 items). Included are:

- Standards-Based Item Bank Mini-Assessments (pre-developed or teacher-created)
- K-2: DIBELS progress monitoring measures
- Grades 4-10: 10 CCSS-SS progress monitoring measures
- Grades 4-10: 18 intervention progress monitoring measures

Click [here](#) to enter the LAUSD Progress Monitoring Assessments

LAUSD Diagnostic Assessments

Diagnostic assessments tools gauge student performance at key instructional intervals to provide detailed information for instruction and intervention. Included are:

- 5th and 8th grade English/Language Arts
- 5th and 8th grade Mathematics
- CAHSEE diagnostic

Click [here](#) to enter the LAUSD Diagnostic Assessments

Done Internet 75%

Option 1: Pre-made assessments aligned to standards

Search Assessment

Use the advanced search section below to find the assessments you are looking for.

Assessment Name
With **all** of these words

With **at least one** of these words


Subject

Grade/Course

Type

Assessment Code

Created by:

Created/Modified After 

Search Criteria Math Algebra Key Standards Assessment

OR

Click on one of the following links to view a list of matching assessments.

- [Your created and assigned assessments](#)
- [All assessments assigned to your students](#)
- [Recommended assessments](#)
- [All assessments](#)

Option 2: Create Your Own Assessment from Item Bank

The screenshot displays the Assessment Center interface for LAUSD Central District. The page title is "LAUSD CENTRAL DISTRICT Select Standards". The user is identified as "Hello CYNTHIA". Navigation links include "Portal Page", "Sign Out", and "Support". The main navigation menu has "Reports", "Assessments", and "Program Materials". The breadcrumb trail is "Home > Assessments > Create an Assessment > Select Standards".

2 Create an Assessment
Select Standards

The Standards Alignment Parameters selected in step 1 determine the standards shown below. Click on the "+" [plus icon] to view the more specific standards within each strand [i](#). Select those you wish to cover in this assessment, then click Next.

Standards marked with an asterisk * are covered on the LAUSD Math Test Standard

Algebra I [i](#)

Copyright © 2010 CORE Education and Consulting Solutions, Inc. **CORE**^{K12}

Teacher or Administrator Can Choose from List of Algebra Standards

Home ▶ Assessments ▶ Create an Assessment ▶ Select Questions

3 Create an Assessment

Select Questions

The standards you selected are shown below. Click on a "+" [plus icon] to view the curriculum objectives within each standard. Then click on a "+" [plus icon] to reveal the specific skills within that curriculum objective. Use the text boxes to fill in the number of questions you would like to include for each skill. [Show All Skills](#)

Standards marked with an asterisk * are covered on the LAUSD Math Test Standard

[Expand All](#) [Collapse All](#)

Total Number of Questions	
	<input type="text" value="0"/>
* [1.0] Students identify and use the arithmetic properties of subsets of ...	<input type="text" value="0"/>
* [2.0] Students understand and use such operations as taking the opposi ...	<input type="text" value="0"/>
* [4.0] Students simplify expressions before solving linear equations an ...	<input type="text" value="0"/>
* [5.0] Students solve multistep problems, including word problems, invo ...	<input type="text" value="0"/>
* [6.0] Students graph a linear equation and compute the x- and y-interce ...	<input type="text" value="0"/>
* [7.0] Students verify that a point lies on a line, given an equation o ...	<input type="text" value="0"/>
* [8.0] Students understand the concepts of parallel lines and perpendic ...	<input type="text" value="0"/>
* [9.0] Students solve system of two linear equations in two variables a ...	<input type="text" value="0"/>
* [10.0] Students add, subtract, multiply, and divide monomials and poly ...	<input type="text" value="0"/>
* [11.0] Students apply basic factoring techniques to 2nd- and simple 3rd ...	<input type="text" value="0"/>
* [14.0] Students solve a quadratic equation by factoring or completing ...	<input type="text" value="0"/>
* [15.0] Students apply algebraic techniques to solve rate problems, wor ...	<input type="text" value="0"/>
* [16.0] Students understand the concepts of a relation and a function, ...	<input type="text" value="0"/>
* [17.0] Students determine the domain of independent variables and the ...	<input type="text" value="0"/>
* [18.0] Students determine whether a relation defined by a graph, a set ...	<input type="text" value="0"/>
* [19.0] Students know the quadratic formula and are familiar with its p ...	<input type="text" value="0"/>
* [21.0] Students graph quadratic functions and know that their roots ar ...	<input type="text" value="0"/>
* [22.0] Students use the quadratic formula or factoring techniques or b ...	<input type="text" value="0"/>
* [23.0] Students apply quadratic equations to physical problems, such a ...	<input type="text" value="0"/>
* [25.0] Students use properties of the number system to judge the valid ...	<input type="text" value="0"/>

Choosing Standard 15.0: Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.

Expand All Collapse All

Total Number of Questions

8
0
0
0
0
0
0
0
0
0
0
0
0
0
8
8
2
2
2
2
2
0
0
0
0
0
0
0
0
0
0
0

Back [X] Next

The list expands

Enter the number of items

Assessment is created & performance bands can be set.

5 Create an Assessment
Save Assessments

Please specify a name for this assessment and click Save.

Fields marked with an asterisk * are required

* **Name**

Performance Level Cut-off's ⓘ

* Advanced	<input type="text" value="80"/> %	-	<input type="text" value="100"/> %
* Proficient	<input type="text" value="60"/> %	-	<input type="text" value="79"/> %
* Basic	<input type="text" value="45"/> %	-	<input type="text" value="59"/> %
* Below Basic	<input type="text" value="31"/> %	-	<input type="text" value="44"/> %
* Far Below Basic	<input type="text" value="0"/> %	-	<input type="text" value="30"/> %

These assessments can be printed or taken online.
They can be shared by grade level or school-wide.

Sample question from Algebra Standard 15.0

Question 9

Question ID# 1063703

The average attendance at a baseball stadium during regular season was 27,630 people. During the playoffs, the average attendance rose to 35,919 people. What was the **percent of increase** in attendance?

- A 14%
- B 23%
- ✓ C 30%
- D 77%

E!

E!

E!

E!

Details

Item Bank

CA Item Bank

State Standard ⓘ

[15.0] Students apply algebraic techniques to solve rate problems, work problems

Thinking Skills ⓘ



Bloom's Taxonomy: *Application*

Webb's Depth of Knowledge: *Using Fundamental Concepts and Procedures*

Cognitive Demand: *Level 2*

[Replace Question](#) | [Delete Question](#)

A closer look at the thinking skills...

Details	
Item Bank	CA Item Bank
State Standard 	[15.0] Students apply algebraic techniques to solve rate problems, work problems
Thinking Skills 	Bloom's Taxonomy: <i>Application</i> Webb's Depth of Knowledge: <i>Using Fundamental Concepts and Procedures</i> Cognitive Demand: <i>Level 2</i>

Psychometric Data

Bloom's Taxonomy is a hierarchy of thinking skills with six levels of cognitive complexity: 1) knowledge, 2) comprehension, 3) application, 4) analysis, 5) synthesis and 6) evaluation.

Webb's Depth of Knowledge is a hierarchy of thinking skills with four levels of cognitive complexity:

Level 1: Recall

Level 2: Basic Application of Skill/Concept

Level 3: Strategic Thinking

Level 4: Extended Thinking

Cognitive Demand is the level of thinking skills required to answer the question. As questions increase in cognitive complexity, the level of cognitive demand increases from low, to moderate, to high.

Another sample question on Algebra standard 15.0

Question 4

Question ID# 124618

In the equation $-9x - 2 = -56$, what is x ?

- A $x = -54$
- B $x = -6$
- C $x = 6$
- D $x = 486$

Details

Item Bank

CA Item Bank

State Standard

[5.0] Students solve multistep problems, including word problems, involving line...

[15.0] Students apply algebraic techniques to solve rate problems, work problems...

Thinking Skills

Bloom's Taxonomy: *Application*

Webb's Depth of Knowledge: *Using Fundamental Concepts and Procedures*

Cognitive Demand: *Level 2*

[Replace Question](#) | [Delete Question](#)

Response rationale provided when student selects correct answer.

Question 4 Question ID# 124618

In the equation $-9x - 2 = -56$, what is x ?

- A $x = -54$
- B $x = -6$
- C $x = 6$
- D $x = 486$

Details

Item Bank CA Item Bank

State Standard [5.0] Student involving line...

[15.0] Students apply algebraic techniques to solve rate problems, work problems...

Thinking Skills Bloom's Taxonomy: *Application*
Webb's Depth of Knowledge: Using Fundamental Concepts and Procedures
Cognitive Demand: Level 2

Replace Question | Delete Question

CORE K12 Education Assessme... ✖

https://ac.corek12.com/assessmentcer 🔒

Well done! You knew to add 2 to both sides of the equation to find that $-9x = -54$. To finish the problem, you divided both sides by -9 to find that $x = 6$.

Close

Response rationale provided when student selects incorrect answer.

Question 4 Question ID# 124618

In the equation $-9x - 2 = -56$, what is x ?

- A $x = -54$
- B $x = -6$
- C $x = 6$
- D $x = 486$

CORE K12 Education Assessme... X

https://ac.corek12.com/assessmentcer 🔒

Oops. It looks like you did the first step correctly by adding 2 to both sides of the equation to get $-9x = -54$. To find the value of x , you need to divide both sides by -9 .

Close

Details

Item Bank CA Item Bank

State Standard [5.0] Student involving line...
 [15.0] Students apply algebraic techniques to solve rate problems, work problems...

Thinking Skills Bloom's Taxonomy: *Application*
Webb's Depth of Knowledge: *Using Fundamental Concepts and Procedures*
Cognitive Demand: *Level 2*

[Replace Question](#) | [Delete Question](#)

Item Response report lets teacher know the progress of all students in the class and which items were not answered correctly.

Item Response Report		LAUSD Algebra 1 AB Periodic Assessment 2 2009 2010																						
Teacher: Teacher			Period: 1			Class Average: 59%			School: School															
30 Assessments Scored / 21 Students Enrolled																								
<ul style="list-style-type: none"> ▲ Advanced (80% - 100%) ● Proficient (60% - 79%) ▼ Basic (45% - 59%) ◆ Below Basic (31% - 44%) ■ Far Below Basic (0% - 30%) 		Question #																						
		% of Correct Responses or Average Score																						
		Standard																						
		Correct Answer/Total Points Possible																						
Student Name		Raw Score	% Correct	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
				77%	83%	57%	63%	63%	87%	93%	47%	10%	23%	53%	40%	33%	27%	27%	67%	40%	50%	60%	33%	3.8 Avg
				5.0	15.0	7.0	9.0	7.0	3.0	4.0	9.0	3.0	8.0	5.0	9.0	9.0	7.0	9.0	5.0	6.0	6.0	15.0	8.0	6.0
				A	B	D	B	A	B	B	D	C	A	C	A	D	D	D	A	C	C	A	D	4
Student	14	58%	B	+	+	D	B	+	+	B	A	D	+	+	C	+	+	C	+	+	B	A	4	
Student	18	75%	+	+	+	+	+	+	+	+	A	+	+	+	B	B	+	+	B	B	+	B	4	
Student	17	71%	+	+	+	C	+	+	+	+	A	D	+	+	B	A	B	+	+	+	+	+	4	
Student	15	63%	+	C	+	+	+	+	+	B	A	C	+	C	+	C	+	B	+	+	D	B	4	
Student	17	71%	+	+	+	+	+	+	+	+	A	D	+	+	B	C	A	+	+	B	A	+	4	
Student	11	46%	+	-	A	+	-	+	+	+	A	D	+	+	B	C	+	A	+	-	-	-	3	
Student	19	79%	+	+	+	+	+	+	+	+	A	C	+	B	+	+	+	+	B	+	+	C	4	
Student	10	42%	+	+	C	A	C	+	+	B	D	C	A	C	A	C	B	C	-	+	+	B	4	
Student	12	50%	+	+	+	C	+	+	+	+	A	A	C	D	+	B	A	C	C	A	D	+	4	
Student	11	46%	B	+	C	A	B	D	+	B	A	D	+	+	C	B	B	+	+	+	C	B	4	
Student	12	50%	B	+	C	+	B	+	+	B	A	D	D	B	B	+	+	C	+	A	C	+	4	
Student	16	67%	+	+	C	+	C	+	+	B	+	+	+	+	B	+	B	+	B	+	B	A	+	4
Student	19	79%	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	B	+	B	+	4	
Student	12	50%	+	+	-	+	C	+	+	-	A	-	-	B	B	A	C	+	+	+	C	C	4	
Student	16	67%	+	+	+	+	+	+	+	+	A	+	D	B	C	B	C	+	B	+	+	B	4	
Student	10	42%	C	+	A	+	+	+	+	A	B	B	D	A	+	B	A	C	+	+	D	D	3	
Student	16	67%	+	+	+	+	+	+	+	+	A	+	D	B	C	B	C	+	B	+	+	B	4	
Student	15	63%	+	+	C	+	+	+	+	+	A	D	D	B	B	B	B	+	D	+	+	+	4	
Student	11	46%	B	+	C	A	B	+	+	A	B	A	D	+	+	C	B	B	+	+	+	C	B	4
Student	9	38%	+	+	A	C	C	+	+	C	A	D	B	C	+	B	A	B	D	B	C	B	4	
Student	19	79%	+	+	+	+	+	+	+	+	D	+	B	B	+	+	C	+	A	+	+	+	4	
Student	13	54%	D	C	+	+	+	+	+	+	B	A	D	+	B	+	A	B	+	B	B	+	4	
Student	14	58%	+	+	+	+	+	+	+	+	A	B	A	D	+	B	B	C	B	C	D	+	4	
Student	6	25%	+	+	A	C	C	+	+	C	A	D	B	C	+	B	B	B	D	B	C	B	1	
Student	17	71%	+	+	+	+	+	C	+	-	D	C	+	+	+	+	C	+	D	+	+	A	4	
Student	11	46%	+	+	C	A	D	+	+	B	A	C	D	+	+	B	B	C	B	A	+	B	4	
Student	16	67%	+	C	+	+	+	+	+	+	A	C	D	C	+	C	+	+	+	+	D	C	4	
Student	17	71%	+	+	+	C	+	+	+	+	A	D	D	+	+	B	B	+	+	A	+	+	4	

Evaluate the Plan

What is the response to instruction &/or intervention?

- How will we monitor student progress?
 - Periodic assessments
 - What strands or standards are students struggling with ?
 - Monitor/adjust instruction & opportunities for learning and practice
 - Progress monitoring assessments
 - Department level discussions of student work and progress
 - End of course exam
- Did we increase proficiency on the CST?

Other Lines of Inquiry

- **Are we teaching the Algebra I content standards assessed by the CST?**
- What are the students' areas of strengths and deficits as they begin Algebra I?
- What is the impact of earlier math instruction?
- What does the math pedagogy look like, sound like?
- **How is student progress monitored?**

Using Data to Improve Outcomes for Our Students

- Reallocate and realign resources and efforts that are laser like in focus and outcome-based
- Guiding Professional Development opportunities for teachers administrators around instruction and behavior

Using Data to Drive Standards Based Instruction

1 Year Objectives

Standards

- Work with State to map out implementation of Common Core Standards including EL and SEL students
- Intentionally infuse content standards with CTE standards that results in A-G approval for Linked learning efforts
- **Differentiated support and accountability for all schools based on multiple measures**
- **Instructional review process completed and piloted**

Assessments

- **Implement District-wide standards-based assessment system that includes progress monitoring, formative and diagnostic assessments**
- Develop project-based learning rubric for Linked Learning (aka Multiple Pathways)

Reporting Tools

- Refinement of reporting and additional features on MyData and School Report Card

Training and Professional Development

- **District-wide administrator professional development plan aligned to the needs of employees (e.g., Speaker Series, Conference)**
- **Best Practices Conference II**
- EL coaches in 150 PI5 schools and growing
- **Expand Summer, Saturday, and afternoon PD opportunities**
- Project-based learning for teachers, counselors, administrators

Using Data to Drive Standards-based Instruction

We are using data-based tools to untangle the Gordian knot that will result in accelerated achievement for all students!



CALIFORNIA STANDARDS TEST

ALGEBRA I

(Blueprint adopted by the State Board of Education 10/02)

Reporting Cluster	CALIFORNIA CONTENT STANDARDS: ALGEBRA I	# of Items
	Symbolic reasoning and calculations with symbols are central in algebra. Through the study of algebra, a student develops an understanding of the symbolic language of mathematics and the sciences. In addition, algebraic skills and concepts are developed and used in a wide variety of problem-solving situations.	
	Algebra I	65
	Standard Set 1.0 Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable:	
Number Properties, Operations & Linear Equations	1.1 Students use properties of numbers to demonstrate whether assertions are true or false.	1/2**
Number Properties, Operations & Linear Equations	2.0* Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.	4
Number Properties, Operations & Linear Equations	3.0 Students solve equations and inequalities involving absolute values.	1
Number Properties, Operations & Linear Equations	4.0* Students simplify expressions prior to solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.	3
Number Properties, Operations & Linear Equations	5.0* Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.	6
Graphing & Systems of Linear Equations	6.0* Students graph a linear equation and compute the x- and y- intercepts (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).	4
Graphing & Systems of Linear Equations	7.0* Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations using the point-slope formula.	4
Graphing & Systems of Linear Equations	8.0 Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.	1

* Key standards comprise a minimum of 70% of the test

** Fractional values indicate rotated standards (e.g., 1/2 = rotated every two years; 1/3 = rotated every three years)

**CALIFORNIA STANDARDS TEST
ALGEBRA I**

(Blueprint adopted by the State Board of Education 10/02)

	CALIFORNIA CONTENT STANDARDS: ALGEBRA I	# of Items
Graphing & Systems of Linear Equations	9.0* Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.	5
Quadratics & Polynomials	10.0* Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.	4
Quadratics & Polynomials	11.0 Students apply basic factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.	2
Functions & Rational Expressions	12.0* Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.	3
Functions & Rational Expressions	13.0* Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.	4
Quadratics & Polynomials	14.0* Students solve a quadratic equation by factoring or completing the square.	3
Functions & Rational Expressions	15.0* Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.	4
Functions & Rational Expressions	16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.	1/2**
Functions & Rational Expressions	17.0 Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.	1
Functions & Rational Expressions	18.0 Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.	1/2**
Quadratics & Polynomials	19.0* Students know the quadratic formula and are familiar with its proof by completing the square.	2
Quadratics & Polynomials	20.0* Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.	3

* Key standards comprise a minimum of 70% of the test

** Fractional values indicate rotated standards (e.g., 1/2 = rotated every two years; 1/3 = rotated every three years)

**CALIFORNIA STANDARDS TEST
ALGEBRA I**

(Blueprint adopted by the State Board of Education 10/02)

	CALIFORNIA CONTENT STANDARDS: ALGEBRA I	# of Items
Quadratics & Polynomials	22.0 Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.	1
Quadratics & Polynomials	21.0* Students graph quadratic functions and know that their roots are the x-intercepts.	3
Quadratics & Polynomials	23.0* Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.	3
	Standard Set 24.0 Students use and know simple aspects of a logical argument:	
Number Properties, Operations & Linear Equations	24.1 Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.	1/3**
Number Properties, Operations & Linear Equations	24.2 Students identify the hypothesis and conclusion in logical deduction.	1/3**
Number Properties, Operations & Linear Equations	24.3 Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.	1/3**
	Standard Set 25.0 Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements:	
Number Properties, Operations & Linear Equations	25.1 Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.	1/2**
Number Properties, Operations & Linear Equations	25.2 Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.	1/2**
Number Properties, Operations & Linear Equations	25.3 Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.	1/2**
	ALGEBRA I TOTAL	65

* Key standards comprise a minimum of 70% of the test

** Fractional values indicate rotated standards (e.g., 1/2 = rotated every two years; 1/3 = rotated every three years)

School Year: 2009-2010
CST Subject: MATHEMATICS

CST Test	Performance Level	Test Name	# Items	Average # Correct	Average % Correct
ALGEBRA I	ADVANCED	ALGEBRA I	65	56	86.8%
		NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	16	91.5%
		GRAPH & SYS LINEAR EQUAT (ALG I)	14	13	90.5%
		QUADRATICS & POLYNOMIALS (ALG I)	21	19	88.5%
		FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	10	74.1%
	BASIC	ALGEBRA I	65	32	49.3%
		NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	11	63.4%
		GRAPH & SYS LINEAR EQUAT (ALG I)	14	7	47.4%
		QUADRATICS & POLYNOMIALS (ALG I)	21	10	47.1%
		FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	5	36.3%
	BELOW BASIC	ALGEBRA I	65	23	34.8%
		NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	8	45.5%
		GRAPH & SYS LINEAR EQUAT (ALG I)	14	5	32.5%
		QUADRATICS & POLYNOMIALS (ALG I)	21	7	31.4%
		FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	4	28.6%
	FAR BELOW BASIC	ALGEBRA I	65	16	24.0%
		NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	5	30.5%
		GRAPH & SYS LINEAR EQUAT (ALG I)	14	3	22.9%
		QUADRATICS & POLYNOMIALS (ALG I)	21	5	21.3%
		FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	3	20.9%
PROFICIENT	ALGEBRA I	65	44	67.4%	
	NUM PROPERTIES, OPER & LIN EQUAT (ALG I)	17	13	78.4%	
	GRAPH & SYS LINEAR EQUAT (ALG I)	14	10	70.1%	
	QUADRATICS & POLYNOMIALS (ALG I)	21	14	67.9%	
	FUNCTIONS & RATIONAL EXPRESS (ALG I)	13	6	49.4%	