

**Carla Santorno**  
Deputy Superintendent  
csantor@tacoma.k12.wa.us

**Dr. Rosanne Fulton**  
Assistant Superintendent  
rfulton@tacoma.k12.wa.us

---

**Kathy Comfort**  
Director of Curriculum &  
Instruction  
kcomfor@tacoma.k12.wa.us

**Pat Cummings**  
Director of Research  
& Evaluation  
pcummin@tacoma.k12.wa.us

**Dan Herforth**  
Math Facilitator  
dherfor@tacoma.k12.wa.us

**Kim Messersmith**  
Math Facilitator  
ksmith1@tacoma.k12.wa.us

**Patrick Paris**  
Math Facilitator  
pparis@tacoma.k12.wa.us

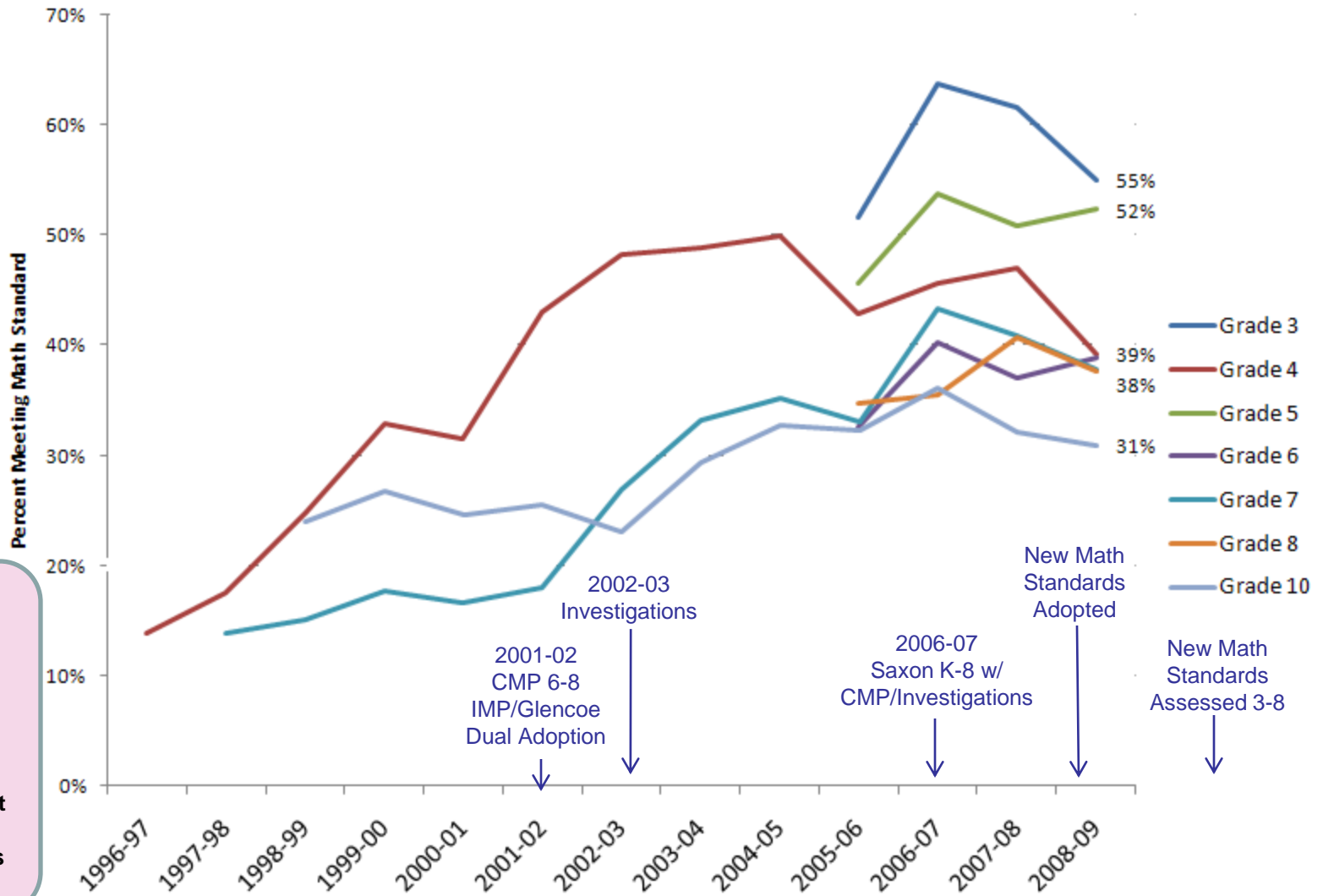
# Overview of Mathematics and Data Trends in Tacoma School District

April 22, 2010

# Mathematics Board Work Session

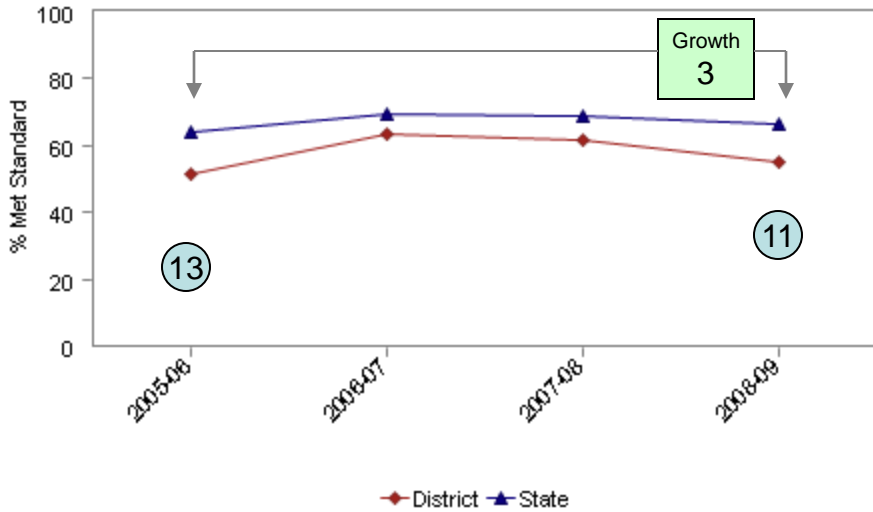
- I. Review of Achievement Results
- II. Instructional Materials Recommendations
- III. Program Implementation Recommendations
- IV. Questions/Discussions

## WASL Math Trends- District (1997-2009)

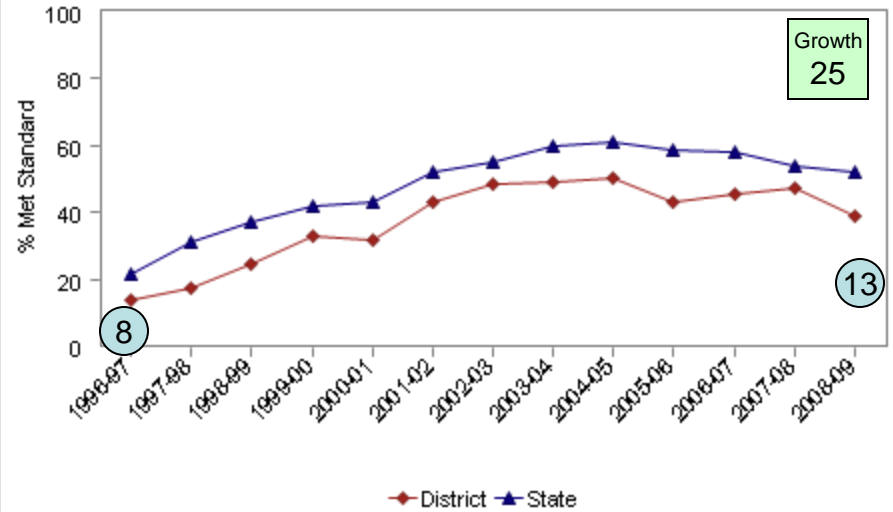


Comment:  
**WASL Math has declined in all grades over the past three year (averaging -4%). Implementation of Saxon has not resulted in improved scores**

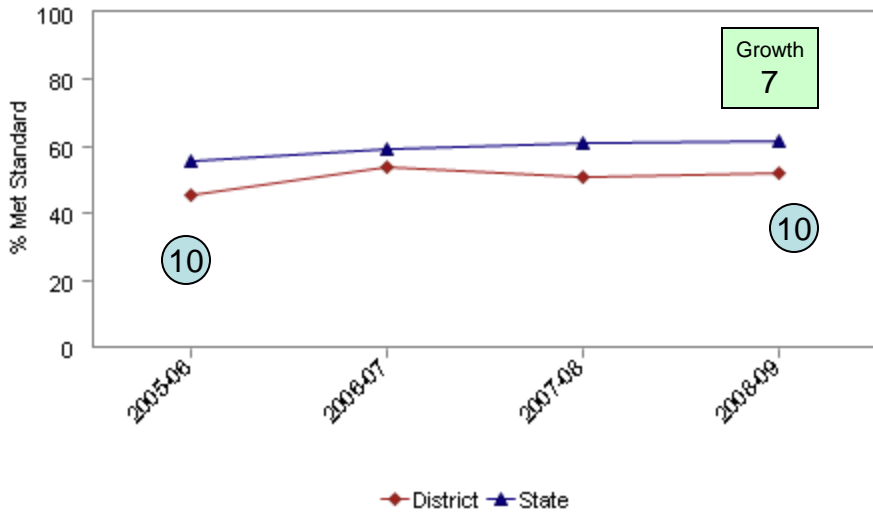
### 3rd Grade Math Trend



### 4th Grade Math Trend





### 5th Grade Math Trend



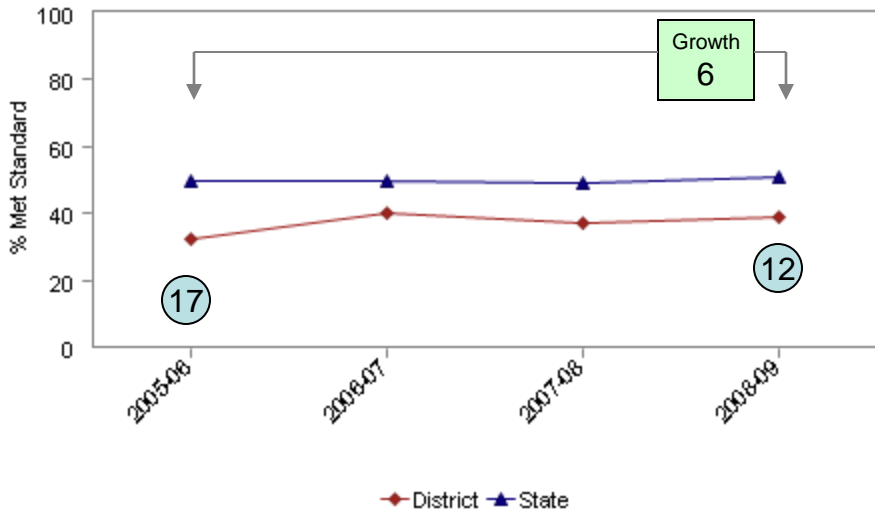
### Elementary Math Trends District and State

**Comment:**  
Elementary WASL Math growth has been flat in the past three years for the district and state. The gap between the district and state does not appear to be closing.

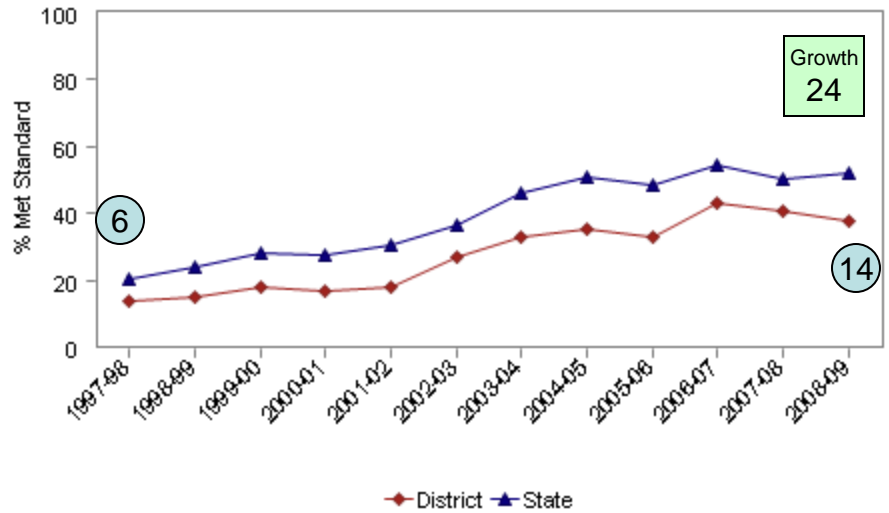
 Tacoma growth from first to last assessment

 Difference between Tacoma and State

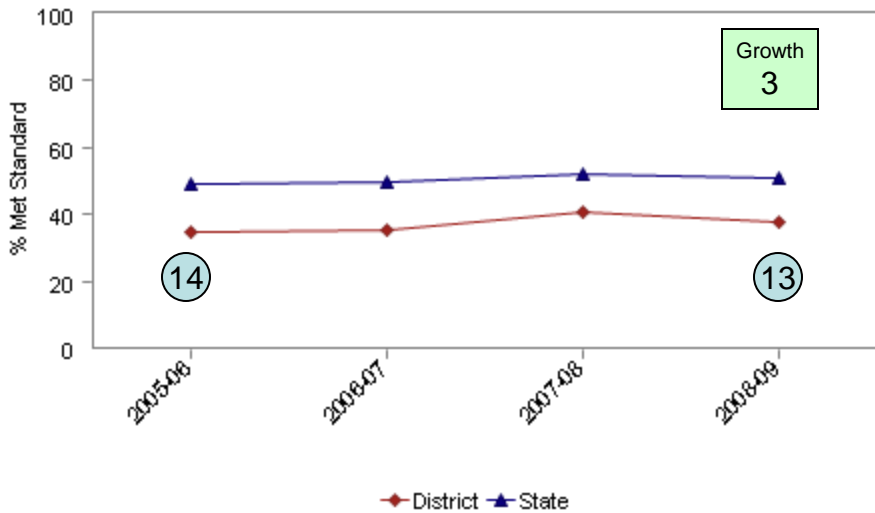
### 6th Grade Math Trend



### 7th Grade Math Trend



### 8th Grade Math Trend



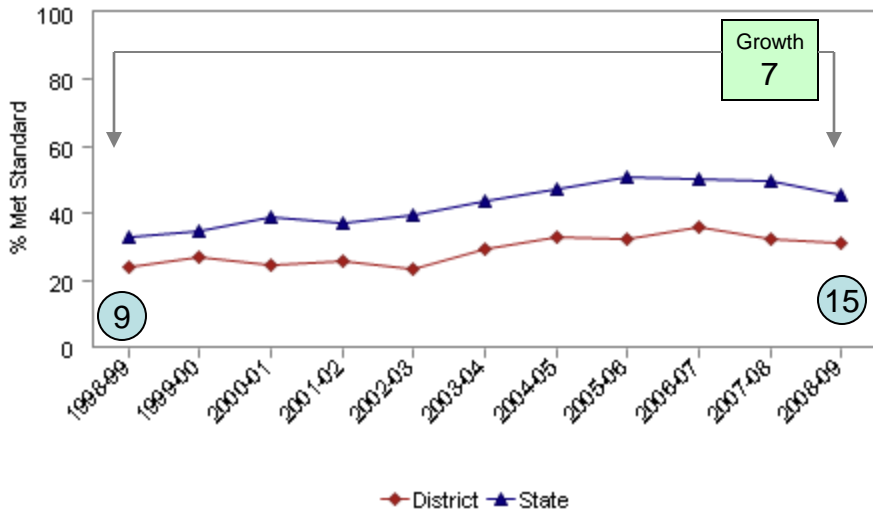
Middle School Math Trends District and State

Comment:  
 Middle School WASL Math growth has also been flat in the past three years for the district and state. The gap between the district and state does not appear to be closing.

Tacoma growth from first to last assessment


Difference between Tacoma and State


## 10th Grade Math Trend



### High School Math Trends District and State

**Comment:**  
 High School WASL Math growth has been flat in the past three years for the district and state. Of all levels, high school math results show the lowest percent of students meeting standard.

 Tacoma growth from first to last assessment

 Difference between Tacoma and State

### Grade 3

Year	Female	Male	diff
2005-06	55%	49%	-6%
2006-07	63%	64%	1%
2007-08	64%	59%	-5%
2008-09	54%	56%	2%

### Grade 6

Year	Female	Male	diff
2005-06	33%	33%	0%
2006-07	40%	40%	0%
2007-08	39%	35%	-3%
2008-09	40%	38%	-3%

### Grade 4

Year	Female	Male	diff
1997-98	18%	18%	0%
1998-99	25%	25%	1%
1999-00	34%	32%	-2%
2000-01	31%	32%	2%
2001-02	42%	45%	3%
2002-03	50%	47%	-2%
2003-04	50%	48%	-3%
2004-05	52%	48%	-4%
2005-06	44%	42%	-2%
2006-07	47%	44%	-3%
2007-08	48%	47%	-1%
2008-09	39%	40%	1%

### Grade 7

Year	Female	Male	diff
1997-98	16%	12%	-4%
1998-99	15%	15%	0%
1999-00	20%	16%	-4%
2000-01	17%	17%	0%
2001-02	18%	18%	0%
2002-03	32%	22%	-9%
2003-04	34%	32%	-2%
2004-05	38%	33%	-4%
2005-06	34%	32%	-3%
2006-07	44%	42%	-2%
2007-08	42%	40%	-2%
2008-09	39%	37%	-2%

### Grade 10

Year	Female	Male	diff
1998-99	22%	28%	6%
1999-00	27%	30%	3%
2000-01	27%	24%	-3%
2001-02	26%	26%	0%
2002-03	24%	22%	-2%
2003-04	30%	29%	0%
2004-05	34%	32%	-2%
2005-06	33%	32%	-1%
2006-07	36%	37%	1%
2007-08	31%	34%	3%
2008-09	32%	31%	-1%

### Grade 5

Year	Female	Male	diff
2005-06	45%	47%	2%
2006-07	55%	52%	-3%
2007-08	54%	48%	-6%
2008-09	53%	52%	-1%

### Grade 8

Year	Female	Male	diff
2005-06	35%	35%	0%
2006-07	37%	35%	-2%
2007-08	42%	40%	-2%
2008-09	37%	38%	1%

Math District Gender Trends

Comment:  
Across all grades, females only slightly out-perform males in math.

### Grade 3

Year	FRL	All	diff
2005-06	42%	52%	-10%
2006-07	55%	64%	-8%
2007-08	52%	62%	-9%
2008-09	44%	55%	-11%

### Grade 6

Year	FRL	All	diff
2005-06	21%	33%	-12%
2006-07	29%	40%	-12%
2007-08	27%	37%	-10%
2008-09	28%	39%	-11%

### Grade 4

Year	FRL	All	diff
2001-02	37%	43%	-6%
2002-03	42%	48%	-7%
2003-04	38%	49%	-11%
2004-05	38%	50%	-12%
2005-06	32%	43%	-11%
2006-07	36%	46%	-9%
2007-08	37%	47%	-10%
2008-09	29%	39%	-10%

### Grade 7

Year	FRL	All	diff
2001-02	10%	18%	-8%
2002-03	17%	27%	-10%
2003-04	22%	33%	-11%
2004-05	25%	35%	-10%
2005-06	23%	33%	-11%
2006-07	31%	43%	-12%
2007-08	29%	41%	-12%
2008-09	26%	38%	-12%

### Grade 10

Year	FRL	All	diff
2003-04	19%	29%	-11%
2004-05	23%	33%	-10%
2005-06	19%	32%	-14%
2006-07	24%	36%	-13%
2007-08	19%	32%	-14%
2008-09	19%	31%	-12%

### Grade 5

Year	FRL	All	diff
2005-06	35%	46%	-10%
2006-07	44%	54%	-10%
2007-08	40%	51%	-11%
2008-09	43%	52%	-9%

### Grade 8

Year	FRL	All	diff
2005-06	24%	35%	-11%
2006-07	24%	36%	-12%
2007-08	28%	41%	-13%
2008-09	27%	38%	-11%

Math District Low Income Trends

Comment:  
Across all grades, low income students perform 11% lower in math.

### Grade 3

Year	White	Am Ind	Asian	Black	Hispanic
2005-06	61%	44%	56%	38%	41%
2006-07	71%	59%	67%	52%	57%
2007-08	71%	54%	68%	50%	47%
2008-09	68%	38%	59%	40%	38%

Average Diff = -22%

### Grade 6

Year	White	Am Ind	Asian	Black	Hispanic
2005-06	42%	17%	37%	17%	19%
2006-07	50%	22%	43%	23%	31%
2007-08	48%	33%	44%	20%	22%
2008-09	49%	31%	44%	25%	25%

Average Diff = -26%

Math District Ethnic Trends

### Grade 4

Year	White	Am Ind	Asian	Black	Hispanic
1997-98	23%	4%	18%	6%	10%
1998-99	30%	17%	29%	11%	11%
1999-00	41%	21%	33%	18%	20%
2000-01	38%	31%	33%	18%	20%
2001-02	53%	33%	39%	27%	30%
2002-03	57%	26%	50%	38%	31%
2003-04	61%	23%	52%	30%	35%
2004-05	62%	28%	55%	33%	33%
2005-06	53%	32%	43%	31%	26%
2006-07	56%	33%	51%	30%	35%
2007-08	57%	49%	53%	31%	38%
2008-09	50%	35%	48%	23%	27%

Average Diff = -24%

### Grade 7

Year	White	Am Ind	Asian	Black	Hispanic
1997-98	18%	6%	14%	5%	7%
1998-99	20%	9%	13%	5%	8%
1999-00	23%	5%	19%	5%	9%
2000-01	23%	2%	16%	5%	6%
2001-02	23%	6%	23%	7%	8%
2002-03	35%	16%	30%	11%	17%
2003-04	43%	28%	35%	17%	19%
2004-05	46%	26%	34%	17%	24%
2005-06	43%	26%	34%	18%	19%
2006-07	55%	33%	48%	24%	31%
2007-08	51%	31%	46%	25%	29%
2008-09	48%	17%	44%	22%	25%

Average Diff = -26%

### Grade 10

Year	White	Am Ind	Asian	Black	Hispanic
1998-99	33%	16%	20%	8%	18%
1999-00	37%	15%	30%	10%	13%
2000-01	32%	21%	30%	9%	12%
2001-02	33%	16%	25%	10%	14%
2002-03	29%	20%	27%	7%	15%
2003-04	37%	20%	33%	12%	15%
2004-05	39%	21%	46%	16%	19%
2005-06	40%	27%	46%	11%	18%
2006-07	45%	13%	47%	15%	22%
2007-08	43%	34%	34%	11%	20%
2008-09	42%	22%	32%	14%	16%

Average Diff = -26%

### Grade 5

Year	White	Am Ind	Asian	Black	Hispanic
Year	55%	38%	49%	28%	35%
2006-07	63%	39%	61%	38%	38%
2007-08	61%	40%	59%	36%	41%
2008-09	62%	41%	59%	40%	38%

Average Diff = -25%

### Grade 8

Year	White	Am Ind	Asian	Black	Hispanic
2005-06	45%	28%	35%	18%	22%
2006-07	44%	34%	38%	20%	24%
2007-08	52%	20%	48%	21%	27%
2008-09	47%	31%	46%	19%	28%

Average Diff = -27%

Comment:

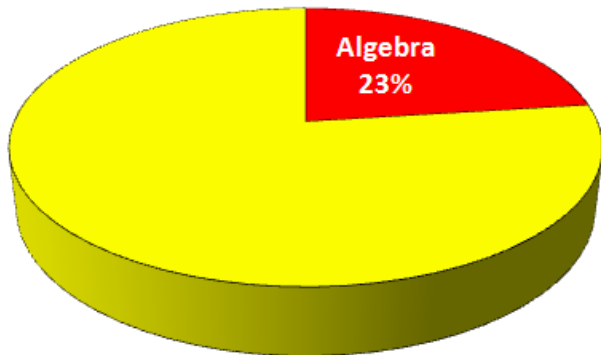
Math gaps by ethnic category are pronounced for all grades:

Average Difference For All Grades Combined

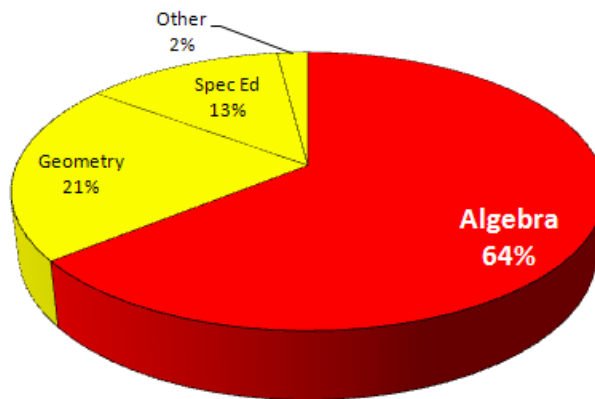
White/Am. Ind. -20  
 White/Asian -5  
 White/Black -25  
 White/Hispanic -22

# What percent of students take Algebra in middle and high school?

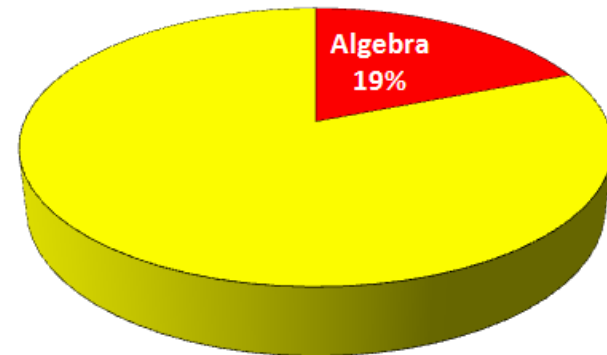
Grade 8



Grade 9



Grade 10

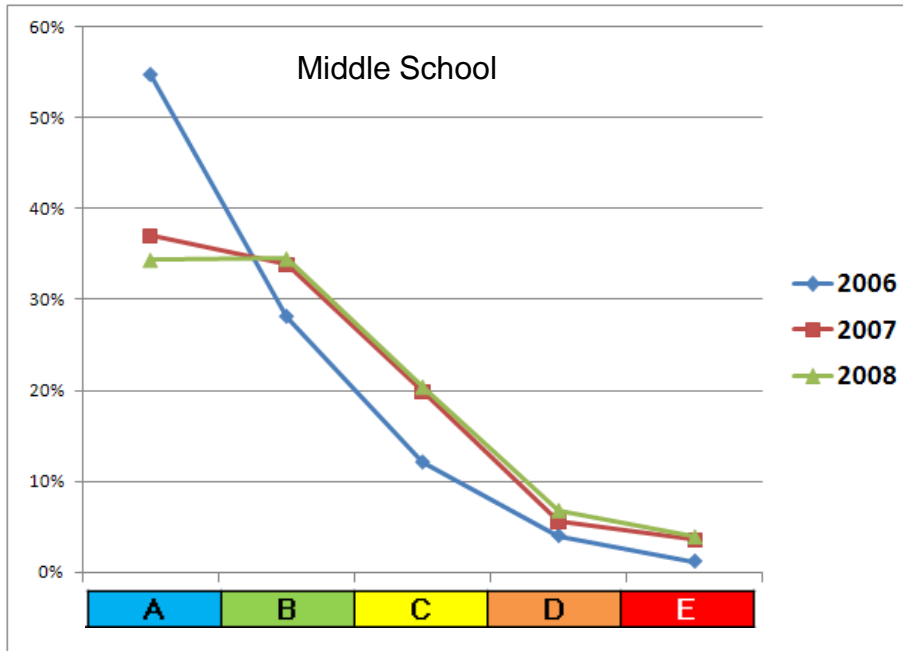


Gr. 9 are "true freshmen" and not behind in credits

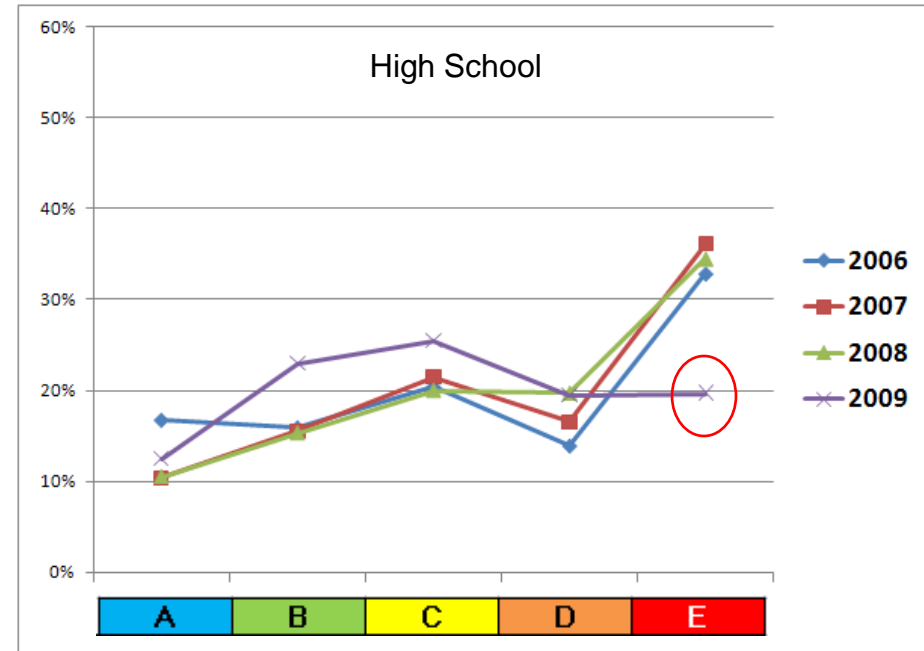
**Comment:**  
Students taking Algebra in 8<sup>th</sup> grade have advanced math skills. Most students take Algebra for the first time as HS freshmen.

This chart represents students taking algebra during the 2008-09 school year compared to the enrollment count for the specific grade

## Middle and High School Algebra Grade Distribution Trends by District Total



This chart represents the grade distribution for middle school students in Algebra during the past three school years.



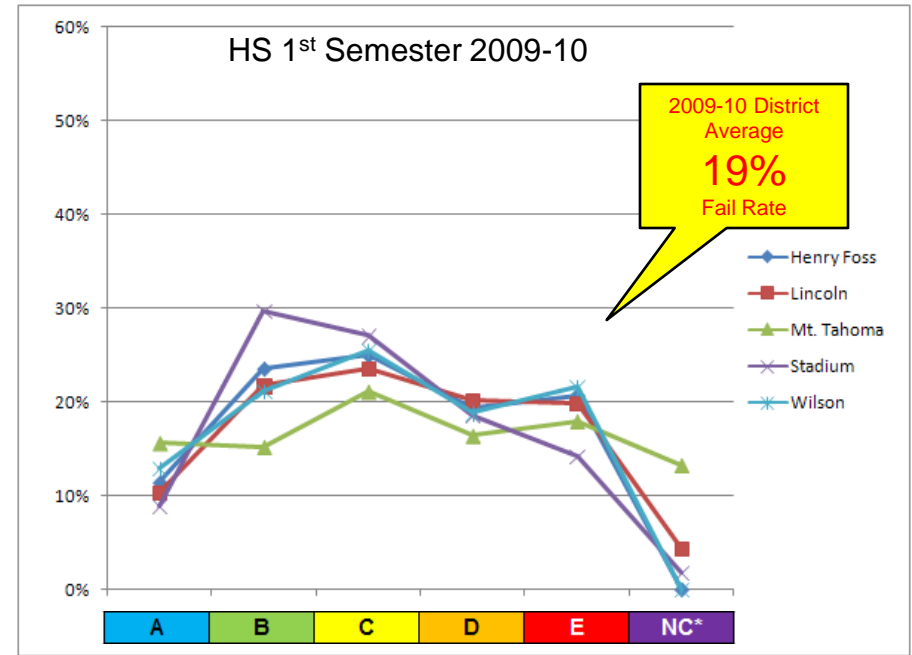
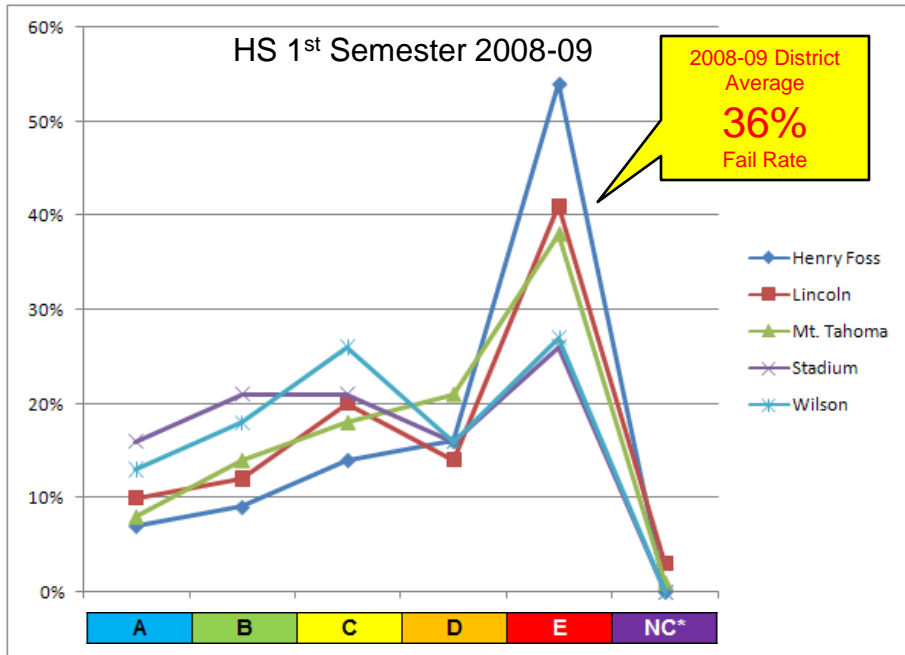
This chart represents the grade distribution for high school students in Algebra during the past three school years. The data for 2009 is only the first semester of the 2009-10 school year.

**Comment:**

Students taking Algebra in 8<sup>th</sup> grade have much better grades than HS students. (more As and less Es). Historically, about one-third of our HS students fail Algebra.

Note the 1<sup>st</sup> semester 2009 grades show a dramatic decrease in the number of Es.

# High School Algebra 1<sup>st</sup> Semester Only Grade Distribution 2 Year Trend by Building



This chart represents the grade distribution for high school students by building (9<sup>th</sup> grade “true freshmen”) in Algebra at the end of the 1<sup>st</sup> semester for last year, 2008-09.

This chart represents the grade distribution for high school students by building (9<sup>th</sup> grade “true freshmen”) in Algebra at the end of the 1<sup>st</sup> semester for this year, 2009-10.

**Comment:**  
9<sup>th</sup> grade students taking Algebra at the end of 1<sup>st</sup> semester this year have much lower fail rates (19%) than students taking Algebra 1<sup>st</sup> semester last year (36%).

Note this chart also includes “NC” or no credit.

# Mathematics Strategic Planning Committee Findings – October/November 2009

- ✓ Inconsistent use of instructional materials (K-8)
- ✓ Inconsistent time spent learning math (K-5)
- ✓ Teachers want more opportunities to network with other teachers and math coaches
- ✓ Teachers want more opportunities to analyze common student work samples
- ✓ Students need more opportunities to focus on thinking in math and on acquiring basic skills
- ✓ Current instructional materials are difficult for parents to use to help their children

# National and State Guidelines

Students need access to 3 important components of an effective mathematics program that is aligned to standards:

- ✓ Knowing skills, facts and procedures  
(procedural proficiency)
- ✓ Making sense of mathematics  
(conceptual understanding)
- ✓ Using mathematics to reason and think  
(problem solving)

# Important Considerations:

- 1) Learning opportunities for students that are aligned with Mathematics Standards
- 2) Cohesion from class to class; grade to grade; school to school; elementary to middle school to high school
- 3) Materials that parents and community members can use to help their children
- 4) Regular assessments that inform teachers about students' learning needs

# Instructional Materials Recommendations:

- ✓ High School – Continue use of Prentice Hall Algebra, Geometry
- ✓ Middle School – Extend adoption of Prentice Hall to Grades 6, 7 & 8
- ✓ Elementary School – Organize adoption process using Board Policy 2020 to select McGraw Hill “Math Connects” or Houghton Mifflin Program “Math Expressions”
- ✓ Final Adoption May 13, 2010

# Program Implementation Recommendations:

- ✓ High School – Continue Teachers' Development Group professional development for 60 teachers including special education teachers
- ✓ Class of 2013 – New Graduation Requirements Rule
- ✓ Middle School – Begin Teachers' Development Group professional development for 60 teachers including special education teachers

# Program Implementation Recommendations: *(continued)*

- ✓ Elementary School –
  - Select elementary principals who will lead network groups of principals to provide strong leadership
  - Mathematics Specialists at grades 4 & 5
  - Mathematics Coaches

# Accountability:

- ✓ Monitor chapter by chapter assessment results
- ✓ Provide extra time and extra instruction for students who need it
- ✓ Monitor program implementation teacher by teacher
- ✓ State results assessment

# Questions/Discussion