Looking at Data as a Team to Drive your Math Vision

imagine learning

In this session we will

- Connect data practices to research
- Share best data practices from Midland ISD
- Create an action plan for your own data practices

NCTM'S POSITION ON DATA

Teachers should "use evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning"

(NCTM, 2014, p. 10)

THREE APPROACHES TO USING DATA TO IMPROVE INSTRUCTION

Data Do Not Drive Themselves (Wieman):

- The Diagnostics Approach
- The Methods Approach
- The Teacher Approach

Wieman 2014, 2018

THREE APPROACHES TO USING DATA TO IMPROVE INSTRUCTION

Each approach addresses a core problem, yet shares the following features:

- They each rely on student data
- None dictate teaching methods, learning theories, or specific goals
- All benefit from effective collaboration among teachers

Wieman 2014, 2018

THE DIAGNOSTIC APPROACH

The problem:

- There is a mismatch between what students need to learn and what they are being taught

How to address the problem:

- Teachers can use data from student assessments to identify which students have achieved mastery and who needs more work

Wieman 2014, 2018

THE METHODS APPROACH

The problem:

- Teachers need better teaching methods for specific learning goals

How to address the problem:

- Teachers can design moves to support specific learning goals, enact those moves, collect data on their enactment and student learning
- If the initial moves don’t work, teachers can revise the plan and repeat the process

Wieman 2014, 2018

THE TEACHER APPROACH

The problem:

- A mismatch between teacher beliefs/knowledge and desired teaching methods/student needs and abilities

How to address the problem:

- Trying new techniques or collaborating with others
- Reflect on the difference between expectations and actual events, then revise knowledge and beliefs based on new information

Wieman 2014, 2018

COLLABORATIVE DATA CONVERSATIONS

The formation of collaborative data teams offers a positive environment for faculties to learn together and build an initiative they can call their own. Principals and other school administrators serve an essential role in leading, guiding, and organizing the work of collaborative data teams

Wayman, Midgley, & Stringfield

How can multiple data points help to assess student progress and to inform instructional strategies?

Teachers and administrators are charged with taking an abundance of data and turning it into something useful to impact teaching practices

Midland ISD
Wendy Devault

ABOUT MIDLAND ISD

- Midland ISD
  - 40 campuses
  - **26,487 students**
    - 14,810 K-6
    - 10,708 7-12
  - **51% Economically Disadvantaged**
    (F/R lunch)
  - Ethnicity
    - 8% African American
    - 3% Asian
    - 63% Hispanic
    - 24% White

MONITORING STUDENT PROGRESS
GUIDE INSTRUCTION & IMPROVE STUDENT OUTCOMES

This process is ongoing and has one main purpose:

IMPROVING STUDENT OUTCOMES

Step 1: Know your purpose!

Step 2: Know what you need to achieve your purpose.

Step 3: Make a plan for how you will achieve your purpose.

Step 4: Execute your plan!

Step 5: Reflect, Adjust, and Repeat!!

4 QUESTIONS CREATE A FOCUS FOR LEARNING

1. What do we want ALL students to learn?
2. How will we know they have learned it?
3. What do will we do when they don’t learn?
4. What will we do when they already know it?

PLC FOCUS

Though the data is being discussed at the end, it is in fact the starting point!!

Data is…

- Not to be taken personal
- Used to set goals
- Analyzed to guide instructional conversations

STANDARDS FOCUS

Total Students	1	2	3	4	5	6	7	8	9	10
	M1	M1	M1	M1	M1	M1	M1	M2	M2	M1
	4.2(B) [R]	4.2(A) [S]	4.2(C) [S]	4.2(B) [R]	4.2(B) [R]	4.2(H) [S]	4.2(F) [S]	4.4(A) [R]	4.4(A) [R]	4.2(D) [S]
	4.1(A) [P]	4.1(B) [P]	4.1(A) [P]	4.1(B) [P]	4.1(F) [P]	4.1(B) [P]	4.1(A) [P]	4.1(B) [P]	4.1(F) [P]	4.1(E) [P]
88	+A (69.32%)	F (18.18%)	A (4.55%)	F (25%	A (19.32%)	F (2.27%)	A (10.23%)	888.38 (36.36%	649.2 (26.14%)	+F (53.41%)
	B (17.05%)	G (17.05%)	B (10.23%)	+G (64.77%	+B (57.95%)	+G (71.59%)	B (4.55%)	NC (63.64%	NC (73.86%)	G (21.59%)
	C (7.95%)	H (14.77%)	+C (78.41%)	H (4.55%	C (12.5%)	H (5.68%)	C (4.55%)			H (12.5%)
	D (5.68%)	+J (50%)	D (6.82%)	J (5.68%	D (10.23%)	J (20.45%)	+D (80.68%)	* (0%	* (0%)	J (12.5%)
	* (0%)	* (0%)	* (0%)	* (0%	* (0%)	* (0%)	* (0%)			* (0%)
40	+A (70%)	F (17.5%)	A (2.5%)	F (30%	A (15%)	F (0%)	A (12.5%)	888.38 (40%	649.2 (22.5%)	+F (55%)
	B (15%)	G (15%)	B (10%)	+G (55%	+B (62.5%)	+G (75%)	B (2.5%)	NC (60%	NC (77.5%)	G (20%)
	C (10%)	H (20%)	+C (85%)	H (5%	C (7.5%)	H (7.5%)	C (0%)			H (15%)
	D (5%)	+J (47.5%)	D (2.5%)	J (10%	D (15%)	J (17.5%)	+D (85%)	* (0%	* (0%)	J (10%)
	* (0%)	* (0%)	* (0%)	* (0%	* (0%)	* (0%)	* (0%)			* (0%)
1	+A (100%)	F (0%)	A (0%)	F (100%	A (0%)	F (0%)	A (0%)	888.38 (100%	649.2 (0%)	+F (100%)
	B (0%)	G (0%)	B (0%)	+G (0%	+B (100%)	+G (100%)	B (0%)	NC (0%	NC (100%)	G (0%)
	C (0%)	H (0%)	+C (100%)	H (0%	C (0%)	H (0%)	C (0%)			H (0%)
	D (0%)	+J (100%)	D (0%)	J (0%	D (0%)	J (0%)	+D (100%)	* (0%	* (0%)	J (0%)
	* (0%)	* (0%)	* (0%)	* (0%	* (0%)	* (0%)	* (0%)			* (0%)
	+A (100%)	F (0%)	A (0%)	F (16.67%	A (0%)	F (0%)	A (0%)	888.38 (50%	649.2 (50%)	+F (50%)

WHAT DO WE WANT ALL STUDENTS TO LEARN?

ESSENTIAL

- What MUST students know and be able to do before the enter the next course or grade level

STATE ASSESSMENT

- Assessment that measures grade level content standards

WHAT DO WE WANT ALL STUDENTS TO LEARN?
ESSENTIAL STANDARDS

Learning standards are most essential because they possess the qualities of:

Endurance

- Are we expecting retention further than the test date?

Readiness

- Is the standard necessary for success in the next unit, course, or grade level?

Leverage

- Will the standards help the student across other content areas?

WHAT DO WE WANT ALL STUDENTS TO LEARN?

ESSENTIAL LEARNINGS

Clarifying what students must know

- **ESSENTIAL LEARNINGS MUST:**
  - Be aligned with district curriculum guides and state standards
  - Ensure that students are prepared for the next grade level and beyond
  - Ensure that students are well prepared to demonstrate proficiency on high-stakes tests
  - Have common assessments that allow students to show mastery of learning in a timely manner so that additional time and support for learning can be provided if necessary

WHAT DO WE WANT ALL STUDENTS TO LEARN?

- Standard in student friendly language
- What do we expect?
- How will we measure it?
    - PAs
    - Teacher Observations
    - Imagine Math
    - CFAs
    - District CP
    - Released STAAR
    - STAAR

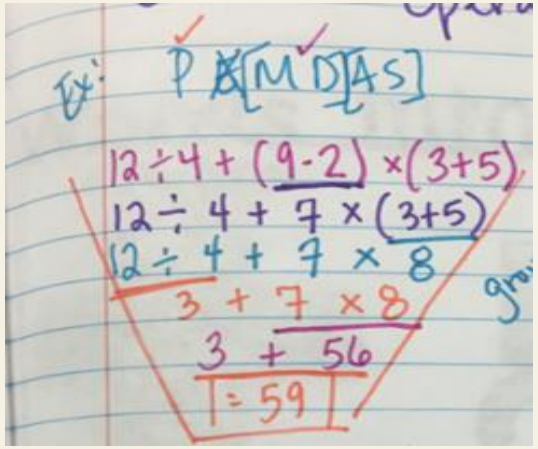
Essential Standards Chart: What Do We Expect Students to Learn?

Grade			Subject		Semester		Team Members			

Standard-Description	Example—Rigor	Prerequisite Skills	Readiness for the Next Grade Level of Learning	Common Assessment	When Taught?	Extension Skills
What is the essential standard to be learned? Describe in student friendly vocabulary.	What does proficient studer t work look like? Provide an example and/or description.	What prior knowledge, skills, and/or vocabulary are needed for students to master this standard?	Will this provide students with essential knowledge and skills that are necessary for the success in the next grade level or next level of instruction? Describe.	What assessments will be used to measure student mastery?	When will this standard be taught? Under which focal point?	What will we do when students have learned the essential standards?
		Vertical Alignment				

WHAT DO WE WANT ALL STUDENTS TO LEARN?

HOW WILL WE KNOW THEY HAVE LEARNED IT?

Know	Show
• Order of Operations • 2 Levels of groupings • Solve left to right • No exponents • Sums and differences of whole numbers, decimals and fractions • Proper, improper, mixed numbers and unit fractions • Multiplication/division of whole numbers and decimals • Expressions • Simplify expressions • Grouping symbols (parenthesis and brackets) • Apply to real world situations • Must be able to generate correct equation and identify correct equation • Vocabulary: Operations, parenthesis	• Steps to solving • PEMDAS-written at the top of each order of operation problem. Mark out each step as you complete it • Show each step by underlining and bringing the rest of the problem down. 

5.4F (R): simplify numerical expressions that do not involve exponents, including up to two levels of grouping

HOW WILL WE KNOW THEY HAVE LEARNED IT?

Teacher: _____

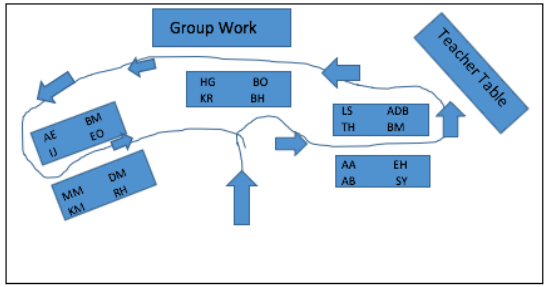
Aggressive Monitoring Plan Lesson Date: _____

TEKS

TEKS: TEKS 1.4C Use relationships to count by twos, fives, and tens to determine the value of collection of pennies, nickels, and/or dimes.
Lesson Objective: I can tell the value of a group of pennies, nickel, and/or dimes, by counting by 2s, 5s, and 10s.

Aggressive Monitoring Plan

Seating Chart:



Fast Finishers:

ETHAN, LINA, DOMINIC

Slow to Start:

KADEN, BRIAN

Monitoring Path:

SLOW STARTERS

Laps:

1. **Problem # 3 counting on for total of coins.**
2. **Problem #8 Draw a picture for possible coins.**
3. **Problem #9 Which coin is needed to make a purchase?**

Coding Plan:

☺ **Great Job**

✓ **Nice work needs some more help**

– **Needs more instruction with intervention**

Aggressive Monitoring Data Tracker

Lesson Objective	I can tell the value of a group of pennies, nickel, and/or dimes, by counting by 2s, 5s, and 10s.
Laps	**Lap 1** Look at problem #3. Count on and then write how much in all. **Lap 2** Look at problem #8. Jack has 30 cents. He has nickels and pennies. Draw a picture to show the coins Jack could have. **Lap 3** Look at problem #9. Rita has the 2 coins below in her purse. She wants to buy yarn for 16 cents. Which coin does Rita need to buy the yarn?

Student Name	Lap 1	Lap 2	Lap 3	Notes
Adam Arguayo	✓	✓	✓	Nice work but needs to work on skip counting
Aven Boyd	☺	☺	☺	
Adriyel Burrola	✓	–	✓	
Alejandro Esquivel	☺	✓	☺	
Hallie Gates	☺	✓	☺	
Torrian Harden	✓	✓	✓	
Rylan Hasselhoff	☺	–	–	Needs more help with skip counting and coin recogniton
Megan Hernandez	☺	✓	✓	
Jaime Jordan	✓	☺	☺	
Isabel Maden	☺	☺	☺	
Brae Magnolia	–	–	–	Still working on counting by one, Struggles to count on from any number
Jorge Martinez	✓	–	✓	Needs help with where to start with counting on
Jaymee Miller	☺	☺	☺	
Isaiah North	✓	✓	✓	
Brianna O'Brien	✓	✓	✓	
Kaden Ripley	✓	✓	☺	
Adelina Salazar	✓	☺	☺	
Flor Yanez	✓	✓	☺	

Trending Misconception(s):

Skip counting and counting on from any number.

HOW WILL WE KNOW THEY HAVE LEARNED IT?

Effective instruction provides for opportunities for students to show what they know through progress monitoring.

FORMATIVE ASSESSMENTS

- Exit Tickets
- Learning Logs/Response Journals
- CFAs
- Quick writes
- Imagine Math

SUMMATIVE ASSESSMENTS

- 9 Week Checkpoints
- Interim STAAR Assessments
- STAAR/TELPAS Assessments
- District Initiative Assessments

Are we being intentional?

MONITORING STUDENT PROGRESS
GUIDE INSTRUCTION & IMPROVE STUDENT OUTCOMES

This process is ongoing and has one main purpose:

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Step 2: Know what you need to achieve your purpose.

Step 3: Make a plan for how you will achieve your purpose.

Step 4: Execute your plan!

Step 5: Reflect, Adjust, and Repeat!!

What is your purpose for data?

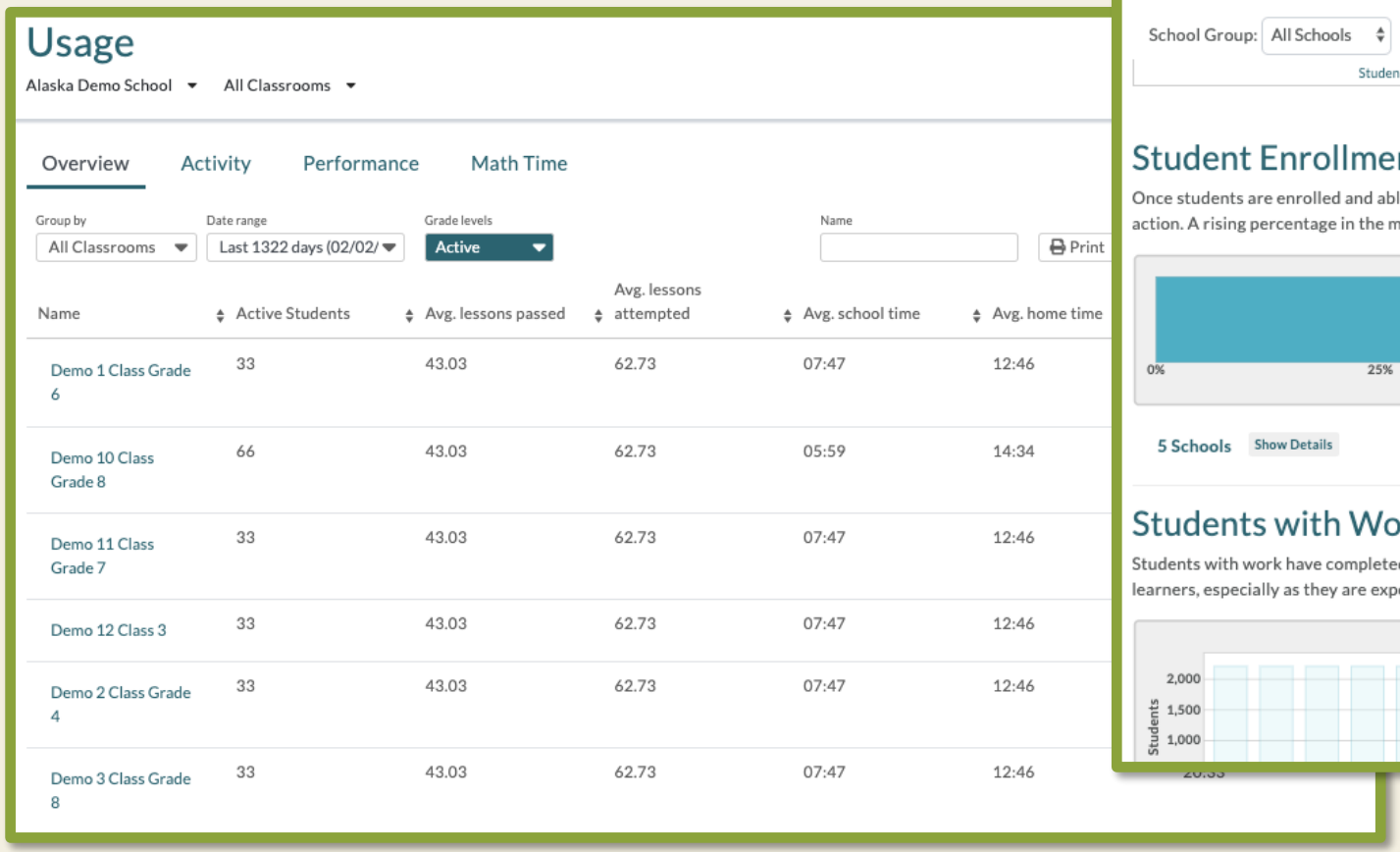
Math

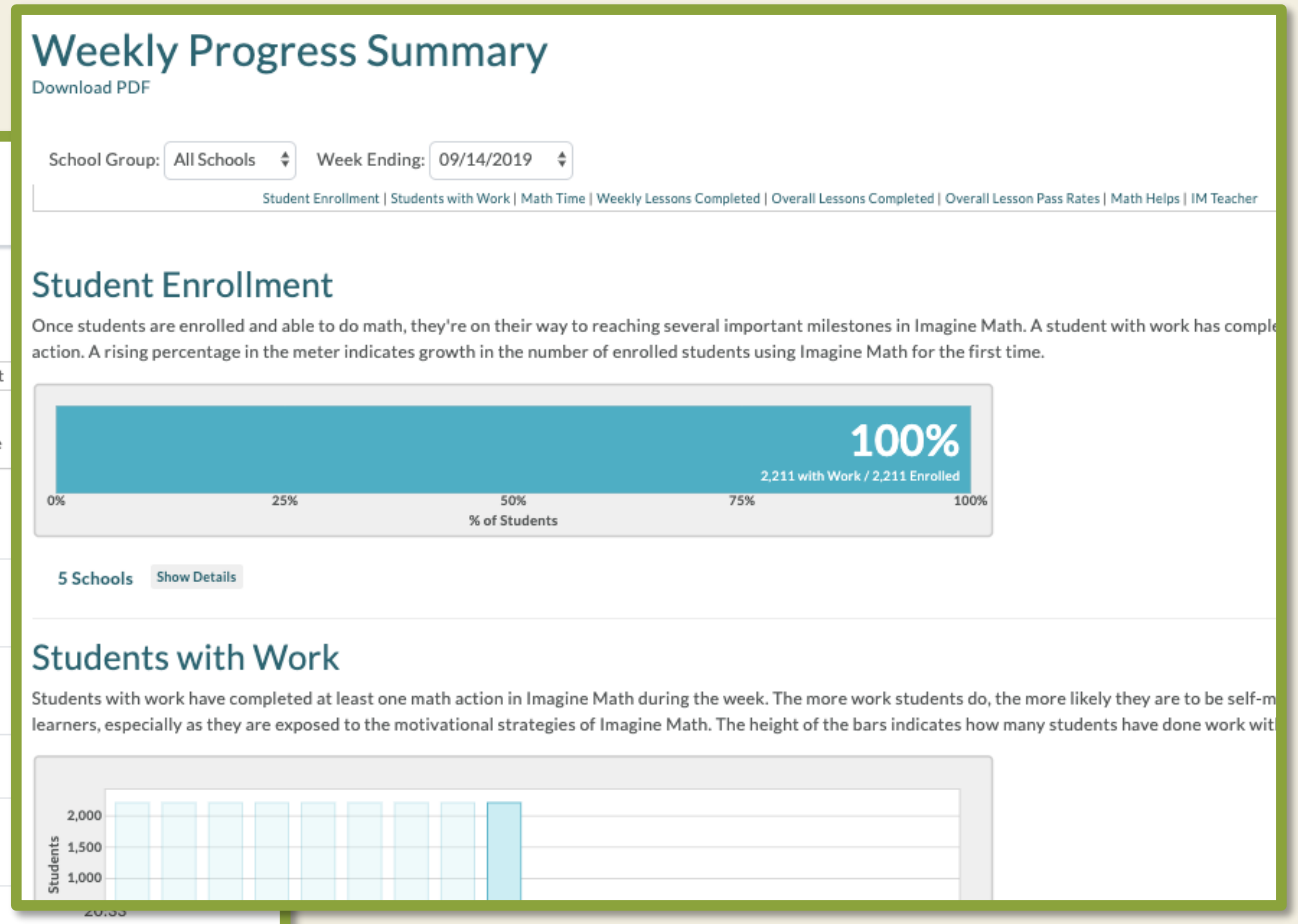
IMAGINE MATH DATA

- Usage
- Progress
- Growth

Math

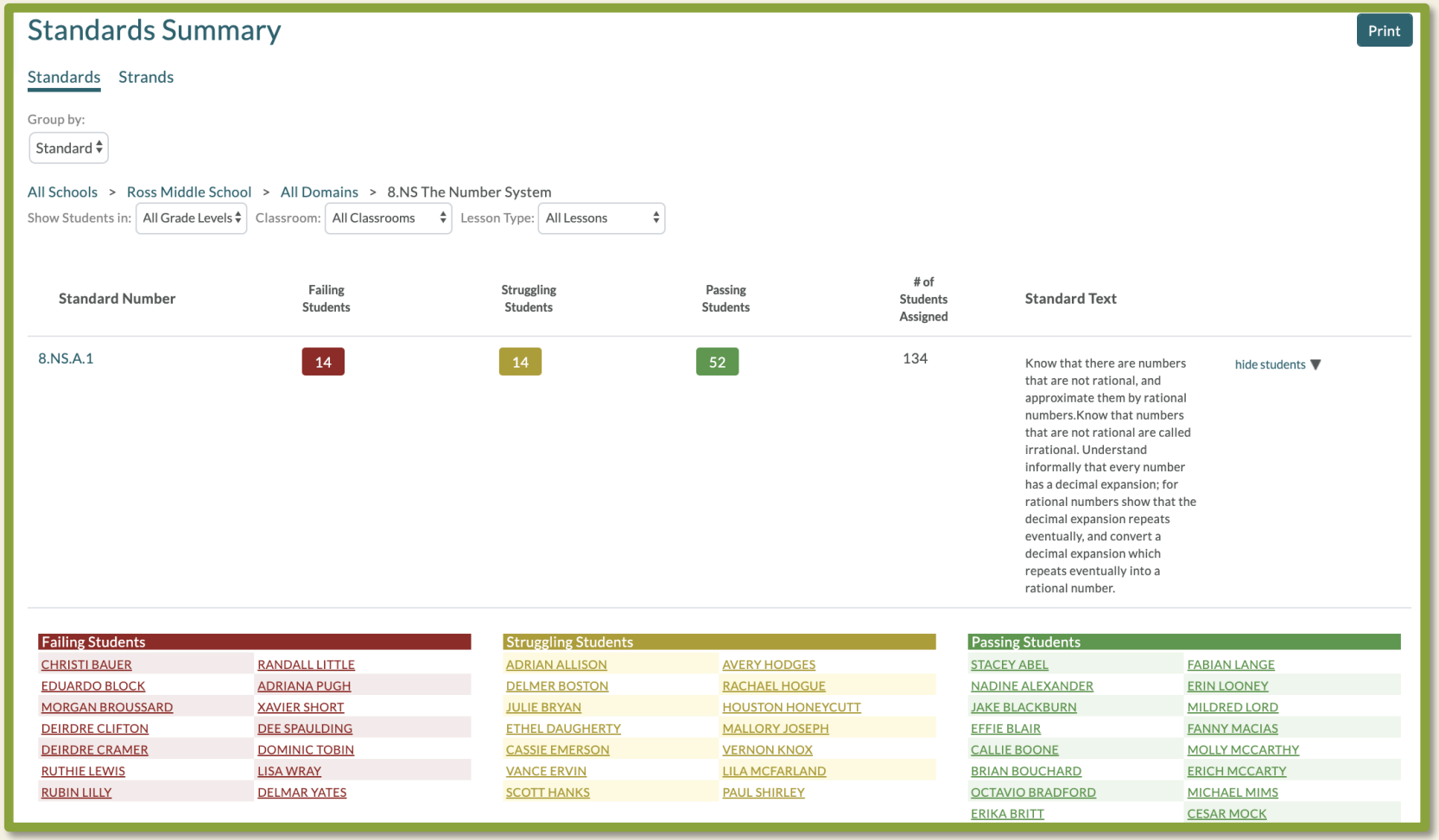
USAGE DATA





Math

PROGRESS



Standards Summary

Print

Standards | Strands

Group by: Standard

All Schools > Ross Middle School > All Domains > 8.NS The Number System

Show Students in: All Grade Levels | Classroom: All Classrooms | Lesson Type: All Lessons

Standard Number	Failing Students	Struggling Students	Passing Students	# of Students Assigned	Standard Text	
8.NS.A.1	14	14	52	134	Know that there are numbers that are not rational, and approximate them by rational numbers.Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	hide students ▼

Failing Students	
CHRISTI BAUER	RANDALL LITTLE
EDUARDO BLOCK	ADRIANA PUGH
MORGAN BROUSSARD	XAVIER SHORT
DEIRDRE CLIFTON	DEE SPAULDING
DEIRDRE CRAMER	DOMINIC TOBIN
RUTHIE LEWIS	LISA WRAY
RUBIN LILLY	DELMAR YATES

Struggling Students	
ADRIAN ALLISON	AVERY HODGES
DELMER BOSTON	RACHAEL HOGUE
JULIE BRYAN	HOUSTON HONEYCUTT
ETHEL DAUGHERTY	MALLORY JOSEPH
CASSIE EMERSON	VERNON KNOX
VANCE ERVIN	LILA MCFARLAND
SCOTT HANKS	PAUL SHIRLEY

Passing Students	
STACEY ABEL	FABIAN LANGE
NADINE ALEXANDER	ERIN LOONEY
JAKE BLACKBURN	MILDRED LORD
EFFIE BLAIR	FANNY MACIAS
CALLIE BOONE	MOLLY MCCARTHY
BRIAN BOUCHARD	ERICH MCCARTY
OCTAVIO BRADFORD	MICHAEL MIMS
ERIKA BRITT	CESAR MOCK

Math

GROWTH

The Quantile® measure is used to determine:

- A student's readiness to learn math
- Difficulty of instructional content

QUANTILE®

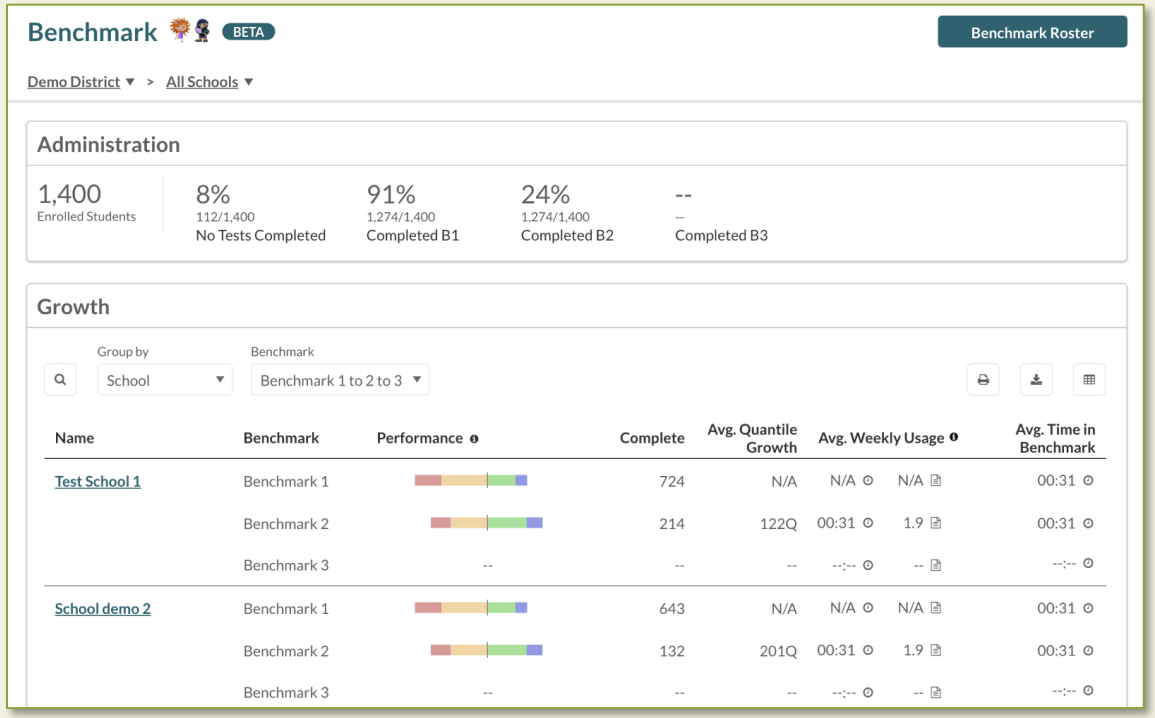
The Quantile® Framework for Mathematics

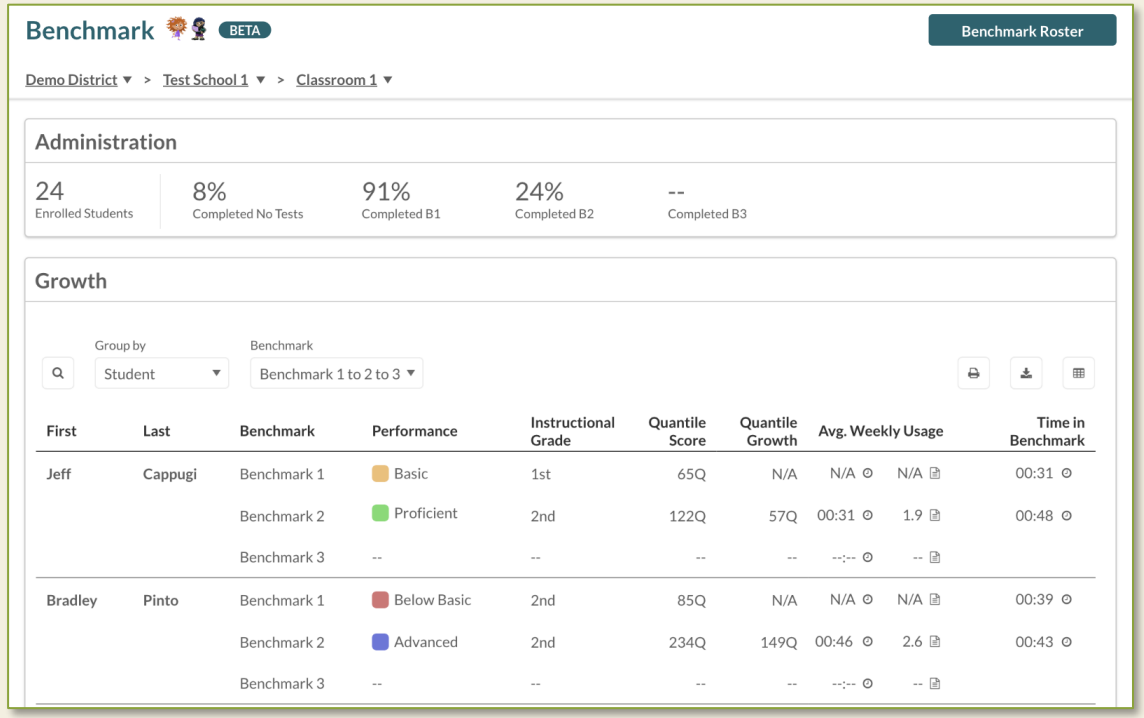
Linking assessment with mathematics instruction

Students are grouped into a performance level:

Math

BENCHMARK DATA





How does data from technology help to drive your math vision?

ACTION PLAN

- Take 2 minutes to think about the following:
  - What do you need to achieve your purpose for data?
  - Write down 2 practical steps for how you will achieve your purpose for data.
  - How will you reflect and adjust your plan?
  - How can technology fit into your data plan?

Reflect, Adjust, Repeat!

In this session we

- Connected data practices to research
- Shared best data practices from Midland ISD
- Created an action plan for your own data practices

Questions?


imagine
learning