



Assessment for Learning

**Using MAP as a Formative
Tool**

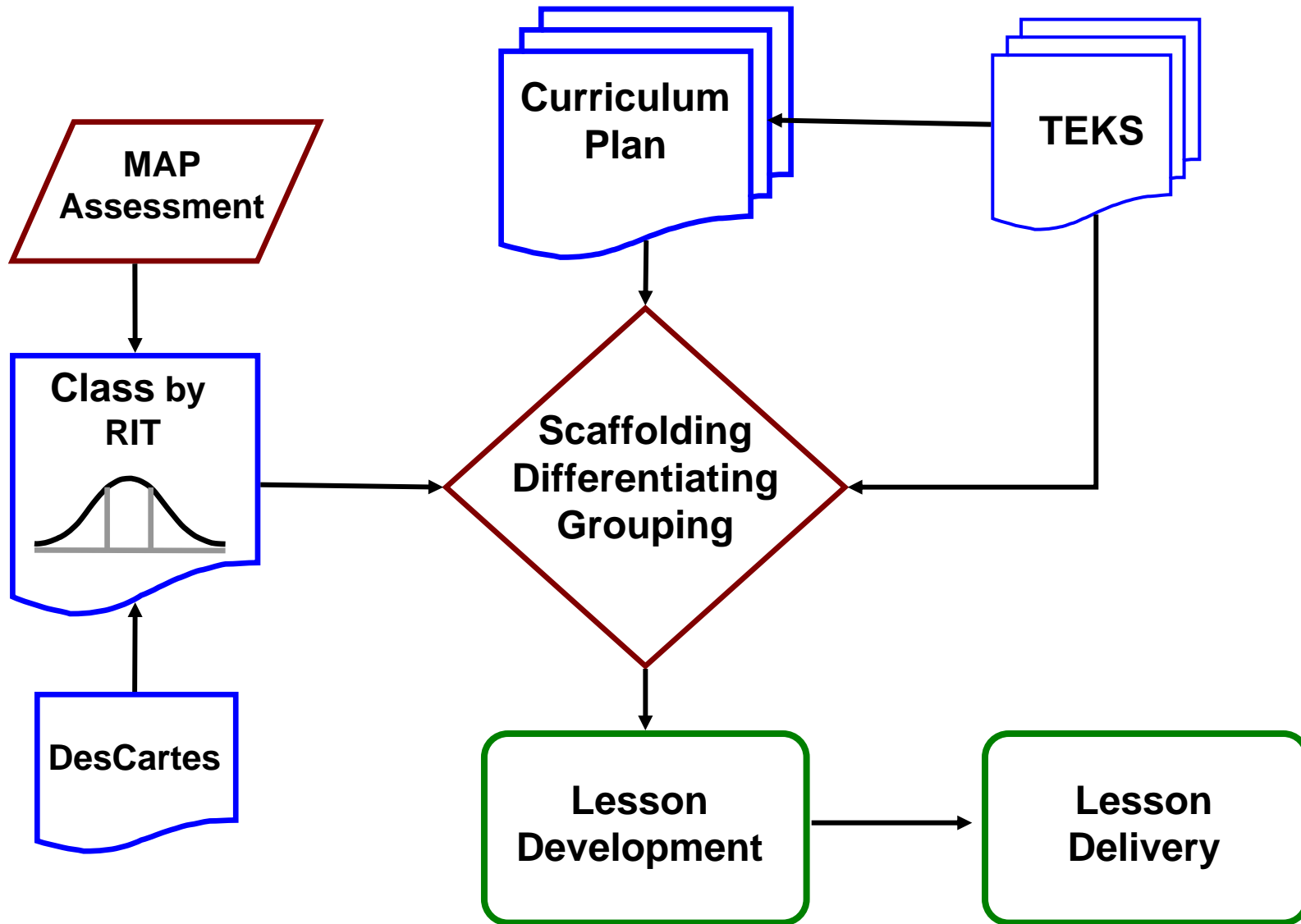
Math



Purpose

- Demonstrate the use of MAP data as a formative tool
 - Determine cognitive demands of a lesson
 - Scaffold lesson delivery
 - Differentiate instruction
 - Develop targeted questions
- Provide a practical approach for using MAP data to
 - Target instruction
 - Grow a student's cognition

MAP Formative Assessment Process





Class Profiles

- Overall Class by RIT – 1st view
- Report format
 - Organized by subjects tested
 - Provides student RIT by subject
- Students grouped by RIT Bands
 - Share a location on the learning continuum
 - Process information at similar levels of cognitive demand

Collect Data: Class by RIT Distribution

Approaching Level Class

	181-190	191-200	201-210	211-220	221-230	231-240	241-250	251-260	261-270
Mathematics	H. E. (183)	J. C. (200)	Y. A. (204) E. V. (206) L. F. (207) D. N. (207) D. E. (208) L. D. (208)	A. J. (211) A. A. (215) M. A. (215) M. B. (216) V. S. (219) D. E. (220)	J. L. (222) L. L. (225) M. P. (226)				

On Level Class

	181-190	191-200	201-210	211-220	221-230	231-240	241-250	251-260	261-270
Mathematics		J. W. (193) S. C. (195) D. S. (195) A. J. (198) S. T. (200)	S. M. (202) M. G. (204) E. J. (205) X. S. ((206)	A. M. (211) Y. P. (211) J. J. (211) R. J. (212) T. D. (212) E. R. (213) I. R. (215) A. D. (217) D. H. (218) B. C. (218) D. M. (220)	I. A. (221) J. M. (221) S. P. (222) T. M. (223) A. S. (226) G. N. (228) A. R. (229)	S. M. (233) A. I. (234)	A. K. (243)		

Beyond Level Class

	181-190	191-200	201-210	211-220	221-230	231-240	241-250	251-260	261-270
Mathematics			K. G. (209)	C. Y. (212) J. K. (213) M. A. (214) M. R. (219)	P. P. (222) A. H. (223) C. C. (224) Z. I. (227) S. M. (227) S. K. (229) E. D. (230) D. R. (230)	B. T. (231) K. S. (231) M. R. (231) P. T. (232) J. J. (232) C. N. (235) N. R. (237) A. K. (239)	S. A. (242) D. J. (247) S. V. (2248) S. M. (250)	A. M. (253) M. H. (255) S. G. (258)	A. Z. (268)



A Process Approach to a Lesson

- Begin with the curriculum planner
 - Gr. 5 Math: Unit 3 - Thousands of Miles
- Enduring Understanding
 - There are multiple meanings for the operations of addition and subtraction and problems can be solved in more than one way.
- Essential Questions
 - Can students use strategies to extend their knowledge of the number system to the billions place?
 - Can students add and subtract accurately and efficiently?
 - Can students examine and use strategies for subtracting whole numbers?
- TEKS Objectives: **TEKS 5.3A and TEKS 5.4**



TEKS Objectives

- **5.3A** Use **addition** and **subtraction** to solve problems involving whole numbers and decimals
- **5.4** Use strategies including rounding and compatible numbers to estimate solutions to **addition**, **subtraction**, multiplication, and division

Tying TEKS to DesCartes

TEKS 5.3
TEKS 5.4A

https://reports.nwea.org/IR/DesCartesHandler.ashx?gskey=43931&range=combined - Microsoft Internet Explorer provided by PlanoISD

1 / 32 100% Find

DesCartes
(Combined)

Subject: Mathematics 2-5
Goal: Number, Operation, and
Quantitative Reasoning

istrict

DesCartes
A continuum of learning

Combined
Above 240
Below 161
161-170
171-180
181-190
191-200
201-210
211-220

Maturity of Concept

Subject: Mathematics

Goal Strand: Number, Operation, and Quantitative Reasoning

RIT Score Range: 211 - 220

Skills and Concepts to Enhance 201 - 210	Skills and Concepts to Develop 211 - 220	Skills and Concepts to Introduce 221 - 230
<p>Add, Subtract Decimals, Simple Fractions</p> <ul style="list-style-type: none"> Subtracts mixed fractions with like denominators with no regrouping Adds decimals to the hundredths place in vertical format (not same number of digits)* Adds decimals to the thousandths place horizontally with and without regrouping Subtracts decimals to the hundredths place (same number of digits) with regrouping Subtracts decimals to the thousandths place, vertically, with and without regrouping Subtracts decimals through the hundred-thousandths place, vertically 	<p>Add, Subtract Decimals, Simple Fractions</p> <ul style="list-style-type: none"> Adds fractions with like denominators with reducing or converting to a mixed fraction Adds mixed fractions with like denominators Subtracts mixed fractions with like denominators with no regrouping Adds decimals to the hundredths place in horizontal format (not same number of digits) Adds decimals to the thousandths place horizontally with and without regrouping Adds decimals through the hundred-thousandths place Subtracts decimals to the thousandths place, vertically, with the zero missing in the ones place* Subtracts decimals to the thousandths place, horizontally, with and without regrouping 	<p>Add, Subtract Decimals, Simple Fractions</p> <ul style="list-style-type: none"> Adds fractions with like denominators with reducing or converting to a mixed fraction Subtracts fractions with like denominators with reducing Adds decimals to the hundredths place in horizontal format (not same number of digits) Adds decimals through the hundred-thousandths place Subtracts decimals to the hundredths place (not same number of digits) Subtracts decimals to the thousandths place, horizontally, with and without regrouping Subtracts decimals through the hundred-thousandths place, horizontally Subtracts a decimal from a whole number, horizontally

Maturity of Concept

Subject: Mathematics						Subtraction
Goal Strand: Number, Operation, and Quantitative Reasoning						
Skills and Concepts 171 - 180	Skills and Concepts 181 - 190	Skills and Concepts 191 - 200	Skills and Concepts 201 - 210	Skills and Concepts 211 - 220	Skills and Concepts 221 - 230	Skills and Concepts 231 - 240
Add and Subtract Whole Numbers	Add and Subtract Whole Numbers	Add and Subtract Whole Numbers	Add and Subtract Whole Numbers	Add and Subtract Whole Numbers	Add and Subtract Whole Numbers	Add and Subtract Whole Numbers
<p>Uses models to calculate differences through 100 (whole numbers)*</p> <p>Uses models to calculate differences through 1000 (whole numbers)*</p> <p>Uses strategies for subtraction facts (e.g., counting back, one less, two less)*</p> <p>Subtracts a 1-digit number from a 2-digit number that is less than 20 (whole numbers only)</p> <p>Subtracts a 1-digit number from a multiple-digit number*</p> <p>Subtracts a 1-digit number from a 2-digit number with <u>no</u> regrouping, vertically</p> <p>Subtracts a 2-digit number from a 2-digit number, with <u>no</u> regrouping</p> <p>Subtracts 2- and/or 3-digit numbers with <u>no</u> regrouping</p>	<p>Uses a number line to construct subtraction facts with subtrahends and minuends through 20 (whole numbers)*</p> <p>Uses models to calculate differences through 1000 (whole numbers)*</p> <p>Instantly recalls basic subtraction facts with minuend less than 10*</p> <p>Uses strategies for sums and differences with 2-digit numbers (e.g., decomposing, compatible, compensation, partial sums, counting on)</p> <p>Subtracts a 1-digit number from a multiple-digit number*</p> <p>Subtracts multiple-digit numbers with <u>no</u> regrouping*</p> <p>Subtracts 1-digit number from a 2-digit number with regrouping*</p> <p>Subtracts a 2-digit number from a 2-digit number, with regrouping</p> <p>Subtracts 2- and/or 3-digit numbers with <u>no</u> regrouping</p> <p>Subtracts 3- or 4-digit numbers with regrouping</p> <p>Performs mental subtraction with numbers under 1000</p>	<p>Uses a number line to construct subtraction facts with subtrahends and minuends through 20 (whole numbers)*</p> <p>Adds and subtracts whole numbers using place value</p> <p>Uses strategies for sums and differences with 2-digit numbers (e.g., decomposing, compatible, compensation, partial sums, counting on)</p> <p>Subtracts multiple-digit numbers with <u>no</u> regrouping*</p> <p>Subtracts 1-digit number from a 2-digit number with regrouping*</p> <p>Subtracts a 2-digit number from a 2-digit number, with regrouping</p> <p>Subtracts a 2-digit number from a 3-digit number with a single regrouping</p> <p>Subtracts 3- or 4-digit numbers with regrouping</p> <p>Performs mental subtraction with numbers under 1000</p> <p>Performs mental subtraction with numbers 1000 and over</p>	<p>Adds and subtracts whole numbers using place value</p> <p>Uses strategies to determine 2 or more missing digits (addition/subtraction only)</p> <p>Subtracts 3- or 4-digit numbers with regrouping</p> <p>Subtracts numbers with 5 digits or more with regrouping</p> <p>Performs mental subtraction with numbers 1000 and over</p>	<p>Uses strategies to determine 2 or more missing digits (addition/subtraction only)</p> <p>Subtracts numbers with 5 digits or more with regrouping</p>	<p>Models algorithms using place value concepts (addition and subtraction with whole numbers)*</p>	<p>Models algorithms using place value concepts (addition and subtraction with whole numbers)*</p>

Lesson Adaptation

- Review Lesson TEKS

Plano ISD
 Mathematics
 Last time updated: 9/25/2009 11:24:00 AM

Grade: 5

U3 S1.4 Adding and Subtracting Large Numbers

Objectives:

The student is expected to:

- 5.1 A use place value to read, write, compare, and order whole numbers through the 999,999,999,999 ; and
- 5.3 A use addition and subtraction to solve problems involving whole numbers and decimals.
- 5.4 use strategies, including rounding and compatible numbers to estimate solutions to addition, subtraction, multiplication, and division problems.

Learning Target:

- I can solve addition and subtraction problems with large numbers by focusing on the place value of digits

- Review the Class by Overall RIT

	101-100	101-200	201-210	211-220
Mathematics	H. E. (183)	J. C. (200)	Y. A. (204) E. V. (205) L. F. (207) D. N. (207) D. E. (208) L. D. (208)	A. J. (211) A. A. (215) M. A. (215) M. B. (215) V. S. (218) D. E. (220)

- Reference DesCartes

Skills and Concepts to Develop 211 - 220
Use Place Value - Whole Numbers and Decimals
<ul style="list-style-type: none"> Identifies the place value and value of each digit to the tenths* Applies base ten place value concepts to solve problems using decimals (analysis)*

- Develop questions

- Use questions purposefully, targeting students for growth

Differentiation through Questioning Activity

- Read each DesCartes learning descriptor
 - Chart on table

- Review maturity of concept development between learning descriptors within and across RIT bands

- Match each “problem” to the appropriate RIT
 - Note how each question increases in cognitive demand

Concept Development

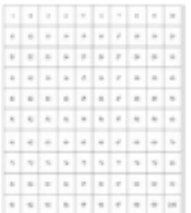
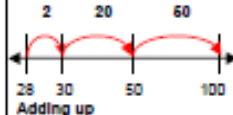
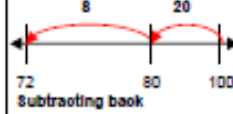
TEKS 5.3A Use addition and subtraction to solve problems involving whole numbers and decimals

5.4 Use strategies including rounding and compatible numbers to estimate solutions to addition, subtraction, multiplication, and division problems

Subject: Mathematics

Goal Strand: Number, Operation, and Quantitative Reasoning

Math Problems by RIT

<p>Skills and Concepts 181-190 Add and Subtract Whole Numbers</p>	<p>Skills and Concepts 191-200 Add and Subtract Whole Numbers</p>	<p>Skills and Concepts 201-210 Add and Subtract Whole Numbers</p>	<p>Skills and Concepts 211-220 Add and Subtract Whole Numbers</p>	<p>Skills and Concepts 221-230 Add and Subtract Whole Numbers</p>	<p>Skills and Concepts 231-240 Add and Subtract Whole Numbers</p>	<p>Skills and Concepts 240+ Add and Subtract Whole Numbers</p>
<p>Provide students with a hundreds chart.</p> <p>Problem: Misaki went to the Post Office and bought 28 stamps. How many more stamps would she need to have total of 100 stamps.</p> <p>a. How many stamps did Misaki start with? b. How many stamps did she need? c. Discuss the strategy that the student(s) chose.</p> 	<p>Provide students with a blank number line.</p> <p>Problem: Misaki went to the Post Office and bought 28 stamps. How many more stamps would she need to have total of 100 stamps.</p> <p>a. How many stamps did Misaki start with? b. How many stamps did she need? c. Discuss the strategy that the student(s) chose.</p>  	<p>Problem: Suppose your family is taking a special trip. On this trip, you will travel exactly 1000 miles. After a couple of days of traveling, you have gone 630 miles. How many more miles do you still have to go to reach 1000?</p> <p>$630 + 300 = 930$ $930 + 70 = 1000$ Adding up</p> <p>$1000 - 300 = 700$ $700 - 70 = 630$ Subtracting back</p>	<p>p. 63 Investigations Teacher's Ed.</p> <p>Problem:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> $1,569 - 275 = 1,294$ </div> <p>$1,569 - 200 = 1,369$ $1,369 - 60 = 1,309$ $1,309 - 5 = 1,304$ $1,304 - 10 = 1,294$</p> <ol style="list-style-type: none"> 1. Explain what happened in this problem. 2. Create a problem, work the solution, and explain the steps you took to solve the problem. 	<p>Subtraction Starter Problems Student book p. 30</p> <p>There are three ways to start this problem. Solve each start, then choose two of the starts and solve the rest of the problem.</p> <p>Problem: $2168 - 455 =$</p> <p>a. $2148 - 400 =$ b. $455 - 45 =$ c. $2168 - 450 =$</p> <ol style="list-style-type: none"> 1. Put this problem into a story context. 2. Identify which strategy makes the most sense to you. Why? 3. Explain how these three strategies are alike and different. 	<p>Solve the following problem using all three strategies:</p> <p>a. Subtracting in parts b. Adding up c. Subtracting back</p> <p>Problem: $1205 - 732 =$</p> <ol style="list-style-type: none"> 1. Evaluate whether your work is clear and concise. 2. Is there a way to make your work more clear or concise? 3. Create additional problems and story context for each of the three strategies. 4. Determine if these strategies would work for decimals. 5. Explain and model your answer. 	<p>Analyze subtraction algorithms used in other countries.</p> <p>Step 1: Become familiar with each procedure by trying it out. Make up some more problems for yourself in order to develop facility with this approach.</p> <p>Step 2: Discuss with others in the group why the method works. You may want to use words, manipulatives, diagrams, or any combination of these.</p> <p>Step 3: Create and solve a problem using each of these algorithms.</p> <p>Method A</p> $\begin{array}{r} 5^3 \\ - 128 \\ \hline 15 \end{array}$ <p>You can't take 8 from 3, so you make the three 13. That means you have to make the 3 tens you're taking away into 4 tens. Then you subtract: 8 from 13 is 5, 4 from 5 is 1.</p> <p>Method B</p> $\begin{array}{r} 53 \\ - 38 \\ \hline 14 \\ + 1 \\ \hline 15 \end{array}$ <p>Transform into an addition problem by subtracting each number in the bottom (subtrahend) from 9. Thus, 3 becomes 6, 8 becomes 1. Now add. When done, drop the 1 in the largest place and add 1 to the ones place to get the answer 15.</p>
<p>Decartes Learning Statements</p> <p>Uses models to calculate differences through 100 (whole numbers) Subtracts a 2-digit number from a 2-digit number, with regrouping Subtracts 2- and/or 3-digit numbers with no regrouping</p>	<p>Decartes Learning Statements</p> <p>Uses number line to construct subtraction facts with subtrahends and minuends through 20 (whole numbers) Uses strategies for sums and differences with 2-digit numbers (e.g., decomposing, compatible, compensation, partial sums, counting on)</p>	<p>Decartes Learning Statements</p> <p>Adds and subtracts whole numbers using place value Subtracts 3- or 4-digit numbers with regrouping</p>	<p>Decartes Learning Statements</p> <p>Adds and subtracts whole numbers using place value Subtracts 3- or 4-digit numbers with regrouping</p>	<p>Decartes Learning Statements</p> <p>Models algorithms using place value concepts (addition and subtraction with whole numbers)</p>	<p>Decartes Learning Statements</p> <p>Models algorithms using place value concepts (addition and subtraction with whole numbers)</p>	<p>Decartes Learning Statements</p> <p>Models algorithms using place value concepts (addition and subtraction with whole numbers)</p>



Reflection

Make your comments on

mypad.pisd.edu/MAPTOOLS

- Why is it important to use data (MAP scores, Class by RIT Reports, DesCartes)?
- How are your teachers using the NWEA website to their best advantage?
- How can utilizing this process grow all students?

Class by RIT Distribution

Approaching Level Class	Level Of Lesson					
	181-190	191-200	201-210	211-220	221-230	231-240
Mathematics	H. E. (183)	J. C. (200)	Y. A. (204) E. V. (206) L. F. (207) D. N. (207) D. E. (208) L. D. (208)	A. J. (211) A. A. (215) M. A. (215) M. B. (216) V. S. (219) D. E. (220)	J. L. (222) L. L. (225) M. P. (226)	

What do the RIT scores of H.E. and J.C. indicate?

Are there more data available?

Targeted Instruction

- How do we reach the outliers?
 - Acceleration
 - Enrichment
- Differentiation (large group) vs Targeted Instruction (individual)

□ Class by Overall RIT

	< 181	181-190	191-200	201-210	211-220	221-230	231-240	241 +
Mathematics			J. W. (193) S. C. (195) D. S. (195) A. J. (198) S. E. (200)	S. M. (202) M. G. (204) E. J. (205) X. S. (206)	A. M. (211) Y. P. (211) J. J. (211) R. J. (212) T. D. (212) E. R. (213) I. R. (215) A. D. (217) E. C. (217) D. H. (218) B. C. (218) D. M. (220)	I. A. (221) J. M. (221) S. P. (222) T. M. (223) A. S. (226) G. N. (228) A. R. (229)	S. K. (233) A. I. (234)	A. K. (243)

□ Class Breakdown by Goal

	< 191	191-200	201-210	211-220	221-230	231-240	241-250	251 +
Geometry & Spat Reasoning		S. C. (195) D. S. (195)	A. J. (198) M. G. (204)	J. W. (193) S. M. (202) X. S. (206)	S. E. I. (200) E. J. (205) A. M. (211) J. J. (211) R. J. (212) T. D. (212) E. R. (213) I. R. (215) A. D. (217) E. C. (217) D. H. (218)	Y. P. (211) B. C. (218) I. A. (221) J. M. (221) S. P. (222) T. M. (223) G. N. (228) A. R. (229) S. K. (233)	D. M. (220) A. S. (226) A. I. (234)	A. K. (243)
Measurement	J. W. (193)	S. C. (195) D. S. (195) S. E. (200) E. J. (205) X. S. (206)	A. J. (198) M. G. (204) Y. P. (211) R. J. (212) T. D. (212) I. R. (215)	A. M. (211) J. J. (211) R. J. (212) D. H. (218) I. A. (221) J. M. (221)	J. J. (211) E. C. (217) B. C. (218) D. M. (220)	A. D. (217) S. P. (222) T. M. (223) A. S. (226) G. N. (228) A. R. (229) S. K. (233)	A. I. (234) A. K. (243)	

Targeted Instruction

A 2

Test Name: Math Survey w/ Goals 2-5 TX V4 – On Level

Class Breakdown By Goal

	< 191	191-200	201-210	211-220	221-230	231-240	241-250	251 +
Geometry & Spat Reasoning				S. E. I (200) E. J. (205) A. M. (211) J. J. (211) R. J. (212) T. D. (212) E. R. (213) I. R. (215)	Y. P. (211) B. C. (218) I. A. (221) J. M. (221) S. P. (222) T. M. (223)			
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Measurement			A. J. (198) S. M. (202) M. G. (204)	A. M. (211) E. R. (213) D. H. (218) I. A. (221) J. M. (221)	J. J. (211) E. C. (217) B. C. (218) D. M. (220)	A. D. (217) S. P. (222) T. M. (223) A. S. (228) G. N. (228) A. R. (229) S. K. (233)		
	J. W. (193)	S. C. (195) D. S. (195) S. E. (200) E. J. (205) X. S. (208)	Y. P. (211) R. J. (212) T. D. (212) I. R. (215)			A. I. (234) A. K. (243)		
Number / Operat / Reasoning			D. S. (195) S. M. (202) J. J. (211) T. D. (212)	E. J. (205) X. S. (206) A. M. (211) Y. P. (211)	B. C. (218) S. P. (222) T. M. (223) A. S. (228) A. R. (229)	D. H. (218) G. N. (228) S. K. (233)		
	S. C. (195)	J. W. (193) A. J. (198) S. E. (200) M. G. (204) A. D. (217)	E. R. (213) I. R. (215) E. C. (217) D. M. (220) I. A. (221)			A. I. (234)	A. K. (243)	

To create a PDF report of the chart above, click here 

To generate printable reports:

1. Click on PDF icon to generate a Class Breakdown By Goal report.
2. Click on a student name to generate a single student report accompanied by DesCartes learning statements applicable to his or her RIT band.
3. Click on a goal (Number/Operation/Reasoning) for list of all students and RIT band DesCartes learning statements for that goal.



Targeted Instruction Activity

- Note the organization of student RIT scores by Goal Strand (Overall RIT score in parentheses)
- Determine which students will benefit from targeted instruction
- How does the Class Breakdown by Goal Strand assist the classroom teacher?
- Once you have determined each student's instructional needs, what is the next step?

MAP Formative Assessment Process

