Principles of Effective Assessment for Screening and Progress Monitoring

Lynn S. Fuchs
Vanderbilt University

Presented at the Center on Instruction (Mathematics) Summit

November 13, 2006

The Center on Instruction is operated by RMC Research Corporation in partnership with the Florida Center for Reading Research at Florida State University; RG Research Group; the Texas Institute for Measurement, Evaluation, and Statistics at the University of Houston; and the Vaughn Gross Center for Reading and Language Arts at the University of Texas at Austin.

The contents of this PowerPoint were developed under cooperative agreement S283B050034 with the U.S. Department of Education. However, these contents do not necessarily represent the policy of the Department of Education, and you should not assume endorsement by the Federal Government.

2006

Assessment

- Process of collecting information for the purpose of formulating decisions.
  - **Formal assessment**: Objective measurements of abilities, skills, strategies
  - **Informal assessment**: Based on inferences a professional draws as a function of unsystematic observations in the relevant context

- **Both are important.**
- **Focus of this presentation: *Formal Assessment***

Assessment

- Purpose: Help educators make better decisions to enhance student learning
- Four types of assessment
  - Screening
  - Progress monitoring
  - Diagnosis
  - Evaluation

- **Focus of this presentation:**

Screening* and *Progress Monitoring

Screening

Screening

- Measuring performance at one time, using a brief measure
- Goals:
  - Identify students who, without special attention, are likely to accrue large math deficits, resulting in math disabilities and requiring special education.
  - Provide early prevention to these students to eliminate long-term failure.

Screening Steps

- Select a measure.
- Identify a score (cut-point) on the measure, below which students are deemed to be at risk.
- Administer the measure to all students.
- Deliver prevention services to students with scores below the cut-point.

Challenges to Accurate Screening

- False Positives

- "False alarms"
- Students score below cut-point even though they would become mathematically competent without special attention.
- Bad because
  - Students spend time receiving special services they don't need
  - Schools waste costly services on these students.

Challenges to Accurate Screening

- False Negatives

- "Undetected Problems"
- Students score above the cut-point but develop serious math difficulties.
- Bad because
  - Students are deprived of the early prevention they require
  - Schools miss opportunities to prevent long-term problems.

4 Considerations in Selecting Screening Tools

1. **Feasibility** (many students are tested)

   Minimal test time

   Few tester qualifications and little training

   Low cost

2. **Strong predictor of future outcome**

   Students who score below the cut-point on the screener are the same students who score low on future, high-stakes outcomes.

4 Considerations in Selecting Screening Tools

3. **Developmentally appropriate content**

- Avoid floor effects: Many student score zero, even though the prognosis for this cluster of students is not equally dismal. To avoid false positives, need a measure that discriminates among these children at the bottom end of the distribution.

- Avoid ceiling effects: Many students earn the highest score on the test, even though the prognosis for this cluster of students is not equally bright. To avoid false negatives, need a measure that discriminates among these children at the high end of the distribution.

4 Considerations in Selecting Screening Tools

4. **Accurate cut-point**

- Criterion-referenced: Set by determining the absolute level of performance on the screening task, which is associated with successful future performance on a developmentally important skill.

- Norm-referenced: Set to select students who perform below a percentile score either on the screener or on the valued future outcome (in relation to a local or national sample).

Example: Kindergarten Screeners

Kindergarten
Computation

Test 1

Name: _____ Date: _____

* * * * ____	* * + * = ____	4 - 2 = ____	Cross out 2 *. * * * * ____
Cross out 4 *. * * * * * * * * ____	* * * * * ____	* + * * * * ____	0 + 4 = ____
2 + 2 = ____	5 - 1 = ____	Cross out 1 *. * * * ____	* + * * * = ____
3 - 3 = ____	Cross out 3 *. * * * * * * * * * * ____	1 + 4 = ____	* * * * * * * * * ____
* * * * + * * = ____	1 + 1 = ____	* ____	5 - 3 = ____

Kindergarten Computation Screener

Group Administered - 5 minutes

Internal consistency (alpha): .91

Validity at beginning of kindergarten: .63-.69

Predictive validity with end kindergarten: .56-.67

Kindergarten
Number Sense

Test 1

Name: _____ Date: _____

1) Which number is smaller? | 4 | 0 |

2) What number goes on the blank?

3) Put these numbers in counting order:

20 19 18 _____

4) Which number is closer to the number **3** ? **7** or **2**

5) Finish the pattern:

22	2	22	2	

6) What number comes next when you are counting backward?

13, _____

7) What is the name of this shape?

_____

Kindergarten Number Sense Screener

Individually Administered < 10 minutes

Internal Consistency (alpha): .91

Alternate Test-Retest Form: .93

Validity at beginning of kindergarten: .66-.79

Predictive validity with end kindergarten: .55-.74

Example: First-Grade Measures
(each 1 minute)

- EN-CBM Quantity Discrimination Measure

12 3	4 1	5 11	9 4

- EN-CBM Missing Number Measure

12 __ 14	6 7 __	__ 4 5

Reliability and Validity

Alternate Form

- OC, NI, QD all close to or exceed r = .90
- MN close to r = .80

Test-Retest

- 2 week
  - QD .90 or greater
  - MN .80

Predictive validity with end first grade

- QD $\underline{r}$ = .76 (.71 - .79)
- MN $\underline{r}$ = .72 (.67 - .78)

Progress Monitoring

Progress Monitoring

- Select a measure
- Assess students frequently (weekly or at least monthly)
- For each student, graph scores against time
- For each student, quantify rate of improvement (slope: increase per week or month)
- Use the information to inform instructional decisions
  - Determine whether student is improving adequately.
  - If not, determine how to revise programs.

Two Prominent Forms of Progress Monitoring

Mastery Measurement

Curriculum-Based Measurement

MASTERY MEASUREMENT Tracks Mastery of Short-term Instructional Objectives

To implement Mastery Measurement, the teacher

- Determines the sequence of skills in an instructional hierarchy
- For each skill, develops a criterion-referenced test

Hypothetical Fourth-Grade Math Concepts/Applications Curriculum

1. **Number Concepts**
2. **Names of Numbers and Vocabulary**
3. **Word Problems**
4. **Measurement**
5. **Grid Reading**
6. **Charts and Graphs**
7. **Area and Perimeter**
8. **Fractions**
9. **Decimals**

Number Concepts Mastery Test

Number Concepts: Place Value

Look at this number.

8,301

Which digit is in the hundreds place? ____

Which digit is in the thousands place? ____

Look at this number.

17,954

Which digit is in the tens place? ____

Which digit is in the hundreds place? ____

Look at this number.

67,418

Which digit is in the thousands place? ____

Which digit is in the ones place? ____

Look at this number.

54,296

Which digit is in the thousands place? ____

Which digit is in the ten thousands place? ____

Look at this number.

5,401

Which digit is in the hundreds place? ____

Which digit is in the ones place? ____

Look at this number.

35,672

Which digit is in the ten thousands lace? ____

Which digit is in the tens place? ____

Hypothetical Fourth-Grade Math Concepts/Applications Curriculum

1. **Number Concepts**
2. **Names of Numbers and Vocabulary**
3. **Word Problems**
4. **Measurement**
5. **Grid Reading**
6. **Charts and Graphs**
7. **Area and Perimeter**
8. **Fractions**
9. **Decimals**

Names of Numbers and Vocabulary Mastery Test

Names of Numbers and Vocabulary: Division

Write the number in each blank.

$$2\overline{)9} \quad 4 \text{ R1}$$

The divisor is _____.

The dividend is _____.

The remainder is _____.

Write the number in each blank.

$$3\overline{)11} \quad 3 \text{ R2}$$

The dividend is _____.

The quotient is _____.

The divisor is _____.

Write the number in each blank.

$$4\overline{)9} \quad 2 \text{ R1}$$

The divisor is _____.

The quotient is _____.

The dividend is _____.

Write the number in each blank.

$$4\overline{)19} \quad 4 \text{ R3}$$

The divisor is _____.

The remainder is _____.

The quotient is _____.

Write the number in each blank.

$$3\overline{)14} \quad 4 \text{ R2}$$

The divisor is _____.

The dividend is _____.

The quotient is _____.

Write the number in each blank.

$$2\overline{)15} \quad 7 \text{ R1}$$

The remainder is _____.

The dividend is _____.

The divisor is _____.

Problems with Mastery Measurement

- Hierarchy of skills is logical, not empirical.
- Performance on single-skill assessments can be misleading.
- Assessment does not reflect maintenance or generalization.
- Assessment is designed by teachers or sold with textbooks, with unknown reliability and validity.
- Number of objectives mastered does not relate well to performance on high-stakes tests.

Curriculum-Based Measurement (CBM) was designed to address these problems.

An Example of CBM:

Math Concepts/Applications

Hypothetical Fourth-Grade Math Concepts/Applications Curriculum

Number Concepts

Names of Numbers and Vocabulary

Word Problems

Measurement

Grid Reading

Charts and Graphs

Area and Perimeter

Fractions

Decimals

First page of a 3-page CBM in math concepts and applications (24 problems)

Items in an item bank are developed to fit an item specification for a problem type.

Items are randomly sampled from an item bank onto alternate forms.

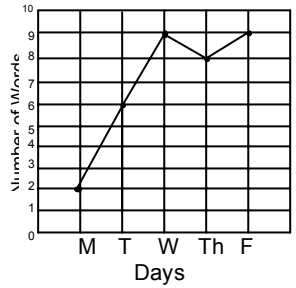
Random placement of problem types on pages

Name _____ Date _____ Test 1 Page 1

Column A — Applications 4 — Column B

(1)

Rachel's Correct Spelling Words



Use the graph to answer the questions.

How many words did Rachel spell correctly on Monday? _____

Rachel's friend Latasha spelled 3 times as many words correctly as Rachel did on Monday. How many words did Latasha spell correctly? _____

How many more words did Rachel spell correctly on Friday than on Monday? _____

(2)

Write a number in the blank.

1 hour = _____ minutes

(3)

Look at this number.

8,301

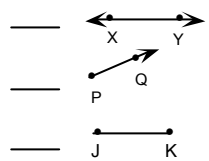
Which digit is in the hundreds place? ____

Which digit is in the thousands place? ____

A

(4)

Write the letter in each blank.



(A) line

(B) point

(C) ray

(D) line segment

(5)

Write the number in each blank.

$$2\overline{)9} \quad 4 \text{ R}1$$

The divisor is _____.

The dividend is _____.

The quotient is _____.

(6)

Complete the sequence.

51, 45, 39, ____, ____

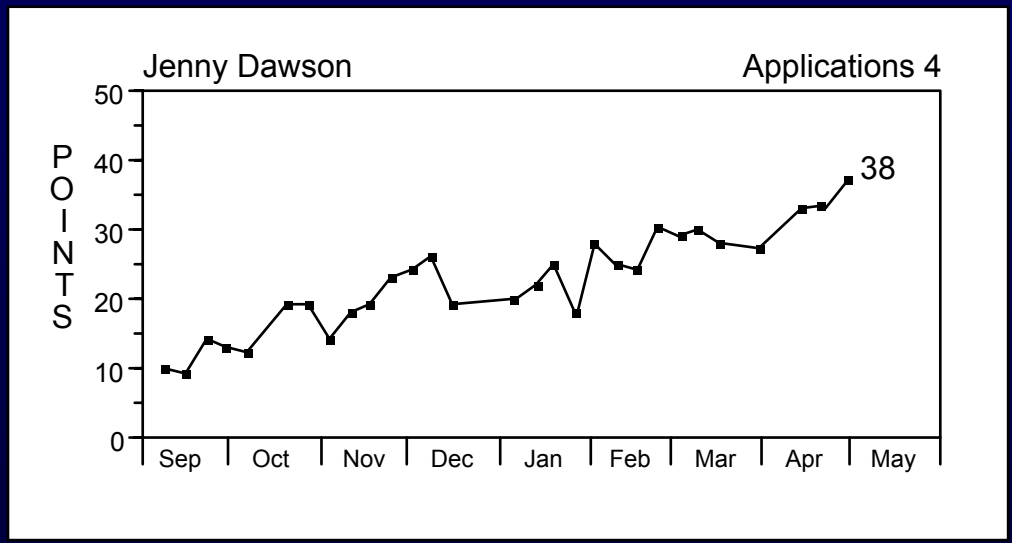
(7)

Solve the problem by estimating the sum or difference to the nearest hundred.

The Jiffy Food Market sells 781 cartons of plain milk each week and 623 cartons of chocolate milk. About how many fewer cartons of chocolate milk are sold than plain milk?

_____

Jenny's Progress Across the School Year



Kindergarten
Computation

Test 1

Name: _____ Date: _____

* * * * ____	* * + * = ____	4 - 2 = ____	Cross out 2 *. * * * * ____
Cross out 4 *. * * * * * * * * ____	* * * * * ____	* + * * * * ____	0 + 4 = ____
2 + 2 = ____	5 - 1 = ____	Cross out 1 *. * * * ____	* + * * * = ____
3 - 3 = ____	Cross out 3 *. * * * * * * * * * * ____	1 + 4 = ____	* * * * * * * * * ____
* * * * + * * = ____	1 + 1 = ____	* ____	5 - 3 = ____

Kindergarten
Number Sense

Test 1

Name: _____ Date: _____

1) Which number is smaller? | 4 | 0 |

2) What number goes on the blank?

3) Put these numbers in counting order:

20 19 18 _____

4) Which number is closer to the number **3** ? **7** or **2**

5) Finish the pattern:

22	2	22	2	

6) What number comes next when you are counting backward?

13, _____

7) What is the name of this shape?

_____

Test 1

Computation 1

Name: _____ Date: _____

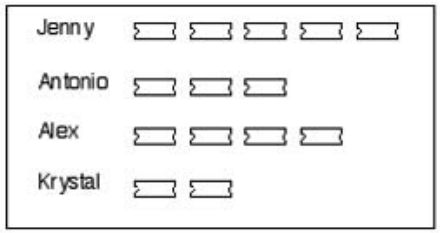
A 0 + 3	B 9 - 7	C 0 + 7	D 54 +33	E 7 + 3
F 10 - 0	G 8 + 1	H 2 + 5	I 6 - 3	J 8 - 5
K 11 - 1	L 8 - 1	M 10 - 7	N 2 6 +1	O 6 - 2
P 65 +23	Q 45 - 4	R 5 + 1	S 8 1 +1	T 7 - 5
U 8 + 1	Y 99 - 8	W 10 - 3	X 7 + 3	Y 9 +1

Name _____ Date _____ Test 1 Page 1

Column A — Applications 1 — Column B

(1)

Tickets Sold



▭ = 1 ticket

How many tickets did Krystal sell?

_____

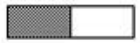
(2)

What number comes after 28?

28 _____

(3)

Write the letter for the shaded part in each blank.



_____ (A) $\frac{1}{2}$

_____ (B) $\frac{1}{4}$

_____ (C) $\frac{1}{3}$

(4)

Of these numbers,

71 34 39

_____ is the smallest.

_____ is the largest.

(5)

Write + or - in the blank.

5 _____ 2 = 7

(6)

A B C D E F G H I J K L

Write the ninth letter. _____

(7)

Write the time.

___ : ___

Test 1

Computation 2

Name: _____ Date: _____

A 30 + 7	B 8 + 7	C 12 - 3	D 15 - 5	E 5 4 + 2
F 10 - 7	G 35 - 6	H 11 - 6	I 55 - 33	J 32 41 + 23
K 14 + 9	L 64 + 16	M 16 - 8	N 9 + 7	O 7 + 7
P 50 - 5	Q 83 - 67	R 254 - 20	S 5 + 3	T 15 - 7
U 30 + 32	Y 6 - 5	W 4 + 6	X 12 - 6	Y 8 + 9

Name _____ Date _____ Test 1 Page 1

Column A

Applications 2

Column B

(1)

Counting by 2's, fill in the blanks.

32, 34, 36, _____, _____

(2)

Write a number in each blank.

Of these numbers,

346 332 798

_____ is the smallest.
_____ is the largest.

(3)

Look at this group of numbers.

1 2 3 4 5 6 7

8 9 10 11 12 13 14

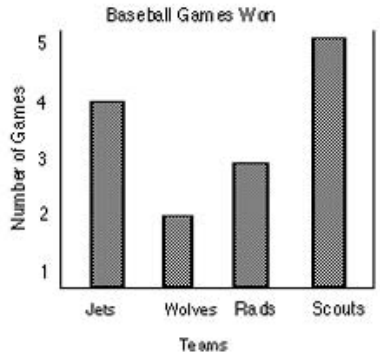
15 16 17 18 19 20

Write the sixteenth number. _____
Write the eleventh number. _____
Write the eighteenth number. _____

(4) How much money?

_____

(5)



Write a number in each blank.

How many games did the Jets win? _____

How many more games did the Jets win than the Rads? _____

How many fewer games did the Wolves win than the Scouts? _____

(6)

Write the number in the blank.

5 + 11 = _____ + 5

Test 1

Computation 3

Name: _____ Date: _____

A 7×8	B $684 + 97$	C 5×1	D 2×5	E $7\overline{)14}$
F $230 + 968$	G $53 - 28$	H 9×6	I $2\overline{)4}$	J 4×3
K 34×2	L 78×9	M $8\overline{)32}$	N $300 - 136$	O $2\overline{)8}$
P $328 - 74$	Q $7\overline{)49}$	R 0×9	S 2×3	T 0×4
U $2\overline{)6}$	Y 8×1	W $74 + 54$	X $81 - 55$	Y $604 - 237$

Name _____ Date _____ Test 1 Page 1

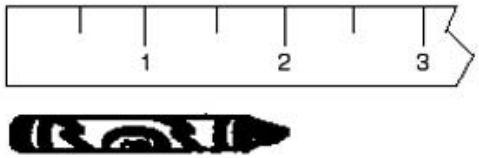
Column A

Applications 3

Column B

(1)

Measure to the nearest inch.



_____ in.

(2)

Write a letter in the blank.

About how much does a large cat weigh?

(A) 5 mg

(B) 5 g

(C) 5 kg

_____

(3)

Write the answer in the blank.

Bill collected 156 baseball cards. After his brother gives him 35 more cards, how many baseball cards does Bill have in all?

_____

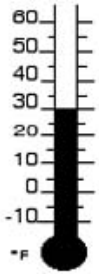
(4)

Write the time.

___ : ___

(5)

What is the temperature?



_____ °F.

(6) Write **<**, **>**, or **=** in each blank.

$\frac{1}{3}$ _____ $\frac{2}{3}$

$\frac{3}{4}$ _____ $\frac{2}{4}$

(7)

Write the number in the blank.

_____ seven hundred thirty-six

(8)

Write the letter **E** next to even numbers and the letter **O** next to odd numbers.

____ 18 ____ 7

Test 1 Computation 4

Name: _____ Date: _____

A $\frac{3}{7} - \frac{2}{7} =$	B $1\frac{3}{5} - 3 =$	C $4\overline{)6}$	D $6\overline{)78}$	E 875×7
F 6×3	G 9×0	H 244×6	I $7\overline{)49}$	J $5\overline{)25}$
K $2\overline{)50}$	L $6144 - 4420$	M 33×10	N 6×0	O $7\overline{)30}$
P $95225 + 75268$	Q $8\overline{)32}$	R $1156 + 2824 + 83$	S $7\frac{2}{5} - 2 =$	T 38×33
U $\frac{3}{5} + \frac{1}{5} =$	Y $982 - 97$	W 9×5	X 4×1	Y $7\overline{)56}$

Name _____ Date _____ Test 1 Page 1

Applications 4

Column A

(1)

Use the graph to answer the questions.

How many words did Rachel spell correctly on Monday? _____

Rachel's friend Latasha spelled 3 times as many words correctly as Rachel did on Monday. How many words did Latasha spell correctly? _____

How many more words did Rachel spell correctly on Friday than on Monday? _____

(2)

Write a number in the blank.

1 hour = _____ minutes

(3)

Look at this number.

8,301

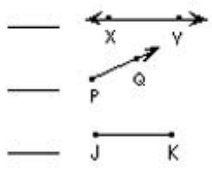
Which digit is in the hundreds place? ____

Which digit is in the thousands place? ____

Column B

(4)

Write the letter in each blank.



____ (A) line

____ (B) point

(C) ray

____ (D) line segment

(5)

Write the number in each blank.

$$2\overline{)9} \quad 4 \text{ R}1$$

The divisor is _____.

The dividend is _____.

The quotient is _____.

(6)

Complete the sequence.

51, 45, 39, ____, ____

(7)

Solve the problem by estimating the sum or difference to the nearest hundred.

The Jiffy Food Market sells 781 cartons of plain milk each week and 623 cartons of chocolate milk. About how many fewer cartons of chocolate milk are sold than plain milk?

_____

Test 1

Computation 5

Name: _____ Date: _____

A $\begin{array}{r} 47785 \\ 3335 \\ 4360 \\ +\ 148 \\ \hline \end{array}$	B $\begin{array}{r} 605 \\ \times\ 38 \\ \hline \end{array}$	C Rename as a mixed number: $\frac{22}{5} =$	D $3\frac{2}{5} + 2\frac{4}{5} =$	E $\frac{1}{3} + \frac{1}{4} =$
F $\frac{1}{8} + \frac{3}{4} =$	G $\begin{array}{r} 43245 \\ -\ 20568 \\ \hline \end{array}$	H $\begin{array}{r} 684 \\ \times\ 23 \\ \hline \end{array}$	I $3\frac{1}{5} - 1\frac{3}{5} =$	J Reduce: $\frac{3}{9} =$
K $17\overline{)85}$	L $6\overline{)720}$	M $\frac{3}{4} - \frac{1}{5} =$	N $\begin{array}{r} 63057 \\ -\ 20563 \\ \hline \end{array}$	O Rename as an improper fraction: $2\frac{3}{4} =$
P $20\overline{)24}$	Q $\begin{array}{r} 63774 \\ +\ 77517 \\ \hline \end{array}$	R $\frac{2}{3} + \frac{2}{3} =$	S $\begin{array}{r} 5.23 \\ +\ 6.9 \\ \hline \end{array}$	T Rename as an improper fraction: $8\frac{4}{7} =$
U $7\overline{)563}$	V $\begin{array}{r} 4.3 \\ -\ 1.26 \\ \hline \end{array}$	W $\frac{11}{12} - \frac{1}{3} =$	X Rename as a mixed number: $\frac{19}{4} =$	Y Reduce: $\frac{4}{10} =$

Name _____ Date _____ Test 1 Page 1

Column A — Applications 5 — Column B

(1)

Write the number in the blank.

seven hundred eighty thousand, two hundred fifteen

_____

(2)

Tom went to the movies and bought popcorn for $2.50, a drink for $1.25, and a box of candy for $1.75. He gave the clerk a $10.00 bill and received change in the least number of bills and coins. How many of each were there? (If none, write the number zero.)

___ $5 bills ___ $1 bills ___ quarters

(3)

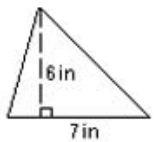
Find the average of these numbers.

19, 7, 12, 8, 9

Arithmetic mean = _____

(4)

Area of triangle = 1/2 x base x height



Area = _____ sq. in.

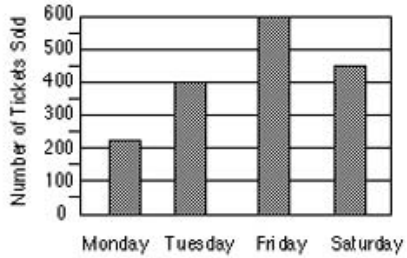
(5)

Write the number for the Roman numeral in the blank.

_____ CCXL

(6)

Tickets Sold for Baseball at Crow Valley Stadium



Write your answer to the nearest hundred.

Crow Valley Stadium has 600 seats. If all the people who buy tickets on Monday attend the game, about how many seats will be empty?

_____

Crow Valley Stadium will sell the remaining tickets for Tuesday's game at the gate for $2.00. If they sell all the remaining tickets, how much money will they get?

$____.00

(7)

Round to the nearest thousand:

44,201 _____

Test 1

Computation 6

Name: _____ Date: _____

A $\frac{3}{5} - \frac{1}{3} =$	B 2.66×5.4	C $5\frac{3}{5} - 3\frac{4}{5} =$	D $15961 + 92307$	E $43245 - 20568$
F $2.591 - 7.6588$	G $65983 + 56937$	H $.13\overline{)720}$	I $122\overline{)8614}$	J $3 \times \frac{1}{2} =$
K 5952×246	L $7\frac{4}{7} + 1\frac{2}{3} =$	M $45\overline{)65}$	N $3\frac{1}{3} + 8\frac{2}{3} =$	O $3.4423 - 1.33$
P $\frac{2}{5} \times \frac{2}{5} =$	Q $81\overline{)9301}$	R $\frac{3}{4} \div \frac{7}{9} =$	S $1.3\overline{).598}$	T $\frac{7}{9} + \frac{2}{3} =$
U 3596×168	Y $7 \div \frac{2}{5} =$	W 5952×246	X $9\frac{3}{7} - 3\frac{4}{7} =$	Y $55867 - 32719$

Name _____ Date _____ Test 1 Page 1

Applications 6

Column A | Column B

(1)

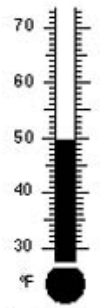
Write **P** if the number is a prime number and **C** if the number is a composite number.

____ 2 ____ 94

(2)

$7^2 =$ ____

(3)



last night's temperature

When Emily woke up, the temperature was 42° F. By how many degrees did the temperature fall?

_____ ° F

(4)

Which expression matches the phrase:

The difference between y and 19?

(A) $y - 19$

(B) $\frac{19}{y}$

_____ (C) $y + 19$

If $y = 25$, then the value of the expression is

(5)

Rename if necessary.

$$\begin{array}{r} 3\text{ m}\ \ 92\text{ cm} \\ +\ 7\text{ m}\ \ 15\text{ cm} \\ \hline \end{array}$$

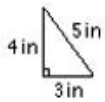
___m ___cm

(6)

15 girls wore pink dresses, 25 wore blue dresses, 7 wore purple dresses and 2 wore green dresses. Write the ratio of green dresses to purple dresses, using the word "to."

_____

(7)



(A) acute
(B) obtuse
(C) right

What kind of triangle? _____

(8)

Express 7% as:

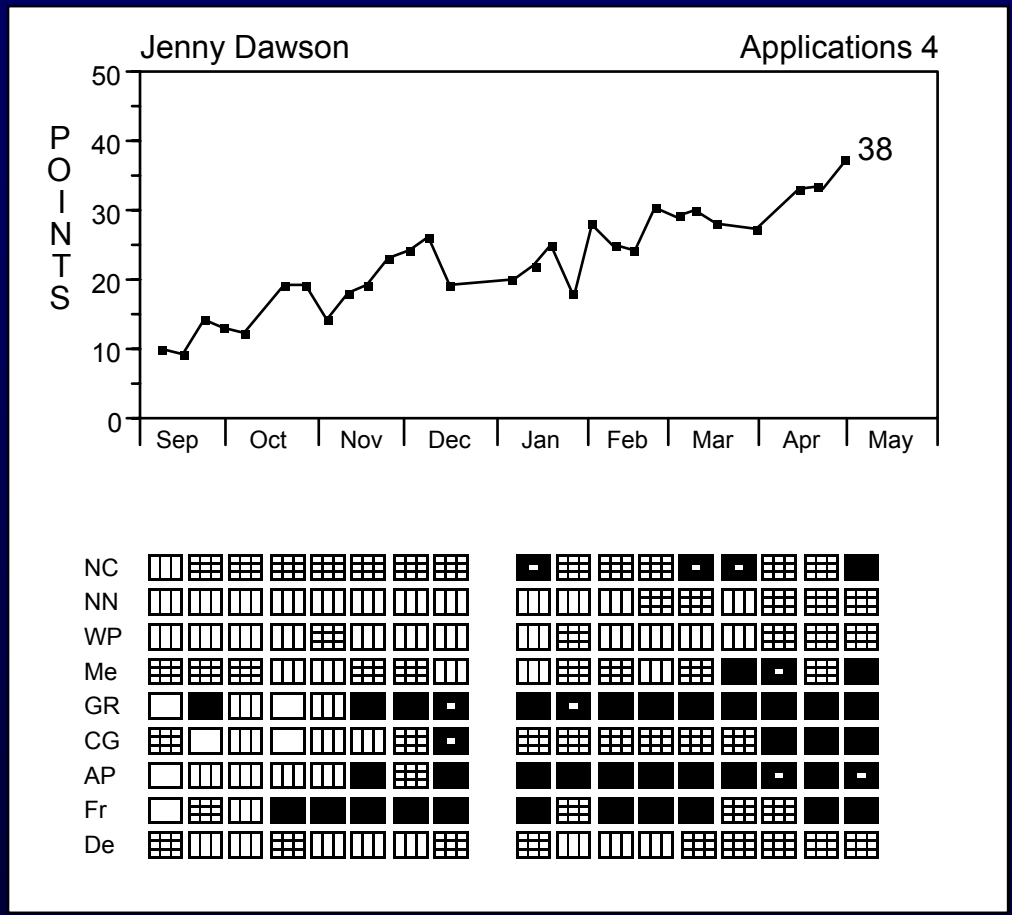
a decimal _____

a fraction with denominator of 100 _____

(9)

2:5 is the same as ___:15

Jenny's Graph and Skills Profile



Darker boxes = greater level of mastery.

Sampling performance on year-long curriculum for each CBM

- Avoids need to specify a skills hierarchy
- Avoids single-skill tests
- Automatically assesses maintenance/generalization
- Permits standardized procedures for sampling the curriculum, with known reliability and validity
- SO THAT: CBM scores relate well to performance on high-stakes tests

Considerations in Selecting PM Tools

- Efficiency (need to administer frequently)
- Tenability of the instructional sequence (if Mastery Measurement)
- Effectiveness (helps teachers effect better outcomes)
- Sensitivity to student improvement
- Reliability and validity

Research Shows

- CBM produces accurate, meaningful information about students' academic levels and their rates of improvement.
- CBM is sensitive to student improvement.
- CBM corresponds well with high-stakes tests.
- When teachers use CBM to inform their instructional decisions, students achieve better.

Using CBM to Enhance Learning

Universal Core Program

1. Formulate instructional plans
2. Quantify response to confirm risk

Secondary Prevention

1. Quantify response

Special Education

1. Set/Monitor progress toward IEP goals
2. Design effective individualized programs

Universal Core Program: CBM for ALL Weekly Testing Class Reports Every 2 Weeks

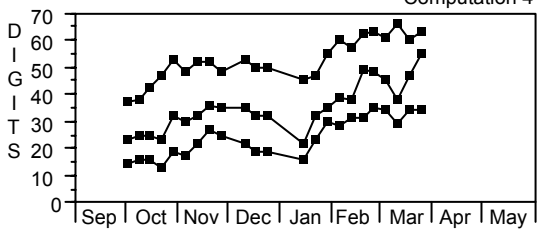
- To document student progress
- To catch students not on track for year-end benchmark
- To plan more effective instruction

In general education, the focus is on the class report to enhance instruction for <u>all</u> students and to identify which students are in need of more help.

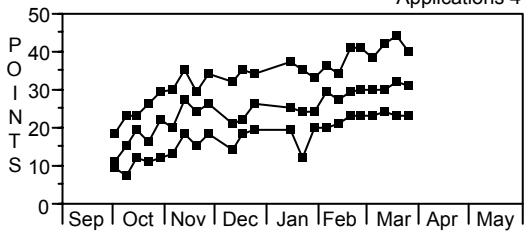
CLASS SUMMARY

Teacher: Mrs. Marshall
Report through 3/24

Computation 4



Applications 4



Students to Watch

Chaz P.
Shane J.
Brittany S.
Bethany T.
Ashley J.

Most Improved

Hailey W.
Laura W.
Lisa B.
Dontae J.
Jenny D.

Areas of Improvement: Computation

D2 One-step dividing

Areas of Improvement: Applications

GR Grid reading
Fr Fractions

Whole Class Instruction: Computation

D3 Two-step dividing

53% of your students are either COLD or COOL on this skill.

Whole Class Instruction: Applications

WP Word Problems

74% of your students are either COLD or COOL on this skill.

Small Group Instruction: Computation

S1 Subtracting

Ashley J.
Bethany T.
Kenny P.
Laura W.
Patrick E.

Small Group Instruction: Applications

CG Charts and graphs

Ashley J.
Bethany T.
Chaz P.

Class Skills Profile -- by problem type for each student

CLASS SKILLS PROFILE - Applications

Teacher: Mrs. Marshall

Report through 3/24

Name	NC	NN	WP	GR	CG	AP	Fr	De	Me
Ashley B.									
Ashley J.									
Bethany T.									
Betsy D.									
Brittany S.									
Chaz P.									
Dontae J.									
Hailey W.									
Jenny D.									
Jon F.									
Justin R.									
Kayla B.									
Kenny P.									
Laura W.									
Lisa B.									
Micah M.									
Patrick E.									
Shane J.									
Shereka W.									

COLD. Not tried	0	0	5	0	0	0	0	0	0
COOL. Trying these.	1	3	9	0	5	0	2	8	4
WARM. Starting to get it.	12	10	4	4	11	2	1	8	12
VERY WARM. Almost have it.	0	0	0	0	2	0	1	1	0
HOT. You've got it!	6	6	1	15	1	17	15	2	3

Ranked Scores -- Average of Last Two CBM Scores and the

Slope -- Average Weekly Increase

RANKED SCORES - Applications

Teacher: Mrs. Marshall
Report through 3/24

Name	Score	Growth
Jon F.	43	+0.81
Justin R.	42	+0.71
Jenny D.	40	+0.83
Ashley B.	38	+0.97
Shereka W.	34	+0.40
Laura W.	32	+0.81
Betsy D.	32	+0.76
Lisa B.	31	+0.49
Dontae J.	31	+0.50
Patrick E.	30	+0.56
Micah M.	30	+0.66
Kayla B.	30	+0.63
Kenny P.	27	+0.64
Hailey W.	26	+0.47
Chaz P.	24	+0.53
Bethany T.	24	+0.45
Shane J.	21	+0.23
Brittany S.	21	+0.48
Ashley J.	21	+0.31

Class Skills Profile -- by problem type for each student

CLASS SKILLS PROFILE - Computation

Teacher: Mrs. Marshall

Report through 3/24

Name	A1	S1	M1	M2	M3	D1	D2	D3	F1	F2
Ashley B.	HOT	HOT	HOT	HOT	HOT	HOT	HOT	HOT	HOT	WARM
Ashley J.	VERY WARM	COOL	HOT	COOL	COLD	WARM	WARM	COOL	HOT	HOT
Bethany T.	WARM	COLD	VERY WARM	WARM	COOL	WARM	VERY WARM	COLD	HOT	VERY WARM
Betsy D.	HOT	HOT	HOT	COOL	COOL	WARM	HOT	COOL	HOT	HOT
Brittany S.	WARM	WARM	VERY WARM	WARM	WARM	WARM	VERY WARM	COOL	HOT	HOT
Chaz P.	HOT	WARM	VERY WARM	VERY WARM	COLD	WARM	COOL	COOL	HOT	HOT
Dontae J.	HOT	WARM	HOT	HOT	VERY WARM	HOT	WARM	COOL	HOT	HOT
Hailey W.	HOT	VERY WARM	HOT	HOT	WARM	HOT	HOT	COOL	HOT	HOT
Jenny D.	HOT	VERY WARM	HOT	HOT	HOT	WARM	HOT	WARM	HOT	COOL
Jon F.	HOT	HOT	HOT	HOT	HOT	HOT	HOT	HOT	HOT	HOT
Justin R.	HOT	COOL	HOT	HOT	HOT	WARM	HOT	WARM	COOL	HOT
Kayla B.	HOT	HOT	HOT	HOT	VERY WARM	WARM	HOT	COLD	HOT	COOL
Kenny P.	WARM	WARM	HOT	VERY WARM	VERY WARM	HOT	HOT	VERY WARM	HOT	HOT
Laura W.	VERY WARM	COLD	HOT	HOT	HOT	VERY WARM	VERY WARM	COLD	HOT	HOT
Lisa B.	HOT	COOL	HOT	HOT	HOT	HOT	HOT	VERY WARM	HOT	HOT
Micah M.	HOT	VERY WARM	HOT	HOT	WARM	HOT	HOT	HOT	HOT	HOT
Patrick E.	WARM	WARM	HOT	HOT	VERY WARM	HOT	HOT	WARM	HOT	HOT
Shane J.	HOT	COLD	HOT	COOL	COOL	WARM	HOT	COOL	HOT	COOL
Shereka W.	HOT	COOL	HOT	HOT	HOT	WARM	HOT	HOT	HOT	HOT

	A1	S1	M1	M2	M3	D1	D2	D3	F1	F2
COLD. Not tried	0	3	0	0	2	0	0	3	0	0
COOL. Trying these.	0	4	0	3	3	0	1	7	1	3
WARM. Starting to get it.	4	5	0	2	3	10	2	3	0	1
VERY WARM. Almost have it.	2	3	3	2	4	2	3	2	0	1
HOT. You've got it!	13	4	16	12	7	7	13	4	18	14

Ranked Scores -- Average of Last Two CBM Scores and the

Slope -- Average Weekly Increase

RANKED SCORES - Computation

Teacher: Mrs. Marshall
Report through 3/24

Name	Score	Growth
Shereka W.	61	+0.72
Jon F.	61	+0.85
Ashley B.	61	+1.31
Justin R.	58	+0.87
Lisa B.	57	+0.77
Jenny D.	57	+1.15
Micah M.	55	+1.06
Dontae J.	55	+0.85
Hailey W.	51	+0.88
Betsy D.	49	+0.95
Kayla B.	47	+0.87
Patrick E.	41	+0.65
Kenny P.	41	+0.93
Laura W.	40	+0.71
Chaz P.	38	+0.87
Shane J.	34	+0.86
Brittany S.	30	+0.53
Ashley J.	28	+0.43
Bethany T.	27	+0.59

Possible Peer Tutoring Assignments based on students' recent CBM scores and Skills Profile

PEER TUTORING ASSIGNMENTS

Teacher: Mrs. Marshall

Report through 3/24

Floater: Jon F.

M3 Multiplying by 2 digits	First Coach	Second Coach
	Justin R.	Ashley J.
	Ashley B.	Bethany T.
	Jenny D.	Betsy D.
	Micah M.	Chaz P.
	Hailey W.	Shane J.

De Decimals	First Coach	Second Coach
	Shereka W.	Kayla B.
	Patrick E.	Lisa B.
	Dontae J.	Kenny P.
	Laura W.	Brittany S.

Overall Class Scores

and ID of students whose progress is poor compared to peers

CLASS STATISTICS: Computation+Applications

Teacher: Mrs. Marshall

Report through 3/24

Score

Average score	78.2
Standard deviation	17.7
Discrepancy criterion	60.5

Slope

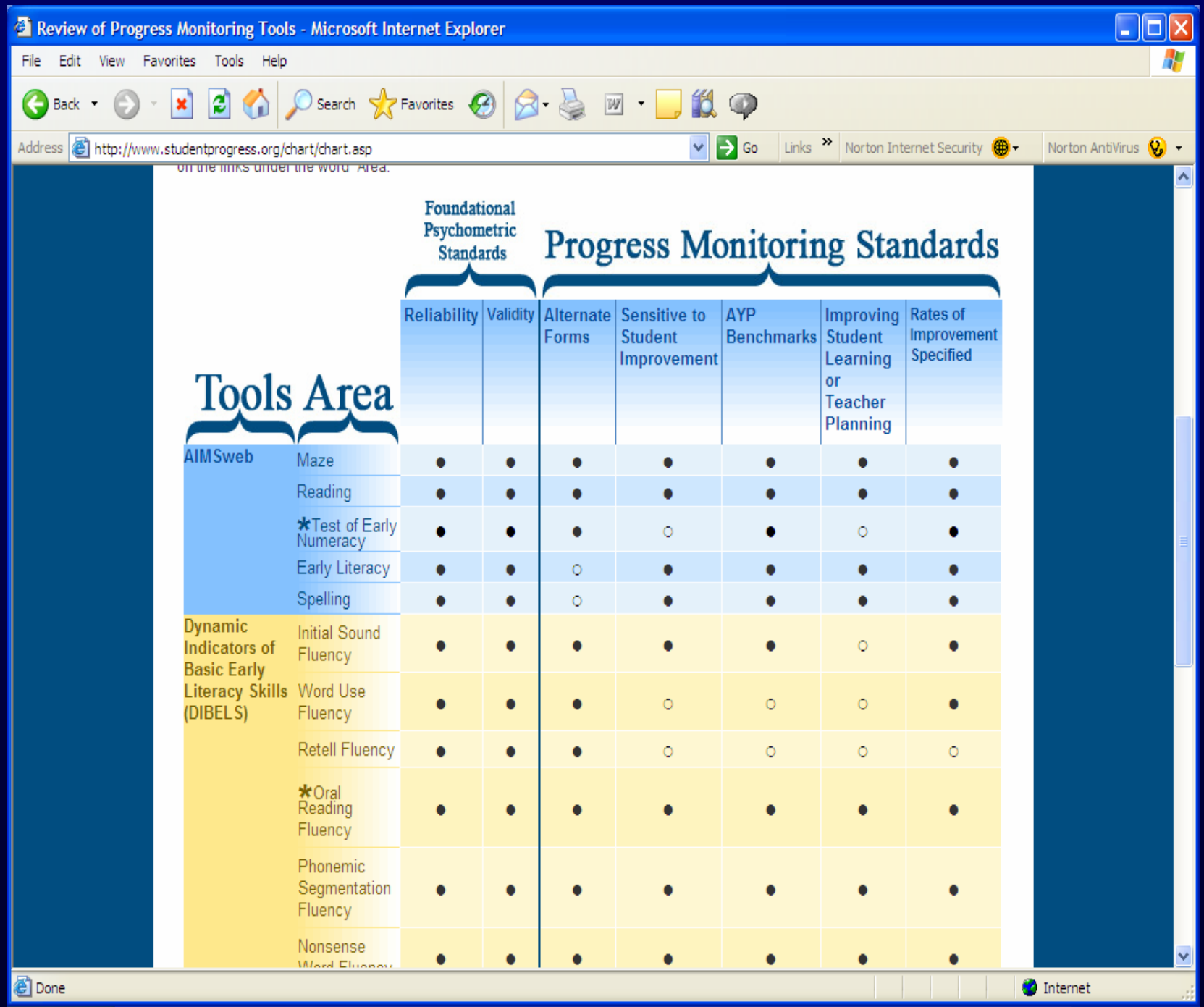
Average slope	+1.41
Standard deviation	0.37
Discrepancy criterion	+1.04

Students identified with dual discrepancy criterion

	Score	Slope
Ashley J.	50.0	+0.73
Bethany T.	51.0	+1.01
Brittany S.	51.5	+1.01

Quantifying Response

- CBM is used to quantify response to instruction, via slope (weekly rate of improvement), to core instructional program.
- If slope is inadequate in response to core program, then student progresses to secondary prevention, where CBM is used to assess response.
- If slope is inadequate to secondary prevention, then student progresses to special education, where instruction is inductively formulated with CBM to meet individual needs.
- In special education, CBM is also used to quantify response to formulate decisions about exiting special education, so that students are returned to core instructional program or secondary prevention as soon as possible.


Review of Progress Monitoring Tools - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://www.studentprogress.org/chart/chart.asp
Go Links Norton Internet Security Norton AntiVirus
on the links under the word "Area."
Foundational Psychometric Standards
Progress Monitoring Standards
Tools Area
Reliability
Validity
Alternate Forms
Sensitive to Student Improvement
AYP Benchmarks
Improving Student Learning or Teacher Planning
Rates of Improvement Specified
AIMSweb
Maze
Reading
*Test of Early Numeracy
Early Literacy
Spelling
Dynamic Indicators of Basic Early Literacy Skills (DIBELS)
Initial Sound Fluency
Word Use Fluency
Retell Fluency
*Oral Reading Fluency
Phonemic Segmentation Fluency
Nonsense
Done
Internet

In Sum …,

- Screening and progress monitoring are important forms of assessment to assist schools in effecting strong learning outcomes.

- In selecting screening and progress monitoring tools, schools need to ensure that measures provide strong data for sound decision making.

- Some well developed math screening and progress monitoring tools exist and should be considered for these forms of assessment.