

Curriculum Based Measurement: Effective Universal Screening and Progress Monitoring Measures for Response-to-Intervention Models

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Overview

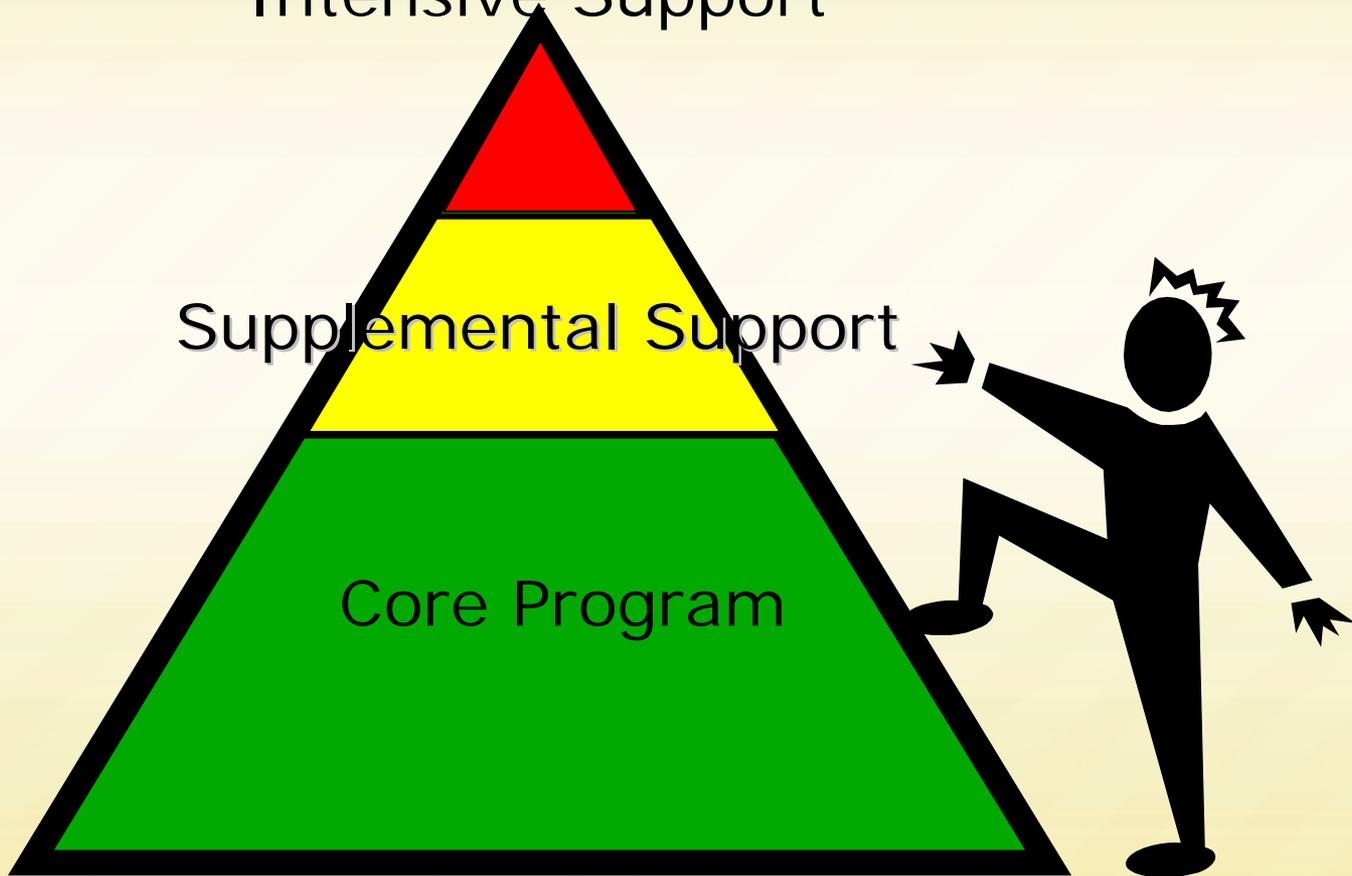
- Assessment tools for RtI – sorting through the options
- Essential features of Curriculum-Based Measurement (CBM)
- Examples of CBM and where to get materials
- Interpreting performance, norms, benchmarks, and standards – oh, my!
- Setting goals and monitoring progress using various CBM tools

A Multi-Tiered Model

Intensive Support

Supplemental Support

Core Program



Core Practices of RTI – Tier 1

- High-quality, research based classroom instruction
- Universal screening of academics and behavior
- Student assessment within a classroom focus with active involvement of all educators
- Continuous progress monitoring within the general curriculum

Core Practices of RTI – Tiers 2+

- Implementation of appropriate, research-based interventions using a tiered approach of increasing intensity
- Continuous progress monitoring of interventions
- Systematic assessment of the fidelity or integrity of implementation

How do we choose tools for assessment within RtI?



AIMSweb PALS MAP TPRI

Ed Checkup STAR mClass

DIBELS NYS-ELA

DRA STEEP Yearly Progress Pro
"Home-grown" tests
RtI Direct

Don't forget the purpose...

- *Outcome* - Provide a *bottom-line* evaluation of the effectiveness of the program.
- *Screening* - Administered to determine which children are at risk for difficulty and who will *need additional intervention*.
- *Diagnosis* - Help teachers *plan instruction* by providing in-depth information about students' skills and instructional needs.
- *Progress Monitoring* - Determine whether students are making *adequate progress* or need more intervention to achieve grade level outcomes.

Features of Assessment

- Reliability evidence
 - Internal Consistency and Alternate Form (generalize across **items**)
 - Test-retest (generalize across **time**)
 - Inter-rater (generalize across **examiners**)
- Validity evidence
 - Is the **content** appropriate for the skill of interest and the intended grade level(s)?
 - Does the tool **discriminate among high, middle, and low-performing students**?
 - Do **raw scores increase** with grade level?
 - Is there a significant, moderate to strong correlation between scores on this tool and **performance on other, established measures** of the same skill?
 - Does this tool correlate significantly with **teacher rankings** of students' skills in the same subject area?

Reliability and Validity Evidence

Measure

Reliability & Validity

Nonsense Word Fluency	Reliability of 1 probe: .92 Reliability of 3 probes: .98 Validity: .84
Word Use Fluency	Reliability of 1 probe: .65 Reliability of 5 probes: .90 Validity: .42 - .71
Oral Reading and Retell Fluency	Validity: .73-.81

Features of Assessment

- Interpretation of scores
 - Norms – national, local, both? If local, what level of local norms is available?
 - Expert Judgment
 - Empirical Linkage to Outcome measure
- Value of the information gained
 - How is the information used? Can it be used for multiple purposes?
 - Screening?
 - Instructional Grouping?
 - Instructional Planning?
 - Progress Monitoring?
 - Program Evaluation?

Essential Features by Purpose

- **Screening:**
 - Reliable and valid, standardized, efficient, high sensitivity, accurate criteria, may over-identify to an extent. Can be an indicator.
- **Instructional Planning:**
 - Content validity is paramount, in-depth, sufficient number of items to permit analysis of what student can/can not do. Standardization is less important. Needs to assess skills directly.
- **Progress Monitoring:**
 - Reliable and valid, sensitive to growth, efficient, multiple equivalent forms, standards for rates of growth. Can be an indicator.
- **Outcome/Program Evaluation**
 - Reliable and valid, standardized, strong indicator (e.g., R-CBM/ORF) or comprehensive content-valid test.

Other Considerations

- Efficiency of data collection
 - Training time
 - Administration time
 - Scoring time
 - Estimated impact of data collection on instructional time
 - Data entry/summarization
- Cost of materials, training
 - Materials purchased once per edition
 - Materials purchased every year (include software license for data management tools)
 - Cost of training (include need for subs)
- Buy-in
 - Do teachers understand the tool and believe it is valid, appropriate, useful, and fair? Do they feel threatened by the collection of data using this tool?

Evaluate Tools Example: DRA

- Intended to accompany literature-based reading programs
- Based on text levels
- Individually administered (“Reading conferences,” based on Marie Clay’s work)
- Not standardized or normed
- Designed to be used for screening, instructional planning, and progress monitoring decisions.

Recommended Uses of DRA Information

(Beaver, 2001, p. 18)

- Determine a reader's independent reading level
- Confirm or redirect ongoing instruction
- Group students effectively for reading experiences and instruction
- Document changes over time in reading performance
- Identify students who may be working below proficiency and who need further assessment or intervention

Reliability Evidence

- Data provided by publisher:
 - Test-retest reliability ranges from .92 to .99 (Weber, 2001)
 - Interrater agreement ranges from .74 to .80 (Williams, 1999)
 - Agreement higher for accuracy and phrasing and fluency, lower for comprehension (Weber, 2001)

Validity Evidence

Information from the publisher:

- Content validity supported by the field-testing and teacher input processes during development
 - Obtained feedback from 127 teachers in 11 states
 - 92% of teacher reviewers rated the DRA as having moderate (40%) or strong (52%) relationship to classroom instruction
- Criterion-related validity with ITBS RC (n=2,470 total)
 - $r = .65$ (G1), $r = .84$ (G2), $r = .54$ (G3)

My DRA Investigation

- Analyzed data from Reading First schools in urban district
 - Years 04-05 and 05-06: 4 schools
- Data:
 - DIBELS 3x/year
 - DRA 2x/year
 - Terra Nova assessment 1x/year (G1-G3)
- Question: Does the DRA produce data that are reliable and valid?
 - Correlation analyses between DRA, DIBELS, and Terra Nova assessment at grades K-3

Kindergarten Correlations

	LNF-F	ISF-F	DRA-F	LNF-S	PSF-S	DRA-S
LNF - F	1.00	---	---	---	---	---
ISF - F	.256*	1.00	---	---	---	---
DRA - F	.489*	.047	1.00	---	---	---
LNF - S	.453*	.145	.319*	1.00	---	---
PSF - S	.362*	.271*	.288*	.643*	1.00	---
DRA - S	.510*	.182*	.548*	.633*	.586*	1.00

**Correlation is significant at the .001 level*

First Grade Correlations

	NWF-F	LNF-F	DRA-F	NWF-S	ORF-S	DRA-S
NWF-F	1.00	---	---	---	---	---
LNF-F	.754*	1.00	---	---	---	---
DRA-F	.787*	.656*	1.00	---	---	---
NWF-S	.497*	.554*	.521*	1.00	---	---
ORF-S	.745*	.625*	.745*	.622*	1.00	---
DRA-S	.761*	.639*	.822*	.524*	.850*	1.00

**Correlation is significant at the .001 level*

Second Grade Correlations

	ORF-F	DRA-F	ORF-S	DRA-S	TN2W	TN2C
ORF-F	1.00	---	---	---	---	---
DRA-F	.752	1.00	---	---	---	---
ORF-S	.862	.757	1.00	---	---	---
DRA-S	.575	.761	.674	1.00	---	---
TN2W	.549	.547	.640	.598	1.00	---
TN2C	.652	.645	.728	.651	.645	1.00

**All correlations are significant at the .001 level*

Third Grade Correlations

	ORF-F	DRA-F	ORF-S	DRA-S	TN3V	TN3C
ORF-F	1.00	---	---	---	---	---
DRA-F	.727*	1.00	---	---	---	---
ORF-S	.880*	.690*	1.00	---	---	---
DRA-S	.717*	.888*	.750*	1.00	---	---
TN3V	.205*	.163	.203*	.116	1.00	---
TN3C	.384*	.401*	.472*	.478*	.223*	1.00

**Correlation is significant at the .001 level*

Other Considerations

- Interpretation of Scores:
 - Text level assignment
 - Assignment to level based on expert opinion
- For what purposes can it be used?
 - Screening?
 - Instructional Grouping?
 - Instructional Planning?
 - Progress Monitoring?
 - Program Evaluation?

DRA as Instructional Planning Tool

- Tools used for instructional planning must:
 - Require production-type responses
 - Have sufficient content representation
 - Be relevant to curricular objectives

DRA as Progress Monitoring Tool

- Tools used for progress-monitoring must:
 - Produce reliable and valid data
 - Be sensitive to growth over time
 - Have multiple forms at each level
 - Be efficient to administer
 - Have benchmarks for performance over time
 - Have rates of growth specified over time
 - Impact teacher decision making, instruction, or student achievement

Source: National Center for Student Progress Monitoring

Useful for Progress Monitoring?

- Reliable and valid?
- Benchmarks for performance over time?
- Impacts teacher decision making, instruction, or student achievement?
- Multiple forms at each level?
- Efficient to administer?
- Sensitive to growth over time?
- Rates of growth specified over time?

Ecological Issues

- Cost – purchase kits, scoring sheets
- Training
- Time to administer (individually, 20-40 minutes per student)
- Buy-in??

Conclusions on DRA in RTI

- DRA and CBM can serve complimentary purposes
- DRA can provide useful information for instructional planning
- DRA is not an appropriate tool for progress monitoring – encourage teachers to use CBM in conjunction with the DRA
- DRA may be useful for screening in second grade and beyond

Activity

- Work in groups with others from your school (if possible)
- Review the checklist for evaluating screening tools
- Complete the checklist with respect to an assessment tool either currently used in your school or under consideration.
- How much can you answer now? What additional information do you need? Where can you find that information?

Curriculum-Based Measurement

Relevant Features:

- | Efficient and economical
- | Standardized
- | Replicable
- | Relevant to instruction
- | Technically adequate
- | Sensitive to growth and change over time and to effects of intervention

Origins of CBM

- ***Curriculum-Based Measurement*** (CBM) was developed more than 25 years ago by Stanley Deno at the University of Minnesota through a federal contract to develop a reliable and valid measurement system for evaluating basic skills growth.
- CBM is supported by more than ***25 years of school-based research*** sponsored by the US Department of Education.
- Supporting documentation can be found in more than ***150 articles, book chapters, and books in the professional literature*** describing the use of CBM to make a variety of important educational decisions.

CBM are DIBS

*D*ynamic



*I*ndicators



of *B*asic *S*kills

Examples of DIBS: Reading

- Reading Aloud (or Oral Reading Fluency)
 - Students read aloud for 1 minute from meaningful, connected, and graded passages of text. The number of words read correctly and errors are counted.
- Maze
 - Students read a passage silently for 3 minutes. Each passage has every 7th word deleted and replaced with three choices. Students select the word that belongs in the sentence. The number of correct words selected is counted.

AIMSweb Example Reading-CBM

Jason and Max picked next Friday to carry out their special mission. 12
Friday was a week away. They had so many things to accomplish. In 25
order to reach their final goal, the boys made a plan for each day of the 41
week. They had to work hard every day to finish each task. Could they 55
do it all? 58

On Monday, they agreed to meet and put plan A into action. 70
Plan A was to gather as many fallen branches as they could carry. They 84
hailed the wood from the edge of the cornfield and stacked it in a big 99
pile at the edge of the forest. 106

On Tuesday, the boys met near the lazy creek and put plan B into 120
motion. They dug up rocks the size of footballs from the creek's bottom. 133
By dusk, they had arranged the rocks in a neat circle next to the pile of 149
branches they had hauled the night before. 156

On Wednesday, plan C was to climb into the attic above Jason's 168
garage. They searched around with flashlights and both found 177
backpacks. They wore their packs as they rode their bikes to the edge 190
of the forest to complete the day's work. 198

On Thursday it rained. They had to drop the plan for the day. Still, 212
Jason and Max met at the end of their driveways under umbrellas. They 225
quietly spoke. They decided their mission would work without plan D. 236

When the sun went down on Friday, they met at the edge of the 250
forest. There sat their tent. They'd set it up on Wednesday evening. 262
The wood was ready to go into their campfire ring. Their next step was 276
to build a warm fire. 281

The mission to camp out was complete. The only tasks now were 293
to sit back and enjoy the fruits of their labor. 303

Sample Passage
For Demonstration Purposes Only

Jason and Max
Grade 3, Sample Passage

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Jason and Max picked next Friday to carry out their special mission.
Friday was a week away. They had so many things to accomplish. In
order to reach their final goal, the boys made a plan for each day of the
week. They had to work hard every day to finish each task. Could they
do it all?

On Monday, they agreed to meet and put plan A into action.
Plan A was to gather as many fallen branches as they could carry. They
hailed the wood from the edge of the cornfield and stacked it in a big
pile at the edge of the forest.

On Tuesday, the boys met near the lazy creek and put plan B into
motion. They dug up rocks the size of footballs from the creek's bottom.
By dusk, they had arranged the rocks in a neat circle next to the pile of
branches they had hauled the night before.

On Wednesday, plan C was to climb into the attic above Jason's
garage. They searched around with flashlights and both found
backpacks. They wore their packs as they rode their bikes to the edge
of the forest to complete the day's work.

On Thursday it rained. They had to drop the plan for the day. Still,
Jason and Max met at the end of their driveways under umbrellas. They
quietly spoke. They decided their mission would work without plan D.

When the sun went down on Friday, they met at the edge of the
forest. There sat their tent. They'd set it up on Wednesday evening.
The wood was ready to go into their campfire ring. Their next step was
to build a warm fire.

The mission to camp out was complete. The only tasks now were
to sit back and enjoy the fruits of their labor.

Sample Passage
For Demonstration Purposes Only

Jason and Max
Grade 3, Sample Passage

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Note: Materials can be derived
from a variety of sources.
AIMSweb and DIBELS are not the
only options.

AIMSweb Example

Maze-CBM

● Silent Reading

Jason and Max picked next Friday to carry out their special mission. Friday was a week away. They **(agreed, had, branches)** so many things to accomplish. In **(plan, order, at)** to reach their final goal, the **(next, branches, boys)** made a plan for each day **(to, of, each)** the week. They had to work **(hard, creek, big)** every day to finish each task. **(Pile, Could, Had)** they do it all?

On Monday, **(creek, big, they)** agreed to meet and put plan **(near, wood, A)** into action. Plan A was to **(gather, work, day)** as many fallen branches as they **(could, on, had)** carry. They hauled the wood from **(neat, a, the)** edge of the cornfield and stacked **(agree, it, they)** in a big pile at the **(plan, edge, hauled)** of the forest.

On Tuesday, the **(rocks, by, boys)** met near the lazy creek and **(put, climb, wood)** plan B into motion. They dug **(up, near, the)** rocks the size of footballs from **(and, night, the)** creek's bottom. By dusk, they had **(rode, arranged, to)** the rocks in a neat circle **(a, next, up)** to the pile of branches they **(their, found, had)** hauled the night before.

On Wednesday, **(plan, the, work)** C was to climb into the **(attic, umbrellas, they)** above Jason's garage. They searched around **(Max, in, with)** flashlights and both found backpacks. They **(spoke, under, wore)** their packs as they rode their **(without, bikes, garage)** to the edge of the forest **(to, end, for)** complete the day's work.

On Thursday **(they, it, work)** rained. They had to drop the **(up, plan, forest)** for the day. Still, Jason and **(went, backpack, Max)** met at the end of their **(bikes, driveways, on)** under umbrellas. They quietly spoke. They **(rained, decided, tent)** their mission would work without plan **(D, fire, was)**.

When the sun went down on **(only, Friday, evening)**, they met at the edge of **(the, out, and)** forest. There sat their tent. They'd **(stacked, tasks, set)** it up on Wednesday evening. The **(circle, special, wood)** was ready to go into their **(campfire, many, night)** ring. Their next step was to **(big, build, climb)** a warm fire.

The mission to **(camp, step, the)** out was complete. The only tasks **(Max, now, next)** were to sit back and enjoy **(a, the, ring)** fruits of their labor.

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Jason and Max
Grade 3, Passage 2

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Jason and Max picked next Friday to carry out their special mission. Friday was a week away. They **(had)** so many things to accomplish. In **(order)** to reach their final goal, the **(boys)** made a plan for each day **(of)** the week. They had to work **(hard)** every day to finish each task. **(Could)** they do it all?

On Monday, **(they)** agreed to meet and put plan **(A)** into action. Plan A was to **(gather)** as many fallen branches as they **(could)** carry. They hauled the wood from **(the)** edge of the cornfield and stacked **(it)** in a big pile at the **(edge)** of the forest.

On Tuesday, the **(boys)** met near the lazy creek and **(put)** plan B into motion. They dug **(up)** rocks the size of footballs from **(the)** creek's bottom. By dusk, they had **(arranged)** the rocks in a neat circle **(next)** to the pile of branches they **(had)** hauled the night before.

On Wednesday, **(plan)** C was to climb into the **(attic)** above Jason's garage. They searched around **(with)** flashlights and both found backpacks. They **(wore)** their packs as they rode their **(bikes)** to the edge of the forest **(to)** complete the day's work.

On Thursday **(it)** rained. They had to drop the **(plan)** for the day. Still, Jason and **(Max)** met at the end of their **(driveways)** under umbrellas. They quietly spoke. They **(decided)** their mission would work without plan **(D)**.

When the sun went down on **(Friday)**, they met at the edge of **(the)** forest. There sat their tent. They'd **(set)** it up on Wednesday evening. The **(wood)** was ready to go into their **(campfire)** ring. Their next step was to **(build)** a warm fire.

The mission to **(camp)** out was complete. The only tasks **(now)** were to sit back and enjoy **(the)** fruits of their labor.

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Jason and Max
Grade 3, Passage 2

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AIMSweb Example

Test of Early Literacy (TEL)

AIMSweb® Letter Naming Fluency - Benchmark Assessment #1 (Kindergarten - Fall)

Given To: _____ Given By: _____ Date: _____

u D P S R A X y l n / 10 (16)

C V g W A G J z c E / 10 (20)

r W Z F M c L t u f / 10 (30)

g c T Y U b d p S o / 10 (40)

c G S U J d a T K m / 10 (50)

R T G I k S q n u A / 10 (60)

R k L K s j f E h q / 10 (70)

K h b U T I D s l a / 10 (80)

N K k v l Z a u A F / 10 (90)

k X O T e h g M B W / 10 (100)

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AIMSweb® Letter Sound Fluency - Benchmark Assessment #1 (Kindergarten - Fall)

Given To: _____ Given By: _____ Date: _____

t d n r p c z v w k / 10 (10)

m b t f v z i c d p / 10 (20)

v y e l b j s t f a / 10 (30)

c n f r m b t h z s / 10 (40)

j k p s f h i r o m / 10 (50)

s z p i j r e d g o / 10 (60)

j g a t s h c r k l / 10 (70)

j u k y a s z e i v / 10 (80)

m s d g f l b v j c / 10 (90)

t e m l w j y z f v / 10 (100)

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AIMSweb® Phoneme Segmentation Fluency - Benchmark Assessment #1 (Kindergarten - Winter)

Given To: _____ Given By: _____ Date: _____

sort /s/ /or/ /t/ weight /w/ /ai/ /t/ / 6 (6)

match /m/ /a/ /ch/ touch /t/ /u/ /ch/ / 6 (12)

meal /m/ /ea/ /l/ bee /b/ /ea/ / 5 (17)

put /p/ /u/ /t/ trees /t/ /r/ /ea/ /z/ / 7 (24)

face /f/ /ai/ /s/ guess /g/ /e/ /s/ / 6 (30)

mean /m/ /ea/ /n/ them /TH/ /e/ /m/ / 6 (36)

swing /s/ /w/ /l/ /ng/ taught /t/ /o/ /t/ / 7 (43)

at /a/ /t/ hung /h/ /u/ /ng/ / 5 (48)

hopped /h/ /o/ /p/ /t/ tight /t/ /ie/ /t/ / 7 (55)

plays /p/ /l/ /ai/ /z/

hook /h/ /u/ /k/

reached /r/ /ea/ /ch/ /t/

wires /w/ /ie/ /r/ /z/

nick /n/ /l/ /k/

paid /p/ /ai/ /d/

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AIMSweb® Nonsense Word Fluency - Benchmark Assessment #1 (Kindergarten - Winter)

Given To: _____ Given By: _____ Date: _____

fec zok miv yoc kod / 15 (15)

kol rez suz rev wev / 15 (30)

nam log tam wol kos / 15 (45)

vac mas yob siv fep / 15 (60)

sut joj muj eb pol / 14 (74)

nes duj sim luj uv / 14 (88)

beb id et jag kac / 13 (101)

num lum wup us hak / 14 (115)

tul wil meb pif yov / 15 (130)

wap hov tof mek mag / 15 (145)

rij fum pom dov pim / 15 (160)

rel riz ij tup vip / 14 (174)

het lef bas sen div / 15 (189)

wif fiv ut wep mup / 14 (203)

hes vav ruv zal maj / 15 (218)

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- Letter Naming Fluency
- Letter Sound Fluency
- Phoneme Segmentation
- Nonsense Word Fluency

Mathematics

- Students complete a 2-4 minute grade-level computational exercise. The number of correctly written digits is counted.
- Students write answers to standard application problems for 4 minutes. The number of correct problems is counted.
- ****New**** Students write answers to grade-level concepts and application problems for 8-10 minutes. Correct problems are awarded points based on difficulty.

AIMSweb Example Mathematics-CBM

AIMSweb® M-CBM Computation Progress Monitor #1 - Grade 3

Student Name: _____	Grade: _____	Teacher Name: _____
282 - 6 <u>+ 542</u>	18 - 3 <u>+ 447</u>	586 - 578 <u>+ 94</u>
1 <u>+ 2</u>	11 <u>- 10</u>	807 <u>- 12</u>
	901 <u>+ 313</u>	93 <u>- 37</u>
		30 <u>+ 71</u>

63
- 60

6
- 3

781
+ 96

93
- 60

AIMSweb® M-CBM Computation Progress Monitor #1 - Grade 3 Answer Key

282 - 6 <u>+ 542</u>	18 - 3 <u>+ 447</u>	586 - 578 <u>+ 94</u>	901 <u>+ 313</u>	93 <u>- 37</u>	30 <u>+ 71</u>	15 (93)
1 <u>+ 2</u>	11 <u>- 10</u>	807 <u>- 12</u>	901 <u>+ 313</u>	93 <u>- 37</u>	30 <u>+ 71</u>	14 (107)
63 <u>- 60</u>	72 <u>- 68</u>	530 <u>- 90</u>	774 <u>- 260</u>	3 <u>- 0</u>	602 <u>+ 35</u>	12 (119)
6 <u>- 3</u>	7 <u>- 4</u>	335 <u>+ 47</u>	6 <u>+ 7</u>	558 <u>- 11</u>	657 <u>+ 465</u>	14 (133)
781 <u>+ 96</u>	21 <u>- 4</u>	41 <u>+ 33</u>	547 <u>- 265</u>	4 <u>+ 4</u>	18 <u>+ 1</u>	13 (146)
93 <u>- 60</u>	4 <u>- 2</u>	782 <u>+ 729</u>	681 <u>+ 83</u>	4 <u>- 1</u>	658 <u>+ 326</u>	14 (160)

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AIMSweb® M-CBM Computation Progress Monitor #1 - Grade 3

Student Name: _____	Grade: _____	Teacher Name: _____
0 <u>+ 2</u>	3 <u>+ 2</u>	9 <u>+ 9</u>
	645 <u>+ 399</u>	12 <u>- 6</u>
559 35 <u>+ 322</u>	13 <u>- 6</u>	18 <u>+ 929</u>
4 9 <u>+ 4</u>	5 9 <u>+ 0</u>	16 <u>- 2</u>
19 <u>+ 31</u>	10 <u>- 0</u>	5 <u>+ 5</u>
194 <u>+ 7</u>	953 <u>- 479</u>	50 <u>- 18</u>

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AIMSweb® M-CBM Computation Progress Monitor #1 - Grade 3 Answer Key

0 <u>+ 2</u>	3 <u>+ 2</u>	9 <u>+ 9</u>	8 <u>+ 4</u>	2 <u>- 2</u>	6 <u>- 4</u>	8 (8)
0 <u>+ 6</u>	187 <u>+ 399</u>	12 <u>- 6</u>	91 <u>+ 41</u>	452 <u>+ 501</u>	37 <u>+ 42</u>	14 (22)
559 35 <u>+ 322</u>	13 <u>- 6</u>	18 <u>+ 929</u>	808 <u>+ 57</u>	44 <u>- 24</u>	41 <u>- 15</u>	14 (36)
4 9 <u>+ 4</u>	5 9 <u>+ 0</u>	16 <u>- 2</u>	765 <u>+ 91</u>	849 <u>+ 930</u>	370 <u>+ 327</u>	17 (53)
19 <u>+ 31</u>	10 <u>- 0</u>	5 <u>+ 5</u>	107 <u>+ 8</u>	8 <u>+ 1</u>	83 <u>- 80</u>	10 (63)
194 <u>+ 7</u>	953 <u>- 479</u>	50 <u>- 18</u>	14 <u>- 5</u>	309 <u>- 84</u>	305 <u>- 84</u>	15 (78)

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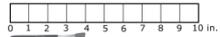
Note: Materials can be derived from a variety of sources. AIMSweb is not the only option.

- Math Computation
- Math Facts
- Concepts and Applications

Concepts and Applications

GRADE 2 PROBE

1 How long is the paintbrush?



_____ in.

2 Write "less" or "greater" in the blank.

729 is _____ than 582

3 Write the time.



_____ :

4 Write the answer in each blank.

Of these numbers

953 389 196 472

_____ is the smallest

_____ is the largest

5 Write + or - in the blank.

37 _____ 7 = 30

6 What is the height of the water bottle?



_____ in.

7 Paul bought 21 party caps. Ted bought 36 party caps. How many party caps did Paul and Ted buy in all?

8 How much money is pictured below?



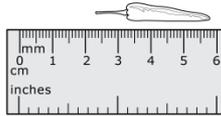
\$ _____

9 Write the answer in the blank.

$14 + 25 + 18 =$ _____

GRADE 5 PROBE

1 Write the appropriate unit in the blank.



The length of the chili is 3.5 _____.

2 In the blank, write the least common multiple of the two numbers.

8, 48

3 Andrew started sketching at time A. He stopped sketching at time B.



Andrew sketched for a total of _____ hours and _____ minutes.

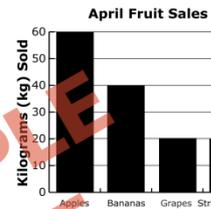
4 Write the number in the blank.

Six million, seven hundred thirty-five thousand, one hundred forty-two

5 Write <, >, or = in each blank.

$\frac{4}{7}$ _____ $\frac{2}{3}$ _____ $\frac{4}{6}$

6 Write the number in the blank.



Amount of apples sold = _____

7 In a survey, 175 students were asked if lemonade should be added to the menu. One-fifth of the students replied yes.

Write down the number of students who replied yes.

8 Solve for the value of p .

$2 \times p = 82$

GRADE 8 PROBE

26 Write the correct answer as an integer in the blank.

$2^3 + 6^1 =$ _____

27 Solve for the value of x .

$$\frac{x + 4}{3} = 4$$

28 A bag contains 50 balls, 30 of which are red. Evan takes a ball from the bag at random. What is the probability that he will take out a red ball? Express the answer as a percent.

29 Simplify the expression.

$$10^2 + 3(2 - 1) - 60$$

30 On a blueprint, the dimensions of a park are 23 centimeters (cm) by 32 cm. The blueprint uses a scale of 1 cm = 5 meters (m). What are the actual dimensions of the park?

_____ m by _____ m

22 The diameter of an asteroid is 34,800 kilometers (km). What is the diameter of the asteroid in scientific notation?

_____ km

23 A ramp is constructed with the given dimensions. What is the height of the ramp?



Note: $c^2 = a^2 + b^2$

_____ ft

24 An online store sells books for \$14.55 each. For each order, there is a one-time shipping and handling fee of \$2.35. Which expression represents the cost of ordering x books?

A $x + 14.55 + 2.35$

B $14.55x + 2.35$

C $(14.55 + 2.35)x$

25 A cylindrical can has a radius of 50 centimeters (cm) and a height of 10 cm. What is the volume of the can?

Note: $\pi = 3.14$
 $V = \pi r^2 h$

_____ cm^3

• Is this CBM?

AIMSweb

Test of Early Numeracy (TEN)

AIMSweb® Quantity Discrimination - Benchmark Assessment #1 (Kindergarten - Fall)

Given To: _____ Given By: _____ Date: _____

7	1	6	5	10	2	10	0	/ 4 of 4
1	0	0	5	7	9	9	3	/ 4 of 8
4	0	3	2	4	5	9	1	/ 4 of 12
0	7	3	8	7	2	10	1	/ 4 of 16
2	4	5	9	0	6	2	6	/ 4 of 20
2	5	10	9	8	9	1	3	/ 4 of 24
0	3	9	7	10	3	1	5	/ 4 of 28

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AIMSweb® Missing Number - Benchmark Assessment #1 (Kindergarten - Fall)

Given To: _____ Given By: _____ Date: _____

5	6	_	4	5	_	6	7	/ 3 of 3	
_	5	6	_	3	4	_	2	3	/ 3 of 6
6	_	8	7	8	_	2	_	4	/ 3 of 9
1	_	3	2	3	_	1	2	_	/ 3 of 12
_	8	9	4	_	6	_	9	10	/ 3 of 15
_	7	8	7	_	9	_	4	5	/ 3 of 18
8	9	_	8	_	10	3	_	5	/ 3 of 21

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AIMSweb® Number Identification - Benchmark Assessment #1 (Kindergarten - Fall)

Given To: _____ Given By: _____ Date: _____

6	5	1	0	9	7	8	/ 7 of 7
3	2	8	9	6	1	7	/ 7 of 14
10	1	5	9	8	0	7	/ 7 of 21
6	3	8	9	2	5	4	/ 7 of 28
6	7	9	0	10	2	1	/ 7 of 35
8	9	2	6	1	10	0	/ 7 of 42
10	8	4	2	1	9	6	/ 7 of 49
3	1	7	5	4	6	0	/ 7 of 56

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- Oral Counting
- Missing Number
- Number Identification
- Quantity Discrimination

Written Expression

- Students write a story based on a presented topic sentence. Students think for 1 minute and write for 3, 5, or 7 minutes (local decision but it's important to be consistent).
- Scoring of Written Expression:
 - Total Words Written (TWW)
 - Words Spelled Correctly (WSC)
 - Correct Word Sequences (CWS)
 - **Correct minus Incorrect Word Sequences (CIWS)

Sample CBM Writing Probe

When my mom was in peace care she had a cat. Once when she went away a friend took care of the cat. It was run over by a bannana truck and it die. The friend was worried that my mom would think that he didnt take any notice so he put a messege on the raydio so she could here it befor she came home.

In that place, feunerals are put on the raydio. The raydio played the messege like it was a feuneral and lots of peepel herd it. One girl got in truble when she laft becaws she kuw it was a cat. Her dad didnt know.

THE END

Sample
Scored
CBM
Writing
Probe

When my mom was in peace core
she had a cat. Once when she
went away a friend took care of
the cat. It was run over by
a bannanna truck and it die.
The friend was worried that my
mom would think that he
didn't take any notice so
he put a messege on the
raydio so she could here
it befor she came home.
In that place feunerals are
put on the raydio. The raydio
played the messege like it
was a feuneral and lots of
people herd it. One girl
got in trouble when she
left becaws she kuw it
was a cat. Her dad
didn't kon.

THE END

110

11ZTWN
92W5C
73CWS

AIMSweb Spelling-CBM

- Features of Spelling-CBM
 - Score Correct Letter Sequences (partial credit)
 - Samples words from the entire year
 - Can be group-administered
 - Spelling probes are easy to develop locally

Note: Materials can be derived from a variety of sources. AIMSweb is not the only option.

AIMSweb® Standard Spelling Benchmark Assessment List #1 (3rd Grade)

Given By: _____

Date Given: ____/____/____

ID	Word	CLS	CCLS
1	heel The heel of the shoe.	5	5
2	wise	5	10
3	face	5	15
4	speak	6	21
5	dinner	7	28
6	weren't Weren't there better things to do?	8	36
7	there It is over there!	6	42
8	river	6	48
9	nameless	9	57
10	able	5	62
11	tomorrow	9	71
12	highway	8	79
13	mess	5	84
14	headaches	10	94
15	wag	4	98
16	crown	6	104
17	scraped	8	112
Total CLS			112

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A Note About Secondary Schools

- Two-pronged approach: Basic Skills and Content Area learning
- Most CBM measures are validated for basic skill development
- Useful for monitoring progress in basic skills at secondary level for students whose basic skills are still underdeveloped

Research on CBM Reading in Secondary Schools

- Reading Aloud is a good indicator of performance at a single point in time
- At the secondary level, Reading Aloud is not effective at indexing growth for most students – may not be appropriate for monitoring progress
- Maze is a good indicator of performance at a single point in time
- Maze also produces valid and reliable growth rates in middle schools, therefore is appropriate for progress monitoring.

Content-Area Learning

- Vocabulary Matching: Students are given a list of 22 terms and 20 definitions. They have 5 minutes to match as many terms as possible to their definitions. Score is number of correct matches in the 5 minutes.
- Studies on vocabulary matching for predicting performance and indexing growth over time have been promising. More research is needed.

Use of CBM in RtI

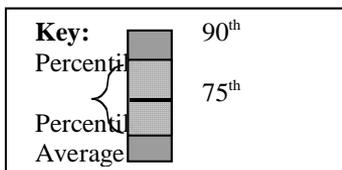
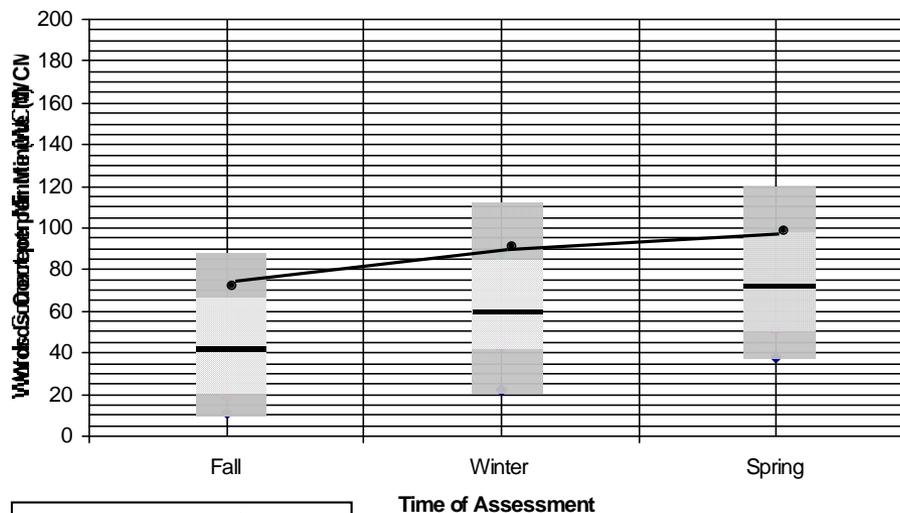
- Universal Screening/ Benchmark Assessment
 - quarterly report cards
 - systematic screening
 - systems-level decision making
 - setting performance goals
- Monitoring student progress
 - formative evaluation
 - user friendly
 - parent friendly

School District of Indian River County Reading Report Card

Grade 2

Student: André R. Teacher: Phillips

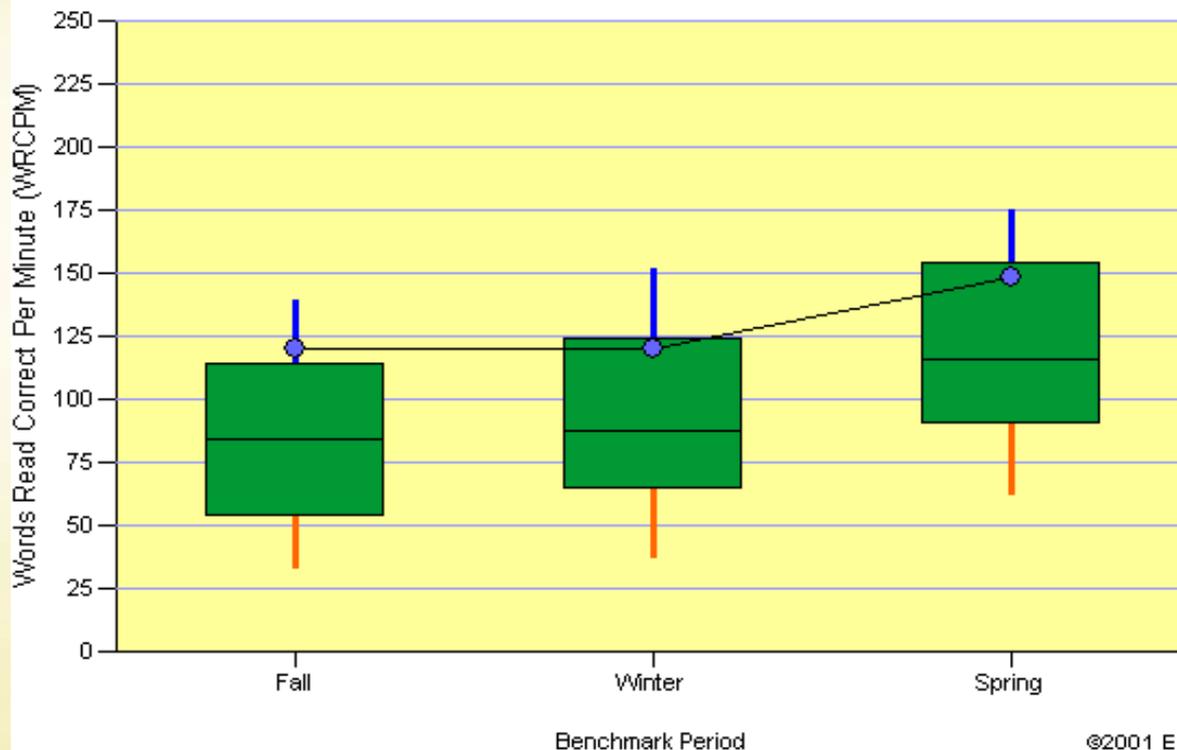
IRC Grade 2 Reading Norms



	Fall <u>10 / 6 / 98</u>	Winter <u>1 / 18 / 99</u>	Spring <u>5 / 3 / 99</u>
Passage 1	<u>72/6</u>	<u>90/9</u>	<u>91/2</u>
Passage 2	<u>80/4</u>	<u>105/0</u>	<u>95/2</u>
Passage 3	<u>48/7</u>	<u>73/5</u>	<u>76/2</u>
Median •	<u>72/6</u>	<u>90/5</u>	<u>91/2</u>
	<i>80th</i>	<i>77th</i>	<i>70th</i>

AIMSweb Report Card

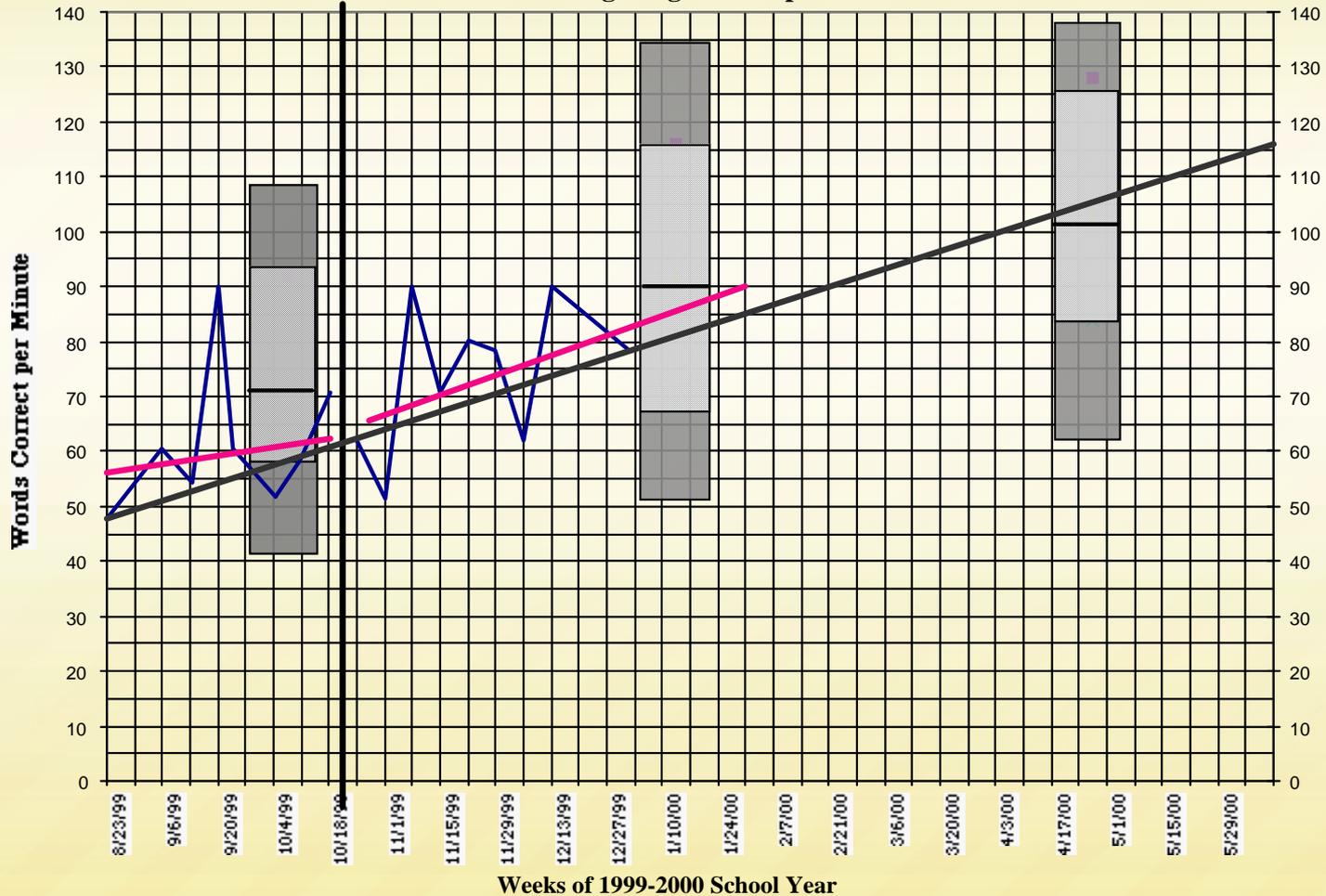
Hartford School District - Wilson Elementary
U. Boardman (Grade 3)
Reading - Standard Benchmark Passages



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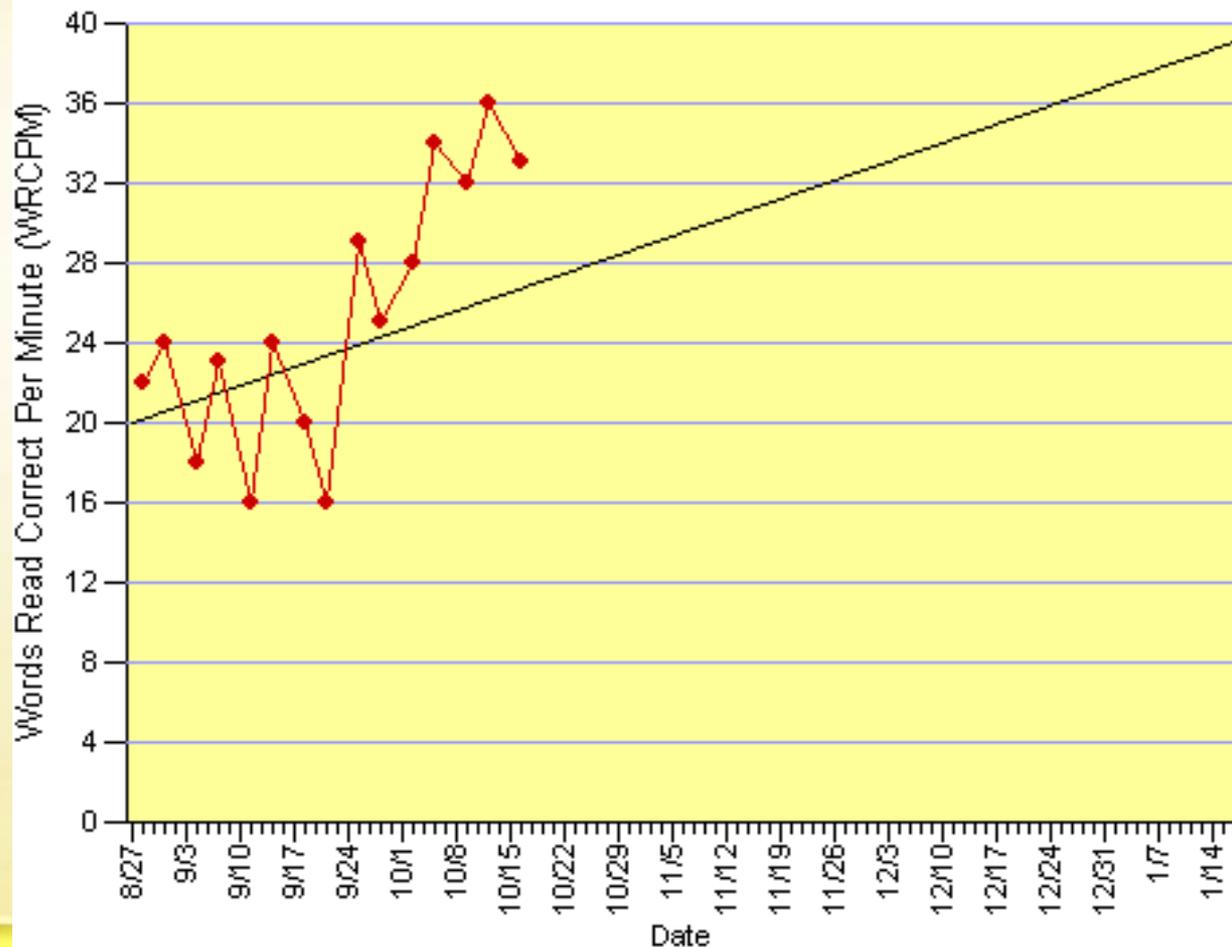
Tier 2-3 Interventions: Progress Monitoring

Individual Reading Progress Graph: Grade 4



AIMSweb P-M Graph

Hartford School District - Wilson Elementary
J. Arnold (Grade 3)
Reading - Standard Benchmark Passages



Example of CBM Uses: Special Education

- Eligibility Process
 - Discrepancies from peers
 - Response to intervention
 - Determine a student's *need* for a specialized program
- Individualizing programs
 - Writing IEP goals
 - Periodic and annual reviews
 - Monitoring progress
 - Adapting instruction appropriately and in a timely manner
 - Validated way of improving student achievement

Survey-Level Assessment of Reading Finding the Normative Reading Level

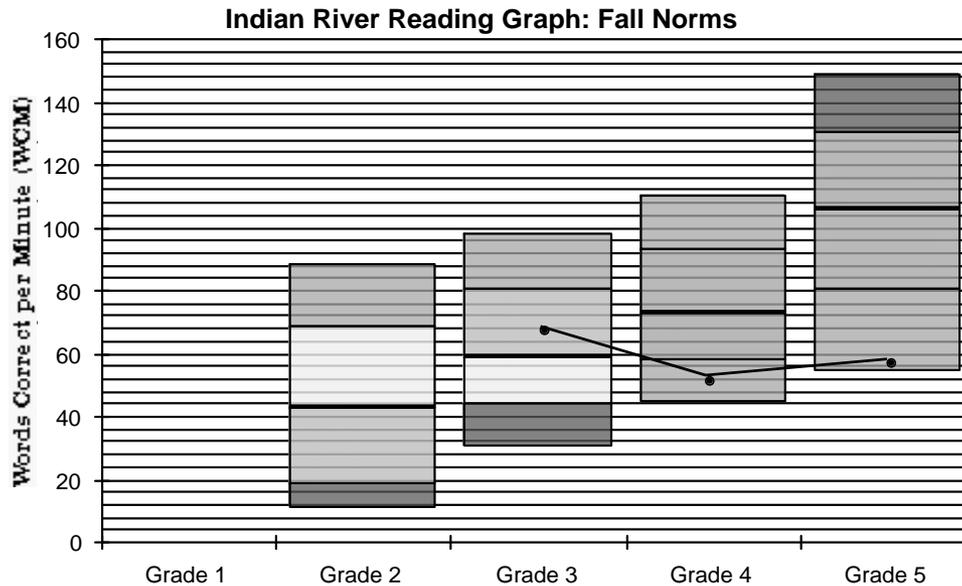
Student: _____ Grade: ____ Date: _____

Teacher: _____ Examiner: _____

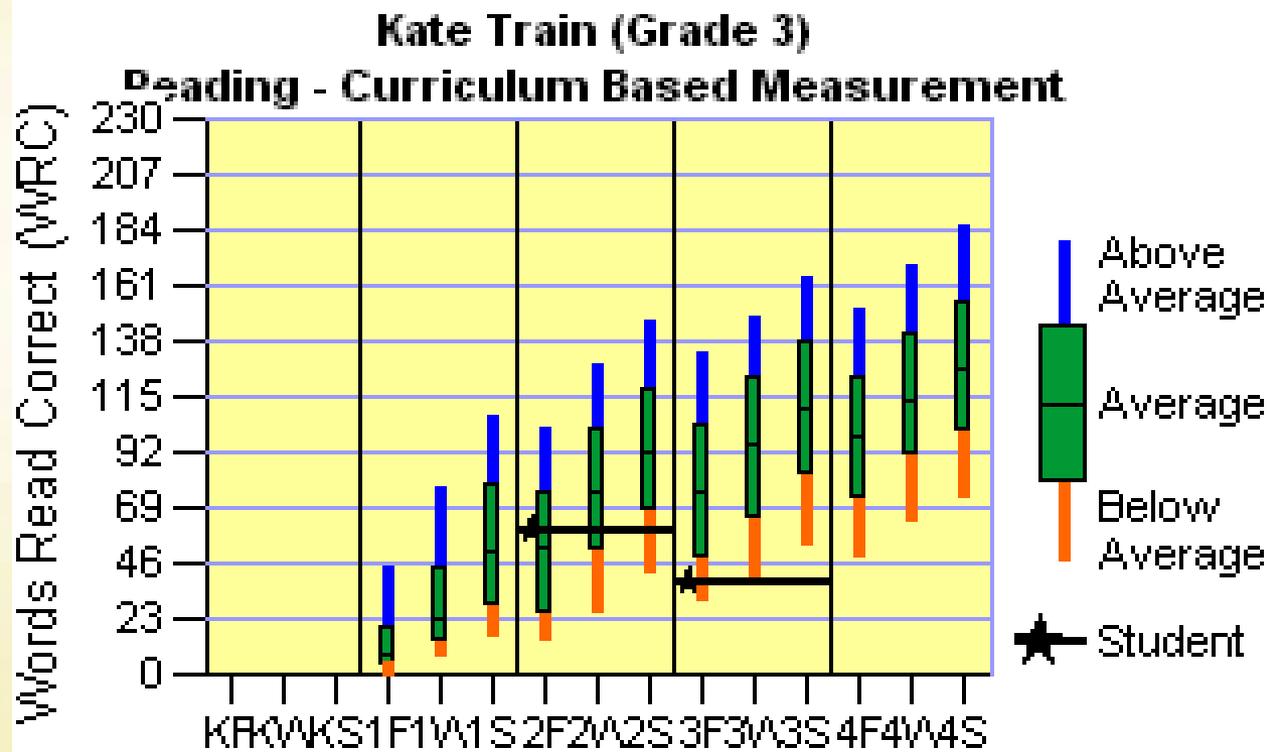
Normative Reading Level: The grade level at which the number of words the student reads correctly per minute falls within the average range (i.e., between the 25th and 75th percentiles).

Grade Level of Stories	Passage 1	Passage 2	Passage 3	Median	Percentile
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Normative Reading Level: _____

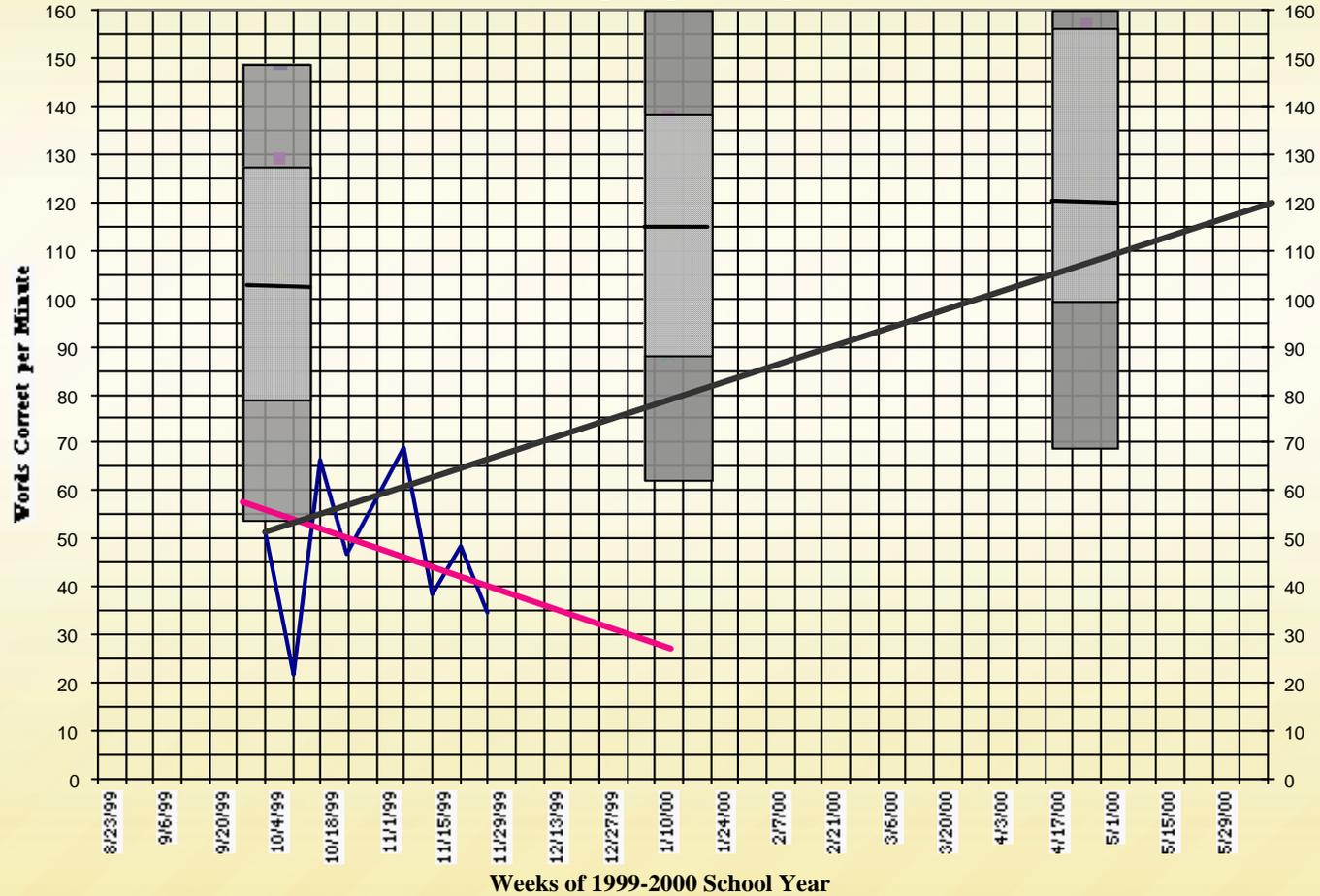


AIMSweb Version



IEP Monitoring/Evaluation

Individual Reading Progress Graph: Grade 5



Administration and Scoring: Mathematics Computation

Materials Needed:

- Directions
- Math probe
- Scoring template
- Stopwatch

Example 3: Student Probe

Sample CBM Math Probe

$$\begin{array}{r} 128 \\ + 4221 \\ \hline 4349 \end{array}$$

$$\begin{array}{r} 12 \\ 6 \overline{)72} \\ \underline{6} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

~~$$\begin{array}{r} 71 \\ \times 74 \\ \hline 284 \end{array}$$~~

$$\begin{array}{r} 213 \\ \times 2 \\ \hline 426 \end{array}$$

$$\begin{array}{r} 132 \\ \times 31 \\ \hline 132 \\ 396 \\ \hline 528 \end{array}$$

$$\begin{array}{r} 351 \\ + 963 \\ \hline 1314 \end{array}$$

$$\begin{array}{r} 893 \\ + 46 \\ \hline 39 \end{array}$$

$$\begin{array}{r} 72 \\ \times 9 \\ \hline 648 \end{array}$$

$$\begin{array}{r} 8.8 \\ \times 5.5 \\ \hline 440 \\ 440 \\ \hline 48.40 \end{array}$$

~~$$\begin{array}{r} 4098 \\ \times 68 \\ \hline 36,882 \end{array}$$~~

$$\begin{array}{r} 3000 \\ \times 3.3 \\ \hline 9000 \\ 90 \\ \hline 9900.0 \end{array}$$

$$\begin{array}{r} 6744 \\ + 5021 \\ \hline 11723 \end{array}$$

$$\begin{array}{r} 786 \\ - 67 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 11 \\ 62 \overline{)682} \\ \underline{62} \\ 62 \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array}$$

$$\begin{array}{r} 131 \\ \times 32 \\ \hline 262 \\ 3930 \\ \hline 4192 \end{array}$$

$$\begin{array}{r} 417 \\ + 982 \\ \hline 1399 \end{array}$$

$$\begin{array}{r} 1715 \\ + 1024 \\ \hline 2739 \end{array}$$

$$\begin{array}{r} 12 \text{ r}1 \\ 14 \overline{)169} \\ \underline{14} \\ 29 \\ \underline{28} \\ 1 \end{array}$$

$$\begin{array}{r} 454 \\ - 39 \\ \hline 11 \end{array}$$

Directions for Administration of Mathematics Probes

- Provide the student with a pencil and the math probe. Place the probe face down on the desk in front of the students.

- Read these specific directions to the student (s):

- Directions for Multiple-Skill Probes: *"The sheet on your desk contains a number of math problems. There are several types of problems on the sheet. Some are ... (list all problem types for that probe). Look at each problem carefully before you answer it. When I say 'begin,' start answering the problems. Start with the first problem and work across the page (demonstrate by pointing). Then go to the next row. Try to work each problem. If you cannot answer a problem, mark an 'X' through it and go to the next one. (If there is more than one page, read the following: If you finish a page, turn the page and continue working.) Are there any questions?" (pause)*

Directions for Administration of Mathematics Probes

- Directions for Single-Skill Probes: *“The sheet on your desk contains a number of math problems. All the problems are...(+, -, x, ÷). Look at each problem carefully before you answer it. When I say ‘begin,’ start answering the problems. Start with the first problem and work across the page (demonstrate by pointing). Then go to the next row. Try to work each problem. If you cannot answer a problem, mark an ‘X’ through it and go to the next one. (If there is more than one page, read the following: If you finish a page, turn the page and continue working.) Are there any questions?” (pause)*

Directions for Administration of Mathematics Probes

- Say "*Begin*" and start your stopwatch
- Monitor students to ensure that they work across the page and do not skip around or answer only specific problems. If the student(s) skip around on the page, say, "*Try to work on each problem.*" If a student works too long on one problem, say, "*Mark an 'X' through the problem and go to the next one.*"
- At the end of 2 minutes, say "*Stop. Put your pencils down.*"

Efficient Math Scoring Procedures

- Compare the student's answer with the scoring template.
- If the answer is correct, give the student full credit.
- If the answer is incorrect, score the correct digits (CD).
- Record the total CDs earned for each problem in parentheses.
- After all the problems have been scored, sum the number of CDs per row, and record this number in brackets at the right hand margin.
- Sum the row totals and record this number in brackets at the top of each page.

Example 3: Scoring Template

Total CD [134]

$$\begin{array}{r} 128 \\ + 4221 \\ \hline 4349 \end{array} \quad (4)$$

$$6 \overline{) 72} \quad (2)$$

$$\begin{array}{r} 71 \\ \times 74 \\ \hline 284 \\ 4970 \\ \hline 5254 \end{array} \quad (11)$$

$$\begin{array}{r} 213 \\ \times 2 \\ \hline 426 \end{array} \quad (3)$$

$$\begin{array}{r} 132 \\ \times 31 \\ \hline 132 \\ 3960 \\ \hline 4092 \end{array} \quad (11)$$

$$\begin{array}{r} 351 \\ + 963 \\ \hline 1314 \end{array} \quad (4)$$

$$\begin{array}{r} 893 \\ + 46 \\ \hline 939 \end{array} \quad (3)$$

$$\begin{array}{r} 72 \\ \times 9 \\ \hline 648 \end{array} \quad (3)$$

$$\begin{array}{r} 8.8 \\ \times 5.5 \\ \hline 440 \\ 4400 \\ \hline 48.40 \end{array} \quad (12)$$

$$\begin{array}{r} 4098 \\ \times 69 \\ \hline 36,882 \\ 245,880 \\ \hline 282,762 \end{array} \quad (17)$$

$$\begin{array}{r} 3000 \\ \times 3.3 \\ \hline 9,000 \\ 90,000 \\ \hline 99,000 \end{array} \quad (15)$$

$$\begin{array}{r} 6744 \\ + 5021 \\ \hline 11,765 \end{array} \quad (5)$$

$$\begin{array}{r} 86 \\ - 67 \\ \hline 19 \end{array} \quad (2)$$

$$62 \overline{) 682} \quad (9)$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array} \quad (2)$$

$$\begin{array}{r} 131 \\ \times 32 \\ \hline 262 \\ 3930 \\ \hline 4192 \end{array} \quad (11)$$

$$\begin{array}{r} 417 \\ + 989 \\ \hline 1406 \end{array} \quad (4)$$

$$\begin{array}{r} 1715 \\ + 1024 \\ \hline 2739 \end{array} \quad (4)$$

$$14 \overline{) 169} \quad (10)$$

$$\begin{array}{r} 54 \\ - 39 \\ \hline 15 \end{array} \quad (2)$$

Sample
CBM
Math
Probe
Scoring
Template

Sample Scored CBM Math Probe

Answer Key

Example 3: Student Probe

TOTAL [102]

$$\begin{array}{r} 128 \\ + 4221 \\ \hline 4349 \end{array} \quad (4)$$

$$\begin{array}{r} 12 \\ 6 \overline{)72} \quad (2) \\ \underline{6} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

~~$$\begin{array}{r} 71 \\ \times 74 \\ \hline 284 \end{array} \quad (3)$$~~

$$\begin{array}{r} 213 \\ \times 2 \\ \hline 426 \end{array} \quad [12] \quad (3)$$

$$\begin{array}{r} 132 \\ \times 31 \\ \hline 132 \\ 396 \\ \hline 528 \end{array} \quad (7)$$

$$\begin{array}{r} 351 \\ + 963 \\ \hline 1314 \end{array} \quad (4)$$

$$\begin{array}{r} 893 \\ + 46 \\ \hline 39 \end{array} \quad (2)$$

$$\begin{array}{r} 72 \\ \times 9 \\ \hline 648 \end{array} \quad [16] \quad (3)$$

$$\begin{array}{r} 8.8 \\ \times 5.5 \\ \hline 440 \\ 4400 \\ \hline 48.40 \end{array} \quad (12)$$

~~$$\begin{array}{r} 4098 \\ \times 69 \\ \hline 36,882 \end{array} \quad (5)$$~~

$$\begin{array}{r} 3000 \\ \times 3.3 \\ \hline 9000 \\ 90 \\ \hline 9900.0 \end{array} \quad (15)$$

$$\begin{array}{r} 6744 \\ + 5021 \\ \hline 11723 \end{array} \quad [34] \quad (2)$$

$$\begin{array}{r} 786 \\ - 67 \\ \hline 16 \end{array} \quad (1)$$

$$\begin{array}{r} 11 \\ 62 \overline{)682} \\ \underline{62} \\ 62 \end{array} \quad (9)$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline 81 \end{array} \quad (2)$$

$$\begin{array}{r} 131 \\ \times 32 \\ \hline 262 \\ 3930 \\ \hline 4192 \end{array} \quad [23] \quad (11)$$

$$\begin{array}{r} 417 \\ + 989 \\ \hline 1390 \end{array} \quad (1)$$

$$\begin{array}{r} 1715 \\ + 1024 \\ \hline 2739 \end{array} \quad (4)$$

$$\begin{array}{r} 12 \text{ r } 1 \\ 14 \overline{)169} \\ \underline{14} \\ 29 \\ \underline{28} \\ 1 \end{array} \quad (10)$$

$$\begin{array}{r} 464 \\ - 39 \\ \hline 425 \end{array} \quad [17] \quad (2)$$

What is a Correct Digit?

- A correct digit (CD) is a digit that is written correctly below the line. Digits written "above the line" are not counted as correct digits.

Simple Case

$$\begin{array}{r} 30 \\ - 21 \\ \hline 9 \end{array}$$

Problem-Value (1 CD)

Complex Case

$$\begin{array}{r} 351 \\ \times 25 \\ \hline 1755 \\ 7020 \\ \hline 8775 \end{array}$$

(12 CD)

What is a Correct Digit?

- Problem-values on the scoring template are assigned according to the longest method taught to solve the problem (answer and process).
- If a student's answer is correct, the student receives the full problem value, even if the work is not shown

Ex:
$$\begin{array}{r} 350 \\ \times 20 \\ \hline 7000 \end{array} \quad (11 \text{ CD})$$

$$\begin{array}{r} 350 \\ \times 20 \\ \hline 000 \\ 7000 \\ \hline 7000 \end{array} \quad (11 \text{ CD})$$

Additional Features of Correct Digits

➤ Place Holders: If the problem is correct, an “X”, “O”, or an explicit space that counts as a place holder is scored as a correct digit.

• **EX:**

Template	(a)	(b)	(c)
347	347	347	347
<u>x 19</u>	<u>x 19</u>	<u>x 19</u>	<u>x 19</u>
3123	3123	3123	3123
<u>3470</u>	<u>3470</u>	<u>347</u>	<u>347X</u>
6593	6593	3570	6593
(12 CD)	(12 CD)	(8 CD)	(12 CD)

Additional Features of Correct Digits

- Crossed-Out Problems: If the student has crossed-out a problem, credit is earned for the correct digits written.

- **EX:**

Template

(a)

(b)

(c)

$$\begin{array}{r} 12 \\ \times 14 \\ \hline 48 \\ 120 \\ \hline 168 \end{array}$$

(8 CD)

$$\begin{array}{r} 12 \\ \times 14 \\ \hline 48 \\ 120 \\ \hline 168 \end{array}$$

(8 CD)

$$\begin{array}{r} 12 \\ \times 14 \\ \hline 48 \\ 12x \\ \hline \end{array}$$

(5 CD)

$$\begin{array}{r} 12 \\ \times 14 \\ \hline 48 \end{array}$$

(2 CD)

Additional Features of Correct Digits

- Incomplete Problems: When a student has not completed a problem, credit is earned for the correct digits written.

- **EX:**

Template

(a)

(b)

(c)

32

32

32

32

x15

x15

x15

x15

160

160

160

0

320

320

320

480

0

(9 CD)

(6 CD)

(7 CD)

(1 CD)

Additional Features of Correct Digits

- Reversed Digits: Reversed digits are counted as correct. If the digit looks like another number, count it as wrong.

- **EX:**

Template

$$\begin{array}{r} 32 \\ +32 \\ \hline 64 \end{array}$$

(2 CD)

(a)

$$\begin{array}{r} 32 \\ +32 \\ \hline 66 \end{array}$$

(2 CD)

(b)

$$\begin{array}{r} 32 \\ +32 \\ \hline 74 \end{array}$$

(2 CD)

(c)

$$\begin{array}{r} 32 \\ +32 \\ \hline 94 \end{array}$$

(1 CD)

Additional Features of Correct Digits

- **Remainders:** In division, remainders are scored as correct digits. Zero remainders ($r\ 0$) are not scored as correct digits.
- **Intermediate Steps of Multiplication and Division Basic-Facts:** Only count the correct digits in the answer of the multiplication and division basic-facts up to 12. Do not count the work shown as correct digits.
- **Decimals:** A decimal written in the appropriate place is counted as a correct digit. Decimal problems are scored first for correct digits and then an extra point is given for correct placement of the decimal point. If the digits are incorrectly placed, but the decimal is in the right place, then they get one point for placement of the decimal.

Student Name: Maggie

$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 11 \\ 8253 \\ + 7257 \\ \hline 25152 \end{array}$$

$$\begin{array}{r} 1 \\ 963 \\ + 72 \\ \hline 1035 \end{array}$$

$$\begin{array}{r} 11 \\ 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \end{array}$$

$$\begin{array}{r} 164 \\ + 144 \\ \hline 208 \end{array}$$

$$6 \overline{) 54}$$

$$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \end{array}$$

$$2 \overline{) 766}$$

$$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \end{array}$$

$$\begin{array}{r} 4 \\ 85 \\ \times 9 \\ \hline 765 \end{array}$$

$$3 \overline{) 27}$$

$$\begin{array}{r} 11 \\ 523 \\ + 87 \\ \hline 610 \end{array}$$

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$$

$$\begin{array}{r} 4 \\ 9588 \\ - 6519 \\ \hline 3069 \end{array}$$

$$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \end{array}$$

$$\begin{array}{r} 12 \\ 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 10461 \end{array}$$

$$\begin{array}{r} 1 \\ 22 \\ \times 7 \\ \hline 154 \end{array}$$

$$\begin{array}{r} 11 \\ 195 \\ + 245 \\ \hline 440 \end{array}$$

$$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \end{array}$$

$$\begin{array}{r} 11 \\ 545 \\ + 56 \\ \hline 601 \end{array}$$

$$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 8 \\ 9246 \\ - 8804 \\ \hline 0442 \end{array}$$

$$\begin{array}{r} 71 \\ \times 6 \\ \hline 426 \end{array}$$

$$\begin{array}{r} 4396 \\ - 3724 \\ \hline \end{array}$$

$$\begin{array}{r} 303 \\ \times 0 \\ \hline 000 \end{array}$$

$$\begin{array}{r} 10 \\ \times 14 \\ \hline 40 \\ 100 \\ \hline 140 \end{array}$$

$$\begin{array}{r} 122 \\ 3078 \\ 412 \\ 3394 \\ + 6596 \\ \hline 13480 \end{array}$$

$$5 \overline{) 351} \text{ r } 1$$

$$\begin{array}{r} 2 \\ 13 \\ \times 8 \\ \hline 104 \end{array}$$

Student Name: Marye

$$\begin{array}{r} 1 \\ \times 8 \\ \hline 8 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ 8253 \\ + 7257 \\ \hline 25152 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ 963 \\ + 72 \\ \hline 1035 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ 8807 \\ 1344 \\ + 6102 \\ \hline 16253 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ 64 \\ + 144 \\ \hline 208 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ 6 \overline{)54} \\ \hline 19 \end{array}$$

$$\begin{array}{r} 3246 \\ + 8221 \\ \hline 11467 \\ \hline \end{array}$$

$$\begin{array}{r} 283 \\ 2 \overline{)766} \\ \hline 12 \end{array}$$

$$\begin{array}{r} 211 \\ 7957 \\ 4983 \\ + 5734 \\ \hline 18674 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ 85 \\ \times 9 \\ \hline 765 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ 3 \overline{)27} \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ 523 \\ + 87 \\ \hline 610 \\ \hline \end{array} \quad 29$$

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ 9588 \\ - 6519 \\ \hline 3069 \\ \hline \end{array}$$

$$\begin{array}{r} 5263 \\ - 3242 \\ \hline 2021 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ 9703 \\ 528 \\ 6287 \\ + 143 \\ \hline 10661 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ 22 \\ \times 7 \\ \hline 154 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ 195 \\ + 245 \\ \hline 440 \\ \hline \end{array} \quad 19$$

$$\begin{array}{r} 10 \\ \times 7 \\ \hline 70 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ 545 \\ + 56 \\ \hline 601 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 5 \\ \hline 20 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline 16 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ 9246 \\ - 8804 \\ \hline 442 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ \times 6 \\ \hline 426 \\ \hline \end{array} \quad 15$$

$$\begin{array}{r} 4396 \\ - 3724 \\ \hline \end{array}$$

$$\begin{array}{r} 303 \\ \times 0 \\ \hline 000 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 14 \\ \hline 140 \\ \hline \end{array} \quad C$$

$$\begin{array}{r} 122 \\ 3078 \\ 412 \\ 3394 \\ + 6596 \\ \hline 13070 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ 5 \overline{)351} \\ \hline 7 \end{array} \quad C$$

$$\begin{array}{r} 2 \\ 13 \\ \times 8 \\ \hline 104 \\ \hline \end{array} \quad 23$$

105

Directions for Administration of Written Expression

- Select an appropriate story starter.
- Provide the student with a pencil and a sheet of lined paper.
- Say these specific directions to the students:

"You are going to write a story. First, I will read a sentence, and then you will write a story about what happens next. You will have 1 minute to think about what you will write, and 3 minutes to write your story. Remember to do your best work. If you don't know how to spell a word, you should guess. Are there any questions? (pause). Put your pencils down and listen. For the next minute, think about ...(insert story starter)."

Directions for Administration of Written Expression

- After reading the story starter, begin your stopwatch and allow 1 minute for students to “think.” (Monitor students so that they do not begin writing).
- After 30 seconds say: “*You should be thinking about (insert story starter).*”
- At the end of 1 minute say: “*Now begin writing.*” Restart your stopwatch.
- Monitor students’ attention to the task. Encourage students to work only if they are looking around or talking.
- After 90 seconds say: “*You should be writing about (insert story starter).*”
- At the end of 3 minutes say: “*Stop. Put your pencils down.*”

Story Starters

- Story starters can be adult or student generated
- Examples:
 - Grades 1-3:
 - Once upon a time there was a haunted house and ...
 - Yesterday, a monkey climbed in through the window at school and
 - Grades 4-6:
 - If you were the teacher of this class, write about what it would be like.
 - Tell a story about your visit to the bottom of the ocean

Written Expression Scoring Rules

Three ways to score writing samples:

- Total Words Written (TWW)
- Words Spelled Correctly (WSC)
- Correct Writing Sequences (CWS)

Total Words Written

- When scoring TWW, underline each word written
- A word is any letter or group of letters separated by a space, *even if the word is misspelled* or is a nonsense word.

- Examples:

The sky was blue

TWW=4

The sky was blew

TWW=4

I tuk a baf

TWW=4

I tuka baf

TWW=3

Total Words Written

- Rule 1: *Hyphenated Words* – Each morpheme separated by a hyphen(s) is counted as an individual word if it can stand alone.
 - Ex: My daughter-in-law had a baby boy. (TWW=8)
- Rule 2: *Hyphenated Words* – *If one or more of the morphemes separated by a hyphen(s) cannot stand alone, the entire sequence is counted as one word.*
 - Ex: We had to re-evaluate the case. (TWW=6)

Total Words Written

- Rule 3: Abbreviations – Commonly used abbreviations are counted as words.
 - Example: Chris watched T.V.. (TWW=3)
- Rule 4: Story Titles or Endings – Words written as a story title or ending are counted as words written.
 - Example:
The Big Run
On the fourth of July, I ran the Boston
Marathon.
The End. (TWW=15)

Total Words Written

- Rule 5: Numbers – With the exception of dates, numbers that are not spelled out are not counted as words.
 - Ex: 3 men ran. (TWW=2)
Three men ran. (TWW=3)
I went 2 a party. (TWW=4)
It is June 10, 1989. (TWW=5)
- Rule 6: Unusual Characters – Symbols used in writing such as (% , & , \$, # , @) , that are not spelled out, are not counted as words.
 - Ex: I won \$100. (TWW=2)

Scoring Total Words Written (TWW)

Written Expression Example 1

Scott, Grade 2

Yesterday, a monkey climbed through the window at school and...

and he was jumping on descs and when we tride to get him he would cLimb up on top of the cupberds and we could not reach him. When we went up their on a Ladder he would jump on a Light.

TWW = _____

Scoring Total Words Written (TWW)

Written Expression Example 1 (Key) Scott, Grade 2

Yesterday, a monkey climbed through the window at school and...

and he was jumping on descs and when we tride to get him he would cLimb up on top of the cupberds and we could not reach him. When we went up their on a Ladder he would jump on a Light.

TWW = 42

Words Spelled Correctly (WSC)

- When scoring WSC, circle incorrectly spelled words
- What is a Correctly Spelled Word?
 - A word is spelled correctly if it can stand alone as a common word in the English language. Contextual clarity is not an issue.

Ex: Bill will reed the book. (WSC=5)

and can rat pake (WSC=3)

dzq ran down the rode (WSC=4)

Words Spelled Correctly (WSC)

- Rule 1a: Hyphenated Words – Each morpheme separated by a hyphen(s) is counted as an individual word if it can stand alone and is spelled correctly.
 - Ex: My dauta-in-law had a baby girl (WSC=7)
- Rule 1b: Hyphenated Words – If one or more of the morphemes separated by a hyphen(s) cannot stand alone, the entire sequence is counted as one word if it is spelled correctly.
 - Ex: I had to re-evaluate the case. (WSC=5)

Words Spelled Correctly

- Rule 2: *Abbreviations* – Commonly used abbreviations (Dr., Mrs., Blvd.) are counted as correctly spelled words.
 - Ex: Jan lives on Sunset Blvd. (WSC=5)
- Rule 3: *Story Titles or Endings* – Words written as part of a story title or ending, if spelled correctly, are included in the words spelled correctly count.
 - Ex:

The Big Run
On the fourth of July, I ran the Boston
Marathon.
The End. (WSC=15)

Words Spelled Correctly

- Rule 4: *Capitalized Words* – Proper nouns must be capitalized to be considered as correct. Capitalization of the first word in a sentence is not required for the word to be spelled correctly. If a name can also be a word (i.e., bill) it does not have to be capitalized.

- Ex: Mary saw the book. (WSC=4)

we crossed the Mississippi (WSC=4)

vicki sat with bill. (WSC=3)

vicki sat with the bill. (WSC=4)

vicki sat with mary. (WSC=2)

Words Spelled Correctly

- Rule 5: *Words with Reversed Letters* – Words containing reversed letters are counted as correctly spelled words unless the reversed letter caused a word to be spelled incorrectly. This rule applies most frequently to the letters p, b, q, d, n, and u.

- Ex: There was a bad storm. (WSC=5)
There was a bad storm. (WSC=5)
The dolphin swam in the sea. (WSC=6)
The bolphin swam in the sea. (WSC=5)
Joe's pig won first place at the fair. (WSC=8)
Joe's qig won first place at the fair. (WSC=7)

Words Spelled Correctly

- Rule 6: Contractions – For a contraction to be counted as a correctly spelled word, an apostrophe in the correct place in the word is required if the word cannot stand alone.
 - Ex: I won't go. (WSC=3)
I wont go. (WSC=2)
Rick's hungry (WSC=2)
Ricks hungry (WSC=2)

Scoring Words Spelled Correctly

Written Expression Example 2a

Scott, Grade 2

Yesterday, a monkey climbed through the window at school and...

and he was jumping on descs and when we tride to get him he would cLimb up on top of the cupberds and we could not reach him. When we went up their on a Ladder he would jump on a Light.

TWW= 42

WSC= ___

Scoring Words Spelled Correctly

Written Expression Example 2b

Mike, Grade 2

Yesterday, a monkey climbed through the window at school and...

*how ere thay. I dont kno I wont sum Frit. Sed The mucy.
Were is The Frit I dont no. Litts tllk*

TWW= 22

WSC=

Answer Key Written Expression Example 2a

Scott, Grade 2

Yesterday, a monkey climbed through the window at school and...

and he was jumping on descs and when we tride to get him he would cLimb up on top of the cupberds and we could not reach him. When we went up their on a Ladder he would jump on a Light.

TWW = 42

WSC = 39

Answer Key Written Expression Example 2b

Mike, Grade 2

Yesterday, a monkey climbed through the window at school and...

how ere thay. I dont kno I wont sum Frit. Sed The mucy.
Were is The Frit I dont no. Litts tllk

TWW = 22

WSC = 10

Correct Writing Sequences (CWS)

- A caret (^) is used to mark each unit of the correct writing sequence. Use an upside down caret (v) to mark each unit that is not a correct writing sequence. There is an implied space at the beginning of the first sentence.
- What is a Correct Writing Sequence?
 - Two adjacent writing units (word/word or word/punctuation) that are acceptable within the context of what is written.

Correct Writing Sequences (CWS)

- Rule 1: *Capitalization at the beginning of a sentence* – The first word of a sentence must be capitalized for a correct writing sequence to be scored.
 - EX: ^The^sky^was^blue.^ (CWS=5)
 - EX: ^The ^sky^was_vblew._v (CWS=3)

Correct Writing Sequences (CWS)

- Rule 2a: *Capitalization within a sentence: Proper nouns* – Proper nouns must be capitalized for a correct writing sequence to be scored.
 - EX: ^She^asked^me^to^give^the^book^to^Nate.^ (CWS=10)
 - EX: ^She^asked^me^to^give^the^book^to_vnate._v (CWS=8)

Correct Writing Sequences (CWS)

- Rule 2b: *Capitalization within a sentence: Words that should not be capitalized* – Words that should not be capitalized must begin with a lower-case letter for a correct writing sequence to be scored.

➤ Examples:

- ^The^monkey^ate^a^banana^while^swinging^from^the^tree.^ (CWS=11)
- ^The_vMonkey_vate^a_vBanana_vwhile^swinging^from^the^tree.^ (CWS=7)

Correct Writing Sequences (CWS)

- Rule 3: Punctuation at the end of a sentence – Correct punctuation must be present at the end of a sentence for a correct writing sequence to be scored.
 - Examples:
 - ^ I ^ could ^ see ^ new ^ planets. ^ ^ It ^ would ^ be ^ fun ^ in ^ space. ^ (CWS=13)
 - ^ I ^ could ^ see ^ new ^ planets_v ^ It ^ would ^ be ^ fun ^ in ^ space_v (CWS=11)

Correct Writing Sequences (CWS)

- Rule 4a: *Punctuation within a sentence: Commas*
 - Commas are not counted as part of the correct writing sequence total except when included in a series of nouns. When part of a series, commas must be used correctly for correct writing sequence to be scored
- Examples:
 - ^Next, ^take ^out ^the ^garbage. ^ (CWS=6)
 - ^Next ^take ^out ^the ^garbage. ^ (CWS=6)
 - ^Max ^went ^to ^the ^store ^to ^buy ^bread ^, ^milk ^, ^and ^cheese. ^ (CWS=14)
 - ^Max ^went ^to ^the ^store ^to ^buy ^bread ^, ^milk ^and ^cheese. ^ (CWS=13)
 - ^Max ^went ^to ^the ^store ^to ^buy ^bread, ^milk ^and ^cheese. ^ (CWS=11)

Correct Writing Sequences (CWS)

- Rule 4b: *Punctuation within a sentence: Other punctuation marks* – Other punctuation marks such as quotes, colons, and semicolons are not counted as part of the correct writing sequence total.
 - EX: ^He^yelled, ^"Watch^out^for^that^dinosaur."^ (CWS=8)
 - EX: ^He^yelled, ^Watch^out^for^that^dinosaur.^ (CWS=8)

Correct Writing Sequences (CWS)

- Rule 5: Spelling – Words must be spelled correctly for a correct writing sequence to be scored. See Words Spelled Correctly (WSC) section of CBM Administration and Scoring Written Expression for specific spelling rules.
 - EX: ^All^of^the^kids^started^to^laugh.^ (CWS=8)
 - EX: ^All^of^the^kids^started^to_vlaghf.^_v (CWS=6)

Correct Writing Sequences (CWS)

- Rule 6: Syntax – Words must be syntactically correct for a correct writing sequence to be scored. Sentences that begin with conjunctions are considered syntactically correct.
 - ^ I ^ had ^ never ^ seen ^ the ^ wolves ^ before. ^
(CWS=8)
 - ^ I ^ never_v seen ^ the ^ wolves_v never. ^
(CWS=5)
 - ^ And ^ then ^ the ^ boy ^ gave ^ the ^ duck ^ some ^ bread. ^
(CWS=10)

Correct Writing Sequences (CWS)

- Rule 7: Semantics – Words must be semantically correct for a correct writing sequence to be scored.
 - ^Jamaal^went^to^the^library.^ (CWS=6)
 - ^Jamaal^went_vtoo_vthe^library.^ (CWS=4)
 - ^My^dad^made^the^treehouse^especially^for^me.^ (CWS=9)
 - ^My^dad^made^the^treehouse_vspecial_vfor^me.^ (CWS=7)

Correct Writing Sequences (CWS)

- Rule 8: *Story Titles and Endings* – Words written as part of a story title or ending are included in the correct writing sequence total.

➤ Example:

^ The ^ Big ^ Run ^
^ On ^ the ^ fourth ^ of ^ July, ^ I ^
ran ^ the ^ Boston ^ Marathon. ^
^ The ^ End. ^

(CWS=18)

Scoring Correct Writing Sequences (CWS)

Written Expression Example 3a

Scott, Grade 2

Yesterday, a monkey climbed through the window at school and...

and he was jumping on descs and when we tride to get him he would climb up on top of the cupberds and we could not reach him. When we went up their on a Ladder he would jump on a Light.

TWW = 42

WSC = 39

CWS =

Scoring Correct Writing Sequences (CWS)

Written Expression Example 3b

Mike, Grade 2

Yesterday, a monkey climbed through the window at school and...

*how ere thay. I dont kno I wont sum Frit Sed The mucy.
Were is The Frit I dont no. Litts tllk*

TWW= 22

WSC= 10

CWS=

Answer Key Written Expression

Example 3a

Scott, Grade 2

Yesterday, a monkey climbed through the window at school and...

^and^he^was^jumping^on_descs_vand^when^we_vtride_v
to^get^him^he^would^climb^up^on^top^of^the_v
cupberds_vand^we^could^not^reach^him.^When^we^
went^up_vtheir_von^a_vLadder_vhe^would^jump^on^a_vLight_v

TWW= 42

WSC= 39

CWS= 32

Answer Key Written Expression

Example 3b

Mike, Grade 2

Yesterday, a monkey climbed through the window at school and...

how ere thay. [^] I dont kno [^] I wont sum Frit Sed The
mucy. Were is The Frit [^] I dont no. Litts flk

TWW = 22

WSC = 10

CWS = 3

Written Expression

Example 4a

Charlie, Grade 8

If you were the teacher of this class, write about what it would be like.

If I were the teacher of this class, I would not give homework and the students would be able to eat in class. Then I would give them a choice of assignments they did, but they would have to choose one to turn in. I would give them

TWW = _____

WSC = _____

CWS = _____

Written Expression

Example 4b

Andy, Grade 8

If you were the teacher of this class, write about what it would be like.

Their wood be alot of partys, no work games I don't no about t.v but free time all the Time. We would have aLot fun. pop candy enthy you want It wood be Like Never Land

TWW = _____

WSC = _____

CWS = _____

Answer Key Written Expression

Example 4a

Charlie, Grade 8

If you were the teacher of this class, write about what it would be like.

^If^I^were^the^teacher^of^this^class,^I^
would^not^give^homework^and^the^students^would^b
e^able^to^eat^in^class.^Then^I^would^give^them^a^
choice^of^assiments^they^did,^but^the^would^have^to^
chose^one^to^turn^in.^I^would^give^them^

TWW = 48

WSC = 47

CWS = 44

Answer Key Written Expression

Example 4b

Andy, Grade 8

Their would be a lot of partys no work games
I don't no about t.v but free time all the Time
We would have a lot fun. pop candy enthy you
want It would be Like Never Land

TWW = 36

WSC = 31

CWS = 13

Where to get started?

- Commercial Products:
 - AIMSweb
 - Ed Checkup
 - STEEP
 - Yearly Progress Pro
 - DIBELS
- DIY Approach
 - [Intervention Central](#)
 - Books and publications:
 - Hosp, M.K., Hosp, J.L., & Howell, K.W. (2007). *The ABCs of CBM: A Practical Guide to Curriculum-Based Measurement*. New York: Guilford

Interpreting Performance

- How do we determine what scores mean?
 1. Expert Opinion/Instructional Placement Standards
 2. National Norms
 3. Local Norms
 - Classroom
 - Building
 - District
 4. Linkages to Later Outcomes

Instructional Placement Standards

The level at which a student could be expected to benefit from **teacher-led** instruction, based on expert opinion

- Instructional Placement Standards in Reading:
 - For 1st-2nd-grade materials: 40-60 wpm, with 4 or fewer errors
 - For 3rd-6th grade materials: 70-100 wpm, with 6 or fewer errors
 - The above ranges assume the child is receiving teacher-led instruction in the material
 - These are **approximate** ranges. The type of instruction must be taken into account (e.g., teacher-led vs. independent), as well as the quality of the errors

Expert Opinion/Instructional Placement Standards

M-CBM (Mathematics Computation) Instructional Placement Standards

- Grades 1-3: 10-19 CD with 3-7 errors
- Grades 4 and up: 20-39 CD with 3-7 errors

Expectancy Criteria for CBM-WE

- Grade 1 = 15 or more TWW
- Grade 2 = 28 or more TWW
- Grade 3 = 37 or more TWW
- Grade 4 = 41 or more TWW
- Grade 5 = 49 or more TWW
- Grade 6 = 52 or more TWW

National Norms - CBM

- E.g., AIMSweb, Hasbrouck and Tindal publications (see interventioncentral.com) or go straight to the [source](#).
http://www.brtprojects.org/publications/tech_reports/TechRpt33_FluencyNorms.pdf
- Potentially useful but with caveats:
 - Aggregates of data collected in various locales
 - Sometimes based on varying materials
 - Biased samples
 - Not controlled for representativeness of U.S. population
 - Be extra cautious in areas other than reading

Local Norms

- Why Local Norms?
 - Local norms operationalize academic expectations
 - Local norms may decrease bias in the decision-making process
 - Local norms can be used to make a range of educational decisions

Levels of Local Norms

1. Classroom Norms
 2. Building Norms
 3. District Norms
- Considerations in Selecting a level:
 - Characteristics of local populations (homogeneous vs. heterogeneous)
 - Curriculum Variability
 - School autonomy in decision-making
 - Decisions for which the data will be used
 - Economics

Classroom Norms

1. Advantages:

- Low-cost and simple
- General estimate of typical expectations
- Fair basis for determining LRE

2. Disadvantages

- Cannot use percentile ranks
- Difficult to estimate variability in performance

3. Best Uses:

- Initial problem identification
- Goal setting
- Problem Solution
- Prioritizing student needs
- Good way to “get your feet wet” with CBM and demonstrate its usefulness to other educators

Building Norms

1. Advantages

- Reasonable estimate of level and variability within a building
- More stable than classroom norms
- Defensible estimate of LRE
- Useful when schools within a district differ on curricula or population
- Can aggregate into district norms

2. Disadvantages:

- Sample may be too small to permit use of percentile ranks
- May result in different outcomes in problem identification and certification if child moves within the district

3. Best uses:

- Problem identification, goal-setting, periodic and annual reviews
- Discussion tool for faculty and administration

District Norms

- Advantages
 - Consistent estimate of achievement and variability across the district
 - Consistent estimate of LRE
 - Reduced cost
 - Can use percentile ranks
 - Can be used for continuous set of educational decisions

District Norms

- Disadvantages:
 - Less precise estimate of LRE
 - Requires relative homogeneity of curricula and population across schools
- Best uses:
 - Problem Certification
 - Prioritizing student needs
 - Goals, objectives, progress-monitoring
 - Periodic and annual reviews

Linkages to Later Outcomes

- Based on correlations with performance on later measures – often with a high-stakes test
- Used for screening and goal-setting
- Distinguish between screening cut-scores and benchmark goals

Screening Cut-Scores vs. Benchmark Goals

Screening Cut-Scores:

- Identify students at-risk of failure on an outcome measure
 - Predict Failure
 - Usually have lower values than benchmark goals
 - Used to identify students in need of intervention services

Benchmark Goals:

- Goals for desired performance
 - Predict success
 - Usually have higher values than screening cut-scores
 - Used to set appropriate goals for students receiving intervention services

Example: DIBELS

Various Classification Categories		
Benchmark # →	Low Risk	Established
	Some Risk	Emerging
Cut-score # →	At Risk	Deficit

(Good, Kaminski, Simmons, & Kame'enui, 2001)

Progress Monitoring Procedures

1. Survey-Level Assessment
2. Setting data-based goals
3. Collecting and graphing progress monitoring data
4. Making decisions

CBM Survey-Level Assessment

Purpose - to determine the level of the curriculum in which the student is successful. This information can help us to:

- ❑ Determine a student's instructional level
- ❑ Select a level for progress monitoring
- ❑ Determine the severity and magnitude of a student's academic problem
- ❑ Set individual goals for students

Conducting a Survey-Level Assessment: General Procedures

- ❑ Prepare materials by having probes available for each grade level
- ❑ Administer and score probes until success is determined.
- ❑ Summarize data in a table and a graph.

Defining Success

- ❑ **Benchmarks or Targets** – child performs in a range that predicts successful performance on later outcomes (e.g., DIBELS benchmark goals)
- ❑ **Local or National Norms** - child performs within the average range of students at that grade
- ❑ **Expert Judgment**; e.g., Instructional Placement Standards - the level at which a student could be expected to benefit from **teacher-led** instruction (based on expert judgment)

Survey-Level Assessment: Benchmarks

Example (DIBELS)

- Tommy, Grade 4, Fall

Level	Passage 1	Passage 2	Passage 3	Median	Range
4	58/4	31/10	65/3	58/4	At Risk
3	73/3	68/1	57/5	68/3	Some Risk
2	79/4	80/5	55/2	79/4	Low Risk

Survey-Level Assessment of Reading – Local Norms Example

Survey-Level Assessment of Reading Finding the Normative Reading Level

Student: Bryan G. Grade: 5 Date: 10/5/99

Teacher: _____ Examiner: _____

Normative Reading Level: The grade level at which the number of words the student reads correctly per minute falls within the average range (i.e., between the 25th and 75th percentiles).

Grade Level of Stories	Passage 1	Passage 2	Passage 3	Median	Percentile
5	<u>73/6</u>	<u>44/6</u>	<u>53/11</u>	<u>53/6</u>	<u>10th</u>
4	<u>53/6</u>	<u>34/9</u>	<u>51/9</u>	<u>51/9</u>	<u>13th</u>
3	<u>54/6</u>	<u>75/6</u>	<u>63/9</u>	<u>63/6</u>	<u>56th</u>

Bryan G./Normative Reading Level 3

Indian River Reading Graph: Fall Norms

W
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C
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e
c
t

P
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M
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n
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t
e

160
140
120
100
80
60
40
20
0

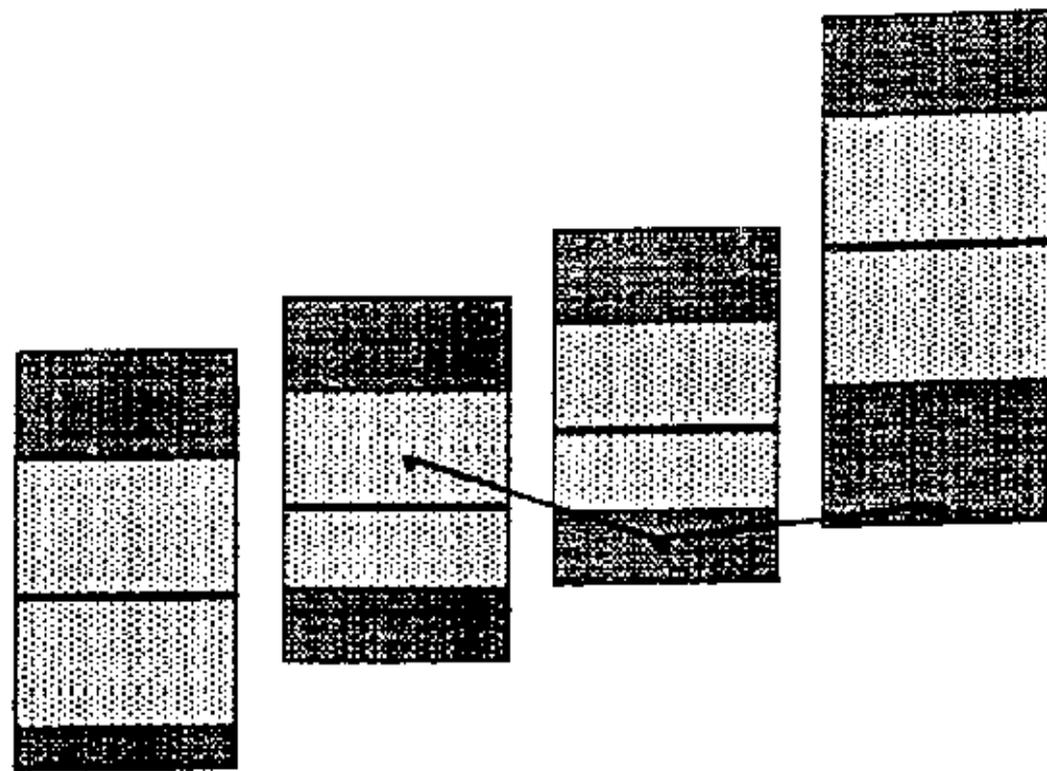
Grade 1

Grade 2

Grade 3

Grade 4

Grade 5



Survey-Level Assessment Outcomes

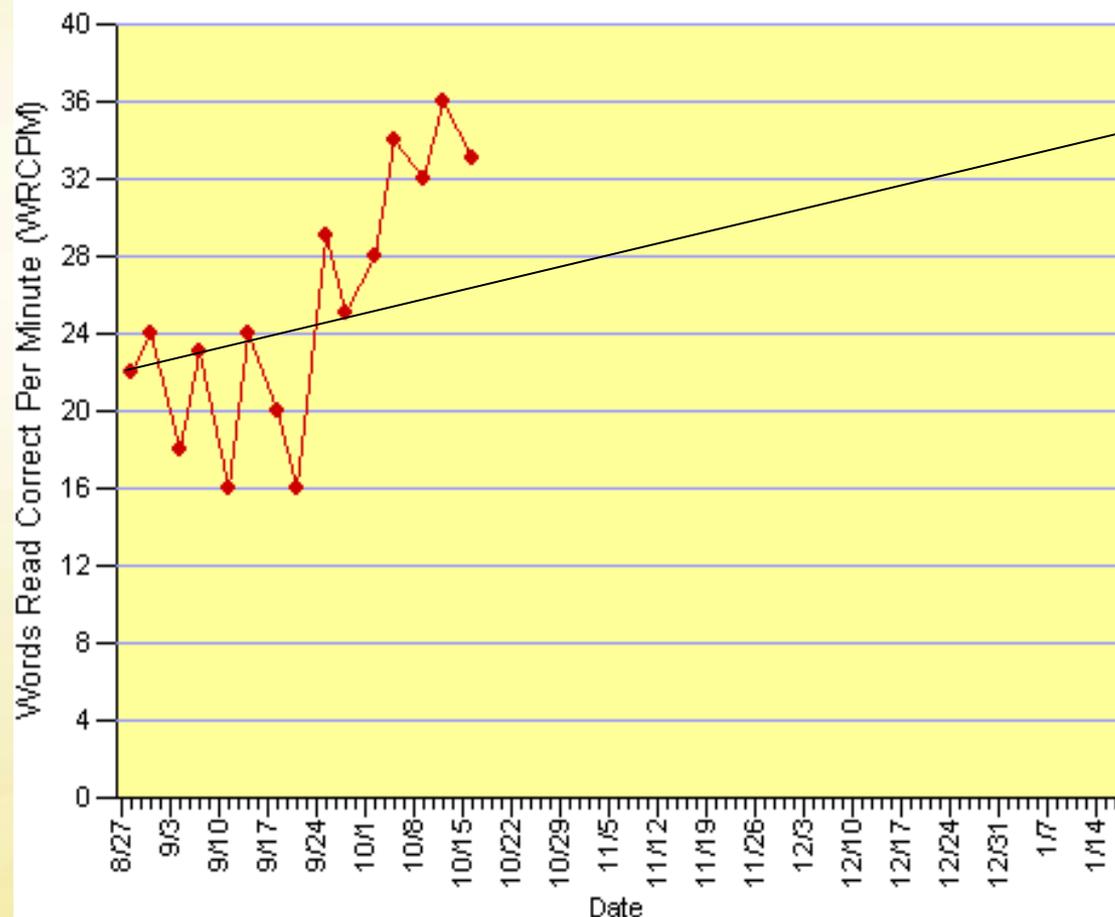
- Determine instructional and monitoring levels (typically not the same level)
- Set individual goals for students
- Help determine which specific skills to teach (e.g., PA, AP, Fluency, etc?)

Activity: Survey-Level Assessment

- Review Sarah's SLA data
- Answer questions a through c
- Discuss in small groups
- 5 minutes

Need for Clear Goals

Hartford School District - Wilson Elementary
J. Arnold (Grade 3)
Reading - Standard Benchmark Passages

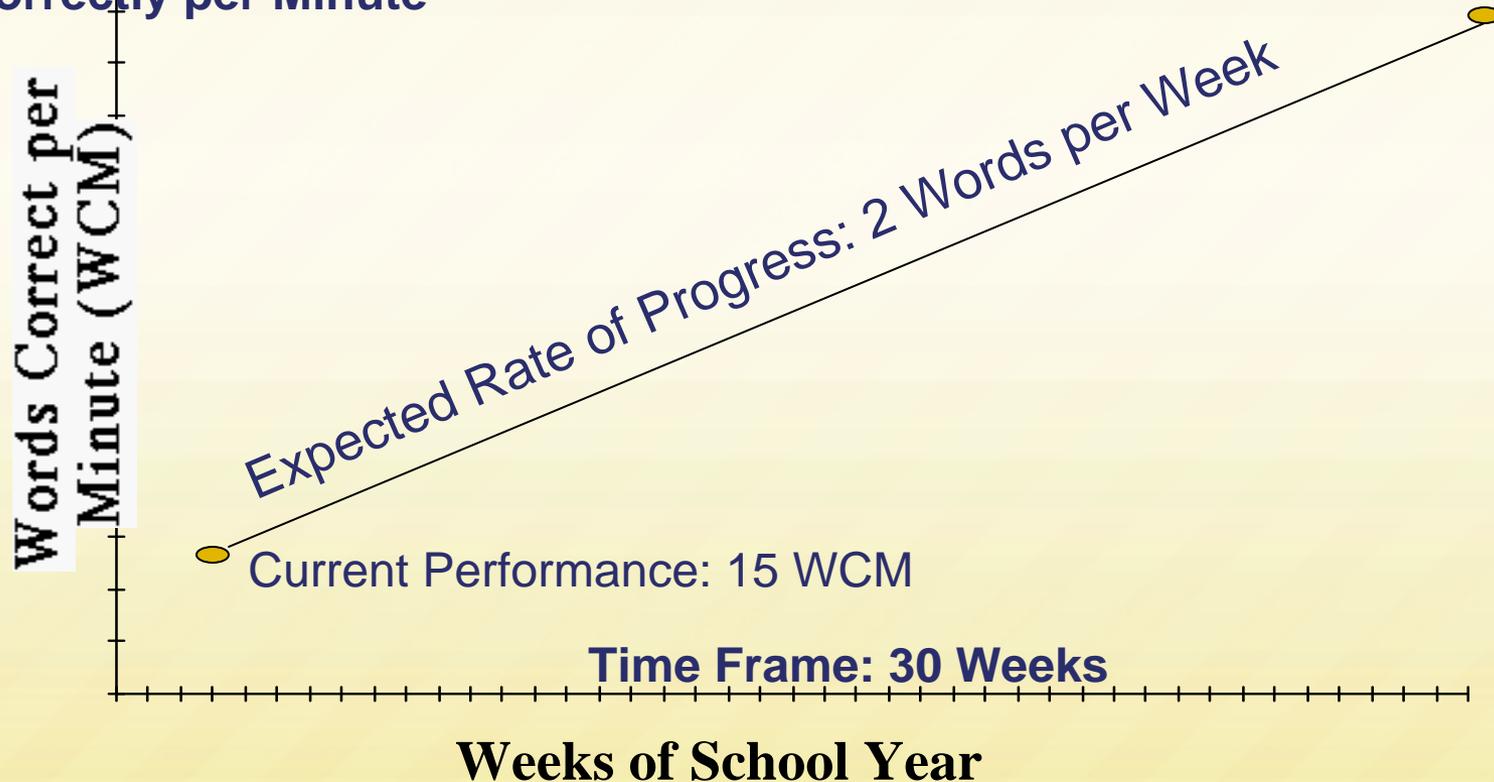


Components of a Goal

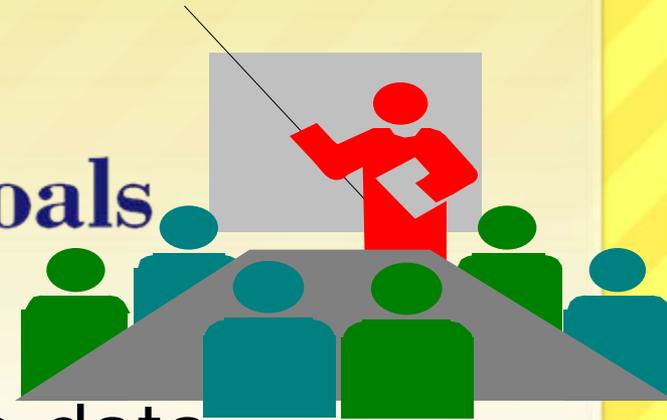
Individual Reading Progress Graph

Behavior: Number of Words Read
Correctly per Minute

Criterion for
Success:
75 WCM



3-Step Process for Writing Individualized Goals



- Collect current performance data
 - Use Survey-Level Assessment information
- Specify measurement conditions
 - Time frame and measurement material representing expected outcome
- Specify Criterion for Success
 - Can use expected rates of progress or benchmark standards

Selecting Measurement Material for Goal

- Issues to Consider:
 - Degree to which goal reflects reduced discrepancy between performance of student and grade-level peers
 - Students should “do more in more difficult material” in one year
 - Sensitivity to Instructional Effects
 - If the student reads less than 15-20 WRC in a given level of the curriculum, the material might not detect small improvements in reading skills
 - Individualized or based on benchmark?

On Goal Setting...

*The greatest danger for most of us is not that our aim is too high and we miss it, but that it is too low and we reach it.
~Michelangelo*

Considerations for Setting Criteria for Individualized Goals

- Balance Realistic and Ambitious
 - Students with more ambitious goals show greater achievement (Fuchs, 1993)
 - The ultimate goal of interventions should be to catch students up to their grade-level peers (i.e., reduce the discrepancy, “solve” the problem)
 - Expected rates of progress are available for students in general education (Fuchs et al., 1993) and those with learning disabilities (Deno et al., 2001)
 - Learning needs to be accelerated for students with disabilities or those behind their peers if the discrepancy is to be reduced

Research on Expected Rates of Progress: General Education

- Weekly Growth Rates in Reading (Fuchs et al., 1993)

Grade	Realistic (Mean)	Ambitious (Mean + 1 SEM)
1	2 WRC/week	2.5 WRC/week
2	1.5	2
3+	1	1.5

Research on Expected Rates of Progress: Students with Learning Disabilities

- Given effective instruction, students with learning disabilities should be able to achieve the following growth rates (Deno et al., 2001):

Initial Perf.	Growth Rate (WRC per week)
Up to 30 WRC	2.0
30+ WRC	1.25-1.50

Setting Goal Criteria Using Expected Rates of Progress

- Take the student's current performance on goal-level passages
 - *e.g., Johnny currently reads **40 WRC** on third-grade passages*
- Count the number of weeks until the end of the school year and multiply by the expected rate of progress (e.g., 1.5 words per week)
 - *e.g., there are 30 weeks left in the school year*
 - $30 * 1.5 = 45$
- Add the resulting number to the student's current performance
 - $40 + 45 = **85 WRC**$

Setting Goal Criteria

Using Norms or Benchmarks

- Decide at which percentile you would like to see the student performing by the end of the year
 - *e.g., 25th, 50th*
- Find the score that corresponds to that percentile in the goal-level material at the time the goal is to be achieved
 - *e.g., Spring norms for fourth grade, 25th percentile = 84 WRC (round to 85 WRC)*

Setting Goal Criteria

Using Norms or Benchmarks

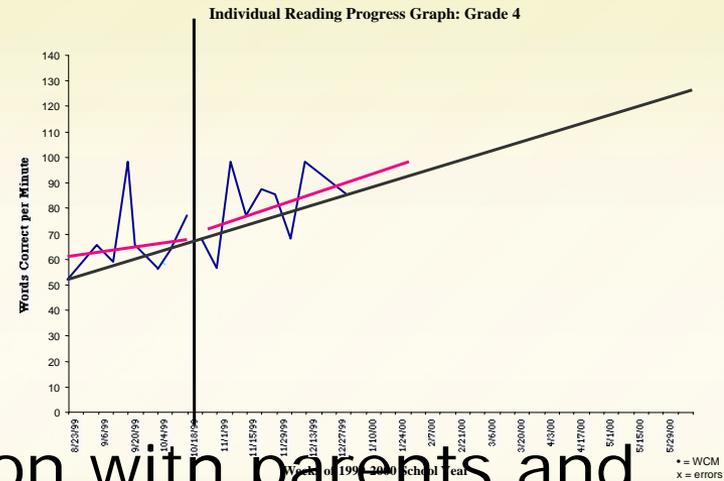
- Check the weekly rate of progress and determine if the goal is realistic and ambitious
 - *If the weekly rate of progress is too high, the goal may not be realistic*
 - *If the weekly rate of progress is too low, the goal may not be sufficiently ambitious*

Activity: Setting goals

- Review Sarah's SLA data
- Set a data-based goal for her.
Determine:
 - Time frame for goal
 - Level of materials for progress monitoring
 - Criterion
- Discuss in small groups
- 5-10 minutes

Graphing Goals and Progress

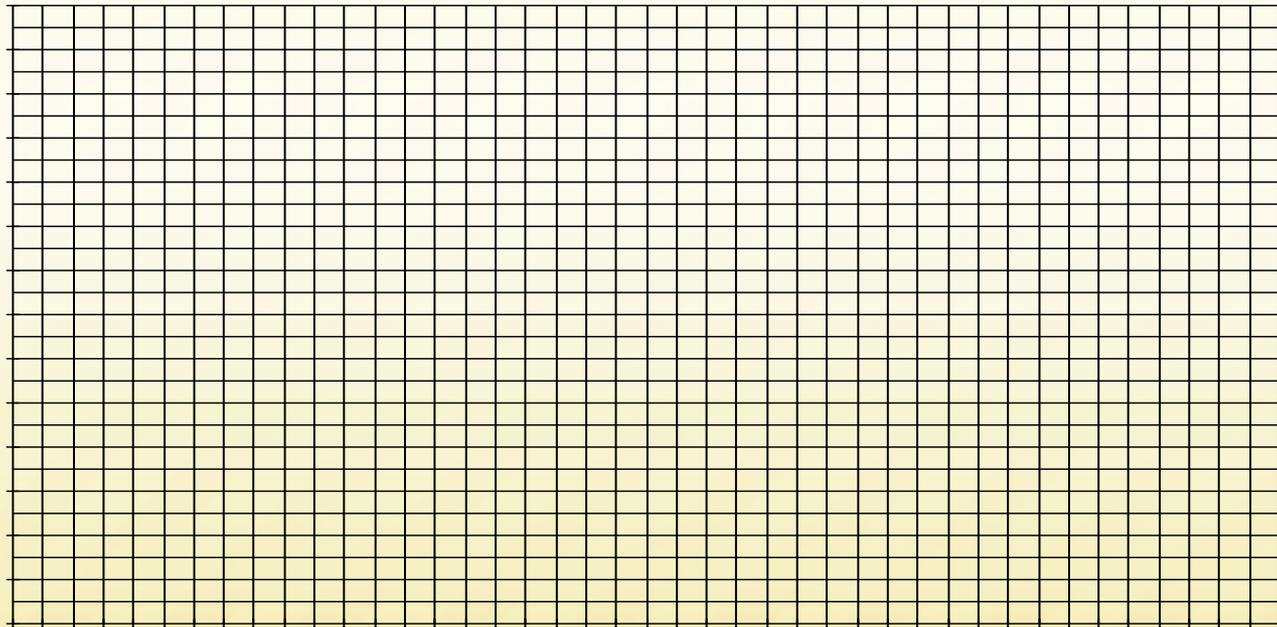
- Why graph?
 - Visual aid makes goals and student performance come to life
 - Facilitates communication with parents and among professionals
 - Facilitates instructional decision making
 - Graphic data display is associated with higher student achievement (Fuchs & Fuchs, 1986)



What Goes on a Graph?

General Conventions

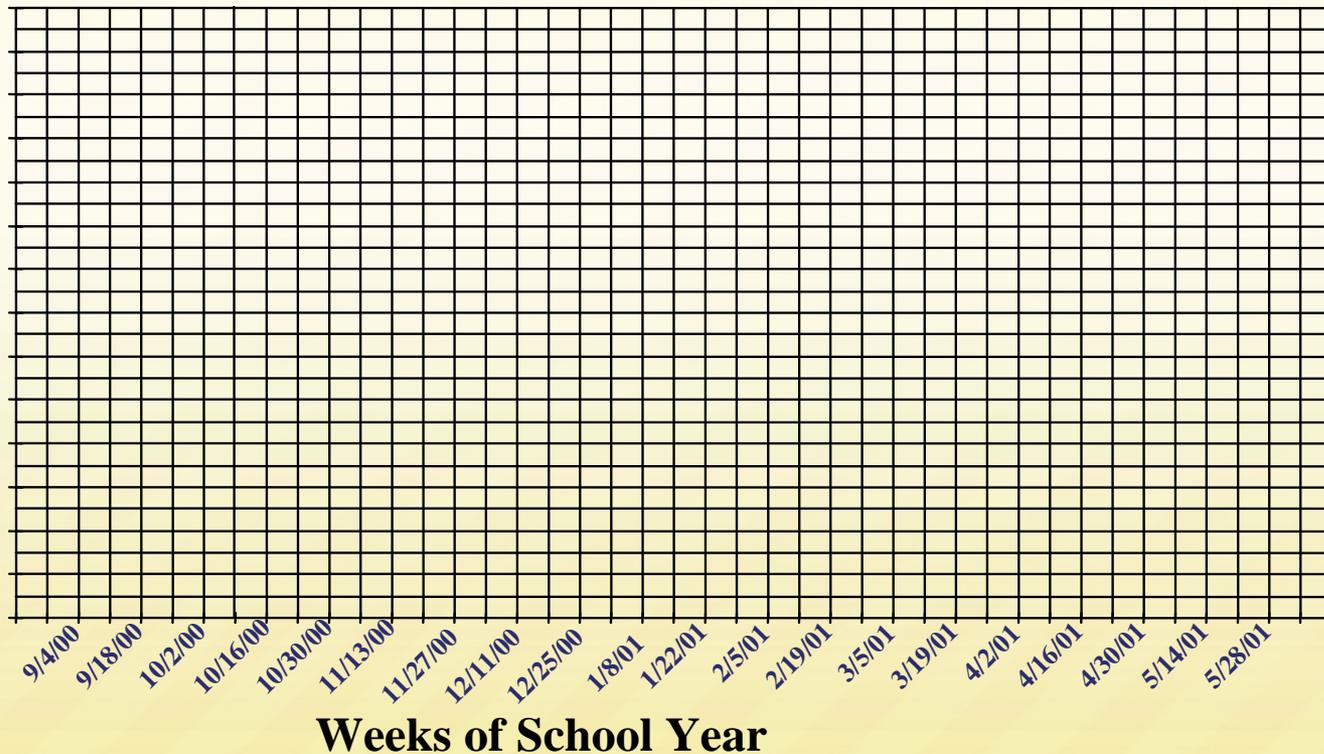
- Label for the horizontal axis (x-axis).
 - number of weeks



Weeks of School Year

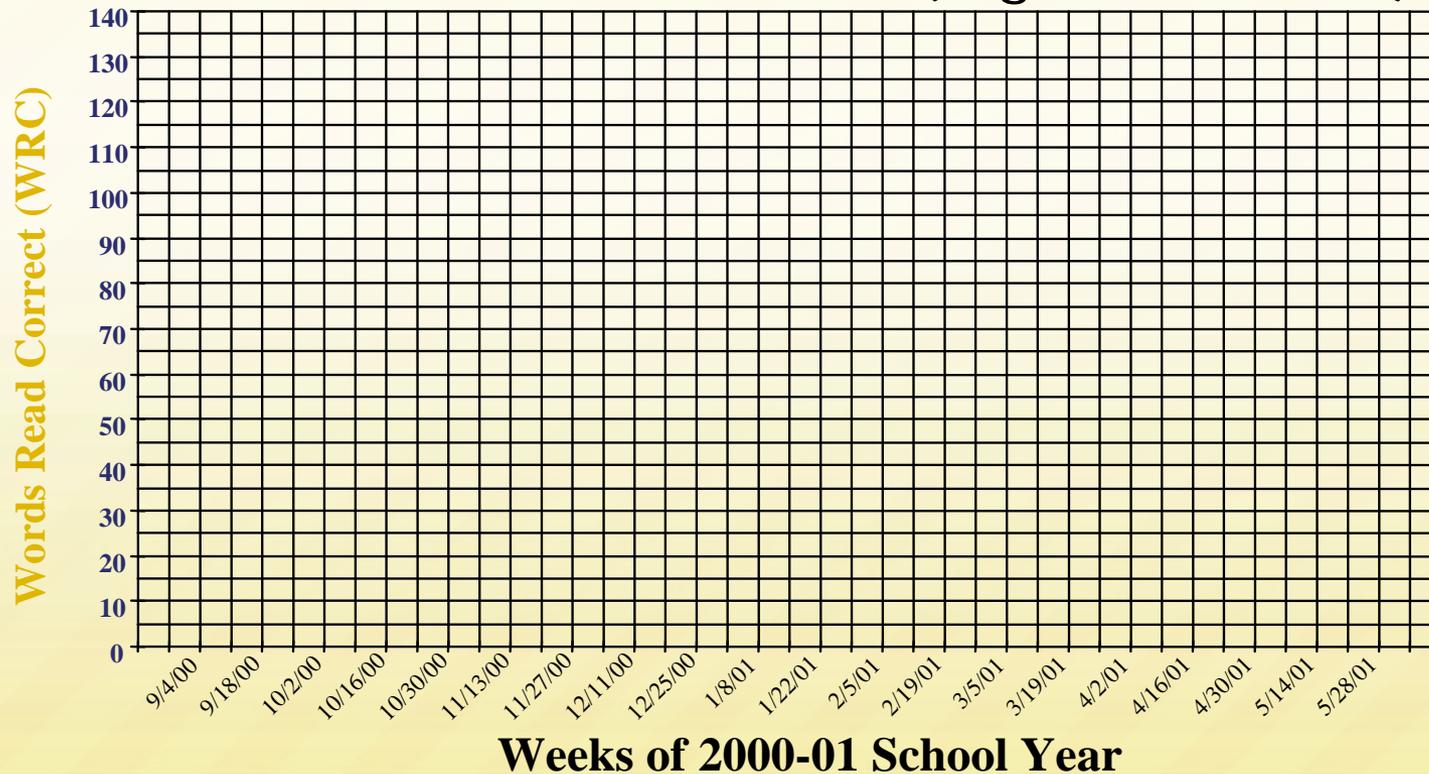
Graphing Conventions

- Units for the horizontal axis (x-axis).
 - Days in week-equal interval



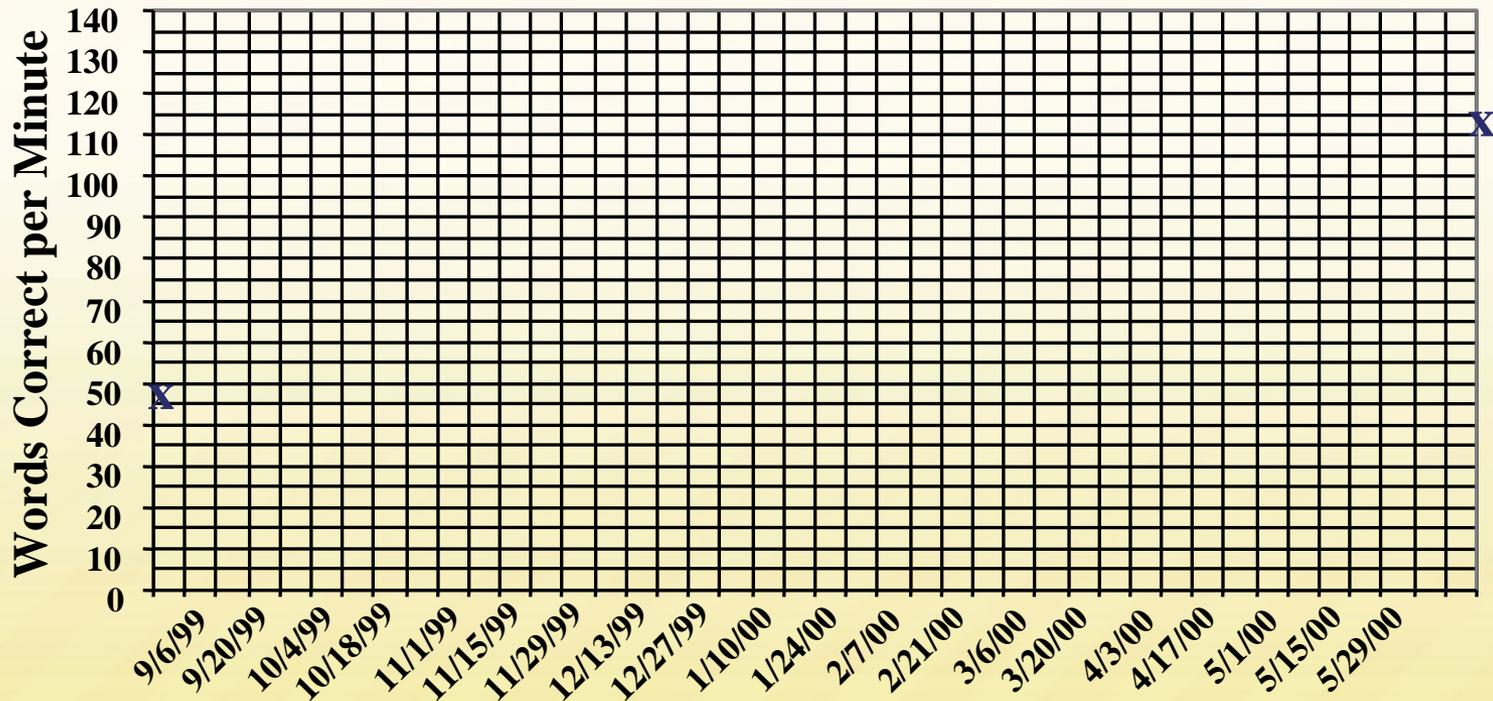
Graphing Conventions

- Label and units for the vertical axis (y-axis).
 - Metric for academic area (e.g., # of WCM)



Graphing Conventions

- Long-term goal
 - Specified by indicating median baseline score and long-term goal criterion using X's.

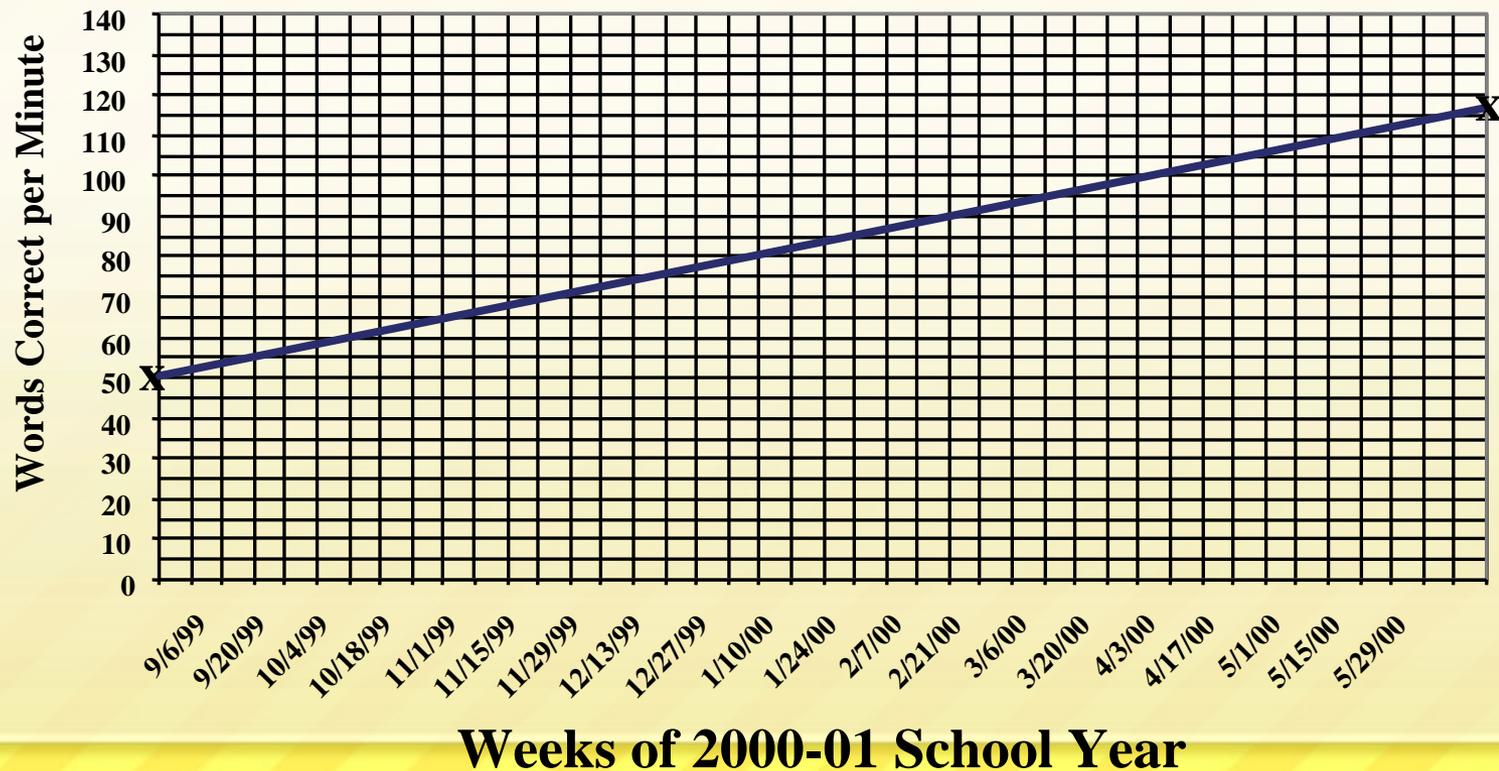


Weeks of 2000-01 School Year

Graphing Conventions

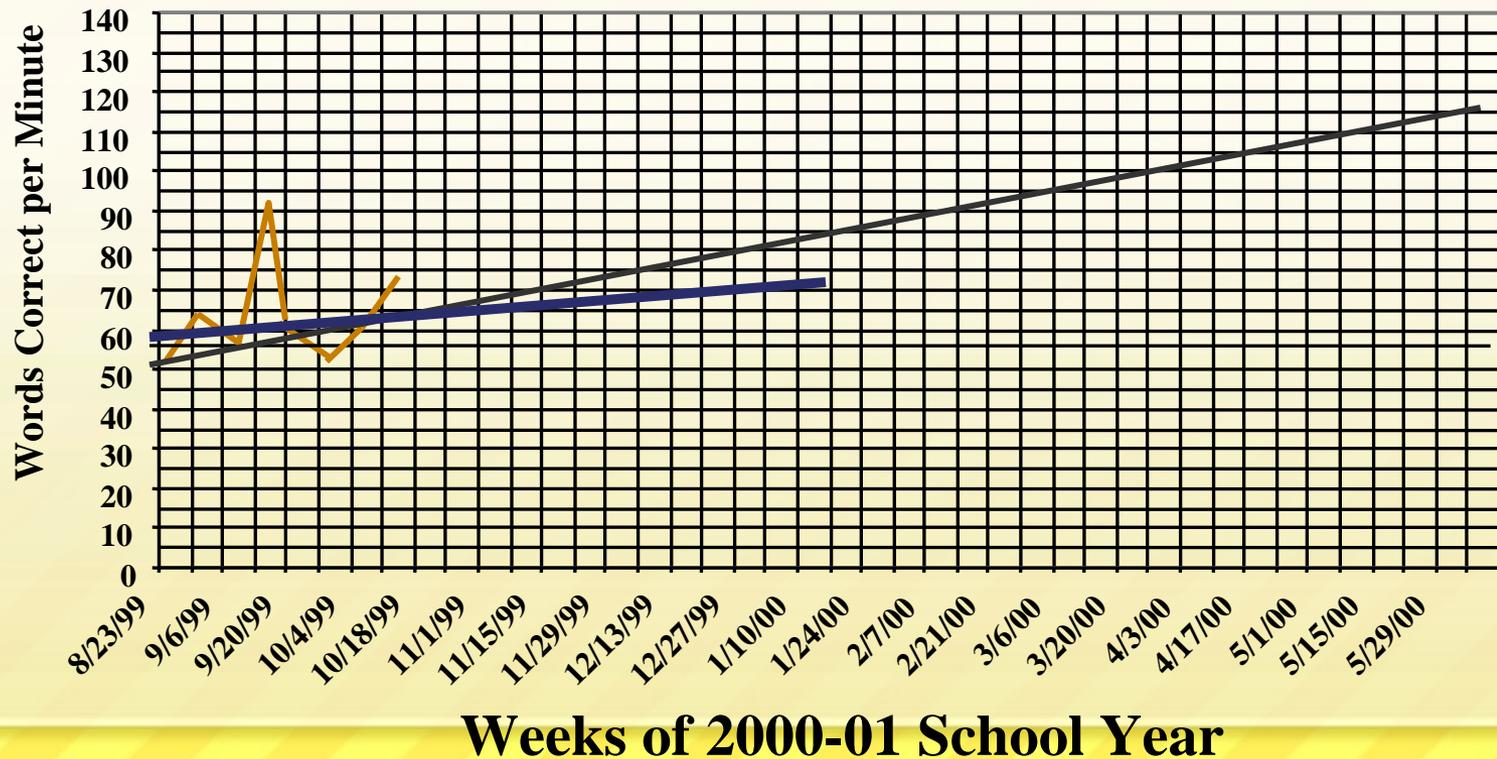
- **Aimline**

- Represents expected rate of progress. Indicated by connecting the X's.



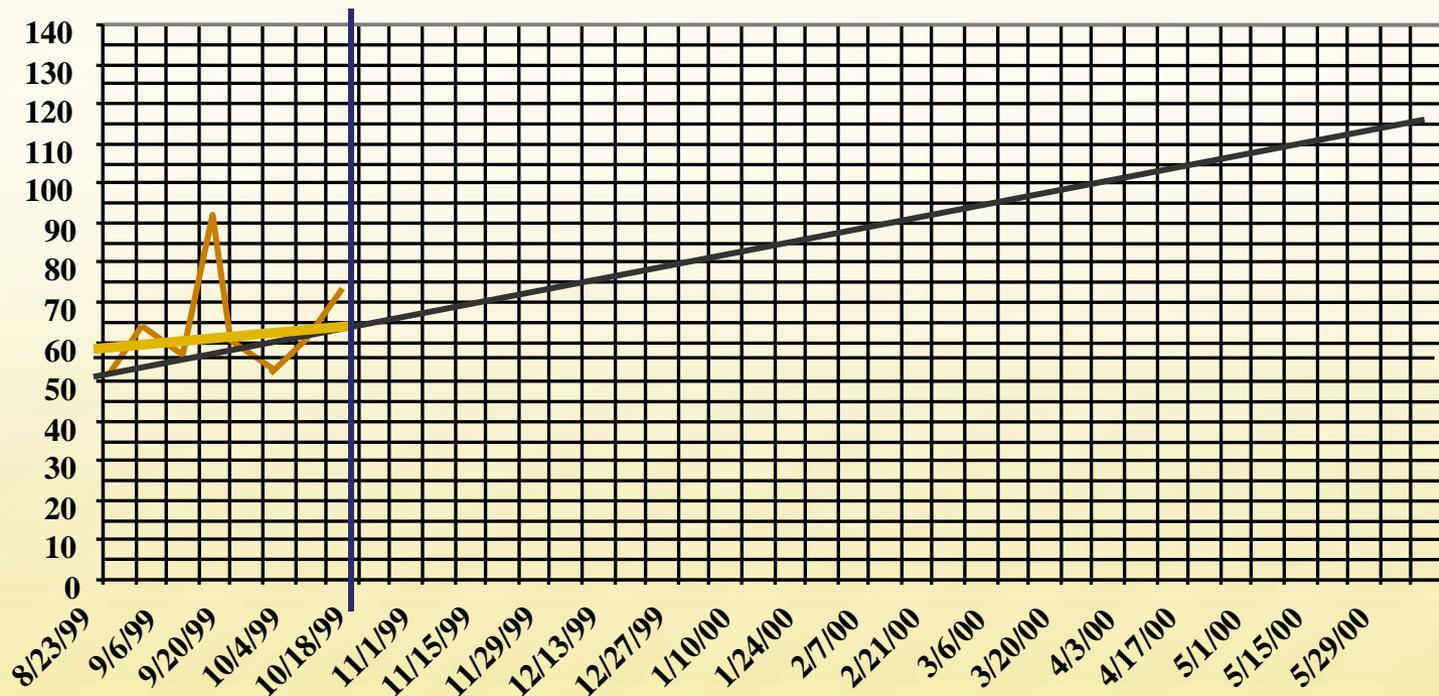
Graphing Conventions

- Trend Line
 - Represents student's estimated rate of progress based on weekly performance data.



Graphing Conventions

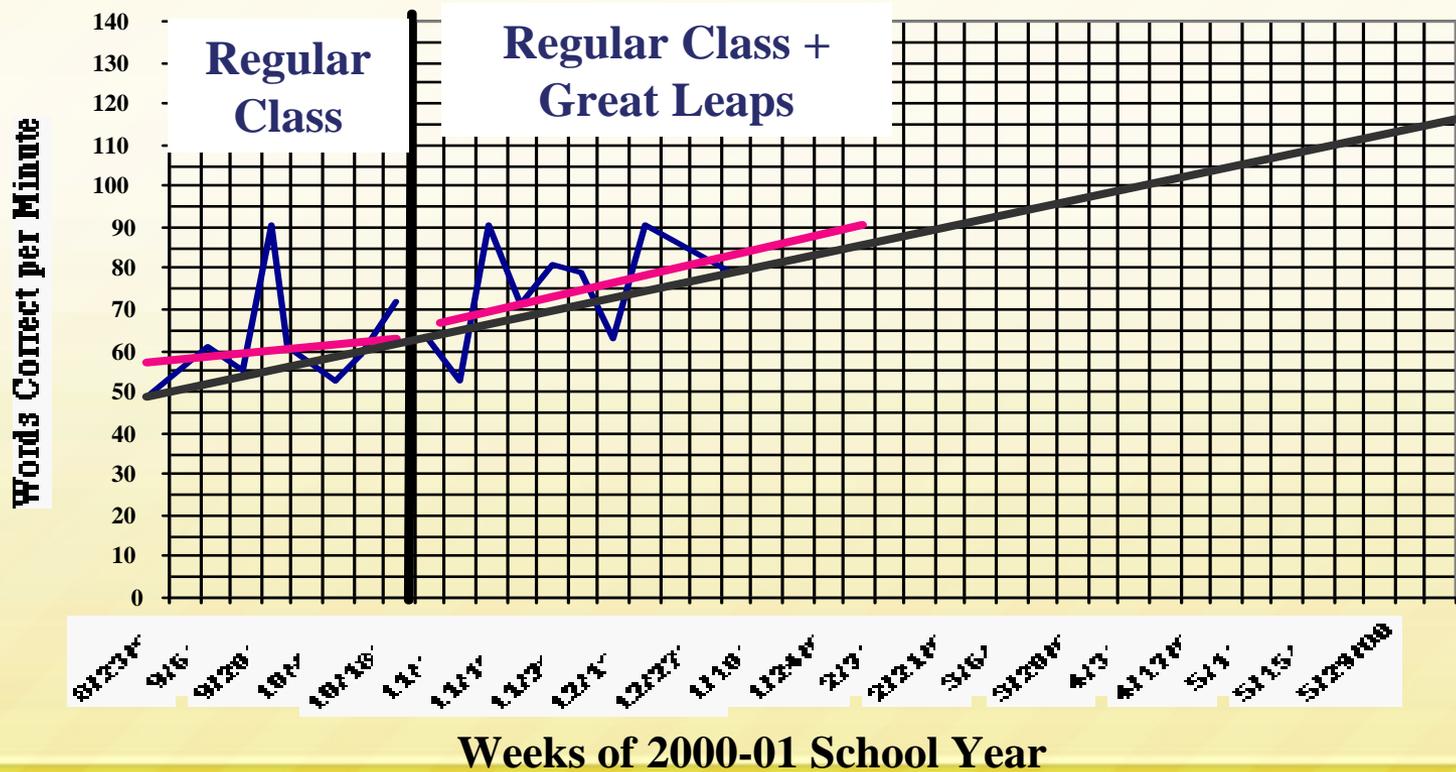
- Phase change line.
 - Dark line separating baseline from intervention and used when intervention is modified



Weeks of 2000-01 School Year

Graphing Conventions

- Label for each phase.
 - Specifies description of each phase



Graphing Options

- By hand (graph paper, DIBELS progress monitoring booklets)
 - Requires little computer skills
 - Cumbersome, difficult to modify
 - Must use 3 data point decision rule or draw trend lines using split-middle approach
- Using Excel
 - Easier and more efficient, more easily corrected and updated
 - Requires some computer skills
 - Can calculate trend line using regression function

Graphing Options

- Use web-based progress monitoring system
 - e.g., DIBELS Data System, AIMSweb, Ed Checkup, other programs found at <http://studentprogress.org>
 - Easiest and most efficient
 - More costly

Activity: Graphing by Hand

- Set up Sarah's progress graph.
 - Label all components of the graph
 - Plot initial performance on goal-level material
 - Plot criterion and connect to initial performance to make an aim line
 - Plot progress-monitoring data points 1-8 and connect dots



Data-based Decision Rules

Why are decision rules important?

- Ensure information inclusion and use.
- Facilitate communication, reduces ambiguity about what steps to take next.
- Standardize decision-making--ensures fair and equal treatment, prevents arbitrary decision-making.
- Reduce time spent in decision-making

Data-based Decision Rules

- Advantages:
 - Provide guidelines for teachers in deciding whether program changes are needed
 - Lead to increased changes in instructional programs by teachers
 - Use of decision rules is related to greater student achievement
- Disadvantages:
 - Reduce decisions to yes/no conceptualizations
 - May oversimplify complex and value-laden decisions

Types of Decision Rules

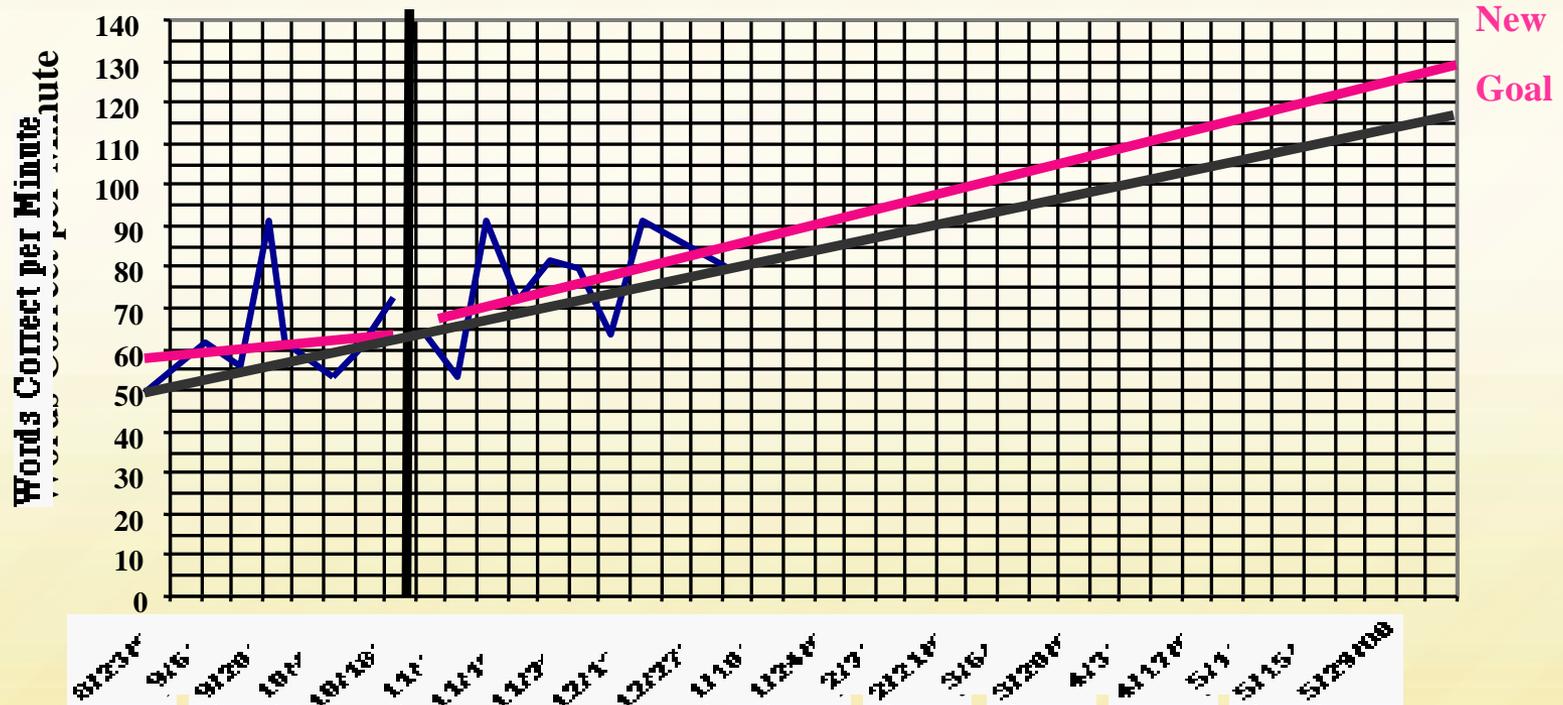
- Trend Line Analysis
 - Draw trend line, compare to aim line
- Data Point Analysis
 - Examine individual data points relative to trend line (e.g., 3 consecutive below = change)
- Dynamic Approach
 - Provides for goal adjustment (esp. upward)

Dynamic Approach

- Collect and graph the student's data
- Draw trendline (8 or more data points)
- Compare trendline to aimline (goal line)
 - If trend is **steeper or the same** as the aim, then re-set goal (raise it)
 - If trend is **flatter** than the aim, then make instructional changes

Raising Goals

- Follow trendline out to end of year and use that level as the new goal



Weeks of 2000-01 School Year

Benefits of the Dynamic Approach



- Increased student achievement when goals are increased (Fuchs, Fuchs, & Hamlett, 1989).
- Corrects for goals set initially too low.
- Dictates that teachers either change goal or instruction on continual basis.

Activity: Decision Rules

- Review Sarah's graph
- Based on the data point analysis rule, are intervention changes needed?
- Discuss in small groups
- 2 minutes

Some helpful resources....

- Jim Wright's famous website –information, tools, links, RTI_Wire
 - <http://www.interventioncentral.org>
- National Center for Research on Learning Disabilities 2006 conference
 - <http://www.nrclid.org/sea/index.html>
- National Center for Progress Monitoring
 - <http://www.studentprogress.org>
- Center on Instruction
 - <http://www.centeroninstruction.org/>
- Vaughn-Gross Reading Center
 - <http://www.texasreading.org/utcrla/>

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