



National Center on Response to Intervention

## Manual

Using Curriculum Based  
Measurements in Response to  
Intervention Framework:

*Introduction to using CBM for  
Progress Monitoring in Reading*

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Response to  
Intervention  
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## Contents

Steps for Conducting CBM.....	1
Step 1: How to Place Students in a Reading CBM Task for Progress Monitoring .....	1
Step 2: How to Identify the Level of Material for Monitoring Progress for Passage Reading Fluency and Maze Fluency .....	2
Step 3: How to Administer and Score Reading CBM.....	2
Step 4: How to Graph Scores .....	17
Step 5: How to Set Ambitious Goals .....	19
Step 6: How to Apply Decision Rules to Graphed Scores to Know When to Revise Programs and Increase Goals.....	21
Step 7: How to Use the CBM Database Qualitatively to Describe Student Strengths and Weaknesses.....	26
CBM Case Study #1: Sascha .....	33
CBM Case Study #2: Joshua .....	35
Appendix A: CBM Materials .....	<b>Error! Bookmark not defined.</b>
Appendix B: Resources .....	400

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## Steps for Conducting CBM

- Step 1: How to Place Students in a Reading CBM Task for Progress Monitoring (page 1)
- Step 2: How to Identify the Level for Material for Monitoring Progress for Passage Reading Fluency and Maze Fluency (page 2)
- Step 3: How to Administer and Score Reading CBM (page 2)
- CBM Letter Sound Fluency (page 3)
  - CBM Word Identification Fluency (page 5)
  - CBM Passage Reading Fluency (page 9)
  - CBM Maze Fluency (page 13)
- Step 4: How to Graph Scores (page 17)
- Step 5: How to Set Ambitious Goals (page 19)
- Step 6: How to Apply Decision Rules to Graphed Scores to Know When to Revise Programs and Increase Goals (page 21)
- Step 7: How to Use the CBM Database Qualitatively to Describe Students' Strengths and Weaknesses (page 26)

### Step 1: How to Place Students in a Reading CBM Task for Progress Monitoring

The first decision for implementing CBM in reading is to decide which task is developmentally appropriate for each reader to be monitored over the academic year. For students who are developing at a typical rate in reading, the correct CBM tasks are as follows:

- At Kindergarten, Letter Sound Fluency.
  - Select Letter Sound Fluency if you are more interested in measuring students' progress toward decoding.
- At Grade 1, Word Identification Fluency.
- At Grades 2 and 3, Passage Reading Fluency.
  - See next section for determining which level of passages to use for progress monitoring.
- At Grades 4–6, Maze Fluency.
  - Use the guidelines in the next section for determining which level of passages to use for progress monitoring.

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**Note:** Once you select a task for CBM progress monitoring (and for Passage Reading Fluency or Maze Fluency, a grade level of passages for progress monitoring), stick with that task (and level of passages) for the entire year.

## **Step 2: How to Identify the Level of Material for Monitoring Progress for Passage Reading Fluency and Maze Fluency**

For Passage Reading Fluency (PRF) and Maze Fluency, teachers use CBM passages written at the student's current grade level. However, if a student is well below grade-level expectations, then he or she may need to read from a lower grade-level passage. If teachers are worried that a student is too delayed in reading to make the grade-level passages appropriate, then find the appropriate CBM level by following these steps.

1. Determine the grade level text at which you expect the student to read competently by year's end.
2. Administer 3 passages at this level. Use generic CBM Passage Reading Fluency (PRF) passages, not passages that teachers use for instruction.
  - If the student reads fewer than 10 correct words in 1 minute, then use the CBM word identification fluency measure instead of CBM PRF or CBM Maze Fluency for progress monitoring.
  - If the student reads between 10 and 50 correct words in 1 minute but less than 85–90% correct, then move to the next lower level of text and try 3 passages.
  - If the student reads more than 50 correct words in 1 minute, then move to the highest level of text where he/she reads between 10 and 50 words correct in 1 minute (but not higher than the student's grade-appropriate text).
3. Maintain the student on this level of text for the purpose of progress monitoring for the *entire school year*.

## **Step 3: How to Administer and Score Reading CBM**

With Reading CBM, students read letters, isolated words, or passages within a 1-minute time span. The student has a "student copy" of the reading probe, and the teacher has an "examiner copy" of the same probe. The student reads out loud for 1 minute while the teacher marks student errors. The teacher calculates the number of letters or words read correctly and graphs this score on a student graph. The CBM score is a general overall indicator of the student's reading competency (Fuchs, Fuchs, Hosp, & Jenkins, 2001).

In reading, the following CBM tasks are available at these grade levels.

- Letter Sound Fluency (Kindergarten)
- Word Identification Fluency (Grade 1)
- Passage Reading Fluency (Grades 1–8)

- Maze Fluency (Grades 1–6)

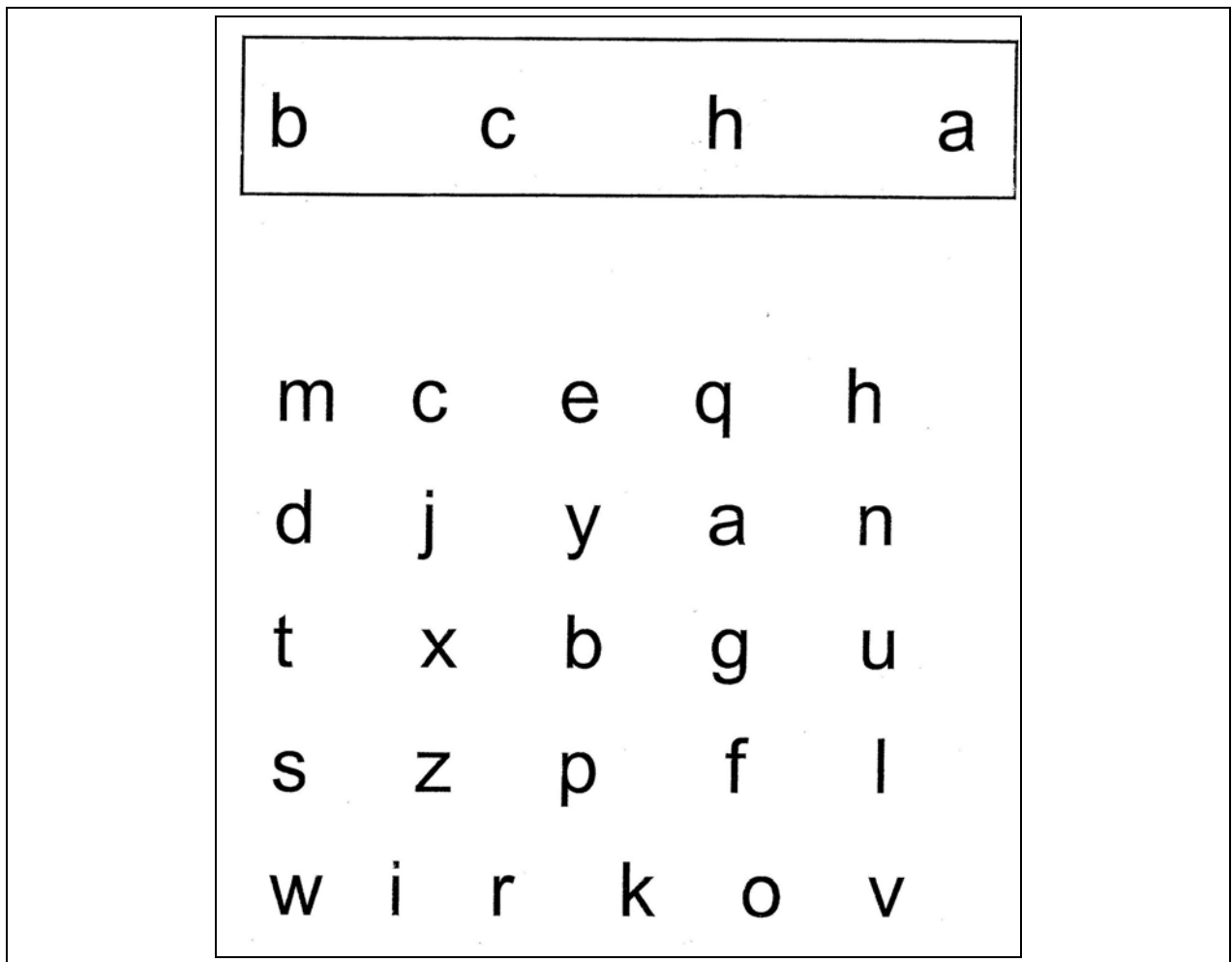
A description of each of these CBM tasks follows. Information on how to obtain the CBM materials for each task is available in Appendix A.

### *CBM Letter Sound Fluency*

CBM Letter Sound Fluency (LSF) is used to monitor student progress in beginning decoding at kindergarten.

CBM LSF is administered individually. The examiner presents the student with a single page showing 26 letters in random order (Figure 1). The student has 1 minute to say the sounds that correspond with the 26 letters. The examiner marks student responses on a separate score sheet (Figure 2). The score is the number of correct letter sounds spoken in 1 minute. If the student finishes in less than 1 minute, then the score is prorated. Five alternate forms, which can be rotated through multiple times, are available.

**Figure 1. Student Copy of CBM Letter Sound Fluency Test**



**Figure 2. Teacher Copy of CBM Letter Sound Fluency Test**

<b>Score Sheet</b>	
Student's Name _____	Examiner's Initials _____
Teacher's Name _____	Date of Testing _____
School _____	
<b>Letter Sound Fluency Test</b>	
<p>If child does not say anything after 3 seconds: do not say anything, point to next letter. If names incorrect letter: keep going. Draw a diagonal slash through any letters the student does <u>not</u> say the sound for or says the sound incorrectly. Circle the last item that child attempts. Stop at <b>1 minute</b>. If finished before 1 minute: record time.</p>	
m c e q h d j y a n t x b g u s z p f l w i r k o v	
_____ number of letters sounded correctly ( in _____ seconds)	
_____ adjusted score ( if completed test in less than 1 minute)	

Administration of CBM LSF is as follows:

**Examiner: I'm going to show you some letters. You can tell me what sound the letters make. You may know the sound for some letters. For other letters, you may now know the sounds. If you don't know the sound a letter makes, don't worry. Okay? What's most important is that you try your best. I'll show you how this activity works. My turn first. (Refer to the practice portion of the CBM LSF sheet.) This says /b/. Your turn now. What sound does it say?**

Student: /b/

**Examiner: Very good. You told me what sound the letter makes. (Correction procedures are provided in the CBM LSF manual.) You're doing a really good job. Now it will be just your turn. Go as quickly and carefully as you can. Remember to tell me the sounds the letters make. Remember just try your best. If you don't know the sounds it's okay. Trigger the stopwatch.**

When scoring CBM LSF, short vowels (rather than long vowel sounds) are correct. If the student answers correctly, then the examiner immediately points to the next letter on the student copy. If the student answers incorrectly, then the examiner marks the letter as incorrect by making a

slash through that letter on the teacher's score sheet. If a student does not respond after 3 seconds, then the examiner points to the next letter. As the student reads, the examiner does not correct mistakes.

At 1 minute, the examiner circles the last letters for which the student provides a correct sound. If the student finishes in less than 1 minute, then the examiner notes the number of seconds it took to finish the letters. The score is adjusted if completed in less than 1 minute. Information on adjusting scores is available in the administration and scoring guide.

Look at the following CBM LSF score sheet (Figure 3). Abby mispronounced 5 letter sounds in 1 minute. The last letter sound she said correctly (/r/) is circled. Her score for the LSF would be 18. A score of 18 would be charted on Abby's CBM graph.

**Figure 3. Abby's Sample CBM LSF Score Sheet**

Score Sheet	
Student's Name <u>Abby H.</u>	Examiner's Initials <u>JF</u>
Teacher's Name <u>Mrs. Fischer</u>	Date of Testing <u>Nov. 18</u>
School <u>Darby Elementary</u>	

*Letter Sound Fluency Test*

If child does not say anything after 3 seconds: do not say anything, point to next letter. If names incorrect letter: keep going. Draw a diagonal slash through any letters the student does not say the sound for or says the sound incorrectly. Circle the last item that child attempts. Stop at 1 minute. If finished before 1 minute: record time.

m c e ~~g~~ h d j ~~y~~ a n t x ~~b~~ g u s z p ~~f~~ l w i (r) k o v

18 number of letters sounded correctly ( in 60 seconds)

\_\_\_\_\_ adjusted score ( if completed test in less than 1 minute)

CBM Letter Sound Fluency is available from the University of Maryland and Vanderbilt University. See Appendix A for contact information.

### ***CBM Word Identification Fluency***

CBM Word Identification Fluency (WIF) is used to monitor students' overall progress in reading at first grade.

CBM WIF is administered individually. The examiner presents the student with a single page with 50 words (Figure 4). The 50 words have been chosen from the Dolch 100 most frequent words list or from "The educator's word frequency guide" (Zeno, Ivens, Millard, & Duvvuri,

1995) 500 most frequent words list with 10 words randomly selected from each hundred. The student has 1 minute to read the words. The examiner marks student errors on a separate score sheet (Figure 5). The score is the number of correct words spoken in 1 minute. If the student finishes in less than 1 minute, then the score is prorated. Twenty alternate forms are available.

**Figure 4. Student Copy of CBM Word Identification Fluency Test**

	List 13		
	and	always	gave
	as	going	car
	at	until	probably
	one	saw	fire
	said	end	taken
	into	room	problems
	could	far	tree
	than	form	common
	new	become	hot
	back	government	using
	such	himself	doing
	things	sun	main
	same	known	thus
	find	war	ask
	went	learn	comes
	between	I'm	street
	want	eat	



**Figure 5. Teacher Copy of CBM Word Identification Fluency Test**

List 13		
Student's Name: _____	Examiner's Initials: _____	
Student's Teacher: _____	Date: _____	
Score 1 for correct response, 0 for incorrect response.		
and _____	always _____	gave _____
as _____	going _____	car _____
at _____	until _____	probably _____
one _____	saw _____	fire _____
said _____	end _____	taken _____
into _____	room _____	problems _____
could _____	far _____	tree _____
than _____	form _____	common _____
new _____	become _____	hot _____
back _____	government _____	using _____
such _____	himself _____	doing _____
things _____	sun _____	main _____
same _____	known _____	thus _____
find _____	war _____	ask _____
went _____	learn _____	comes _____
between _____	I'm _____	street _____
want _____	eat _____	
		Total score = _____

Administration of the WIF is as follows:

**Examiner: When I say, 'go,' I want you to read these words as quickly and correctly as you can. Start here** (point to the first word) **and go down the page** (run your finger down the first column). **If you don't know a word, skip it and try the next word. Keep reading until I say, 'stop.'** Do you have any questions? Trigger the stopwatch for 1 minute.

The teacher scores a word as a "1" if it is correct and a "0" if it is incorrect. The examiner uses a blank sheet to cover the second and third columns. As the student completes a column, the blank sheet is moved to expose the next column. If the student hesitates, then after 2 seconds he/she is prompted to move to the next word. If the student is sounding out a word, then he/she is prompted to move to the next word after 5 seconds. As the student reads, the examiner does not correct mistakes and marks errors on the score sheet.

At 1 minute, the examiner circles the last word the student reads. If the student finishes in less than 1 minute, then the examiner notes the number of seconds it took to complete the word list, and the student score is adjusted.

Look at the following CBM WIF score sheet (Figure 6). Shameka mispronounced 7 words in 1 minute. The last word she read correctly (car) is circled. Her score for the WIF is 29. A score of 29 is charted on Shameka's CBM graph.

**Figure 6. Shameka's CBM WIF Score Sheet**

List 13		
Student's Name: <u>Shameka S.</u>		Examiner's Initials: <u>ST</u>
Student's Teacher: <u>Mr. Towler</u>		Date: <u>Jan. 15</u>
Score 1 for correct response, 0 for incorrect response.		
and <u>1</u>	always <u>1</u>	gave <u>1</u>
as <u>1</u>	going <u>0</u>	car <u>1</u>
at <u>1</u>	until <u>1</u>	probably <u>   </u>
one <u>1</u>	saw <u>1</u>	fire <u>   </u>
said <u>0</u>	end <u>1</u>	taken <u>   </u>
into <u>1</u>	room <u>1</u>	problems <u>   </u>
could <u>1</u>	far <u>1</u>	tree <u>   </u>
than <u>1</u>	form <u>0</u>	common <u>   </u>
new <u>1</u>	become <u>0</u>	hot <u>   </u>
back <u>1</u>	government <u>0</u>	using <u>   </u>
such <u>1</u>	himself <u>1</u>	doing <u>   </u>
things <u>1</u>	sun <u>1</u>	main <u>   </u>
same <u>1</u>	known <u>0</u>	thus <u>   </u>
find <u>0</u>	war <u>1</u>	ask <u>   </u>
went <u>1</u>	learn <u>1</u>	comes <u>   </u>
between <u>1</u>	I'm <u>1</u>	street <u>   </u>
want <u>1</u>	eat <u>1</u>	
		Total score = <u>29</u>

CBM Word Identification Fluency is available from Vanderbilt University. See Appendix A for contact information.

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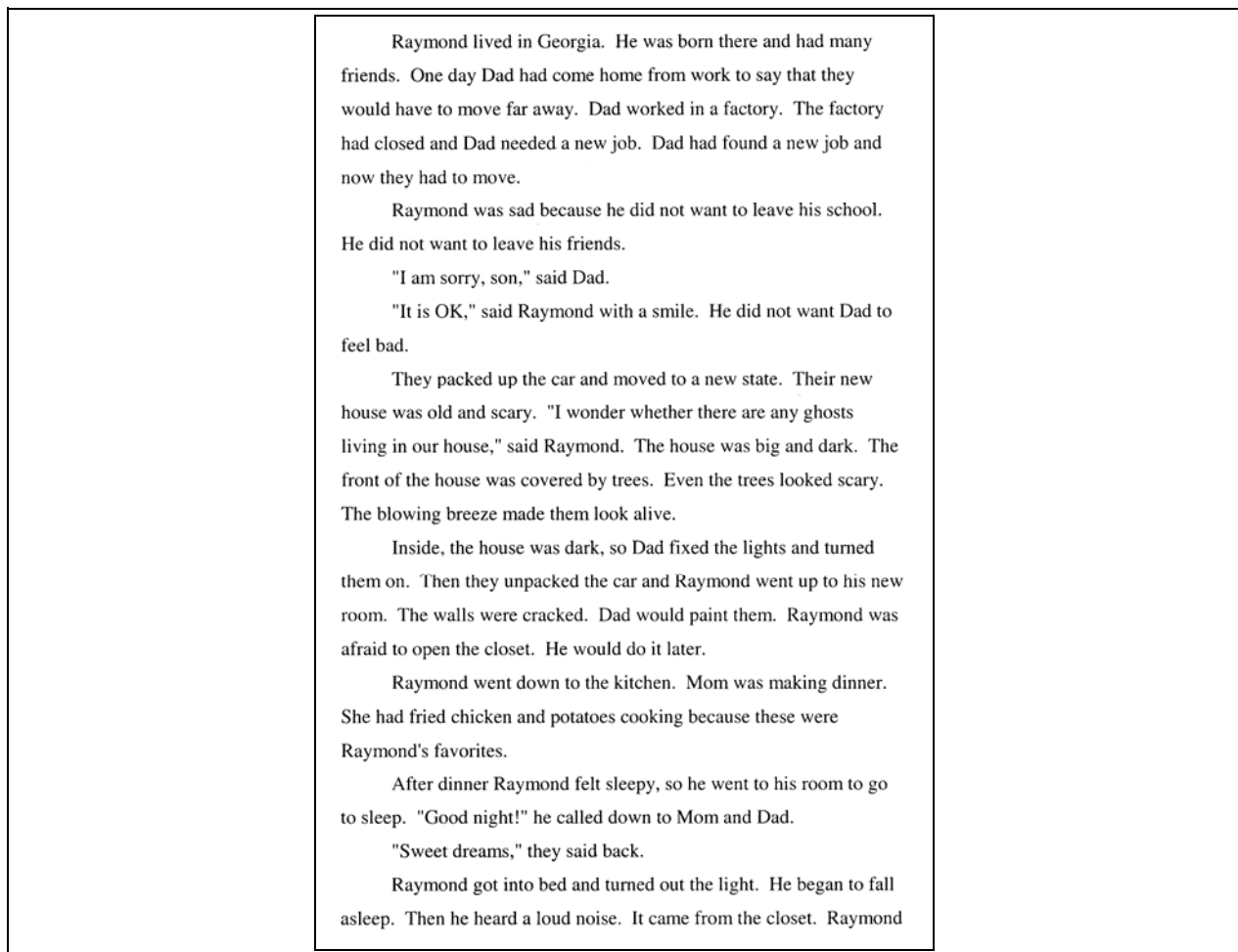
## *CBM Passage Reading Fluency*

CBM Passage Reading Fluency (PRF) is used to monitor students' overall progress in reading at Grades 1-6. Some teachers prefer Maze Fluency beginning at Grade 4.

CBM PRF is administered individually. In general education classrooms, students take one PRF test each week. Special education students take two PRF tests each week. Each PRF test uses a different passage at the same grade level of equivalent difficulty. For higher-performing general education students, teachers might administer PRF tests (also referred to as "probes") on a monthly basis and have each student read three probes on each occasion.

For each CBM PRF reading probe, the student reads from a "student copy" that contains a grade-appropriate reading passage (Figure 7). The examiner scores the student on an "examiner copy." The examiner copy contains the same reading passage but has a cumulative count of the number of words for each line along the right side of the page (Figure 8). The numbers on the teacher copy allow for quick calculation of the total number of words a student reads in 1 minute.

### **Figure 7. Student Copy of CBM Passage Reading Fluency Test**



**Figure 8. Teacher Copy of CBM Passage Reading Fluency Test**

Raymond lived in Georgia. He was born there and had many	11
friends. One day Dad had come home from work to say that they	24
would have to move far away. Dad worked in a factory. The factory	37
had closed and Dad needed a new job. Dad had found a new job and	52
now they had to move.	57
Raymond was sad because he did not want to leave his school.	69
He did not want to leave his friends.	77
"I am sorry, son," said Dad.	83
"It is OK," said Raymond with a smile. He did not want Dad to	97
feel bad.	99
They packed up the car and moved to a new state. Their new	112
house was old and scary. "I wonder whether there are any ghosts	124
living in our house," said Raymond. The house was big and dark. The	137
front of the house was covered by trees. Even the trees looked scary.	150
The blowing breeze made them look alive.	157
Inside, the house was dark, so Dad fixed the lights and turned	169
them on. Then they unpacked the car and Raymond went up to his new	183
room. The walls were cracked. Dad would paint them. Raymond was	194
afraid to open the closet. He would do it later.	204
Raymond went down to the kitchen. Mom was making dinner.	214
She had fried chicken and potatoes cooking because these were	224
Raymond's favorites.	226
After dinner Raymond felt sleepy, so he went to his room to go	239
to sleep. "Good night!" he called down to Mom and Dad.	250
"Sweet dreams," they said back.	255
Raymond got into bed and turned out the light. He began to fall	268
asleep. Then he heard a loud noise. It came from the closet. Raymond	281

Administration of CBM PRF is as follows:

**Examiner: I want you to read this story to me. You'll have 1 minute to read. When I say, 'begin,' start reading aloud at the top of the page. Do your best reading. If you have trouble with a word, I'll tell it to you. Do you have any questions? Begin.** Trigger the timer for 1 minute.

The examiner marks each student error with a slash (/). At the end of 1 minute, the last word read is marked with a bracket (]). If a student skips an entire line of a reading passage, then a straight line is drawn through the skipped line. When scoring CBM probes, the teacher

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identifies the count for the last word read in 1 minute and the total number of errors. The teacher then subtracts errors from the total number of words to calculate the student score.

There are a few scoring guidelines to follow when administering reading CBM probes. Repetitions (words said over again), self-corrections (words misread, but corrected within 3 seconds), insertions (words added to passage), and dialectical difference (variations in pronunciation that conform to local language norms) are all scored as correct. Mispronunciations, word substitutions, omitted words, hesitations (words not pronounced within 3 seconds), and reversals (two or more words transposed) are all scored as errors.

Numerals are counted as words and must be read correctly within the context of the passage. With hyphenated words, each morpheme separated by a hyphen(s) is counted as a word if it can stand alone on its own (e.g., *Open-faced* is scored as two words but *re-enter* is scored as one word). Abbreviations are counted as words and must be read correctly within the context of the sentence.

As teachers listen to students read, they can note the types of decoding errors that students make, the kinds of decoding strategies students use to decipher unknown words, how miscues reflect students' reliance on graphic, semantic, or syntactic language features, and how self-corrections, pacing, and scanning reveal strategies used in the reading process (Fuchs, Fuchs, Hosp, & Jenkins, 2001). Teachers can use these more qualitative descriptions of a student's reading performance to identify methods to strengthen the instructional program for each student. More information about noting student decoding errors is covered under "Step 7: How to Use the Database Qualitatively to Describe Student Strengths and Weaknesses."

If a student skips several connected words or an entire line of the reading probe, the omission is calculated as 1 error. If this happens, then every word but 1 of the words is subtracted from the total number of words attempted in 1 minute.

Look at the following example (Figure 9). The student omitted text 2 times during the 1-minute CBM PRF. The examiner drew a line through the omitted text. The first omission was on words 26–40. The examiner counts 15 words as omitted and drops 14 of the words before calculating the total words attempted. The student also omitted words 87–100. The examiner drops 13 of the 14 words before calculating the total words attempted.

To calculate the total number of words read in 1 minute, the examiner subtracts the 2 words (14 words from first omission plus 13 words from second omission) from the total number of words read in 1 minute (122). The adjusted number of words attempted is then 95. The student made 7 errors (5 errors marked by slashes and 2 errors from omissions). These 7 errors are subtracted from the adjusted number of words attempted of 95.  $95 - 7 = 88$ . 88 is the number of words read correctly in 1 minute.

**Figure 9. Sample CBM Passage Reading Fluency Passage**

It was Saturday morning and Ellie wanted to go see a movie.	12
She asked her father if he would take her downtown. "Sure," said Dad.	25
<del>"I have to go in to work anyway. It will be right on my way."</del>	40
Ellie called her friends Beth, Katie, and Laura to see whether	51
they <del>could</del> go. They said yes. They went to Ellie's house. <del>There</del> they	64
all got into Dad's car. Then Dad drove to the movies.	75
There were two movies playing. One movie was about a boy	86
<del>and a dog. The ticket lady said it was funny. The other movie was</del>	100
about a <del>mummy</del> . It looked scary. The name of it was "The Mummy	113
Walks Again!" There was a picture of the <del>mummy</del> on the wall. He	126
looked creepy. The girls asked the ticket lady about the movie. She	138
said she had heard people scream when they saw the mummy.	149

Look at this sample CBM PRF probe (Figure 10). Reggie made 8 errors while reading the passage for 1 minute. The straight line drawn through the fourth line shows that he also skipped an entire line. The last word he read was "and" and a bracket was drawn after this word. In all Reggie attempted 135 words. He skipped 15 words in the fourth line. 14 of those skipped words are subtracted from the total words attempted ( $135 - 14 = 121$ ) and 1 of those skipped words is counted as an error. Reggie made 8 additional errors for a total of 9 errors. The 9 errors are subtracted from the 121 words attempted.  $121 - 9 = 112$ . 112 is Reggie's reading score for this probe.

**Figure 10. Reggie's CBM PRF Score Sheet**

Raymond lived in Georgia. He was born there and had many	11
<del>friends</del> . One day Dad had come home from work to say that they	24
would have to move far away. Dad <del>worked</del> in a factory. The factory	37
<del>had closed and Dad needed a new job. Dad had found a new job and</del>	52
now they had to move.	57
Raymond was sad because he <del>did not</del> want to leave his school.	69
He did not want to leave his friends.	77
"I am sorry, son," said Dad.	83
"It is OK," said Raymond with a <del>smile</del> . He did not want Dad to	97
feel bad.	99
They <del>packed up</del> the car and moved to a new state. Their new	112
house was old and <del>scary</del> . "I wonder <del>whether</del> there are any ghosts	124
living in our house," said Raymond. The house was big and dark. The	137
front of the house was covered by trees. Even the trees looked scary.	150
The blowing breeze made them look alive.	157
Inside, the house was dark, so Dad fixed the lights and turned	169
them on. Then they unpacked the car and Raymond went up to his new	183
room. The walls were cracked. Dad would paint them. Raymond was	194
afraid to open the closet. He would do it later.	204
Raymond went down to the kitchen. Mom was making dinner.	214
She had fried chicken and potatoes cooking because these were	224
Raymond's favorites.	226
After dinner Raymond felt sleepy, so he went to his room to go	239
to sleep. "Good night!" he called down to Mom and Dad.	250
"Sweet dreams," they said back.	255
Raymond got into bed and turned out the light. He began to fall	268
asleep. Then he heard a loud noise. It came from the closet. Raymond	281

CBM PRF tests can be obtained from a variety of sources. See Appendix A for contact information.

### ***CBM Maze Fluency***

CBM Maze Fluency is available for students in Grades 1–6, but typically teachers use CBM Maze Fluency beginning in Grade 4. Maze Fluency is used to monitor students' overall progress in reading.

CBM Maze Fluency can be administered to a group of students at one time. The examiner presents each student with a maze passage (Figure 11). With CBM Maze, the first sentence in a

passage is left intact. Thereafter, every seventh word is replaced with a blank and three possible replacements. Only one replacement is semantically correct. Students have 2.5 minutes to read the passage to themselves and circle the word correct for each blank. The examiner monitors the students during the 2.5 minutes and scores each test later. When the student makes 3 consecutive errors, scoring is discontinued (no subsequent correct replacement is counted). Skipped blanks (with no circles) are counted as errors. The score is the number of correct replacements circled in 2.5 minutes. Thirty alternate forms are available for each grade level.

**Figure 11. Sample CBM Maze Fluency Student Copy**

<p>THE CAVE TRIP</p> <p>Mrs. Jones said that Cindy's class [<u>was/ step/ hill</u>] going on a field trip. The [<u>stare/ class/ green</u>] of third graders had never been [<u>be/ on/ so</u>] a field trip before. Cindy was [<u>bed/ went/ very</u>] excited. Mrs. Jones said that the [<u>class/ chair/ peach</u>] was going on a field trip [<u>at/ to/ is</u>] see the caves up in the mountains. [<u>Show/ And/ The</u>] class had been studying about caves [<u>for/ sad/ kill</u>] the last few weeks. Cindy [<u>wet/ and/ ill</u>] her classmates had seen pictures of [<u>shout/ caves/ sing</u>]. Now, they were going to see [<u>a/ are/ or</u>] real cave.</p> <p>A week later, the students [<u>then/ her/ and</u>] Mrs. Jones climbed onto a bus [<u>four/ that/ dime</u>] would take them to [<u>and/ the/ sat</u>] cave. It was early in the morning [<u>sit/ tap/ and</u>] the air was chilly. Mrs. Jones [<u>got/ sat/ had</u>] warned all of the students to [<u>bring/ pillow/ horse</u>] a sweater because the air might [<u>be/ to/ it</u>] chilly in the cave. Cindy was [<u>work/ jump/ very</u>] glad that she had brought her sweater.</p> <p>[<u>Rain/ Halt/ The</u>] bus driver started the engine and [<u>the/ was/ got</u>] bus began to roll. The bus [<u>rolled/ mother/ girls</u>] along the freeway. Finally the bus [<u>lather/ coffee/ pulled</u>] onto a little country road that [<u>ate/ led/ pear</u>] to the cave.</p> <p>When the students arrived at the [<u>goat/ math/ cave</u>], all they could [<u>see/ kite/ lot</u>] was a mountain with a big [<u>toys/ trees/ black</u>] hole in the side. A</p>
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Administration of CBM Maze Fluency is as follows:

**Examiner: Look at this story.** (Place practice maze on overhead.) **It has some places where you need to choose the correct word. Whenever you come to three words in parentheses and underlined (point), choose the word that belongs in the story. Listen. The story begins, “Jane had to take piano lessons. Her Mom and Dad made her do. Jane (from/did/soda) not like playing the piano.” Which one of the three underlined words (from/did/soda) belongs in the sentence? (Give time for response.) That’s right. The word that belongs in the sentence is did. So, you circle the word did.** (Demonstrate.) Continue through entire practice activity.

**Now you are going to do the same thing by yourself. Whenever you come to three words in parentheses and underlined, circle the word that belongs in the sentence. Choose a word even if you’re not sure of the answer. When I tell you to start, pick up your pencil, turn you test over, and begin working. At the end of 2 and a half minutes, I’ll tell you to stop working. Remember, do your best. Any questions? Start.** Trigger the timer for 2.5 minutes.

When scoring CBM Maze Fluency, students receive 1 point for each correctly circled answer. Blanks with no circles are counted as errors. Scoring is discontinued if 3 consecutive errors are made. The number of correct answers within 2.5 minutes is the student score.

Look at the following CBM Maze score sheet (Figure 12). Juan circled 16 correct answers in 2.5 minutes. He circled 7 incorrect answers. However, Juan did make 3 consecutive mistakes, and 5 of his correct answers were after his 3 consecutive mistakes. Juan’s score for the Maze Fluency Test would be 10. A score of 10 would be charted on Juan’s CBM graph.

Figure 12. Juan's CBM Maze Fluency Student Answer Sheet

THE CAVE TRIP

Mrs. Jones said that Cindy's class [was/ step/ hill] going on a field trip. The [stare/ class/ green] of third graders had never been ~~[he/ on/ so]~~ a field trip before. Cindy was [bed/ went/ very] excited. Mrs. Jones said that the [class/ chair/ peach] was going on a field trip [at/ to/ is] see the caves up in the mountains. [Show/ And/ The] class had been studying about caves [for/ sad/ kill] the last few weeks. Cindy [wet/ and/ ill] her classmates had seen pictures of [shout/ caves/ sing]. Now, they were going to see ~~[a/ are/ or]~~ real cave.

A week later, the students [then/ her/ and] Mrs. Jones climbed onto a bus [four/ that/ dime] would take them to ~~[and/ the/ sat]~~ cave. It was early in the morning ~~[st/ tap/ and]~~ the air was chilly. Mrs. Jones ~~[got/ sat/ had]~~ warned all of the students to [bring/ pillow/ horse] a sweater because the air might [be/ to/ it] chilly in the cave. Cindy was [work/ jump/ very] glad that she had brought her sweater.

[Rain/ Halt/ The] bus driver started the engine and ~~[the/ was/ got]~~ bus began to roll. The bus [rolled/ mother/ girls] along the freeway. Finally the bus [lather/ coffee/ pulled] onto a little country road that [ate/ led/ pear] to the cave.

When the students arrived at the [goat/ math/ cave], all they could [see/ kite/ lot] was a mountain with a big [toys/ trees/ black] hole in the side. A

CBM Maze is available from AIMSweb, Edcheckup, and Vanderbilt University. Some of these products include computerized administration and scoring of CBM Maze Fluency. See Appendix A for contact information.

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## Step 4: How to Graph Scores

Once the CBM data for each student have been collected, it is time to begin graphing student scores. Graphing the scores of every CBM on an individual student graph is a vital aspect of the CBM program. These graphs give teachers a straightforward way of reviewing a student's progress, monitoring the appropriateness of the student's goals, judging the adequacy of the student's progress, and comparing and contrasting successful and unsuccessful instructional aspects of the student's program.

CBM graphs help teachers make decisions about the short- and long-term progress of each student. Frequently, teachers underestimate the rate at which students can improve (especially in special education classrooms), and the CBM graphs help teachers set ambitious, but realistic, goals. Without graphs and decision rules for analyzing the graphs, teachers often stick with low goals. By using a CBM graph, teachers can use a set of standards to create more ambitious student goals and help better student achievement. Also, CBM graphs provide teachers with actual data to help them revise and improve a student's instructional program.

Teachers have two options for creating CBM graphs of the individual students in the classroom. The first option is that teachers can create their own student graphs using graph paper and pencil. The second option is that teachers and schools can purchase CBM graphing software that graphs student data and helps interpret the data for teachers.

### *Creating Your Own Student Graphs*

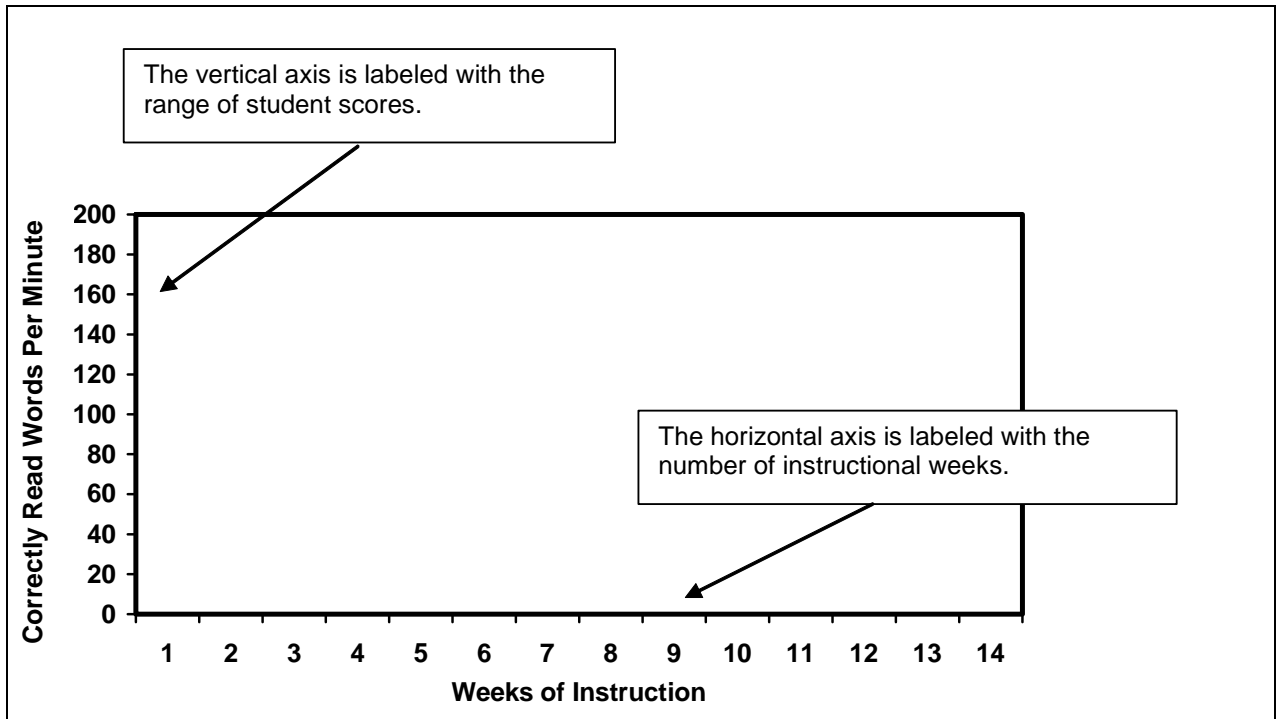
It is easy to graph student CBM scores on teacher-made graphs. Teachers create a student graph for each individual CBM student so they can interpret the CBM scores of every student and see progress or lack thereof.

Teachers should create a master CBM graph in which the vertical axis accommodates the range of the scores of all students in the class, from 0 to the highest score (Figure 13). On the horizontal axis, the number of weeks of instruction is listed (Figure 14). Once the teacher creates the master graph, it can be copied and used as a template for every student.

**Figure 13. Highest Scores for Labeling Vertical Axes on CBM Graphs**

CBM Task	Vertical Axis: 0–__
LSF	100
PSF	100
WIF	100
PRF	200
Maze Fluency	60

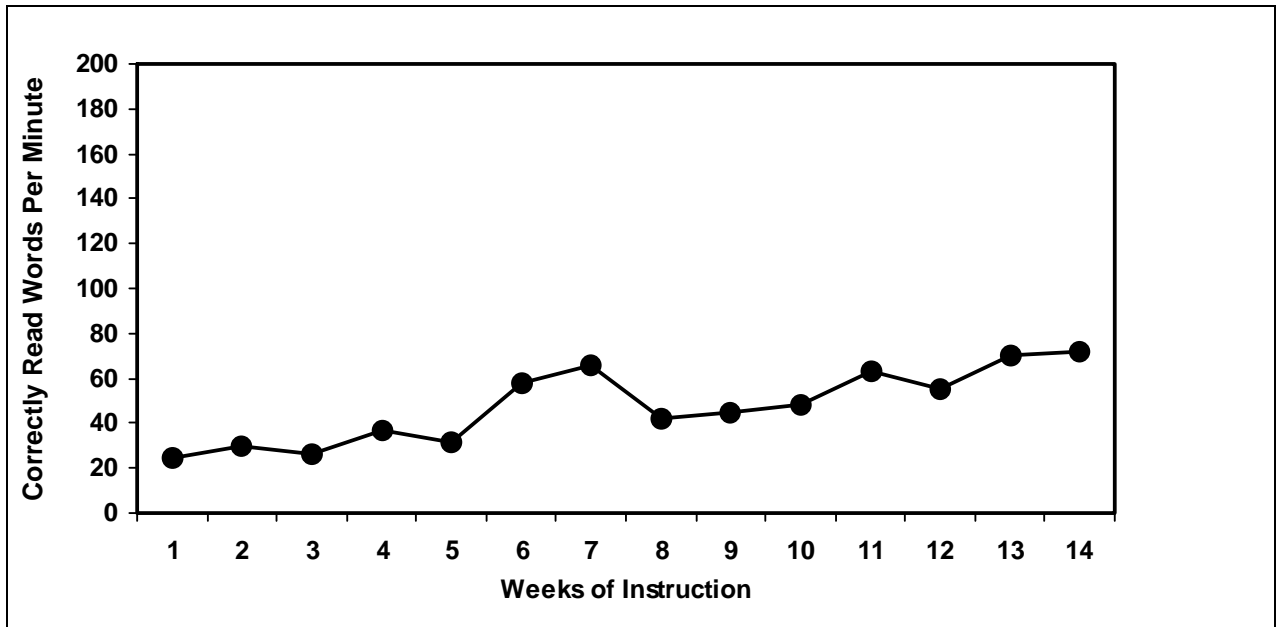
**Figure 14. Labeling the CBM Graph**



*Beginning to Chart Data*

Every time a CBM probe is administered, the teacher scores the probe and then records the score on a CBM graph (Figure 15). A line can be drawn connecting each data point.

**Figure 15. Sample CBM Graph**



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## Step 5: How to Set Ambitious Goals

Once a few CBM scores have been graphed, it is time for the teacher to decide on an end-of-year performance goal for the student. There are three options. Two options are utilized after at least three CBM scores have been graphed. One option is utilized after at least 8 CBM scores have been graphed.

### *Option #1: End-of-Year Benchmarking*

For typically developing students at the grade level where the student is being monitored, identify the end-of-year CBM benchmark. (See recommendations in Figure 16.) This is the end-of-year performance goal. The benchmark, or end-of-year performance goal, is represented on the graph by an X at the date marking the end of the year. A goal-line is then drawn between the median of at least the first 3 CBM graphed scores and the end-of-year performance goal.

**Figure 16. CBM Benchmarks**

<b>Grade</b>	<b>Benchmark</b>
Kindergarten	40 letter sounds per minute (CBM LSF)
1st	60 words correct per minute (CBM WIF) 50 words correct per minute (CBM PRF)
2nd	75 words correct per minute (CBM PRF)
3rd	100 words correct per minute (CBM PRF)
4th	20 correct replacements per 2.5 minutes (CBM Maze)
5th	25 correct replacements per 2.5 minutes (CBM Maze)
6th	30 correct replacements per 2.5 minutes (CBM Maze)

For example, the benchmark for a first-grade student is reading 60 words correctly in 1 minute on CBM WIF. The end-of-year performance goal of 60 would be graphed on the student's graph. The goal-line would be drawn between the median of the first few CBM WIF scores and the end-of-year performance goal.

The benchmark for a sixth-grade student is correctly replacing 30 words in 2.5 minutes on CBM Maze Fluency. The end-of-year performance goal of 30 would be graphed on the student's graph. The goal-line would be drawn between the median of the first few CBM Maze Fluency scores and the end-of-year performance goal.

### *Option #2: National Norms*

For typically developing students at the grade level where the student is being monitored, identify the average rate of weekly increase from a national norm chart (Figure 17).

**Figure 17. CBM Norms for Student Growth (Slope)**

<b>Grade</b>	<b>Letter Sound Fluency Norms</b>	<b>Word Identification Fluency Norms</b>	<b>Passage Reading Fluency Norms</b>	<b>Maze Fluency Norms</b>
K	1.2	—	—	—
1	—	1.50	2.00	0.40
2	—	—	1.50	0.40
3	—	—	1.00	0.40
4	—	—	0.90	0.40
5	—	—	0.50	0.40
6	—	—	0.30	0.40

Note. From Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993

For example, let's say that a fourth-grade student's median score from his first three CBM PRF scores is 29. The PRF norm for fourth-grade students is 0.90 (Figure 17). The 0.90 is the weekly rate of growth for fourth graders. To set an ambitious goal for the student, multiply the weekly rate of growth by the number of weeks left until the end of the year. If there are 16 weeks left, then multiply 16 by 0.90:  $16 \times 0.90 = 14.4$ . Add 14.4 to the baseline median of 29 ( $29 + 14.4 = 43.4$ ). This sum (43.0) is the end-of-year performance goal.

### **Option #3: Intra-Individual Framework**

Identify the weekly rate of improvement for the target student under baseline conditions, using at least 8 CBM data points. Multiply this baseline rate by 1.5. Take this product and multiply it by the number of weeks until the end of the year. Add this product to the student's baseline score. This sum is the end-of-year goal.

For example, a student's first 8 CBM scores were 10, 12, 9, 14, 12, 15, 12, 14. To calculate the weekly rate of improvement, or slope, we can use the Tukey method. Divide the scores into three roughly equal groups, and subtract the median of the first group from the median of the last group. In this instance, 10 is the first median scores, and 14 is the last median score.  $14 - 10 = 4$ . We then divide 4 by the number of weeks of instruction in this example minus 1, which is 7 in this case because the data are from 8 weeks.  $4 \div 7 = 0.57$ .

0.57 is multiplied by 1.5:  $0.57 \times 1.5 = 0.855$ . Multiply the product of 0.855 by the number of weeks until the end of the year. If there are 14 weeks left until the end of the year:  $0.855 \times 14 = 11.97$ . The median score of the first 8 data points was 10. The sum of 11.97 and the median score of the end-of-year performance goal:  $11.97 + 10 = 21.97$ . The student's end-of-year performance goal would be 22.

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### *Computer Management Programs*

CBM computer management programs are available for schools to purchase. The computer scoring programs create graphs for individual students after the student scores are entered into the program and aid teachers in making performance goals and instructional decisions. Other computer programs actually collect and score the data.

Various types of computer assistance are available at varying fees. Information on how to obtain the computer programs is in Appendix A.

**AIMSweb** provides a computer software program that allows teachers to enter student CBM data, once they have administered and scored the tests, and then receive graphs and automated reports based on a student's performance. Teachers can purchase the software from AIMSweb. A sample CBM report produced by AIMSweb is available in Appendix A.

**DIBELS** operates an online data system that teachers can use for the cost of \$1 per student, per year. With the data system, teachers can administer and score tests and then enter student CBM scores and have student graphs automatically prepared. The data system also provides reports for the scores of an entire district or school. A sample CBM report produced by DIBELS is available in Appendix A.

**Edcheckup** operates a computer assistance program that allows teachers to enter student data. They administer and score online. Reports and graphs are automatically generated that follow class and student progress. The program also guides teachers to set annual goals and evaluate student progress. The Edcheckup program is available for a fee.

**McGraw-Hill** produces Yearly ProgressPro™, a computer-administered progress monitoring and instructional system to bring the power of Curriculum Based Measurement (CBM) into the classroom. Students take their CBM tests at the computer, eliminating the need for teachers to administer and score probes. Weekly diagnostic assessments provide teachers with the information they need to plan classroom instruction. Reports allow teachers to track progress against state and national standards at the individual student, class, building, or district level. A sample CBM report produced by Yearly ProgressPro™ is available in Appendix A.

### **Step 6: How to Apply Decision Rules to Graphed Scores to Know When to Revise Programs and Increase Goals**

CBM can judge the adequacy of student progress and the need to change instructional programs. Researchers have demonstrated that CBM can be used to improve the scope and usefulness of program evaluation decisions (Germann & Tindal, 1985) and to develop instructional plans that enhance student achievement (Fuchs, Deno, & Mirkin, 1984; Fuchs, Fuchs, & Hamlett, 1989a).

After teachers draw CBM graphs and trend-lines, they use graphs to evaluate student progress and to formulate instructional decisions. Standard CBM decision rules guide decisions about the adequacy of student progress and the need to revise goals and instructional programs.

Decision rules based on the most recent 4 consecutive scores:

- If the most recent 4 consecutive CBM scores are above the goal-line, then the student's end-of-year performance goal needs to be increased.
- If the most recent 4 consecutive CBM scores are below the goal-line, then the teacher needs to revise the instructional program.

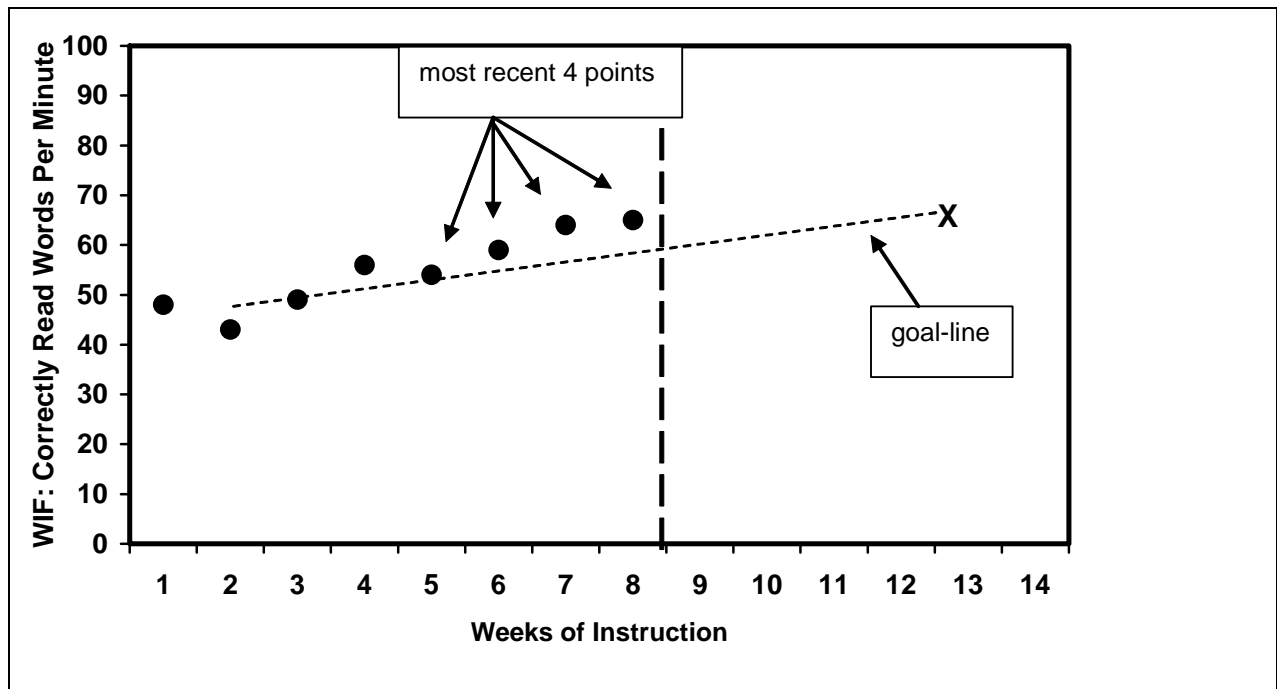
Decision rules based on the trend-line:

- If the student's trend-line is steeper than the goal-line, then the student's end-of-year performance goal needs to be increased.
- If the student's trend-line is flatter than the goal-line, then the teacher needs to revise the instructional program.
- If the student's trend-line and goal-line are the same, then no changes need to be made.

Let's look at each of these decision rules and the graphs that help teachers make decisions about a student's goals and instructional programs.

Look at the graph in Figure 16.

**Figure 18. Four Consecutive Scores Above Goal-Line**



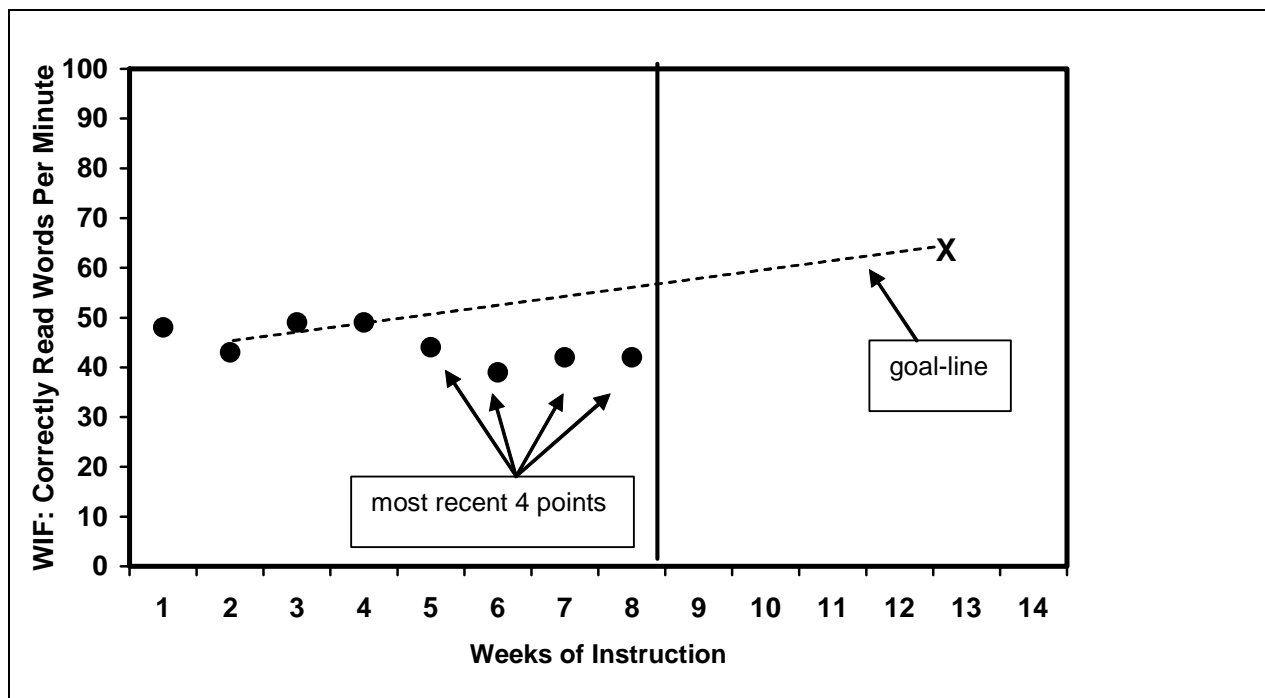


On this graph, the most recent 4 scores are *above* the goal-line. Therefore, the student's end-of-year performance goal needs to be adjusted. The teacher increases the desired rate (or goal) to boost the actual rate of student progress.

The point of the goal increase is notated on the graph as a dotted vertical line. This allows teachers to visually note when the student's goal was changed. The teacher re-evaluates the student graph in another 7 or 8 data points to determine whether the student's new goal is appropriate or whether a teaching change is needed.

Look at the graph in Figure 19.

**Figure 19. Four Consecutive Scores Below Goal-Line**

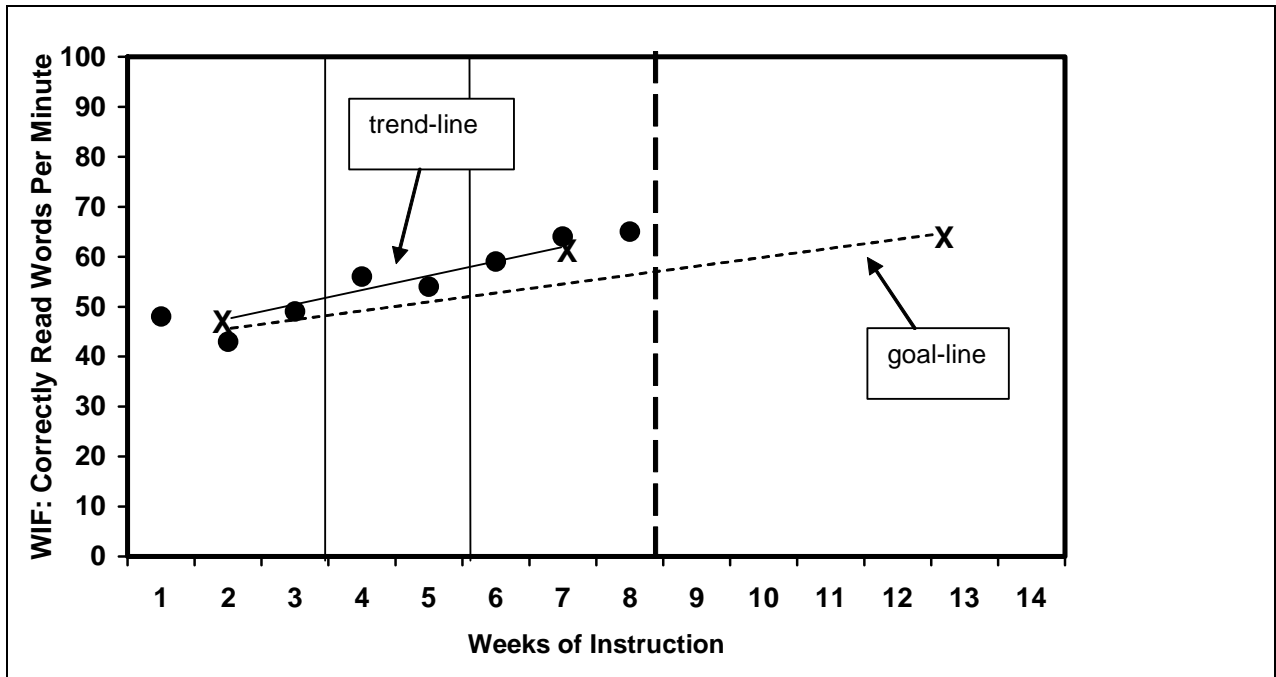


On this graph, the most recent 4 scores are *below* the goal-line. Therefore, the teacher needs to change the student's instructional program. The end-of-year performance-goal and goal-line never decrease, they can only increase. The instructional program should be tailored to bring a student's scores up so they match or surpass the goal-line.

The teacher draws a solid vertical line when making an instructional change. This allows teachers to visually note when changes to the student's instructional program were made. The teacher re-evaluates the student graph in another 7 or 8 data points to determine whether the change was effective.

Look at the graph in Figure 20.

**Figure 20. Trend-line Above Goal-Line**

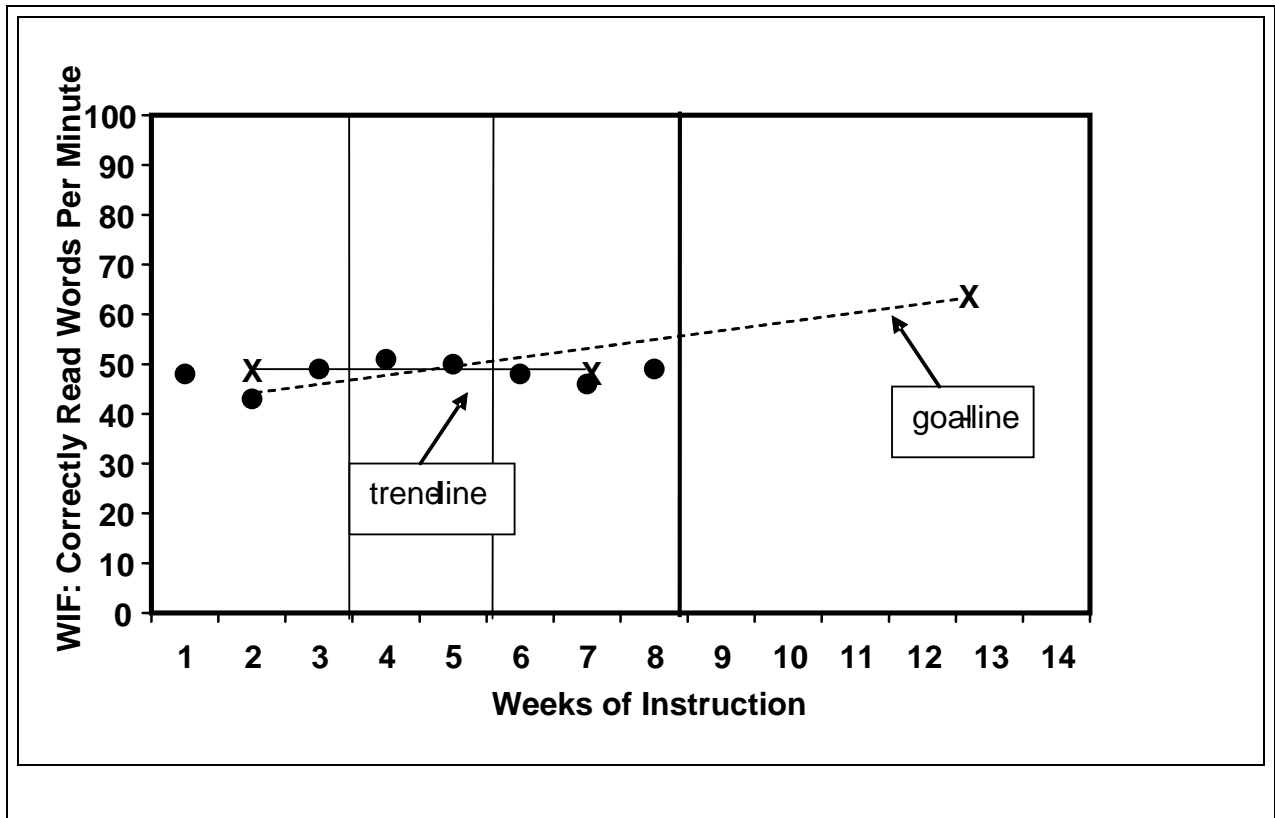


On this graph, the trend-line is steeper than the goal-line. Therefore, the student's end-of-year performance goal needs to be adjusted. The teacher increases the desired rate (or goal) to boost the actual rate of student progress. The new goal-line can be an extension of the trend-line.

The point of the goal increase is notated on the graph as a dotted vertical line. This allows teachers to visually note when the student's goal was changed. The teacher re-evaluates the student graph in another 7 or 8 data points to determine whether the student's new goal is appropriate or whether a teaching change is needed.

Look at the graph in Figure 21.

**Figure 21. Trend-line Flatter than Goal-line**

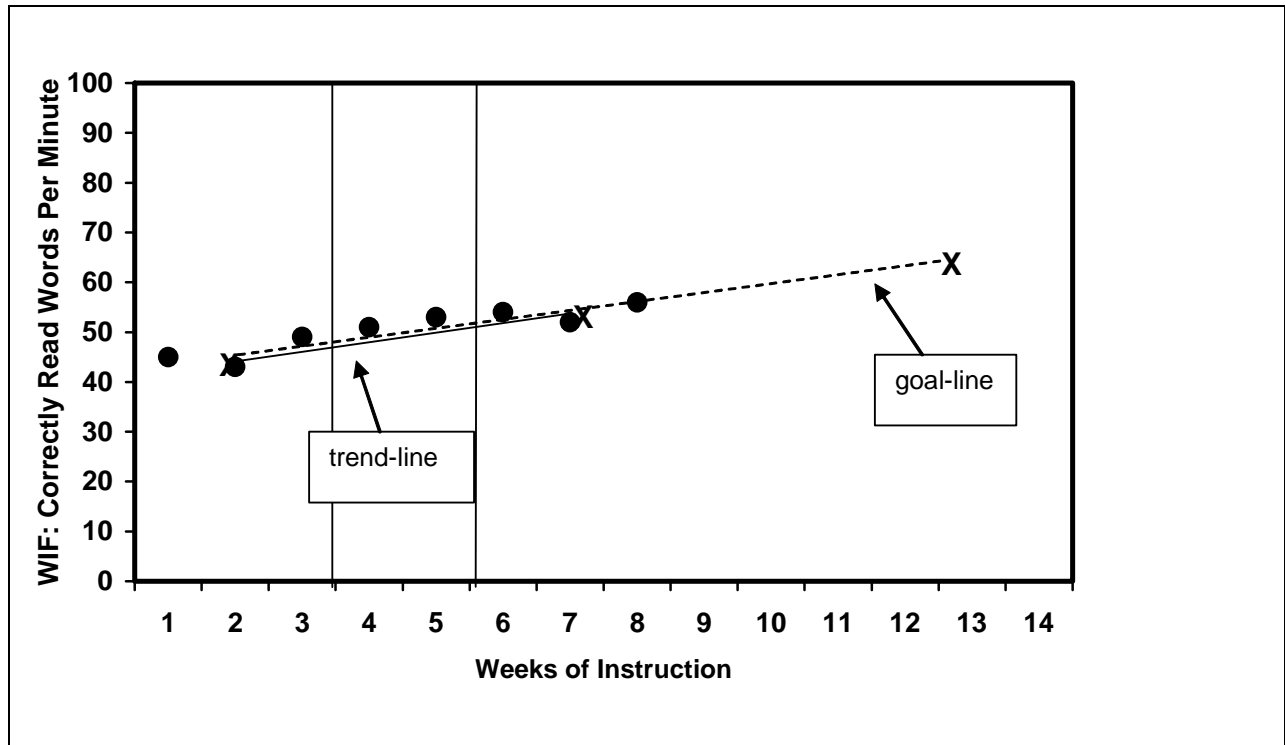


On this graph, the trend-line is flatter than the performance goal-line. The teacher needs to change the student's instructional program. Again, the end-of-year performance goal and goal-line are never decreased! A trend-line below the goal-line indicates that student progress is inadequate to reach the end-of-year performance goal. The instructional program should be tailored to bring a student's scores up so they match or surpass the goal-line.

The point of the instructional change is represented on the graph as a solid vertical line. This allows teachers to visually note when the student's instructional program was changed. The teacher re-evaluates the student graph in another 7 or 8 data points to determine whether the change was effective.

Look at the graph in Figure 22.

**Figure 22. Trend-line Matches Goal-line**



If the trend-line matches the goal-line, then no change is currently needed for the student.

The teacher re-evaluates the student graph in another 7 or 8 data points to determine whether an end-of-year performance goal or instructional change needs to take place.

### **Step 7: How to Use the CBM Database Qualitatively to Describe Student Strengths and Weaknesses**

Student miscues during CBM PRF can be analyzed to describe student reading strengths and weaknesses. To complete a miscue analysis, the student reads a CBM PRF passage following the standard procedures. While the student reads, the teacher writes student errors on the examiner copy. (See Figure 23.) The first 10 errors are written on the Quick Miscue Analysis Table (see Figure 24) and analyzed.

**Figure 23. Miscue Analysis Story: Student #1**

Adventure on Highway 66	
A snowstorm can be <del>exciting</del> <sup>extra</sup> exciting. But too much <del>snow</del> <sup>now</sup> snow can cause	11
<del>trains</del> <del>listened</del> trouble. I <del>learned</del> this in a way I will never <del>forget</del> <sup>figure</sup> .	22
My name is John Hearon. I'm a bus <del>driver</del> <sup>door</sup> . At five o'clock one	35
morning I turned my bus onto Highway 66. It was <del>snowing</del> <sup>snake</sup> . But I was	49
used to <del>driving</del> <sup>dumping</sup> in all kinds of weather. Maybe this storm wouldn't last	62
long.	63
As I drove, I counted my <del>passengers</del> <sup>pencils</sup> . There were 14 – nine men,	75
four women and a little two-year-old <del>boy</del> <sup>baby</sup> . It was so <del>early</del> <sup>car</sup> that most of	91
them were <del>still</del> <sup>was stand</sup> asleep. No one seemed to <del>worry</del> <sup>word</sup> about the storm.	103
But after an hour or two, I felt the wind getting <del>stronger</del> <sup>straight</sup> . The bus	117
swayed from side to side. It was snowing <del>harder</del> <sup>happy</sup> , and I had to drive more	132
and more slowly. I wished I had never started out. I didn't like the look of	148
things.	149

**Figure 24. Quick Miscue Analysis**

	Written Word	Spoken Word	Graphophonetic	Syntax	Semantics
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
			%		

To fill out the Quick Miscue Analysis table, the teacher writes the written word from the CBM PRF passage in the **Written Word** column. The student mistake, or miscue, is written in the **Spoken Word** column.

The teacher answers three questions for each mistake. If the student made a graphophonic error, then the teacher writes a “yes” in the **Graphophonic** column along with a brief description of the error. A graphophonic error preserves some important phonetics of the written word, even if it does not make sense (i.e., written word “friend”; spoken word “fried.”)

The teacher then answers “yes” or “no” in the **Syntax** and **Semantics** columns. A syntax error preserves the grammar of (i.e., is the same part of speech as) the written word. Does the error have the same part of speech as the written word? (i.e., “ran” is the same part of speech as “jogged”). A semantics error preserves the meaning of the sentence. Does the error preserve the meaning of the sentence? (i.e., “The *woman* is tall” means the same as “The *lady* is tall”).

Once the entire table is complete, the teacher calculates the percentage of graphophonic, syntax, or semantic errors that the student made. Let’s look at this example (Figure 25).

**Figure 25. Quick Miscue Analysis Table: Student #1**

	Written Word	Spoken Word	Graphophonic	Syntax	Semantic
1	exciting	extra	yes - first part	yes	no
2	snow	now	yes - except <u>s</u>	yes	yes
3	trouble	trains	yes - first part	yes	no
4	learned	listened	yes - first and end	yes	no
5	forget	figure	yes - first and middle	yes	no
6	driver	door	yes - first and last	yes	no
7	snowing	snake	yes - first part	no	no
8	driving	dumping	yes - first and end	yes	no
9	passengers	pencils	yes - first and last	yes	no
10	boy	baby	yes - first and last	yes	yes
		%	100%	90%	20%

The examiner wrote the first 10 mistakes on the Quick Miscue Analysis Table. The percentage of the time the student error was a graphophonic, syntax, or semantics error is calculated at the bottom of the table. To calculate the percentage, add together the number of “yes” answers and divide the sum by 10. In the Graphophonic column, 10 “yes” answers divided by 10 miscues is 100%. In the Syntax column, 9 “yes” answers divided by 10 miscues is 90%. In the Semantics column, 2 “yes” answers divided by 10 miscues is 20%. Calculating the percentages allows teachers to glance at the various types of miscues and spot trends in student mistakes.

From the miscue analysis, the teacher gains insight about the strengths and weaknesses of the student's reading. This student appears to rely on graphophonic cues (especially at the beginning and ending of words) and knowledge of syntax for identifying unknown words. The student appears to ignore the middle portion of the unknown words, so the teacher could help the student to sound out entire words, perhaps reading some words in isolation. However, the student's reading does not make sense. The teacher should help the student learn to self-monitor and self-correct. The student should ask himself/herself whether the word makes sense given the context. Practice with the cloze procedure (similar to CBM Maze Fluency) may also assist the student in focusing on comprehension. Tape recording the student's reading and having the student listen to the tape also may help alert the student to inaccuracies that do not make sense.

Now, look at another example (Figure 26). The examiner copy of the student reading is below. Use the blank Quick Miscue Analysis Table and write in the student miscues (Figure 27).

**Figure 26. Miscue Analysis Story: Student #2**

<u>Adventure on Highway 66</u>		
could	that	could
A snowstorm <del>can</del> be exciting. But <del>too</del> much snow <del>can</del> cause		11
it		
trouble. I learned <del>this</del> in a way I will never forget.		22
am		
My name is John Hearon. I'm a bus driver. At five o'clock one		35
the		
morning I turned <del>my</del> bus onto Highway 66. It was snowing. But I was		49
at		
used to driving <del>in</del> all kinds of weather. Maybe this storm wouldn't last		62
long.		63
while	was	
<del>As</del> I drove, I counted my passengers. There <del>were</del> 14 – nine men,		75
four women and a little two-year-old boy. It was so early that <del>most of</del>	they	91
<del>them</del> were still asleep. No one seemed to worry about the storm.		103
a	That	
But after an hour or two, I felt <del>the</del> wind getting stronger. <del>The</del> bus		117
swayed from side to side. It was snowing harder, and I had to drive more		132
<del>and more</del> slowly. I wished I had never started out. I didn't like the look of		148
things.		149

**Figure 27. Sample Quick Miscue Analysis: Student #2**

	Written Word	Spoken Word	Graphophonetic	Syntax	Semantics
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
			%		

Your miscue analysis table should look like this (Figure 28). Based on this table, the teacher can see that the student’s problem is mistakes on short, functional words rather than content words. The teacher might choose to practice discrimination between similar words (i.e., this / that / the) and similar phrases (i.e., The big boy..., This big boy..., That big boy...). The teacher might also choose to have the student echo read and complete writing and spelling exercises for the short, functional words.

**Figure 28. Quick Miscue Analysis Table: Student #2**

	Written Word	Spoken Word	Graphophonetic	Syntax	Semantic
1	can	could	yes-first letter only	yes	yes
2	too	that	yes-first letter only	yes	yes
3	can	could	yes-first letter only	yes	yes
4	this	it	no	yes	yes
5	I'm	I am	yes	yes	yes
6	my	the	no	yes	yes
7	in	at	no	yes	no
8	As	While	no	yes	yes
9	were	was	yes-first letter only	yes	yes
10	most of them	they	no	yes	yes
			%	50%	100%
				100%	90%



Let's look at one more (Figures 29 and 30).

**Figure 29. Miscue Analysis Story: Student #3**

<u>Adventure on Highway 66</u>	
A snowstorm can be exciting. But too much snow can cause	11
trouble. I learned <del>this</del> <sup>it</sup> in a way I will never forget.	22
My name is <del>John Hearer</del> <sup>John-John</sup> . I'm a bus driver. At five o'clock one	35
morning I <del>turned</del> <sup>burned</sup> my bus onto Highway 66. It was <del>sn</del> <sup>saw</sup> snowing. But I <del>was</del> <sup>saw</sup>	49
used to driving in all kinds of weather. Maybe this <del>storm</del> <sup>snow won't</sup> wouldn't last	62
long.	63
As I drove, I counted <del>my</del> <sup>the</sup> passengers. There <del>were</del> <sup>are</sup> 14 – nine men,	75
four women and a little two-year-old boy. <del>It</del> <sup>But</sup> was so early that most of	91
them were <del>still</del> asleep. No one seemed to worry about the <del>storm</del> <sup>rain</sup> .	103
But after an hour or two, I felt the <del>wind</del> getting stronger. The bus	117
<del>swayed</del> <sup>swing</sup> from side to side. It was snowing harder, and I had to drive more	132
and more slowly. I wished I had never started out. I didn't like the look of	148
<del>things</del> <sup>that</sup> .	149

**Figure 30. Quick Miscue Analysis: Student #3**

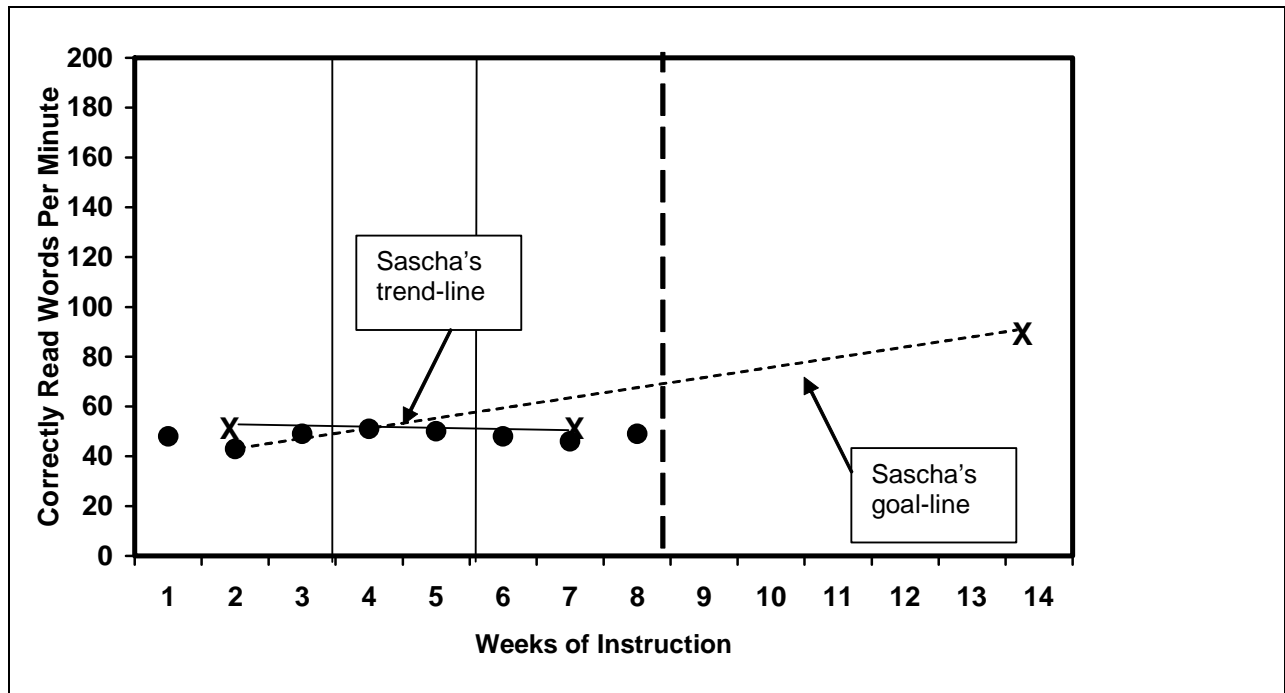
	Written Word	Spoken Word	Graphophonetic	Syntax	Semantics
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
			%		

What are the strengths and weaknesses of this student? What teaching strategies might you choose to implement for this student?

## CBM Case Study #1: Sascha

Mr. Miller has been monitoring his entire class using weekly CBM Passage Reading Fluency tests. He has been graphing student scores on individual student graphs. Mr. Miller used the Tukey method to draw a trend-line for Sascha's CBM PRF scores. This is Sascha's graph (Figure 29).

**Figure 31. Sascha's CBM PRF Graph**



Since Sascha's trend-line is flatter than her goal-line, Mr. Miller needs to make a change to Sascha's instructional program. He has marked the week of the instructional change with a dotted vertical line. To decide what type of instructional change might benefit Sascha, Mr. Miller decides to do a Quick Miscue Analysis on Sascha's weekly CBM PRF to find her strengths and weaknesses as a reader.

The following is Sascha's CBM PRF test (Figure 32).

**Figure 32. Sascha's CBM PRF**

Lars was a big <del>dragon</del> <sup>doggie</sup> . He was green and had red	11
eyes. He shot <del>long</del> <sup>log</sup> <del>flames</del> <sup>flies</sup> from his <del>mouth</del> <sup>month</sup> . The grass	21
<del>around</del> <sup>round</sup> his cave was <del>scored</del> <sup>scratched</sup> .	26
Lars was the meanest <del>dragon</del> <sup>doggie</sup> in the land. He	35
<del>scared</del> <sup>scratched</sup> the people in the <del>village</del> <sup>villain</sup> . At night the people	45
would look up <del>to</del> <sup>at</sup> Lar's cave. They saw the mighty	55
flames he breathed. He blew the smoke down to the	65
village. Often the people could not breathe. The	73
smoke was too thick.	77

This is Sascha's Quick Miscue Analysis for her CBM PRF test (Figure 33).

**Figure 33. Sascha's Quick Miscue Analysis**

Quick Miscue Analysis					
	Written Word	Spoken Word	Grapho-Phonetic	Syntax	Semantics
1.	dragon	doggie	yes-d & g	yes	no
2.	long	log	yes-first & last	no	no
3.	flames	flies	yes-first & last	yes	yes
4.	mouth	month	yes-first & last	yes	no
5.	around	round	yes-all letters except 'a'	yes	yes
6.	scorched	scratched	yes-first & last	yes	no
7.	dragon	doggie	yes-d & g	yes	no
8.	scared	scratched	yes-first & last	yes	no
9.	village	villain	yes-first	yes	no
10.	to	at	no	yes	yes
		%	90%	90%	30%

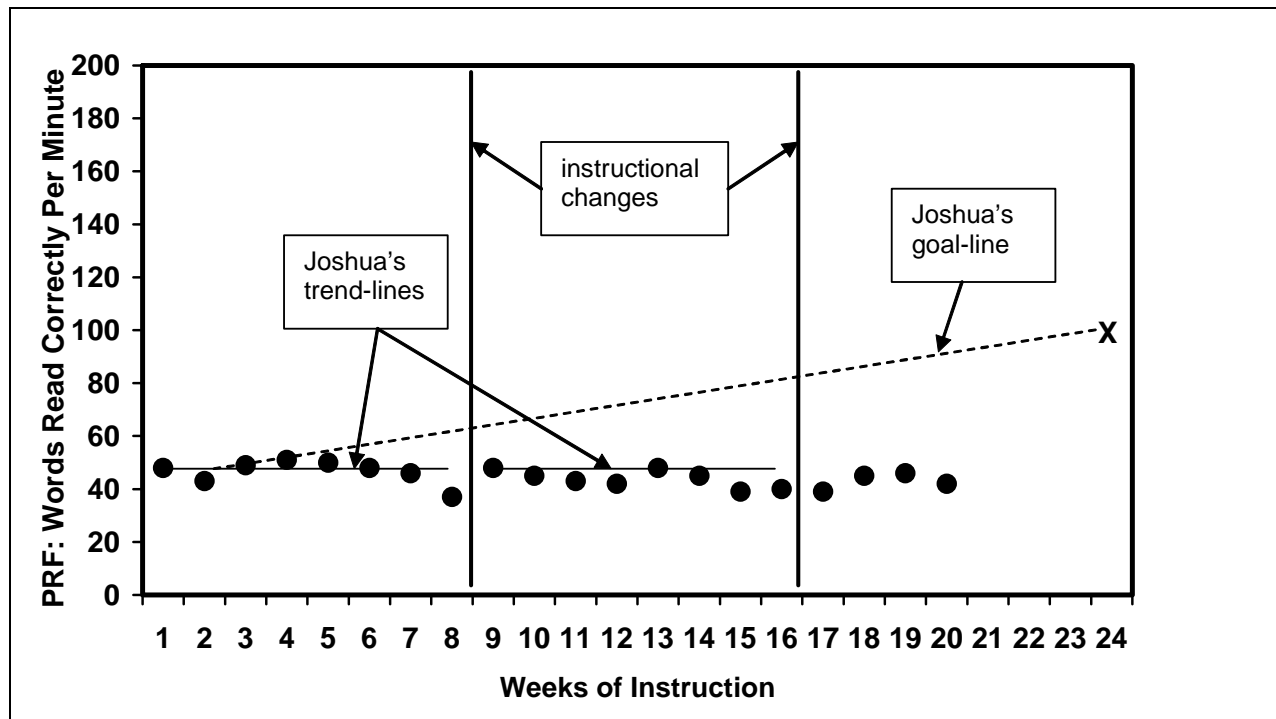
Based on the Quick Miscue Analysis Table, what instructional program changes should Mr. Miller introduce into Sascha's reading program?

## CBM Case Study #2: Joshua

Mrs. Sanchez has been using CBM to monitor the progress of all of the students in her classroom for the entire school year. She has one student, Joshua, who has been performing extremely below his classroom peers, even after two instructional changes.

Look at Joshua's CBM graph (Figure 34).

**Figure 34. Joshua's CBM Graph**



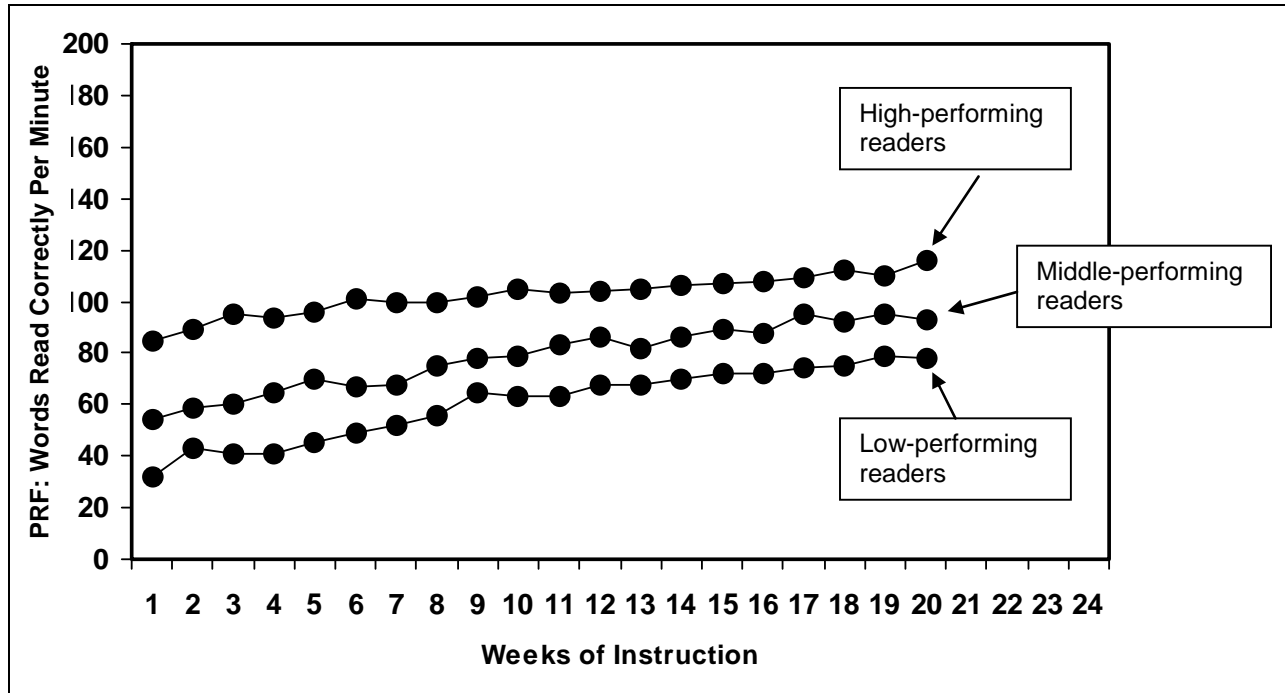
After eight weeks, Mrs. Sanchez determined that Joshua's trend-line was flatter than his goal-line, so she made an instructional change to Joshua's reading program. This instructional change included having Joshua work on basic sight words that he was trying to sound out when reading. The instructional change is the first thick, vertical line on Joshua's graph.

After another eight weeks, Mrs. Sanchez realized that Joshua's trend-line was still flatter than his goal-line. His graph showed that Joshua had made no improvement in reading. So, Mrs. Sanchez made another instructional change to Joshua's reading program. This instructional change included having Joshua work on basic letter sounds and how those letter sounds combine to form words. The second instructional change is the second thick, vertical line on Joshua's graph.

Mrs. Sanchez has been conducting CBM for 20 weeks and still has yet to see any improvement with Joshua's reading despite two instructional teaching changes. What could this graph tell Mrs. Sanchez about Joshua? Pretend you're at a meeting with your principal and IEP team members, what would you say to describe Joshua's situation? What would you recommend as

the next steps? How could Mrs. Sanchez use this class graph to help her with her decisions about Joshua (Figure 35)?

**Figure 35. Mrs. Sanchez's CBM Class Report**



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## Appendix A: CBM Resources

The various CBM reading and math measures may be obtained from the following sources.

### *AIMSweb / Edformation (Reading, and Math CBM)*

AIMSweb is based on CBM. It provides materials for CBM data collection and supports data use. AIMSweb measures, administration guides, scoring guides, and software are available for purchase on the Internet:

<http://www.aimsweb.com> or <http://www.edformation.com>

Phone: 888-944-1882

Mail: Edformation, Inc.  
6420 Flying Cloud Drive, Suite 204  
Eden Prairie, MN 55344

### *Curriculum-Based Measurement in Reading (Reading CBM)*

The Curriculum-Based Measurement in Reading materials were developed and researched using standard CBM procedures. The CBM measures are free, except for copying costs, postage, and handling. The CBM measures, scoring sheets, administration instructions, and scoring instructions are available:

Phone: 615-343-4782

Email: [flora.murry@vanderbilt.edu](mailto:flora.murry@vanderbilt.edu)

Mail: Flora Murray  
Vanderbilt University  
Peabody #228  
110 Magnolia Circle, Suite MRL418  
Nashville, TN 37203-5721

### *DIBELS (Reading CBM)*

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) are a set of standardized, individually administered measures of early literacy development. DIBELS measures, administration guides, scoring guides, and information on the automated Data System are on the Internet:

<http://dibels.uoregon.edu/>

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### ***Monitoring Basic Skills Progress (Math CBM)***

Monitoring Basic Skills Progress materials were developed and researched using standard CBM procedures. Curriculum-Based Math Computation Probes include 30 alternate forms at each grade level for grades 1-6. Curriculum-Based Math Concepts/ Applications Probes include 30 alternate forms at each grade level for grades 2-6. Each comes with a manual that provides supporting information (e.g., technical information, directions for administration, and scoring keys).

Phone: 615-343-4782  
Email: [flora.murry@vanderbilt.edu](mailto:flora.murry@vanderbilt.edu)  
Mail: Flora Murray  
Vanderbilt University  
Peabody #228  
110 Magnolia Circle, Suite MRL418  
Nashville, TN 37203-5721

### ***Wireless Generation (Math CBM)***

mCLASS:Math by Wireless Generation are a set of standardized, computer administered measures of early math development. mCLASS:Math measures, administration guides, and scoring guides can be found on the Wireless Generation website:

[www.wirelessgeneration.com](http://www.wirelessgeneration.com)  
Phone: 800-823-1969, option 1  
Mail: Wireless Generation  
55 Washington St., Suite 900  
Brooklyn, NY 11201

### ***Scholastic Reading Inventory***

Scholastic Reading Inventory is a computer-adaptive reading assessment that measures reading comprehension. Scholastic Reading Inventory measures, administration guides, and scoring guides are on the Internet:

[www.scholastic.com/SRI](http://www.scholastic.com/SRI)  
Phone: 877-387-1437  
Mail: Scholastic Inc  
P.O. Box 7502  
Jefferson City, MO 65102-9964



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***Renaissance Learning, STAR (Reading and Math)***

STAR Reading, Math, and Early Literacy are standardized, computer-adaptive progress monitoring measures assessing reading comprehension and overall reading, mathematics, and early literacy skill, respectively. Information on measures, administration guides, and scoring guides are on the Internet:

<http://www.renlearn.com>

Phone: (800) 338-4204  
Mail: Renaissance Learning, Inc.  
PO Box 8036  
Wisconsin Rapids, WI 54495

***STEEP Oral Reading Fluency***

The STEEP Oral Reading Fluency progress monitor is designed for progress monitoring in the area of Oral Reading Fluency. It consists of 50 forms of equivalent difficulty at each grade 1 – 5. Administration guides, scoring guides, and information on the content are on the Internet:

[www.isteep.com](http://www.isteep.com) or [www.isteeplearning.com](http://www.isteeplearning.com)

Mail: iSTEEP, LLC  
2627 S. Bayshore Drive  
Suite 1105  
Miami, FL 33133

***McGraw-Hill (Reading and Math CBM)***

Yearly ProgressPro™, from McGraw-Hill Digital Learning, combines ongoing formative assessment, prescriptive instruction, and a reporting and data management system to give teachers and administrators the tools they need to raise student achievement. Information on the McGraw-Hill computer software is available on the Internet:

<http://www.ctb.com/ypp>

Phone: 1-800-538-9547  
Mail: CTB/McGraw-Hill  
20 Ryan Ranch Road  
Monterey, CA 93940

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## Appendix B: Resources

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