Texas Early Mathematics Inventories

Progress Monitoring

First Grade Teacher's Manual

Version 2.0

Acknowledgments

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First Grade TEMI-PM Teacher's Manual

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General Information

This manual provides information to teachers and others regarding the *Texas Early Mathematics Inventories – Progress Monitoring* (TEMI-PM). In this manual, we provide (a) the rationale for the TEMI-PM, (b) a description of the TEMI-PM, (c) test preparation information, (d) general testing information, (e) specific administration instructions, (f) testing tips, (g) scoring procedures, and (h) information pertaining to instructional decision-making.

Rationale for the TEMI-PM

Mathematics assessment has a long history in American education. Since the early 1900s, educators and psychologists have been devising and using mathematics measures to identity struggling students, determine math strengths and struggles, and inform instruction.

In early mathematics, recent research has identified that number and operations skills are the best predictors of future mathematics difficulties. The Texas Essential Knowledge and Skills (TEKS) provides several number, operations, and quantitative reasoning skills that young children should attain. Thus, it stands to reason that early math assessments used to identify struggling Texas students should focus on number and operations. The TEMI-PM targets these key skills.

The group testing format of the TEMI-PM was selected with the classroom teacher in mind. In order to minimize the time lost to instruction, the TEMI-PM uses a group testing format. Thus, within a 45-minute time span, teachers can test for student struggles. The TEMI-PM technical manual provides evidence that the TEMI-PM is composed of reliable subscales that yield valid results. If the TEMI-PM were to be administered individually, it would take about 15 hours to test all of them.

Each TEMI-PM subscale asks students to solve as many problems as they can for 2 minutes. The 2-minute timing provides an effective and efficient method for measuring student achievement. The format is effective because the subscales are reliable and yield valid results. The format is efficient because it allows testing to proceed rapidly. Tests with timed formats have been validated by numerous studies and reports (see www.studentprogress.org; go to http://progressmonitoring.org/search/default.asp and enter the keyword “math”), and evidence of the validity of the timed TEMI-PM measures is found in the technical manual.

Description of the TEMI-PM

The TEMI-PM assesses fundamental numeration skills that students should master if they are to benefit from instruction across the Number, Operations, and Quantitative Reasoning TEKS. The research is clear that if students have no fundamental sense of numbers or quantity, they are at risk for failure in overall mathematics. Four tests compose the TEMI-PM for grade 1; the tests are:

- Magnitude Comparisons.
- Number Sequences.
- Place Value.
- Addition/Subtraction Combinations.

NOTE: It would be helpful to examine a student booklet for the grade you will be testing as we discuss the tests. Leaf through the pages as we discuss each test by examining (a) what we measure, (b) how we measure, and (c) what we ask students to do.

Magnitude Comparisons

- **What we measure:** Magnitude Comparisons involves a variety of skills: numeral recognition and knowledge (0 through 99), quantity recognition, place value, and "same as, less than, greater than."

- **How we measure:** Students look at two numbers that appear side-by-side in a box in their student booklet (a vertical dotted line separates the two numbers). As a fluency measure, the test is designed to see how many items the student can answer correctly in 2 minutes by circling the smaller of the two numbers or circling both numbers if they are the same (equal).

- **What we ask students to do:** Students must pay attention, listen carefully, and do their best to look at two numbers side-by-side and circle the number that is their answer or both numbers if they are the same. Students should start on time (not early) and stop testing and put their pencil down when the examiner says, "Stop." Children must handle a pencil in order to draw a circle or loop, turn pages of a booklet, and listen to and follow directions. Also, students must sustain attention and be able to track across columns and avoid skipping rows as they work.

Number Sequences

- **What we measure:** Number Sequences imbeds several skills: numeral recognition and knowledge, counting ahead or counting back (0 through 99), place value, and "less than and greater than."

- **How we measure:** Students look at a three-number sequence; one number of the sequence is missing and is represented by a blank. The missing number may be the first number in the sequence, the second number, or the third number. In grade 1, the student then looks at four possible response choices, in boxes below the stimulus series, and circles their answer from among the four response choices. As a fluency measure, the test is designed to see how many items the student can answer correctly in 2 minutes.

- **What we ask students to do:** Students are asked to pay attention, listen carefully, and do their best to look at the series and the response choices and circle the response choice that completes the three-number series. We also ask them to start on time, not early, and stop testing and put their pencil down when the examiner says, "Stop." Children must manage a pencil in order to draw a circle or loop, turn pages of a booklet, and listen to and follow directions. Also, students must pay sustained attention and be able to track across columns and not skip rows as they work.

Place Value

- **What we measure:** Place Value involves several skills: see the stacks of tens and ones, recognize the quantity represented by the stacks, and recognize numerals (four response choices for each item).

- **How we measure:** Students look at stacks of tens and ones up to 99. First-graders then look at four possible response choices, in boxes below the stimulus item, and circle the number that shows "how many." As a fluency measure, the test is designed to see how many items the student can answer correctly in 2 minutes.

- **What we ask students to do:** We ask students to pay attention, listen carefully, count by tens and by ones, look at the response choices, and circle the response choice that shows "how many" they see. We also ask them to start on time, not early, and stop testing and put their pencil down when the examiner says, "Stop." Students must manipulate a pencil in order to draw a circle or loop around the response choice, turn pages of a booklet, and listen to and follow directions. Attention and tracking skills also come into play.

Addition/Subtraction Combinations

- **What we measure:** Addition/Subtraction Combinations assesses basic math facts and involves several skills: recognizing numerals, recognizing operational signs (plus and minus), and computing (addition and subtraction).

- **How we measure:** Students look at addition and subtraction problems on a page and then compute and write the answer to each problem. As a fluency measure, the test is designed to see how many items the student can answer correctly in 2 minutes.

- **What we ask students to do:** We ask students to pay attention, listen carefully, and do their best to compute and write the answer. We also ask them to start on time, not early, and stop testing and put their pencil down when the examiner says, "Stop." Children are asked to use a pencil in order to write a numeral (the answer). They must have the ability to turn pages of a booklet and listen to and follow directions.

Test Preparation Information

As examiners prepare for testing, they should have all materials at hand. During testing:

- Students will need pencils to mark their answers.
- Students will not need erasers; they will be asked to *cross out* wrong answers instead of erasing them—erasing takes too much time and can have a dramatic effect on fluency scales.
- Examiners may wish to use dividers to deter students from looking at other students' answers. Dividers are optional, depending on examiner judgment. If examiners want to use dividers but don't have them, they can look at the instructions in the manual appendix on how to make dividers.

As part of their test administration packet, examiners should have:

- Overhead projector and transparencies for Demonstrations.
- Dry-erase pen for marking the Demonstrations.
- Student test booklets.
- Administration and Scoring Manual.
- Dividers.
- Timers with minutes and seconds displays.

General Testing Information

Testing for the TEMI-PM should take between 30 and 45 minutes, with the approximate time frame being:

- Materials distribution, 5 minutes.
- Demonstrations, 2 minutes each; four tests, 8 minutes total.
- Practice items, 2 minutes each; four tests, 8 minutes total (includes 30 seconds for completing practice items).
- Administration of test items, 3 minutes each (1 minute of instructions, 2 minutes of testing); four tests, 12 minutes total.
- Pickup, 2 minutes.

Three Sections Across the Four Subtests

- **Demonstrations:** The Demonstrations are designed to model for students the testing task and show students how to mark their answers. Demonstrations are *not* designed to teach the constructs being measured. Demonstrations are at the beginning of each test. Note that with each Demonstration, the examiner is directed to make an intentional mistake (this is built into the instructions). The mistake is designed to show the students how to correct any mistake by marking out the incorrect answer with an "X," rather than erasing the incorrect answer.

- **Practice:** The Practice items are designed to prepare students for the pacing they will need. Instructions are read aloud to the students, who are given 30 seconds to complete as many items as they can. At the end of the practice items, students can be reminded that they are not expected to complete all items; they are to do as many as they can in the time allotted.

- **Test items:** Instructions are read aloud to the students, who are then given 2 minutes to complete as many items as they can. There are several pages of items, so students will have to turn pages quickly, one page at a time, and avoid skipping pages. Arrows at the bottom of the page are designed to show students that they should continue working. A "stop sign" appears at the end of the last test item. In the fall, almost no one will complete all of the items. As students progress throughout the school year and are retested, they will complete more items.

General Comments That Pertain to Testing

- Pacing, pacing, pacing—all three sections of testing (Demonstrations, Practice, and Test items) should proceed as a brisk pace. It is important not to be overly deliberate when going over the Demonstrations and Practice items. Normally, testing should take between 30 and 45 minutes to complete, but when proper pacing was not heeded during early field-testing, testing took well over an hour. Students became bored, fidgety, and strayed off task.

- Some students stop testing when they finish one page of test items, forgetting that the arrow means that they are to turn their page and keep going. Be alert to this occurrence. Remind students, "If you get to the arrow, turn the page and keep working until you get to the stop sign or until I say, 'Stop.'" You may have to physically turn the page for some students.

- When testing, it is best to have two timers. Set one for 30 seconds (this is the timer you can use for Practice), and set the other timer for 2 minutes (this is the timer you can use for Test items).

- Some students do not do well in group testing situations. Their inattention, behavior, impulsivity, and so forth, can invalidate their test results; and their behaviors can be disruptive to other students. It may be best to test these students in smaller groups or individually, using the same instructions used in typical group testing.

- If students show signs of frustration or refuse to proceed, collect their materials and either test them later in small groups or individually, or do not test them. Do not continue to test students who are clearly distraught.

- Examiners need to have all students' full attention during the testing procedure.

- After examiners have read the instructions and just before saying, "Ready … Begin" to get the children started, all students are told to hold their pencils high in the air where they can be seen. This is designed to ensure that all students start at the same time. Some students may want to get a "head start" and begin testing before the 2-minute timing begins. *Do not begin testing until all pencils are raised.*

- When the time expires, say, "Stop. Put your pencils down." Make sure that all students stop working and place their pencils on their desk; this is designed to ensure that all students stop marking their booklets at the end of 2 minutes.

- Examiners should make note of students who start early or end late. The results of their tests will not be valid indicators of performance and their results should not be used in the standardization. If this happens, when materials are collected, write something like "SEMC" (an acronym for "started early on Magnitude Comparisons") or "KWAT" (kept working on all tests) on the cover page of the booklet. Project staff will not submit those tests for scoring.

- Watch for students who might be looking at another student's answers. Remind students that they are to do their own work and not copy their neighbors' answers. If a particular student persists in copying others' answers, write "CANS" (copied answers on Number Sequences) on the cover page; again, project staff will not submit those tests for scoring.

Specific Administration Instructions

The instructions should be read verbatim. For the TEMI-PM, there are three sections to test administration: Demonstrations, Practice, and Test items. In each section, words appearing in *italics* are not read aloud, and words appearing in **boldface type** are read aloud to the students. Examiners should read the instructions several times to become thoroughly familiar with the content. Pay particular attention to the timing portion of the instructions and how students should change their answers (that is, marking out rather than erasing).

Magnitude Comparisons

Demonstrations

- *Show the Magnitude Combinations Demonstrations overhead transparency.*
- **Turn to the page where you see a bear at the top.** *Pause.* **Eyes on me.** *Check that you have all students' attention.*
- **We are going to work with numbers. You will see two numbers next to each other. You will circle the number that is smaller or circle both numbers if they are the same or equal**.
- **The first number is 16, and the second number is 29. Because 16 is smaller than 29, I circle the number 16.** *Circle the 16 on the transparency.*
- **Look at the next one. Which number is smaller?** *Call on a student.*
- **1 is smaller than 3, so I circle the 1.** *Circle the 1*.
- **The next two numbers are the same, or equal**. *Point to the 4s.*
- **When two numbers are the same, or equal, draw a circle around both numbers.** *Draw a circle around both 4s on the transparency.*
- **Look at the last one, 9 is smaller than 15***. Circle the 15.* **Oops! I circled 15 by mistake. If you make a mistake, cross out the wrong answer with an "X" and circle the right answer.** *Demonstrate.*
- **When you are working, do not say any numbers or answers out loud. Think in your head.**
- *Turn off the overhead projector.*

Practice

- *Set the timer for 30 seconds.*
- *Hold your copy of the tests up in front of the class, showing the practice items.*
- **Look at the page with the duck at the top.** *Pause.* **These are your practice items. Eyes on me.** *Check that you have all students' attention.*
- **Start with the first item and do each one, going across each of the rows.** *Point to items and rows as you speak.*
- **Do not jump around on the page.** *Point to different items around the page.*
- **When I say, "Stop" or when you get to the stop sign** *— point to the stop sign —* **stop and put your pencil down.**
- **When I say, "Begin," you will have 30 seconds to circle the number that is smaller or both numbers if they are the same, or equal.**
- **Work as quickly as you can and remember to do your own work.**
- **Hold your pencil up high where I can see it.** *Check that pencils are raised.*
- **Ready? Begin.** *Start the timer.*

- *As the students work, walk around the room to check that children are following directions and remind them to put their pencil down if they get to a stop sign.*
- *When the timer sounds, say:* **Stop. Put your pencil down.**

Test Items

- *Set the timer for 2 minutes.*
- **Turn the page to where you see shoes at the top.** *Pause.* **Eyes on me.** *Check that you have all students' attention.*
- **Hold your pencil up high where I can see it.** *Check that pencils are raised.*
- **When I say, "Begin," you will have 2 minutes to do as many items as you can. Circle the number that is smaller or both numbers if they are the same, or equal.**
- **If you see an arrow, keep going until I say, "Stop" or until you come to a stop sign.**
- **Ready? Begin.** *Start the timer.*
- *As students work, prepare for the next subtest. Then circulate and say:* **I like the way you are working hard and doing your own work. If you get to the arrow, turn the page and keep working until you get to the stop sign or until I say, "Stop."**
- *After the timer sounds, say:* **Stop. Put your pencil down.**

Number Sequences

Demonstrations

- *Show the Number Sequences Demonstrations overhead transparency.*
- **Turn to the page where you see a bike at the top.** *Pause.* **Eyes on me.** *Check that you have all students' attention.*
- **We are going to work with numbers. You will see two numbers and a blank in a box. You will circle the number that makes a three-number sequence.**
- **The first number is 2, the second number is 3, and then there is a blank to show a missing number.** *Point to the blank***. Because the number 4 makes a three-number sequence, I circle the number 4.** *Circle the 4 on the demonstration set.*
- **Look at the next one. The blank is in the middle.** *Point to the blank.* **What number makes a three-number sequence?** *Call on a student.*
- **The number 20 makes a three-number sequence, so I circle the number 20.** *Circle the 20 on the transparency.*
- **Look at the last one. The blank is in the beginning.** *Point to the blank.* **The number 53 makes a three-number sequence.** *Circle the 52.* **Oops! I circled 52 by mistake. If you make a mistake, cross out the wrong answer with an "X" and circle the right answer.** *Demonstrate.*
- **When you are working, do not say any numbers or answers out loud. Think in your head.**
- *Turn off the overhead projector.*

Practice

- *Set the timer for 30 seconds.*
- *Hold your copy of the tests up in front of the class, showing the practice items.*
- **Look at the page with the fish at the top.** *Pause.* **These are your practice items. Eyes on me.** *Check that you have all students' attention.*
- **Start with the first item and do each one, going across each of the rows.** *Point to items and rows as you speak.*
- **Do not jump around on the page.** *Point to different items around the page.*
- **When I say, "Stop" or when you get to the stop sign** *— point to the stop sign —* **stop and put your pencil down.**
- **When I say, "Begin," you will have 30 seconds to circle the number that makes a three-number sequence.**
- **Work as quickly as you can and circle only one answer. Remember to do your own work.**
- **Hold your pencil up high where I can see it**. *Check that pencils are raised.*
- **Ready? Begin**. *Start the timer.*
- *As the students work, walk around the room to check that children are following directions and remind them to put their pencil down if they get to stop sign.*
- *When the timer sounds, say:* **Stop. Put your pencil down**.

Test Items

- *Set the timer for 2 minutes.*
- **Turn the page to where you see a monkey at the top.** *Pause.* **Eyes on me.** *Check that you have all students' attention.*
- **Hold your pencil up high where I can see it.** *Check that pencils are raised.*
- **When I say, "Begin," you will have 2 minutes to do as many items as you can. Circle the number that makes a three-number sequence.**
- **If you see an arrow, keep going until I say, "Stop" or until you come to a stop sign.**
- **Ready? Begin.** *Start the timer.*
- *As students work, prepare for the next subtest. Then circulate and say:* **I like the way you are working hard and doing your own work. If you get to the arrow, turn the page and keep working until you get to the stop sign or until I say, "Stop."**
- *When the timer sounds, say:* **Stop. Put your pencil down.**

Place Value

Demonstrations

- *Show the Place Value Demonstrations overhead transparency.*
- **Turn to the page where you see a bird at the top.** *Pause.* **Eyes on me.** *Check that you have all students' attention.*
- **We are going to work with pictures and numbers. You will see pictures of tens** *— point to the tens set —* **and ones** *— point to the ones set.* **You will circle the number that shows how many there are in all. 10, 11, so I circle the number 11 because there are 11 in all.** *Circle the 11.*
- **The next pictures show 1 ten and 6 ones. There are 16 in all.** *Point to each picture and say:* **10, 11, 12, 13, 14, 15, 16. Because there are 16 in all, I circle the number 16.** *Circle the 16 on the transparency.*
- **Look at the next one. How many are there in all?** *Call on a student.*
- **There are 5 in all, no tens and 5 ones, so I circle the number 5.** *Circle the 5 on the transparency.*
- **Look at the last one. There are 34 in all.** *Circle the 16.* **Oops! I circled 16 by mistake. If you make a mistake, cross out the wrong answer with an "X" and circle the right answer.** *Demonstrate.*
- **When you are working, do not say any numbers or answers out loud. Think in your head.**
- *Turn off the overhead projector.*

Practice

- *Set the timer for 30 seconds.*
- *Hold your copy of the tests up in front of the class, showing the practice items.*
- **Look at the page with the umbrella at the top.** *Pause.* **These are your practice items. Eyes on me.** *Check that you have all students' attention.*
- **Start with the first item and do each one, going across each of the rows.** *Point to items and rows as you speak.*
- **Do not jump around on the page.** *Point to different items around the page.*
- **When I say, "Stop" or when you get to the stop sign** *— point to the stop sign —* **stop and put your pencil down.**
- **When I say, "Begin," you will have 30 seconds to circle the number that shows how many there are in all.**
- **Work as quickly as you can and circle only one answer. Remember to do your own work.**
- **Hold your pencil up high where I can see it.** *Check that pencils are raised.*
- **Ready? Begin.** *Start the timer.*
- *As the students work, walk around the room to check that they are following directions and remind them to put their pencil down if they get to a stop sign.*
- *When the timer sounds, say:* **Stop. Put your pencil down.**

Test Items

- *Set the timer for 2 minutes.*
- **Turn the page to where you see a pig at the top.** *Pause.* **Eyes on me.** *Check that you have all students' attention.*
- **Hold your pencil up high where I can see it.** *Check that pencils are raised.*
- **When I say, "Begin," you will have 2 minutes to do as many items as you can. Circle the number that shows how many there are in all.**
- **If you see an arrow, keep going until I say, "Stop" or until you come to a stop sign.**
- **Ready? Begin.** *Start the timer.*
- *As students work, prepare for the next subtest. Then circulate and say:* **I like the way you are working hard and doing your own work. If you get to the arrow, turn the page and keep working until you get to the stop sign or until I say, "Stop."**
- *After the timer sounds, say:* **Stop. Put your pencil down.**

Addition/Subtraction Combinations

Demonstrations

- *Show the Addition/Subtraction Combinations Demonstrations overhead transparency.*
- **Turn to the page where you see a chair at the top.** *Pause.* **Eyes on me.** *Check that you have all students' attention.*
- **We are going to do addition and subtraction problems.**
- **When you see a plus sign** *— point to the plus sign —* **you add. When you see a minus sign** *— point to the minus sign —* **you subtract, or take away.**
- **Pay attention to the sign as you work to see whether you should add or subtract.**
- **Let's look at some sample items. The first problem shows 1 plus 1. What is 1 plus 1? 1 plus 1 equals what number?** *Pause and select a student to right answer.*
- **1 plus 1 equals 2, so I write "2" below the line.** *Demonstrate on the transparency.*
- **Now look at the second problem. It shows 3 minus 2, or 3 take away 2.**
- **3 minus 2 equals 1, so I write "1" below the line.** *Demonstrate on the transparency.*
- **Now look at the next problem. It shows 3 plus 1. 3 plus 1 equals 4, so I write "4" below the line.** *Demonstrate on the transparency.*
- **Now look at the last problem. It shows 9 minus 9, or 9 take away 9. 9 minus 9 equals 0, so I write "0" below the line.** *Demonstrate on the transparency.*
- **When you add or subtract, you should place your answers here** *— point to the space under the problem.*
- *Turn off the overhead projector.*

Practice

- *Set the timer for 30 seconds.*
- *Hold your copy of the tests up in front of the class, showing the practice items.*
- **Look at the page with the sun at the top.** *Pause.* **These are your practice items. Eyes on me.** *Check that you have all students' attention.*
- **Start with the first item and do each one, going across both of the rows.** *Point to items and rows as you speak.*
- **Do not jump around on the page.** *Point to different items around the page.*
- **When I say, "Stop" or when you get to the stop sign** *— point to the stop sign —* **stop and put your pencil down.**
- **Work as quickly as you can and remember to do your own work.**
- **Hold your pencil up high where I can see it.** *Check that pencils are raised.*
- **Ready? Begin**. *Start the timer.*
- *As the students work, walk around the room to check that they are following directions and remind them to put their pencil down if they get to a stop sign.*
- *When the timer sounds, say:* **Stop. Put your pencil down.**

Test Items

- *Set the timer for 2 minutes.*
- **Turn the page to where you see a mouse at the top.** *Pause.* **Eyes on me.** *Check that you have all students' attention.*
- **Hold your pencil up high where I can see it.** *Check that pencils are raised.*
- **When I say, "Begin," you will have 2 minutes to do as many problems as you can. Pay attention to the sign so you will know whether to add or subtract.**
- **Keep going until I say, "Stop" or until you come to a stop sign.**
- **Ready? Begin.** *Start the timer.*
- *As students work, prepare for the next subtest. Then circulate and say:* **I like the way you are working hard and doing your own work. Remember to pay attention to the sign as you work to see whether you should add or subtract.**
- *When the timer sounds, say:* **Stop. Put your pencil down.**

This completes testing for the TEMI-PM. First-grade Day 1 testing is complete. Collect all materials, check to be sure that student names (first and last) are on the cover sheet, and write the correct name if nicknames are on the sheet.

Testing Tips

Some tips for testing:

- Practice administering the test. Become thoroughly familiar with the test instructions and how to handle the materials (manual, timer, etc.).
- Have all materials ready for testing.
- Do not test students who have not returned permission slips or whose parents/guardians do not want their children tested.
- Before and during testing, ensure that students are "math ready". Students should sit up straight with their chairs in place and attention focused on the teacher.
- Have extra pencils during testing, in case pencils break or wear down. Students should be told to raise their hand if a pencil breaks.
- After testing:
    - Make sure that students' names are written on their protocols.
    - Collect all students' protocols.

Scoring Procedures

This section provides information about scoring the grade 1 TEMI-PM. We (a) discuss scorer qualifications, (b) present the two scoring options from which teachers can choose, (c) present general scoring information, (d) provide specific scoring instructions and examples for scoring the whole test, and (e) present instructions for an abbreviated method of scoring only until the student meets the criterion for noneligibility (that is, a student scores enough points to reach the 25th percentile on the Total Test; thus, he or she does not qualify for remedial intervention).

Scorer Qualifications

Scoring the TEMI-PM and TEMI-O is not particularly difficult, but it should be done by someone qualified to do so. Any general education teacher, special education teacher, diagnostician, or other professional educator who has had coursework in test administration and scoring is qualified to score the test after reading this manual. In addition, paraeducators who have taken assessment courses are also qualified, because such coursework has discussed the relationship between fidelity of test administration and scoring and its relationship to test reliability. However, if scoring is to be assigned to a paraeducator, he or she should be specifically trained on the proper scoring procedures for the TEMI-PM and TEMI-O; should be given multiple opportunities to practice alongside a teacher, diagnostician, and so forth; and have their scorings compared to that of the training professional. Only when agreement of scoring reaches or exceeds 80 percent will the paraeducator be allowed to score the tests independently.

Scoring Options

There are two options for scoring the TEMI-PM. Select the option that best fits the purpose for testing.

Option		Purpose	What to Do
1	**Completed scoring**	• To identify whether students scored at the 25th percentile in all areas tested. • To identify students' strengths and struggles within the TEMI-PM.	• Score all items for the TEMI-PM. • Sum and record the total number of points.
2	**Abbreviated scoring**	• To identify whether students scored at or above the 25th percentile for the TEMI-PM Total Score.	• Tally the number of correct items and stop scoring when the student has accumulated enough points to reach the 25th percentile.

General Scoring Information

- To score the TEMI-PM test protocols for each grade, you need to have the TEMI-PM scoring sheets. You can download scoring sheets from the Web site, www.earlymathintervention.org/assessment.

- TEMI-PM Scoring Sheets (see Figure 1):
  - The TEMI-PM Scoring Sheets show answer(s) according to the columns and rows on each page of the test protocols.
  - The answer(s) is (are) in the *A* (*Answer*) box.
  - The correct numbers of answers for each row must be recorded in the *S* (*Score*) box.
  - All *S* box scores for each page are summed and recorded in the *SUBTOTAL* box.
  - All subtotal scores for each page must be summed and recorded in the *SUBTEST TOTAL* (e.g., *MC TOTAL*) box.
  - All subtest total scores are summed and recorded in the *TEST TOTAL* box.

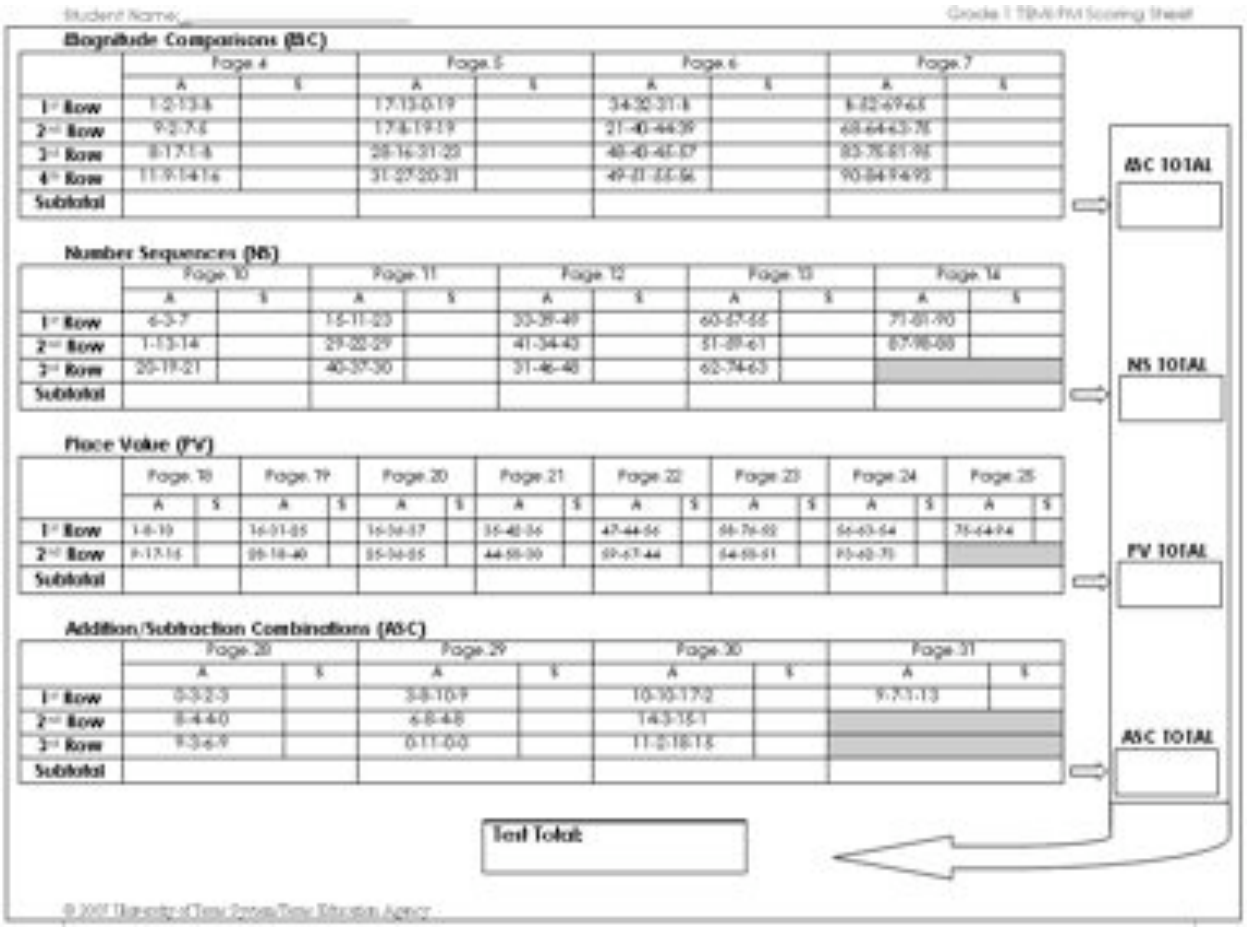

Figure 1. Grade 1/TEMI-PM Scoring Sheet

- Physical setup for scoring: The TEMI-PM Student Booklet is placed on the table, and the matching Scoring Sheet is placed next to the page being scored (see Figures 2 and 3).

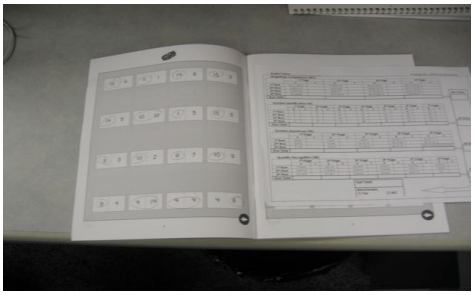

Figure 2. Side-by-side configuration—TEMI-PM test protocol on left, Scoring Sheet on right.

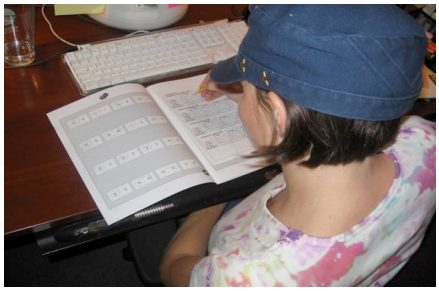

Figure 3. Picture of person scoring a TEMI-PM protocol.

- Scoring is done for the test item pages only. Do not score Demonstration and Practice items for each subtest in the Student Booklet.

- Some students may skip items or a page and then resume testing with a later item. Thus, it is important to check all pages of the Student Booklet.

Specific Scoring Instructions and Examples: Completed Scoring

Subtest 1: Magnitude Comparisons (MC)

- The student is told to circle the smaller number or both numbers if they are the same, or equal.
- To score: See Figures 4 and 5.

On the Protocol	On the Scoring Sheet
• Place a 1 next to each correct answer. • Place a 0 next to each incorrect answer.	• Slash incorrect answers in the A box of the Scoring Sheet. • Circle the answer of the last item that the student solved in the A box of the Scoring Sheet.
• Sum the number of correct answers for each row and write the row total on the right of the row on the protocol.	• Record the number of correct answers for each row in the S box of the Scoring Sheet.
	• Sum all S box scores for a page and record it in the Subtotal box. • Sum all subtotal scores and record it in the MC Total box.

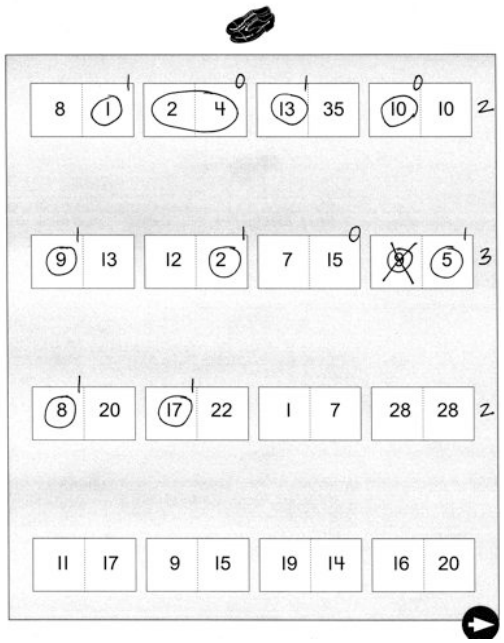

Figure 4. Grade 1/TEMI-PM MC (Page 4) Example

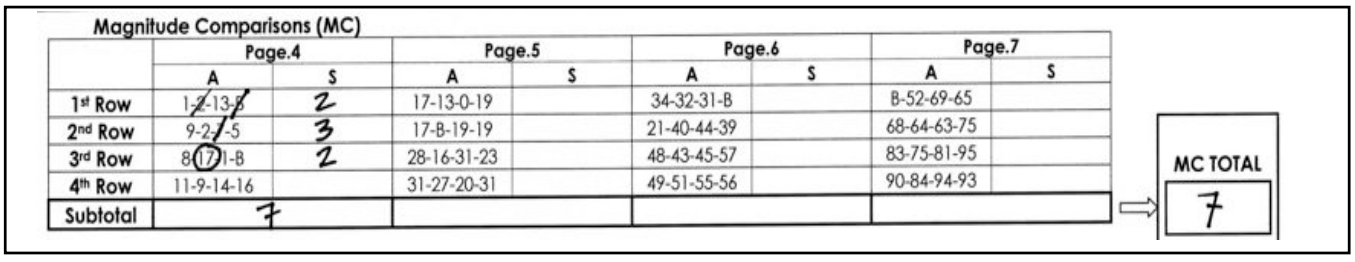

Figure 5. Grade 1/Cutout of TEMI-PM MC Scoring Sheet Example

Subtest 2: Number Sequences (NS)

- The student is told to circle the number that makes a three-number sequence.
- To score: See Figures 6 and 7.

On the Protocol	On the Scoring Sheet
• Place a 1 next to each correct answer. • Place a 0 next to each incorrect answer.	• Slash incorrect answers in the A box of the Scoring Sheet. • Circle the answer of the last item that the student solved in the A box of the Scoring Sheet.
• Sum the number of correct answers for each row and write the row total on the right of the row on the protocol.	• Record the number of correct answers for each row in the S box of the Scoring Sheet.
	• Sum all S box scores for a page and record it in the Subtotal box. • Sum all subtotal scores and record it in the NS Total box.

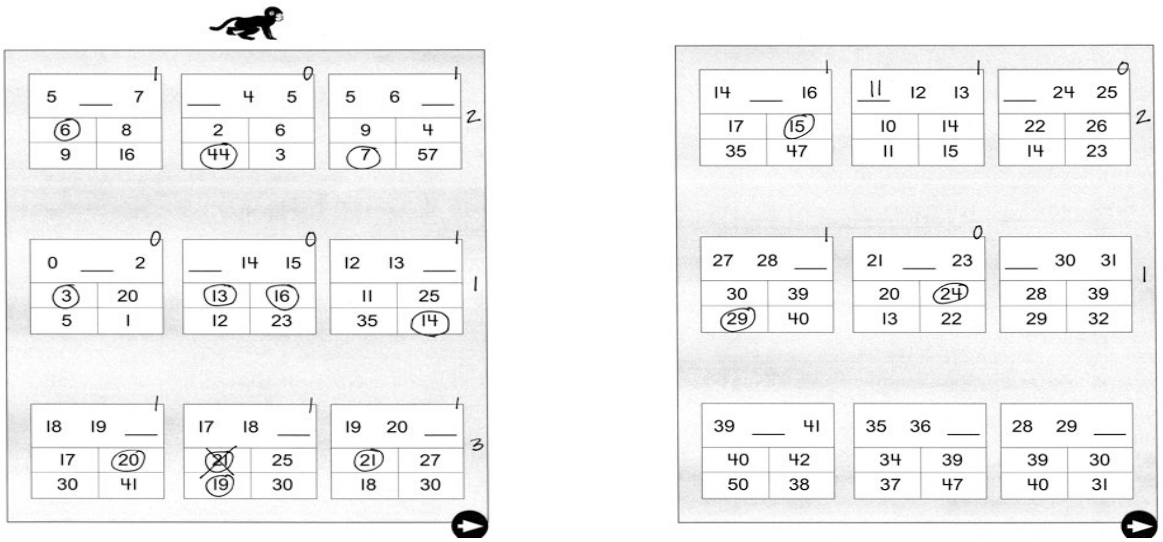

Figure 6. Grade 1/TEMI-PM NS (Pages 10 and 11) Example

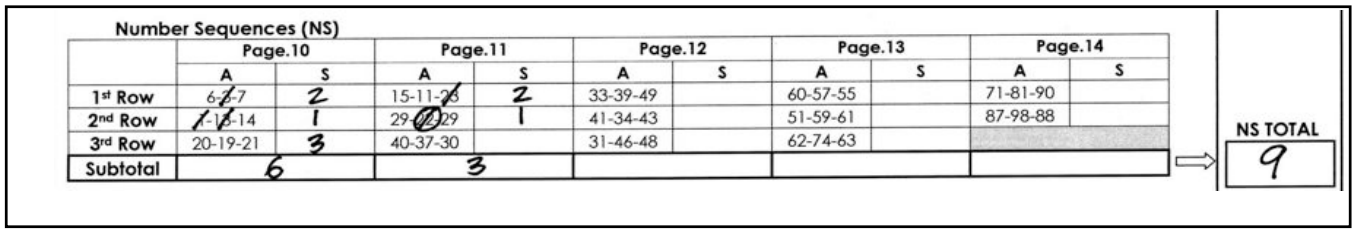

Figure 7. Grade 1/Cutout of TEMI-PM NS Scoring Sheet Example

Q& A FOR SCORING

Q: What if students write their answers in the blanks instead of circling their responses?
A: Score their written responses (see example). Note, however, that writing the answers may be more or less time consuming for a student, based on his or her number writing facility. So when a student writes the answers, understand that this may affect performance.

Subtest 3: Place Value (PV)

- The student is told to see pictures of tens and ones and circle the number that shows how many there are in all.
- To score: See Figures 8 and 9.

On the Protocol	On the Scoring Sheet
• Place a 1 next to each correct answer. • Place a 0 next to each incorrect answer.	• Slash incorrect answers in the A box of the Scoring Sheet. • Circle the answer of the last item that the student solved in the A box of the Scoring Sheet.
• Sum the number of correct answers for each row and write the row total on the right of the row on the protocol.	• Record the number of correct answers for each row in the S box of the Scoring Sheet.
	• Sum all S box scores for a page and record it in the Subtotal box. • Sum all subtotal scores and record it in the PV Total box.

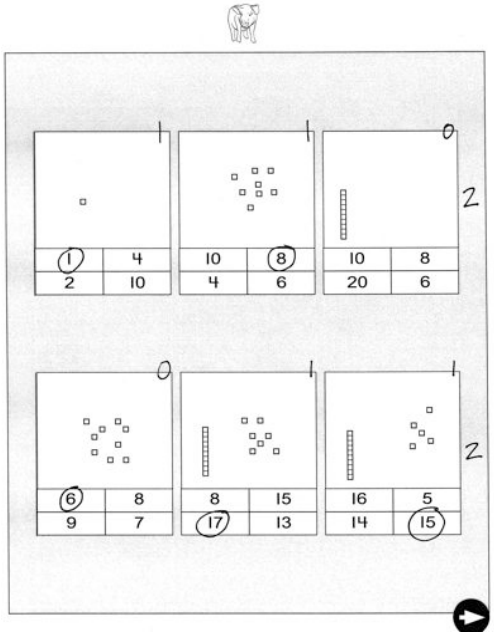

Figure 8. Grade 1/TEMI-PM PV (Page 18) Example

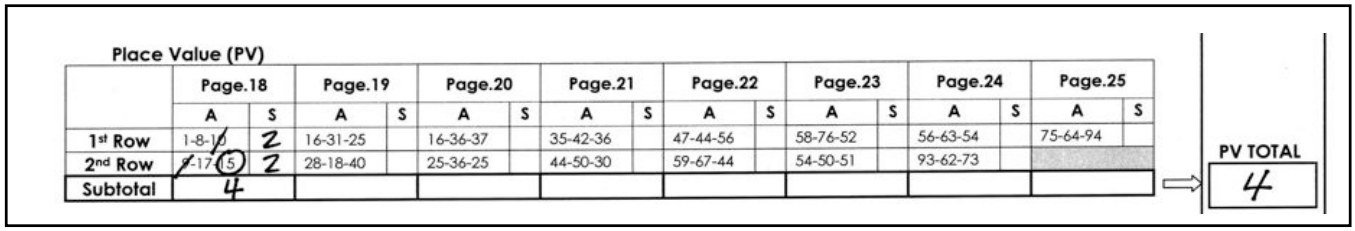

Figure 9. Grade 1/Cutout of TEMI-PM PV Scoring Sheet Example

Subtest 4: Addition Subtraction Combinations (ASC)

- The student is told to solve addition and subtraction problems.
- To score: See Figures 10 and 11.

On the Protocol	On the Scoring Sheet
• Place a 1 next to each correct answer. • Place a 0 next to each incorrect answer.	• Slash incorrect answers in the A box of the Scoring Sheet. • Circle the answer of the last item that the student solved in the A box of the Scoring Sheet.
• Sum the number of correct answers for each row and write the row total on the right of the row on the protocol.	• Record the number of correct answers for each row in the S box of the Scoring Sheet.
	• Sum all S box scores for a page and record it in the Subtotal box. • Sum all subtotal scores and record it in the ASC Total box.

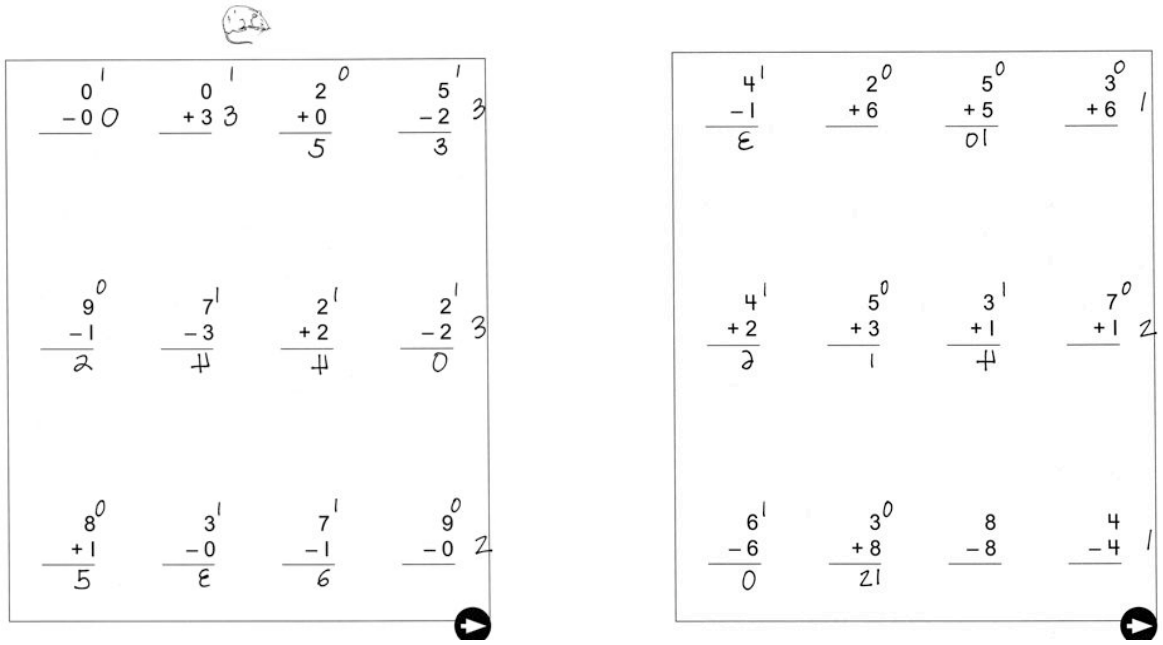

Figure 10. Grade 1/TEMI-PM ASC (Pages 28 and 29) Example

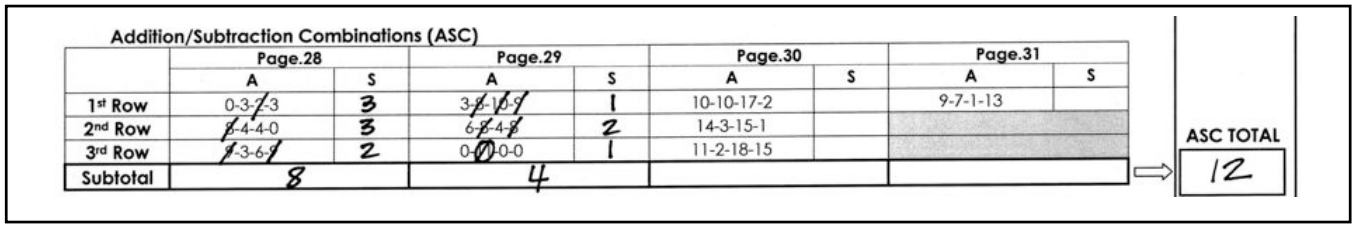

Figure 11. Grade 1/Cutout of TEMI-PM ASC Scoring Sheet Example

Q& A FOR SCORING

Q1: What if students write their answers next to the problem rather than under the line?
A1: Score their answers (see example).

Q2: What if students reverse their numbers—for example, writing a backward 4 instead of a conventional 4?
A2: Score the item as correct (see example). However, the numbers 2 and 5 may be tricky, because written backward, they may look the same. In this case, check the other answers and see how 2 and 5 are written. Look for consistency and score accordingly.

Q3: What if students write the number 01 instead of 10?
A3: Score the item as incorrect (see example). There is no way of knowing what the student was thinking, so score such reversals as incorrect.

Once scoring for the TEMI-PM is completed, sum the subtest total scores (7 + 9 + 4 + 12) and place the total (32) in the Test Total box (see Figure 12).

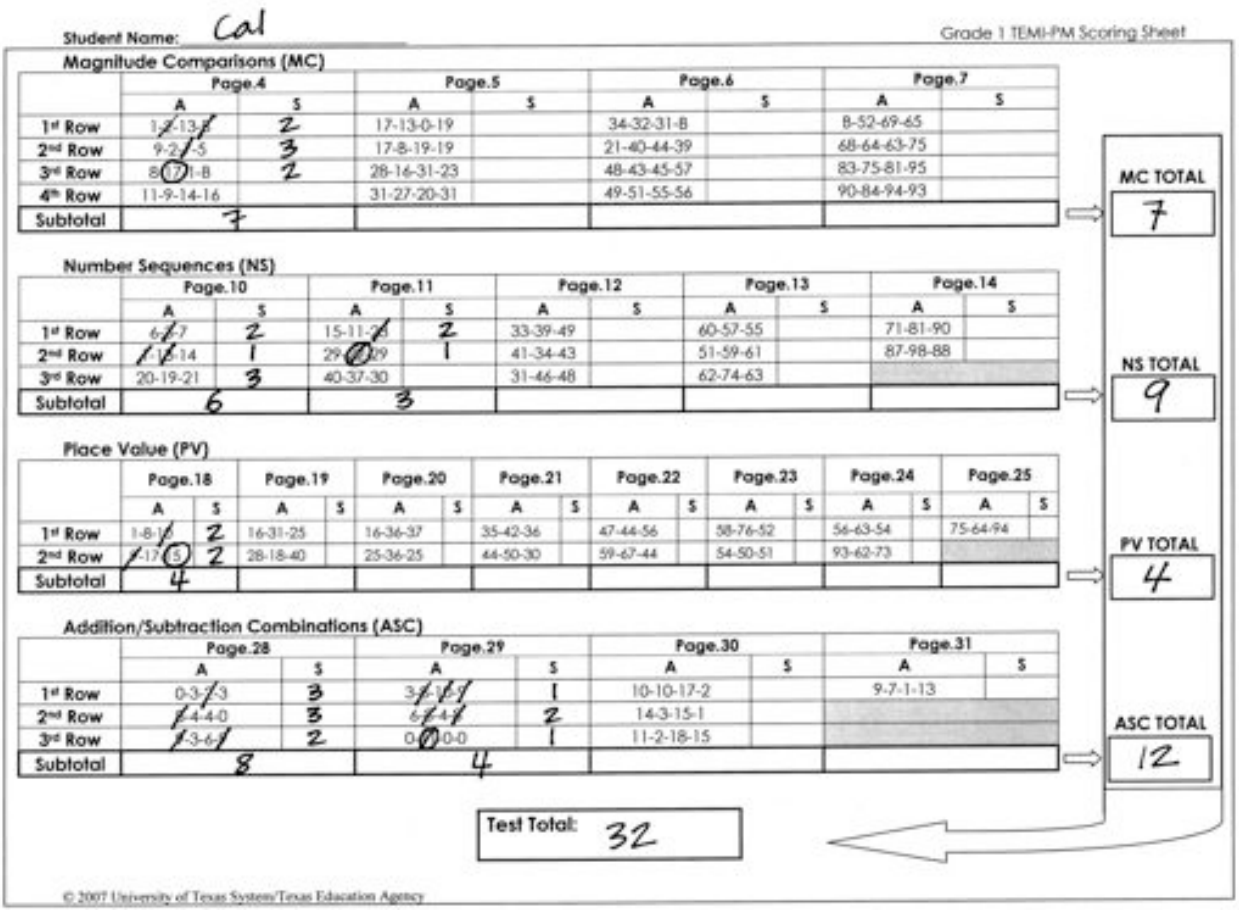

Figure 12. Grade 1/TEMI-PM Completed Scoring Example

Specific Scoring Instructions and Examples: Abbreviated Scoring

Before presenting instructions for the abbreviated scoring approach, it is important to note that students who are eligible for remedial intervention will have their entire test scored, because they never reach the point where they score at or above the 25th percentile. However, most students in your class will score at or above the 25th percentile, so there may be a considerable amount of time saved by using this procedure. Yet, by using this option, one cannot create an Electronic Student Report, nor can one use make ABC interpretations, which are discussed later. But for those wanting to save some time during scoring, this is a viable option.

A second option for the TEMI-PM is to score until the student earns enough Total Test points to reach the 25th percentile and thereby not qualify for remedial intervention. Consider the following example. The TEMI-PM Total Test 25th percentile for grade 1 fall testing (September) is reached at 34 points.

On the Protocol	On the Scoring Sheet
• Place a 1 next to each correct answer. • Place a 0 next to each incorrect answer.	• Slash incorrect answers in the A box of the Scoring Sheet. • Circle the answer of the last item that the student solved in the A box of the Scoring Sheet.
• Sum the number of correct answers for each row and write the row total on the right of the row on the protocol.	• Record the number of correct answers for each row in the S box of the Scoring Sheet.
	• Sum all S box scores for a page and record it in the Subtotal box. • Stop scoring if the student reaches the 25th percentile criterion for the Total Test, in this case 34 points. If the 34th point is not achieved, sum all subtotal scores and record the score in the MC Total box and proceed to the NI subtest. • Continue scoring with the next subtest if the student reaches the 25th percentile criterion for the Total Test, in this case 34 points.

Now look at the TEMI-PM Scoring Sheet in Figure 13. This example uses the abbreviated procedure. Notice that the scoring continued through all of MC, all of NS, and stopped at the beginning of PV, where the student scored the 34th point. In this example, the student scored at or above the 25th percentile and does not qualify for remedial intervention.

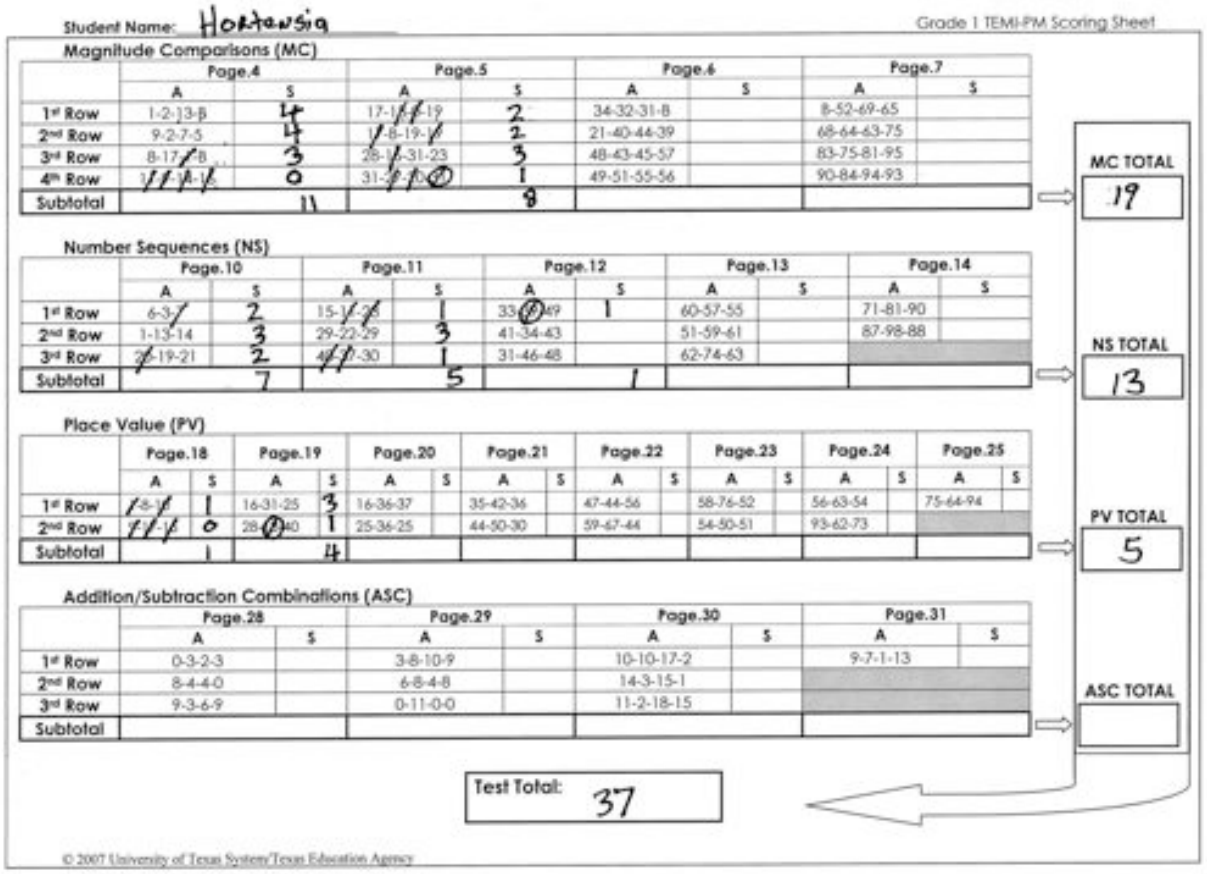

Figure 13. Grade 1/TEMI-PM Abbreviated Scoring Example

Instructional Decision-making

Once the test is scored, it is time to assemble the scores and use the results to help inform instruction. In this section of the manual, we describe how to (a) complete the Student Report, (b) complete the Class Report, and (c) interpret the TEMI scores.

Completing the Student Report

When the scoring is done, a Student Report can be created for each student to analyze his or her performance by comparing with the 25th percentile score. To complete the Student Report sheet (see Figure 14):

- Write the name of the teacher and student.
- Write each student's subtest score from TEMI-PM (i.e., MC, NS, PV, and ASC) in the *Student Score* boxes.
- Compare each student's subtest scores to the numbers in the adjacent *25th Percentile* boxes.
- If the student's score is the same or higher than the score in the 25th Percentile box, place a checkmark in the "Yes" blank in the *At or Above 25th Percentile* box.
- If the student's score is below the score in the *25th Percentile* box, place a check in the "No" blank in the *At or Above 25th Percentile* box.
- Consult the Descriptive Ratings table in Appendix B. Locate the appropriate test (Magnitude Comparisons) and Norms column (in this case, Week 4) and find the student's score (7). Look to the first column and note that the student's score, 7 (from 7–16), corresponds to a Descriptive Rating of Below Average, which is written on the Student Report (see Figure 15).

Fall Student Report
Texas Early Mathematics Inventories-Progress Monitoring (TEMI-PM)

Grade: Grade 1
Teacher: James
Student Name: Cal Gonzales

Subtest	Student Score	25th Percentile* WEEK 4	25th Percentile* WEEKS 8-11	At or Above 25th Percentile		Descriptive Rating
Magnitude Comparisons (MC): Comparing two numbers' quantity (0 to 99)	7	17	19	Yes ____	No ✓	Below Average
Number Sequences (NS): Identifying the missing number in a 3-number sequence (0 to 99)	9	7	9	Yes ✓	No ____	Average
Place Value (PV): Recognizing the value of stacks of hundreds, tens, and ones (1 to 99)	4	5	5	Yes ____	No ✓	Below Average
Addition/Subtraction Combinations (ASC): Knowing the basic addition and subtraction facts	12	2	4	Yes ✓	No ____	Above Average
TEMI-PM Total Score: Understanding number, operations, and quantitative reasoning (EKS	32	34	39	Yes ____	No ✓	Below Average

* Apply your testing period

Figure 14. Grade 1/ TEMI-PM Student Report Sheet Example

Descriptive Ratings For Magnitude Comparisons—Fall

Rating	Week 4	Weeks 5-11
Very Poor	0-2	0-5
Poor	3-6	6-8
Below Average	7-16	9-18
Average	17-32	19-33
Above Average	33-37	34-38
Superior	38-48	39-48
Very Superior	>48	>48

Figure 15. Grade 1/TEMI-PM MC Descriptive Rating from Appendix B

Completing the Class Report

When the Student Reports are completed, either a Handwritten Class Report (see Figure 16) or Electronic Class Report (see Figure 17) can be created to summarize performance of all students in a class.

Completing the Handwritten Class Report

Here, write the names of all students in the classroom in the Student column. Then, in the At or Above 25th Percentile column, check "Yes" or "No"—whatever was checked in the Student Report.

Handwritten Classroom Report
Texas Early Mathematics Inventories
Progress Monitoring (TEMI-PM)

Grade: 1
Teacher: James

	Student Name	Student Score	At or Above 25th Percentile	
1	John Doe	55	Yes ✓	No
2	Mark Franklin	32	Yes	No ✓
3	Alex Garcia	61	Yes ✓	No
4	Julio Martinez	72	Yes ✓	No
5	Erica McCall	47	Yes ✓	No
6	Kim Rodriguez	38	Yes ✓	No
7	Evan Taylor	29	Yes	No ✓
8	Jose Sanchez	52	Yes ✓	No
9	Susan Smith	34	Yes ✓	No
10	Jason Williams	43	Yes ✓	No
11	Cal Gonzales	32	Yes	No ✓
12			Yes	No
13			Yes	No
14			Yes	No
15			Yes	No
16			Yes	No
17			Yes	No
18			Yes	No
19			Yes	No
20			Yes	No

Figure 16. Grade 1/Handwritten Classroom Report Sheet Example

Completing the Electronic Classroom Report for the TEMI-PM

When the Student Reports are completed *and* if the first scoring option was used (that is, if all TEMI-PM subtests were scored), an electronic version of the Classroom Report can be created to summarize TEMI-PM performance of all students in a class. The electronic Classroom Report provides a major incentive for taking the time to score all four TEMI-PM subtests.

Because the assessment administration period (i.e., September or October for fall testing/January or February for winter testing) affects scores to be used to determine the status of student performance, it is important to choose a version of the electronic Classroom Report pertinent to your assessment time from Assessment Central (for more information, visit www.earlymathintervention.org/assessment). In any versions, the electronic Classroom Report includes two types of progress monitoring boards, either designed to create graphic displays of the progress of the entire class across the three assessment periods (Class Progress Monitoring [CPM]: see Figure 17) or graphic displays of progress of Tier II students in the classroom (Individual Progress Monitoring [IPM]: see Figure 18). Figure 17 and Figure 18 illustrate examples of CPM and IPM.

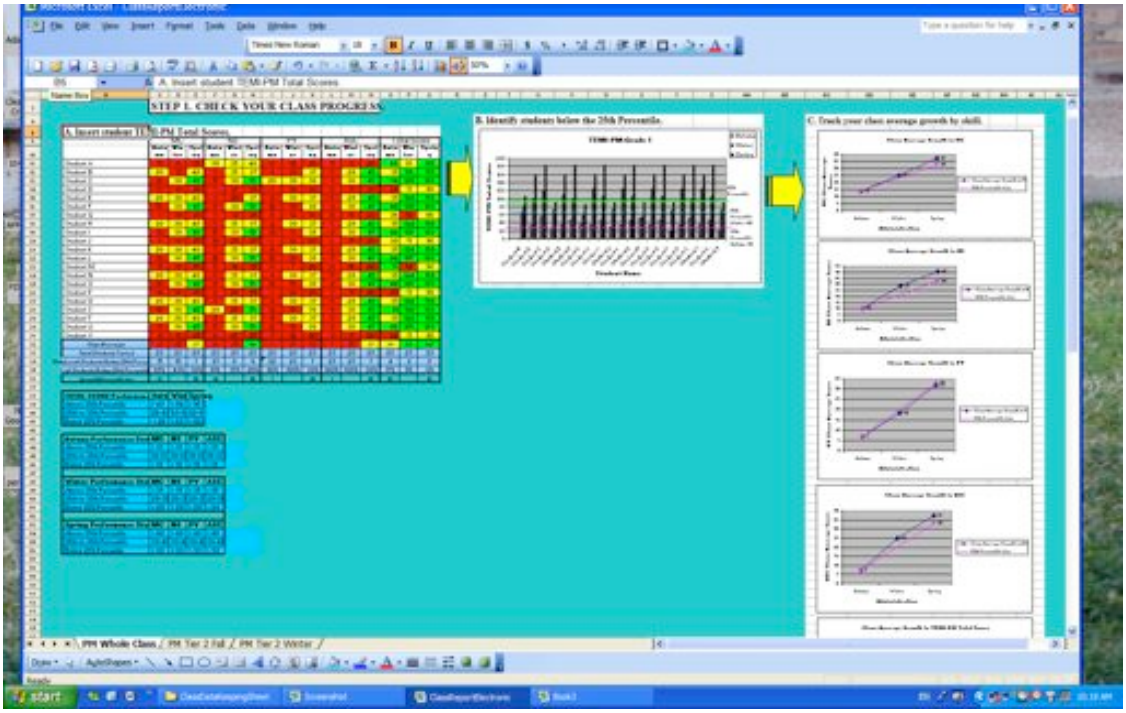

Figure 17. Example Class Progress Monitoring Board

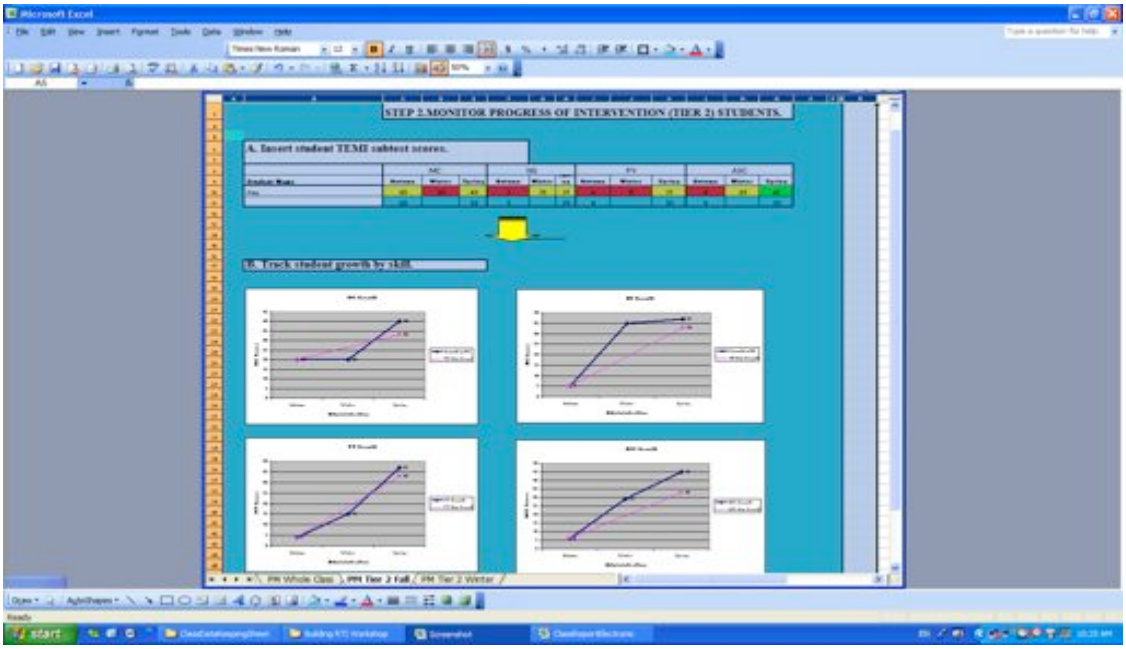

Figure 18. Example Individual Progress Monitoring Board

Figure 19 provides a graphic summary of what teachers do and the outputs that are generated for each type of progress monitoring.

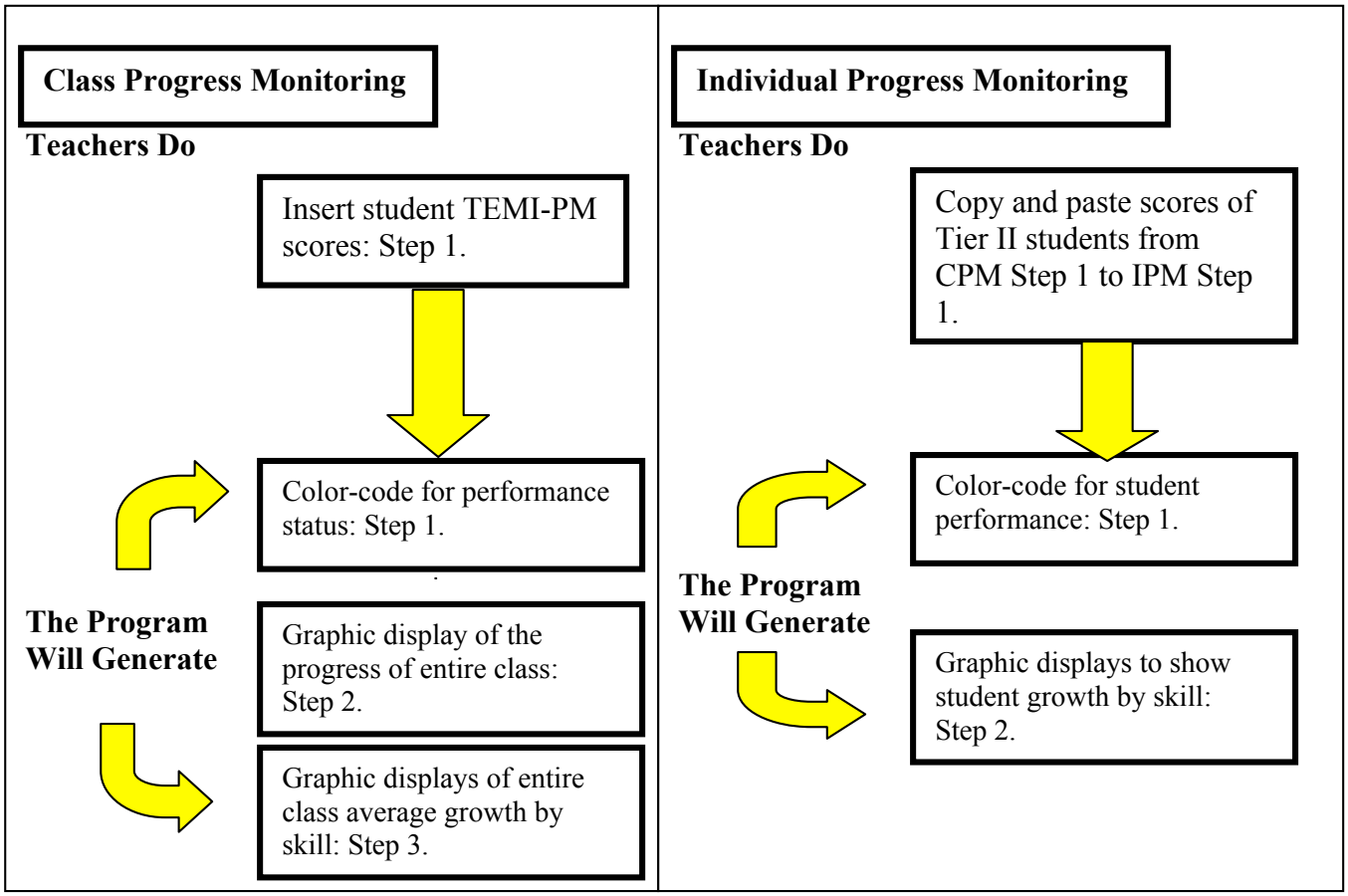

Figure 19. Summary of Teachers' Actions and Outputs by CPM and IPM

Class Progress Monitoring (CPM) Board

A CPM board can be used to monitor the progress of an entire class across three assessment periods (fall, winter, spring).

There are three steps involved in creating the CPM board:

1. Enter data.
2. Examine bar graph of class progress.
3. Examine graphs of class average growth by skill.

Teacher Directions: Step 1

1. Type the names of all students in the class in the Student Name column.
2. Enter each student's TEMI-PM subtest scores from the Student Report.
   a. Grade 1: MC, NS, PV and ASC.
3. Look at first output: Student Scores, color-coded.
   a. Scores above 35th percentile rank are coded in green.
   b. Scores between the 25th percentile and 35th percentile rank are coded in yellow.
   c. Scores below the 25th percentile rank are coded in red.
4. Identify students whose TEMI-PM total score are coded in red. These students are eligible for Tier II intervention if their scores are validated by the teacher. (For more information, see the Interpreting TEMI Scores section).

Figure 20 shows the color-coded student scores resulting from Step 1.

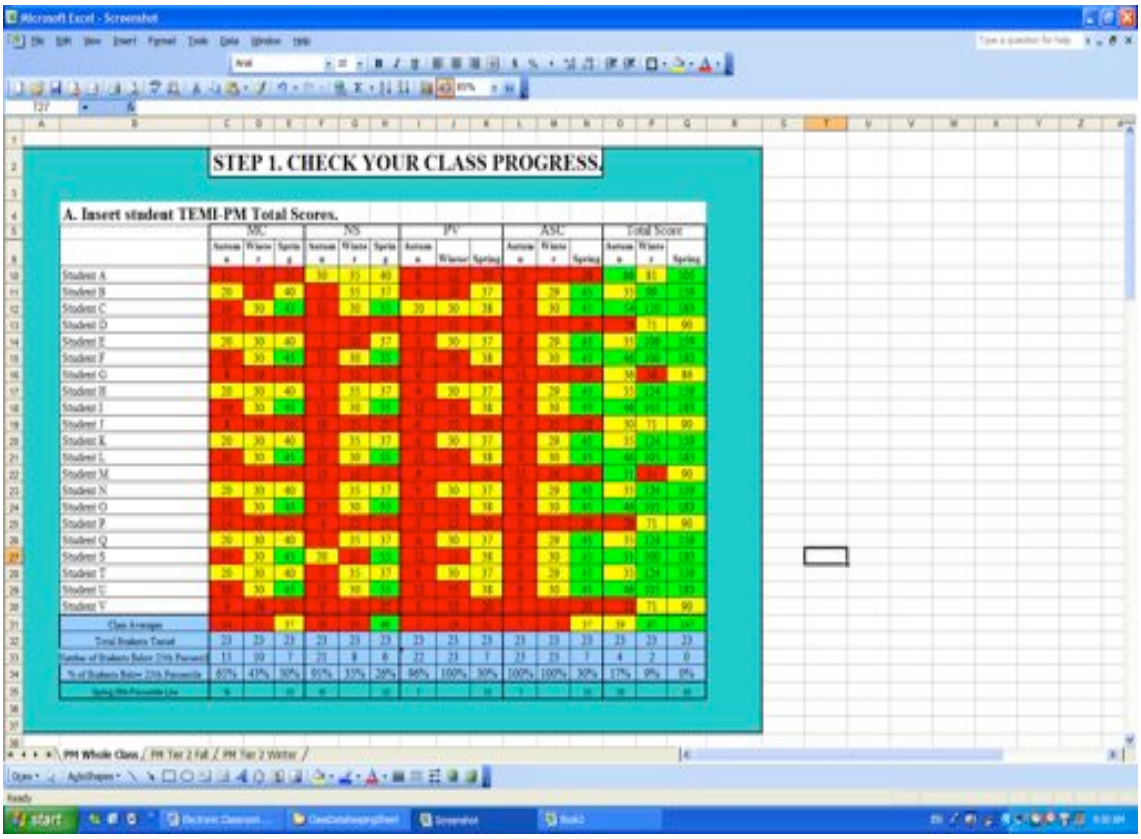

Figure 20. Student Scores Color-coded in the CPM Step 1

Teacher Directions: Step 2

1. Look at the bar graph of student scores. This graph shows that Total Test performance can be used to monitor the progress of the entire class quickly.
2. The Class Report shows a graph of the entire class' progress across three assessment periods (fall, winter, and spring). Note the horizontal 25th percentile lines for each period.
3. Validate student names whose score is below the 25th percentile. Again, these students qualify for additional support in Tier II, if their scores are validated by teachers.

Figure 21 shows the graph generated from Step 2 in the CPM board.

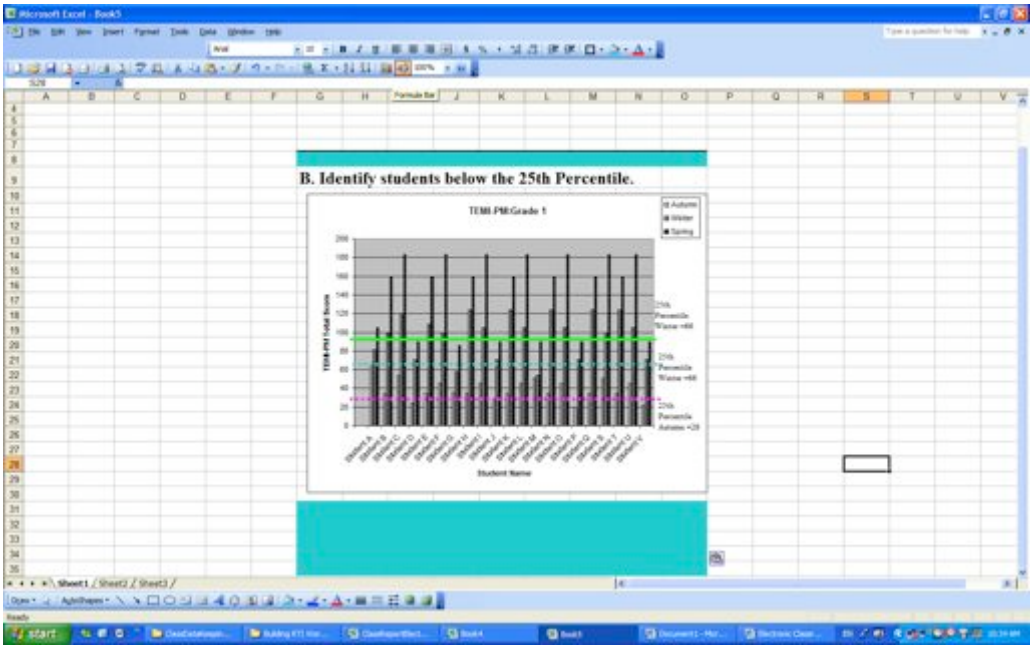

Figure 21. Example Progress Graph for Entire Class (CPM: Step 2)

Teacher Directions: Step 3

1. Look at the line graph of student scores. This graph monitors the class' average growth by subtest.
2. Identify skills for which the class' average growth line is below the 25th percentile line. These are skills for your entire class to work on.

Figure 22 shows an example of graphs generated from Step 3 in the CPM board.

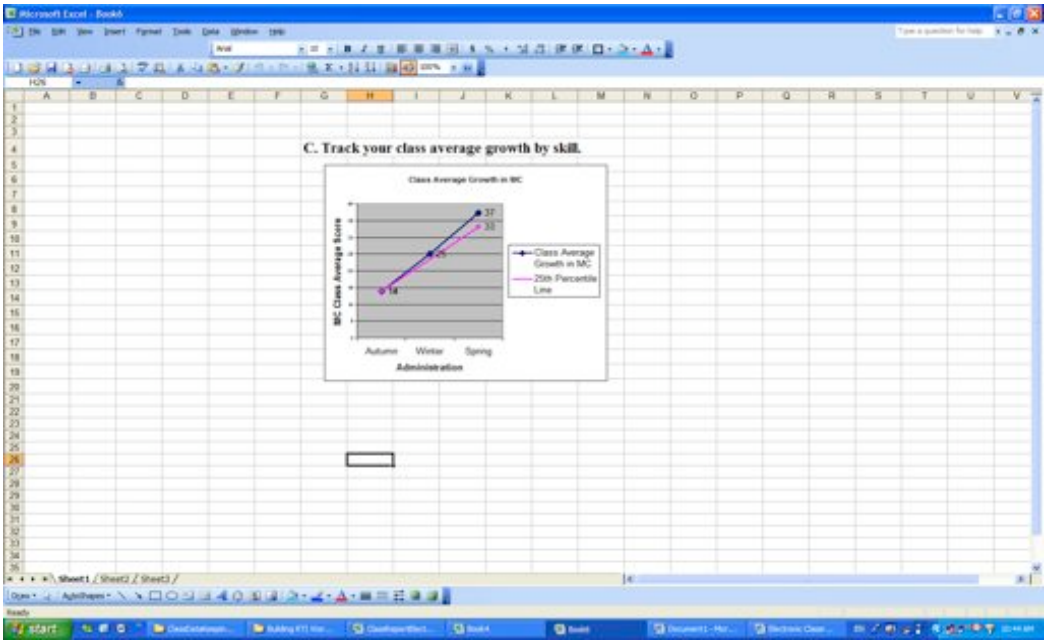

Figure 22. Example Graphs of Class Average Growth by Skill (CPM: Step 3)

Individual Progress Monitoring (IPM) Board

Classroom reports can be generated using only the CPM board. However, IPM boards can be used when teachers seek information about the progress of students identified as performing below 25th percentile in either the fall or in winter.

- To monitor the progress of students identified in the fall, choose the IPM Fall board for progress monitoring.
- To monitor the progress of students identified in the winter, choose the IPM Winter board for progress monitoring.

Both IPM boards include two steps:

1. Enter data.
2. Examine the individual progress bar graphs.

Teacher Directions: Step 1

1. Type the student's name in the Student Name column.
2. Copy and paste (or re-enter) the student's TEMI-PM subtest scores from the CPM board Step 1.
    a. Grade 1: MC, NS, PV and ASC.
3. Look at first output: Student Scores, color-coded.

Teacher Directions: Step 2

1. Look at the students' bar graphs. The graphs show individual student progress by skill across the three assessment periods. Horizontal 25th percentile lines are included.
2. Identify specific skills for which the student has scored below the 25th percentile lines. These skills need remedial instruction.

Figures 23 and 24 show graphs of individual student progress by skill, which are generated in the IPM Fall and the IPM Winter boards.

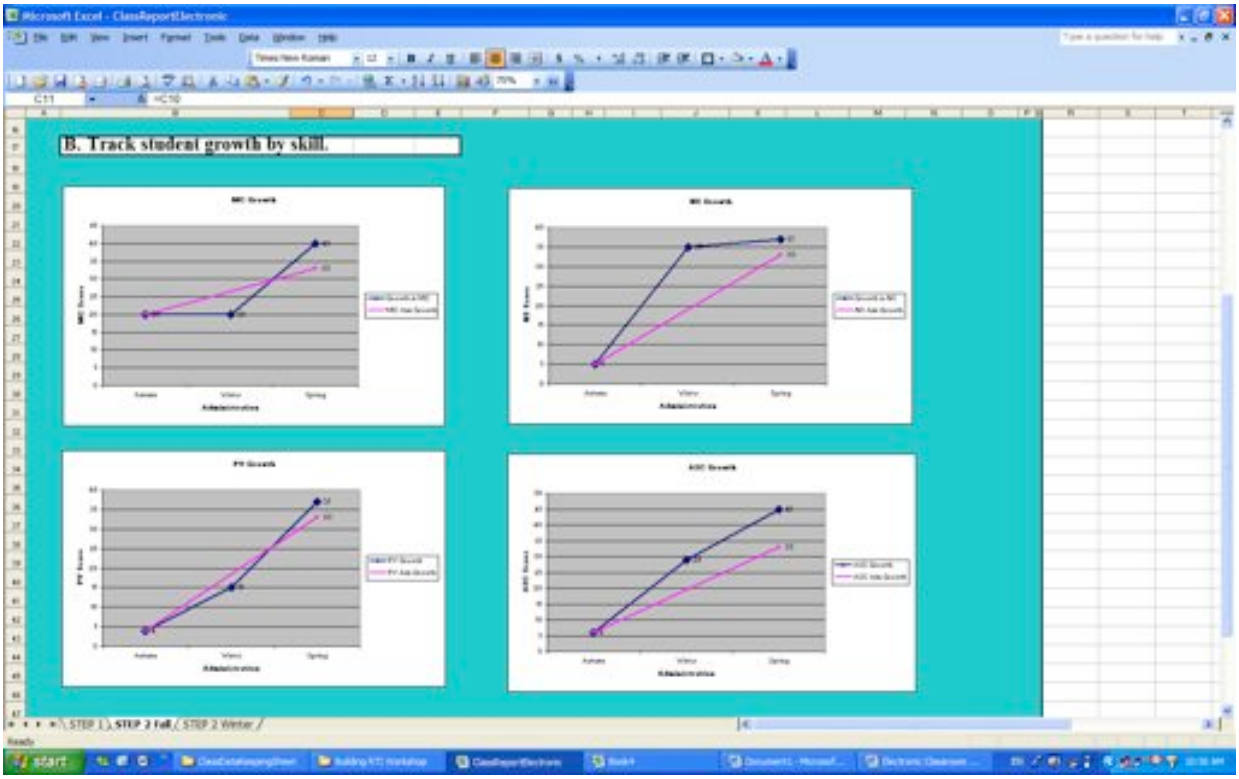

Figure 23. Progress Graphs for an Intervention Student Identified in the Fall (IPM Fall)

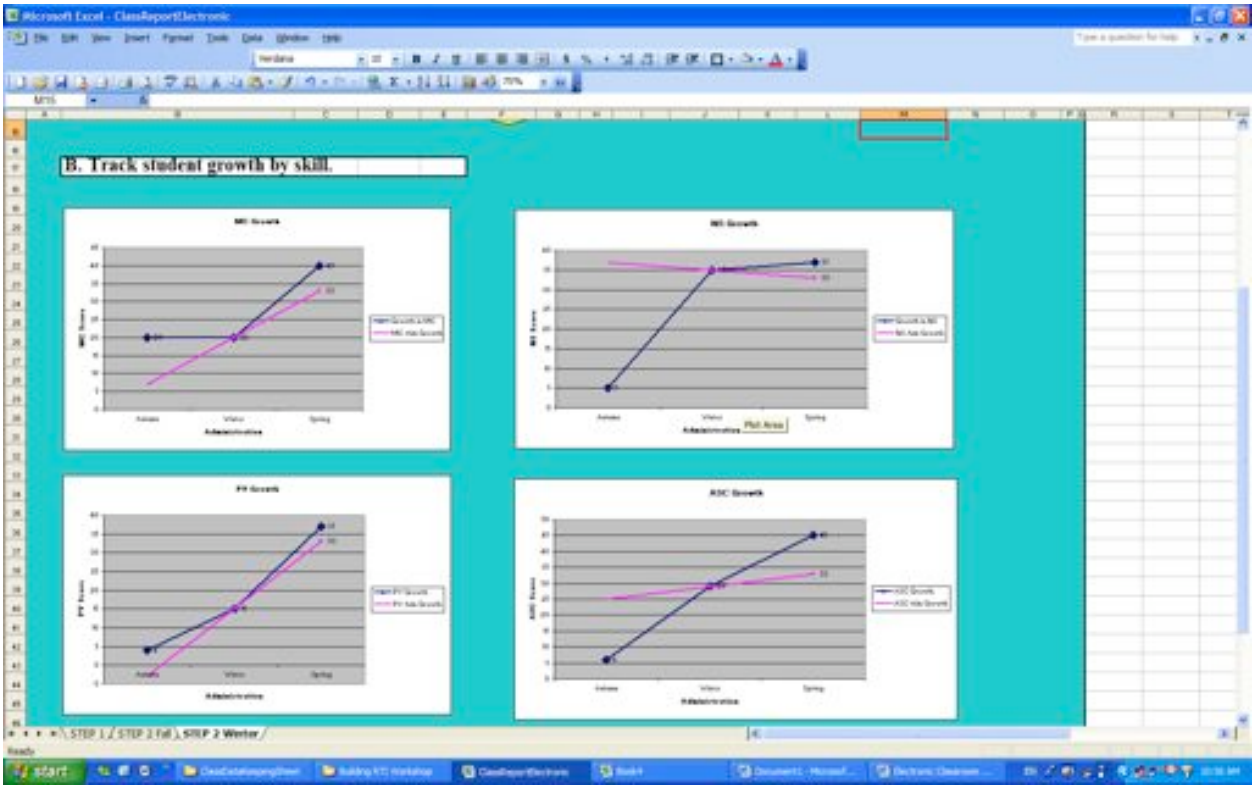

Figure 24. Progress Graphs for an Intervention Student Identified in Winter (IPM Winter)

Interpreting the TEMI Scores

Student Scores

When you sum the item scores to achieve a total, you have created a Student Score for that measure (see Figure 12). When scoring, the terms "Total" or "Total Score" on the Scoring Sheet are used synonymously with "Student Score"—it is the total number of points attained. Sometimes it is for a subtest (e.g., Magnitude Comparisons, Number Sequences), or it may be the summed values of all the subscales, the Total Score of the TEMI-PM. These scores are used for progress monitoring purposes and to derive percentile ranks.

In our example (see Figure 14), the teacher transferred, from the student's Scoring Sheet to the Student Report, the Totals and Total Scores students received for the TEMI-PM subtests. The TEMI-PM Total Score will always be the sum of the subtest scores, so this process allows for a double-check of addition.

25th Percentile

Once Student Scores are derived, they can be converted to a percentile rank using the Normative Tables found in Appendix C. Of particular interest with the TEMI-PM is the 25th percentile. In this column of the Student Report is the Student Score that corresponds to the 25th percentile. The 25th percentile is important because it is the lower end of Average performance. Below that point, if the performance level is verified by the teacher, the student is eligible for intervention.

To make things easy, we provide the point total in this column that corresponds to the 25th percentile. In Figure 14, the student needed to score 17 points on Magnitude Comparisons to reach the 25th percentile. The student scored 7 points and thus failed to meet criterion.

At or Above the 25th Percentile

Here there are two choices, Yes and No. If the Student Score in column two is at or above the 25th percentile score in column three, a checkmark is placed alongside "Yes". If the Student Score is below that provided in the 25th Percentile column, a "No" is checked. Students who score at or above the 25th percentile on the TEMI-PM Total Score, if the results are verified by the teacher, are not eligible for intervention.

Descriptive Rating

A Descriptive Rating is available if all subtests are scored completely. In the column, write the descriptor that goes with the student's percentile rank. Descriptive Ratings that go with the TEMI-PM scores are found in Appendix B. We provide information about the ratings below.

%ile Rank Range	Descriptive Rating	% in Normative Sample
<2	Very Poor	1.99
2-8	Poor	7
9-24	Below Average	16
25-75	Average	50
76-86	Above Average	16
87-98	Superior	7
>98	Very Superior	1.99

Identifying Students in Need

One of the primary purposes of the TEMI is to identify students who are below average in math performance and who require remedial instruction. Research conducted using the TEMI has used the TEMI-PM Total Score to identify students who are at risk for mathematics difficulties and who require remedial intervention. Students who score below the 25th percentile, and whose teachers concur are struggling, should receive extra help in number, operations, and quantitative reasoning. The following guide for interpreting the TEMI-PM Total Score Results (see Appendix D) can be used when all subtests are scored and Total Score percentile ranks are derived.

ABC System

TEMI-PM Total Score percentile rank more than 35	**A**ll ahead full! Keep doing whatever is currently being done. These children are doing well in developing their number, operations, and quantitative reasoning skills. Their scores not only are at or above the 25th percentile, but they are above the 35th percentile.
TEMI-PM Total Score percentile rank at or above 25 but not more than 35	**B**e alert! Keep an eye on these students; they achieved the 25th percentile but should be considered "borderline". These children may drop below the 25th percentile when the next test is administered, if they fall behind slightly. During core instruction, check their work and their understanding of concepts taught more than you otherwise would, and provide many opportunities for practice.
TEMI-PM Total Score percentile rank below 25	**C**hange! These students are either at risk for mathematics difficulties or are already experiencing math difficulties. They require intensive math intervention to help develop their number, operations, and quantitative reasoning skills.

Determining Strengths and Struggles

Not all struggling students exhibit the same characteristics and needs. TEMI-PM subscale (subtest) performance can help teachers identify areas of weakness that need to be remediated during the interventions. If subtest scores are at or above the 25th percentile, the area can be considered a relative strength. These skills should be periodically reviewed and practiced, but these students' skills have developed sufficiently to be in the Average range.

Scores below the 10th percentile mean that the content presents serious struggles for the students. Scores from the 11th through 24th percentile are considered relative struggles and should be targeted for intervention.

Grouping students is always a challenge. Flexible grouping—that is, grouping students differently for different activities—is an important tool to help students maintain interest and social relationships across the school year. When planning short-term interventions, ability grouping is an important consideration. By grouping students of equal or nearly equal abilities, teachers can focus their lessons on targeted needs. Again, the TEMI-PM Total Score, in conjunction with the subscale scores, can help in this effort.

Appendix

Appendix A: How to Make Testing Dividers

Test dividers help separate students and reduce the chances that students will copy one another's answers. If you do not already have dividers, here is a three-step process to make them:

- Cut heavy-duty poster board into three rectangles about 12 inches wide (one rectangle is about 18 inches long, the other two rectangles about 12 inches long).
- Tape the three sides together (longer rectangle in the middle). The tape serves as hinges so that dividers fold flat when not in use.
- Laminate and trim (optional).

Appendix B: Descriptive Ratings

Fall

Descriptive Ratings For Magnitude Comparisons—Fall

Rating	Week 4	Weeks 5-11
Very Poor	0-2	0-5
Poor	3-6	6-8
Below Average	7-16	9-18
Average	17-32	19-33
Above Average	33-37	34-38
Superior	38-48	39-48
Very Superior	>48	>48

Descriptive Ratings For Number Sequences—Fall

Rating	Week 4	Weeks 5-11
Very Poor	0	0-1
Poor	1-2	2-4
Below Average	3-6	5-8
Average	7-16	9-17
Above Average	17-20	18-20
Superior	21-26	21-26
Very Superior	>26	>26

Descriptive Ratings For Place Value—Fall

Rating	Week 4	Weeks 5-11
Very Poor	0	0
Poor	1-2	1-2
Below Average	3-4	3-4
Average	5-8	5-11
Above Average	9-12	12-15
Superior	13-17	16-20
Very Superior	>17	>20

Descriptive Ratings For Addition/Subtraction Combinations—Fall

Rating	Week 4	Weeks 5-11
Very Poor		
Poor	0	0-1
Below Average	1	2-3
Average	2-8	4-9
Above Average	9-12	10-14
Superior	13-19	15-20
Very Superior	>19	>20

Descriptive Ratings For TEMI-PM Total Score—Fall

Rating	Week 4	Weeks 5-11
Very Poor	0-10	0-17
Poor	11-20	18-23
Below Average	21-33	24-38
Average	34-62	39-67
Above Average	63-81	68-86
Superior	82-105	87-110
Very Superior	>105	>110

Winter

Descriptive Ratings For Magnitude Comparisons—Winter

Rating	Weeks 19-21	Weeks 22-28
Very Poor	0-11	0-11
Poor	12-19	12-19
Below Average	20-27	20-27
Average	28-39	28-40
Above Average	40-47	41-48
Superior	48-59	49-59
Very Superior	>59	>59

Descriptive Ratings For Number Sequences—Winter

Rating	Weeks 19-21	Weeks 22-28
Very Poor	0-2	0-3
Poor	3-7	4-8
Below Average	8-12	9-14
Average	13-22	15-23
Above Average	23-27	24-28
Superior	28-34	29-35
Very Superior	>34	>35

Descriptive Ratings For Place Value—Winter

Rating	Weeks 19-21	Weeks 22-28
Very Poor	0-3	0-3
Poor	4-5	4-5
Below Average	6-7	6-10
Average	8-16	11-18
Above Average	17-20	19-21
Superior	21-23	22-24
Very Superior	>23	>24

Descriptive Ratings For Addition/Subtraction Combinations—Winter

Rating	Weeks 19-21	Weeks 22-28
Very Poor	0-1	0-1
Poor	2-3	2-4
Below Average	4-7	5-8
Average	8-17	9-19
Above Average	18-23	20-24
Superior	24-27	25-28
Very Superior	>27	>28

Descriptive Ratings For TEMI-PM Total Score—Winter

Rating	Weeks 19-21	Weeks 22-28
Very Poor	0-25	0-26
Poor	26-44	27-46
Below Average	45-59	47-65
Average	60-93	66-97
Above Average	94-114	98-117
Superior	115-133	118-134
Very Superior	>133	>134

Spring

Descriptive Ratings For Magnitude Comparisons—Spring

Rating	Weeks 32-40
Very Poor	0-13
Poor	14-24
Below Average	25-31
Average	32-45
Above Average	46-54
Superior	55-63
Very Superior	>63

Descriptive Ratings For Number Sequences—Spring

Rating	Weeks 32-40
Very Poor	0-5
Poor	6-10
Below Average	11-15
Average	16-25
Above Average	26-29
Superior	30-40
Very Superior	>40

Descriptive Ratings For Place Value—Spring

Rating	Weeks 32-40
Very Poor	0-4
Poor	5-9
Below Average	10-13
Average	14-22
Above Average	23-24
Superior	25-29
Very Superior	>29

Descriptive Ratings For Addition/Subtraction Combinations—Spring

Rating	Weeks 32-40
Very Poor	0-3
Poor	4-8
Below Average	9-12
Average	13-23
Above Average	24-30
Superior	31-37
Very Superior	>37

Descriptive Ratings For TEMI-PM Total Score—Spring

Rating	Weeks 32-40
Very Poor	0-41
Poor	42-60
Below Average	61-76
Average	77-111
Above Average	112-133
Superior	134-159
Very Superior	>159

Appendix C: Converting Raw Scores to Percentiles

First Grade: Week 4

%ile	MC	NS	PV	ASC	PM-Tot	%ile
1	0-2	0	0		0-10	1
2			1		11	2
3	3	1			12-13	3
4			2		14-15	4
5	4	2			16	5
6	5				17	6
7				0	18-19	7
8	6				20	8
9	7	3	3		21	9
10	8				22	10
11	9				23	11
12	10	4			24	12
13	11				25	13
14	12				26	14
15		5		1	27	15
16	13				28	16
17						17
18	14		4		29	18
19					30	19
20	15	6			31	20
21						21
22					32	22
23	16					23
24					33	24
25	17	7	5	2	34	25
26						26
27	18				35	27
28		8			36	28
29	19					29
30					37	30
31	20				38	31
32						32
33					39	33
34						34
35	21	9		3	40	35
36						36
37	22				41	37
38						38
39					42	39

First Grade: Week 4 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
40						40
41	23	10			43	41
42						42
43					44	43
44			6	4		44
45	24				45	45
46						46
47	25	11			46	47
48						48
49					47	49
50	26				48	50
51						51
52						52
53	27	12		5	49	53
54					50	54
55						55
56					51	56
57	28					57
58					52	58
59		13	7			59
60					53	60
61	29			6		61
62					54	62
63					55	63
64					56	64
65	30				57	65
66		14				66
67					58	67
68						68
69	31			7	59	69
70						70
71		15	8		60	71
72						72
73	32				61	73
74		16			62	74
75				8		75
76					63	76
77						77
78	33				64	78

First Grade: Week 4 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
79			9		65	79
80	34	17			66	80
81				9	67	81
82	35					82
83			10		68	83
84					69	84
85	36	18		10	70	85
86					71	86
87			11		72-74	87
88		19		11	75-76	88
89	37				77-78	89
90		20	12	12	79-80	90
91					81	91
92	38-39	21			82-83	92
93	40-41		13	13	84-85	93
94	42-43	22	14		86-88	94
95	44	23		14	89-93	95
96	45	24	15	15-16	94-98	96
97	46-47	25	16	17-18	99-104	97
98	48	26	17	19	105	98
99	>48	>26	>17	>19	>105	99

First Grade: Weeks 5-11

%ile	MC	NS	PV	ASC	PM-Tot	%ile
1	0-5	0-1	0		0-17	1
2		2	1		18	2
3	6				19	3
4	7	3	2	0	20	4
5					21	5
6	8				22	6
7		4		1	23	7
8						8
9	9		3		24	9
10	10	5		2	25	10
11					26	11
12	11					12
13					27	13
14	12	6			28	14
15	13				29	15
16		7			30	16
17	14		4	3	31	17
18					32	18
19	15	8			33	19
20					34-35	20
21	16				36	21
22	17				37	22
23					38	23
24	18					24
25	19	9	5	4	39	25
26					40	26
27	20				41	27
28		10			42	28
29	21				43	29
30					44	30
31	22				45	31
32		11			46	32
33			6	5		33
34					47	34
35	23				48	35
36					49	36
37		12				37
38					50	38
39						39

First Grade: Weeks 5-11 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
40	24				51	40
41						41
42					52	42
43	25			6		43
44		13				44
45			7		53	45
46						46
47	26				54	47
48						48
49						49
50		14			55	50
51	27					51
52						52
53				7		53
54					56	54
55						55
56	28				57	56
57						57
58		15				58
59			8		58	59
60	29				59	60
61				8		61
62						62
63					60	63
64	30					64
65		16				65
66					61	66
67						67
68	31		9		62	68
69						69
70				9	63	70
71					64	71
72		17			65	72
73	32		10		66	73
74						74
75	33		11		67	75
76					68	76
77						77
78				10		78

First Grade: Weeks 5-11

%ile	MC	NS	PV	ASC	PM-Tot	%ile
79	34	18	12		69	79
80						80
81				11	70	81
82					71	82
83				12	72-74	83
84			13		75	84
85	35	19			76-77	85
86					78	86
87				13	79	87
88	36		14		80	88
89	37				81	89
90		20		14	82-85	90
91	38		15		86	91
92				15	87	92
93	39				88	93
94	40-42	21		16	89-91	94
95	43		16	17	92	95
96	44-46	22-23		18	93-98	96
97	47	24-25	17-19	19	99-109	97
98	48	26	20	20	110	98
99	>48	>26	>20	>20	>110	99

First Grade: Weeks 19-21

%ile	MC	NS	PV	ASC	PM-Tot	%ile
1	0-11	0-2	0-3	0-1	0-25	1
2	12	3	4		26-29	2
3	13-14	4		2	30-33	3
4	15-16	5			34-36	4
5	17	6		3	37-38	5
6	18		5		39-41	6
7	19	7			42-43	7
8					44	8
9	20	8		4	45	9
10	21				46	10
11	22				47	11
12	23		6		48	12
13		9		5	49	13
14	24				50	14
15					51	15
16	25	10			52	16
17			7		53-54	17
18	26			6	55	18
19		11			56	19
20						20
21	27				57	21
22		12		7	58	22
23					59	23
24						24
25	28	13	8	8	60	25
26						26
27					61	27
28	29					28
29					62	29
30			9		63	30
31		14				31
32				9	64	32
33	30					33
34			10		65	34
35					66	35
36		15			67	36
37				10		37
38					68	38
39	31		11			39

First Grade: Weeks 19-21 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
40		16			69	40
41					70	41
42				11		42
43					71	43
44						44
45		17				45
46	32		12		72	46
47				12		47
48					73	48
49						49
50					74	50
51					75	51
52	33	18		13	76	52
53					77	53
54			13		78	54
55					79	55
56	34					56
57				14	80	57
58					81	58
59		19				59
60	35		14		82	60
61						61
62					83	62
63	36			15	84	63
64		20			85	64
65						65
66	37				86	66
67			15		87	67
68				16		68
69		21			88	69
70	38					70
71					89	71
72					90	72
73		22	16		91	73
74	39			17	92	74
75					93	75
76					94	76
77	40	23				77
78			17	18	95	78

First Grade: Weeks 19-21 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
79						79
80	41				96	80
81				19	97	81
82	42	24			98	82
83			18		99	83
84	43			20	100	84
85					101-102	85
86	44	25		21	103	86
87			19		104-105	87
88	45	26			106-107	88
89				22	108-109	89
90	46	27			110-112	90
91	47		20	23	113-114	91
92	48	28			115-117	92
93	49				118-119	93
94	50	29		24	120-121	94
95	51-53	30	21	25	122-124	95
96	54-55	31			125-128	96
97	56-58	32-33	22	26	129-132	97
98	59	34	23	27	133	98
99	>59	>34	>23	>27	>133	99

First Grade: Weeks 22-28

%ile	MC	NS	PV	ASC	PM-Tot	%ile
1	0-11	0-3	0-3	0-1	0-26	1
2		4		2	27-28	2
3	12	5	4		29-32	3
4	13	6		3	33-34	4
5	14-15		5		35-38	5
6	16-17	7		4	39-41	6
7	18				42-44	7
8	19	8			45-46	8
9	20		6		47	9
10	21	9		5	48	10
11	22				49-51	11
12	23	10	7		52-53	12
13					54	13
14	24	11		6	55	14
15		12	8		56	15
16	25				57	16
17			9	7	58	17
18	26	13			59	18
19					60	19
20					61	20
21	27	14	10	8	62	21
22					63	22
23					64	23
24					65	24
25	28			9	66	25
26		15				26
27			11			27
28	29			10	67	28
29		16			68	29
30						30
31					69	31
32					70	32
33	30		12			33
34				11	71	34
35		17			72	35
36						36
37					73	37
38	31				74	38
39				12	75-76	39

First Grade: Weeks 22-28 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
40						40
41			13		77	41
42						42
43		18			78	43
44				13		44
45					79	45
46	32					46
47					80	47
48			14			48
49		19				49
50				14	81	50
51					82	51
52					83	52
53	33					53
54					84	54
55		20	15		85	55
56	34			15		56
57					86	57
58						58
59					87	59
60	35					60
61						61
62			16	16	88	62
63	36	21				63
64					89	64
65					90	65
66	37			17		66
67					91	67
68					92-93	68
69		22	17		94	69
70	38					70
71				18	95	71
72						72
73	39				96	73
74		23	18	19	97	74
75	40					75
76						76
77					98	77
78	41			20	99	78

First Grade: Weeks 22-28 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
79		24				79
80	42				100	80
81			19	21	101	81
82	43				102	82
83		25			103	83
84	44			22	104	84
85					105-106	85
86	45	26			107	86
87			20	23	108	87
88	46				109-110	88
89	47	27			111-113	89
90				24	114-115	90
91	48	28	21		116-117	91
92	49				118-121	92
93	50	29		25	122-123	93
94	51-52	30	22		124-125	94
95	53-54	31		26	126-128	95
96	55-56	32-33	23		129-130	96
97	57	34	24	27	131-133	97
98	58-59	35		28	134	98
99	>59	>35	>24	>28	>134	99

First Grade: Weeks 32-40

%ile	MC	NS	PV	ASC	PM-Tot	%ile
1	0-13	0-5	0-4	0-3	0-41	1
2	14	6	5	4	42	2
3	15-17	7	6	5	43-47	3
4	18-19	8	7	6	48-51	4
5	20	9		7	52-53	5
6	21-23		8		54-55	6
7	24	10	9	8	56-57	7
8					58-60	8
9	25		10	9	61	9
10	26	11			62-63	10
11					64-65	11
12	27		11	10	66	12
13		12			67	13
14	28				68	14
15			12	11		15
16	29	13			69	16
17					70	17
18					71	18
19	30		13	12	72	19
20		14			73	20
21					74	21
22	31				75	22
23		15				23
24					76	24
25	32	16	14	13	77	25
26						26
27			15		78	27
28				14	79	28
29					80	29
30						30
31		17			81	31
32			16		82	32
33	33			15		33
34					83	34
35					84	35
36	34				85	36
37		18				37
38					86	38
39	35		17	16	87	39

First Grade: Weeks 32-40 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
40						40
41					88	41
42						42
43	36				89	43
44		19			90	44
45			18	17	91	45
46						46
47	37				92	47
48					93	48
49						49
50		20			94	50
51	38			18	95	51
52					96	52
53	39		19			53
54					97	54
55		21			98	55
56				19	99	56
57	40					57
58						58
59					100	59
60			20			60
61	41	22		20	101	61
62					102	62
63					103	63
64	42					64
65				21	104	65
66					105	66
67		23	21			67
68	43				106	68
69					107	69
70				22	108	70
71	44					71
72		24			109	72
73					110	73
74	45		22	23		74
75		25			111	75
76	46				112	76
77					113	77
78	47				114	78

First Grade: Weeks 32-40 (cont.)

%ile	MC	NS	PV	ASC	PM-Tot	%ile
79				24	115	79
80		26			116	80
81	48		23		117	81
82				25	118	82
83	49				119	83
84		27		26	120	84
85	50				121-122	85
86				27	123	86
87	51	28			124-125	87
88	52		24	28	126-127	88
89	53				128-130	89
90		29		29	131-132	90
91	54			30	133	91
92	55	30			134-136	92
93	56-57	31	25	31	137-140	93
94	58-59	32		32	141-146	94
95	60-61	33-34	26	33	147-149	95
96	62	35	27	34-35	150-154	96
97	63	36-39	28	36	155-157	97
98		40	29	37	158-159	98
99	>63	>40	>29	>37	>159	99

Appendix D: ABC Interpretations

ABC Levels—Fall

Level	Week 4	Weeks 5-11
A	>40	>48
B	34-40	39-48
C	0-33	0-38

ABC Levels—Winter

Level	Weeks 19-21	Weeks 22-28
A	>66	>72
B	60-66	66-72
C	0-59	0-65

ABC Levels—Spring

Level	Weeks 32-40
A	>84
B	77-84
C	0-76