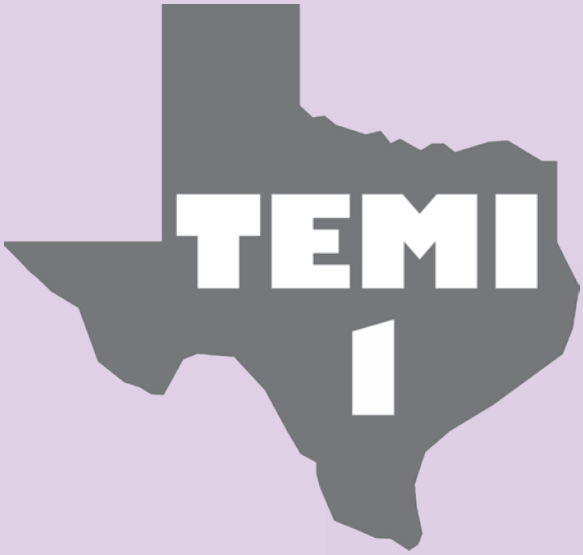

Texas Early Mathematics Inventories

Outcome

First Grade Teacher's Manual

Version 2.0

Acknowledgments

The Texas Early Mathematics Inventories – Progress Monitoring and Texas Early Mathematics Inventories – Outcome measures were developed with funding from the Texas Education Agency. The material was designed with the support and talent of many individuals whose hard work and ideas are represented in the measures and accompanying materials. The individuals who have contributed to its development and the norming and validation process include national experts, researchers, classroom teachers, principals, mathematics specialists, curriculum coordinators, special educators, and those who work for the Vaughn Gross Center at The University of Texas at Austin and the Texas Education Agency. The following schools and school districts have contributed to the development and standardization process:

Agua Dulce Elementary (Agua Dulce ISD); Northside Elementary (Angleton ISD); Short Elementary and Swift Elementary (Arlington ISD); Bel Air Elementary and South Athens Elementary (Athens ISD); Grace E. Hardeman Elementary (Birdville ISD); Bosqueville Elementary (Bosqueville ISD); Bovina Elementary (Bovina ISD); Colonial Heights Elementary and Oak Grove Elementary (Brownfield ISD); Seadrift School (Calhoun County ISD); Central Primary (Central ISD); Cisco Elementary (Cisco ISD); Clarksville Elementary (Clarksville ISD); Como-Pickton Elementary (Como-Pickton CISD); Comstock Elementary (Comstock ISD); Reaves Elementary and Armstrong Elementary (Conroe ISD); Martin Walker Elementary (Copperas Cove ISD); Bowie Elementary (Corsicana ISD); Ozona Primary (Crockett County CCSD); Culberson County-Allamoore ISD; Popham Elementary (Del Valle ISD); John J. Ciavarra Elementary (Devine ISD); Pecan Valley Elementary (East Central ISD); Flour Bluff Primary (Flour Bluff ISD); A. B. Duncan Elementary (Floydada ISD); Frost Elementary (Georgetown ISD); Acton Elementary (Granbury ISD); Grapeland Elementary (Grapeland ISD); Ann Whitney Elementary (Hamilton ISD); China Elementary (Hardin-Jefferson ISD); Howe Elementary (Howe ISD); Hubbard Elementary (Hubbard ISD); Hughes Springs Elementary (Hughes Springs ISD); Irion County Elementary (Irion County ISD); Jefferson Elementary (Jefferson ISD); Joaquin Elementary (Joaquin ISD); Monday Primary (Kaufman ISD); Harrel Elementary, Harvey Elementary, Kleberg Elementary, Lamar Elementary, and Perez Elementary (Kingsville ISD); Kopperl Elementary (Kopperl ISD); Lackland Elementary (Lackland ISD); South Elementary (Lamesa ISD); LaPorte Elementary (LaPorte ISD); Levelland ABC, Cactus Elementary, and South Elementary (Levelland ISD); Liberty-Eylau Primary (Liberty-Eylau ISD); Lovelady Elementary (Lovelady ISD); North Elementary (Lubbock-Cooper ISD); Garrett Primary/Dunbar Primary (Lufkin ISD); Marfa Elementary (Marfa ISD); Mason Elementary (Mason ISD); McDade Elementary (McDade ISD); McGregor Elementary (McGregor ISD); Mildred Elementary (Mildred ISD); Moran Elementary (Moran ISD); Carl Schurz Elementary (New Braunfels ISD); A. G. Hilliard Elementary, Lakewood Elementary, Shadydale Elementary, and Thurgood Marshall Elementary (North Forest ISD); North Hopkins Elementary (North Hopkins ISD); Olney Elementary (Olney ISD); Panther Creek Elementary (Panther Creek CISD); Aikin Elementary and T. G. Givens Elementary (Paris ISD); Delco Primary, Wieland Elementary, and Windermere Primary (Pflugerville ISD); Pittsburg Primary (Pittsburg ISD); Poteet Elementary (Poteet ISD); Folsom Elementary, Baker Elementary, and Rucker Elementary (Prosper ISD); Joe Martin Early Childhood Center/Cannon Elementary (Quinlan ISD); Robinson Primary (Robinson ISD); Ed Downs Elementary and La Paloma Elementary (San Benito CISD); Alarcon Elementary (San Elizario ISD); Shepherd Primary (Shepherd ISD); H.D. Hilley Elementary, Robert R. Rojas Elementary, and Paso Del Norte Elementary (Socorro ISD); Sonora Elementary (Sonora ISD); Central Elementary and Chamberlin Elementary (Stephenville ISD); Stockdale Elementary (Stockdale ISD); Tarkington Primary (Tarkington ISD); Tenaha

Elementary (Tenaha ISD); Valley View Elementary (Valley View ISD); Austin Elementary, Bose Ikard Elementary, Crockett Elementary, Curtis Elementary, and Juan Seguin Elementary (Weatherford ISD); Winfield School (Winfield ISD); Pasodale Elementary (Ysleta ISD).

In particular, we greatly appreciate the ideas, recommendations, and support from central office administrators, campus-based administrators, and teachers with whom we have worked over the past several years at Delco Primary, Wieland Elementary, and Windermere Primary (PISD), LaPorte Elementary (LISD), Martin Walker Elementary (CCISD), North Elementary (LCISD), and Popham Elementary (DVISD).

Vaughn Gross Center

Sylvia Linan-Thompson, *Director*

College of Education, The University of Texas at Austin

Manuel J. Justiz, *Dean*

Texas Education Agency

Robert Scott, *Commissioner of Education*
Kathy Clayton, *Director of IDEA Coordination*

Assessment Team

Brian R. Bryant, *Lead Author*
Diane P. Bryant, *Lead Author*
Deanna Bessner
Gina Cordero
Kate Harris
Sun A. Kim
Cathy Pool
Barbara Scholer-Bryant
You-Jin Seo
Minyi Shih
Rick Sperling

Design and Editing

Elana Wakeman, *Manager of Graphic Services*
Carlos Treviño, *Senior Graphic Designer*
Johnnie Blevins, *Web Designer*
Matthew Slater, *Publications Editor*
Annie So, *Systems Analyst*
Paul Resta, *Director of Learning Technology Center*
Rob Donald, *Media Coordinator*
Craig Smith, *Radio/Television/Film Specialist*

First Grade TEMI-O Teacher's Manual

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General Information

This manual provides information to teachers and others regarding the *Texas Early Mathematics Inventories – Outcome* (TEMI-O). In this manual, we provide (a) general information about the TEMI-O, (b) specific administration instructions (Form A), (c) scoring procedures, and (d) instructional decision-making.

Rationale for the TEMI-O

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 recent years, states and professional organization have identified key mathematics skills as being fundamental to student success. Specifically, the National Council of Teachers of Mathematics (NCTM, 2000) identified content standards that should be examined in children in the early grades. These standards include Number and Operations, Algebra, Geometry, Measurement, and Data Analysis and Probability. The Texas Essential Knowledge and Skills (TEKS) has areas similar to those offered by the NCTM: Number, Operation, and Quantitative Reasoning; Patterns, Relationships, and Algebraic Thinking; Geometry and Spatial Reasoning; Measurement; Probability and Statistics; and Underlying Processes and Mathematical tools. The TEMI-O targets these key skills.

The group testing format of the TEMI-O was selected with the classroom teacher in mind. In order to minimize the time lost to instruction, the TEMI-O uses a group testing format. Thus, within a 45-minute and 30-minute time span across 2 days, teachers can test for student struggles. The TEMI-O technical manual provides evidence that the TEMI-O is composed of reliable subscales that yield valid results. If the TEMI-O were to be administered individually to each student in a 20-student classroom, testing would take about 25 hours.

Description of the TEMI-O

Students in grade 1 are given all items of Mathematics Problem Solving on Day 2. The test examines broad-based abilities in the TEKS. It contains items that assess numeration, quantity, operations, reasoning and problem solving, probability and statistics, measurement, and so on. During testing, examiners read aloud the stimulus prompts and students mark their answer from among response choices. First-graders select from four response choices, the fourth choice always being "NS," which means that the answer is "Not Shown."

Some test items are somewhat long, so it is important that examiners speak in their normal voice and tone (not monotone), with proper pitch, intonation, stress, and word pronunciation. Move briskly from item to item, giving the appropriate amount of time for students to respond. Do not delay needlessly nor wait for all students to mark an answer (more on this later), and try to ensure that students are on the right page and answering the correct item. Such responsibilities are somewhat similar to those with the Texas Assessment of Knowledge and Skills (TAKS) or practice tests for the TAKS.

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

Mathematics Problem Solving

- **What we measure:** Mathematics Problem Solving assesses a child's ability to listen and pay attention as items are read aloud, access their mathematics knowledge, examine the stimulus prompt, survey the response choices, and connect two dots to mark the answer. Students who do well on Mathematics Problem Solving exhibit skills across the TEKS. Students who do poorly may have difficulty with all of the TEKS or may exhibit strengths and struggles across abilities.

- **How we measure:** There are three practice items that students solve, one at a time. The first item is designed to show students how to mark their answer sheet by connecting two dots. Remaining practice items are designed to familiarize students with the format of the test. Teachers read aloud each test item as students follow along in their test booklets. Teachers proceed briskly through the test, allowing only about 10 seconds for the students to respond after the item has been read to them. Students are given more time for some items on the test; these items are marked on the instructions. Pacing is important. Do not wait for all students to mark their booklets. Proceed in a brisk fashion. Typically, students either know the answer or they don't. Allowing long periods of time to pass between items frustrates the stronger students and does little to help struggling students.

- **What we ask students to do:** Students have to listen carefully as the teacher reads the items because the items are not repeated in their entirety. Students also have to keep their place in the booklets to ensure they mark the appropriate item. Students view stimulus items and response choices and must be able to connect two dots to mark their answer. Students also must be able to turn pages with some degree of facility and make sure they are on the right page.

Computation

- **What we measure:** Computation assess arithmetic calculation and involves several skills: recognizing numerals and operational signs (plus, minus); computing (addition, subtraction); and the ability to manage a pencil in order to circle the answer, turn pages of a booklet, and listen to and follow directions.

- **How we measure:** Students look at arithmetic problems on a page and then compute and circle the answer to each problem.

- **What we ask students to do:** We ask students to pay attention, listen carefully, and do their best to compute and circle the answer to each problem.

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; students will be told to *cross out* wrong answers instead of erasing them. Erasing takes too much time for some students.
- 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, examiners can look at the instructions in the manual's appendix on how to make dividers.
- Markers, for students to keep their place during testing, are optional.
- Scratch paper is passed out for calculating.

As part of their test administration packet, examiners should be supplied the following:

- Overhead projector and transparencies for practice items.
- A dry-erase pen for marking the practice items.
- Student test booklets.
- Administration and Training Manual with accompanying CD-ROM.
- Markers.
- Dividers.
- Pencils for marking the student booklets.
- Scratch paper for calculating.

General Comments That Pertain to Testing

- Administer all Mathematics Problem Solving items on the first day of TEMI-O testing and Computation items on the second day of TEMI-O testing.

- Practice items are designed to show students what the test involves and how to mark their answers.

- Pacing, pacing, pacing—testing should proceed as a brisk pace. It is important not to be too deliberate when going over the Demonstrations and Practice items. For most items, allow 10 seconds after the instructions have been read for students to mark their answer. Items that require more time (25 to 30 seconds) are marked with an asterisk on the instructions. *Do not* wait until all students mark their answers before going on to the next item. If the students can respond correctly to the item, they will usually do so within the time allotted. Students who do not initially know the answer will be unlikely to answer the item correctly if given more time, and the delay between items will frustrate the more successful students.

- Some students do not do well in group testing situations. Their inattention, behavior, impulsivity, and so forth can invalidate their test results, and their behavior 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 large-group testing.

- If students show signs of frustration or refuse to proceed, collect their materials and test them later in small groups or individually, or do not test them.

- Examiners need to have all students' attention before starting the test.

- 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, that student's results will not be a valid indicator of abilities.

- Examiners should walk around to make sure that students are on the right items and page.

Specific Administration Instructions

Mathematics Problem Solving (Form A)

Four test items appear on a page. Pictures appear at the top of each page and are used to keep students on the right page. A picture also accompanies each row of items. On the left page, a picture of a lollipop marks the first row, a lion designates the second row, a star appears on the third row, and a tree begins the fourth row. On the right page, a picture of a shoe marks the first row, a hat designates the second row, a cake appears on the third row, and a monkey begins the fourth row. The stimulus box is next to the pictures of the lollipop, lion, and so forth and is designated by a bold outline. It may contain an ear (directing children to listen carefully) or a stimulus picture.

Students should be given about 10 seconds after instructions are given to complete an item. For items marked with an asterisk (e.g., *****9.), students will require more time (about 25 to 30 seconds).

The instructions should be read verbatim. Words appearing in *italics* are not read aloud, words appearing in regular type are read aloud to the students, and words appearing in **boldface type** are repeated aloud.

Pass out the student booklets, scratch paper, and markers (if used). Instruct the students to write their names as neatly as they can. Examiners should check the protocols after they have been collected.

Direct students to place their marker under each row as instructions are read. If you elect *not* to use markers, say, “Place your finger on the row …” instead of, “Place your marker under the row…”

Practice Items

Page: 3 Cow 

P-1 (first practice item)

- *Show the Mathematics Problem Solving overhead transparency.*
- Today we are going to work with math. I want you to listen to me carefully and do your best. I do not expect you to be able to know all of the answers; just do the best you can.
- As you work, you may want to use the sheet of paper to help find the answer.
- Turn to the page where you see a cow at the top.
- Look at the boxes on the page.
- Put your finger on the lollipop.
- The boxes you see are in a row. Place your marker under the row with the lollipop.
- In the first box you see an ear, which means that you have to listen very carefully. Find the box with the two dots in it.
- Draw a line that connects the dots. Draw a line from one dot to the other dot.
- *Mark the answer on the overhead transparency.*
- *Pause and check students' work.*
- Good. This is how you mark your answers.

P-2 (second practice item)

- Move your marker under the row where you see a lion.
- Look at the last box in the row. It shows "NS," which means the answer is not shown.
- You connect the dots over the NS if you don't see the answer to a problem. Look at the first box.
- Now look at the other boxes. Is there a picture that looks just like the one in the first box?
- *Pause.*
- No, so you mark the box with the NS because you didn't see the answer. Connect the dots in the box with the NS.
- *Mark the answer on the overhead transparency.*

P-3 (third practice item)

- Now move your marker below the row where you see a star.
- In the first box you see an ear. This means that you have to listen very carefully.
- Now look at the other boxes. **Mark the box that shows a number.** *(Reminder: Bolded text means the sentence is to be repeated.)*
- Mark the box with the NS if you don't see the answer.
- *Check to see that the students marked an answer. Then mark the answer on the overhead transparency.*
- *Turn off the overhead projector.*
- As we continue, remember to mark only one answer for each item. And you mark your answer by connecting two dots inside a box.

Test Items

Page 4: Fish 

- Turn to the page where you see a fish at the top.
- Move your marker under the row with the lollipop.
- Look at the ear in the first box. This means that you need to listen carefully.
- Now look at the other boxes. **Mark the box that shows the ball that is smaller than the others.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the lion.
- Look at the pencils in the first box.
- Now look at the other boxes. **Mark the box that shows how many pencils there are in the first box.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the star.
- Look at the triangle and the square in the first box.
- Now look at the other boxes. **Mark the box that shows a picture with the triangle on top of the square.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the tree.
- Look at the ear in the first box. This means that you need to listen carefully to this story.
- Timothy's uncle, Joe, gave Timothy a present for his birthday. He put his present below the table in his living room.
- Look at the pictures in the other boxes. **Mark the box that shows the present is below the table.**
- Mark the box with the NS if you don't see the answer.

Page: 5 Pony 

- Look at the page where you see a pony at the top.
- Move your marker under the row with the shoe.
- Look at the temperature on the thermometer in the first box.
- Now look at the other boxes. **Mark the box that shows a temperature that is hotter than what is shown on the thermometer.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the hat.
- Look at the apple in the first box and listen carefully to this story. Michael had an apple. He wanted to give half of the apple to his brother, so he cut his apple into halves. Now look at the other boxes. **Mark the box that shows the apple cut into halves.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the cake.
- Look at the ear in the first box. This means that you need to listen carefully.
- **Mark the box with a shape that has four sides and four corners.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the monkey.
- Look at the ear in the first box. This means that you need to listen carefully.
- Jacques wants to grow a flower for his garden.
- Now look at the pictures in the other boxes that show how a flower grows. **Mark the box that shows what would happen last.**
- Mark the box with the NS if you don't see the answer.

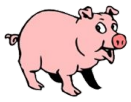
Page: 6 Bird 

- Move your marker under the row with the lollipop.
- Look at the number in the first box.
- Now look at the marbles in the other boxes. **Mark the box that shows the number of marbles less than the number in the first box.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the lion.
- Look at the stickers in the first box and listen to this story.
- Gina was given three stickers for her good behavior during reading. She got two more stickers during mathematics class. She wants to know how many stickers she got in all. She was given three stickers, then two more.
- Now look at the number sentences in the other boxes. **Mark the box that has the number sentence to answer how many stickers Gina had in all.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the star.
- Look at the ear in the first box. This means that you need to listen carefully.
- Look at the other boxes. **Mark the box that shows the second circle filled in.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the tree.
- Look at the pattern in the first box.
- Now look at the other boxes. **Mark the box that shows what should go next in the sequence.**
- Mark the box with the NS if you don't see the answer.

Page: 7 Pig 

- Look at the page where you see a pig at the top.
- Move your marker under the row with the shoe.
- Look at the lamp in the first box. Rolando wants to measure the height of the lamp.
- Now look at the other boxes. **Mark the box that shows the best tool to measure the height of the lamp.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the hat.
- Look at the candles in the first box and listen carefully to this joining story. Marcus had two candles. His sister gave him three more candles. Now look at the other boxes.
- **Mark the box with the addition sentence to show the joining story.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the cake.
- Look at the number line in the first box.
- Now look at the numbers in the other boxes. **Mark the box that shows the number that comes between 24 and 26.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the monkey.
- Look at the ear in the first box. This means that you need to listen carefully.
- Now look at the other boxes. Marcus was counting by fives. **He said, "5, 10, 15, 20 …" Mark the box that shows what Marcus would say next.**
- Mark the box with the NS if you don't see the answer.

Page: 8 Train Engine

- Move your marker under the row with the lollipop.
- Look at the pattern in the first box.
- Now look at the other boxes. **Mark the box that shows what comes next.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the lion.
- Look at the first box. It shows that Lucy has five cats. She gave three of them away to her friends.
- Now look at the other boxes. **Mark the box with the number sentence that shows how many cats Lucy has left.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the star.
- In the first box, look at what Belinda packed in her backpack: three pencils, two books, and a ruler.
- Now look at the items in other boxes. **Mark the box that shows the item that is impossible to find in her backpack at school.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the tree.
- Look at the children in the first box.
- Now look at the other boxes. **Mark the box with the tool you would use to show how cold it is where the children are playing.**
- Mark the box with the NS if you don't see the answer.

<Optional short stretch break>

Page: 9 Bug 

- Look at the page where you see a bug at the top.
- Move your marker under the row with the shoe.
- Look at the drawing in the first box.
- Now look at the other boxes. **Mark the box that shows the drawing that is the same size and shape as the one in the first box.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the hat.
- Look at the gallon of milk in the first box.
- Now look at the other boxes, which say, "lighter than one pound," "about one pound," and "heavier than one pound." **Mark the box that shows how much a gallon of milk weighs: lighter than one pound, about one pound, or heavier than one pound.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the cake.
- Look at the ear in the first box. This means that you need to listen carefully.
- Jennifer has five beads.
- Now look at the beads in the other boxes. **Mark the box that shows three out of five beads are black.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the monkey.
- Look at the coins in the first box.
- Now look at the other boxes. **Mark the box that shows the amount of money in the first box.**
- Mark the box with the NS if you don't see the answer.

Page: 10 House 

- Turn to the page where you see a house at the top.
- Move your marker under the row with the lollipop.
- Look at the addition problem in the first box.
- Now look at the numbers in the other boxes. **Mark the box that shows the answer to the addition problem in the first box.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the lion.
- Look at the addition problem in the first box.
- Now look at the other boxes. **Mark the box with the snap cubes that solve the problem.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the star.
- Look at the ear in the first box. This means that you need to listen carefully to this story.
- Students in Mr. Lee's class had to work in groups and choose what they were going to do during the weekend. They were supposed to graph their choices. In Jose's group, three students chose to read, one student chose to ride a bike, and two students chose to play with their pet cat. **Mark the box with the graph that shows that three students chose to read, one student chose to ride a bike, and two students chose play with their pet cat.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the tree.
- Look at the counters in the first box.
- Now look at the other boxes. **Mark the box that shows how many groups of tens and ones there are in the first box.**
- Mark the box with the NS if you don't see the answer.

Page: 11 Policeman 

- Look at the page where you see a policeman at the top.
- Move your marker under the row with the shoe.
- Look at the ear in the first box. This means that you need to listen carefully.
- It usually takes 1 hour for Claire to complete her homework, 30 minutes to have dinner, and 50 minutes to clean her room.
- Now look at the other boxes. **Mark the picture that shows Claire's work that takes the longest time to complete.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the hat.
- Look at the ear in the first box. This means that you need to listen carefully.
- James wants to shade in one of two equal parts of a shape.
- Now look at the shapes in the other boxes. **Mark the picture that shows one out of two equal parts shaded.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the cake.
- Look at the ear in the first box. This means that you need to listen carefully.
- Now look at the other boxes. **Mark the box that shows the odd number of cookies.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the monkey.
- Look at the diagram in the first box and listen carefully. Ms. McGhee asked her after-school students whether they wanted to play baseball or go swimming.
- Look at the numbers in the other boxes. **Mark the box that shows how many students wanted to do both.**
- Mark the box with the NS if you don't see the answer.

Page: 12 Car 

- Turn to the page where you see a car at the top.
- Move your marker under the row with the lollipop.
- Look at the ear in the first box. This means that you need to listen carefully to this story.
- Cathy had 10 dollars in her purse. She took 4 dollars away to leave 6 dollars in her purse.
- Now look at the number sentences in other boxes. **Mark the box that has the number sentence showing what happened to Cathy's money.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the lion.
- Look at the chart with tally marks in the first box. The chart shows how many students in Mr. Smith's class like different kinds of fruit. At the top, you see an apple; in the middle, you see an orange; and at the bottom, you see a banana.
- Now look at the other boxes. **Mark the box that shows how many students like bananas.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the star.
- Look at the ear in the first box. This means that you need to listen carefully to this story.
- Angela had two stickers. Mina had six stickers. Angela got three stickers from Mina. **Mark the box that shows the number sentence that answers how many stickers Angela had in all.**
  Mark the box with the NS if you don't see the answer.

-
- Look at the line and the snap cube in the first box. Rachel wants to measure her line using snap cubes.
- Now look at the other boxes. **Mark the box that shows how many snap cubes Rachel needs to measure the length of the line.**
- Mark the box with the NS if you don't see the answer.

Page: 13 Frog 

- Look at the page where you see a frog at the top.
- Move your marker under the row with the shoe.
- Look at the ear in the first box. This means that you need to listen carefully.
- Ben is watching the clock so he can leave at 10:30.
- Now look at the other boxes. **Mark the box with the clock that shows 10:30.**
- Mark the box with the NS if you don't see the answer.

- Move your marker under the row with the hat.
- Look at the number sentence in the first box.
- Now look at the number sentences in the other boxes. **Mark the box that shows the number sentence that is in the same fact family as the one in the first box.**
- Mark the box with the NS if you don't see the answer.

After item 38 has been completed, have students place their scratch paper on the next page (the page with the bear on the left page and the bike on the right page) and close their booklets. Collect the booklets and markers.

Computation

Direct the students to open their booklets to where they left off at the end of previous testing. The instructions are provided below. Here, what is seen in **boldface type** is read aloud to the students. Words appearing in *italics* are not read aloud.

Demonstrations

- *Show the Computation Demonstrations overhead transparency.*
- **Today we are going to do some math problems. You are to look at each problem and pay attention to the sign that shows you how to solve the problem.**
- **You will see four possible answers printed below each problem. If you see the answer, circle it. If the answer is not there, circle the NS, which means, "not shown"; the answer is not shown. You should circle only one answer.**
- **Let's look at some sample items. The first problem shows 1 plus 1. Below the problem are five possible answers: 2, 3, 1, 11, and NS, which means the right answer is not shown. What is 1 plus 1? 1 plus 1 equals what number?** *Pause and select a student to answer.*
- **1 plus 1 equals 2, so circle the 2 below the problem.** *Pause and demonstrate.*
- **Now look at the second problem. It shows 1 plus 2. What is 1 plus 2? 1 plus 2 equals what number?** *Pause and select a student to answer.*
- **1 plus 2 equals 3, so circle the 3 below the problem.** *Pause and demonstrate.*
- **Now look at the last problem. It shows 3 minus 1. What is 3 minus 1? 3 minus 1 equals what number?** *Pause and select a student to answer.*
- **3 minus 1 equals 2, but there is no 2 for an answer, so what should you circle?** *Pause and select a student to answer.* **Yes, you should circle the NS because the correct answer, 2, is not shown.** *Pause and demonstrate.*
- *Turn off the overhead projector.*

Practice

- **Now look at the page with the bike at the top. Here are some practice items. Use the scratch paper to help solve the problems, or you can mark in your booklet. You have 30 seconds to do as many practice items as you can. Ready? Begin.** *Start the timer.*
- *As the children are working, circulate and say:* **I like the way you are working hard and doing your own work. Remember to circle only one answer.** *After 30 seconds, say:* **Stop.** *Then, reset the timer for 20 minutes.*

Test Items

- **Now turn to the page with the chair at the top.** *Make sure all the children are on the right page.*
- **You are to look at each math problem and pay attention to the sign that shows you how to solve the problem. If you see the answer, circle it. If the answer is *not* shown, circle NS. You will have 20 minutes to do as many problems as you can.**
- **When you finish, raise your hand. I will check to make sure you didn't skip any items or pages. Do your best work. Ready? Begin.** *Start the timer.*
- *As the children are working, circulate and say:* **I like the way you are working hard and doing your own work. Remember to circle only one answer. If you get to the end of a page that says, "Go," turn the page and keep going.**
- *As you circulate, if you find students who have given up or clearly have reached their last item, remind them that they can draw a picture. Make sure they are not skipping pages.*
- *If all students finish ahead of time, say:* **Stop.** *Congratulate them on working so hard and collect the sheets.*
- *At the end of 20 minutes, check to see whether everyone is finished. If only a few students are still working, finish the testing later for those students. Otherwise, continue testing until all the children have completed all items.*
- *When children raise their hands to show completion, check their work to ensure that they answered all items and did not accidentally skip a page. As students finish, direct them to read a book quietly at their desk or to do other assigned seatwork.*

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.
- 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:
    - Collect all students' protocols.
    - Make sure that students' names are written on their protocols. Examiners should check the protocols after they have been collected.

Scoring Procedures

This section provides information about scoring the TEMI-O at the grade 1 level. We (a) discuss scorer qualifications, (b) present the scoring option, (c) present general scoring procedures, and (d) provide specific scoring instructions and examples.

Scorer Qualifications

Scoring the TEMI-O is not particularly difficult, but it should be done only by qualified individuals. 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 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-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 should the paraeducator be allowed to score the tests independently.

Scoring Option

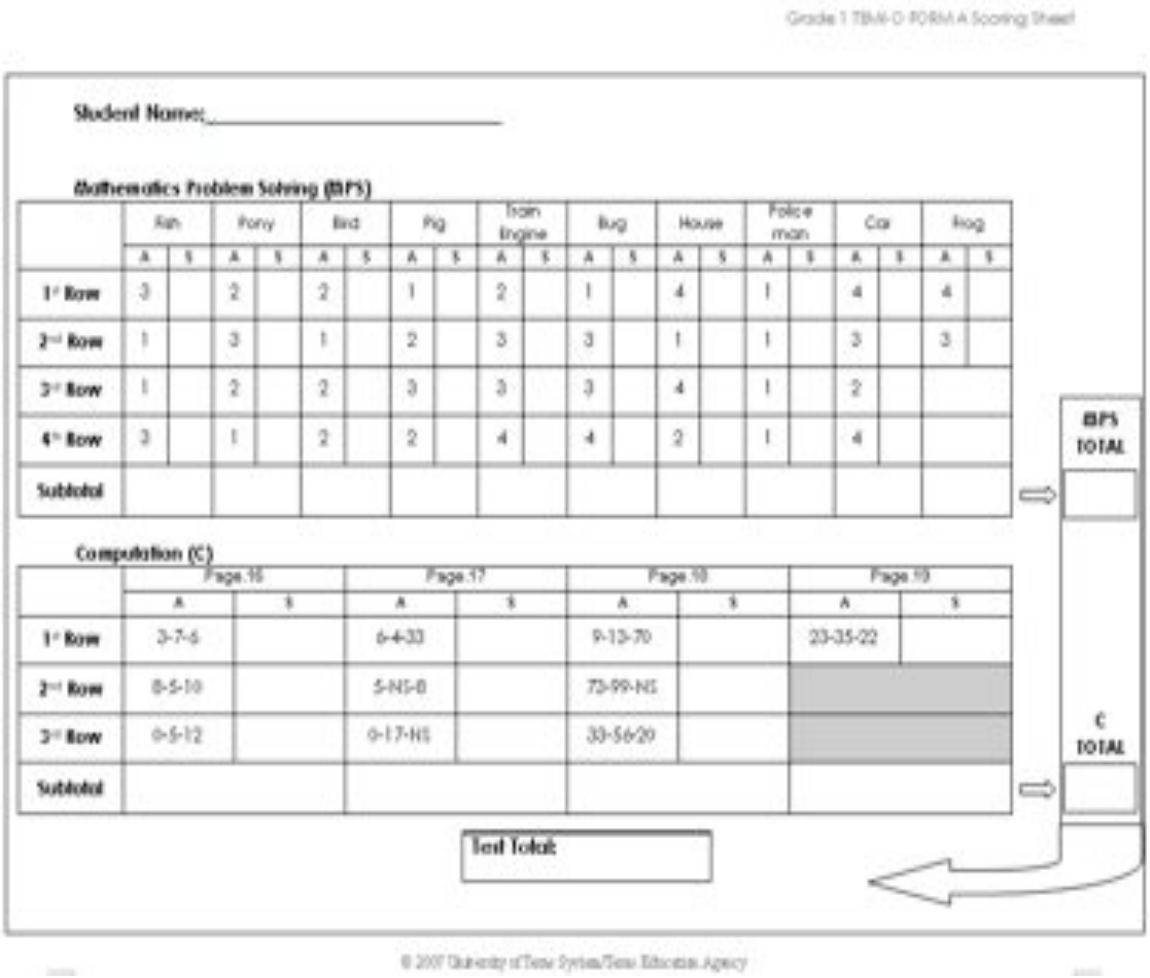
There is only one option for scoring the TEMI-O.

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-O.	• Score all items for the TEMI-O. • Sum and record the total number of points.

General Scoring Procedures

- To score the TEMI-O test protocols for grade 1, you need to have the TEMI-O Scoring Sheets (see Figure 1). You can download scoring sheets from the Web site, www.earlymathintervention.org/assessment.

- For the TEMI-O Mathematics Problem Solving (MPS), correct answers on the Scoring Sheet reflect the box number of the response choices (see Figure 2).



Student Name:_____

Mathematics Problem Solving (MPS)

	Rain		Pony		Bird		Pig		Train Engine		Bug		House		Police man		Car		Frog	
	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S
1st Row	3		2		2		1		2		1		4		1		4		4	
2nd Row	1		3		1		2		3		3		1		1		3		3	
3rd Row	1		2		2		3		3		3		4		1		2			
4th Row	3		1		2		2		4		4		2		1		4			
Subtotal																				

MPS TOTAL

Computation (C)

	Page 16		Page 17		Page 18		Page 19	
	A	S	A	S	A	S	A	S
1st Row	3-7-6		6-4-33		9-13-70		23-35-22	
2nd Row	8-5-10		5-NS-8		73-99-NS			
3rd Row	0-5-12		9-17-NS		33-56-20			
Subtotal								

C TOTAL

Test Total:

Figure 1. Grade 1/TEMI-O Scoring Sheet

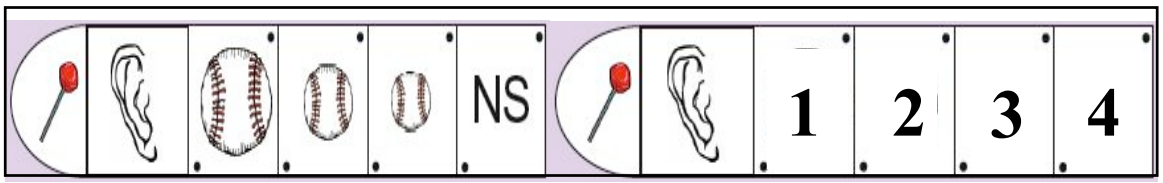


Figure 2. Grade 1/TEMI-O MPS Response Choice and Corresponding Box Number for Answer

- The TEMI-O 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 number of correct answers for each row is recorded in the *S* (*Score*) box.
- All *S* box scores for each page must be summed and recorded in the *SUBTOTAL* box.
- For grade 1, all subtotal scores for each page are summed and recorded in the *SUBTEST TOTAL* (e.g., *MPS TOTAL*) box.
- For grade 1, all subtest total scores are summed and recorded in the *TEST TOTAL* box.
- Physical setup for scoring: The TEMI-O Student Booklet is placed on the table, and the matching Scoring Sheet is placed next to the page being scored (see Figures 3 and 4).

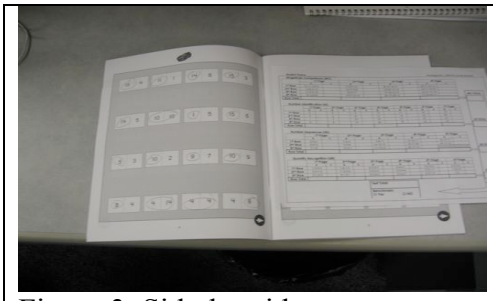


Figure 3. Side-by-side configuration—TEMI-O test protocol on left, Scoring Sheet on right.

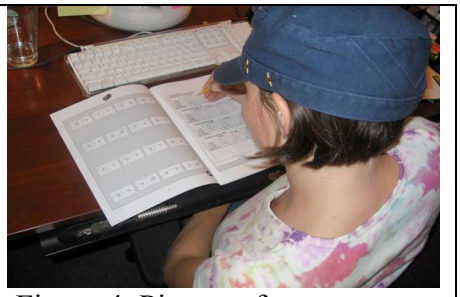


Figure 4. Picture of person scoring a TEMI-O protocol.

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

TEMI-O Specific Scoring Instructions and Examples

Subtest 1: Mathematics Problem Solving (MPS)

- The student is told to listen to the problems and find the answers by connecting the dots.
- To score: See Figures 5 and 6.

On the Protocol	On the Scoring Sheet
• Place a 1 for each correct answer on the right of the row on the protocol. • Place a 0 for each incorrect answer on the right of the row on the protocol.	• Find the name of the picture that sits atop the page on the *A (Answer)* and *S (Score*) columns of the Scoring Sheet.
	• Slash incorrect answers in the *A* box of the Scoring Sheet.
	• Record the scores 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 *MPS Total* box.

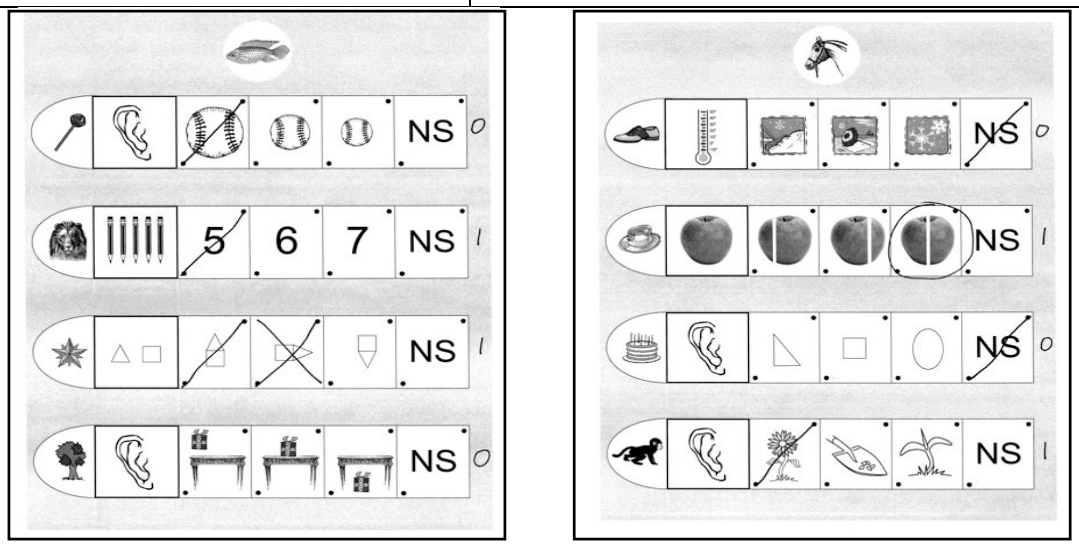


Figure 5. Grade 1/TEMI-O MPS (Pages 4 and 5) Example

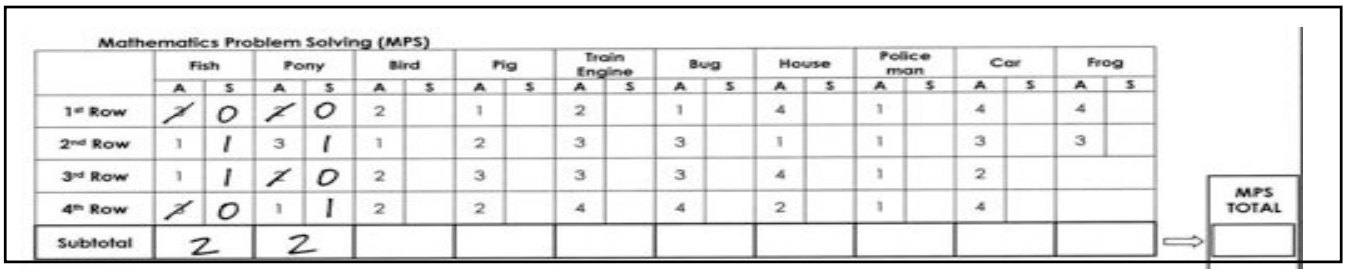


Figure 6. Grade 1/Cutout of TEMI-O MPS Scoring Sheet Example

Q& A FOR SCORING

Q: What if students circle their answers instead of connecting the dots?
A: Score their answers (see example).

Subtest 2: Computation (C)

- The student is told to do addition and subtraction problems.
- To score: See Figures 7 and 8.

	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.
• Sum the number of correct answers for each row and write it 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.

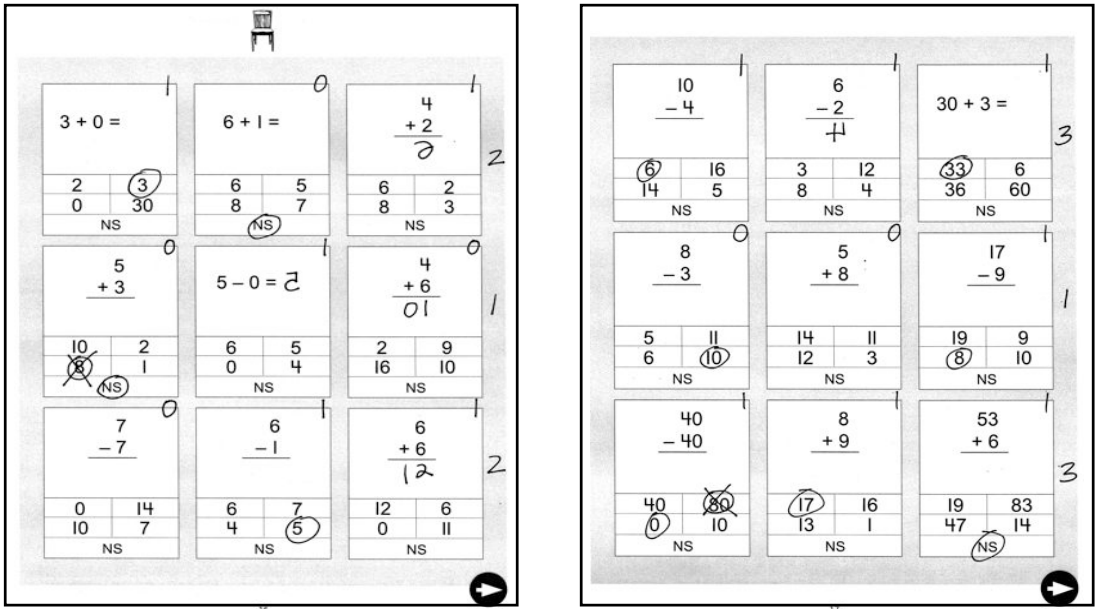
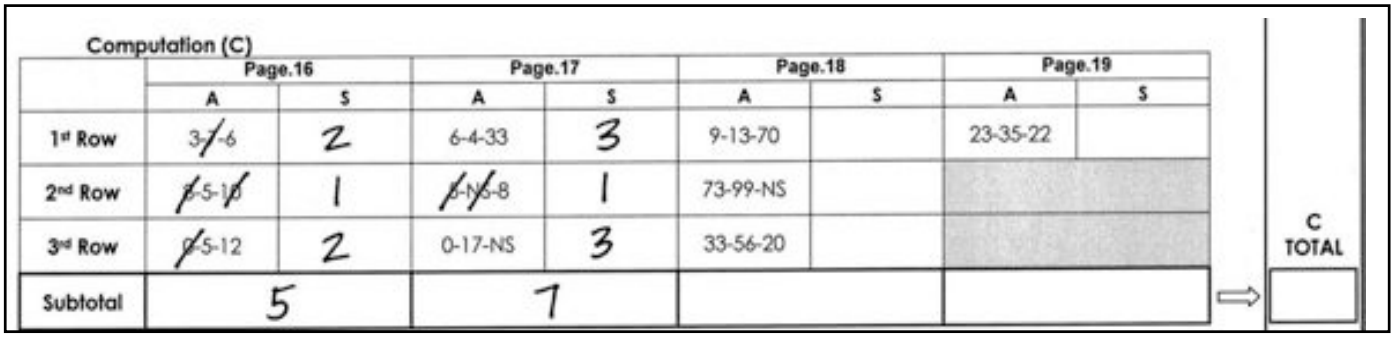


Figure 7. Grade 1/TEMI-O C (Pages 4 and 5) Example



Computation (C)	Page.16		Page.17		Page.18		Page.19		
	A	S	A	S	A	S	A	S	
1st Row	3-~~7~~-6	2	6-4-33	3	9-13-70		23-35-22		
2nd Row	~~8~~-5-~~10~~	1	~~8~~-N~~S~~-8	1	73-99-NS				
3rd Row	~~0~~-5-12	2	0-17-NS	3	33-56-20				C TOTAL
Subtotal	5		7						

Figure 8. Grade 1/Cutout of TEMI-O C Scoring Sheet Example

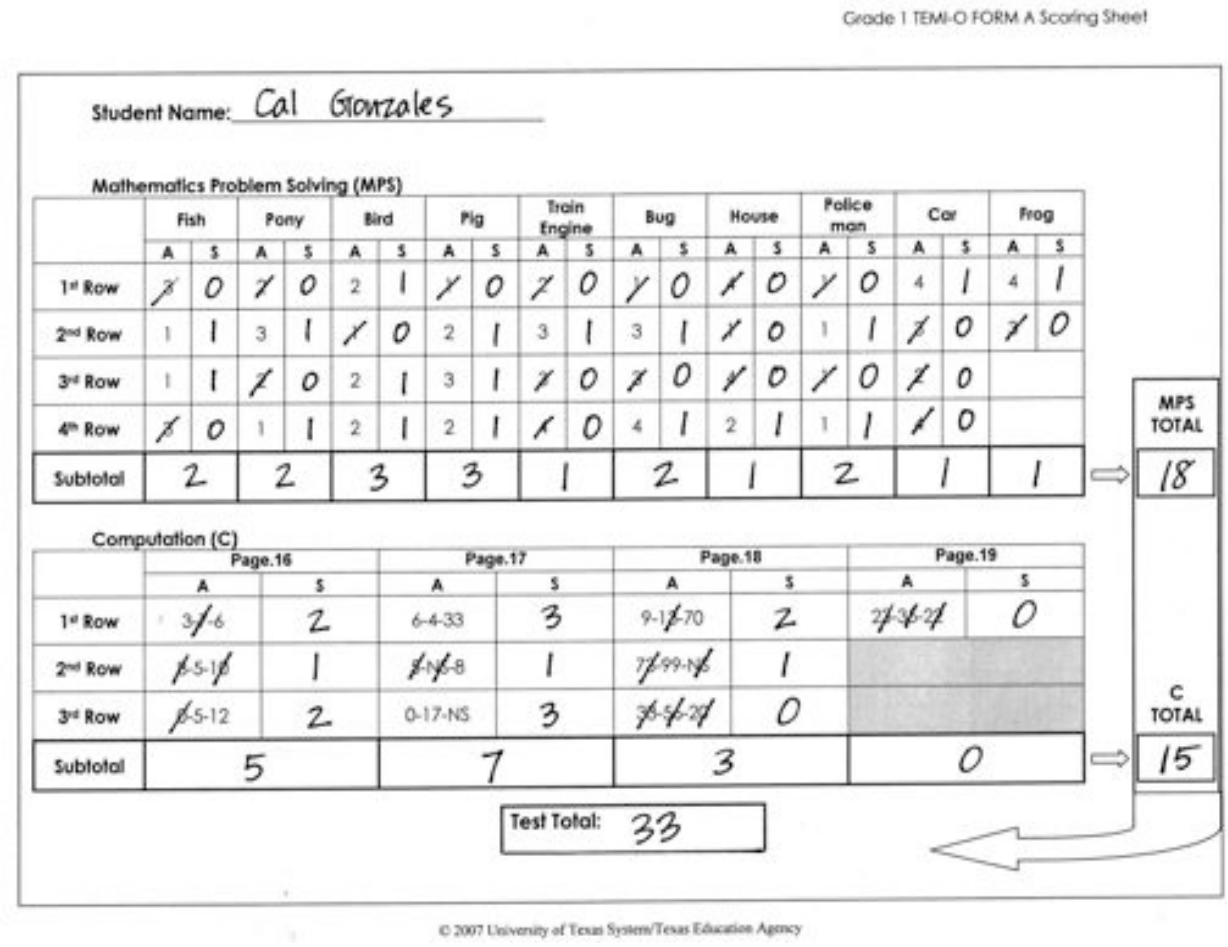
Q&A FOR SCORING

Q1: What if students write their answers instead of circling the answers?
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 71 instead of 17 or 01 instead of 10 as their answer?
A3: Score the item as incorrect (see example). There is no way of knowing what the student was thinking, so score these reversals as incorrect.

Once scoring for the TEMI-O is completed, sum the MPS scores (2 + 2 + etc.) and place the total (18) in the *MPS Total* box (see Figure 9). Do the same for the Computation scores. Then sum the two scores and place the total in the *Test Total* box (18 + 15 = 33).


Grade 1 TEMI-O FORM A Scoring Sheet

Student Name: Cal Gonzales

Mathematics Problem Solving (MPS)

	Fish		Pony		Bird		Pig		Train Engine		Bug		House		Police man		Car		Frog	
	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S	A	S
1st Row	✗	0	✗	0	2	1	✗	0	✗	0	✗	0	✗	0	✗	0	4	1	4	1
2nd Row	1	1	3	1	✗	0	2	1	3	1	3	1	✗	0	1	1	✗	0	✗	0
3rd Row	1	1	✗	0	2	1	3	1	✗	0	✗	0	✗	0	✗	0	✗	0		
4th Row	✗	0	1	1	2	1	2	1	✗	0	4	1	2	1	1	1	✗	0		
Subtotal	2		2		3		3		1		2		1		2		1		1	

MPS TOTAL: 18

Computation (C)

	Page.16		Page.17		Page.18		Page.19	
	A	S	A	S	A	S	A	S
1st Row	3-✗-6	2	6-4-33	3	9-1-✗-70	2	✗-✗-✗	0
2nd Row	✗-5-1✗	1	✗-✗-8	1	7-✗-99-✗	1		
3rd Row	✗-5-12	2	0-17-NS	3	✗-✗-✗	0		
Subtotal	5		7		3		0	

C TOTAL: 15

Test Total: 33

Figure 9. Grade 1/TEMI-O Scoring Sheet Example

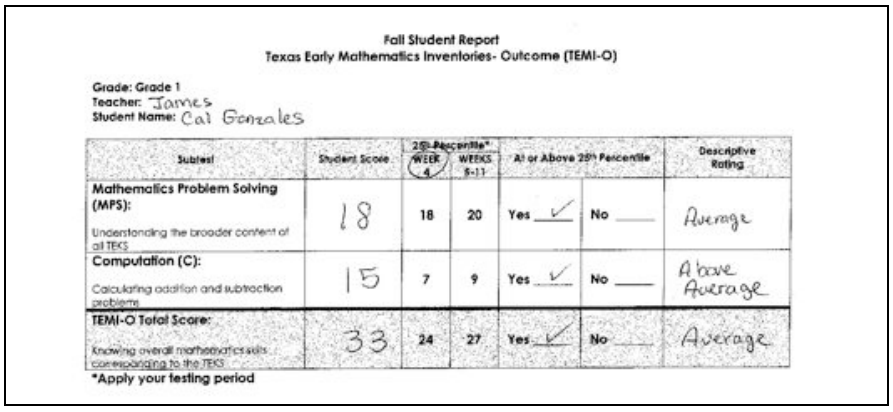
Instructional Decision-making

Once the test is scored, it is time to assemble the test 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 TEMI-O Handwritten Class Report, (c) conduct a TEMI-O Item Analysis, and (d) interpret the TEMI-O results.

Completing the Student Report

When the scoring is done, the Student Report can be created for each student to analyze his or her performance by comparing it with the 25th percentile score. To complete the Student Report sheet (see Figure 10):

- Write the name of teacher and student.
- Write each student's score from TEMI-O Mathematics Problem Solving in the *Student Score* box.
- Compare the student's subtest score to the numbers in the adjacent *25th Percentile* box.
- 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 (Mathematics Problem Solving or Computation) and Norms column (in this case, Weeks 1–4) and find the student's score. For example, for Mathematics Problem Solving, look to the first column and note that the student's score, 18 (from 18–24), corresponds to a Descriptive Rating of Average, which is written on the Student Report. Apply the same procedure for Computation and TEMI-O Total Score (see Figure 11).



Fall Student Report
Texas Early Mathematics Inventories- Outcome (TEMI-O)

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

Subtest	Student Score	25th Percentile* WEEK 4	25th Percentile* WEEKS 5-11	At or Above 25th Percentile		Descriptive Rating
Mathematics Problem Solving (MPS): Understanding the broader content of all TEKS	18	18	20	Yes ✓	No ____	Average
Computation (C): Calculating addition and subtraction problems	15	7	9	Yes ✓	No ____	Above Average
TEMI-O Total Score: Knowing overall mathematics skills corresponding to the TEKS	33	24	27	Yes ✓	No ____	Average

*Apply your testing period

Figure 10. Grade 1/TEMI-O Student Report Sheet Example

Descriptive Ratings For Mathematics Problem Solving—Fall

Rating	WEEKS 1-4	WEEKS 5-11
Very Poor	0–8	0–9
Poor	9–12	10–15
Below Average	13–17	16–19
Average	18–24	20–25
Above Average	25–27	26–28
Superior	28–30	29-31
Very Superior	> 30	> 31

Figure 11. Grade 1/TEMI-O MPS Descriptive Rating from Appendix B

Completing the Handwritten Class Report

When the Student Reports are completed, a Handwritten Class Report can be created to summarize performance of all students in a class (see Figure 12). 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
Outcome (TEMI-O)

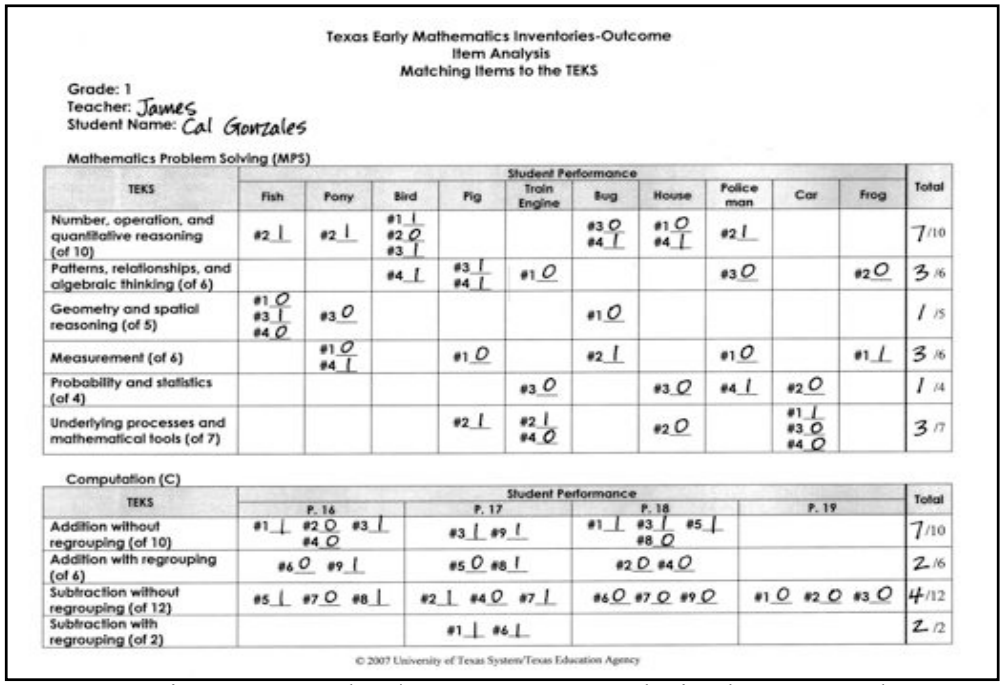
Grade: 1
Teacher: James

	Student Name	Student Score	At or Above 25th Percentile	
1	John Doe	33	Yes ✓	No
2	Mark Franklin	31	Yes ✓	No
3	Alex Garcia	29	Yes ✓	No
4	Julio Martinez	22	Yes	No ✓
5	Erica McCall	25	Yes ✓	No
6	Kim Rodriguez	14	Yes	No ✓
7	Evan Taylor	34	Yes ✓	No
8	Jose Sanchez	32	Yes ✓	No
9	Susan Smith	37	Yes ✓	No
10	Jason Williams	34	Yes ✓	No
11	Cal Gonzales	33	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
21			Yes	No

Figure 12. Grade 1/Handwritten Classroom Report Sheet Example

Conducting a TEMI-O Item Analysis

When the scoring is completed, students' performance on specific mathematics knowledge and skills related to the TEKS can be analyzed using TEMI-O Item Analysis Sheet (see Figure 13).



Texas Early Mathematics Inventories-Outcome
Item Analysis
Matching Items to the TEKS

Grade: 1
Teacher: James
Student Name: Cal Gonzales

Mathematics Problem Solving (MPS)

TEKS	Student Performance										Total
	Fish	Pony	Bird	Pig	Train Engine	Bug	House	Police man	Car	Frog	
Number, operation, and quantitative reasoning (of 10)	#2 1	#2 1	#1 1 #2 0 #3 1			#3 0 #4 1	#1 0 #4 1	#2 1			7/10
Patterns, relationships, and algebraic thinking (of 6)			#4 1	#3 1 #4 1	#1 0			#3 0		#2 0	3/6
Geometry and spatial reasoning (of 5)	#1 0 #3 1 #4 0	#3 0				#1 0					1/5
Measurement (of 6)		#1 0 #4 1		#1 0		#2 1		#1 0		#1 1	3/6
Probability and statistics (of 4)					#3 0		#3 0	#4 1	#2 0		1/4
Underlying processes and mathematical tools (of 7)				#2 1	#2 1 #4 0		#2 0		#1 1 #3 0 #4 0		3/7

Computation (C)

TEKS	Student Performance				Total
	P. 16	P. 17	P. 18	P. 19	
Addition without regrouping (of 10)	#1 1 #2 0 #3 1 #4 0	#3 1 #9 1	#1 1 #3 1 #5 1 #8 0		7/10
Addition with regrouping (of 6)	#6 0 #9 1	#5 0 #8 1	#2 0 #4 0		2/6
Subtraction without regrouping (of 12)	#5 1 #7 0 #8 1	#2 1 #4 0 #7 1	#6 0 #7 0 #9 0	#1 0 #2 0 #3 0	4/12
Subtraction with regrouping (of 2)		#1 1 #6 1			2/2

Figure 13. Grade 1/TEMI-O Item Analysis Sheet Example

To complete the Item Analysis Sheet:

- Write the name of the teacher and student.
- For the TEMI-O Mathematics Problem Solving (MPS), problem numbers on the Item Analysis Sheet reflect the row numbers on each page of test protocols. Thus, the problem on the first, second, third, and fourth row is No. 1, No. 2, No. 3, and No. 4, respectively (see Figure 14).

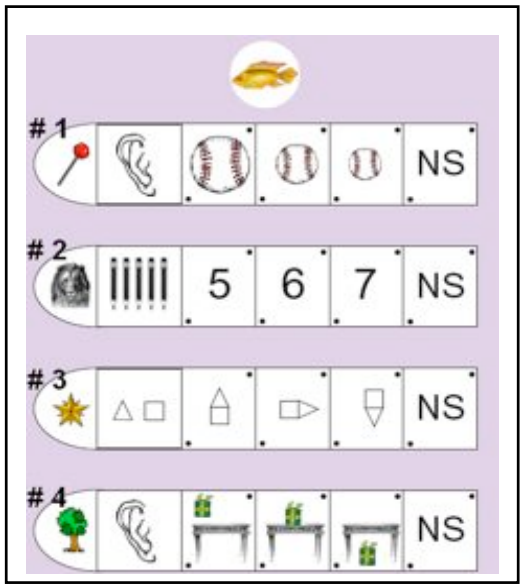


Figure 14. Grade 1/TEMI-O MPS Problem Numbers for Item Analysis on Each Page

- For the TEMI-O Computation (C), problem numbers on the Item Analysis Sheet reflect the row and column numbers on each page of test protocols. Thus, three problems on the first row are No. 1, No. 2, and No. 3. Three problems on the second row are No. 4, No. 5, and No. 6. The three problems on the third row are No. 7, No. 8, and No. 9 (see figure 15).

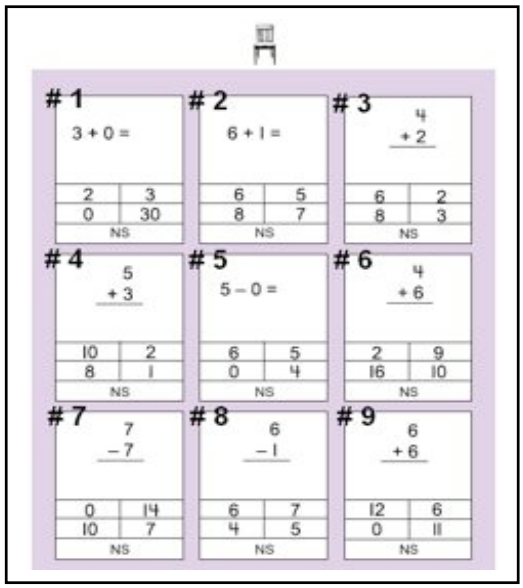


Figure 15. Grade 1/TEMI-O C Problem Numbers for Item Analysis on Each Page

- Copy the student's score (1 or 0) for each item on the Scoring Sheet into the Item Analysis Sheet.
- The scores across all pages of the protocol for the each category of the TEKS mathematics knowledge and skills (e.g., for TEMI-O MPS, Number, Operation, Quantitative Reasoning, Patterns, Relationships, Algebraic Thinking, and so on; and for TEMI-O C, Addition Without Regrouping, Addition With Regrouping, and so on) are summed and recorded in the *Total* box.

Interpreting the TEMI Results

Student Scores

When you sum the item scores to achieve a total, you have created a Student Score for that measure (see Figure 9). 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. These scores are used for progress monitoring purposes and to derive percentile ranks.

In our example (see Figure 10), the teacher transferred, from the student's Scoring Sheet to the Student Report, the Totals and Total Scores students received for the TEMI-O.

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-O 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 10, the student needed to score 12 points on Magnitude Comparisons to reach the 25th percentile. The student scored 27 points and thus met the 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.

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-O score 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

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 Mathematics Problem Solving—Fall

Rating	Weeks 1-4	Weeks 5-11
Very Poor	0–8	0–9
Poor	9–12	10–15
Below Average	13–17	16–19
Average	18–24	20–25
Above Average	25–27	26–28
Superior	28–30	29-31
Very Superior	> 30	> 31

Descriptive Ratings For Computation—Fall

Rating	Weeks 1-4	Weeks 5-11
Very Poor	0–2	0–2
Poor	3	3-4
Below Average	4–6	5–8
Average	7–13	9–14
Above Average	14–17	15–17
Superior	18–22	18–23
Very Superior	> 22	> 23

Descriptive Ratings For TEMI-O Total Score—Fall

Rating	Weeks 1-4	Weeks 5-11
Very Poor	0–12	0–13
Poor	13–18	14–19
Below Average	19–23	20–26
Average	24–36	27–39
Above Average	37–43	40–45
Superior	44–48	46–50
Very Superior	> 48	> 50

Winter

Descriptive Ratings For Mathematics Problem Solving—Winter

Rating	Weeks 19-21	Weeks 22-28
Very Poor	0–10	0–11
Poor	11–16	12–16
Below Average	17–20	17–21
Average	21–28	22–29
Above Average	29–30	30–31
Superior	31–33	32–33
Very Superior	> 33	> 33

Descriptive Ratings For Computation—Winter

Rating	Weeks 19-21	Weeks 22-28
Very Poor	0–3	0–4
Poor	4–7	5–8
Below Average	8–11	9–13
Average	12–21	14–21
Above Average	22–24	22–24
Superior	25–27	25–27
Very Superior	> 27	> 27

Descriptive Ratings For TEMI-O Total Score—Winter

Rating	Weeks 19-21	Weeks 22-28
Very Poor	0–16	0–17
Poor	17–24	18–25
Below Average	25–33	26–35
Average	34–48	36–49
Above Average	49–53	50–54
Superior	54–58	55–58
Very Superior	> 58	> 58

Spring

Descriptive Ratings For Mathematics Problem Solving—Spring

Rating	Weeks 32-40
Very Poor	0–11
Poor	12–18
Below Average	19–24
Average	25–32
Above Average	33–34
Superior	35
Very Superior	> 35

Descriptive Ratings For Computation—Spring

Rating	Weeks 32-40
Very Poor	0–6
Poor	7–10
Below Average	11–15
Average	16–24
Above Average	25–27
Superior	28–29
Very Superior	> 29

Descriptive Ratings For TEMI-O Total Score—Spring

Rating	Weeks 32-40
Very Poor	0–18
Poor	19–30
Below Average	31–40
Average	41–55
Above Average	56–60
Superior	61–63
Very Superior	>63

Appendix C: Converting Raw Scores to Percentiles

First Grade: Weeks 1-4 Math Problem Solving

%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile
1	0–8	1	25	18	25	49		49	73	24	73	97		97
2	9	2	26		26	50		50	74		74	98	30	98
3	10	3	27		27	51	21	51	75		75	99	>30	99
4	11	4	28		28	52		52	76		76			
5		5	29		29	53		53	77		77			
6	12	6	30		30	54		54	78		78			
7		7	31		31	55		55	79		79			
8		8	32		32	56		56	80		80			
9	13	9	33		33	57		57	81	25	81			
10		10	34		34	58		58	82		82			
11	14	11	35	19	35	59	22	59	83		83			
12		12	36		36	60		60	84		84			
13		13	37		37	61		61	85		85			
14	15	14	38		38	62		62	86	26	86			
15		15	39		39	63		63	87		87			
16		16	40		40	64		64	88		88			
17		17	41		41	65		65	89		89			
18	16	18	42		42	66		66	90	27	90			
19		19	43	20	43	67	23	67	91		91			
20		20	44		44	68		68	92		92			
21		21	45		45	69		69	93		93			
22	17	22	46		46	70		70	94	28	94			
23		23	47		47	71		71	95		95			
24		24	48		48	72		72	96	29	96			

First Grade: Weeks 1-4 Computation

%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile
1	0–2	1	25	7	25	49		49	73		73	97	21	97
2	3	2	26		26	50		50	74		74	98	22	98
3		3	27		27	51		51	75	13	75	99	>22	99
4		4	28		28	52		52	76		76			
5		5	29		29	53		53	77		77			
6		6	30		30	54	10	54	78		78			
7		7	31		31	55		55	79	14	79			
8		8	32		32	56		56	80		80			
9	4	9	33		33	57		57	81		81			
10		10	34		34	58		58	82		82			
11		11	35	8	35	59		59	83		83			
12	5	12	36		36	60		60	84	15	84			
13		13	37		37	61		61	85		85			
14		14	38		38	62		62	86		86			
15		15	39		39	63	11	63	87	16	87			
16		16	40		40	64		64	88		88			
17		17	41		41	65		65	89		89			
18		18	42		42	66		66	90	17	90			
19	6	19	43		43	67		67	91		91			
20		20	44	9	44	68		68	92		92			
21		21	45		45	69		69	93	18	93			
22		22	46		46	70	12	70	94		94			
23		23	47		47	71		71	95	19	95			
24		24	48		48	72		72	96	20	96			

First Grade: Weeks 1-4 Total

%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile
1	0–12	1	25	24	25	49		49	73		73	97	47	97
2	13	2	26		26	50		50	74	36	74	98	48	98
3	14	3	27		27	51		51	75		75	99	>48	99
4	15	4	28	25	28	52		52	76	37	76			
5	16	5	29		29	53		53	77		77			
6	17	6	30		30	54	31	54	78		78			
7		7	31		31	55		55	79	38	79			
8	18	8	32	26	32	56		56	80		80			
9		9	33		33	57		57	81		81			
10	19	10	34		34	58	32	58	82		82			
11		11	35		35	59		59	83	39	83			
12	20	12	36	27	36	60		60	84		84			
13		13	37		37	61	33	61	85	40	85			
14	21	14	38		38	62		62	86		86			
15		15	39	28	39	63		63	87		87			
16		16	40		40	64		64	88	41	88			
17	22	17	41		41	65		65	89		89			
18		18	42		42	66	34	66	90	42	90			
19		19	43	29	43	67		67	91	43	91			
20	23	20	44		44	68		68	92		92			
21		21	45		45	69		69	93	44	93			
22		22	46		46	70	35	70	94	45	94			
23		23	47		47	71		71	95		95			
24		24	48	30	48	72		72	96	46	96			

First Grade: Weeks 5-11 Math Problem Solving

%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile
1	0–9	1	25	20	25	49		49	73		73	97	30	97
2	10-11	2	26		26	50		50	74		74	98	31	98
3	12	3	27		27	51		51	75	25	75	99	>31	99
4	13	4	28		28	52		52	76		76			
5	14	5	29		29	53		53	77		77			
6		6	30		30	54		54	78		78			
7		7	31		31	55		55	79		79			
8	15	8	32		32	56		56	80		80			
9	16	9	33		33	57		57	81	26	81			
10		10	34		34	58		58	82		82			
11		11	35		35	59	23	59	83		83			
12		12	36	21	36	60		60	84		84			
13	17	13	37		37	61		61	85		85			
14		14	38		38	62		62	86	27	86			
15		15	39		39	63		63	87		87			
16		16	40		40	64		64	88		88			
17		17	41		41	65		65	89	28	89			
18	18	18	42		42	66		66	90		90			
19		19	43		43	67	24	67	91		91			
20		20	44		44	68		68	92		92			
21		21	45		45	69		69	93		93			
22		22	46	22	46	70		70	94		94			
23	19	23	47		47	71		71	95	29	95			
24		24	48		48	72		72	96		96			

First Grade: Weeks 5-11 Computation

%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile
1	0–2	1	25	9	25	49	12	49	73		73	97	22	97
2		2	26		26	50		50	74		74	98	23	98
3	3	3	27		27	51		51	75		75	99	>23	99
4		4	28		28	52		52	76		76			
5		5	29		29	53		53	77		77			
6		6	30		30	54		54	78	15	78			
7		7	31		31	55		55	79		79			
8	4	8	32		32	56		56	80		80			
9		9	33		33	57		57	81		81			
10		10	34	10	34	58		58	82		82			
11	5	11	35		35	59		59	83	16	83			
12		12	36		36	60	13	60	84		84			
13	6	13	37		37	61		61	85		85			
14		14	38		38	62		62	86		86			
15		15	39		39	63		63	87		87			
16	7	16	40		40	64		64	88	17	88			
17		17	41	11	41	65		65	89		89			
18		18	42		42	66		66	90		90			
19		19	43		43	67		67	91		91			
20	8	20	44		44	68		68	92	18	92			
21		21	45		45	69		69	93	19	93			
22		22	46		46	70	14	70	94	20	94			
23		23	47		47	71		71	95		95			
24		24	48		48	72		72	96	21	96			

First Grade: Weeks 5-11 Total

%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile
1	0–13	1	25	27	25	49	34	49	73		73	97	50	97
2	14	2	26	28	26	50		50	74	39	74	98		98
3	15–16	3	27		27	51		51	75		75	99	>50	99
4	17	4	28		28	52		52	76		76			
5	18	5	29	29	29	53		53	77		77			
6		6	30		30	54		54	78		78			
7	19	7	31		31	55	35	55	79	40	79			
8		8	32	30	32	56		56	80		80			
9	20	9	33		33	57		57	81		81			
10		10	34		34	58		58	82	41	82			
11	21	11	35	31	35	59		59	83		83			
12		12	36		36	60	36	60	84		84			
13	22	13	37	32	37	61		61	85		85			
14		14	38		38	62		62	86	42	86			
15	23	15	39		39	63		63	87		87			
16		16	40		40	64		64	88		88			
17	24	17	41		41	65	37	65	89	43	89			
18		18	42	33	42	66		66	90	44	90			
19		19	43		43	67		67	91	45	91			
20	25	20	44		44	68		68	92		92			
21		21	45		45	69		69	93		93			
22	26	22	46		46	70	38	70	94	46	94			
23		23	47		47	71		71	95		95			
24		24	48		48	72		72	96	47–49	96			

First Grade: Weeks 19-21 Math Problem Solving

%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile
1	0–10	1	25	21	25	49	25	49	73		73	97		97
2	11	2	26		26	50		50	74		74	98	33	98
3	12	3	27		27	51		51	75		75	99	>33	99
4	13	4	28		28	52		52	76		76			
5	14	5	29	22	29	53		53	77		77			
6		6	30		30	54		54	78		78			
7	15	7	31		31	55		55	79		79			
8	16	8	32		32	56	26	56	80	29	80			
9	17	9	33		33	57		57	81		81			
10		10	34		34	58		58	82		82			
11	18	11	35		35	59		59	83		83			
12		12	36	23	36	60		60	84		84			
13		13	37		37	61		61	85		85			
14	19	14	38		38	62		62	86		86			
15		15	39		39	63		63	87		87			
16		16	40		40	64	27	64	88	30	88			
17		17	41		41	65		65	89		89			
18	20	18	42	24	42	66		66	90		90			
19		19	43		43	67		67	91		91			
20		20	44		44	68		68	92		92			
21		21	45		45	69		69	93	31	93			
22		22	46		46	70		70	94		94			
23		23	47		47	71		71	95		95			
24		24	48		48	72	28	72	96	32	96			

First Grade: Weeks 19-21 Computation

%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile
1	0–3	1	25	12	25	49		49	73		73	97		97
2	4	2	26		26	50		50	74		74	98	27	98
3	5	3	27		27	51		51	75	21	75	99	>27	99
4		4	28		28	52	17	52	76		76			
5	6	5	29	13	29	53		53	77		77			
6		6	30		30	54		54	78		78			
7	7	7	31		31	55		55	79		79			
8		8	32		32	56		56	80		80			
9	8	9	33		33	57	18	57	81		81			
10		10	34	14	34	58		58	82	22	82			
11	9	11	35		35	59		59	83		83			
12		12	36		36	60		60	84		84			
13		13	37		37	61		61	85		85			
14		14	38		38	62		62	86	23	86			
15	10	15	39		39	63	19	63	87		87			
16		16	40	15	40	64		64	88		88			
17		17	41		41	65		65	89	24	89			
18		18	42		42	66		66	90		90			
19	11	19	43		43	67		67	91		91			
20		20	44		44	68		68	92		92			
21		21	45		45	69		69	93	25	93			
22		22	46	16	46	70	20	70	94		94			
23		23	47		47	71		71	95		95			
24		24	48		48	72		72	96	26	96			

First Grade: Weeks 19-21 Total

%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile
1	0–16	1	25	34	25	49		49	73		73	97	57	97
2	17	2	26		26	50		50	74		74	98	58	98
3	18–19	3	27		27	51		51	75	48	75	99	>58	99
4	20	4	28	35	28	52	42	52	76		76			
5	21	5	29		29	53		53	77		77			
6	22	6	30		30	54		54	78	49	78			
7	23	7	31	36	31	55		55	79		79			
8	24	8	32		32	56	43	56	80		80			
9	25	9	33		33	57		57	81	50	81			
10	26	10	34	37	34	58		58	82		82			
11	27	11	35		35	59	44	59	83		83			
12	28	12	36		36	60		60	84	51	84			
13	29	13	37	38	37	61		61	85		85			
14		14	38		38	62	45	62	86		86			
15	30	15	39		39	63		63	87	52	87			
16		16	40	39	40	64		64	88		88			
17	31	17	41		41	65		65	89		89			
18		18	42		42	66	46	66	90	53	90			
19	32	19	43		43	67		67	91		91			
20		20	44	40	44	68		68	92	54	92			
21	33	21	45		45	69		69	93		93			
22		22	46		46	70		70	94	55	94			
23		23	47		47	71	47	71	95	56	95			
24		24	48	41	48	72		72	96		96			

First Grade: Weeks 22-28 Math Problem Solving

%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile
1	0-11	1	25	22	25	49		49	73		73	97		97
2	12	2	26		26	50		50	74	29	74	98	33	98
3	13	3	27		27	51	26	51	75		75	99	>33	99
4	14	4	28		28	52		52	76		76			
5	15	5	29		29	53		53	77		77			
6		6	30	23	30	54		54	78		78			
7	16	7	31		31	55		55	79		79			
8		8	32		32	56		56	80		80			
9	17	9	33		33	57		57	81		81			
10		10	34		34	58		58	82		82			
11	18	11	35		35	59		59	83		83			
12	19	12	36	24	36	60	27	60	84	30	84			
13		13	37		37	61		61	85		85			
14	20	14	38		38	62		62	86		86			
15		15	39		39	63		63	87		87			
16		16	40		40	64		64	88		88			
17		17	41		41	65		65	89	31	89			
18	21	18	42		42	66		66	90		90			
19		19	43	25	43	67		67	91		91			
20		20	44		44	68	28	68	92		92			
21		21	45		45	69		69	93		93			
22		22	46		46	70		70	94		94			
23		23	47		47	71		71	95	32	95			
24		24	48		48	72		72	96		96			

First Grade: Weeks 22-28 Computation

%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile
1	0-4	1	25		25	49		49	73		73	97	27	97
2	5	2	26		26	50	18	50	74		74	98		98
3		3	27	14	27	51		51	75		75	99	>27	99
4	6	4	28		28	52		52	76		76			
5		5	29		29	53		53	77		77			
6	7	6	30		30	54		54	78		78			
7		7	31		31	55		55	79		79			
8	8	8	32		32	56		56	80	22	80			
9		9	33	15	33	57	19	57	81		81			
10	9	10	34		34	58		58	82		82			
11		11	35		35	59		59	83	23	83			
12		12	36		36	60		60	84		84			
13	10	13	37		37	61		61	85		85			
14		14	38	16	38	62		62	86		86			
15	11	15	39		39	63		63	87		87			
16		16	40		40	64		64	88		88			
17		17	41		41	65	20	65	89	24	89			
18	12	18	42		42	66		66	90		90			
19		19	43		43	67		67	91		91			
20		20	44	17	44	68		68	92		92			
21		21	45		45	69		69	93	25	93			
22	13	22	46		46	70		70	94		94			
23		23	47		47	71		71	95	26	95			
24		24	48		48	72	21	72	96		96			

First Grade: Weeks 22-28 Total

%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile
1	0-17	1	25		25	49		49	73		73	97		97
2	18	2	26	36	26	50	43	50	74		74	98	58	98
3	19	3	27		27	51		51	75	49	75	99	>58	99
4	20	4	28		28	52	44	52	76		76			
5	21	5	29	37	29	53		53	77		77			
6	22	6	30		30	54		54	78		78			
7	23-24	7	31		31	55		55	79		79			
8	25	8	32	38	32	56		56	80		80			
9	26	9	33		33	57	45	57	81	50	81			
10	27	10	34		34	58		58	82		82			
11	28	11	35		35	59		59	83	51	83			
12	29	12	36	39	36	60		60	84		84			
13	30	13	37		37	61	46	61	85		85			
14		14	38		38	62		62	86	52	86			
15	31	15	39	40	39	63		63	87		87			
16		16	40		40	64		64	88	53	88			
17	32	17	41		41	65		65	89		89			
18		18	42	41	42	66	47	66	90	54	90			
19	33	19	43		43	67		67	91		91			
20		20	44	42	44	68		68	92		92			
21	34	21	45		45	69		69	93	55	93			
22		22	46		46	70		70	94		94			
23	35	23	47		47	71		71	95	56	95			
24		24	48		48	72	48	72	96	57	96			

First Grade: Weeks 32-40 Math Problem Solving

%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile	%ile	MPS	%ile
1	0-11	1	25	25	25	49		49	73		73	97		97
2	12	2	26		26	50		50	74		74	98		98
3	13-14	3	27		27	51	29	51	75	32	75	99	>35	99
4	15	4	28		28	52		52	76		76			
5	16	5	29		29	53		53	77		77			
6		6	30		30	54		54	78		78			
7	17	7	31	26	31	55		55	79		79			
8	18	8	32		32	56		56	80		80			
9		9	33		33	57		57	81		81			
10	19	10	34		34	58	30	58	82		82			
11	20	11	35		35	59		59	83		83			
12		12	36		36	60		60	84	33	84			
13	21	13	37		37	61		61	85		85			
14		14	38	27	38	62		62	86		86			
15		15	39		39	63		63	87		87			
16	22	16	40		40	64		64	88		88			
17		17	41		41	65		65	89		89			
18	23	18	42		42	66		66	90		90			
19		19	43		43	67	31	67	91	34	91			
20		20	44	28	44	68		68	92		92			
21		21	45		45	69		69	93		93			
22	24	22	46		46	70		70	94		94			
23		23	47		47	71		71	95	35	95			
24		24	48		48	72		72	96		96			

First Grade: Weeks 32-40 Computation

%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile	%ile	C	%ile
1	0-6	1	25	16	25	49		49	73		73	97	29	97
2		2	26		26	50		50	74		74	98		98
3	7	3	27		27	51		51	75	24	75	99	>29	99
4	8	4	28		28	52		52	76		76			
5		5	29		29	53		53	77		77			
6	9	6	30	17	30	54	21	54	78		78			
7		7	31		31	55		55	79		79			
8	10	8	32		32	56		56	80		80			
9		9	33		33	57		57	81	25	81			
10	11	10	34		34	58		58	82		82			
11		11	35		35	59		59	83		83			
12	12	12	36	18	36	60		60	84		84			
13		13	37		37	61		61	85		85			
14	13	14	38		38	62	22	62	86	26	86			
15		15	39		39	63		63	87		87			
16	14	16	40		40	64		64	88		88			
17		17	41		41	65		65	89		89			
18		18	42	19	42	66		66	90		90			
19		19	43		43	67		67	91	27	91			
20	15	20	44		44	68	23	68	92		92			
21		21	45		45	69		69	93		93			
22		22	46		46	70		70	94	28	94			
23		23	47		47	71		71	95		95			
24		24	48	20	48	72		72	96		96			

First Grade: Weeks 32-40 Total

%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile	%ile	Tot	%ile
1	0-18	1	25	41	25	49		49	73		73	97	63	97
2	19	2	26		26	50	49	50	74		74	98		98
3	20-21	3	27	42	27	51		51	75	55	75	99	>63	99
4	22-25	4	28		28	52		52	76		76			
5	26	5	29	43	29	53		53	77		77			
6	27-28	6	30		30	54		54	78		78			
7	29	7	31		31	55	50	55	79	56	79			
8	30	8	32	44	32	56		56	80		80			
9		9	33		33	57		57	81		81			
10	31	10	34		34	58		58	82	57	82			
11	32	11	35	45	35	59		59	83		83			
12	33	12	36		36	60	51	60	84		84			
13	34	13	37		37	61		61	85	58	85			
14	35	14	38		38	62		62	86		86			
15	36	15	39	46	39	63		63	87		87			
16		16	40		40	64	52	64	88	59	88			
17	37	17	41		41	65		65	89		89			
18		18	42		42	66		66	90		90			
19	38	19	43	47	43	67		67	91	60	91			
20		20	44		44	68	53	68	92		92			
21	39	21	45		45	69		69	93		93			
22		22	46	48	46	70		70	94	61	94			
23	40	23	47		47	71		71	95		95			
24		24	48		48	72	54	72	96	62	96			