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Tiered Interventions Using Evidence-Based Research

Computational Fluency Progress-Monitoring System for K–6 Mathematics

Administration and Scoring Instructions

Texas Education Agency | Texas SPED Support

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TIER Computational Fluency Progress-Monitoring System for K–6 Mathematics: *Administration and Scoring Instructions*

Overview of the Progress-Monitoring System

The purpose of the TIER Computational Fluency Progress-Monitoring System is to measure students' computational fluency in kindergarten through grade 6 over time. These data can help educators determine the rate of students' growth in grade-level content standards and make inferences about the effectiveness of instruction in supporting student learning. This system is based on a well-known approach called curriculum-based measurement (CBM). CBMs are timed tests that represent an important indicator of general proficiency in the domain. For mathematics, that indicator is often considered to be computational fluency. Although computational fluency is only one strand of mathematical proficiency, it has been found to be predictive of students' overall mathematics performance in kindergarten through grade 6 (National Mathematics Advisory Panel, 2008).

Computational fluency is defined as efficient and accurate methods for computing and is based on the standards specified in the Texas Essential Knowledge and Skills (TEKS). At each grade, the TEKS that comprise aspects of computational fluency were identified through a systematic review process.

The TIER Computational Fluency Progress-Monitoring System includes 20 forms in each grade, kindergarten to grade 6. Each form includes 30–40 items assessing the computational fluency TEKS. The representation of the TEKS on each form was based on proportional weighting and an analysis of their relative importance at the grade level.

Prototypical items for the TIER Computational Fluency Progress-Monitoring System were written by experienced Texas educators, reviewed by mathematics education experts, and approved by the Texas Education Agency. The prototypical items served as the template for all subsequent items on each grade-level form. For example, if Item 1 on Form 1 of Grade 5 assesses fraction addition, then Item 1 on all subsequent forms in Grade 5 also assesses fraction addition.

Overview of Administration and Scoring

The TIER Computational Fluency Progress-Monitoring System can be administered to students individually, in small groups, or in a whole-group setting. Students have a fixed amount of time to respond to as many items as possible. They write their responses directly on the forms.

After administration, students' responses are scored using the answer key. The number of items the student responds to correctly within the allotted time is plotted on a graph to chart student progress in order to inform instructional decisions.

Timing

The table at right indicates how much time students have to respond to as many items as possible by grade. It is important to precisely and consistently follow the administration timing to allow for valid interpretations of student progress. Administration is standardized so that students always have the same amount of time.

Grade	Time
K	**1 minute** each side
1	**1 minute** each side
2	A total of **2 minutes**
3	A total of **2 minutes**
4	A total of **4 minutes**
5	A total of **4 minutes**
6	A total of **4 minutes**

Preparation for Administration

To prepare for administration, the assessor will need to gather the following items:

- Enough copies of the form for each student
- Pencils for each student
- Stopwatch or timer

Administration Procedures

Follow these procedures to administer the tests.

1. Make sure that students have the TIER Computational Fluency Progress-Monitoring Form and that it is double sided. If it isn't double sided, you may need to reprint the forms so you have all of the items. Make sure that the students put their name and the date on the top of the form.
2. Read the standardized administration directions aloud using the script provided. The script changes for some of the grades, so please read the script for the appropriate grade.
3. After answering any questions, say *"If there are no more questions, you may begin when I say 'Start'."* Please be sure to start your stopwatch or timer at the same time you say *"Start."* Monitor students to verify that they are working throughout the duration of the testing time. If you notice that someone is skipping a lot of items, you may suggest that students try to work on each problem. Avoid answering questions or providing feedback about the items or responses. It is important to remember that this is a test and that the results will be used to evaluate student progress.
4. At the end of the allotted time, say *"Stop. Put your pencils down."* Make sure that students stop working.

Kindergarten Administration Directions

SIDE 1

"We will take two 1-minute math tests. I will tell you when to start and when to stop working on each test. When I say 'Stop,' you will put your pencils down.

When I say 'Start,' you may get started. Try to work each problem.

Start with the first problem and then work across the page. Then work on the problems on the next row.

It is OK if you don't finish all of the items on the front of the page. Do not start working on the other side if you finish early.

We are ready to take the first test. I will now read you the directions that are next to the star for the first test: For each problem circle which is greater.

You will have 1 minute to answer as many problems as you can. Remember not to rush and to do the best you can. I cannot help you answer any test questions. I will be able to help you only with questions about the instructions. Do you have any questions?"

SIDE 2

"We are ready to take the second test. I will now read you the directions that are next to the circle for the second test: Fill in the blank with the missing number. If you don't know how to work the problem, put an X over it and move to the next problem.

You will have 1 minute to answer as many problems as you can. Remember not to rush and to do the best you can. Do you have any questions?"

Grade 1 Administration Directions

SIDE 1

"We will take two 1-minute math tests. I will tell you when to start and when to stop working on each test. When I say 'Stop,' you will put your pencils down.

When I say 'Start,' you may get started. Try to work each problem.

Start with the first problem and then work across the page. Then work on the problems on the next row.

It is OK if you don't finish all of the items on the front of the page. Do not start working on the other side if you finish early.

We are ready to take the first test. I will now read you the directions that are next to the star for the first test: Look at the numbers and circle which is greater.

You will have 1 minute to answer as many problems as you can. Remember not to rush and to do the best you can. I cannot help you answer any test questions. I will be able to help you only with questions about the instructions. Do you have any questions?"

SIDE 2

"We are ready to take the second test. I will now read you the directions that are next to the circle for the second test: Write the answer for each problem. If you don't know how to work the problem, put an X over it and move to the next problem.

You will have 1 minute to answer as many problems as you can. Remember not to rush and to do the best you can. Do you have any questions?"

Grade 2 Administration Directions

"We will take a math test. You will have 2 minutes to answer as many problems as you can. I will tell you when to start and when to stop. When I say 'Stop,' you will put your pencils down.

When I say 'Start,' you may get started with the first problem and then work across the page. Then work on the problems on the next row.

I will now read you the directions that are above the math problems: Write the answer for each problem. Some problems will give you a list of numbers with a blank. Fill in the blank with the missing number. If you don't know how to work the problem, put an X over it and move to the next problem.

If you finish the problems on the first side, start working on the other side.

Remember not to rush and to do the best you can. I cannot help you answer any test questions. I will be able to help you only with questions about the instructions. Do you have any questions?"

Grade 3 Administration Directions

"We will take a math test. You will have 2 minutes to answer as many problems as you can. I will tell you when to start and when to stop. When I say 'Stop,' you will put your pencils down.

When I say 'Start,' you may get started with the first problem and then work across the page. Then work on the problems on the next row.

I will now read you the directions above the math problems: Write the answer for each problem. If you don't know how to work the problem, put an X over it and move to the next problem.

If you finish the problems on the first side, start working on the other side.

Remember not to rush and to do the best you can. I cannot help you answer any test questions. I will be able to help you only with questions about the instructions. Do you have any questions?"

Grade 4 Administration Directions

"We will take a math test. You will have 4 minutes to answer as many problems as you can. I will tell you when to start and when to stop. When I say 'Stop,' you will put your pencils down.

When I say 'Start,' you may get started with the first problem and then work across the page. Then work on the problems on the next row.

I will now read you the directions that are above the math problems: Write the answer for each problem. If you don't know how to work the problem, put an X over it and move to the next problem. Complete the problems in order.

If you finish the problems on the first side, start working on the other side.

Remember not to rush and to do the best you can. I cannot help you answer any test questions. I will be able to help you only with questions about the instructions. Do you have any questions?"

Grades 5–6 Administration Directions

"We will take a math test. You will have 4 minutes to answer as many problems as you can. I will tell you when to start and when to stop. When I say 'Stop,' you will put your pencils down.

When I say 'Start,' you may get started with the first problem and then work across the page. Then work on the problems on the next row.

I will now read you the directions that are above the math problems: Write the answer for each problem. If you don't know how to work the problem, put an X over it and move to the next problem. Complete the problems in order. Simplify fractions to their most common form.

If you finish the problems on the first side, start working on the other side.

Remember not to rush and to do the best you can. I cannot help you answer any test questions. I will be able to help you only with questions about the instructions. Do you have any questions?"

Scoring

Score each item that was attempted. Items are scored correct (1 point) or incorrect (0 points). Items that were not attempted do not get scored.

Each form has a unique answer key. The English and Spanish forms use the same answer key. For each item, compare the student's response to the answers provided on the corresponding answer key. Please note that for grades 5 and 6, not all possible answer choices are represented in the teacher answer keys. If a student has represented the correct answer differently (i.e., decimal written in fraction form), mark the answer correct.

Count the number of items scored correct and record this on the form. Plot each test's score on a graph for decision making about student progress. Scores can be graphed using the TIER Progress Monitoring Tool, a free progress-monitoring platform on the Texas SPED Support website (https://spedsupport.tea.texas.gov/resource-library/tier-progress-monitoring-tool), or the blank Graphing Chart in the appendix. See the English Graphing Chart in Appendix A and Spanish Chart in Appendix C.

These measures were designed for monitoring progress (i.e., growth) across a school year or during mathematics intervention. Therefore, growth should be measured on a student-by-student basis.

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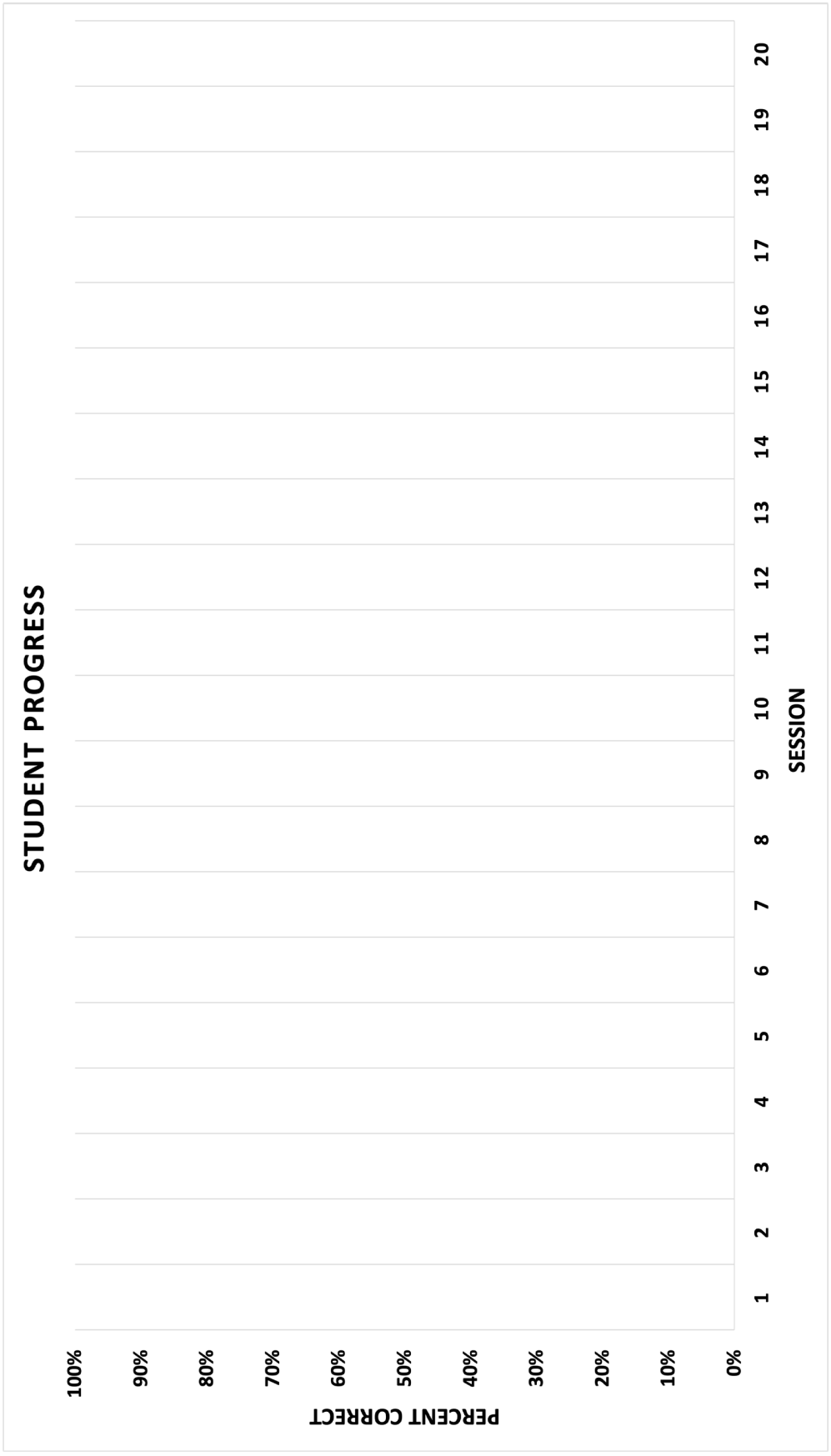
Appendices

Appendix A: English Graphing Chart

Use the following to graph students' progress by session.



Appendix B: Spanish Administration Directions

Instrucciones para la administración de la prueba de kindergarten

LADO UNO

"Haremos dos pruebas de matemáticas de 1 minuto. Yo les indicaré cuando comenzar y cuando terminar de trabajar en cada prueba. Cuando diga "alto", bajarán sus lápices.

Cuando diga 'comenzar', podrán empezar a responder. Traten de resolver cada problema. Empiecen con el primer problema y continúen con el resto de los problemas en la misma línea. Después, resuelvan los problemas de la siguiente línea.

Está bien si no terminan todos los problemas en el frente de la página. No empiecen a trabajar en el otro lado si terminan antes.

Estamos listos para hacer la primera prueba. Ahora les leeré las instrucciones que están al lado de la estrella para la primera prueba: Para cada problema, marque con un círculo cuál es mayor.

Tendrán un minuto para responder a tantos problemas como puedan. Recuerden no apresurarse y hacerlo lo mejor que puedan. No puedo ayudarlos a responder a las preguntas de la prueba. Solo podré ayudarlos con preguntas sobre las instrucciones. ¿Tienen alguna pregunta?"

LADO DOS

"Estamos listos para hacer la segunda prueba. Ahora les leeré las instrucciones que están al lado del círculo para la segunda prueba: Completa el espacio en blanco con el número que falta. Si no sabes cómo resolver el problema, pon una X encima y continua con el siguiente problema.

Tendrán un minuto para responder a tantos problemas como puedan. Recuerden no apresurarse y hacerlo lo mejor que puedan. ¿Tienen alguna pregunta?"

Instrucciones para la administración de la prueba de 1er grado

LADO UNO

"Haremos dos pruebas de matemáticas de 1 minuto. Yo les indicaré cuando comenzar y cuando terminar de trabajar en cada prueba. Cuando diga "alto", bajarán sus lápices.

Cuando diga 'comenzar', podrán empezar a responder. Traten de resolver cada problema. Empiecen con el primer problema y continúen con el resto de los problemas en la misma línea. Después, resuelvan los problemas de la siguiente línea.

Está bien si no terminan todos los problemas en el frente de la página. No empiecen a trabajar en el otro lado si terminan antes.

Estamos listos para hacer la primera prueba. Ahora les leeré las instrucciones que están al lado de la estrella para la primera prueba: Mira los números y rodea el que sea mayor.

Tendrán un minuto para responder a tantos problemas como puedan. Recuerden no apresurarse y hacerlo lo mejor que puedan. No puedo ayudarlos a responder a las preguntas de la prueba. Solo podré ayudarlos con preguntas sobre las instrucciones. ¿Tienen alguna pregunta?"

LADO DOS

"Estamos listos para hacer la segunda prueba. Ahora les leeré las instrucciones que están al lado del círculo para la segunda prueba: Escribe la respuesta para cada problema. Si no sabes cómo resolver un problema, pon una X encima y continua con el siguiente problema.

Tendrán un minuto para responder a tantos problemas como puedan. Recuerden no apresurarse y hacerlo lo mejor que puedan. ¿Tienen alguna pregunta?"

Instrucciones para la administración de la prueba de 2º grado

"Haremos una prueba de matemáticas. Tendrán 2 minutos para resolver a tantos problemas como puedan. Yo les indicaré cuando comenzar y cuando parar. Cuando diga 'alto', bajarán sus lápices.

Cuando diga 'comenzar' podrán empezar con el primer problema y continúen con los problemas restantes en la misma línea. A continuación, resuelvan los problemas de la siguiente línea.

Ahora les leeré las instrucciones que están arriba de los problemas de matemáticas: Escribe la respuesta para cada problema. Algunos problemas te darán una lista de números con un espacio en blanco. Completa el espacio en blanco con el número que falta. Si no sabes cómo resolver el problema, pon una X encima y continua con el siguiente problema.

Si terminan los problemas de la primera parte, continúen a trabajar en el otro lado de la hoja.

Recuerden no apresurarse y hacerlo lo mejor que puedan. No puedo ayudarlos a responder a las ninguna preguntas de la prueba. Solo podré ayudarlos con preguntas sobre las instrucciones. ¿Tienen alguna pregunta?"

Instrucciones para la administración de la prueba de 3er grado

"Haremos una prueba de matemáticas. Tendrán 2 minutos para resolver a tantos problemas como puedan. Yo les indicaré cuando comenzar y cuando parar. Cuando diga 'alto', bajarán sus lápices.

Cuando diga 'comenzar' podrán empezar con el primer problema y continúen con los problemas restantes en la misma línea. A continuación, resuelvan los problemas de la siguiente línea.

Ahora les leeré las instrucciones que están arriba de los problemas de matemáticas: Escribe la respuesta para cada problema. Si no sabes cómo resolver el problema, pon una X encima y continua con el siguiente problema.

Si terminan los problemas de la primera parte, continúen a trabajar en el otro lado de la hoja.

Recuerden no apresurarse y hacerlo lo mejor que puedan. No puedo ayudarlos a responder a las ninguna preguntas de la prueba. Solo podré ayudarlos con preguntas sobre las instrucciones. ¿Tienen alguna pregunta?"

Instrucciones para la administración de la prueba de 4º grado

"Haremos una prueba de matemáticas. Tendrán 2 minutos para resolver a tantos problemas como puedan. Yo les indicaré cuando comenzar y cuando parar. Cuando diga 'alto', bajarán sus lápices.

Cuando diga 'comenzar' podrán empezar con el primer problema y continúen con los problemas restantes en la misma línea. A continuación, resuelvan los problemas de la siguiente línea.

Ahora les leeré las instrucciones que están arriba de los problemas de matemáticas: Escribe la respuesta para cada problema. Si no sabes cómo resolver el problema, pon una X encima y continua con el siguiente problema. Completa los problemas en orden.

Si terminan los problemas de la primera parte, continúen a trabajar en el otro lado de la hoja.

Recuerden no apresurarse y hacerlo lo mejor que puedan. No puedo ayudarlos a responder a las ninguna preguntas de la prueba. Solo podré ayudarlos con preguntas sobre las instrucciones. ¿Tienen alguna pregunta?"

Instrucciones para la administración de la prueba de 5º y 6º grado

"Haremos una prueba de matemáticas. Tendrán 4 minutos para resolver a tantos problemas como puedan. Yo les indicaré cuando comenzar y cuando parar. Cuando diga 'alto', bajarán sus lápices.

Cuando diga 'comenzar' podrán empezar con el primer problema y continúen con los problemas restantes en la misma línea. A continuación, resuelvan los problemas de la siguiente línea.

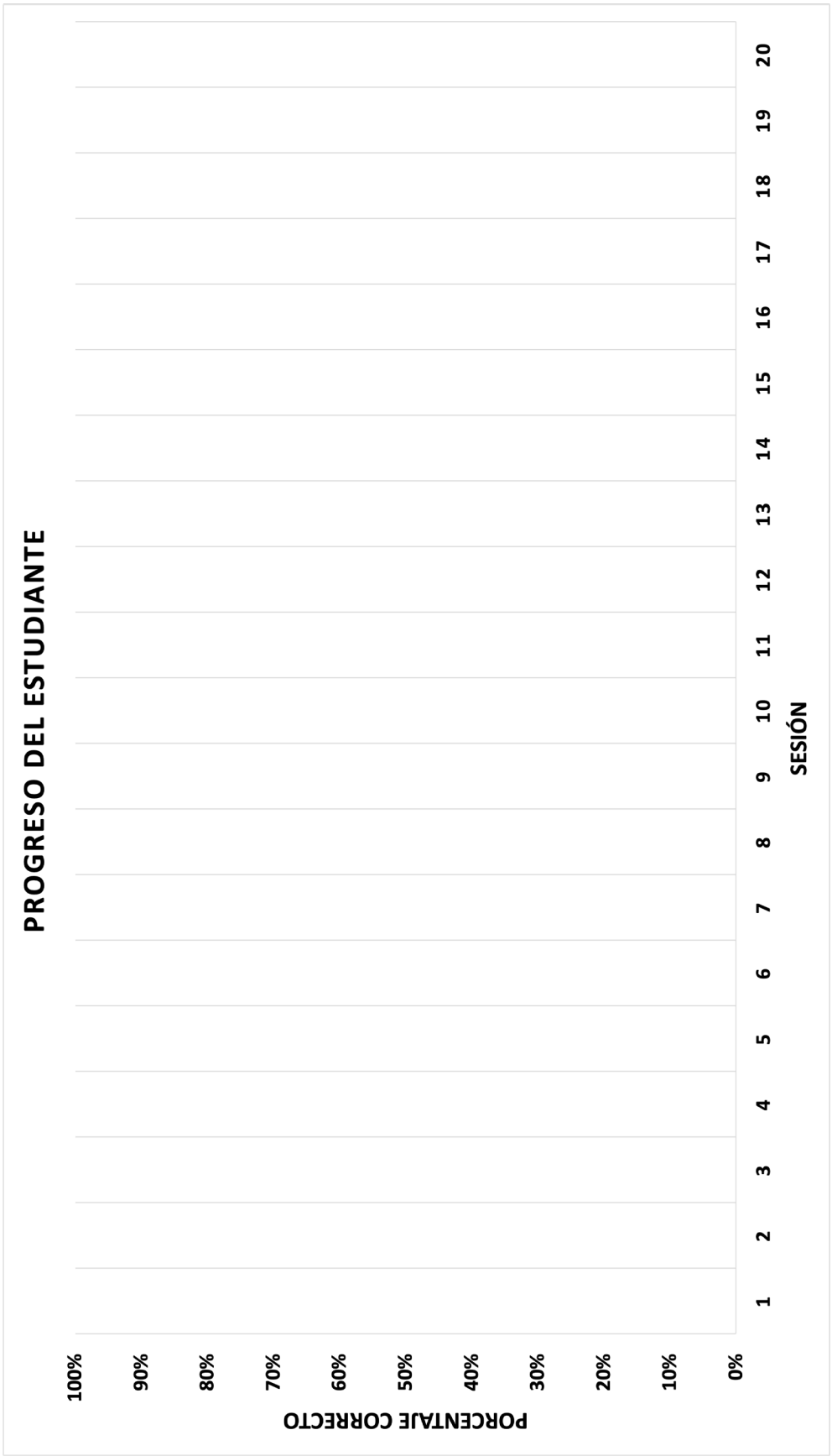
Ahora les leeré las instrucciones que están arriba de los problemas de matemáticas: Escribe la respuesta para cada problema. Si no sabes cómo resolver el problema, pon una X encima y continua con el siguiente problema. Completa los problemas en orden. Simplifica las fracciones a su forma más común.

Si terminan los problemas de la primera parte, continúen a trabajar en el otro lado de la hoja.

Recuerden no apresurarse y hacerlo lo mejor que puedan. No puedo ayudarlos a responder a las ninguna preguntas de la prueba. Solo podré ayudarlos con preguntas sobre las instrucciones. ¿Tienen alguna pregunta?"

Appendix C: Spanish Graphing Chart

Use the following to graph students' progress by session.



Appendix D: TEKS Assessed by Grade Level

Kindergarten

Content	# of Items
Number Sequence Subtest Total	10
K(2)(F): Generate a number that is one more than or one less than another number up to at least 20.	**10**
a number that is one more than another number up to at least 20	3
a number that is one less than another number up to at least 20	2
a number that is one more than another number up to at least 10	2
a number that is one less than another number up to at least 10	3
Magnitude Comparison Subtest Total	20
K(2)(G): Compare sets of objects up to at least 20 in each set using comparative language.	**10**
with structured arrangements of objects of the same size	5
with structured arrangements of objects of varying sizes	2
with unstructured arrangements of objects of the same size	2
with unstructured arrangements of objects of varying sizes	1
K(2)(H): Use comparative language to describe two numbers up to 20 presented in written numerals.	**10**
two numbers up to 10 presented in written numerals	4
two numbers up to 20 presented in written numerals	6
Total	30

Grade 1

Content	# of Items
Magnitude Comparison Subtest Total	**20**
1(2)(E): Use place value to compare whole numbers up to 120 using comparative language.	**20**
numbers up to 50 using comparative language	5
numbers up to 100 using comparative language	10
numbers up to 120 using comparative language	5
Addition and Subtraction Subtest Total	**20**
1(5)(F): Determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation.	**20**
Addition equation	10
determine the unknown whole number in a three-term addition equation when the start is unknown	1
determine the unknown whole number in a three-term addition equation when the change is unknown	1
determine the unknown whole number in a three-term addition equation when the result is unknown	6
determine the unknown number in a four-term addition equation when the part is unknown	1
determine the unknown number in a four-term addition equation when the whole is unknown	1
Subtraction equation	10
determine the unknown whole number in a three-term subtraction equation when the start is unknown	2
determine the unknown whole number in a three-term subtraction equation when the change is unknown	2
determine the unknown whole number in a three-term subtraction equation when the result is unknown	6
Total	40

Grade 2

Content	# of Items
2(2)(C): Generate a number that is greater than or less than a given whole number up to 1,200.	**4**
a number greater, where the result stays within a hundred (up to 1,000)	1
a number greater, where the result stays within a thousand (up to 1,200)	1
a number less, where the result goes across the decade (up to 500)	1
a number less, where the result stays within a hundred (up to 1,000)	1
2(4)(A): Recall basic facts to add and subtract within 20 with automaticity.	**10**
Add within 20	5
where one addend is 5 (second addend < 10)	1
where none of the addends are 5 (one addend > 9 and other < 10)	2
where one addend is 10 (one addend < 9 and other = 10)	1
where none of the addends are 10 (both addends < 9)	1
Subtract within 20	5
where minuend and subtrahend both are more than 10 (minuend > 15 and subtrahend < 15)	1
where minuend is more than 10 but subtrahend is less than 10 (minuend > 10 and subtrahend < 10)	2
where minuend and subtrahend are both less than 10	2
2(4)(B): Add up to four two-digit numbers and subtract two-digit numbers using mental strategies and algorithms based on knowledge of place value and properties of operations. < 99	**16**
Add up to four two-digit numbers	9
add four two-digit numbers (three addends are multiples of 10) (within 99)	1
add four two-digit numbers (one addend is a multiple of 10) (within 99)	1
add four two-digit numbers (none of the addends are multiples of 10) (within 99)	1
add three two-digit numbers (all addends are multiples of 10) (within 50)	1

Content	# of Items
add three two-digit numbers (two addends are multiples of 10) (within 50)	1
add three two-digit numbers (one addend is a multiple of 10) (within 50)	1
add two two-digit numbers (both addends are multiples of 10) (within 50)	1
add two two-digit numbers (one addend is a multiple of 10) (within 50)	1
add two two-digit numbers (none of the addends are multiples of 10) (within 50)	1
Subtract two-digit numbers	7
where minuend (within 100) and subtrahend (within 50) are multiples of 10	2
where minuend (within 100) and subtrahend (within 50) both are NOT multiples of 10	1
where minuend (within 100) is a multiple of 10 but not the subtrahend (within 50)	2
where minuend (within 100) is NOT a multiple of 10 but subtrahend (within 50) is a multiple of 10	2
Total	**30**

Grade 3

Content	# of Items
3(4)(A): Solve with fluency one-step and two-step problems involving addition and subtraction within 1,000 using strategies based on place value, properties of operations, and the relationship between addition and subtraction.	**10**
one-step addition problems (one addend within 500 and result within 1,000)	1
two-step addition problems (one addend within 500)	2
one-step subtraction problems (minuend within 1,000)	3
two-step subtraction problems (minuend within 1,000)	1
two-step addition and subtraction problems (within 1,000)	1
unknown addend (within 1,000)	1
unknown minuend (within 1,000)	1

Content	# of Items
3(4)(F): Recall facts to multiply up to 10 by 10 with automaticity and recall the corresponding division facts.	**8**
Multiply up to 10 by 10 (< 100)	4
where one multiple is 2 and the other is within 10, including 0	1
where one multiple is 5 and the other multiple is > 0 and < 10	1
where one multiple is < 10 and the other multiple = 10	1
where both multiples are > 3 (not including 5) and < 10 (not including 10)	1
Recall the corresponding division facts (< 100)	4
multiples of 10 (up to 100) divided by a number > 1 and < or = 10	1
multiples of 2 (up to 100) divided by an even number > 1 and < 10	1
multiples of 5 (up to 100) divided by a number > or = 1 and < 10	1
multiples of a number > 3 (not including 5) and < 10 divided by a corresponding factor < 10	1
3(4)(G): Use strategies and algorithms, including the standard algorithm, to multiply a two-digit number by a one-digit number.	**5**
multiple of 10 x single digit	1
two-digit multiple of 5 x single digit	2
two-digit number (not a multiple of 5 or 10) x single digit	2
3(4)(K): Solve one-step and two-step problems involving multiplication and division within 100 using strategies based on objects; pictorial models, including arrays, area models, and equal groups; properties of operations; or recall of facts. < 100	**2**
two-step problem where the product of the first step is the multiplicand of the second step (all factors < 10)	2

Content	# of Items
3(5)(D): Determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product. < 100	**5**
determine the unknown factor in a multiplication equation (__ x 5 = 10 or 2 x __ = 10) (Result within 100 [1] dividend multiple of 10 [2] dividend not multiple of 10)	2
determine the unknown factor in a division equation (10 / __ = 5_) (dividend within 50 and divisor within 25, completely divisible [1] dividend multiple of 10 [2] dividend not multiple of 10)	2
determine the unknown whole in a division equation (__ / 2 = 5) (dividend within 100 and divisor within 50, none is multiple of 10, completely divisible)	1
Total	**30**

Grade 4

Content	# of Items
4(4)(A): Add and subtract whole numbers and decimals to the hundredths place using the standard algorithm.	**10**
Add whole numbers and decimals (< 1,000,000)	4
two whole numbers greater than 1,000 (within 20,000 and 10,000)	1
whole number and a decimal to the tenths or hundredths place (within 10,000 and tenths place)	1
decimals to the tenths place (both decimals to tenths place)	1
decimals to the hundredths place (both decimals to hundredths place)	1
Subtract whole numbers and decimals (< 1,000,000)	4
two whole numbers greater than 1,000 (within 20,000 and 10,000)	1
decimals to the tenths place (both decimals to tenths place)	1
decimals to the hundredths place (both decimals to hundredths place)	1
decimals to the tenths place from a whole number (within 10,000 and tenths place)	1

Content	# of Items
Add and subtract whole numbers and decimals (<1,000,000)	2
two-step problem with addition and subtraction of whole numbers	2
4(4)(D): Use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number.	**8**
Multiply up to a four-digit number by a one-digit number (> 1,000 and < 100,000)	5
one-digit number by a one-digit number (within 9 and 9)	1
two-digit number by a one-digit number (within 99 and 9)	1
three-digit number by a one-digit number (within 999 and 9)	2
four-digit number by a one-digit number (within 9,999 and 9)	1
Multiply a two-digit number by a two-digit number (> 1,000 and < 100,000)	3
a two-digit number by a two-digit number (both multiplicands are multiples of 10 within 10 and 90)	1
a two-digit number by a two-digit multiple of 10 (within 99 and 10)	1
a two-digit number by a two-digit number (neither of the multiplicands is a multiple of 10) (within 99 and 11)	1
4(4)(F): Use strategies and algorithms, including the standard algorithm, to divide up to a four-digit dividend by a one-digit divisor.	**8**
one-digit dividend by a one-digit divisor (within 9 and 9)	1
two-digit dividend by a one-digit divisor (within 99 and 9)	2
three-digit dividend by a one-digit divisor (within 999 and 9)	2
four-digit dividend by a one-digit divisor (within 9,999 and 9)	3
4(4)(H): Solve with fluency one- and two- step problems involving multiplication and division, including interpreting remainders.	**4**
two-step problem where the product of the first step is the multiplicand of the second step	1
where a factor is unknown in a multiplication equation	1

Content	# of Items
where the dividend is unknown in a division equation	1
where the divisor is unknown in a division equation	1
Total	**30**

Grade 5

Content	# of Items
5(3)(B): Multiply with fluency a three-digit number by a two-digit number using the standard algorithm.	**5**
a three-digit number by a two-digit number, both numbers are multiples of 10 (within 500 and 90)	1
a three-digit multiple of 10 by a two-digit number (within 500 and 99)	1
a three-digit number by a two-digit multiple of 10 (within 500 and 90)	1
a three-digit number by a two-digit number, neither a multiple of 10 ([1] within 500 and 99 [2] within 999 and 99)	2
5(3)(C): Solve with proficiency for quotients of up to a four-digit dividend by a two-digit divisor using strategies and the standard algorithm.	**5**
for quotients of a four-digit dividend by a two-digit divisor (within 9,999 and 99)	2
for quotients of a three-digit dividend by a two-digit number (within 999 and 99)	2
for quotients of a two-digit dividend by a two-digit divisor (dividend and divisor within 99 and 50)	1
5(3)(E): Solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers.	**3**
for products of decimals to the tenths (within 99.9 and 49.9)	1
for products of decimals to the hundredths ([1] within 20.99 and 10.99 [2] within 99.99 and 49.99)	2

Content	# of Items
5(3)(G): Solve for quotients for decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm.	**3**
for quotients of decimals to the hundredths, four-digit dividends and two-digit whole number divisors (within 4,999.99 and 99)	1
for quotients of decimals to the hundredths, three-digit dividends and two-digit whole number divisors (within 999.99 and 99)	1
for quotients of decimals to the hundredths, two-digit dividends and two-digit whole number divisors (within 99.99 and 99)	1
5(3)(K): Add and subtract positive rational numbers fluently.	**14**
Add positive rational numbers	6
positive rational numbers represented as decimals (decimals within thousandths)	2
positive rational numbers represented as fractions with different denominators with a sum < 1 (denominators within 50)	1
positive rational numbers represented as fractions with different denominators with a sum > 1 (denominators within 50)	1
positive rational numbers represented as improper fractions (at least one) with like denominators (denominators up to and including 12)	1
positive rational numbers as mixed numbers with unlike denominators (denominators within 50)	1
Subtract positive rational numbers	8
positive rational numbers represented as decimals (decimals within thousandths)	2
positive rational numbers represented as a whole number and a fraction (denominators within 50)	1
positive rational numbers represented as fractions with unlike denominators (denominators within 50)	1
positive rational numbers represented as a fraction and a mixed number with unlike denominators where the difference is < 1 (denominators within 50)	1
positive rational numbers represented as improper fractions (at least one) with like denominators (denominators up to and including 12)	2

Content	# of Items
positive rational numbers as mixed numbers with unlike denominators (denominators within 50)	1
Total	**30**

Grade 6

Content	# of Items
6(3)(D): Add, subtract, multiply, and divide integers fluently.	**16**
Add integers	3
positive integers (within 1,000,000)	1
positive and negative integers (within 1,000)	1
negative integers (within 100,000)	1
Subtract integers	3
positive integers (within 1,000,000)	1
positive and negative integers (within 1,000)	1
negative integers (within 100,000)	1
Multiply integers	5
positive integers (within 1,000,000)	1
positive and negative integers [1] within 1,000; [2] within 100,000	2
negative integers [1] within 1,000; [2] within 100,000	2
Divide integers	5
positive integers (within 1,000,000)	1
positive and negative integers [1] within 1,000; [2] within 100,000	2
negative integers [1] within 1,000; [2] within 100,000	2

Content	# of Items
6(3)(E): Multiply and divide positive rational numbers fluently.	**14**
Multiply positive rational numbers	7
positive rational numbers represented as fractions less than 1 with like denominators (denominators within 50)	1
positive rational numbers represented as fractions less than 1 with different denominators (denominators within 50)	1
positive rational numbers represented as fractions greater than 1 with like denominators (denominators within 50)	1
positive rational numbers represented as fractions greater than 1 with different denominators [1] denominators within 12; [2] denominators within 25	2
positive rational numbers represented as decimals to the tenths or hundredths place [1] within 100; [2] within 1,000	2
Divide positive rational numbers	7
positive rational numbers represented as fractions less than 1 with like denominators (denominators within 50)	1
positive rational numbers represented as fractions less than 1 with different denominators (denominators within 50)	1
positive rational numbers represented as fractions greater than 1 with like denominators (denominators within 50)	1
positive unit fraction by whole number	1
positive rational numbers represented as fractions greater than 1 with different denominators [1] denominators within 12; [2] denominators within 25	1
positive rational numbers represented as decimals where the quotient terminates at the tenths, hundredths, or thousandths place [1] within 100; [2] within 1,000	2
Total	**30**

Appendix E: References

National Mathematics Advisory Panel. (2008). *Foundations for success: The final report of the National Mathematics Advisory Panel*. U.S. Department of Education.

Texas Education Agency. (2021). *Chapter 111. Texas Essential Knowledge and Skills for Mathematics.* https://tea.texas.gov/about-tea/laws-and-rules/texas-administrative-code/19-tac-chapter-111

