CYPRESS FAIRBANKS
INDEPENDENT SCHOOL DISTRICT
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Fact Fluency District Plan Grades K-5

Cypress-Fairbanks ISD Mathematics Fluency Plan 2015-2016

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2015-2016

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Cypress-Fairbanks ISD Mathematics Fluency Plan 2015-2016

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Purpose and Research

The CFISD Fact Fluency Plan is designed to help students develop fluency and automaticity of basic facts. This will be accomplished through a balanced approach focusing on conceptual understanding, math fact strategies, and the relationships between operations.

CFISD Mathematics- Current Practices:

Guiding Principle: Conceptual understanding is the foundation for developing procedural fluency, which leads to mathematical literacy.

Instructional Practice: Build mathematical fluency for efficient problem solving.

National Mathematics Panel Report:

Students should develop immediate recall of arithmetic facts to free the "working memory" for solving more complex problems.

TEA- Revised TEKS

For students to become fluent in mathematics, they must develop a robust sense of number. Procedural Fluency is defined as "skill in carrying out procedures flexibly, accurately, efficiently, and appropriately", according to the National Research Council's report, "*Adding It Up*". As students develop procedural fluency, they must also realize that true problem solving may take time, effort, and perseverance.

Research

Mastery of a basic fact means that a child can give a quick response (in about 3 seconds) without resorting to non-efficient means, such as counting*. (Van de Walle & Lovin 2006).*

What Practice Provides *(Van de Walle, Karp, & Bay-Williams, Elementary and Middle School Mathematics: Teaching Developmentally 2010):*

- *An opportunity to develop alternative and flexible strategies*
- *A clear message that mathematics is about figuring things out and that it makes sense*
- *An increased opportunity to develop conceptual ideas and more elaborate and useful connections*

Cypress-Fairbanks ISD Mathematics Fluency Plan 2015-2016

Fluency: Simply Fast and Accurate? I Think Not! *(Linda M. Gojak, NCTM President)*

"Computational fluency refers to having efficient and accurate methods for computing. Students exhibit computational fluency when they demonstrate flexibility in the computational methods they choose, understand and can explain these methods, and produce accurate answers efficiently. The computational methods that a student uses should be based on mathematical ideas that the student understands well, including the structure of the base-ten number system, properties of multiplication and division, and number relationships" (p. 152).

Cypress-Fairbanks ISD Mathematics Fluency Plan 2015-2016

Components of CFISD Fact Fluency Plan:

Teaching with Conceptual Understanding

This includes:

- Following a teaching sequence designed to develop a sense of number using fact strategies and the commutative property
- Using representational models, context-based problem solving, real world examples, discussions, children's literature, and partner activities

Providing Meaningful Practice

This includes:

- Using a variety of practice helps to reinforce and continue the process of automaticity
- Providing students a variety of opportunities to practice using games, mini-lessons, connections to literature, and partner practice
- Providing parents resources to use at home with children

Assessing

This includes:

- Mastering the Basic Facts will be used to assess a specific strategy, inverse operation with the specific strategy, and a mixed review.
- Fact Checks (Basic Fact Assessments) will be provided to teachers for practice in the classroom. Students in grades 2-5 will record the time as the fact check is complete. Students will monitor their progress using a personal fact graph.
- Students will be assessed at the beginning, middle, and end of year for automaticity with the same number of problems on the fact checks. These will include the strategies taught prior to the assessment and spiral previous strategies.

Cypress-Fairbanks ISD Mathematics Fluency Plan 2015-2016

Fact Fluency for Student Mastery Timeline – According to TEKS

- Kindergarten- Combinations to 10 using concrete and pictorial representations
- First- Addition and Subtraction Facts within 20
- Second- Addition and Subtraction Facts within 20 with automaticity
- Third- Multiplication and Division facts to 10 by 10 with automaticity
- Fourth- Multi-digit Computational Fluency using fact strategies
- Fifth- Multi-digit Computational Fluency using fact strategies

Grade Level Expectations

	TEKS	Goals
Kinder	2.I 3.A,3.B,3.C	▪ Count forward, count backward, read, write, and represent #s to 20 with or without objects ▪ Compose and decompose up to 10 with objects and pictures
First	2.A, 2.B 3.A, 3.B, 3.C,3.D, 3.E,3.F 4.A, 4.C 5.B,5.C,5.D,5.E,5.F,5.G 7.E	▪ Compose and Decompose, compare, order up to 120 ▪ Basic Fact strategies to Add/Subtract within 20
Second	4.A 1.D,1.E,1.G 2.A 4.A, 4.B 5.A	▪ Recall basic facts to add and subtract within 20 with automaticity ▪ Compose and Decompose, compare, order up to 1,200
Third	2.A,2.B 4.A, 4.D,4.E,4.F,4.J,4.K 5.A, 5.B, 5.C, 5.D 6.E	▪ Recall multiplication facts up to 10 x 10 with automaticity and how fact recall corresponds to division ▪ Solve with fluency one-step and two-step problems involving addition and subtraction within 1,000 based on place value, operations, and relationship between addition and subtraction ▪ Compose and Decompose, compare, order up to 100,000
Fourth	4.A, 4.B, 4.C, 4.E, 4.F, 4.G	▪ Solve with fluency one-step and two-step problems involving multiplication and division, including interpreting remainders ▪ Compare and order numbers up to 1,000,000,000
Fifth	3.B, 3.C, 3.D, 3.E, 3.F, 3.G, 3.I, 3.J 6.A, 6.B 4.B, 4.C, 4.D, 4.E, 4.G, 4.H 10.A, 10.C	▪ Fluency in multiplication up to 3-digit numbers multiplied by 2-digit numbers ▪ Proficiency for quotients of up to 4-digit dividends by 2-digit divisor ▪ Addition and Subtraction of positive rational numbers with fluency

Parent Guide to Basic Facts Progression Grades K-5

CFISD

Parent Guide to Basic Facts Progression - Kindergarten

	1st Nine Weeks
Strategy/Focus	▪ **Count Forward, Backward, Read, Write, and Represent #'s to 20** ▪ **Subitize to 5**
Focus- The Big Idea	▪ Count by 1s to 20 ▪ Count down from 20 to 1 ▪ Read and write numbers to 20 ▪ Begin at any number and count on to 20 ▪ Subitizing is being able to instantly recognize the quantity of a small group of objects in organized and random arrangements.
Videos/Songs for Practice	Count to 20 Song Count down from 20 Subitizing Number Fluency
	2nd Nine Weeks
Strategy/Focus	▪ **Compose and decompose numbers to 5** ▪ **Subitize numbers from 6-10**
Focus- The Big Idea	▪ Decomposing is separating a whole group into parts ▪ Composing is taking two parts and joining them to form a whole ▪ Subitizing helps students recognize parts when composing numbers
Games/Videos for Practice	Number Bracelets 1-5 Shake and Spill (Ways to Make "6") Circle, Circle Capture and Count Subitize 6-10
	3rd Nine Weeks
Strategy/Focus	▪ **Compose and decompose numbers from 6 to 10** ▪ **Adding one and adding two up to 10** ▪ **Counting from 1-100 by ones and tens**
Focus- The Big Idea	▪ The sum when 1 is added to a quantity is the next counting number ▪ Addition is a joining or combining process ▪ The order of addends does not change the sum ▪ Counting to 100 assists in understanding the order of numbers when counting on
Games/Songs for Practice	Number Bracelets 6-10 Clap, Jump, Wiggle Adding 1 Adding 2 Count to 100 Climbing up this Mountain: Count to 100 by 10s
	4th Nine Weeks
Strategy/Focus	▪ **Subtracting one and two up to 10** ▪ **Adding zero**
Focus- The Big Idea	▪ Subtracting is a separating or comparison process ▪ Addition and subtraction are inverse (opposite) processes ▪ Adding zero to a number does not change the quantity of the original number
Games/Songs for Practice	Hop the Line Domino Addition Subtracting Song: When you Subtract with a Pirate Adding zero practice video

Parent Guide to Basic Facts Progression – 1st Grade

	1st Nine Weeks
Strategy/Focus	**Understanding Addition and Subtraction**
Focus- The Big Idea	▪ Our number system is a system of patterns. ▪ Addition is a joining or part-part-whole process. ▪ Subtraction is a separate or compare process. ▪ The order of the addends does not change the sum (the commutative property). ▪ Addition and subtraction are inverse operations. ▪ Numbers are flexible. They can be broken apart to perform calculations more easily.
Games for Practice	Number Bracelets Shake and Spill (Ways to Make "6") Circle, Circle Capture and Count War using a deck of cards
Strategy/Focus	**Plus One/Plus Two Minus One/Minus Two**
Focus- The Big Idea	▪ The sum when 1 is added to a quantity is the next counting number. ▪ Our number system is a system of patterns. ▪ Addition is a joining or combining process. ▪ Subtraction is a separation or comparison process. ▪ The order of addends does not change the sum. ▪ Addition and subtraction are inverse (opposite) processes.
Games for Practice	Plus One/Two Bingo Minus One/Two Bingo Clap, Jump, Wiggle Hop the Line
Strategy/Focus	**Adding Zero**
Focus- The Big Idea	▪ The zero property of addition tells us that 0 added to any number results in a sum that is the original quantity. ▪ The order of addends does not change the sum. ▪ Addition is a joining or part-part-whole process. ▪ Subtraction is a separate or compare process.
Games for Practice	Domino Addition/Subtraction Hop the Line
Strategy/Focus	**Adding Ten**
Focus- The Big Idea	▪ Numbers can represent separate objects or groups of 10 objects. ▪ Adding 10 to a single-digit number will add one place value. ▪ The order of the addends does not change the sum. ▪ Working with tens simplifies computations.
Games for Practice	What's Ten More/Ten Less? Slam Ten
	2nd Nine Weeks
Strategy/Focus	**Doubles**
Focus- The Big Idea	▪ Doubling is the process of joining two groups of the same quantity. ▪ Halving is the opposite of doubling. ▪ Addition and subtraction are inverse (opposite) processes.
Games for Practice	Roll and Double It I Spy Doubles Doubles Memory Halves Memory

Parent Guide to Basic Facts Progression – 1st Grade

Strategy/Focus	**Making Ten**
Focus- The Big Idea	▪ Our number system is a system of tens. ▪ Working with tens simplifies computations. ▪ The order of the addends does not change the sum. ▪ Addition and subtraction are inverse operations.
Games for Practice	Domino Tens Addition/Subtraction Fact Card Ten-Frames Make Ten Behind the Back
	3rd Nine Weeks
Strategy/Focus	**Using Tens**
Focus- The Big Idea	▪ Working with tens simplifies computations. ▪ Numbers are flexible. They can be broken apart to more easily perform calculations.
Games for Practice	Using Ten
	4th Nine Weeks
Strategy/Focus	**Using Doubles (Doubles Plus 1)**
Focus- The Big Idea	▪ Doubling is the process of joining two groups of the same quantity. ▪ Halving is the opposite of doubling. ▪ Addition and subtraction are inverse (opposite) processes.
Games for Practice	Scrambled Eggs

Parent Guide to Basic Facts Progression – 2nd grade

	1st Nine Weeks
Strategy/Focus	**Addition/Subtraction** Plus One/Plus Two Subtract One/Subtract Two Adding Zero Subtracting Zero
Focus- The Big Idea	▪ The sum when 1 is added to a quantity is the next counting number ▪ Addition is a joining or combining process ▪ Subtraction is a separation or comparison process ▪ The order of addends does not change the sum. ▪ Addition and subtraction are inverse (opposite) processes. ▪ The zero property of addition tells us that 0 addend to any number results in a sum that is the original quantity. ▪ The order of the addends does not change the sum (the commutative property). ▪ Addition is the joining or part-part-whole process. ▪ Subtraction is a separate or compare process.
Games for Practice	Plus One/Two Bingo Minus One/Two Bingo Capture Two
	2nd Nine Weeks
Strategy/Focus	**Addition/Subtraction** Adding Ten Subtracting Ten Doubles
Focus- The Big Idea	▪ Numbers can represent separate objects or groups of 10 objects. ▪ Adding 10 to a single-digit number will add one place value. ▪ The order of the addends does not change the sum (the commutative process. ▪ Doubling is the process of joining two groups of the same quantity. ▪ Halving is the opposite of joining two groups of the same quantity. ▪ Addition and Subtraction are inverse operations.
Games for Practice	You're a 10-Addition You're a 10-Subtraction Tens Go Fish I Spy Doubles
	3rd Nine Weeks
Strategy/Focus	**Addition/ Subtraction** Making Ten Subtraction from Ten Using Ten Using Doubles Doubles Subtraction
Focus- The Big Idea	▪ Numbers can represent objects or groups of 10 objects. ▪ Adding 10 to a single-digit number will add one place value. ▪ The order of addends does not change the sum (the commutative property). ▪ Halving is the process of joining two groups of the same quantity. ▪ Halving is the opposite of doubling. ▪ Addition and subtraction are inverse operations.
Games for Practice	Addition Turnover Subtraction Turnover Dominoes Tens - Addition Dominoes Tens - Subtraction Making Tens

Parent Guide to Basic Facts Progression – 2nd grade

	4th Nine Weeks
Strategy/Focus	**Multiplication and Division** Multiply by Two/ Divide by Two Multiply by Ten/ Divide by Ten Multiply by Five/ Divide by Five Multiply by One/ Divide by One Multiply by Zero/ Divide by Zero
Focus- The Big Idea	▪ Multiplication by 2 is the same as doubling. ▪ Numbers stand for a variety of things. Operation symbols help us determine what the numbers represent. ▪ Our number system is a system of patterns. ▪ Multiplication by 10 is like skip-counting by 10. ▪ Our number system is a system of patterns. ▪ The order of the factor does not change the product (the commutative property). ▪ Multiplication by 5 is like skip-counting by 5. ▪ 5 is half of 10. Multiplying a number by 5 will result in a product that is half of the product that results when the same number is multiplied by 10. ▪ When multiplying by 1, the product is the same as the other factor. ▪ If either factor is 0, the product will be 0.
Games for Practice	Multiplication Cut Throat Slam Ten Zemory Math Checkers

Parent Guide to Basic Facts Progression - 3rd grade

	1st Nine Weeks
Strategy/Focus	Multiply and divide by 2 Multiply and divide by 10 Multiply and divide by 5
Focus- The Big Idea	▪ Our number system is a system of patterns. ▪ The order of the factors does not change the product (commutative property). ▪ Multiplication by 2 is the same as doubling. ▪ Multiplication by 10 is like skip-counting by 10. ▪ Multiplication by 5 is like skip-counting by 5. ▪ 5 is half of 10. Multiplying a number by 5 will result in a product that is half of the product that results when the same number is multiplied by 10. ▪ When multiplying by 5 the following is true about the product: o The ones digit is always 0 or 5 o The products alternate odd, then even o Some of the products are x10 products o Every other product is a x10 product
Games for Practice	X2 Multiplication Bingo Keep It, Toss It Corners
	2nd Nine Weeks
Strategy/Focus	Multiply and divide by 1 Multiply and divide by 0 Multiply and divide by 3 Multiply and divide by 4
Focus- The Big Idea	▪ Our number system is a system of patterns. ▪ The order of the factors does not change the product (the commutative property). ▪ When multiplying by 1, the product is the same as the other factor. ▪ If either factor is 0, the product will be 0. ▪ Multiplying by 3 is tripling a number. ▪ Multiplication by 4 is doubling a double.
Games for Practice	Math Checkers Zemory Triangle Fact Cards to Review x3 Fact Fish
	3rd Nine Weeks
Strategy/Focus	Multiply and divide by 6 Multiply and divide by 9 Multiply and divide by 8
Focus- The Big Idea	▪ Our number system is a system of patterns. ▪ The order of the factors does not change the product (the commutative property). ▪ In multiplication, if we double the number of sets or double the size of each set, the product will double. ▪ The distributive property shows us that numbers can be broken apart in varied ways (ex: 4x6, the 6 might be broken down into 2 threes, so 4x6 is the same as 4 x(3+3), which is the same as 4x3 plus 4x3). Splitting a factor into two simpler factors allows students to find unknown products and strengthen their understanding of numbers. Multiplication facts are connected. Knowing one set of facts can help us understand a related set of facts. Products of x9 facts are 1

Parent Guide to Basic Facts Progression - 3rd grade

	group less than products of x10 facts, so our prior knowledge of multiples of 10 can help us quickly learn to multiply by 9 (ex: 9x3=1 group of 3 less than 10x3 or might be thought of as 30-3). ▪ Multiplication by 8 is double multiplication by 4
Games for Practice	Capture Nine Cross Crazy Eight
	4th Nine Weeks
Strategy/Focus	Multiply and divide by 7 Reviewing all facts for automaticity.
Focus- The Big Idea	▪ Our number system is a system of patterns. ▪ The order of the factors does not change the product (the commutative property) ▪ The distributive property shows us that numbers can be broken apart in varied ways (ex: in the expression 6x7, 7 might be broken down into 2+5, so 6x7 is the same as 6x(2+5), which is the same as 6x2 plus 6x5.) Splitting large factors and then finding the sum of the two familiar products is a way to find unknown products.
Games for Practice	Target 70 Spinning Facts

Parent Guide to Basic Facts Progression - 4th grade

	1st Nine Weeks
Strategy/Focus	Connecting Multiplication and Division
Focus- The Big Idea	▪ Multiplication and division are inverse operations ▪ Multiplication and division are both involve repeated operations(addition and subtraction) ▪ Multiplication and division combine or distribute equal sets ▪ Fact Families are used to show the connection between multiplication and division
Games for Practice	Mini Fish Bowl Multiplication Playing Cards Domino Multiplication Losing Your Marbles
	2nd Nine Weeks
Strategy/Focus	Multiplication/Division of 2's, 10's, 5's, 1's, 0's
Focus- The Big Idea	▪ Multiplying by 2 is doubling or twice the number. ▪ Multiplying by 10 is like skip counting by 10. ▪ Multiplying by 5's results in a product that is half of the product that results when the same number is multiplied by 10. ▪ Multiplying by 1 results in a product that is the same as the other factor. ▪ Multiplying by 0 the product will be 0. ▪ The order of the factors does not change the product. ▪ Multiplication and division are inverse (opposite) processes.
Games for Practice	Slides and Ladders Math Baseball Halves Race Three in a Row
	3rd Nine Weeks
Strategy/Focus	Multiplication/Division of 3s, 4s, 6s, 9s x2/Plus One, x5/Plus One, x5/Subtract One, x10/Subtract One
Focus- The Big Idea	▪ Multiplying by 3 is tripling a number or doubling the number and then adding 1 more set. ▪ Multiplying by 4 is doubling the product of x2 fact (doubling a double) or multiplying x5 and subtracting 1 set. ▪ Multiples of 4 are also multiples of 2, always even. ▪ Multiplying by 6 is tripling x2 or, doubling the product of x3. ▪ Multiplying by 9 is tripling the product of x3 or, multiplying x10 and subtracting 1 set. ▪ Products can be created in various ways: (4x1) + (4x5) = 4x6 or (2x6) + (2x6) = 4x6. ▪ The order of factors does not change the product. ▪ Multiplication and division are inverse (opposite) processes.
Games for Practice	Fact Grid Criss Cross Multiplication BINGO

Parent Guide to Basic Facts Progression - 4th grade

	4th Nine Weeks
Strategy/Focus	Multiplication/Division of 7s and 8s
Focus- The Big Idea	▪ Multiplication by 8 is double the multiplication facts by 4. Doubling, doubling, and doubling again. ▪ Multiplication by 7 can be solved by splitting large factors and then finding the sum of the two familiar products. (e.g., 6x7 can be 6x2 plus 6x5)
Games for Practice	Crazy Eight Sum up the Facts Spinning Facts Math Facts Face-off I Spy 1 More Race to 100

Parent Guide to Basic Facts Progression - 5th grade

	1st Nine Weeks
Strategy/Focus	Developing Fluency with Multiplication/Division Facts of 2s, 10s, 5s, 1s, 0s, 3s, 4s, and 6s
Focus- The Big Idea	▪ Becoming Fluent with Multiplication Facts ▪ Understanding that multiplication and division are inverse (opposite) operations ▪ The order of the factors does not change the product ▪ Identifying patterns on a multiplication chart ▪ Make connections to division
Games for Practice	Fact-Tac-Toe Card Turnover
	2nd Nine Weeks
Strategy/Focus	Developing Fluency with Multiplication/Division Facts of 8s, 9s, 7s
Focus- The Big Idea	▪ Becoming Fluent with Multiplication Facts ▪ Understanding that multiplication and division are inverse (opposite) operations ▪ The order of the factors does not change the product ▪ Identifying patterns on a multiplication chart ▪ Make connections to division
Games for Practice	Fact-Tac-Toe Card Turnover
	3rd Nine Weeks
Strategy/Focus	Reviewing Multiplication/Division Facts (Mixed)
Focus- The Big Idea	▪ Becoming Fluent with Multiplication Facts ▪ Understanding that multiplication and division are inverse (opposite) operations ▪ The order of the factors does not change the product ▪ Identifying patterns on a multiplication chart ▪ Make connections to division
Games for Practice	Math Board Game Fact War Equation Game
	4th Nine Weeks
Strategy/Focus	Practicing Fluency with Multiplication/Division Facts (Mixed)
Focus- The Big Idea	▪ Practice Fluency with Multiplication, Division, Addition, and Subtraction Facts ▪ Understanding that multiplication and division are inverse (opposite) operations ▪ The order of the factors does not change the product ▪ Make connections to division
Games for Practice	Math Board Game Fact War Equation Game