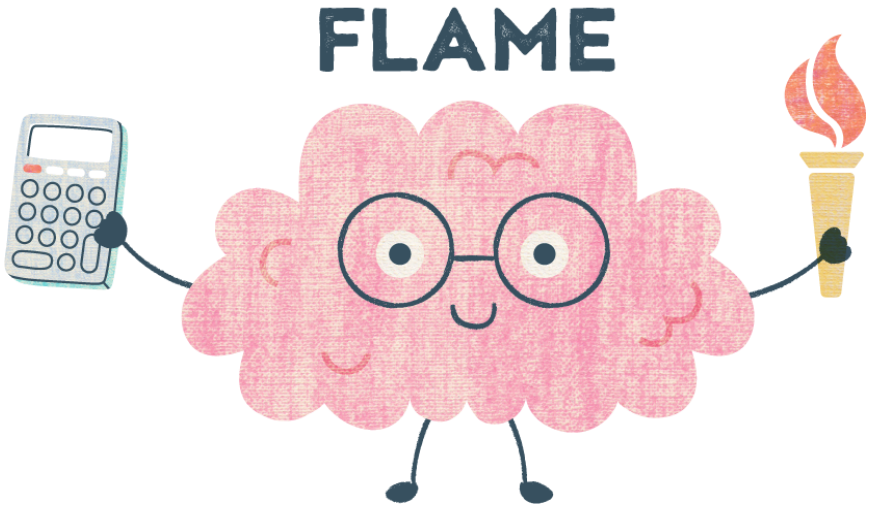
FLAME

Foundational Lessons to Accelerate Math Education (for all students)



Unit 1

Teacher's Guide

Grade 4

DEPARTMENT of EDUCATION
Louisiana Believes

Foundational Lessons for Accelerating Math Education (FLAME)

Purpose

Foundational Lessons for Accelerating Math Education (FLAME) provides teachers with tools to build, track, and support the development of grade-level math fluency for students in grades K-5. Materials are organized into three units per grade level. Each unit provides teachers with various activities designed to support the development of the expected fluency skills at each grade level. Units also include guidance to help teachers identify students whose skills are fluent, progressing, or emerging. Each unit provides parent reports explaining how families can support their child's learning.

Activities are organized so that students have opportunities to build skill and fluency, supported by the teacher in preparation for more complex mathematics. FLAME activities are designed to be brief, no longer than 10-15 minutes, and include opportunities for students to practice fluency skills independently. Each activity includes formative assessment items to track students' progress toward fluency.

FLAME is not a substitute for strong classroom instruction provided through high-quality instructional materials or meant to replace the fluency-building activities within those materials. These activities complement high-quality instructional materials by building students' accuracy, efficiency, and flexibility with grade-appropriate fluency skills. FLAME activities offer additional support to students as they move through grade-level content.

Teachers should anticipate that some of their students will need additional practice with the skills beyond what is provided through the activities. By using the data collected through daily formative assessments and growing understanding of fluency development, teachers have the power to ensure that their students will build grade-appropriate fluency skills.

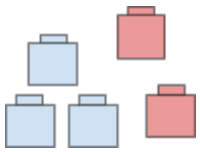
If you have additional questions or feedback on these lessons, please do not hesitate to contact the Louisiana Math team at STEM@la.gov.

Louisiana's Math Pillars

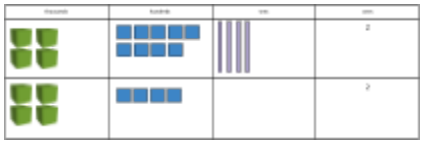
Mathematical Fluency

Students who are fluent in grade-level mathematics are able to compute with accuracy, efficiency, and flexibility using appropriate strategies chosen from a bank of approaches when engaging with various operations. Fluency develops along a concrete to representational to abstract progression. Early learners use manipulatives to build understanding, progress to visual representations, and eventually move into abstractions as they develop automaticity. Students move through the concrete-representational-abstract (CRA) progression continuously while developing skills with more complex numbers. Movement through the progression is not always linear. Concrete and representational strategies become part of the tools students reference and use when they are challenged. Students build comfort in choosing a strategy as they build confidence with multiple approaches.

K.OA.A.1 Represent addition and subtraction with objects, fingers, mental images, drawings*, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
*Drawings need not show details, but should show the mathematics of the problem. (This applies wherever drawings are mentioned in the Standards.)

Concrete	Representational	Abstract
Students use manipulatives and counting to add.  3 + 2 = 5	Students use fingers to add or draw the following picture. 3 + 2 = 5	Solve the problem 3 + 2 3 + 2 = 5

4.NBT.A.2 Read and write multi-digit whole numbers less than or equal to 1,000,000 using base-ten numerals, number names, and expanded forms. Compare two multi-digit numbers based on the meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

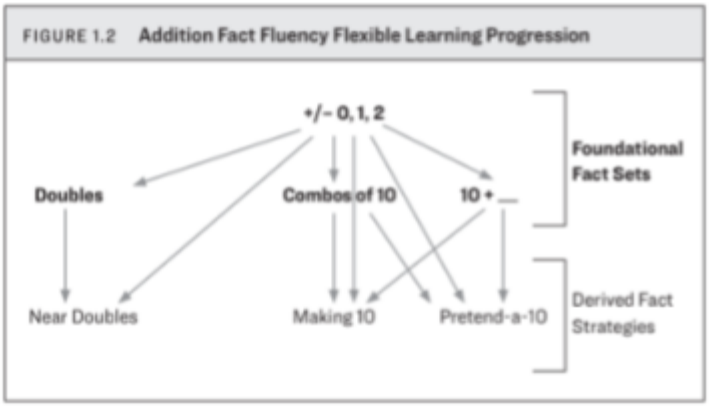
Concrete	Representational	Abstract
Which number is larger? 4,942 or 4,492  4,942 > 4,492	Which number is larger? 4,942 or 4,492 4000 + 900 + 40 + 2 > 4000 + 400 + 90 + 2 4,942 > 4,492	Which number is larger? 4,942 or 4,492 4,942 > 4,492

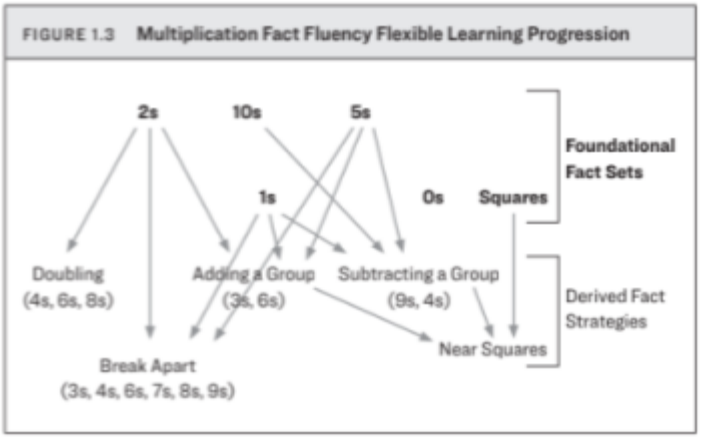
While speed is definitely a component of fluency, it is not necessarily speed in producing an answer; rather, fluency can be observed by watching the speed with which a student engages with a particular problem. The standards specify grade-level appropriate strategies or types of strategies with which students should demonstrate fluency (e.g., 1.OA.C.6 allows for students to use counting on, making ten, creating equivalent but easier or known sums, etc.). It should also be noted that teachers should expect some procedures to take longer than others (e.g., fluency with the standard algorithm for division, 6.NS.B.2, as compared to fluently adding and subtracting within 10, 1.OA.C.6).

Standards identified as targeting procedural skill and fluency do not all have an expectation of automaticity and/or rote recall. Only two standards, 2.OA.B.2 and 3.OA.C.7, have explicit expectations of students knowing facts from memory. Other standards targeting procedural skill and fluency do not require students to reach automaticity. For example, in 4.G.A.2, students do not need to reach automaticity in classifying two-dimensional figures.

Foundational Facts and Derived Facts

Number sense builds as student begin counting, derive specific facts and move to mastery and therefore automiticity of facts with any operation. Figures 1.2 and 1.3[1] below show the Foundational Fact Sets and those students derive using strategies.





[1] Bay-Williams, J., & Kling, G. (2019). *Math Fact Fluency*. Association for Supervision and Curriculum Development.

FLAME and Diverse Learners

The Special Education Playbook for School and System Leaders (Louisiana Department of Education, 2023) identifies three key instructional best practices as the central drivers of all support provided to students who struggle.

FOCUS ON CORE INSTRUCTION

EXTRA TIME TO LEARN

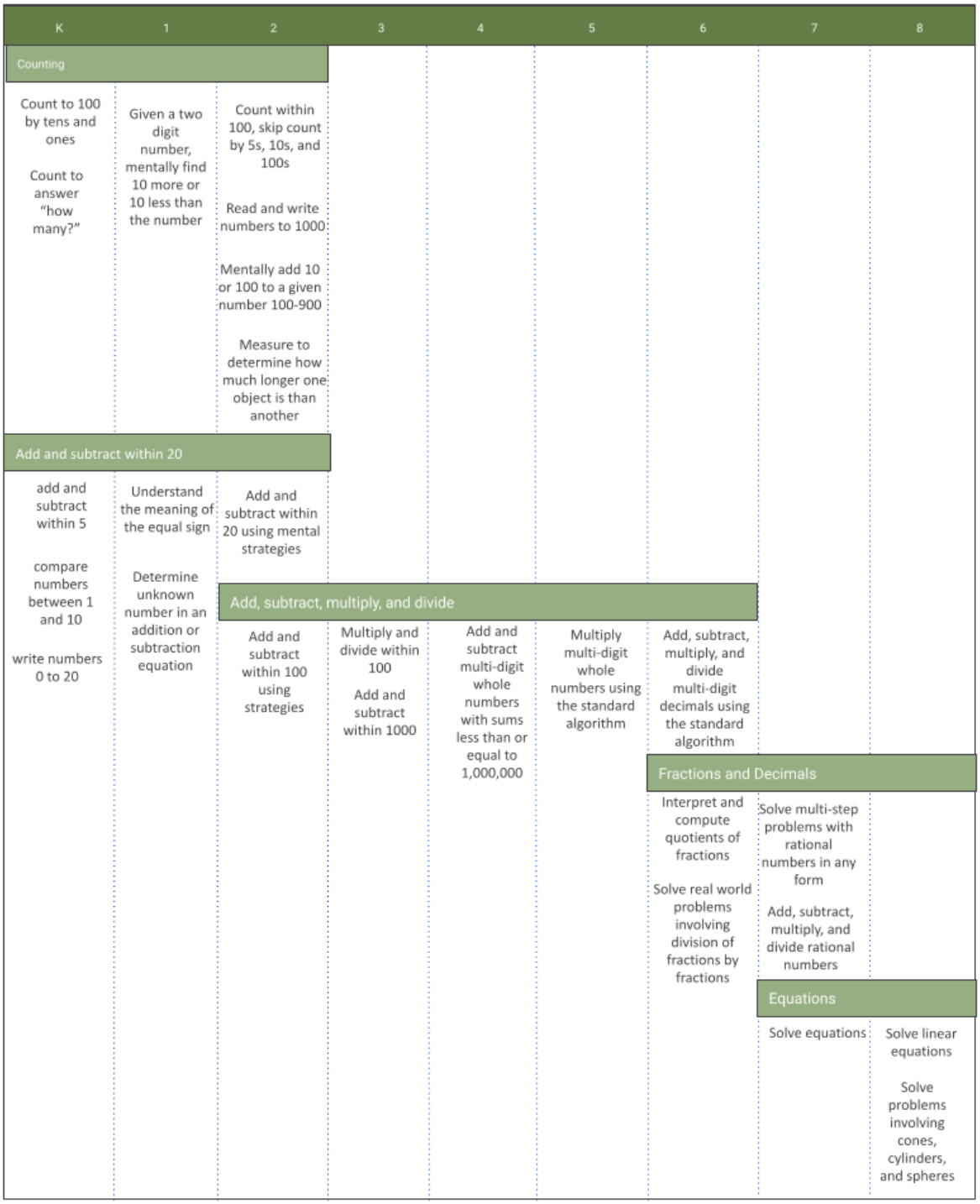
CONTENT STRONG TEACHERS

FLAME resources can be used to support foundational learning for all students including those with diverse learning needs. As educators determine support plans and interventions for students, the following should be considered:

- FLAME does not replace core grade-level instruction.
- Developing fact proficiency does not prevent students from engaging in grade-level instruction.
- No students' engagement with math content should be limited to the resources within FLAME.
- Intervention experiences for all students should occur within a coherent learning experience (TNTP, 2022) including a balance of the three aspects of rigor; conceptual understanding, procedural skill, and fluency and application.

Fluency Across the Grades

Students develop fluency as they build an understanding of the standards. As educators monitor and support students as fluent math learners, it is important to focus on the appropriate expectations at each grade level. The table below lists the topics at each grade where fluency is expected.



Lesson Breakdown

4.NBT.A.1	4.NBT.A.2	4.NBT.A.3	4.NBT.B.4
Change Place Value by Modeling	Arrange the Numbers from Least to Greatest	Finding the Midpoint	Subtract Common Units
Identifying Base Units	Comparing Numbers in Different Number Forms	Round to Different Place Values	
Introduction to Base Tens	Creating True Mathematical Statements Using Symbols and Place Value	Round to Different Place Values Review	
Number Patterns	Find 1, 10, and 100 Thousand More and Less Than a Given Number		
Place Value and Division	Identifying Base Units by Comparing Place Values		
Thousands to Millions	Place Value		
True Number Sentences with Place Value	Practice Writing in Expanded Form		
Unit Skip-Counting by Threes	Rename the Units		
Unit Skip-Counting by Twos	Reviewing Base Tens		

Student Name _____

FLAME Grade 4
Teacher Tracking Tool for Individual Students

Use this tracking tool to track individual students throughout each unit of FLAME.

Unit 1							
4.NBT.A.1		**4.NBT.A.2**		**4.NBT.A.3**		**4.NBT.B.4**	
Change Place Value by Modeling		Arrange the Numbers from Least to Greatest		Finding the Midpoint		Subtract Common Units	
Identifying Base Units		Comparing Numbers in Different Number Forms		Round to Different Place Values			
Introduction to Base Tens		Creating True Mathematical Statements Using Symbols and Place Value		Round to Different Place Values Review			
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FLAME Parent Report
Grade 4 Unit 1

To the Parent of _____,

This chart is to update you on _____'s current performance in math. It includes a description of the state math standards addressed in this unit. Please review your child's performance using the **performance summary key** below. Please keep in mind that some standards are listed in multiple quarters because the expectation looks different at different points in the school year. Please reach out to your child's teacher if you have any questions or concerns. There are activities at the end of this report that you can use to continue to support your child at home.

Performance Summary Key

Beginning	Student's performance demonstrates that they are **beginning** to understand the standard.
Progressing	Student's performance demonstrates they are **progressing** toward understanding the standard.
Consistent	Student's performance demonstrates they are showing **consistent** understanding of the standard

Description of Standard	Beginning	Progressing	Consistent
Recognizing the place value in numbers smaller than 1,000,000	☐	☐	☐
Writing numbers smaller than 1,000,000 in standard form	☐	☐	☐
Reading whole numbers equal to or less than 1,000,000	☐	☐	☐
Using place value to round	☐	☐	☐
Adding and subtracting numbers equal to or less than 1,000,000	☐	☐	☐

See the Louisiana Department of Education Family Math Engagement Library for ideas on how to support your child in math at home.