



# Numeracy Specialist Program

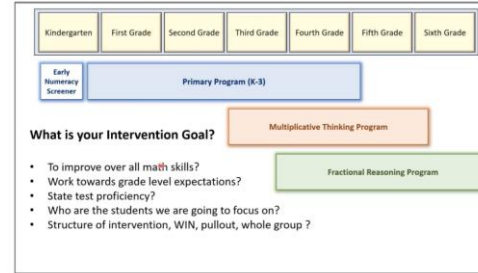
## Level 3

## Transitioning Programs and Multiplicative Thinking

## Course #3

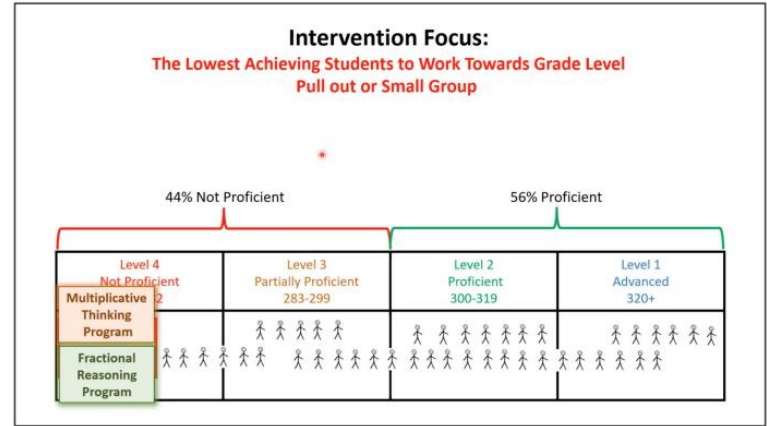
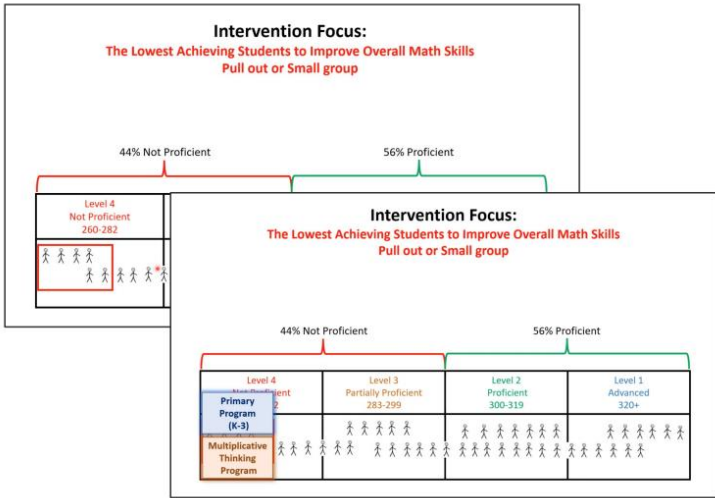
## Program Selection and Transitioning Between Programs <sup>nc</sup>

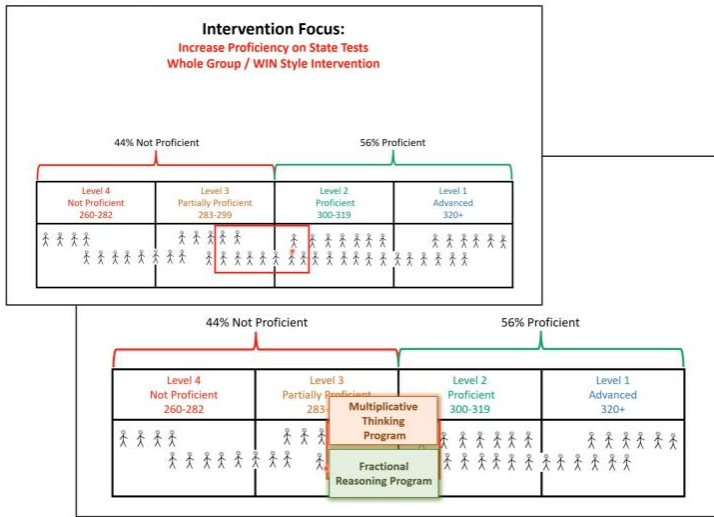
- What programs should I use with what grades?
- Can students in 4th and 5th grade use the Primary Program?
- When will I know when to transition to a new program?
- What if a student shows weakness in all 3 programs, where do I start?
- How long do I work in a program?



## Program Selection & Transition <sup>nc</sup>

- Design of program based off of curriculum/standards
- You can always use the programs with students who are older
- What is your intervention goal?
  - Improve overall math skills
  - Work toward grade level expectations
  - Improve proficiency on state standards
- 4th grade scenarios based on Intervention Focus (See slides 4-6 of your packet)
- Scenarios based on student data





	Primary Numeracy Program	Multiplicative Thinking	Fractions
K-2	All K-2 Students should work in the Primary Program	Unless being used for enrichment of very strong students, Multiplicative Thinking will not be used.	Almost under no circumstances will K-2 students use the fraction program.
3rd	Many struggling students will start in the K-2 Program.	Could be used in the introduction phases of Multiplication and Division	Midyear to end of the year for Domain 1. Domain 1 is a great introduction for 3rd grade.
4th	Some struggling students will need Primary Program, Part 2 in particular.	Many student will need some time in Multiplicative Thinking, especially at beginning of year	Midyear
5th	Some struggling students will need Primary Program, Part 2 in particular.	Many student will need some time in Multiplicative Thinking, especially at beginning of year	Beginning of year

\* Word Problem Intervention Program can be used for all grade K-5

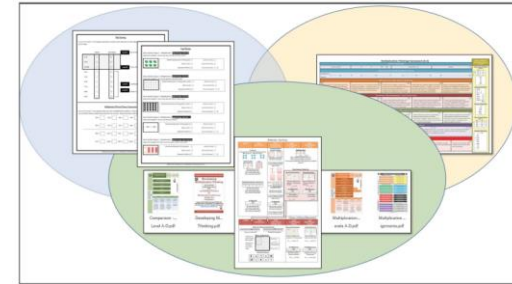
## Multiplicative Thinking Program

7

### Multiplicative Thinking Program <sup>nc</sup>

- 3 Pillars of the Program
  1. Assessment
  2. Framework
  3. Instructional Materials
- Multiplicative Thinking Framework is more of a strategy based framework than the Primary Numeracy Framework. There is less "can or can't do" tasks.
- Reference free webinar if you need a refresher on levels or assessment administration.
- Our focus is on breaking down the framework for instructional purposes.

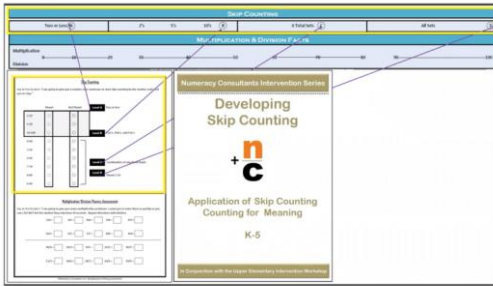
9



## Basic Skills: Skip Counting/ Framework



- Basic skills are just a measure of rote memorization.
- Assessment directly links to the framework.
- The “Developing Skip Counting Book” is in Free Materials.
- Balance between rote skip counting and applying skip counting.
- Every set has a video song for learning the oral sequence.
- Balance your instruction.
- Can be blended into your instruction for first few minutes of instruction or last few minutes.

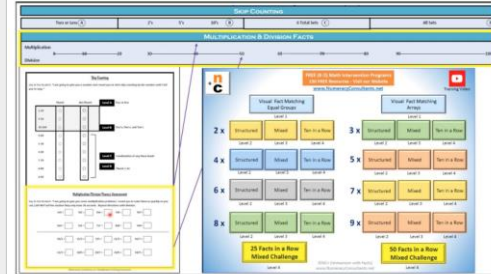


10

## Basic Skills: Multiplication Facts



- The Immersion with Facts tool is free and located in the free materials folder within the “Math Fact Program” folder.
- Explicit, direct, structured way to teach multiplication.
- There are different levels within the program.
  - Visual
  - Structured
  - Mixed
  - Ten in a Row
- The program is meant to be done with the students.
- Be sure the students are saying the answers out loud.



11

**4 x 6 =**

**+n  
c**

### Immersion with Facts

- Important: when working on these, say the problem and answer out loud **every time**.
- When student is working independently, say problem and answer out loud, too.

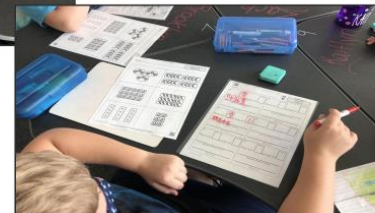
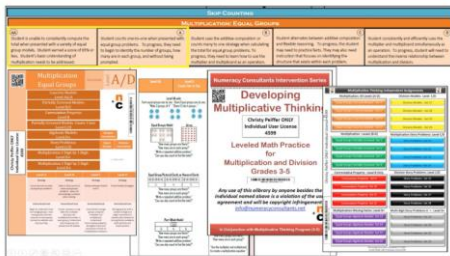
### Multiplication Equal Groups

- 4 Concrete Problems - How many groups, number in each group & the total can all be visually seen.
- 4 Abstract Problems - Never able to see the total number of objects.
- Level AA/A - Counting by ones or stress counting.
- Level B - Shows there is an understanding of what multiplication is about. Applying repeated addition or skip counting.
- Level C - Rotating from using a multiplication fact (Level D) to using skip counting or repeated addition (Level B)
- Level D - Using multiplication fact to solve the problem

## Multiplication Equal Groups Level A

- eLessons are very structured. If you are new to the program, you will want to use these for instruction.
- With the Leveled Activities Guide, you choose the models and prompts to use.
- Models found in the free materials folder. (Use with All Levels)
- Developing Multiplicative Thinking Book (DMT)
  - Answer sheet (Lvl. AA/A)
  - Concrete Models
- Multiplicative Thinking Ind. Assignments Book (MTIA)
  - Projectable
  - Additional Practice
- Both books can be used for formative assessment.

14  



## Multiplication Equal Groups Level B

Level B - Lower & Higher Side

- Repeated Addition
- Skip Counting

2 Goals for Level B

- Write an equation (**How many groups "X"** How many in each group)
- Commutative Property

Instruction

- eLessons
- Leveled Activities Guide (Printables & Models)

DMT Book

- Concrete Models & Screened Models (Lvl. B answer sheet)
- Commutative (No Answer Sheet)

MTIA Book

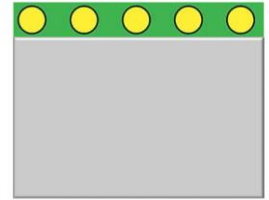
- Answer sheet for ALL sets

Flexibility within the program



The screenshot shows a software interface titled 'Multiplication Equal Groups'. It features a grid of activity cards for different levels (A, B, C, D) and modes (Concrete, Partially Screened, Algebraic, Story, Multiplication). A central pop-up window titled 'Developing Multiplicative Thinking' is visible, containing text about leveled math practice for multiplication and division in grades 3-5.

The screenshot shows the 'Multiplication Equal Groups Level B' interface. It lists various activity modes: Concrete Models (Level A/D), Partially Screened Models (Level B/C), Algebraic Models (Level D), Story Problems (Level C/D), and Multiplications 2 Digit by 2 Digit (Level D). Below the list is a table with columns for Level A, B, C, and D, each with a 'Strategy' and 'Introduction' section. A large empty rounded rectangle is provided for the student's work. The number '18' is in the bottom right corner.

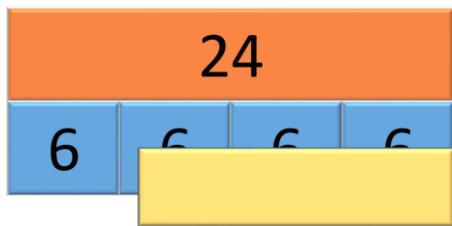


Groups: ?  
5 in each group

Q1- How many groups are there?

Q2- How many are in each group?

Q3- What is missing? Can we find the total?



### Multiplication Equal Groups Level B

Multiplicative Thinking Independent Assignments	
<b>Multiplication: All Levels (A-C)</b>	<b>Division Models: Level C/D</b>
<ul style="list-style-type: none"> <li>One More/One Less: Set 10</li> <li>One More/One Less: Set 11</li> <li>One More/One Less: Set 12</li> <li>One More/One Less: Set 13</li> <li>One More/One Less: Set 14</li> </ul>	<ul style="list-style-type: none"> <li>Division Models: Set 15</li> <li>Division Models: Set 16</li> <li>Division Models: Set 17</li> <li>Division Models: Set 18</li> </ul>
<b>Multiplication: Level B</b>	<b>Multiplication Story Problems: Level C/D</b>
<ul style="list-style-type: none"> <li>Equal Group Models: Set 1</li> <li>Equal Group Models: Set 2</li> <li>Equal Group Models: Set 3</li> <li>Equal Group Models: Set 4</li> </ul>	<ul style="list-style-type: none"> <li>Story Problems: Set 19</li> <li>Story Problems: Set 20</li> <li>Story Problems: Set 21</li> <li>Story Problems: Set 22</li> <li>Story Problems: Set 23</li> <li>Story Problems: Set 24</li> </ul>
<b>Commutative Property: Level B Only</b>	<b>Division Story Problems: Level C/D</b>
<ul style="list-style-type: none"> <li>Commutative Property: Set 5</li> <li>Commutative Property: Set 6</li> <li>Commutative Property: Set 7</li> <li>Commutative Property: Set 8</li> </ul>	<ul style="list-style-type: none"> <li>Story Problems: Set 25</li> <li>Story Problems: Set 26</li> <li>Story Problems: Set 27</li> <li>Story Problems: Set 28</li> </ul>
<b>Multiplication Thinking Factor: Level C/D</b>	<b>Multi-digit Story Problems: Level C/D</b>
<ul style="list-style-type: none"> <li>Factor Models: Set 9</li> <li>Factor Models: Set 10</li> <li>Factor Models: Set 11</li> <li>Factor Models: Set 12</li> </ul>	<ul style="list-style-type: none"> <li>Story Problems: Set 29</li> <li>Story Problems: Set 30</li> <li>Story Problems: Set 31</li> <li>Story Problems: Set 32</li> </ul>



**SKIP COUNTING**

**MULTIPLICATION: EQUAL GROUPS**

(A) 3 groups of 2 = 6  
multiplication needs to be introduced

(B) 2 groups of 3 = 6  
prompted

(C) 3 groups of 2 = 6  
multiples and multiplicand as an operation

(D) 2 groups of 3 = 6  
structure that exists within each problem

Our goal is observe a pattern of thinking so we know how and what to instruct.

### Multiplication Equal Groups Level C / D



Why is the student a Level C?

- Weakness/deficit with understanding structure of "X" (Level B instruction)
- Understands structure, needs math facts. (Level D instruction)

Instruction for Level C/D

- Partially Screened Models: One More/One Less
- Story Problems
- Leveled Activities Guide (Top Section - 1 more/less)

DMT Book

- Level C answer sheet (weakness)
- Level C/D answer sheet (strong)
- Concrete & Screened Models

MTIA Book

- Level C answer sheet (weakness)
- Level D answer sheet (strong)
- Concrete & Screened Models

MULTIPLICATION: EQUAL GROUPS		
(AA) Student is unable to consistently compute the total when presented with a variety of equal group models. Student earned a score of 65% or less. Student's basic understanding of multiplication needs to be addressed.	(A) Student counts one-to-one when presented with equal group problems. To progress, they need to begin to identify the number of groups, how many are in each group, and without being prompted.	(B) Student uses the additive composition or counts many to one strategy when calculating the total for equal group problems. To progress, they need to learn how to use the multiplier and multiplicand as an operation.
(C) Student alternates between additive composition and flexible reasoning. To progress, the student may need to practice facts. They may also need instruction that focuses on identifying the structure that exists within each problem.	(D) Student consistently and efficiently uses the multiplier and multiplicand simultaneously as an operation. To progress, student will need to understand the inverse relationship between multiplication and division.	
Assessment Score of Level D	Instructional Level D	Instructional Level D +
Determined by the assessment.	<b>Review Basic Knowledge:</b> "Write the Fact that matches the model"	There is no Level D+ answer sheet. It is an instruction scaffold within level D designed to begin the connection to division.
Student can connect a math fact to a multiplicative situation with automaticity.	<b>Build and Expand Knowledge:</b> Introduction of missing factor. (Student controls missing Factor)  One more group or one less group (Sudden change to structure)	The D+ means writing missing factor problems within context where the missing factor will be determined by the model not the student. (All about division)
Level D thinking is the type of thinking and understanding the standards are referring to.	<b>Instructional Level D:</b> Mastery is observed through tasks, there is not an assessment.	Level D+ Instruction is "observed", "not assessed" which mean you need to make your own "observations" in order to move on to Level D+ (Division Connection)

### Multiplication Equal Groups D+

- For Level D, the student controls what the missing factor will be.
- Level D+ uses the Level C/D answer sheet. All of the models will have a missing factor.
- The **only** eLesson for Level D+ is Algebraic Models.
- On the Leveled Activities Guide use the Division Connection/Missing Factor section.
- DMT Book
  - Algebraic Models
  - Level C/D answer sheet
- MTIA Book
  - Algebraic Models D+
  - Use Level D (answer sheet)



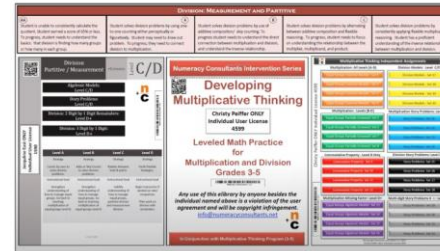
## Division



- Level AA,A & B- Use Leveled Activities Guide for instruction
- Can almost enter at Level C/D Division due to work at Equal Groups Level D & D+

### Level C/D Instruction

- eLessons
  - Algebraic Models (Product First)
  - Story Problems
- DMT Book
  - Algebraic Models (Level C/D Division answer sheet)
  - Measurement/Partitive Division (No answer sheet needed)
- MTIA Book
  - Division Models (Level C/D Division answer sheet)
  - Division Story Problems + Answer Sheet



## Rest of the Framework +

### Extending Multiplication: Rate/Multiplicative Comparison

- eLessons
- Leveled Activities Guide (use as a blueprint)
- DMT Book - Guided Story Problems

### Multiplicative Connections: Inverse Relationships

- Leveled Activities Guide
- DMT Book - Level C/D "X" Answer Sheet and Inverse Relationship Multiplication & Division pages

### Multiplying by Multiples of Ten

- eLessons with videos
- DMT Book - Multiplying by Multiples of Ten pages

### Multi-Digit Multiplication & Division

- Resources within your program
- DMT Book Multi-Digit pages 23

**Progress Monitoring: Observation**

Name: \_\_\_\_\_ Teacher: \_\_\_\_\_ Grade: \_\_\_\_\_

**Multiplication: Equal Groups**

Level	9/28-30	9/29	10/30/31/29
Student A			
Student B			
Student C			
Student D			

**Rate and Multiplication Comparison**

Level	9/28-30	9/29	10/30/31/29
Student A			
Student B			
Student C			
Student D			

**Multiplicative Connections/Inverse Relationship**

Level	9/28-30	9/29	10/30/31/29
Student A			
Student B			
Student C			
Student D			

**Multiplying by Tens**

Level	9/28-30	9/29	10/30/31/29
Student A			
Student B			
Student C			
Student D			

Notes: 9/28 - 3 concrete all level 8 - Repeated addition  
9/28 - 2 Screened created equation, skip counted  
9/29 - 3 Screened array, used fact with automaticity  
10/29 - 5 Missing factor equation in context

## Progress Monitoring +

### Alternative Tools

#### MTIA Book

- Do not give answer sheet (guides thinking)
- Blank sheet of paper or white board
- Save specific sets

#### Models

- Save a few from each type of model
- Cover up label on screens
- Plan prompts to say ahead of time

#### Create Your Own

- Number Cards/Dominoes
- Array - use same color
- Equal Groups

#### Guided Math Lesson Plan

- Basic Skill + 1 Problem Structure

#### Grouping Chart