

A Story of Units

Fluency

Kindergarten to Grade 5

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Focus on Fluency

Session Objectives:

- Study, analyze, and practice Sprints, counting exercises, and other specific fluency activities.
- Analyze fluency sequences and practice adjusting them to meet varied students' needs.
- Recognize and appreciate the coherence of K-5 fluency.
- Understand fluency as a component of rigor, as defined by the Instructional Shifts.

Sprint: Take the Challenge!!
Grade 5 Sprint
Write the Missing Factor

You try!

Sprint Directions
Read the Directions for Administration of Sprints

- Located in the overview of first module of every grade, 1st through 5th

What is the architecture of a Grade 2 through Grade 5 Sprint?

4 quadrants:

- 1st: Very easy 1-11 (every student feels successful)
- 2nd: Easy 12-22
- 3rd: Moderate 23-33
- 4th: Challenge 34-44 (strongest student couldn't finish)

Analyze the sequence of this Grade 1 Sprint.

| 1st Common Core Mathematics Curriculum | | Lesson 3 Sprint | |
|--|--------------------|---|-------------------------|
| A | | Number correct: 0 | |
| Name _____ Date _____ | | | |
| *Write the missing number. Pay attention to the + and - signs. | | | |
| 1 | $5 + 2 = \square$ | 16 | $13 + 6 = \square$ |
| 2 | $15 + 2 = \square$ | 17 | $3 + 16 = \square$ |
| 3 | $2 + 5 = \square$ | 18 | $19 - 2 = \square$ |
| 4 | $12 + 5 = \square$ | 19 | $19 - 7 = \square$ |
| 5 | $7 - 2 = \square$ | 20 | $4 + 15 = \square$ |
| 6 | $17 - 2 = \square$ | 21 | $14 + 5 = \square$ |
| 7 | $7 - 5 = \square$ | 22 | $18 - 6 = \square$ |
| 8 | $17 - 5 = \square$ | 23 | $18 - 2 = \square$ |
| 9 | $4 + 3 = \square$ | 24 | $13 + \square = 19$ |
| 10 | $14 + 3 = \square$ | 25 | $\square - 6 = 13$ |
| 11 | $3 + 4 = \square$ | 26 | $14 + \square = 19$ |
| 12 | $13 + 4 = \square$ | 27 | $\square - 4 = 15$ |
| 13 | $7 - 4 = \square$ | 28 | $\square - 5 = 14$ |
| 14 | $17 - 4 = \square$ | 29 | $13 + 4 = 19 - \square$ |
| 15 | $17 - 3 = \square$ | 30 | $18 - 6 = \square + 3$ |

Analyze the sequence of this Kindergarten Sprint.

| | |
|-------|-------|
| ♥ | ★ |
| 1 2 3 | 1 2 3 |
| ♥ ♥ | ★ ★ |
| 1 2 3 | 1 2 3 |
| ♥ ♥ ♥ | ★ |
| 1 2 3 | 1 2 3 |
| ♥ ♥ ♥ | ★ ★ ★ |
| 1 2 3 | 1 2 3 |

What is the teaching sequence of the Sprint routine in Kindergarten?

Kindergarten Module 3

Lesson 16: Starting and stopping at a signal, while writing numbers 1-10.

Lesson 19: Starting and stopping at a signal, 10-1.

Lesson 20: Watching their teacher take a Sprint. Students talk about their observations.

Lesson 21: Take the first half of a Sprint

Lesson 25: Repeat the first half of the Sprint twice.

Lessons 28 and 31: Do a complete Sprint!

Troubleshooting in Kindergarten

- **If motor skills haven't caught up to cognitive ability...**
Have the student use a highlighter to swipe the answer
- **If the student is working across the columns, instead of down...**
Try covering one column at a time
- **If a student is slow to get started...**
Check pencil position.
Pencils ready before beginning!

All Grades: Differentiation Techniques

- Provide students with the Sprint the night before
- Use Sprints as morning work, classwork, or homework
- Create differentiated Sprints
- Create Sprints to address student needs

What are Sprint essentials?

- Intelligent design of the sequence
- A fast pace within a consistent routine
- An adrenaline rich experience, like that of sports.
- Students' motivation to do personal best
- Recognition of improvement, success
- Varied topics previously taught

A Story of Units: Happy Counting!

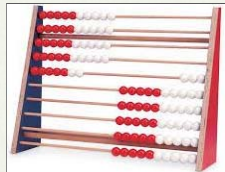
SOU is unified by the big idea of the unit. In fluency activities, we count different units and by different units. For example: frogs, bananas, ones, tens, centimeters, meters, kilograms, grams, fourths, eighths, hundredths... and mixed units of tens and ones, meters and centimeters, hours and minutes, ones and thirds.

We rename or compose units as we count up, and rename or decompose units as we count down.



Kindergarten Counting Exercises

- Rekenrek Roller Coaster
- Finger Counting
- Rekenrek Say Ten Counting
- Pop Up
- Green Light, Red Light*



Grade 1 Counting Exercises

- Green Light, Red Light*
- Say Ten Push Ups
- Coin Drop
- Beep Counting*

| | |
|----|----|
| | |
| 1 | 6 |
| 4 | 10 |
| 5 | 1 |
| 10 | 5 |
| 7 | 12 |
| 12 | 5 |
| 8 | 14 |
| 18 | 24 |
| 12 | 7 |
| 22 | 17 |
| 38 | 44 |
| 44 | 38 |

Grade 2 Counting Exercises

- Beep counting*
- Say Ten to the Next Ten
- Skip-Count by Tens Up and Down Crossing 100
- Counting with Bundles: 1s, 10s, 100s
- Counting on a clock*

Grade 3 Counting Exercises

- Skip Counting by Halves and Fourths on the Clock*
- Group Counting/ Skip Counting
- Gram Counting
- Counting by Unit Fractions*

Grade 4 Counting Exercises

- Unit Skip Counting
- Fraction Multiplication
- Counting and Renaming Centimeters
- Counting and Renaming Measurement Units (grams, liters, meters, minutes, etc.)
- Count by Equivalent Fractions*

Grade 4 Counting Exercises

Grade 5 Counting Exercises

- Measurement Unit Counting in Decimal Form
- Decimal Counting
- Skip count by 12's, 12 tens
- Happy Counting with Mixed Numbers


Sequence Analysis of Equivalent Counting

- Grade 3: Equivalent with Units of Four
- Grade 4: Count by Equivalent Fractions
- Grade 5: Count by Fractions

Let's Practice!

1. Confirm signals.
2. Study counting exercises in grades K-5. Look for coherence and study the sequences.
3. Role play with a partner when the sequence must be adjusted because:
 - a) The student makes an error.
 - b) The sequence needs more challenge.

You try!



Categories of Fluency

Maintenance: Staying sharp on previously learned skills

Preparation: Targeted practice for the current lesson

Anticipation: Building skills to prepare students for the in-depth work of future lessons

In fluency work, all students are actively engaged with **familiar content**. This provides a daily opportunity for continuous improvement and individual success.


K-2: Three Essential Skills

Sums and Differences within Ten

- Target Practice
- Take out 1s, 2s, etc.


Ten Plus Facts

- Say Ten counting



Partners to Ten

- Ten and Tuck
- Math Fingers Flash
- Ten Frame Flash



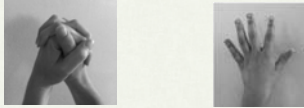
K-2: Use Ten(s) to Add and Subtract

Make Ten Addition
with Partners



$9 + 6$

Take From Ten
Subtraction with
Partners



$15 - 9$

Develop skill with sums and differences within 20

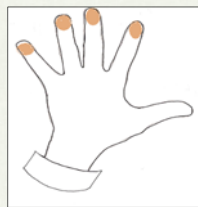
Make Ten Addition

Take From Ten Subtraction

| | | |
|---|---|---|
| $\begin{array}{r} 12 - 9 = 3 \\ \wedge \\ 10 \end{array}$ | $\begin{array}{r} 12 - 8 = 4 \\ \wedge \\ 10 \end{array}$ | $\begin{array}{r} 12 - 7 = 5 \\ \wedge \\ 10 \end{array}$ |
| $\begin{array}{r} 10 - 9 = 1 \\ 1 + 2 = 3 \end{array}$ | $\begin{array}{r} 10 - 8 = 2 \\ 2 + 2 = 4 \end{array}$ | $\begin{array}{r} 10 - 7 = 3 \\ 3 + 2 = 5 \end{array}$ |

**Kindergarten
Choral & White Board Exercises**

- Number Bonds
- Making 3 with Triangles
- Left Hand Counting
- Dot Cards
- Number Pairs
- 5 Groups Hands
- 1 More/Less



What is happening to the units in each fluency?

Kindergarten Choral & White Board Exercises

- Invisible Page

Grade 1 Choral & White Board Exercises

- Count On Cheers
- Number Bond Dash
- Friendly Fact Go Around
- Tens and Ones
- 1 More/Less,
10 More/Less

| Friendly Fact Go Around: Addition Strategies Review | | |
|---|-------------------|-------------------|
| $2 + 1 = \square$ | $3 + 1 = \square$ | $5 + 1 = \square$ |
| $4 + 1 = \square$ | $6 + 1 = \square$ | $9 + 1 = \square$ |
| $2 + 2 = \square$ | $2 + 3 = \square$ | $5 + 5 = \square$ |
| $3 + 3 = \square$ | $4 + 4 = \square$ | $4 + 5 = \square$ |

What is happening to the units in each fluency?

Grade 1 Choral & White Board Exercises

Grade 2
Choral & White Board Exercises

- Make Ten to Add
- Take from Ten
- Rename the Units
- Take From Tens or Ones
- Compensation
- Place Value Practice
- Zap to Zero with Hide Zero Cards

What is happening to the units in each fluency?

Grade 2
Choral & White Board Exercises

Grade 3
Choral & White Board Exercises

- Decomposition Tree
- Add to Multiply
- Rekenrek Division
- Distributive Property and Multiplication
- Commutative Multiplying
- Find the Area
- Find the Whole
- Divide and Label the Meaning of the Factors

What is happening to the units in each fluency?

Grade 3
Choral & White Board Exercises

Grade 4
Choral & White Board Exercises

- Rename the Place Value Units
- Convert Units
- Multiply or Divide Units
- Divide with Remainders
- Algorithms! Add, Subtract, Multiply or Divide
- Add and Multiply Fractions

What is happening to the units in each fluency?

Grade 4
Choral & White Board Exercises

Grade 5 Choral & White Board Exercises

- Rename Units on the Place Value Chart
- Rename the Decimal as a Mixed Number
- Multiply and Divide by 10, 100, and 1,000
- Multiply Metric Units
- Decimal Parts to Make a Whole
- Write in Exponential Form
- All Operations with Whole Numbers and Fractions

What is happening to the units in each fluency?

Grade 5 Choral & White Board Exercises

Let's Practice!

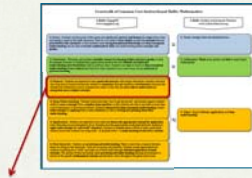
1. Develop protocol for using the personal white board.
2. Study fluency exercises (choral and white board activities) in Grades K-5. Look for coherence and study the sequences.
3. Role play with a partner where the sequence must be adjusted.
 - a) The student makes an error.
 - b) The sequence needs challenge.



Implementation Considerations

- Establish signals for student responses.
- Use “I say, you say” to establish the fluency’s objective.
- Sequence to meet the needs of your students! Adjust in the moment as necessary.
- Keep the pace up and end with success.

Fluency as Defined by the Instructional Shifts



“Students are expected to have speed and accuracy with simple calculations; teachers structure class time and/or homework time for students to memorize through repetition, core functions.”

Required Fluencies

| | | |
|----------|-------------------|--|
| K | K.OA.5 | Add/Subtract within 5 |
| 1 | 1.OA.6 | Add/Subtract within 10 |
| 2 | 2.OA.2 2.NBT.5 | Add/Subtract within 20 (know single-digit sums from memory) Add/Subtract within 100 |
| 3 | 3.OA.7 3.NBT.2 | Multiply/Divide within 100 Add/Subtract within 1000 |
| 4 | 4.NBT.4 | Add/Subtract within 1,000,000 |
| 5 | 5.NBT.5 | Multi-digit multiplication |

Kindergarten Core Fluency Materials

Core Fluency Differentiated Practice Sets
 (Module 4, Lesson 29)

- Set A: My Addition Practice
- Set B: My Decomposition Practice
- Set C: My Subtraction Practice
- Set D: My Subtraction Practice
- Set E: My Mixed Practice

1st Grade Core Fluency Materials

Core Fluency Practice Sets
 (Module 4, Lesson 23)

- Set A: My Addition Practice
- Set B: My Missing Addend Practice
- Set C: My Related Addition and Subtraction Practice
- Set D: My Subtraction Practice
- Set E: My Mixed Practice

Core Fluency Sprints
 (Module 5, Lesson 1)

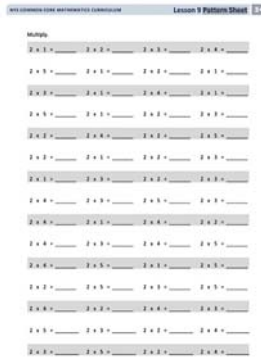
2nd Grade Core Fluency Materials

Core Fluency Practice Sets
 (Module 4, Lesson 14)

- Set A: Addition
- Set B: My Missing Addend
- Set C: Subtraction
- Set D: More Subtraction
- Set E: Mixed Practice

3rd Grade Core Fluency Materials

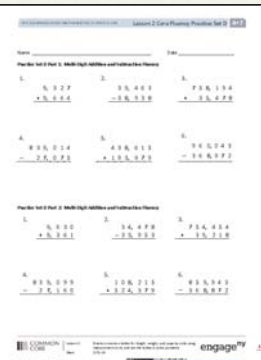
Pattern Sheets (Begin in Module 1)



Grade 4 Core Fluency Materials

Core Fluency Differentiated Practice Sets (Module 7, Lesson 2)

Set A: Multi-Digit Addition
 Set B: Multi-Digit Subtraction
 Set C: Multi-Digit Subtraction with Zeros in the Minuend
 Set D: Multi-Digit Addition and Subtraction

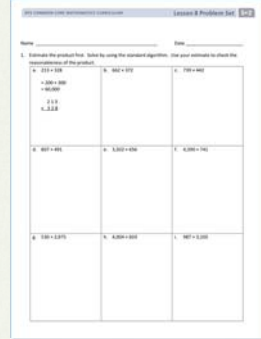


Grade 5 Differentiated Practice with Multi-Digit Whole Number Multiplication

G5 Module 2 Topic B

Problem and Homework Sets

- Lesson 5: Two Double-Digit Factors Without Renaming
- Lesson 6: One Double, One Triple-Digit Factor with Renaming
- Lesson 7: Two Triple-Digit Factors with Renaming
- Lesson 8: Two to Four-Digit Factors with Estimation and Renaming



Next Steps

- How does analyzing a fluency script improve your understanding of sequencing questions?
- What units did we use in the fluencies? What happened to the units?
- What are your next steps for planning, practicing, and implementing fluency in your classroom?
- How can you monitor the improvement and effectiveness of your own and your colleagues fluency component?
