**STUDENT
ACHIEVEMENT
PARTNERS**

Reviewing Using the IMET: Mathematics
Module 101: Focus and Coherence (Non-Negotiable Criteria 1 and 2)
Participant Materials

Essential Questions:

- How does the **Instructional Materials Evaluation Tool (IMET)** reflect the major features of the Standards and the Shifts?

- What understandings support high-quality, accurate application of the IMET metrics?

Goals:

- ✓ Understand how aligned materials embody the shifts inherent in the Common Core State Standards

- ✓ Understand the precise meaning of each metric of the IMET

- ✓ Recognize examples and non-examples related to each metric of Non-Negotiables 1 and 2 of the IMET

Common Core State Standards Shifts in Mathematics

1. **Focus** strongly where the Standards focus

Focus: The Standards call for a greater focus in mathematics. Rather than racing to cover topics in a mile-wide, inch-deep curriculum, the Standards require us to significantly narrow and deepen the way time and energy is spent in the math classroom. We focus deeply on the major work* of each grade so that students can gain strong foundations: solid conceptual understanding, a high degree of procedural skill and fluency, and the ability to apply the math they know to solve problems inside and outside the math classroom.

2. **Coherence**: **think** across grades, and **link** to major topics within grades

Thinking across grades: The Standards are designed around coherent progressions from grade to grade. Learning is carefully connected across grades so that students can build new understanding onto foundations built in previous years. Each standard is not a new event, but an extension of previous learning.

Linking to major topics: Instead of allowing additional or supporting topics to detract from the focus of the grade, these concepts serve the grade level focus. For example, instead of data displays as an end in themselves, they are an opportunity to do grade-level word problems.

3. **Rigor**: in major topics* pursue:
   • **conceptual understanding**,
   • procedural skill and **fluency**, and
   • **application** with equal intensity.

Conceptual understanding: The Standards call for conceptual understanding of key concepts, such as place value and ratios. Students must be able to access concepts from a number of perspectives so that they are able to see math as more than a set of mnemonics or discrete procedures.

Procedural skill and fluency: The Standards call for speed and accuracy in calculation. Students are given opportunities to practice core functions such as single-digit multiplication so that they have access to more complex concepts and procedures.

Application: The Standards call for students to use math flexibly for applications in problem-solving contexts. In content areas outside of math, particularly science, students are given the opportunity to use math to make meaning of and access content.

High-level Summary of Major Work in Grades K–8

K–2   Addition and subtraction—concepts, skills, and problem solving; place value
3–5   Multiplication and division of whole numbers and fractions—concepts, skills, and problem solving
6   Ratios and proportional relationships; early expressions and equations
7   Ratios and proportional relationships; arithmetic of rational numbers
8   Linear algebra and linear functions

*For a list of major, additional and supporting clusters by grade, please refer to 'Focus in Math' at achievethecore.org/focus pp. 4–12

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NN Metric 1A: Materials reflect the basic architecture of the Standards by not assessing the topics listed below* before the grade level indicated.
Grade 3
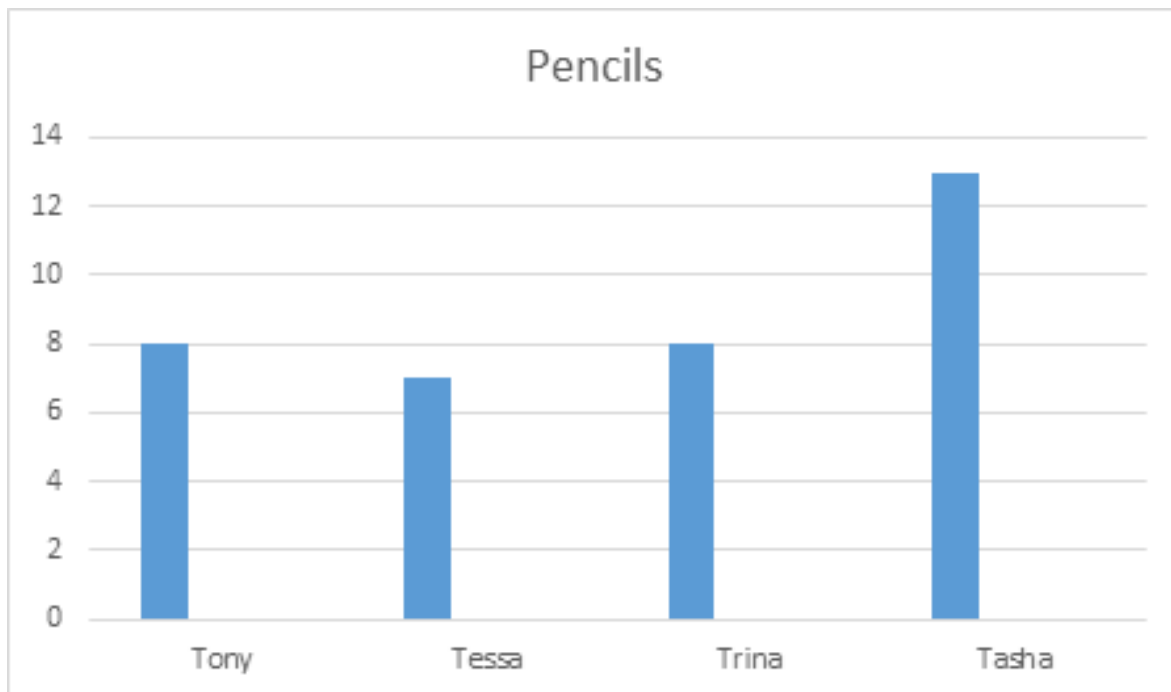
If Mrs. Brown collects all of the pencils from the students and shares them equally among the students, how many pencils will each student get?

What is the average number of pencils the students have?

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NN Metric 2A: In each grade K–8, students and teachers using the materials as designed devote the large majority of time to the Major Work of the grade.
Grade 4

The chart below lists chapter titles from various grade 4 programs. It is **not** a table of contents for a particular program.

Chapter Title	Major work of Grade 4	Supporting/ Additional Work of Grade 4	Not in grade 4	Unclear; Need to look at whether...
Multiplying Greater Numbers				
Adding and Subtracting Fractions				
Measurement Conversions				
Big Numbers, Estimation and Computation				
Decimals and their Uses				
Dividing by 1-digit Numbers				
Flips, Slides and Turns				
Comparing with Multiplication				
Number Patterns				
Multiply Fractions by Whole Numbers				
Rates				

Grade 4 Correlated Curriculum

The following table shows how the Grade 4 ⬚⬚⬚⬚⬚ curriculum covers all of the Grade 4 Common Core State Standards. All of the lessons in the Grade 4 Teacher's Guide and Assessment & Practice Books are listed, along with the Grade 4 Common Core State Standards they address. Note: the table of contents is subject to minor revision.

Domain

OA	Operations and Algebraic Thinking
NBT	Number and Operations in Base Ten
NF	Number and Operations—Fractions
MD	Measurement and Data
G	Geometry

Grade 4 Part 1

Unit 1: Patterns

Lesson Number	Lesson Title	Common Core State Standards
OA4-1	Increasing Sequences	Prep for 4.OA.C.5, 4.OA.A.3, 4.NBT.B.4
OA4-2	Decreasing Sequences	Prep for 4.OA.C.5, 4.OA.A.3
OA4-3	Increasing and Decreasing Sequences	Prep for 4.OA.C.5, 4.OA.A.3
OA4-4	Pattern Rules	4.OA.C.5
OA4-5	Introduction to T-tables	4.OA.C.5
OA4-6	T-tables	4.OA.C.5
OA4-7	Patterns Involving Time	4.OA.C.5, 4.OA.A.3
OA4-8	Problem Solving with Patterns	4.OA.C.5, 4.OA.A.3
OA4-9	Arrays	Prep for 4.MD.A.2, 4.OA.A.1
OA4-10	Multiplication and Addition	Prep for 4.MD.A.2, 4.OA.A.1
OA4-11	Multiplying by Skip Counting	Prep for 4.MD.A.2, 4.OA.A.1
OA4-12	Times as Many	4.OA.A.1

Unit 2: Place Value, Addition, and Subtraction

Lesson Number	Lesson Title	Common Core State Standards
NBT4-1	Place Value—Ones, Tens, Hundreds, and Thousands	4.NBT.A.2
NBT4-2	Place Value	4.NBT.A.2, 4.NBT.A.1
NBT4-3	Writing Numbers	4.NBT.A.2
NBT4-4	Representation with Base Ten Materials	4.NBT.A.2
NBT4-5	Representation in Expanded Form	4.NBT.A.2
NBT4-6	Comparing and Ordering Numbers	4.NBT.A.2
NBT4-7	Differences of 1, 10, 100, 1,000, 10,000, and 100,000	4.NBT.A.2

Grade 4 Curriculum with Common Core State Standards Correlation

NBT4-8	Counting by 10s, 100s, and 1,000s	4.NBT.A.2
NBT4-9	Comparing Numbers (Advanced)	4.NBT.A.2
NBT4-10	Counting Coins	Prep for 4.NBT.B.4
NBT4-11	Which Coins Are Missing?	4.MD.A.2, Prep for 4.NBT.B.4
NBT4-12	Least Number of Coins	4.MD.A.2, Prep for 4.NBT.B.4
NBT4-13	Making Change Using Mental Math	4.MD.A.2, Prep for 4.NBT.B.4
NBT4-14	Regrouping	4.NBT.B.4
NBT4-15	Adding 2-Digit Numbers	4.NBT.B.4
NBT4-16	Adding with Regrouping	4.NBT.B.4
NBT4-17	Adding 3-Digit Numbers	4.NBT.B.4
NBT4-18	Adding Larger Numbers	4.NBT.B.4
NBT4-19	Subtraction	4.NBT.B.4
NBT4-20	Subtraction with Regrouping	4.NBT.B.4
NBT4-21	Subtraction with Regrouping (Advanced)	4.NBT.B.4
NBT4-22	Parts and Totals	Prep for 4.OA.A.3
NBT4-23	Parts and Totals (Advanced)	4.OA.A.3
NBT4-24	Fact Families	4.OA.A.3
NBT4-25	Sums and Differences	4.NBT.B.4
NBT4-26	Larger Numbers (Review)	4.NBT.B.4
NBT4-27	Concepts in Number Sense	4.NBT.B.4

Unit 3: Rounding

Lesson Number	Lesson Title	Common Core State Standards
OA4-13	Rounding on a Number Line	4.NBT.A.3
OA4-14	Rounding on a Number Line (Hundreds and Thousands)	4.NBT.A.3
OA4-15	Rounding	4.NBT.A.3
OA4-16	Rounding on a Grid	4.NBT.A.3
OA4-17	Estimating Sums and Differences	4.OA.A.3

Unit 4: Multiplication

Lesson Number	Lesson Title	Common Core State Standards
NBT4-28	Multiplying by Adding On	Prep for 4.NBT.B.5
NBT4-29	Multiplying Tens, Hundreds, and Thousands	4.NBT.A.1
NBT4-30	Mental Math	4.NBT.B.5
NBT4-31	Using Doubles to Multiply	Prep for 4.NBT.B.5
NBT4-32	Standard Method for Multiplication (No Regrouping)	4.NBT.B.5
NBT4-33	Multiplication with Regrouping	4.NBT.B.5
NBT4-34	Multiplying with the 6, 7, 8, and 9 Times Tables	4.NBT.B.5
NBT4-35	Multiplying a Multi-Digit Number by a 1-Digit Number	4.NBT.B.5

Grade 4 Curriculum with Common Core State Standards Correlation

NBT4-36	Word Problems with Multiplying	4.NBT.B.5, 4.OA.A.2
NBT4-37	Multiplying 2-Digit Numbers by Multiples of 10	4.NBT.B.5
NBT4-38	Multiplying 2-Digit Numbers by 2-Digit Numbers	4.NBT.B.5
NBT4-39	Topics in Multiplication	4.NBT.B.5, 4.OA.A.2

Unit 5: Division

Lesson Number	Lesson Title	Common Core State Standards
OA4-18	Sets and Sharing	Prep for 4.NBT.B.6, 4.OA.A.3
OA4-19	Sharing When You Know the Number in Each Set	Prep for 4.NBT.B.6, 4.OA.A.3
OA4-20	Two Ways of Sharing	Prep for 4.NBT.B.6, 4.OA.A.3
OA4-21	Division, Addition, and Multiplication	Prep for 4.OA.A.2, 4.OA.A.3
OA4-22	Dividing by Skip Counting	Prep for 4.NBT.B.6
OA4-23	The Two Meanings of Division	Prep for 4.NBT.B.6, 4.OA.A.3
OA4-24	Division and Multiplication	4.NBT.B.6, 4.OA.A.3, 4.OA.A.2
OA4-25	Knowing When to Multiply or Divide	4.OA.A.2

Unit 6: Metric Units, Perimeter, and Time

Lesson Number	Lesson Title	Common Core State Standards
MD4-1	Centimeters	Prep for 4.MD.A.1
MD4-2	Millimeters	4.MD.A.1, 4.OA.A.2
MD4-3	Centimeters and Millimeters	4.MD.A.2, 4.OA.A.2
MD4-4	Centimeters and Millimeters (Advanced)	4.MD.A.2, 4.OA.A.2
MD4-5	Meters	4.MD.A.1, 4.OA.A.2
MD4-6	Meters (Advanced)	4.MD.A.1, 4.OA.A.2
MD4-7	Kilometers and Meters	4.MD.A.1, 4.OA.A.2, 4.NBT.B.4, 4.OA.A.3
MD4-8	Ordering and Assigning Appropriate Units	4.MD.A.1, 4.MD.A.2, 4.OA.A.2
MD4-9	Length (Review)	4.MD.A.1, 4.MD.A.2, 4.OA.A.2
MD4-10	Perimeter	Prep for 4.MD.A.3
MD4-11	Exploring Perimeter	4.MD.A.3, 4.OA.A.3
MD4-12	Measuring Perimeter	4.MD.A.3, 4.OA.A.3
MD4-13	Telling Time to the Minute	Prep for 4.MD.A.2
MD4-14	Elapsed Time	4.MD.A.1, 4.NBT.B.4
MD4-15	Elapsed Time (Advanced)	4.MD.A.2, 4.OA.A.3
MD4-16	Time Intervals	4.MD.A.1, 4.MD.A.2, 4.OA.A.2
MD4-17	Topics in Time	4.MD.A.1, 4.MD.A.2, 4.OA.A.3, 4.NBT.B.4

Unit 7: Shapes

Lesson Number	Lesson Title	Common Core State Standards
G4-1	Introduction to Classifying Data	Prep for 4.G.A.2
G4-2	Venn Diagrams	Prep for 4.G.A.2
G4-3	Sides and Vertices of 2-D Shapes	Prep for 4.G.A.2

Grade 4 Curriculum with Common Core State Standards Correlation

G4-4	Right Angles	4.G.A.2
G4-5	Parallel Lines	4.G.A.1
G4-6	Quadrilaterals	Prep for 4.G.A.2
G4-7	Properties of Shapes	4.G.A.2
G4-8	Special Quadrilaterals	4.G.A.2
G4-9	Symmetry	Prep for 4.G.A.3
G4-10	More Symmetry	4.G.A.3
G4-11	Comparing Shapes	4.G.A.2
G4-12	Sorting and Classifying Shapes	4.G.A.2
G4-13	Puzzles and Problems	4.G.A.2

Grade 4 Part 2

Unit 1: More Patterns

Lesson Number	Lesson Title	Common Core State Standards
OA4-26	Patterns in the Times Tables	4.OA.C.5
OA4-27	Advanced Patterns	4.OA.C.5

Unit 2: Remainders

Lesson Number	Lesson Title	Common Core State Standards
NBT4-40	Remainders	Prep for 4.OA.A.3, 4.NBT.B.6
NBT4-41	Finding Remainders on Number Lines	Prep for 4.OA.A.3, 4.NBT.B.6
NBT4-42	Checking Division When There Is a Remainder (Advanced)	Prep for 4.NBT.B.6
NBT4-43	Dividing Using Tens, Hundreds, and Thousands	4.NBT.B.6
NBT4-44	Long Division—2-Digit by 1-Digit	4.NBT.B.6
NBT4-45	Long Division—Multi-Digit by 1-Digit	4.NBT.B.6, 4.MD.A.2
NBT4-46	Concepts in Multiplication and Division	4.NBT.B.6, 4.MD.A.2
NBT4-47	Mental Math	4.NBT.A.1, 4.NBT.B.6
NBT4-48	Mental Math (Advanced)	4.NBT.B.6
NBT4-49	Interpreting Remainders	4.OA.A.3
NBT4-50	Interpreting Remainders (Advanced)	4.OA.A.3
NBT4-51	Extending and Predicting Patterns	4.OA.C.5

Unit 3: Word Problems

Lesson Number	Lesson Title	Common Core State Standards
OA4-28	Introduction to Algebra—Addition	Prep for 4.OA.A.3
OA4-29	Introduction to Algebra—Multiplication	Prep for 4.OA.A.3
OA4-30	Totals and Equations	Prep for 4.OA.A.3
OA4-31	Differences and Equations	Prep for 4.OA.A.3
OA4-32	Addition and Subtraction Word Problems	4.OA.A.3
OA4-33	Problems with Diagrams	4.OA.A.3

Grade 4 Curriculum with Common Core State Standards Correlation

OA4-34	Models and Times as Many	4.OA.A.2
OA4-35	Equations with Multiplication and Division	4.OA.A.1, 4.OA.A.2, 4.OA.A.3
OA4-36	More Totals and Differences (Advanced)	4.OA.A.1, 4.OA.A.2, 4.OA.A.3
OA4-37	Comparisons (Advanced)	4.OA.A.1, 4.OA.A.2, 4.OA.A.3
OA4-38	Multistep Word Problems	4.OA.A.1, 4.OA.A.2, 4.OA.A.3

Unit 4: Fractions

Lesson Number	Lesson Title	Common Core State Standards
NF4-1	Naming Fractions	Prep for 4.NF.A.1, 4.NF.A.2
NF4-2	Comparing Fractions (Introduction)	Prep for 4.NF.A.1, 4.NF.A.2
NF4-3	Equal Parts and Models of Fractions	4.NF.A.2
NF4-4	Fractions on Number Lines	Prep for 4.NF.A.1, 4.NF.A.2
NF4-5	More Comparing Fractions	Prep for 4.NF.A.2
NF4-6	Equivalent Fractions and Multiplication	4.NF.A.1
NF4-7	Comparing Fractions Using Benchmarks (Advanced)	4.NF.A.2
NF4-8	Comparing Fractions Using Equivalent Fractions	4.NF.A.2
NF4-9	Problems and Puzzles (Advanced)	4.NF.A.2
NF4-10	Adding Fractions	4.NF.B.3a
NF4-11	Adding and Subtracting Fractions	4.NF.B.3a, 4.NF.B.3b, 4.NF.B.3d
NF4-12	Improper Fractions and Mixed Numbers (Introduction)	4.NF.B.3c
NF4-13	Improper Fractions and Mixed Numbers	4.NF.B.3c
NF4-14	Adding and Subtracting Mixed Numbers	4.NF.B.3c, 4.NF.B.3d
NF4-15	Equal Parts of a Set	Prep for 4.NF.B.4c
NF4-16	Fractions of Whole Numbers	4.NF.B.4c
NF4-17	Multiplying a Fraction by a Whole Number	4.NF.B.4a, 4.NF.B.4b
NF4-18	Problems and Puzzles	4.NF.B.3b, 4.NF.B.4c

Unit 5: Mass and Capacity

Lesson Number	Lesson Title	Common Core State Standards
MD4-18	Grams and Kilograms	4.MD.A.1
MD4-19	Changing Units of Mass	4.NBT.B.4, 4.NBT.B.5, 4.MD.A.1, 4.MD.A.2
MD4-20	Problems Involving Mass	4.NBT.B.4, 4.NBT.B.5, 4.MD.A.1, 4.MD.A.2
MD4-21	Pounds and Ounces	4.MD.A.1
MD4-22	Converting Pounds to Ounces	4.NBT.B.4, 4.NBT.B.5, 4.NBT.B.6, 4.MD.A.1, 4.MD.A.2
MD4-23	Capacity	4.NBT.B.4, 4.MD.A.1
MD4-24	Problems with Capacity and Mass	4.NBT.A.1, 4.NBT.B.4, 4.NBT.B.5, 4.NF.B.3d, 4.NF.B.4, 4.MD.A.2

Grade 4 Curriculum with Common Core State Standards Correlation

Unit 6: Factors

Lesson Number	Lesson Title	Common Core State Standards
OA4-39	Organized Lists	4.OA.B.4
OA4-40	Factors	4.OA.B.4
OA4-41	Finding Factors	4.OA.B.4, 4.NBT.B.6
OA4-42	Factor Pairs	4.OA.B.4, 4.NBT.B.6
OA4-43	Prime Numbers and Composite Numbers	4.OA.B.4, 4.NBT.B.6
OA4-44	Problem Solving with Factors (Advanced)	4.OA.B.4

Unit 7: Decimals

Lesson Number	Lesson Title	Common Core State Standards
NF4-19	Dollar Notation and Cent Notation	Prep for 4.NF.C.6
NF4-20	More Dollar Notation and Cent Notation	Prep for 4.NF.C.7
NF4-21	Tenths and Hundredths (Fractions)	4.NF.C.5, 4.NF.C.7
NF4-22	Decimal Tenths and Hundredths	4.NF.C.6, 4.NF.C.7
NF4-23	Comparing Decimal Tenths and Hundredths	4.NF.C.7
NF4-24	Combining Tenths and Hundredths	4.NF.C.6, 4.NF.C.7
NF4-25	Decimals and Money	4.NF.C.6, 4.NF.C.7
NF4-26	Adding Tenths and Hundredths	4.NF.C.5
NF4-27	Decimals Greater Than 1	4.NF.C.5
NF4-28	Different Wholes (Advanced)	4.NF.C.7
NF4-29	Problems and Puzzles	4.NF.C.7

Unit 8: US Customary Units and Area

Lesson Number	Lesson Title	Common Core State Standards
MD4-25	Inches	4.MD.A.1
MD4-26	Quarters of an Inch	4.NF.B.3, 4.NF.B.4
MD4-27	Eighths of an Inch	4.NF.B.3, 4.NF.B.4, Prep for 4.MD.B.4
MD4-28	Feet	4.NBT.B.5, 4.MD.A.1
MD4-29	Feet and Inches	4.NBT.B.5, 4.MD.A.1
MD4-30	Measuring in Feet and Inches	4.NBT.B.5, 4.MD.A.1
MD4-31	Yards	4.NBT.B.5, 4.MD.A.1
MD4-32	Inches, Feet, and Yards (Review)	4.NBT.B.5, 4.MD.A.1, 4.MD.A.2
MD4-33	Area in Square Centimeters	Prep for 4.MD.A.3
MD4-34	Area of Rectangles	4.NBT.B.5, 4.MD.A.1, 4.MD.A.2
MD4-35	Problems with Area and Perimeter of Rectangles	4.NBT.B.5, 4.MD.A.1, 4.MD.A.2
MD4-36	Area (Advanced)	4.NBT.B.5, 4.MD.A.1, 4.MD.A.2
MD4-37	Problems and Puzzles	4.NBT.B.5, 4.MD.A.1, 4.MD.A.2
MD4-38	Line Plots (Review)	4.MD.B.4
MD4-39	Fractions on Line Plots	4.NF.B.3, 4.MD.B.4
MD4-40	Line Plots (Advanced)	4.NF.B.3, 4.MD.B.4

Grade 4 Curriculum with Common Core State Standards Correlation

Unit 9: Angles

Lesson Number	Lesson Title	Common Core State Standards
G4-14	Lines, Line Segments, and Rays	4.G.A.1
G4-15	Angles	4.MD.C.5, 4.G.A.1
G4-16	Measuring Angles	4.MD.C.6
G4-17	Drawing Angles	4.MD.C.6
G4-18	Adding Angles	4.MD.C.7
G4-19	Adding Angles (Advanced)	4.MD.C.7, 4.OA.A.3
G4-20	Angles as Fractions of a Circle	4.MD.A.2, 4.MD.C.5, 4.NF.B.3, 4.NF.B.4
G4-21	Angles in Shapes	4.MD.C.6, 4.G.A.2
G4-22	Classifying Shapes	4.G.A.2

Grade 4 Curriculum with Common Core State Standards Correlation

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NN Metric 2B: Supporting Work enhances focus and coherence simultaneously by also engaging students in the Major Work of the grade.

Standard/Cluster: 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

Elena has a cat with a mass of 4 kilograms. Ginger's cat has a mass that is 2 times as much as Elena's cat. What is the mass of Ginger's cat in grams?

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NN Metric 2C: Materials follow the grade-by-grade progressions in the Standards. Content from previous or future grades does not unduly interfere with on-grade-level content.

Standard/Cluster: 4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

BIG IDEA 1	**Multiplication with Tens and Hundreds**

Common Core State Standards 4.NBT.1, 4.NBT.5

1   **Arrays and Area Models** . . . .
ACTIVITIES Arrays of Ones • Arrays of Tens

2   **Connect Place Value and Multiplication** . . . .
ACTIVITIES Discuss a Product of Tens • Arrays of Hundreds

3   **Mental Math and Multiplication** . . . .
ACTIVITIES Review Multiplication with Tens • Mental Multiplication

BIG IDEA 2	**Multiply by One-Digit Numbers**

Common Core State Standards 4.OA.3, 4.NBT.2, 4.NBT.3, 4.NBT.5, 4.MD.2

4   **Model One-Digit by Two-Digit Multiplication** . . . .
ACTIVITIES Multiplication Modeling • Practice Multiplication
• Multiplication with Dollars

5   **Estimate Products** . . . .
ACTIVITIES Estimate Products • Practice Estimation

6   **Use Place Value to Multiply** . . . .
ACTIVITIES Model the Place Value Sections Method • Model the Expanded Notation Method

7   **Algebraic Notation Method** . . . .
ACTIVITIES The Distributive Property and Multiplication • Connect Models and the Distributive Property

8   **Compare Methods of One-Digit by Two-Digit Multiplication** . . . .
ACTIVITIES Multiplication Methods • Practice Multiplication

9   **Discuss Different Methods** . . . .
ACTIVITIES Compare Multiplication Methods • Analyze the Shortcut Method

10   **One-Digit by Three-Digit Multiplication** . . . .
ACTIVITIES Multiply One-Digit Numbers by Hundreds • Use the Area Model to Multiply Hundreds • Practice One-Digit by Three-Digit Multiplication

BIG IDEA 3	**Multiplication with Two-Digit Numbers**

Common Core State Standards 4.OA.3, 4.NBT.2, 4.NBT.5

12   **Two-Digit by Two-Digit Multiplication** . . . .
ACTIVITIES Represent Multiplication • Practice Multiplication

13   **Different Methods for Two-Digit Multiplication** . . . .
ACTIVITIES Multiply Two-Digit Numbers • The Shortcut Multiplication Method

14   **Check Products of Two-Digit Numbers** . . . .
ACTIVITIES Compare Methods • Estimate Products of Two-Digit Numbers
• Practice Multiplication

NN Metric 2C: Materials follow the grade-by-grade progressions in the Standards. Content from previous or future grades does not unduly interfere with on-grade-level content.

Standard/Cluster: 4.NBT.B Use place value understanding and properties of operations to perform multi-digit arithmetic

1)

► **Properties and Algebraic Notation**

equation
simplify
term

| An **expression** is one or more numbers, variables, or numbers and variables with one or more operations.

Examples: 4 $6x$ $6x - 5$ $7 + 4$ | An **equation** is a statement that two expressions are equal. It has an equal sign.

Examples: $40 + 25 = 65$
          $(16 \div 4) - 3 = 1$ |

We **simplify** an expression or equation by performing operations to combine like **terms**.

Use the Identity Property to simplify each expression.

1. $n + 5n =$ _____

2. $17t + t =$ _____

3. $x + 245x =$ _____

4. $9e - e =$ _____

5. $8c + c + c =$ _____

6. $(5z - z) - z =$ _____

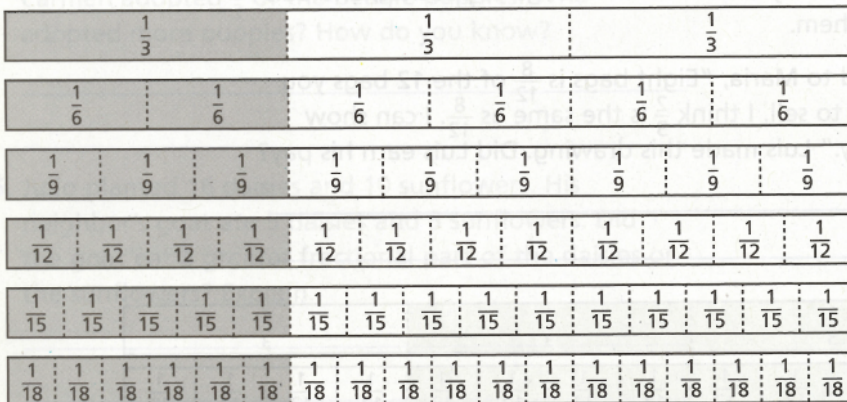**Solve.**

7. $30 \div (35 \div 7) =$ _____

8. $(72 \div 9) \div 4 =$ _____

9. $80 \div (32 \div 8) =$ _____

10. $13 - (9 - 1) =$ _____

Standard/Cluster: 4.NF.A Extend understanding of fraction equivalence and ordering. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

2)

► **Use Fraction Bars to Find Equivalent Fractions**

3. How do these fraction bars show equivalent fractions for $\frac{1}{3}$?

_____

5. Tell whether the fractions are equivalent.

a. $\frac{1}{6}$ and $\frac{2}{12}$ _____

b. $\frac{3}{6}$ and $\frac{5}{9}$ _____

c. $\frac{6}{12}$ and $\frac{8}{15}$ _____

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NN Metric 2D: Lessons that only include mathematics from previous grades are clearly identified as such to the teacher.

B – Bridging: Materials were designed to help schools transition to the Standards. We have assumed that students entering a particular grade may not have fully learned all of the material in the Standards from the previous grade. Thus, we have included some lessons that cover Standards from previous grades that students must know to succeed at grade level. These lessons are labeled with "B" in the annotated table of contents and are also clearly identified in the lesson plans. (Mathematical Practice Standards are rarely flagged in Bridging lessons.) We are developing a set of supplementary materials that teachers can use to replace bridging lessons when schools have fully adopted the Standards.

If the majority of students in your class already know the material in a bridging lesson well, then you might only teach the lesson to small groups of students who need the review; otherwise, we recommend that you cover the lesson quickly with the whole class. Your class will cover more material during the year if you start at a level that allows every student to succeed.

NN Metric 2D: Lessons that only include mathematics from previous grades are clearly identified as such to the teacher.
Standard/Cluster: 4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm

Studying Addition

Session 1.1
SOLVING ADDITION PROBLEMS >

Students solve addition problems with 3-digit numbers. They examine and describe addition strategies.

Common Core State Standards Supports 4.NBT.B.4

Session 1.2
ADDITION STRATEGIES >

Students create charts that show the addition strategies they are using, classified according to how each strategy starts.

Common Core State Standards Supports 4.NBT.B.4

Session 1.3
STARTER PROBLEMS >

Students solve addition problems after considering several different first steps. They represent and discuss how to create equivalent addition expressions.

Common Core State Standards Supports 4.NBT.B.4

Session 1.4
STUDYING THE U.S. STANDARD ALGORITHM FOR ADDITION >

Students compare two addition algorithms, adding by place and the U.S. standard algorithm. They talk through and make sense of the steps of the U.S. standard algorithm, and then use it to solve problems.

Common Core State Standards 4.NBT.B.4

Session 1.5
CLOSE TO 1,000 >

Students play a variation of the game *Close to 100* in which they make combinations of 3-digit numbers with sums equal to or close to 1,000. They practice solving addition problems using the U.S. standard algorithm for addition. Students take Quiz 1.

Common Core State Standards 4.NBT.B.4