# *Eureka Math*² Level 4 Correlation to Connecticut Model Curriculum

| Level 4: Fractional Units | | | |
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| **Model Unit Name** | **Model Unit Standards** | **Lessons** | **Pacing** *Lessons that address concepts in more than one unit are only counted once.* |
| **Understanding and Using Place Value to Multiply and Divide** | **4.NBT.A.1** | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic B: Place Value and Comparison Within 1,000,000<br>Lesson 6: Demonstrate that a digit represents 10 times the value of what it represents in the place to its right. | **45 days** |
| | **4.NBT.A.2** | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic B: Place Value and Comparison Within 1,000,000<br>Lesson 5: Organize, count, and represent a collection of objects.<br>Lesson 7: Write numbers to 1,000,000 in unit form and expanded form by using place value structure.<br>Lesson 8: Write numbers to 1,000,000 in standard form and word form.<br>Lesson 9: Compare numbers within 1,000,000 by using >, =, and <.<br><br>**Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic C: Rounding Multi-Digit Whole Numbers<br>Lesson 10: Name numbers by using place value understanding.<br>Lesson 11: Find 1, 10, and 100 thousand more than and less than a given number. | |

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| **Understanding and Using Place Value to Multiply and Divide (cont.)** | **4.NBT.A.3** | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic C: Rounding Multi-Digit Whole Numbers<br>Lesson 12: Round to the nearest thousand.<br>Lesson 13: Round to the nearest ten thousand and hundred thousand.<br>Lesson 14: Round multi-digit numbers to any place.<br>Lesson 15: Apply estimation to real-world situations by using rounding. | |
| | **4.NBT.B.5** | **Module 2: Place Value Concepts for Multiplication and Division**<br>Topic A: Compose and Decompose Units of Ten<br>Lesson 1: Multiply multiples of 10 by one-digit numbers by using the associative property of multiplication.<br><br>**Module 2: Place Value Concepts for Multiplication and Division**<br>Topic B: Multiplication of Tens and Ones by One-Digit Numbers<br>Lesson 4: Multiply by using familiar strategies.<br>Lesson 5: Multiply by using place value strategies and the distributive property.<br>Lesson 6: Multiply with regrouping by using place value strategies and the distributive property.<br>Lesson 7: Multiply by using an area model and the distributive property.<br>Lesson 8: Multiply by applying the distributive property and write equations.<br>Lesson 9: Solve multiplication word problems.<br>Lesson 10: Multiply by applying simplifying strategies. (Optional)<br><br>**Module 3: Multiplication and Division of Multi-Digit Numbers**<br>Topic A: Multiplication and Division of Multiples of Tens, Hundreds, and Thousands<br>Lesson 2: Multiply by multiples of 100 and 1000.<br>Lesson 3: Multiply a two-digit multiple of 10 by a two-digit multiple of 10.<br><br>**Module 3: Multiplication and Division of Multi-Digit Numbers**<br>Topic C: Multiplication of up to Four-Digit Numbers by One-Digit Numbers<br>Lesson 9: Apply place value strategies to multiply three-digit numbers by one-digit numbers.<br>Lesson 10: Apply place value strategies to multiply four-digit numbers one-digit numbers.<br>Lesson 11: Represent multiplication by using partial products. | |

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| **Understanding and Using Place Value to Multiply and Divide (cont.)** | | Lesson 12: Multiply by using various recording methods in vertical form.<br>Lesson 13: Multiply two-digit numbers by two-digit multiples of 10.<br>Lesson 14: Apply place value strategies to multiply two-digit numbers by two-digit numbers.<br>Lesson 15: Multiply with four partial products.<br>Lesson 16: Multiply with two partial products.<br>Lesson 17: Apply the distributive property to multiply. | |
| | **4.NBT.B.6** | **Module 2: Place Value Concepts for Multiplication and Division**<br>Topic A: Compose and Decompose Units of Ten<br>Lesson 2: Divide two- and three-digit multiples of 10 by one-digit numbers.<br><br>**Module 2: Place Value Concepts for Multiplication and Division**<br>Topic C: Division of Tens and Ones by One-Digit Numbers<br>Lesson 11: Divide by using familiar strategies.<br>Lesson 12: Divide two-digit numbers by one-digit numbers by using an area model.<br>Lesson 13: Divide three-digit numbers by one-digit numbers by using an area model.<br>Lesson 14: Divide two-digit numbers by one-digit numbers by using place value strategies.<br>Lesson 15: Divide three-digit numbers by one-digit numbers by using place value strategies.<br>Lesson 16: Divide by using the break apart and distribute strategy.<br><br>**Module 3: Multiplication and Division of Multi-Digit Numbers**<br>Topic A: Multiplication and Division of Multiples of Tens, Hundreds, and Thousands<br>Lesson 1: Divide multiples of 100 and 1000.<br><br>**Module 3: Multiplication and Division of Multi-Digit Numbers**<br>Topic B: Division of Thousands, Hundreds, Tens, and Ones<br>Lesson 4: Apply place value strategies to divide hundreds, tens, and ones.<br>Lesson 5: Apply place value strategies to divide thousands, hundreds, tens, and ones.<br>Lesson 6: Connect pictorial representations of division to long division.<br>Lesson 7: Represent division by using partial quotients.<br>Lesson 8: Choose and apply a method to divide multi-digit numbers. | |

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| **Understanding and Using Place Value to Multiply and Divide (cont.)** | | **Module 3: Multiplication and Division of Multi-Digit Numbers**<br>Topic F: Remainders, Estimating, and Problem Solving<br>Lesson 21: Find whole-number quotients and remainders.<br>Lesson 22: Represent, estimate, and solve division word problems. | |
| **Factors and Multiples** | **4.OA.A.1** | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic A: Multiplication as Multiplicative Comparison<br>Lesson 1: Interpret multiplication as multiplicative comparison.<br>Lesson 2: Solve multiplicative comparison problems with unknowns in various positions.<br>Lesson 3: Describe relationships between measurements by using multiplicative comparison.<br>Lesson 4: Represent the composition of larger units of money by using multiplicative comparison.<br><br>**Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic B: Place Value and Comparison Within 1,000,000<br>Lesson 6: Demonstrate that a digit represents 10 times the value of what it represents in the place to its right. | **10 days** |
| | **4.OA.B.4** | **Module 2: Place Value Concepts for Multiplication and Division**<br>Topic E: Factors and Multiples<br>Lesson 21: Find factor pairs for numbers up to 100 and use factors to identify numbers as prime or composite.<br>Lesson 22: Use division and the associative property of multiplication to find factors.<br>Lesson 23: Determine whether a whole number is a multiple of another number.<br>Lesson 24: Recognize that a number is a multiple of each of its factors.<br>Lesson 25: Explore properties of prime and composite numbers up to 100 by using multiples. | |
| | **4.OA.C.5** | **Module 2: Place Value Concepts for Multiplication and Division**<br>Topic E: Factors and Multiples<br>Lesson 26: Use relationships within a pattern to find an unknown term in the sequence. | |

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| **Multi-Digit Whole Number Computation** | **4.NBT.B.4** | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic D: Multi-Digit Whole Number Addition and Subtraction<br>Lesson 16: Add by using the standard algorithm.<br>Lesson 17: Solve multi-step addition word problems by using the standard algorithm.<br>Lesson 18: Subtract by using the standard algorithm, decomposing larger units once.<br>Lesson 19: Subtract by using the standard algorithm, decomposing larger units up to 3 times.<br>Lesson 20: Subtract by using the standard algorithm, decomposing larger units multiple times.<br>Lesson 21: Solve two-step word problems by using addition and subtraction.<br>Lesson 22: Solve multi-step word problems by using addition and subtraction. | **12 days** |
| | **4.OA.A.2** | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic A: Multiplication as Multiplicative Comparison<br>Lesson 1: Interpret multiplication as multiplicative comparison.<br>Lesson 2: Solve multiplicative comparison problems with unknowns in various positions.<br>Lesson 3: Describe relationships between measurements by using multiplicative comparison.<br>Lesson 4: Represent the composition of larger units of money by using multiplicative comparison.<br><br>**Module 2: Place Value Concepts for Multiplication and Division**<br>Topic B: Multiplication of Tens and Ones by One-Digit Numbers<br>Lesson 9: Solve multiplication word problems.<br><br>**Module 2: Place Value Concepts for Multiplication and Division**<br>Topic D: Problem Solving with Measurement<br>Lesson 20: Solve word problems involving additive and multiplicative comparisons. | |
| | **4.OA.A.3** | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic D: Multi-Digit Whole Number Addition and Subtraction<br>Lesson 16: Add by using the standard algorithm.<br>Lesson 17: Solve multi-step addition word problems by using the standard algorithm.<br>Lesson 21: Solve two-step word problems by using addition and subtraction.<br>Lesson 22: Solve multi-step word problems by using addition and subtraction. | |

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| **Multi-Digit Whole Number Computation (cont.)** | | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic E: Metric Measurement Conversion Tables<br>Lesson 23: Express metric measurements of length in terms of smaller units.<br>Lesson 24: Express metric measurements of mass and liquid volume in terms of smaller units.<br>**Module 3: Multiplication and Division of Multi-Digit Numbers**<br>Topic F: Remainders, Estimating, and Problem Solving<br>Lesson 21: Find whole-number quotients and remainders.<br>Lesson 22: Represent, estimate, and solve division word problems.<br>Lesson 23: Solve multi-step word problems and interpret remainders.<br>Lesson 24: Solve multi-step word problems and assess the reasonableness of solutions. | |
| **Comparing Fractions and Understanding Decimal Notation** | **4.NF.A.1** | **Module 4: Foundations for Fraction Operations**<br>Topic B: Equivalent Fractions<br>Lesson 8: Generate equivalent fractions with smaller units for unit fractions.<br>Lesson 9: Generate equivalent fractions with smaller units for non-unit fractions.<br>Lesson 10: Generate equivalent fractions with larger units.<br>Lesson 11: Represent equivalent fractions by using tape diagrams, number lines, and multiplication or division.<br>Lesson 12: Generate equivalent fractions for fractions greater than 1 and generate equivalent mixed numbers. | **24 days** |
| | **4.NF.A.2** | **Module 4: Foundations for Fraction Operations**<br>Topic C: Compare Fractions<br>Lesson 13: Compare fractions by using the benchmarks 0, $\frac{1}{2}$, and 1.<br>Lesson 14: Compare fractions with related denominators.<br>Lesson 15: Compare fractions with related numerators.<br>Lesson 16: Generate a common numerator or denominator to compare fractions.<br>Lesson 17: Apply fraction comparison strategies to compare fractions greater than 1. | |
| | **4.NF.C.5** | **Module 5: Place Value Concepts for Decimal Fractions**<br>Topic B: Tenths and Hundredths<br>Lesson 5: Decompose 1 one and express hundredths in fraction form and decimal form.<br>Lesson 6: Represent hundredths as a place value unit.<br>Lesson 7: Write mixed numbers in decimal form with hundredths.<br>Lesson 8: Represent decimal numbers in expanded form. | |

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| **Comparing Fractions and Understanding Decimal Notation (cont.)** | | **Module 5: Place Value Concepts for Decimal Fractions**<br>Topic D: Addition of Tenths and Hundredths<br>Lesson 12: Apply fraction equivalence to add tenths and hundredths.<br>Lesson 13: Apply fraction equivalence to add mixed numbers with tenths and hundredths.<br>Lesson 14: Solve word problems with tenths and hundredths. | |
| | **4.NF.C.6** | **Module 5: Place Value Concepts for Decimal Fractions**<br>Topic A: Exploration of Tenths<br>Lesson 1: Organize, count, and represent a collection of money.<br>Lesson 2: Decompose 1 one and express tenths in fraction form and decimal form.<br>Lesson 3: Represent tenths as a place value unit.<br>Lesson 4: Write mixed numbers in decimal form with tenths.<br><br>**Module 5: Place Value Concepts for Decimal Fractions**<br>Topic B: Tenths and Hundredths<br>Lesson 5: Decompose 1 one and express hundredths in fraction form and decimal form.<br>Lesson 6: Represent hundredths as a place value unit.<br>Lesson 7: Write mixed numbers in decimal form with hundredths.<br>Lesson 8: Represent decimal numbers in expanded form. | |
| | **4.NF.C.7** | **Module 5: Place Value Concepts for Decimal Fractions**<br>Topic C: Comparison of Decimal Numbers<br>Lesson 9: Compare measurements expressed as decimal numbers.<br>Lesson 10: Use pictorial representations to compare decimal numbers.<br>Lesson 11: Compare and order decimal numbers. | |
| **Building Understanding of Addition, Subtraction and Multiplication of Fractions** | **4.NF.B.3** | **Module 4: Foundations for Fraction Operations**<br>Topic A: Fraction Decomposition and Equivalence<br>Lesson 1: Decompose whole numbers into a sum of unit fractions.<br>Lesson 2: Decompose fractions into a sum of unit fractions.<br>Lesson 3: Decompose fractions into a sum of fractions.<br>Lesson 4: Represent fractions by using various fraction models.<br>Lesson 5: Rename fractions greater than 1 as mixed numbers.<br>Lesson 6: Rename mixed numbers as fractions greater than 1.<br>Lesson 7: Rename fractions as a sum of equivalent smaller unit fractions. | **22 days** |

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| **Building Understanding of Addition, Subtraction and Multiplication of Fractions (cont.)** | | **Module 4: Foundations for Fraction Operations**<br>Topic D: Add and Subtract Fractions<br>Lesson 18: Estimate sums and differences of fractions by using benchmarks.<br>Lesson 19: Add and subtract fractions with like units.<br>Lesson 20: Subtract a fraction from a whole number.<br>Lesson 21: Solve addition and subtraction word problems and estimate the reasonableness of the answers.<br>Lesson 22: Add two fractions with related units. (Optional)<br><br>**Module 4: Foundations for Fraction Operations**<br>Topic E: Add and Subtract Mixed Numbers<br>Lesson 23: Add a fraction to a mixed number.<br>Lesson 24: Add a mixed number to a mixed number.<br>Lesson 25: Subtract a fraction from a mixed number, part 1.<br>Lesson 26: Subtract a fraction from a mixed number, part 2.<br>Lesson 27: Subtract a mixed number from a mixed number.<br>Lesson 28: Represent and solve word problems with mixed numbers by using drawings and equations. | |
| | **4.NF.B.4** | **Module 4: Foundations for Fraction Operations**<br>Topic F: Repeated Addition of Fractions as Multiplication<br>Lesson 31: Decompose non-unit fractions into a product of a whole number and a unit fraction.<br>Lesson 32: Multiply a fraction by a whole number by using the associative property.<br>Lesson 33: Solve word problems involving multiplication of a fraction by a whole number.<br>Lesson 34: Multiply a mixed number by a whole number by using the distributive property. | |
| **Solving Problems Involving Measurement and Data** | **4.MD.A.1**<br>**4.MD.A.2** | **Module 1: Place Value Concepts for Addition and Subtraction**<br>Topic E: Metric Measurement Conversion Tables<br>Lesson 23: Express metric measurements of length in terms of smaller units.<br>Lesson 24: Express metric measurements of mass and liquid volume in terms of smaller units. | **11 days** |

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| **Solving Problems Involving Measurement and Data (cont.)** | | **Module 2: Place Value Concepts for Multiplication and Division**<br>Topic D: Problem Solving with Measurement<br>Lesson 17: Express measurements of length in terms of smaller units.<br>Lesson 20: Solve word problems involving additive and multiplicative comparisons.<br><br>**Module 3: Multiplication and Division of Multi-Digit Numbers**<br>Topic E: Problem Solving with Measurement<br>Lesson 18: Express units of time in terms of smaller units.<br>Lesson 19: Express customary measurements of weight in terms of smaller units.<br>Lesson 20: Express customary measurements of liquid volume in terms of smaller units.<br><br>**Module 4: Foundations for Fraction Operations**<br>Topic D: Add and Subtract Fractions<br>Lesson 18: Estimate sums and differences of fractions by using benchmarks.<br>Lesson 20: Subtract a fraction from a whole number.<br>Lesson 21: Solve addition and subtraction word problems and estimate the reasonableness of the answers.<br><br>**Module 4: Foundations for Fraction Operations**<br>Topic E: Add and Subtract Mixed Numbers<br>Lesson 24: Add a mixed number to a mixed number.<br>Lesson 27: Subtract a mixed number from a mixed number.<br>Lesson 28: Represent and solve word problems with mixed numbers by using drawings and equations.<br><br>**Module 4: Foundations for Fraction Operations**<br>Topic F: Repeated Addition of Fractions as Multiplication<br>Lesson 33: Solve word problems involving multiplication of a fraction by a whole number.<br><br>**Module 5: Place Value Concepts for Decimal Fractions**<br>Topic D: Addition of Tenths and Hundredths<br>Lesson 14: Solve word problems with tenths and hundredths. | |
| | **4.MD.A.3** | **Module 2: Place Value Concepts for Multiplication and Division**<br>Topic A: Compose and Decompose Units of Ten<br>Lesson 3: Investigate and use a formula for the area of a rectangle. | |

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| **Solving Problems Involving Measurement and Data (cont.)** | | **Module 2: Place Value Concepts for Multiplication and Division**<br>Topic B: Multiplication of Tens and Ones by One-Digit Numbers<br>Lesson 7: Multiply by using an area model and the distributive property.<br><br>**Module 2: Place Value Concepts for Multiplication and Division**<br>Topic D: Problem Solving with Measurement<br>Lesson 18: Investigate and use formulas for the perimeter of a rectangle.<br>Lesson 19: Apply area and perimeter formulas to solve problems.<br>Lesson 20: Solve word problems involving additive and multiplicative comparisons. | |
| | **4.MD.B.4** | **Module 4: Foundations for Fraction Operations**<br>Topic E: Add and Subtract Mixed Numbers<br>Lesson 29: Solve problems by using data from a line plot.<br>Lesson 30: Represent data on a line plot. | |
| **Exploring Angles and Angle Measurement** | **4.MD.C.5** | **Module 6: Angle Measurements and Plane Figures**<br>Topic B: Angle Measurement<br>Lesson 7: Explore angles as fractional turns through a circle.<br>Lesson 8: Use a circular protractor to recognize a 1° angle as a turn through $\frac{1}{360}$ of a circle.<br>Lesson 9: Identify and measure angles as turns and recognize them in various contexts.<br>Lesson 10: Use 180° protractors to measure angles.<br>Lesson 11: Estimate and measure angles with a 180° protractor. | **10 days** |
| | **4.MD.C.6** | **Module 6: Angle Measurements and Plane Figures**<br>Topic B: Angle Measurement<br>Lesson 8: Use a circular protractor to recognize a 1° angle as a turn through $\frac{1}{360}$ of a circle.<br>Lesson 10: Use 180° protractors to measure angles.<br>Lesson 11: Estimate and measure angles with a 180° protractor.<br>Lesson 12: Use a protractor to draw angles up to 180°. | |
| | **4.MD.C.7** | **Module 6: Angle Measurements and Plane Figures**<br>Topic C: Determine Unknown Angle Measures<br>Lesson 13: Decompose angles by using pattern blocks.<br>Lesson 14: Find unknown angle measures within right and straight angles.<br>Lesson 15: Find unknown angle measures within a decomposed angle of up to 180°.<br>Lesson 16: Find unknown angle measures around a point. | |

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| **Understanding Properties of Two-Dimensional Figures** | **4.G.A.1**<br>**4.G.A.2** | **Module 6: Angle Measurements and Plane Figures**<br>Topic A: Lines and Angles<br>Lesson 1: Identify and draw points, lines, line segments, rays, and angles.<br>Lesson 2: Identify right, acute, obtuse, and straight angles.<br>Lesson 3: Draw right, acute, obtuse, and straight angles.<br>Lesson 4: Identify, define, and draw perpendicular lines.<br>Lesson 5: Identify, define, and draw parallel lines.<br>Lesson 6: Relate geometric figures to a real-world context.<br><br>**Module 6: Angle Measurements and Plane Figures**<br>Topic B: Angle Measurement<br>Lesson 10: Use 180° protractors to measure angles.<br>Lesson 11: Estimate and measure angles with a 180° protractor.<br>Lesson 12: Use a protractor to draw angles up to 180°.<br><br>**Module 6: Angle Measurements and Plane Figures**<br>Topic D: Two-Dimensional Figures and Symmetry<br>Lesson 18: Analyze and classify triangles based on side length, angle measures, or both.<br>Lesson 19: Construct and classify triangles based on given attributes.<br>Lesson 20: Sort polygons based on a given rule. | **10 days** |
| | **4.G.A.3** | **Module 6: Angle Measurements and Plane Figures**<br>Topic D: Two-Dimensional Figures and Symmetry<br>Lesson 17: Recognize, identify, and draw lines of symmetry. | |

# *Eureka Math²* Scope and Sequence: Year at a Glance
## Level 4: Fractional Units

If a district uses this resource to implement the state model curriculum for grade 4, the following scope and sequence should be followed to ensure alignment and attention to the progressions of mathematics.

| **Module 1** | **Module 2** | **Module 3** | **Module 4** | **Module 5** | **Module 6** |
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| Place Value Concepts for Addition and Subtraction | Place Value Concepts for Multiplication and Division | Multiplication and Division of Multi-Digit Numbers | Foundations for Fraction Operations | Place Value Concepts for Decimal Fractions | Angle Measurements and Plane Figures |
| Topic A: Multiplication as Multiplicative Comparison<br><br>**Lesson 1:** Interpret multiplication as multiplicative comparison.<br>**4.OA.A.1, 4.OA.A.2, MP7, 4.Mod1.AD1, 4.Mod1.AD2, 4.Mod1.AD3**<br><br>**Lesson 2:** Solve multiplicative comparison problems with unknowns in various positions.<br>**4.OA.A.1, 4.OA.A.2, MP7, 4.Mod1.AD1, 4.Mod1.AD2, 4.Mod1.AD3**<br><br>**Lesson 3:** Describe relationships between measurements by using multiplicative comparison.<br>**4.OA.A.1, 4.OA.A.2, MP2, 4.Mod1.AD1, 4.Mod1.AD2, 4.Mod1.AD3** | Topic A: Compose and Decompose Units of Ten<br><br>**Lesson 1:** Multiply multiples of 10 by one-digit numbers by using the associative property of multiplication.<br>**4.NBT.B.5, MP7, 4.Mod2.AD6**<br><br>**Lesson 2:** Divide two- and three-digit multiples of 10 by one-digit numbers.<br>**4.NBT.B.6, MP2, 4.Mod2.AD7**<br><br>**Lesson 3:** Investigate and use a formula for the area of a rectangle.<br>**4.MD.A.3, MP1, 4.Mod2.AD11**<br><br>Topic B: Multiplication of Tens and Ones by One-Digit Numbers<br><br>**Lesson 4:** Multiply by using familiar strategies.<br>**4.NBT.B.5, MP5, 4.Mod2.AD6** | Topic A: Multiplication and Division of Multiples of Tens, Hundreds, and Thousands<br><br>**Lesson 1:** Divide multiples of 100 and 1000.<br>**4.NBT.B.6, MP8, 4.Mod3.AD3**<br><br>**Lesson 2:** Multiply by multiples of 100 and 1000.<br>**4.NBT.B.5, MP7, 4.Mod3.AD2**<br><br>**Lesson 3:** Multiply a two-digit multiple of 10 by a two-digit multiple of 10.<br>**4.NBT.B.5, MP3, 4.Mod3.AD2**<br><br>Topic B: Division of Thousands, Hundreds, Tens, and Ones<br><br>**Lesson 4:** Apply place value strategies to divide hundreds, tens, and ones.<br>**4.NBT.B.6, MP1, 4.Mod3.AD3** | Topic A: Fraction Decomposition and Equivalence<br><br>**Lesson 1:** Decompose whole numbers into a sum of unit fractions.<br>**NF.B.3.a, 4.NF.B.3.b, MP7, 4.Mod4.AD4**<br><br>**Lesson 2:** Decompose fractions into a sum of unit fractions.<br>**4.NF.B.3.a, 4.NF.B.3.b, MP2, 4.Mod4.AD4**<br><br>**Lesson 3:** Decompose fractions into a sum of fractions.<br>**4.NF.B.3.a, 4.NF.B.3.b, MP6, 4.Mod4.AD4**<br><br>**Lesson 4:** Represent fractions by using various fraction models.<br>**4.NF.B.3.a, 4.NF.B.3.b, MP4, 4.Mod4.AD4** | Topic A: Exploration of Tenths<br><br>**Lesson 1:** Organize, count, and represent a collection of money.<br>**4.NF.C.6, MP5, 4.Mod5.AD3**<br><br>**Lesson 2:** Decompose 1 one and express tenths in fraction form and decimal form.<br>**4.NF.C.6, MP8, 4.Mod5.AD3**<br><br>**Lesson 3:** Represent tenths as a place value unit.<br>**4.NF.C.6, MP7, 4.Mod5.AD3**<br><br>**Lesson 4:** Write mixed numbers in decimal form with tenths.<br>**4.NF.C.6, MP6, 4.Mod5.AD3** | Topic A: Lines and Angles<br><br>**Lesson 1:** Identify and draw points, lines, line segments, rays, and angles.<br>**4.G.A.1, MP6, 4.Mod6.AD4, 4.Mod6.AD5**<br><br>**Lesson 2:** Identify right, acute, obtuse, and straight angles.<br>**4.G.A.1, MP7, 4.Mod6.AD4, 4.Mod6.AD5**<br><br>**Lesson 3:** Draw right, acute, obtuse, and straight angles.<br>**4.G.A.1, MP6, 4.Mod6.AD4, 4.Mod6.AD5**<br><br>**Lesson 4:** Identify, define, and draw perpendicular lines.<br>**4.G.A.1, MP6, 4.Mod6.AD4, 4.Mod6.AD5**<br><br>**Lesson 5:** Identify, define, and draw parallel lines.<br>**4.G.A.1, MP6, 4.Mod6.AD4, 4.Mod6.AD5** |

**Lesson 4:** Represent the composition of larger units of money by using multiplicative comparison.
**4.OA.A.1, 4.OA.A.2, MP7, 4.Mod1.AD1, 4.Mod1.AD2, 4.Mod1.AD3**

### Topic B: Place Value and Comparison within $1,000,000$

**Lesson 5:** Organize, count, and represent a collection of objects.
**4.NBT.A.2, MP5, 4.Mod1.AD7**

**Lesson 6:** Demonstrate that a digit represents 10 times the value of what it represents in the place to its right.
**4.OA.A.1, 4.NBT.A.1, MP8, 4.Mod1.AD1, 4.Mod1.AD2, 4.Mod1.AD6**

**Lesson 7:** Write numbers to 1,000,000 in unit form and expanded form by using place value structure.
**4.NBT.A.2, MP7, 4.Mod1.AD7**

**Lesson 8:** Write numbers to 1,000,000 in standard form and word form.
**4.NBT.A.2, MP3, 4.Mod1.AD7**

**Lesson 9:** Compare numbers within 1,000,000 by using $>$, $=$, and $<$.
**4.NBT.A.2, MP6, 4.Mod1.AD8**

**Lesson 5:** Multiply by using place value strategies and the distributive property.
**4.NBT.B.5, MP7, 4.Mod2.AD6**

**Lesson 6:** Multiply with regrouping by using place value strategies and the distributive property.
**4.NBT.B.5, MP6, 4.Mod2.AD6**

**Lesson 7:** Multiply by using an area model and the distributive property.
**4.NBT.B.5, 4.MD.A.3, MP7, 4.Mod2.AD6, 4.Mod2.AD11**

**Lesson 8:** Multiply by applying the distributive property and write equations.
**4.NBT.B.5, MP3, 4.Mod2.AD6**

**Lesson 9:** Solve multiplication word problems.
**4.OA.A.2, 4.NBT.B.5, MP5, 4.Mod2.AD1, 4.Mod2.AD6**

**Lesson 10:** Multiply by applying simplifying strategies. (Optional)
**4.NBT.B.5, MP5, 4.Mod2.AD6**

### Topic C: Division of Tens and Ones by One-Digit Numbers

**Lesson 11:** Divide by using familiar strategies.
**4.NBT.B.6, MP2, 4.Mod2.AD7**

**Lesson 12:** Divide two-digit numbers by one-digit numbers by using an area model.
**4.NBT.B.6, MP7, 4.Mod2.AD7**

**Lesson 5:** Apply place value strategies to divide thousands, hundreds, tens, and ones.
**4.NBT.B.6, MP5, 4.Mod3.AD3**

**Lesson 6:** Connect pictorial representations of division to long division.
**4.NBT.B.6, MP6, 4.Mod3.AD3**

**Lesson 7:** Represent division by using partial quotients.
**4.NBT.B.6, MP8, 4.Mod3.AD3**

**Lesson 8:** Choose and apply a method to divide multi-digit numbers.
**4.NBT.B.6, MP6, 4.Mod3.AD3**

### Topic C: Multiplication of up to Four-Digit Numbers by One-Digit Numbers

**Lesson 9:** Apply place value strategies to multiply three-digit numbers by one-digit numbers.
**4.NBT.B.5, MP5, 4.Mod3.AD2**

**Lesson 10:** Apply place value strategies to multiply four-digit numbers by one-digit numbers.
**4.NBT.B.5, MP7, 4.Mod3.AD2**

**Lesson 11:** Represent multiplication by using partial products.
**4.NBT.B.5, MP8, 4.Mod3.AD2**

**Lesson 12:** Multiply by using various recording methods in vertical form.
**4.NBT.B.5, MP6, 4.Mod3.AD2**

**Lesson 5:** Rename fractions greater than 1 as mixed numbers.
**4.NF.B.3.a, 4.NF.B.3.b, MP7, 4.Mod4.AD4**

**Lesson 6:** Rename mixed numbers as fractions greater than 1.
**4.NF.B.3.a, 4.NF.B.3.b, MP5, 4.Mod4.AD4**

### Topic B: Equivalent Fractions

**Lesson 7:** Rename fractions as a sum of equivalent smaller unit fractions.
**4.NF.B.3.a, 4.NF.B.3.b, MP2, 4.Mod4.AD4**

**Lesson 8:** Generate equivalent fractions with smaller units for unit fractions.
**4.NF.A.1, MP8, 4.Mod4.AD1, 4.Mod4.AD2**

**Lesson 9:** Generate equivalent fractions with smaller units for non-unit fractions.
**4.NF.A.1, MP7, 4.Mod4.AD1, 4.Mod4.AD2**

**Lesson 10:** Generate equivalent fractions with larger units.
**4.NF.A.1, MP6, 4.Mod4.AD1, 4.Mod4.AD2**

**Lesson 11:** Represent equivalent fractions by using tape diagrams, number lines, and multiplication or division.
**4.NF.A.1, MP8, 4.Mod4.AD1, 4.Mod4.AD2**

### Topic B: Tenths and Hundredths

**Lesson 5:** Decompose 1 one and express hundredths in fraction form and decimal form.
**4.NF.C.5, 4.NF.C.6, MP2, 4.Mod5.AD1, 4.Mod5.AD3**

**Lesson 6:** Represent hundredths as a place value unit.
**4.NF.C.5, 4.NF.C.6, MP3, 4.Mod5.AD1, 4.Mod5.AD3**

**Lesson 7:** Write mixed numbers in decimal form with hundredths.
**4.NF.C.5, 4.NF.C.6, MP7, 4.Mod5.AD1, 4.Mod5.AD3**

**Lesson 8:** Represent decimal numbers in expanded form.
**4.NF.C.5, 4.NF.C.6, MP2, 4.Mod5.AD1, 4.Mod5.AD3**

### Topic C: Comparison of Decimal Numbers

**Lesson 9:** Compare measurements expressed as decimal numbers.
**4.NF.C.7, MP2, 4.Mod5.AD4**

**Lesson 10:** Use pictorial representations to compare decimal numbers.
**4.NF.C.7, MP5, 4.Mod5.AD4**

**Lesson 11:** Compare and order decimal numbers.
**4.NF.C.7, MP3, 4.Mod5.AD4**

**Lesson 6:** Relate geometric figures to a real-world context.
**4.G.A.1, MP2, 4.Mod6.AD4, 4.Mod6.AD5**

### Topic B: Angle Measurement

**Lesson 7:** Explore angles as fractional turns through a circle.
**4.MD.C.5.a, MP7, 4.Mod6.AD1**

**Lesson 8:** Use a circular protractor to recognize a $1°$ angle as a turn through $\frac{1}{360}$ of a circle.
**4.MD.C.5, 4.MD.C.6, MP8, 4.Mod6.AD1, 4.Mod6.AD2**

**Lesson 9:** Identify and measure angles as turns and recognize them in various contexts.
**4.MD.C.5, 4.MD.C.5.a, 4.MD.C.5.b, MP2, 4.Mod6.AD1**

**Lesson 10:** Use $180°$ protractors to measure angles.
**4.MD.C.5, 4.MD.C.5.a, 4.MD.C.5.b, 4.MD.C.6, 4.G.A.1, MP6, 4.Mod6.AD1, 4.Mod6.AD2, 4.Mod6.AD4**

**Lesson 11:** Estimate and measure angles with a $180°$ protractor.
**4.MD.C.5, 4.MD.C.5.a, 4.MD.C.5.b, 4.MD.C.6, 4.G.A.1, MP6, 4.Mod6.AD1, 4.Mod6.AD2, 4.Mod6.AD4**

**Lesson 12:** Use a protractor to draw angles up to $180°$.
**4.MD.C.6, 4.G.A.1, MP6, 4.Mod6.AD2, 4.Mod6.AD4**

## Topic C: Rounding Multi-Digit Whole Numbers

**Lesson 10:** Name numbers by using place value understanding.
**4.NBT.A.2, MP8, 4.Mod1.AD7**

**Lesson 11:** Find $1$, $10$, and $100$ thousand more than and less than a given number.
**4.NBT.A.2, MP1, 4.Mod1.AD7**

**Lesson 12:** Round to the nearest thousand.
**4.NBT.A.3, MP6, 4.Mod1.AD9**

**Lesson 13:** Round to the nearest ten thousand and hundred thousand.
**4.NBT.A.3, MP6, 4.Mod1.AD9**

**Lesson 14:** Round multi-digit numbers to any place.
**4.NBT.A.3, MP8, 4.Mod1.AD9**

**Lesson 15:** Apply estimation to real-world situations by using rounding.
**4.OA.A.3, 4.NBT.A.3, MP3, 4.Mod1.AD4, 4.Mod1.AD9**

## Topic D: Multi-Digit Whole Number Addition and Subtraction

**Lesson 16:** Add by using the standard algorithm.
**4.OA.A.3, 4.NBT.B.4, MP4, 4.Mod1.AD4, 4.Mod1.AD10**

**Lesson 13:** Divide three-digit numbers by one-digit numbers by using an area model.
**4.NBT.B.6, MP3, 4.Mod2.AD7**

**Lesson 14:** Divide two-digit numbers by one-digit numbers by using place value strategies.
**4.NBT.B.6, MP6, 4.Mod2.AD7**

**Lesson 15:** Divide three-digit numbers by one-digit numbers by using place value strategies.
**4.NBT.B.6, MP7, 4.Mod2.AD7**

**Lesson 16:** Divide by using the break apart and distribute strategy.
**4.NBT.B.6, MP1, 4.Mod2.AD7**

## Topic D: Problem Solving with Measurement

**Lesson 17:** Express measurements of length in terms of smaller units.
**4.MD.A.1, 4.MD.A.2, MP8, 4.Mod2.AD8, 4.Mod2.AD9, 4.Mod2.AD10**

**Lesson 18:** Investigate and use formulas for the perimeter of a rectangle.
**4.MD.A.3, MP4, 4.Mod2.AD11**

**Lesson 19:** Apply area and perimeter formulas to solve problems.
**4.MD.A.3, MP2, 4.Mod2.AD11**

**Lesson 20:** Solve word problems involving additive and multiplicative comparisons.
**4.OA.A.2, 4.MD.A.2, 4.MD.A.3, MP1, 4.Mod2.AD1, 4.Mod2.AD9, 4.Mod2.AD10, 4 Mod2.AD11**

## Topic D: Multiplication of Two-Digit Numbers by Two-Digit Numbers

**Lesson 13:** Multiply two-digit numbers by two-digit multiples of $10$.
**4.NBT.B.5, MP5, 4.Mod3.AD2**

**Lesson 14:** Apply place value strategies to multiply two-digit numbers by two-digit numbers.
**4.NBT.B.5, MP2, 4.Mod3.AD2**

**Lesson 15:** Multiply with four partial products.
**4.NBT.B.5, MP6, 4.Mod3.AD2**

**Lesson 16:** Multiply with two partial products.
**4.NBT.B.5, MP7, 4.Mod3.AD2**

**Lesson 17:** Apply the distributive property to multiply.
**4.NBT.B.5, MP2, 4.Mod3.AD2**

## Topic E: Problem Solving with Measurement

**Lesson 18:** Express units of time in terms of smaller units.
**4.MD.A.1, 4.MD.A.2, MP1, 4.Mod3.AD4, 4.Mod3.AD5**

**Lesson 19:** Express customary measurements of weight in terms of smaller units.
**4.MD.A.1, 4.MD.A.2, MP4, 4.Mod3.AD4, 4.Mod3.AD5**

**Lesson 12:** Generate equivalent fractions for fractions greater than $1$ and generate equivalent mixed numbers.
**4.NF.A.1, MP3, 4.Mod4.AD1, 4.Mod4.AD2**

## Topic C: Compare Fractions

**Lesson 13:** Compare fractions by using the benchmarks $0$, $\frac{1}{2}$, and $1$.
**4.NF.A.2, MP3, 4.Mod4.AD3**

**Lesson 14:** Compare fractions with related denominators.
**4.NF.A.2, MP5, 4.Mod4.AD3**

**Lesson 15:** Compare fractions with related numerators.
**4.NF.A.2, MP5, 4.Mod4.AD3**

**Lesson 16:** Generate a common numerator or denominator to compare fractions.
**4.NF.A.2, MP1, 4.Mod4.AD3**

**Lesson 17:** Apply fraction comparison strategies to compare fractions greater than 1.
**4.NF.A.2, MP7, 4.Mod4.AD3**

## Topic D: Add and Subtract Fractions

**Lesson 18:** Estimate sums and differences of fractions by using benchmarks.
**4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.d, MP3, 4.Mod4.AD4, 4.Mod4.AD7**

## Topic D: Addition of Tenths and Hundredths

**Lesson 12:** Apply fraction equivalence to add tenths and hundredths.
**4.NF.C.5, MP1, 4.Mod5.AD2**
**Lesson 13:** Apply fraction equivalence to add mixed numbers with tenths and hundredths.
**4.NF.C.5, MP7, 4.Mod5.AD2**

**Lesson 14:** Solve word problems with tenths and hundredths.
**4.NF.C.5, 4.MD.A.2, MP4, 4.Mod5.AD2, 4.Mod5.AD5**

## Topic C: Determine Unknown Angle Measures

**Lesson 13:** Decompose angles by using pattern blocks.
**4.MD.C.7, MP2, 4.Mod6.AD3**

**Lesson 14:** Find unknown angle measures within right and straight angles.
**4.MD.C.7, MP7, 4.Mod6.AD3**

**Lesson 15:** Find unknown angle measures within a decomposed angle of up to $180°$.
**4.MD.C.7, MP5, 4.Mod6.AD3**

**Lesson 16:** Find unknown angle measures around a point.
**4.MD.C.7, MP1, 4.Mod6.AD3**

## Topic D: Two-Dimensional Figures and Symmetry

**Lesson 17:** Recognize, identify, and draw lines of symmetry.
**4.G.A.3, MP7, 4.Mod6.AD7**

**Lesson 18:** Analyze and classify triangles based on side length, angle measures, or both.
**4.G.A.1, 4.G.A.2, MP3, 4.Mod6.AD5, 4.Mod6.AD6**

**Lesson 19:** Construct and classify triangles based on given attributes.
**4.G.A.1, 4.G.A.2, MP6, 4.Mod6.AD5, 4.Mod6.AD6**

**Lesson 17:** Solve multi-step addition word problems by using the standard algorithm.
**4.OA.A.3, 4.NBT.B.4, MP2, 4.Mod1.AD5, 4.Mod1.AD10**

**Lesson 18:** Subtract by using the standard algorithm, decomposing larger units once.
**4.NBT.B.4, MP6, 4.Mod1.AD10**

**Lesson 19:** Subtract by using the standard algorithm, decomposing larger units up to 3 times.
**4.NBT.B.4, MP1, 4.Mod1.AD10**

**Lesson 20:** Subtract by using the standard algorithm, decomposing larger units multiple times.
**4.NBT.B.4, MP7, 4.Mod1.AD10**

**Lesson 21:** Solve two-step word problems by using addition and subtraction.
**4.OA.A.3, 4.NBT.B.4, MP4, 4.Mod1.AD5, 4.Mod1.AD10**

**Lesson 22:** Solve multi-step word problems by using addition and subtraction.
**4.OA.A.3, 4.NBT.B.4, MP2, 4.Mod1.AD5, 4.Mod1.AD10**

### Topic E: Factors and Multiples

**Lesson 21:** Find factor pairs for numbers up to 100 and use factors to identify numbers as prime or composite.
**4.OA.B.4, MP6, 4.Mod2.AD2, 4.Mod2.AD4**

**Lesson 22:** Use division and the associative property of multiplication to find factors.
**4.OA.B.4, MP3, 4.Mod2.AD2, 4.Mod2.AD4**

**Lesson 23:** Determine whether a whole number is a multiple of another number.
**4.OA.B.4, MP7, 4.Mod2.AD3**

**Lesson 24:** Recognize that a number is a multiple of each of its factors.
**4.OA.B.4, MP8, 4.Mod2.AD3**

**Lesson 25:** Explore properties of prime and composite numbers up to 100 by using multiples.
**4.OA.B.4, MP3, 4.Mod2.AD3, 4.Mod2.AD4**

**Lesson 26:** Use relationships within a pattern to find an unknown term in the sequence.
**4.OA.C.5, MP6, 4.Mod2.AD5**

**Lesson 20:** Express customary measurements of liquid volume in terms of smaller units.
**4.MD.A.1, 4.MD.A.2, MP5, 4.Mod3.AD4, 4.Mod3.AD5**

### Topic F: Remainders, Estimating, and Problem Solving

**Lesson 21:** Find whole-number quotients and remainders.
**4.OA.A.3, 4.NBT.B.6, MP2, 4.Mod3.AD1, 4.Mod3.AD3**

**Lesson 22:** Represent, estimate, and solve division word problems.
**4.OA.A.3, 4.NBT.B.6, MP1, 4.Mod3.AD1, 4.Mod3.AD3**

**Lesson 23:** Solve multi-step word problems and interpret remainders.
**4.OA.A.3, MP4, 4.Mod3.AD1**

**Lesson 24:** Solve multi-step word problems and assess the reasonableness of solutions.
**4.OA.A.3, MP3, 4.Mod3.AD1**

**Lesson 19:** Add and subtract fractions with like units.
**4.NF.B.3.a, 4.NF.B.3.b, MP4, 4.Mod4.AD4**

**Lesson 20:** Subtract a fraction from a whole number.
**4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.d, 4.MD.A.2, MP1, 4.Mod4.AD4, 4.Mod4.AD7**

**Lesson 21:** Solve addition and subtraction word problems and estimate the reasonableness of the answers.
**4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.d, 4.MD.A.2, MP1, 4.Mod4.AD4, 4.Mod4.AD7**

**Lesson 22:** Add two fractions with related units. (Optional)
**4.NF.B.3.a, 4.NF.B.3.b, MP5, 4.Mod4.AD4**

### Topic E: Add and Subtract Mixed Numbers

**Lesson 23:** Add a fraction to a mixed number.
**4.NF.B.3.c, MP7, 4.Mod4.AD5**

**Lesson 24:** Add a mixed number to a mixed number.
**4.NF.B.3.c, 4.NF.B.3.d, MP7, 4.Mod4.AD5, 4.Mod4.AD7**

**Lesson 25:** Subtract a fraction from a mixed number, part 1.
**4.NF.B.3.c, MP6, 4.Mod4.AD6**

**Lesson 20:** Sort polygons based on a given rule.
**4.G.A.1, 4.G.A.2, MP1, 4.Mod6.AD5, 4.Mod6.AD6**

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|---|---|---|---|---|---|
| **Topic E: Metric Measurement Conversion Tables**<br><br>**Lesson 23:** Express metric measurements of length in terms of smaller units.<br>**4.MD.A.1, 4.MD.A.2, MP7, 4.Mod1.AD11, 4.Mod1.AD12**<br><br>**Lesson 24:** Express metric measurements of mass and liquid volume in terms of smaller units.<br>**4.MD.A.1, 4.MD.A.2, MP5, 4.Mod1.AD11, 4.Mod1.AD12** | | | **Lesson 26:** Subtract a fraction from a mixed number, part 2.<br>**4.NF.B.3.c, MP7, 4.Mod4.AD6**<br><br>**Lesson 27:** Subtract a mixed number from a mixed number.<br>**4.NF.B.3.c, 4.NF.B.3.d, 4.MD.A.2, MP2, 4.Mod4.AD6, 4.Mod4.AD7**<br><br>**Lesson 28:** Represent and solve word problems with mixed numbers by using drawings and equations.<br>**4.NF.B.3.d, 4.MD.A.2, MP4, 4.Mod4.AD7**<br><br>**Lesson 29:** Solve problems by using data from a line plot.<br>**4.MD.B.4, MP1, 4.Mod4.AD11**<br><br>**Lesson 30:** Represent data on a line plot.<br>**4.MD.B.4, MP6, 4.Mod4.AD11**<br><br>**Topic F: Repeated Addition of Fractions as Multiplication**<br><br>**Lesson 31:** Decompose non-unit fractions into a product of a whole number and a unit fraction.<br>**4.NF.B.4.a, MP7, 4.Mod4.AD8**<br><br>**Lesson 32:** Multiply a fraction by a whole number by using the associative property.<br>**4.NF.B.4.b, MP8, 4.Mod4.AD9**<br><br>**Lesson 33:** Solve word problems involving multiplication of a fraction by a whole number.<br>**4.NF.B.4.b, 4.NF.B.4.c, 4.MD.A.2, MP2, 4.Mod4.AD9, 4.Mod4.AD10** | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | **Lesson 34:** Multiply a mixed number by a whole number by using the distributive property. **4.NF.B.4.b, MP3, 4.Mod4.AD9** | | |

Trimester and quarter indicators are provided as a guide for pacing. A few optional lessons in each grade level are included in total number of lessons. About 30 additional days are allotted at each level for assessment and responsive teaching.

Trimester 1 | Trimester 2 | Trimester 3

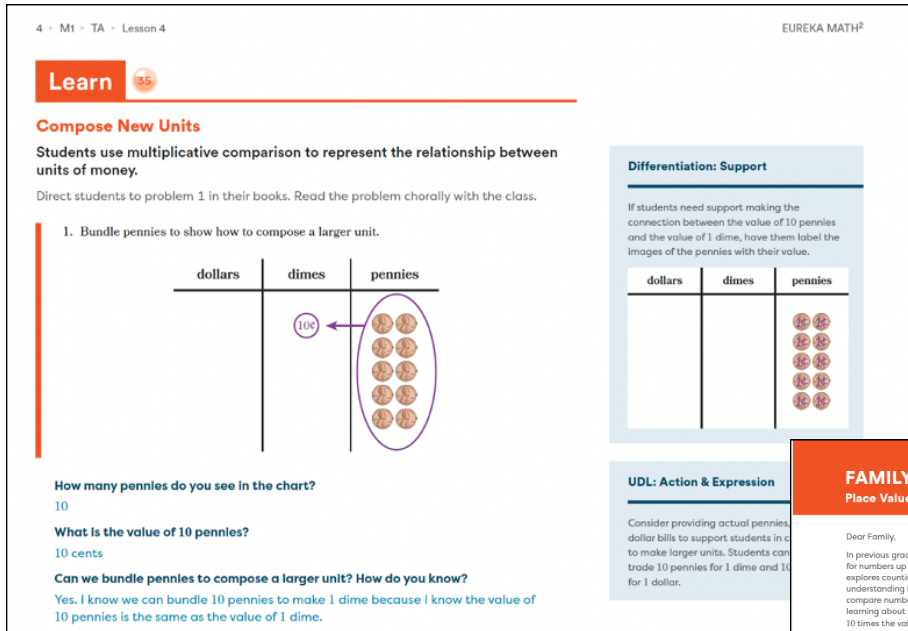
Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4

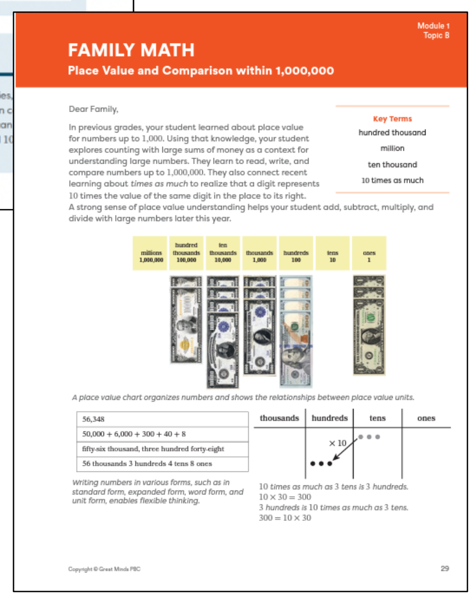
| Level 3<br>Units of Any Number | Level 4<br>Fractional Units | Level 5<br>Fractions Are Numbers |
|---|---|---|
| **Module 1: Multiplication and Division with Units of 2, 3, 4, 5, and 10**<br>5 Topics \| 23 Lessons | **Module 1: Place Value Concepts for Addition and Subtraction**<br>5 Topics \| 24 Lessons | **Module 1: Place Value Concepts for Multiplication and Division with Whole Numbers**<br>4 Topics \| 20 Lessons |
| **Module 2: Place Value Concepts through Metric Measurement**<br>4 Topics \| 25 Lessons | **Module 2: Place Value Concepts for Multiplication and Division**<br>5 Topics \| 26 Lessons | **Module 2: Addition and Subtraction with Fractions**<br>4 Topics \| 17 Lessons |
| **Module 3: Multiplication and Division with Units of 0, 1, 6, 7, 8, and 9**<br>4 Topics \| 25 Lessons | **Module 3: Multiplication and Division of Multi-Digit Numbers**<br>6 Topics \| 24 Lessons | **Module 3: Multiplication and Division with Fractions**<br>4 Topics \| 22 Lessons |
| **Module 4: Multiplication and Area**<br>4 Topics \| 19 Lessons | **Module 4: Foundations for Fraction Operations**<br>6 Topics \| 34 Lessons | **Module 4: Place Value Concepts for Decimal Operations**<br>5 Topics \| 30 Lessons |
| **Module 5: Fractions as Numbers**<br>5 Topics \| 27 Lessons | **Module 5: Place Value Concepts for Decimal Fractions**<br>4 Topics \| 14 Lessons | **Module 5: Addition and Multiplication with Area and Volume**<br>4 Topics \| 28 Lessons |
| **Module 6: Geometry, Measurement, and Data**<br>4 Topics \| 26 Lessons | **Module 6: Angle Measurements and Plane Figures**<br>4 Topics \| 20 Lessons | **Module 6: Foundations to Geometry in the Coordinate Plane**<br>4 Topics \| 20 Lessons |
| **TOTAL:**<br>**26 Topics \| 145 Lessons** | **TOTAL:**<br>**30 Topics \| 142 Lessons** | **TOTAL:**<br>**25 Topics \| 137 Lessons** |

# Supports of Diversity, Equity, and Inclusion

## Providing Culturally Responsive Instruction

*Eureka Math²* values the funds of knowledge that students bring into the classroom and acknowledges that deep learning happens when all students are able to leverage their diverse life experiences while learning mathematics.




One of the ways *Eureka Math²* invites students into mathematics and celebrates the diversity present in every classroom is by highlighting for teachers those specific lesson moments that can be tailored to bring students' experiences from their home and communities into the classroom. For example, a strategically placed Universal Design for Learning (UDL) margin note in grade 4 module 1 lesson 4 suggests that teachers leverage life experiences by using real pennies instead of images of pennies while working with a place value chart.

**UDL: Engagement**

Consider adjusting the problem to make it more relevant to students in your class. For example, identify items in the school or community with the dimensions and quantity in the problem and change the problem to reflect the more relevant context. When you select a different context, the units of measure could change, but the quantity 5 and the dimensions 6 by 8 should remain the same to maintain the complexity of the problem.

Adjusting questions to make them more meaningful to students provides options for recruiting interest by personalizing and contextualizing the content to learners' lives. In grade 3 module 4 lesson 13, students reason about, represent, and solve a two-step area word problem. A Universal Design for Learning Engagement margin note encourages the teacher to adjust the existing problem context by identifying items in the school or community with the dimensions and quantity in the problem, making the context more relevant and meaningful to students.

Students' experiences from their home and communities are also leveraged through Family Math. Family Math is a letter to families that describes the major concepts in the current topic. Each letter uses words and phrases that should be familiar to the student from the lessons in the topic. It includes visual supports that students can use to explain the concepts or strategies to their family or that can help adults at home understand or unpack a concept. Family Math also includes simple and practical at-home activities to extend learning and help students see mathematics in their world.

Students are diverse, and any one classroom can have students from either an individualist frame of reference or a collectivist frame of reference. The teacher-writers of *Eureka Math²* considered both frames of reference in intentionally balancing activities that build off individualism as well as collectivism.

In her book *Culturally Responsive Teaching and the Brain*, Zaretta Hammond references collectivism as emphasizing relationships, interdependence within a community, and cooperative learning (page 25). In *Eureka Math*$^2$, a collectivist approach to learning mathematics is present in the embedded cooperative learning structures in open-middle and open-ended tasks. Specifically, the instructional routines Numbered Heads and Co-construction are rooted in students working cooperatively in groups to deepen their mathematical conceptual understanding. See grade 3 module 6 lesson 6, in which students work with a partner to create a context that could apply to an elapsed time situation in the routine Co-construction. Also, grade 5 module 3 lesson 3 features the routine Numbered Heads, in which students work in groups of three to describe how to solve one multiplication problem.

Beyond the instructional routines, *Eureka Math*$^2$ leverages the power of student relationships and interdependence through frequent partner and group work. For any partner or group work referenced in the instructional materials, teachers may make use of strategic, flexible groupings that build off students' strengths, including home language. A Language Support margin note in the first lesson of every module serves to remind teachers to leverage students' cultural perspectives when strategically placing students in partners.

**Language Support**

Consider using strategic, flexible grouping throughout the module.

- Pair students who have different levels of mathematical proficiency.
- Pair students who have different levels of English language proficiency.
- Join pairs to form small groups of four.

As applicable, complement any of these groupings by pairing students who speak the same native language.

Hammond references individualism as emphasizing individual achievement and independence (page 25). In *Eureka Math*$^2$, an individualist approach to learning mathematics may be seen in the embedded systems for independent practice in every lesson, such as Exit Tickets and Practice Sets. Additionally, the instructional routines Critique a Flawed Response and Take a Stand both start with students working on a math problem individually before engaging in student discourse. See grade 4 module 3 lesson 3, in which students engage with the Critique a Flawed Response routine by first identifying an error individually before a whole-class discussion. Also, grade 3 module 3 lesson 6 invites students to engage with the Take a Stand routine, in which students first determine how they would decompose a number before engaging in a whole-class discussion about different ways to decompose numbers.

Beyond balancing individualism and collectivism, *Eureka Math*$^2$ activities and problems provide students with mirrors in which to see their own cultural perspectives reflected, as well as windows through which to view others' cultural perspectives.

*Eureka Math*$^2$ is an inclusive mathematics curriculum that represents diverse doers of math. The curriculum's images, fine art, and pictures of people represent diversity through problems and exercises related to real-life experiences, perspectives, and contributions of people from various cultures, ethnicities, and gender identities. These representations affirm student identities while rejecting the stereotypes and biases that have excluded many students from mathematical learning in favor of a more robust and inclusive perspective. Representing a diverse array of doers of mathematics in the curriculum inspires all students to think of themselves as mathematicians.

For example, *Eureka Math*$^2$ includes various mathematical activities that involve counting on hands or simulating a number line with one's fingers. In images throughout the curriculum, care was taken to include a variety of body types and skin tones.

The names used in word problems and for sample students in the lesson vignettes are intentionally diverse to represent the wide variety of students who use the curriculum. The names in student-facing word problems are also designed for readability to ensure that they are not a barrier to accessing the math.

***Story of Units®***

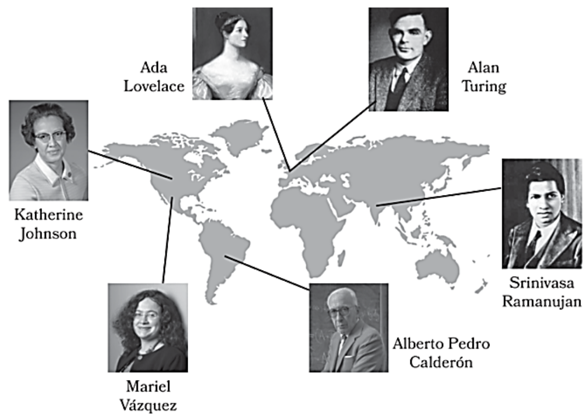
Tam, Kit, Zan, Ren, Mac, Jon, Baz, Liv, Jade, Ling, Sal, Deepa, Oka, Mia, Gabe, Pablo, Shea, Jayla, Shen, Lacy, Sasha, Yuna, Leo, Adesh, Toby

According to CAST, "individuals are engaged by information and activities that are relevant and valuable to their interests and goals." (UDL Guidelines, Engagement, Checkpoint 7.2) *Eureka Math*$^2$ also leverages students' experiences, goals, and interests through Math Pasts (described below), art connections, and wordless context videos.

To honor the diverse contributions to the development of the field of mathematics, to build knowledge about our shared math history, and to empower every child to see themselves as able to do mathematics, nearly every module in *Eureka Math*$^2$ includes a feature called Math Past. Each Math Past tells the history of some big ideas in the module, recounting the story of the mathematics through artifacts, discoveries, and other contributions from cultures around the world. Math Past also provides ideas about how to engage students in the history of mathematics.

Math Past counters the traditional Eurocentric perspective and celebrates the many contributions of Black, Indigenous, and People of Color communities to the history of mathematics.

For example, students explore large numbers in expanded form by first engaging with Egyptian hieroglyphics in Launch of grade 4 module 1 lesson 8. The Math Past Teacher Resource highlights the specific hieroglyphic numerals and their connection to familiar objects for Egyptians 4,000 years ago. Studying the mathematics used by people thousands of years ago helps students view mathematics as a worthwhile and useful subject that stands the test of time.




Lovelace – "Portrait of Ada Lovelace, 1836/Wikimedia Commons"
Turing – "famouspeople/Alamy Stock Photo"
Vazquez – "University of California Davis. Photo by Gregory Urquiaga"
Calderon – "Photograph Courtesy of the University of Chicago"

In a similar vein, *Eureka Math²* connects works of fine art to the standards of each grade level. Each *Teach* book opens with a stunning work of fine art that has a connection to the math learned in the grade. There is also a wide variety of additional pieces of art embedded in each grade's lessons. For example:

**Land** 10

**Debrief** 5 min

**Objective: Organize, count, and represent a collection of objects.**

Display *Flower Vendor*, 1949, by Diego Rivera.

**This painting is called *Flower Vendor*. The artist who painted this is named Diego Rivera. It is one of many paintings he made of calla lily flowers.**

Use the following questions to help students engage with the art:

- What do you notice in the painting?
- What do you wonder?

Guide students to think about the painting in terms of their experience with the counting collection. Tell the class that the children in the painting are making bundles of flowers for the woman to carry.

- Land (the culminating section of each day's lesson) in grade 3 module 1 lesson 1 relates Diego Rivera's painting *Flower Vendor* to making equal groups to count the total number of objects.
- Land in grade 4 module 2 lesson 19 connects the painting *Composition with Large Red Plane, Yellow, Black, Gray and Blue* by Piet Mondrian to the formulas for area and perimeter of rectangles.
- Land in grade 5 module 3 lesson 7 connects the painting *Thirteen Rectangles* by Wassily Kandinsky to multiplying fractions less than one by unit fractions.

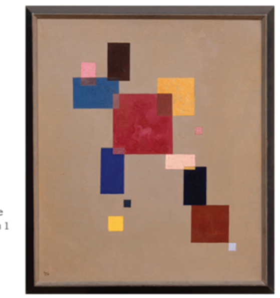
**Land** 10

**Debrief** 5 min

**Objective: Multiply fractions less than 1 by unit fractions pictorially.**

Facilitate a class discussion about multiplying fractions less than 1 by unit fractions by using the following prompts. Encourage students to restate or add on to their classmates' responses.

Display *Thirteen Rectangles*, 1930, by Wassily Kandinksy.



**This painting is called *Thirteen Rectangles*. The artist who painted it is named Wassily Kandinksy.**

Use the following questions to help students engage with the art:

- What do you notice about the painting?
- What do you wonder?

Guide students to think about the painting in terms of their experience with multiplying a fraction less than 1 by a unit fraction.

**What do you notice about the shapes in the painting?**

They are all rectangles.

Some of the rectangles appear to be squares.

Some of the rectangles and squares overlap.

Additionally, *Eureka Math²* lessons include more than 190 videos. These wordless context-building videos highlight how we use math to solve problems in our everyday lives and make sense of the world around us. Three types of highly engaging videos may be found in the curriculum: character animation, collage animation, and live action.

Students can identify with the diverse set of actors and characters in the videos, which helps them visualize how math is part of their own lives. Through these videos, students will more readily realize that math surrounds them and that they, too, can engage in mathematical pursuits. The videos allow students to see themselves in the math problems they encounter, which lowers the barrier to engagement and makes the math classroom a more welcoming place.

Wordless videos in lessons serve many other purposes as well, such as the following:

- They make the context for a given problem come alive, putting all students on the same footing by activating or building the requisite background knowledge.
- They remove any language and reading barriers to the written word problem.
- They raise the accessibility of mathematics through accurate and inclusive representation.
- They show the many ways in which we interact with math in the world around us and how these interactions spark curiosity and joy.
- They help students see the delight and wonder associated with being a mathematician.
- They create excitement and buzz in the classroom about the content of the new word problem.
- They invite students to tell the story of the math problem, to notice, to wonder, and to drive the discussion.

Examples include:

- Grade 3 module 6 lesson 12: *Real World Perimeters*
- Grade 4 module 1 lesson 23: *Running Meters and Kilometers*
- Grade 5 module 3 lesson 12: *Julie's Birdhouse*
- Grade 5 module 5 lesson 20: *Cubes in a Cylinder*

Specific instructional prompts, engaging word problems, accessible and engaging tasks, art connections, Math Past connections, and context videos throughout *Eureka Math²* work together to create a powerful curriculum that welcomes all students and invites them to become doers of mathematics.

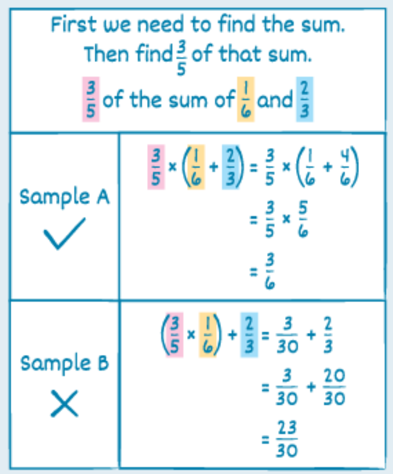
## Addressing Learner Variance

To ensure success of all learners, every *Eureka Math²* lesson includes Universal Design for Learning (UDL) strategies and scaffolds that address learner variance. These suggestions promote flexibility with engagement, representation, and action and expression, the three UDL principles described by CAST. These strategies and scaffolds are complements to the curriculum's overall alignment with the UDL Guidelines and were designed to support educators in effectively teaching students who experience difficulty in mathematics. The strategies are based on research specific to mathematics instruction.

According to *Teaching Mathematics Meaningfully: Solutions for Reaching Struggling Learners, Second Edition*, (page 71) "Students who have learning difficulties that affect their ability to do well in mathematics come from a variety of backgrounds and experiences. Although each of these students is individual and unique, students often demonstrate one or more of the nine learning characteristics…" The nine learning characteristics described include: learned helplessness, passive learning, knowledge and skills gaps, math anxiety, memory disabilities, attention disabilities, metacognitive thinking disabilities, processing disabilities, and reading disabilities. Some of these characteristics can affect all students who may be struggling in math regardless of whether they have learning-related disabilities (learned helplessness, passive learning, knowledge and skills gaps, math anxiety). Other characteristics result from learning-related disabilities (memory disabilities, attention disabilities, metacognitive thinking disabilities, processing disabilities, and reading disabilities). These learning characteristics as well as curriculum factors can result in common mathematics performance traits of students who struggle in mathematics.

**UDL: Action & Expression**

Consider comparing the correct solution for problem 3 with an incorrect work sample. Present a chart that shows the correct work in sample A and the incorrect work in sample B to emphasize how the placement of parentheses affects the value of the expression. Ask students, "How would you compare the work in sample A to the work in sample B? Why is it incorrect to evaluate problem 3 the way it is shown in sample B?" Post the chart for the remainder of the topic as an example of why parentheses are used and the importance of their placement. Use color coding and annotation to highlight these features, such as in the following example:



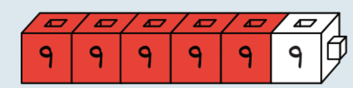

According to Allsopp et. al (2018), "Mathematics visuals appear to be most effective when used in conjunction with other effective instructional practices. An example of this is the use of explicit instruction techniques in conjunction with visuals. (page 192)." "Explicit cueing techniques can be utilized with visuals in ways that help students attend to the visual's most important features and its representation of the mathematical idea. Simple techniques, such as color-coding, using directional arrows, and highlighting, can help students focus on what is most relevant." An example of this is found in grade 7 module 5 lesson 7.

A variety of other strategies suggested in the literature are the foundation of all UDL margin notes found in *Eureka Math²*. Each margin note is aligned to a strategy found to minimize the impacts of one of the nine learning characteristics listed above. Strategies include, but are not limited to:

- Break down tasks into manageable chunks.
- Demonstrate the belief that students can be successful.
- Visually organize to cue student to important aspects of concept.
- Teach students to change their frame of thinking.
- Embed math in relevant contexts.
- Help students make connections to prior knowledge
- Engage students by addressing interests.
- Celebrate progress and success.
- Cultivate a growth mindset.
- Relate math to students' lives.
- Use concrete materials.
- Associate content with meaningful context.
- Use a variety of strategies (visual, auditory, tactile, or kinesthetic).
- Provide visual organizers.
- Provide think alouds.
- Use novel learning contexts.
- Help students focus on what is important rather than on things that are irrelevant.

**UDL: Representation**

To support students in transitioning from the array to the tape diagram, consider using interlocking cubes. Model the array vertically as 6 nines by using 5 cubes of one color and 1 cube of another color. Then rotate the array horizontally to show that it looks like the tape diagram.



*Eureka Math²* embeds differentiation through the simple-to-complex sequencing of lesson and Practice problems. This logical sequence gradually reduces scaffolds and builds in complexity, allowing teachers to differentiate assignments for either individual or small-group work. For all students, including those working above grade level, the gradual reduction of support and increase in complexity builds independent thinking and encourages productive struggle. Problems toward the end of the Problem Set (a lesson's daily independent practice) are often open-ended, at Depth of Knowledge (DOK) levels 2 and 3, and integrate two or more standards and/or Standards for Mathematical Practice. Teachers can assign problems of different complexities to students according to their needs or allow students to select problems in the 10-minute (approximate) timeframe. Lessons provide differentiation suggestions at the point of instruction to support a wide variety of learners. Differentiation margin notes found in the *Teach* book offer guidance for adapting instruction so that all students can successfully access grade-level content. There are two types of Differentiation margin notes: Support and Challenge. Challenge boxes suggest ways to keep students working at a more advanced level engaged by providing opportunities for extension while Support boxes offer specific, lesson-based scaffolds for helping students access content.

In this example from grade 5 module 6 lesson 2, the Differentiation margin note offers a suggestion for students to interact with the lesson objective of describing the location of points in the coordinate plane at a deeper level of complexity by describing a point's location relative to another point rather than providing an ordered pair.

**Differentiation: Challenge**

Consider challenging students by describing a point's location relative to another point, as opposed to providing an ordered pair. For example, ask students to plot a point that is 3 units to the left and 4 units up from point $P$ in problem 1. Then have students name the ordered pair for the point they plotted.

This Support box from grade 4 module 4 lesson 2 encourages the use of concrete models to bolster understanding of fractions greater than 1 and their decomposition into both unit and non-unit fractions.

**Differentiation: Support**

Consider providing a concrete example of a fraction greater than 1 before presenting $\frac{6}{5}$. Pair students and ask one partner to shade all 4 fourths of their fraction strip. Have partners lay the shaded $\frac{4}{4}$ and $\frac{2}{4}$ side by side. Ask students what fraction is shaded and have them write an equation to show $\frac{6}{4}$ as the sum of $\frac{4}{4}$ and $\frac{2}{4}$.

## Supporting Multilanguage Learners

*Eureka Math²* writers relied on language development research to outline and build in the language support needed for multilanguage learners to engage with the language-rich lessons. With the goal of supporting the clear, concise, and precise use of reading, writing, speaking, and listening in English, *Eureka Math²* supports multilanguage learners through each lesson's instructional design. It does this by including instructional best practices, support for mathematical discourse, and support for the different tiers of terminology. Additionally, Language Support margin notes provide just-in-time, targeted instructional recommendations to support multilanguage learners.

## Instructional Best Practices

The following table outlines the instructional best practices included in *Eureka Math²*.

| Practice | Eureka Math² |
|---|---|
| Activate prior knowledge (mathematics content, terminology, contexts) | The daily Fluency and Launch lesson components activate prior knowledge to prepare students for new learning. Context videos demonstrate math concepts in a concrete or real-world context. |
| Provide multiple entry points to the mathematics | Recurring Notice and Wonder routines and frequent open-middle and open-ended tasks provide multiple points of entry for students to participate. The inclusion of fine art and Math Past history components engages students with math in the real world. |
| Use clear, concise student-facing language | Readability guidelines ensure that words are never an obstacle to math learning. |
| Provide strategic active processing time | Frequent mathematical discourse, core instructional routines, and the 10/2 principle expand opportunities for students to synthesize and process new information. |
| Illustrate multiple modes and formats | Varied physical and visual models, such as digital interactives, context videos, and graphic organizers, help students make connections and deepen understanding. |
| Provide opportunities for strategic review | Daily fluency activities, distributed practice Remember problems, Exit Tickets, and comprehensive assessments provide frequent opportunities for strategic review. |

## Mathematical Discourse

To support all learners, lessons provide ample authentic and engaging opportunities for students to read, write, speak, and listen. *Eureka Math²* supports teachers in creating language-rich classrooms by modeling teacher-student discourse and by providing suggestions for supported student-to-student discourse. Because curricula in general have an abundance of receptive language experiences (reading and listening), *Eureka Math²* focuses specific supports on language production (speaking and writing) in mathematics.


The instructional routines that promote discourse are aligned with Stanford's Language Design Principles of supporting sense-making, optimizing output, cultivating conversation, and maximizing linguistic and cognitive meta-awareness.

*Eureka Math²* periodically includes Language Support notes that suggest specific sentence frames and sentence starters to support multilanguage learners in student-to-student discussions, such as those used in instructional routines. General sentence frames and sentence starters are provided in the Talking Tool which is referenced often during times of student-to-student discourse.

## Terminology

*Eureka Math²* lessons give students experience with a new mathematical concept before naming it with a precise mathematical term. Students may see a mathematical concept come to life in a digital interactive, manipulate counters in groups, or use an instructional routine to engage in mathematical discourse before the teacher gives that concept a name. In addition, teachers are provided with educative guidance, either in the body of the lesson or in a Language Support margin note, to support students in pairing the written term with a visual representation. *Eureka Math²* highlights domain-specific terms from previous lessons in the current lesson, along with instructional recommendations for supporting those terms. These instructional recommendations focus on previewing the meaning of the terms before students are expected to interact with them in the mathematics of the lesson. Additionally, domain-specific terms from previous lessons are also supported by pairing the written term with a visual representation. For each grade, the academic verbs needed to engage with the mathematics were considered. Each grade in *Eureka Math²* offers a carefully curated list of targeted academic verbs that appear in the lessons for students to preview before they are expected to understand and use the language. For example, before students are asked to classify in grade 4 module 6 (page 39), lessons preview the meaning of the academic verb, supporting the meaning of the term in a class discussion and through a Language Support box, shown to the right.

Multiple-meaning terms encompass homophones like *whole* and *hole*, homographs like *scale* and *scale*, and other pronunciation-based challenges, like the difference between *estimate* (as a noun, as in, *What is your estimate?*) and *estimate* (as a verb, as in, *Estimate the sum.*). Lessons call out multiple-meaning terms that could affect emergent bilingual learners' understanding of the mathematics. Lessons also include Language Support notes to preview the meaning of the term in the lesson. These previews include pairing the term with a visual, with real items, or with a video to highlight the different meanings of the term and emphasize the specific meaning used in the lesson.

## Language Support Boxes

A Language Support margin note appears in the first lesson of every module to prompt teachers to consider using strategic, flexible grouping in each activity of the module to support multilanguage learners. These grouping suggestions invite teachers to use students' knowledge and home language by pairing students in different ways. Each of these different ways of pairing students has specific benefits for multilanguage learners. The Language Support margin notes also highlight discourse, language or terminology supports.

**Language Support**

To further develop students' understanding of the word *classify*, explain that we classify things regularly. Consider using an example such as animals. Provide students with the following categories: fish, bird, insect. Name some animals and invite students to classify them. Invite students to describe what makes each category distinct from the other categories.

To learn more, please visit the Great Minds MLL blog: [https://gm.greatminds.org/how-to-support-multilingual-learners-in-engaging-in-math-conversations-in-the-classroom](https://gm.greatminds.org/how-to-support-multilingual-learners-in-engaging-in-math-conversations-in-the-classroom)

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