

4th Grade Pacing Guide

Green: Major Clusters

Blue: Supporting Clusters

Yellow: Additional Clusters

[Instructional Content Nav - Mathematics: Focus by Grade Level](#)

Trimester 1

(Ends December 15th)

Chapter 1

Place Value, Addition, and Subtraction to One Million

- **Lesson 1.1: As Is**

- Ensure students can identify the value of a digit in a multi-digit number (i.e. In 23,782, the value of the 3 is 3 thousands or 3,000).

- IXL Skills:

- **A.3: Value of a digit**

- **A.7: Place value review**

- Add a lesson on the size of place values and their relationship to each other.

- Use the following lesson from EngageNY:

- **Recognize A Digit Represents 10 Times The Representative To Its Right**

- Students should recognize that one place is ten times greater than the place to the right when given the same digits and vice versa (i.e. 700 is 10 times larger than 70 or in the number 8,832, the 800 is 10 times less than 8,000).

- **Lesson 1.2: As Is**

- Add examples where the expanded form is given out of order (i.e. $70 + 800 + 2 + 3,000 = 3,872$).

- Add more examples where the expanded form is missing place values and/or out of order (i.e. $50 + 8 + 2,000 = 2,058$)

- Ensure students use a dash when writing word form for two-digit numbers (i.e. 98 is ninety-eight).

- Ensure students are NOT saying “and” when reading word names (i.e. 456 is four hundred fifty-six, NOT four hundred and fifty-six). The word “and” refers to the decimal point in math.

- IXL Skills:

- **A.2: Convert between standard and expanded form**

- **A.8: Convert between standard and expanded form**

- **A.9: Writing numbers up to 1,000 in words: convert digits to words**

- **A.10: Writing numbers up to 100,000 in words: convert words to digits**

- **A.11: Writing numbers up to 100,000 in words: convert digits to words**

- A.12: Writing numbers up to one million in words: convert words to digits
- A.13: Writing numbers up to one million in words: convert digits to words
- J.1: Place value word problems

- Lesson 1.3: As Is

- Students should recognize that numbers to the right on a number line are greater than numbers to the left.
- The main focus of this lesson is comparing numbers. Ordering numbers is not a skill required in 4th grade, although you may want to expose it to the students.
- Add problems that compare numbers in different forms (i.e. $90 + 700 + 5 + 2000 > 2$ thousands + 8 ones + 5 tens)
- IXL Skills:
 - A.25: Compare numbers up to one hundred thousand
 - A.26: Compare numbers up to one million

- Lesson 1.4: As Is

- NIX THE TRICK: 5 or more go up a floor, 4 or less let it rest (Don't use rounding rhymes or tricks.)
- Students must round numbers using estimation, place value, or a number line (i.e. 86,378 is between 86,000 and 87,000, but it's closer to 86,000 on a number line).
- IXL Skills:
 - A.21: Rounding: up to millions place

- Lesson 1.5: As Is

- Students should be able to represent numbers in multiple ways (i.e. 1,500 is 15 hundreds OR one thousand and five hundreds).
- IXL Skills:
 - A.5: Convert between place values

- Lesson 1.6: As Is

- Do NOT skip the estimation part of the lesson. Use estimation to check the reasonableness of the sum.
- Ensure students understand regrouping strategies for addition (i.e. 15 tens should be composed into 1 hundred and 5 tens and regrouped into the hundreds place).
- Show students that addition can be added in any order using the Commutative Property.
- Add problems that have 3 or more addends and use the Associative Property (i.e. $(456 + 93) + 278 = 456 + (93 + 278)$).

- **IXL Skills:**
 - **B.1: Add two numbers up to five digits**
 - **B.6: Properties of addition**
 - **B.9: Choose numbers with a particular sum**
 - **B.10: Estimate sums**
 - **B.11: Estimate sums: word problems**
- **Lesson 1.7: As Is**
 - **Do NOT skip the estimation part of the lesson. Use estimation to check the reasonableness of the difference.**
 - **Ensure students understand regrouping strategies for subtraction (i.e. decompose 4 hundreds into 3 hundreds and 10 tens and regroup into the tens place).**
 - **Use addition to check the difference of a subtraction problem.**
 - **Add more problems with regrouping across zeros.**
 - **Ensure students understand that you cannot change the order of the numbers in a subtraction problem.**
 - **IXL Skills:**
 - **C.1: Subtract numbers up to five digits**
 - **C.7: Choose numbers with a particular difference**
 - **C.8: Estimate differences**
 - **C.9: Estimate differences: word problems**
- **Lesson 1.8: As is**
 - **Use a bar model to solve additive comparison problems.**
 - **IXL Skills:**
 - **B.2: Add two numbers up to five digits: word problems**
 - **C.2: Subtract numbers up to five digits: word problems**
- **Add multi-step word problems involving addition and subtraction.**
 - **Use the following lesson from EngageNY:**
 - **Two-Step Word Problems And Rounding**

Chapter 1 Rules of Thumb

- Don't only use rounding rules to teach rounding. Use estimation to help with rounding (i.e. 758 rounded to the nearest hundred: Is 758 closer to 700 or 800 on a number line?)

- Emphasize subtraction problems with only one regrouping step to build fluency).

- Incorporate error analysis, multi-select, and multi-part questions into your daily lessons.

Chapter 2

Multiply by One-Digit Numbers

- **Lesson 2.1: As Is**

- Use multiplication equations to compare the size of numbers (i.e. $35 = 5 \times 7$ ----> 35 is 5 times as many as 7 and 7 times as many as 5).
- Add problems on multiplicative comparisons with unknown at each position (i.e. 32 is ____ times as much as 4 OR 32 is 8 times as many as ____).
- IXL Skills:
 - **D.10: Compare numbers using multiplication**

- **Lesson 2.2: As Is**

- Add this lesson for multiplicative comparison in addition to Go Math:
 - **Illustrative Mathematics: Comparing Money Raised**
- Students should be able to distinguish between multiplicative comparison and additive comparison (i.e. 5 times as much as 7 (multiplicative) vs. 5 more than 7 (additive)).
- IXL Skills:
 - **F.4: Addition, subtraction, multiplication, and division word problems**

- **Lesson 2.3: As Is**

- Add the following lesson from EngageNY in addition to Go Math:
 - **Multiply Multiples Of 10, 100, 1,000**
- NIX THE TRICK: Add zeros when multiplying by powers of ten. Instead, multiply by powers of ten just like any other number. Use models, drawings, place value, number lines, equations, etc. to multiply powers of ten. (i.e. $800 \times 3 = 800 + 800 + 800 = 2,400$)
- IXL Skills:
 - **D.23: Multiplication patterns over increasing place values**
 - **D.43: Multiply numbers ending in zeroes**
 - **D.44: Multiply numbers ending in zeroes: word problems**

- **Lesson 2.4: As Is (Don't spend too much time on this lesson.)**

- IXL Skills:
 - **D.28: Estimate products: multiply by 1-digit numbers**

- **Lesson 2.5: As Is**

- Start with one-digit by one-digit multiplication problems using the distributive property (i.e. $6 \times 8 = (6 \times 4) + (6 \times 4)$), then transition to two-digit by one-digit multiplication problems).

- IXL Skills:
 - **D.26: Multiply using the distributive property**
- **Lesson 2.6: As Is**
 - Ensure students can write or fill in a multiplication and addition equation using expanded form (i.e. $25 \times 8 = (20 \times 8) + (5 \times 8)$ OR $25 \times 8 = (___ \times 8) + (5 \times ___)$).
 - IXL Skills:
 - **D.25: Distributive property: find the missing factor**
- **Lesson 2.7: As Is**
 - IXL Skills:
 - **D.15: Multiply 1-digit numbers by 2-digit numbers**
 - **D.20: Multiply 1-digit numbers by 3-digit or 4-digit numbers**
- **Add a lesson on 2×1 , 3×1 , and 4×1 digit problems using the area model.**
- **Lesson 2.8: DELETE**
- **Lesson 2.9: As Is**
 - IXL Skills:
 - **D.46: Multiply three or more numbers: word problems**
- **Lesson 2.10: As Is**
 - Show how area models, partial products, and the standard algorithm provide the student with the same product for 2×1 digit problems.
 - IXL Skills:
 - **D.15: Multiply 1-digit numbers by 2-digit numbers**
 - **D.49: Multiplication input/output tables: find the rule**
- **Lesson 2.11: As Is**
 - Add the following lesson from EngageNY:
 - **Three/Four-Digit Numbers By One-Digit**
 - **Multiplying Three- And Four-Digit Numbers By One-Digit Numbers**
 - Show how area models, partial products, and the standard algorithm provide the student with the same product for 3×1 and 4×1 digit problems.
 - IXL Skills:
 - **D.20: Multiply 1-digit numbers by 3-digit or 4-digit numbers**
- **Lesson 2.12: MODIFY (Skip problems using the Order of Operations)**
 - Only focus on problems like “Unlock the Problem” on page 131. Use bar models and equations with variables to solve the problems.
 - Add the following lesson from EngageNY in addition to Go Math:

■ Use Multiplication, Addition, and Subtraction to Solve Multi-Step Problems

Chapter 2 Rules of Thumb

- Multiplicative comparison: Comparing two sets of numbers using multiplication (i.e. James is three times taller than Sarah. James is 48 inches tall. How tall is Sarah?)

- Encourage students to estimate throughout their work, in order to connect place value and reasonableness of their work

- Students should master multiplying 2×1 , 3×1 , and 4×1 digit numbers using rectangular arrays, area models, and partial products. Students **DO NOT** need to master multiplying by one-digit using the standard algorithm.

- Incorporate error analysis, multi-select, and multi-part questions into your daily lessons.

Chapter 3

Multiply by Two-Digit Numbers

- **Lesson 1: As Is**

- Use place value and the Associative Property to multiply by tens.
- Show students how to use the area model to multiply by ten.
- **NIX THE TRICK: Add zeros when multiplying by ten**

- **Lesson 2: As Is**

- **IXL Skills:**
 - **D.29: Estimate products: multiply by 2-digit numbers**

- **Lesson 3: As Is (Have students break up the factors into tens and ones)**

- **IXL Skills:**
 - **D.35: Box multiplication**

- **Lesson 4: As Is**

- **IXL Skills:**
 - **D.35: Box multiplication**

- **Lesson 5: As Is**

- **IXL Skills:**
 - **D.37: Multiply 2-digit number by 2-digit number: complete the missing steps**
 - **D.38: Multiply a 2-digit number by a 2-digit number**

- **Lesson 6: As Is**

- **IXL Skills:**
 - **D.38: Multiply a 2-digit number by a 2-digit number**

- Lesson 7: As Is
 - IXL Skills:
 - D.39: Multiply a 2-digit number by a 2-digit number: word problems
- Add a lesson on multi-step problems involving 2 x 2 digit numbers and multiplication, addition, and subtraction. Be sure to use variables and equations.

Chapter 3 Rules of Thumb

- Students should be able to master the area model and partial products strategy for multiplying 2 x 2 digit numbers. They **DO NOT** need to master the standard algorithm in 4th grade.

- Incorporate error analysis, multi-select, and multi-part questions into your daily lessons.

Chapter 4

Divide by One-Digit Numbers

- Lesson 4.1: DELETE
- Lesson 4.2: As Is
 - Add the following lessons from EngageNY in addition to Go Math:
 - Solve Division Problems With Remainders Using Arrays And Area Models
 - Division With Remainders
 - Use counters and drawing to show equal groups with remainders.
- Lesson 4.3: As Is
 - How many full...? Round quotient down
 - How many are needed...? Round quotient up
 - How many are left over...? How many will not...? Use the remainder as the answer
 - IXL Skills:
 - E.12: Divide 2-digit numbers by 1-digit numbers: word problems
 - E.14: Divide 2-digit numbers by 1-digit numbers: interpret remainders
- Lesson 4.4: As Is
 - IXL Skills:
 - E.22: Division patterns over increasing place values
 - E.23: Divide numbers ending in zeroes by 1-digit numbers
- Lesson 4.5: As Is
 - IXL Skills:
 - E.27: Divisibility rules: word problems

- Lesson 4.6: As Is
- Lesson 4.7: As Is (Don't spend too much time on this lesson.)
 - IXL Skills:
 - E.11: Divide 2-digit numbers by 1-digit numbers
- Lesson 4.8: As Is
 - ADD the following lesson from LearnZillion in addition to Go Math:
 - Using arrays and partial quotients to solve division problems
 - IXL Skills:
 - E.11: Divide 2-digit numbers by 1-digit number
- Lesson 4.9: As Is
 - IXL Skills:
 - E.11: Divide 2-digit numbers by 1-digit number
- Lesson 4.10: As Is (Split into multiple lessons)
 - 1) Divide 2 digit by 1 digit (with and without remainders)
 - 2) Divide 3 digit by 1 digit (with and without remainders)
 - 3) Divide 4 digit by 1 digit (with and without remainders)
 - Ensure students are placing the first digit in the quotient in the correct place value.
 - IXL Skills:
 - E.17: Divide larger numbers by 1-digit numbers
- Lesson 4.11: As Is
 - Use multiplication to check the quotient of the division problem.
 - Add problems when a 0 must be placed into the quotient (i.e. $624 \div 3 = 208$)
 - IXL Skills:
 - E.11: Divide 2-digit numbers by 1-digit number
 - E.13: Divide 2-digit numbers by 1-digit numbers: complete the table
 - E.17: Divide larger numbers by 1-digit numbers
 - E.18: Divide larger numbers by 1-digit numbers: word problems
 - E.19: Divide larger numbers by 1-digit numbers: complete the table
 - E.20: Divide larger numbers by 1-digit numbers: interpret remainders
 - E.21: Choose numbers with a particular quotient
- Lesson 4.12: As Is
 - IXL Skills:
 - F.11: Multi-step word problems
- All a lesson on multi-step word problems with all four operations.

Chapter 4 Rules of Thumb

- Do not skip any strategies for dividing numbers, but students should master the standard algorithm before the end of the year.
- Incorporate error analysis, multi-select, and multi-part questions into your daily lessons.
- Use math vocabulary (i.e. quotient, divisor, dividend, partial products, equally, remainder, compatible numbers, multiple, etc.).

Trimester 2

(Ends March 15th)

Chapter 5

Factors, Multiples, and Patterns

- **Lesson 5.1: AS IS**

- Use color tiles and/or graph paper to model and record factors.
- Show that there are multiple ways to arrange the color tiles to find the factors of a number.
- Use a factor rainbow to find factors of a number.
- IXL Skills:
 - D.5: Multiplication facts to 12: find the missing factor
 - D.9: Find all the factor pairs of a number
 - D.8: Choose numbers with a particular product

- **Lesson 5.2: AS IS**

- Use division to find the factors of a number. A number is a factor when there is no remainder after division.
- Use divisibility rules to find factors without dividing.
- IXL Skills:
 - D.7: Identify factors
 - Divisibility rules for numbers up to 100
 - Divisibility rules for numbers up to 100: word problems

- **Lesson 5.3: MODIFY**

- **Lesson 5.4: AS IS**

- **FACTOR x FACTOR = MULTIPLE**
- Students should understand that the product is a multiple of both factors. (i.e. $3 \times 4 = 12$, 12 is a multiple of 3 and 12 is a multiple of 4).
- IXL Skills:

- **D.6: Choose the multiples of a given number up to 12**

- **Lesson 5.5: AS IS**

- **ONE is neither prime nor composite.**
- **The first ten prime numbers are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29...**
- **Prime: only has two factors, Composite: has more than two factors**
- **IXL Skills:**
 - **A.19: Prime and composite: up to 100**
 - **A.18: Prime and composite: up to 20**

- **Lesson 5.6 AS IS (Don't spend too much time on this lesson)**

- **IXL Skills:**
 - **K.5: Use a rule to complete a number pattern**
 - **K.6: What is true about the given pattern?**
 - **K.7: What is true about the pattern made by the rule?**
 - **K.8: Identify mistakes in number patterns**

Chapter 5 Rules of Thumb

- Be sure that students recognize the difference between factors and multiples, including word problems.

- Common factors and common multiples should not be emphasized in this chapter. They will be taught when finding equivalent fractions.

Chapter 6

Fraction Equivalence and Comparison

***Use Frax to help students understand fraction concepts and develop fraction fluency.**

- **Prior to starting the lessons, spend some time reviewing key fraction concepts from third grade:**
 - **Students partition and shade in various shapes to show a given fraction.**
 - **Students categorize shapes into equal parts vs. unequal parts.**
- **Lesson 6.1: AS IS**
 - **Use paper strips and graph paper to show fraction equivalency.**
 - **Use double number lines to show fraction equivalency.**
 - **Fraction denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12 and 100.**
 - **IXL Skills:**
 - **O.7: Identify equivalent fractions**
 - **Are the fractions equivalent?**

- Identify equivalent fractions using number lines

- Lesson 6.2: AS IS

- First, model equivalent fractions using shapes and fraction tiles. Then, transition into using multiplication to generate equivalent fractions.
- Ensure students understand that fractions are equivalent because the number and size of the part differ even though the fractions are the same size.
- Students should be able to RECOGNIZE and GENERATE equivalent fractions.
- Ensure students understand that you must multiply/divide the numerator and denominator by the same number.
- Fraction denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12 and 100.
- IXL Skills:
 - 0.5: Find equivalent fractions using area models
 - O.8: Equivalent fractions: find the missing numerator or denominator
 - O.6: Graph equivalent fractions on number lines

- Lesson 6.3: Modify

- The term “simplest form” should not be used. Instead, use the term “equivalent fractions”.
- Fraction denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12 and 100.
- Add the following lessons from EngageNY in addition to Go Math:
 - Area Models, Division And Equivalent Fractions
 - Area Models, Division And Equivalent Fractions (part 2)
 - Fraction Equivalence: Tape Diagrams, Number Lines
- IXL Skills:
 - 0.12: Write fractions in lowest terms

- Lesson 6.4: AS IS

- Fraction denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12 and 100.

- Lesson 6.5: DELETE

- Use the following lesson from Learn Zillion instead of Go Math:
 - Generate equivalent fractions with multiplication and division
- Add error analysis questions (i.e. A student says that $\frac{2}{3} = \frac{6}{8}$. The student is incorrect...).
- Add examples for finding equivalent fractions from a table/chart.
- IXL Skills:
 - Equivalent fractions: word problems

- **Lesson 6.6: AS IS**

- Ensure that students understand you can only compare fractions that refer to the same whole.



- Fraction denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12 and 100.
- Use number lines and benchmark fractions (0, $\frac{1}{2}$, 1) to compare fractions.
- Ensure students understand that fractions that the closer the numerator is to the denominator, the closer the fraction is to a whole (i.e. $\frac{6}{7}$ is greater than $\frac{3}{8}$ because $\frac{6}{7}$ is almost a whole).
- Fraction denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12 and 100.
- IXL Skills:
 - **O.19: Compare fractions using benchmarks: find the missing numerator**

- **Lesson 6.7: AS IS**

- **DO NOT USE THE BUTTERFLY METHOD!**
- Use various strategies to compare fractions: benchmark fractions, common denominators, number lines, models, etc.
- Fraction denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12 and 100.
- IXL Skills:
 - **O.20: Compare fractions**
 - **O.21: Compare fractions: find the missing numerator or denominator**
 - **Compare proper fractions in recipes**
 - **O.16: Compare fractions using models**

- **Lesson 6.8: AS IS (Don't spend too much time on this lesson.)**

- IXL Skills:
 - **O.23: Graph and order fractions on number lines**
 - **O.24: Order fractions with like numerators or denominators**
 - **O.25: Order fractions**

Chapter 6 Rules of Thumb

- Relate bar models to number lines when using visual models.

- Ask students to justify fraction comparisons using visual models toward the beginning of the unit and encourage students to use more reasoning-based strategies toward the end of the chapter.

- DO NOT USE THE BUTTERFLY METHOD!!!

Chapter 7

Add and Subtract Fractions

- **Lessons 7.1: AS IS**

- Use fraction tiles, fraction circles, fraction squares, etc. to show how to add and subtract parts of a whole.
- Ensure that students understand that adding/subtracting fractions is joining or separating parts referring to the same whole (i.e. You cannot add $\frac{1}{4}$ of a circle to $\frac{1}{4}$ of a rectangle.)
- IXL Skills:
 - **P.5: Add fractions with like denominators using area models**
 - **P.9: Subtract fractions with like denominators using area models**

- **Lesson 7.2: AS IS**

- Introduce unit fractions as one part over the total number of parts. A unit fraction always has a numerator of 1 because it tells the part of the whole that represents 1 piece.
- Students should recognize that a whole is equal to a fraction where the numerator and denominator are the same ($\frac{4}{4}$, $\frac{6}{6}$, $\frac{10}{10}$, $\frac{7}{7}$, etc.)
- Ensure students can write fractions as sums of unit fractions and other fractions (i.e. $\frac{1}{4} = \frac{1}{4} + \frac{1}{4} + \frac{2}{4}$).
- IXL Skills:
 - **P.1: Decompose fractions into unit fractions using models**
 - **Write a fraction as a sum of unit fractions**
 - **Write a fraction as a sum of fractions in multiple ways**

- **Lesson 7.3: AS IS**

- Add more examples of more than two proper fractions (i.e. $\frac{1}{8} + \frac{3}{8} + \frac{2}{8}$).
- Add multi-select examples to find the sum of multiple fractions (i.e. $\frac{5}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$ AND $\frac{5}{6} = \frac{2}{6} + \frac{1}{6} + \frac{2}{6}$ AND $\frac{5}{6} = \frac{4}{6} + \frac{1}{6}$...). Students should be able to recognize that you can decompose a fraction in more than one way.
- Students should recognize that a whole is equal to a fraction where the numerator and denominator are the same ($\frac{4}{4}$, $\frac{6}{6}$, $\frac{10}{10}$, $\frac{7}{7}$, etc.)
- IXL Skills:
 - **P.6: Add fractions with like denominators using strip models**

- Add fractions with like denominators
 - Add fractions with like denominators using number lines
 - Add fractions with like denominators: pick the model
- Lesson 7.4: AS IS
 - Ensure that students understand that subtracting fractions is separating parts from the same whole.
 - Use fraction strips and models to subtract fractions.
 - Add examples that subtract fractions using a number line.
 - IXL Skills:
 - P.10: Subtract fractions with like denominators using strip models
 - Subtract fractions with like denominators
 - Subtract fractions with like denominators using number lines
 - Subtract fractions with like denominators: pick the model
- Lesson 7.5: AS IS
 - Add the following lesson from EngageNY in addition to Go Math:
 - Fraction Addition And Subtraction: Word Problems
 - IXL Skills:
 - Add and subtract fractions with like denominators
 - P.16: Add and subtract fractions with like denominators: word problems
 - P.17: Add and subtract fractions with like denominators in recipes
- Prior to the next lesson, review what mixed numbers and improper fractions are and draw models to represent them.
- Lesson 7.6: AS IS
 - Break up lesson into two parts:
 - 1) Changing a mixed number into an improper fraction.
 - 2) Changing an improper fraction into a mixed number.
 - Mixed number into improper fractions
 - Do NOT show the students the shortcut of changing mixed numbers into improper fractions in 4th grade (i.e. multiply and add).
 - Instead, students should be able to decompose mixed numbers into a sum of fractional parts (i.e. $2\frac{3}{4} = 1 + 1 + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$) and then replace each whole (1) with a fraction and add (i.e. $2\frac{3}{4} = 1 + 1 + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4} + \frac{4}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{11}{4}$)
 - Improper fractions into mixed numbers

- Do NOT show the students the shortcut of changing improper fractions into mixed numbers in 4th grade (i.e. dividing numerator by denominator).
 - Instead, students should be able to decompose an improper fraction into a sum of unit fractions and then grouping until fractions into wholes (1) (i.e. $7/3 = \underline{1/3} + \underline{1/3} + \underline{1/3} + \underline{1/3} + \underline{1/3} + \underline{1/3} + \underline{1/3} = 3/3 + 3/3 + 1/3 = 1 + 1 + 1/3 = 2 \frac{1}{3}$)
- IXL Skills:
 - O.27: Convert between improper fractions and mixed numbers
 - O.4: Identify mixed numbers
 - Write an improper fraction as a sum of unit fractions
 - Write an improper fraction as a sum of fractions
- Prior to lesson, review renaming improper mixed numbers into proper mixed numbers (i.e. $4 \frac{4}{3} \rightarrow 4 + 3/3 + 1/3 \rightarrow 4 + 1 + 1/3 \rightarrow 5 \frac{1}{3}$)
- Lesson 7.7: AS IS
 - Add and subtract mixed numbers with like denominators ONLY!
 - Add more examples of adding mixed numbers where the sum is an improper mixed number (i.e. $3 \frac{7}{6} \rightarrow 3 + 6/6 + 1/6 \rightarrow 3 + 1 + 1/6 \rightarrow 4 \frac{1}{6}$).
 - IXL Skills:
 - Add mixed numbers
 - Subtract mixed numbers without regrouping
- Prior to lesson, review renaming mixed numbers or whole numbers as fractions in order to regroup in lesson 7.8 (i.e. $5 \frac{1}{8} \rightarrow 4 + 1 + 1/8 \rightarrow 4 + 8/8 + 1/8 \rightarrow 4 \frac{9}{8}$).
- Lesson 7.8: AS IS
 - Add more examples of subtracting a whole number by a mixed number by renaming the whole number (i.e. $9 - 3 \frac{1}{2} \rightarrow 8 \frac{2}{2} - 3 \frac{1}{2} \rightarrow 5 \frac{1}{2}$)
 - Add more examples where the students need to rename the first number in the subtraction problem in order to regroup.
 - IXL Skills
 - Subtract mixed numbers with regrouping
- Lesson 7.9: DELETE
- Lesson 7.10: DELETE
 - Use the following lesson from Learn Zillion instead of Go Math:
 - Solving word problems by adding and subtracting mixed numbers
 - IXL Skills:
 - P.20: Add and subtract mixed numbers with like denominators: word problems

Chapter 7 Rules of Thumb

-Make sure students have many opportunities to work with fractions greater than one.

-Have students justify their answers by using visual models, equations, and other strategies.

-DO NOT USE THE BUTTERFLY METHOD!!!

Chapter 8

Multiply Fractions by Whole Numbers

***Students do not need to multiply a mixed number by a fraction in 4th grade. However, they must master multiplying a whole number by a fraction by the end of the year.**

● Lesson 8.1: AS IS

- Students should be able to decompose fractions into multiples of a unit fraction (i.e. $\frac{5}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = 5 \times \frac{1}{6}$).
- Relate multiplying fractions to multiplying whole numbers (i.e. $3 \times 4 = 4 + 4 + 4$).
- Use fraction strips, models, and number lines to show the multiples of a fraction.
- IXL Skills:
 - R.1: Multiply unit fractions by whole numbers using number lines
 - R.3: Multiples of unit fractions: find the missing numbers
 - R.5: Multiply unit fractions by whole numbers
 - R.4: Multiply unit fractions by whole numbers: sorting
 - R.2: Multiply unit fractions by whole numbers using models

● Lesson 8.2: AS IS

- Students must recognize that the product of multiplying a whole number by a proper fraction is equivalent to multiplying a whole number by a unit fraction (i.e. $4 \times \frac{2}{3} = 8 \times \frac{1}{3}$).
- Use number lines to rewrite the product of a whole number by a fraction as the product of a whole number and a unit fraction.
- IXL Skills:
 - R.7: Multiply fractions by whole numbers using number lines
 - R.10: Multiples of fractions: find the missing numbers

● Lesson 8.3: AS IS

- Students should be able to rewrite a fraction multiplied by a whole number as a multiplication fact in the numerator within one fraction and then multiply the

factors together to get the final product (i.e. $3 \times \frac{3}{4} = \frac{(3 \times 3)}{4} = \frac{9}{4}$ OR $4 \times \frac{2}{5} = \frac{(4 \times 2)}{5} = \frac{8}{5}$).

- IXL Skills:

- R.9: Multiply fractions by whole numbers using models: complete the equation

- R.8: Multiply fractions by whole numbers using models

- Lesson 8.4: MODIFY

- **SKIP MULTIPLYING A MIXED NUMBER BY A FRACTION.** Focus only on multiplying a whole number by a fraction.

- IXL Skills:

- R.12: Multiply fractions by whole numbers

- R.11: Multiply fractions by whole numbers: sorting

- Lesson 8.5: MODIFY

- **Modify word problems so they do not contain mixed numbers.** Students should only be multiplying a whole number by a fraction in all of the word problems.

- Multiplicative comparison word problems: comparing two quantities such that when one is multiplied by a specified number, the other is produced.

- Add examples of multi-step word problems.

- IXL Skills:

- R.13: Multiply fractions by whole numbers: word problems

Chapter 8 Rules of Thumb

-Use diagrams, bar models, number lines, etc. to show how to multiply fractions.

Chapter 9

Relate Fractions and Decimals

- Lesson 9.1: AS IS

- Lesson 9.2: AS IS

- Lesson 9.3: AS IS

- Lesson 9.4: AS IS

- Lesson 9.5: DELETE

- Lesson 9.6: AS IS

- Lesson 9.7: AS IS

Chapter 9 Rules of Thumb

-Use bar models, number lines, base ten blocks, diagrams, etc. to show how fractions and decimals are related.

Trimester 3

(Ends June 24th - Finish major skills by May 2nd for NJSLA Testing)

Chapter 13

Perimeter and Area

***To save time, please only spend one day on each lesson and then move on.**

- Lesson 13.1: As is
- Lesson 13.2: As is
 - Add the following lesson from EngageNY in addition to Go Math:
 - <https://www.unbounded.org/math/grade-4/module-3/topic-a/lesson-1>
- Lesson 13.3: As is
 - Add the following lesson from EngageNY in addition to Go Math:
 - <https://www.unbounded.org/math/grade-4/module-3/topic-a/lesson-2>
- Lesson 13.4: As is
- Lesson 13.5: As is
 - Add the following lesson from EngageNY in addition to Go Math:
 - <https://www.unbounded.org/math/grade-4/module-3/topic-a/lesson-3>

Chapter 13 Rules of Thumb

- Use color tiles, graph paper, etc. to show how to find the area and perimeter of rectangles. Do not rely solely on using the formula to solve problems.

Chapter 12

Relative Sizes of Measurement Units

***To save time, please only spend one day on each lesson and then move on.**

- Lesson 12.1: As is
- Lesson 12.2: As is
- Lesson 12.3: As is
- Lesson 12.4: As is
- Lesson 12.5: DELETE
 - Use the following lesson from EngageNY instead of Go Math:
 - <https://www.unbounded.org/math/grade-4/module-5/topic-e/lesson-28>
- Lesson 12.6: DELETE
 - Use the following lesson from EngageNY instead of Go Math:
 - <https://www.unbounded.org/math/grade-4/module-2/topic-a/lesson-1>
- Lesson 12.7: As is
- Lesson 12.8: DELETE
 - Use the following lesson from EngageNY instead of Go Math:
 - <https://www.unbounded.org/math/grade-4/module-7/topic-a/lesson-3>
- Lesson 12.9: DELETE
- Lesson 12.10: DELETE
- Lesson 12.11: DELETE
 - Use the following lesson from EngageNY instead of Go Math:

- <https://www.unbounded.org/math/grade-4/module-7/topic-b/lesson-10>
- <https://www.unbounded.org/math/grade-4/module-7/topic-b/lesson-11>

Chapter 12 Rules of Thumb

- No rules of thumb for this chapter.

Chapter 10

Two-Dimensional Figures

****To save time, please only spend one day on each lesson and then move on.**

- Lesson 10.1: As is
- Lesson 10.2: As is
- Lesson 10.3: As is
- Lesson 10.4: As is
- Lesson 10.5: As is
- Lesson 10.6: As is
- Lesson 10.7: As is

Chapter 10 Rules of Thumb

- Students should be using precise vocabulary to describe the attributes of shapes when naming 2-dimensional figures (i.e. rhombus, trapezoid, etc.).

Chapter 11

Angles

****To save time, please only spend one day on each lesson and then move on.**

- Lesson 11.1: As is
- Lesson 11.2: As is
- Lesson 11.3: As is
 - Add the following lesson from EngageNY in addition to Go Math:
 - <https://www.unbounded.org/math/grade-4/module-4/topic-b/lesson-7>
- Lesson 11.4: As is
- Lesson 11.5: As is

Chapter 11 Rules of Thumb

- No rules of thumb for this chapter.

FOURTH GRADE STANDARD CLUSTERS

Green: Major Clusters

Blue: Supporting Clusters

Yellow: Additional Clusters

MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR GRADE 4

Emphases are given at the cluster level. Refer to the Common Core State Standards for Mathematics for the specific standards that fall within each cluster.

Key: ■ Major Clusters □ Supporting Clusters ● Additional Clusters

- 4.OA.A ■ Use the four operations with whole numbers to solve problems.
- 4.OA.B □ Gain familiarity with factors and multiples.
- 4.OA.C ● Generate and analyze patterns.
- 4.NBT.A ■ Generalize place value understanding for multi-digit whole numbers.
- 4.NBT.B ■ Use place value understanding and properties of operations to perform multi-digit arithmetic.
- 4.NF.A ■ Extend understanding of fraction equivalence and ordering.
- 4.NF.B ■ Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- 4.NF.C ■ Understand decimal notation for fractions, and compare decimal fractions.
- 4.MD.A □ Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- 4.MD.B □ Represent and interpret data.
- 4.MD.C ● Geometric measurement: understand concepts of angle and measure angles.
- 4.G.A ● Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

FOURTH GRADE NEW JERSEY STUDENT LEARNING STANDARDS

Operations and Algebraic Thinking

4.OA

A. Use the four operations with whole numbers to solve problems.

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.
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.¹
3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

B. Gain familiarity with factors and multiples.

4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

C. Generate and analyze patterns.

5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

Number and Operations in Base Ten²

4.NBT

A. Generalize place value understanding for multi-digit whole numbers.

1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.*
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
3. Use place value understanding to round multi-digit whole numbers to any place.

B. Use place value understanding and properties of operations to perform multi-digit arithmetic.

4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.
 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.
-
6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Number and Operations—Fractions³

4.NF

A. Extend understanding of fraction equivalence and ordering.

1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

B. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
 - a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

- b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2\ 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.*
- c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
- d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
- a. Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.*
- b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)*
- c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

C. Understand decimal notation for fractions, and compare decimal fractions.

5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.⁴ *For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.*
6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*
7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.

Measurement and Data

4.MD

A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

1. Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*
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.
3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

B. Represent and interpret data.

4. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

C. Geometric measurement: understand concepts of angle and measure angles.

5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
 - a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle,” and can be used to measure angles.
 - b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.
6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Geometry

4.G

A. Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.