

Unit 3: Mathematics - Numbers and Operations-Fractions (Grade: 4)

Content Area: **Mathematics**
Course(s): **Math 4**
Time Period: **Marking Period 3**
Length: **March-April**
Status: **Published**

Established Goals/Standards

Please choose the appropriate Goals/Standards from the Standards tab above.

MA.4.OA.B	Gain familiarity with factors and multiples.
MA.4.OA.B.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.
MA.4.OA.C	Generate and analyze patterns.
MA.4.OA.C.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.
MA.4.NF.A	Extend understanding of fraction equivalence and ordering.
MA.4.NF.A.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.
MA.4.NF.A.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.
MA.4.NF.B	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
MA.4.NF.B.3	Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
MA.4.NF.B.3a	Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
MA.4.NF.B.3b	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.
MA.4.NF.B.3c	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.
MA.4.NF.B.3d	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.
MA.4.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
MA.4.NF.B.4a	Understand a fraction a/b as a multiple of $1/b$.
MA.4.NF.B.4b	Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a

	fraction by a whole number.
MA.4.NF.B.4c	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.
MA.4.NF.C	Understand decimal notation for fractions, and compare decimal fractions.
MA.4.NF.C.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.
MA.4.NF.C.6	Use decimal notation for fractions with denominators 10 or 100.
MA.4.NF.C.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.
MA.4.MD.A.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
SEL.PK-12.2.2	Recognize the skills needed to establish and achieve personal and educational goals
SEL.PK-12.2.3	Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals
SEL.PK-12.4.1	Develop, implement and model effective problem-solving, and critical thinking skills
SEL.PK-12.5.1	Establish and maintain healthy relationships
SEL.PK-12.5.2	Utilize positive communication and social skills to interact effectively with others

Essential Questions

Please add your Essential Questions by clicking on the Lists tab above.

- How are fractions and decimals related?
- How can decimals be compared and ordered?
- How can fractions and mixed numbers be added and subtracted on a number line?
- How can fractions be compared and ordered?
- How can the same fractional amount be named using symbols in different ways?
- How is decimal numeration related to whole number numeration?
- What does it mean to add and subtract fractions and mixed numbers with like denominators?
- What is a standard procedure for adding and subtracting fractions and mixed numbers with like denominators?

Enduring Understanding

Please add your Enduring Understandings by clicking on the Lists tab above.

- All equivalent fractions are represented by the same decimal that is based on place-value numeration.
- Equivalent fractions are found by multiplying or dividing the numerator and denominator by the same nonzero number.

- If two fractions have the same denominator, the fraction with the greater numerator is the greater fraction. If two fractions have the same numerator, the fraction with the lesser denominator is the greater fraction.
- Just as place value can be used to compare and order whole numbers, it can be used to compare and order decimals.
- Ordering 3 or more numbers is similar to comparing 2 numbers because each number must be compared to the other numbers.
- Positive fractions can be added or subtracted by locating a fraction on the number line and then moving to the right to add or to the left to subtract.
- When adding or subtracting fractions with like denominators, you are adding or subtracting portions of the same size. So, you can add or subtract the numerators without changing the denominators.
- With mixed numbers, sometimes the whole numbers or fractional parts need to be renamed after adding or subtracting.

Content

Students will be able to:

- factor whole numbers.
- identify prime and composite numbers.
- find multiples of a number.
- use models and computation to show equivalent fractions.
- use a number line to identify and write equivalent fractions.
- use benchmark fractions to compare fractions with unlike denominators.
- use common denominators and equivalent fractions to order fractions with unlike denominators.
- write to explain whether an answer is correct or not.
- use models to add and subtract fractions with like denominators.
- use computational procedures to add and subtract fractions and mixed numbers with like denominators.
- use a number line to add and subtract fractions with like denominators.
- identify and write mixed numbers as improper fractions and improper fractions as mixed numbers.
- draw a picture and write an equation to solve a problem.
- use unit fractions and multiplication to describe fractions that are multiples of the unit fraction.
- model multiplication of a fraction by a whole number.
- multiply fractions by whole numbers.
- represent a fraction as a decimal and a decimal as a fraction.
- locate and name fractions and decimals on a number line.
- read and write decimals in expanded, standard, and word form.
- use place-value charts to compare decimals to hundredths.
- use place-value charts to read, write, and compare decimals in the tenths and hundredths using money.
- solve word problems using the strategy Draw a Picture.

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Vocabulary students will know:

fraction

denominator

numerator

benchmark fraction

equivalent fractions

prime number

composite number

mixed number

improper fraction

unit fraction

decimal point

hundreth

tenth

Resources

Envision2020 Resources:

- Textbook
- <https://reader.savvasrealize.com/#/login>
- Lesson Flipcharts
- Daily Common Core Review
- Quick Checks
- Mad Minutes
- Envision Topic Tests
- Manipulatives
- Reteaching Pages
- Practice Pages
- Enrichment Pages
- Math Centers

Specific Items for Numbers and Operations-Fractions:

- Online math games from teacher website.

