Grade 4 Key Concepts by LearnZillion Unit

Key Concepts for each unit can provide instructional guidance around the main focus for student learning and the depth of exploration and mastery toward a standard. The final focus for each standard is indicated with black outline. A + indicates the focus of this standard is isolated to a single unit.

Standards for Math Practice(MP.#) have been listed for each Key Concept. While the curriculum highlights opportunities to elevate these in learning, it is essential that these standards be embedded into student learning when they occur regardless of the few called out in this document. For more information on the Standards for Math Practice, please visit: Illustrative Math

A few questions teams have asked while using this document:

- Where does the standard occur before it is finalized?
- To what depth is the current unit calling for? (range of numbers, strategies, use of abstraction like equations, concept awareness and flexibility, etc.)
- What "I can" or "I know" statements would make the Key Concepts clear to my learning community?
- How does the standard progress over the year?

Key Concepts (Term 1)	Content Standards	Practice Standards
Unit 1 - Exploring multiples and factors		
1. A whole number is a multiple of its factors.	4.OA.B.4+	MP.3, MP.4, MP.7
2. A prime number is a natural number greater than 1 whose only integral factors are 1 and itself. A composite number is a natural number greater than 1 that is not prime.	4.OA.B.4+	MP.3, MP.7
3. We can create patterns according to a rule, and find features of the pattern that are not explicit in the rule itself.	4.OA.C.5	MP.3, MP.7
Unit 2 - Using multiplication and division strategies with larger numbers		
1. Place value understanding allows us to multiply multi-digit numbers in different ways.	4.OA.A.3, 4.NBT.B.5	MP.1, MP.7
2. Place value understanding allows us to divide multi-digit numbers in different ways.	4.OA.A.3, 4.NBT.B.6	MP.1, MP.7
3. The remainder can be interpreted the whole number amount left over when a quantity is divided by its greatest whole-number factor.	4.OA.A.3, 4.NBT.B.6	MP.1, MP.2, MP.7
4. We can use the relationship between multiplication and division to solve mathematical and real-world problems.	4.OA.A.3, 4.NBT.B.5, 4.NBT.B.6, 4.MD.A.3	MP.1, MP.8
Unit 3 - Decomposing and composing fractions for addition and subtraction		
1. Based on the definition of a fraction a/b as a parts that are the size of 1/b, we can construct a whole given any fractional part of that whole.	4.NF.B.3b	MP.2, MP.4, MP.7
2. Fractions can be decomposed into non-unit fractions in more than one way.	4.NF.B.3.b	MP.4, MP.7
3. The meanings of addition and subtraction do not change when those operations are used with fractions.	4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.d	MP.2, MP.3, MP.4, MP.7
4. Mixed numbers are a form of numbers greater than 1 that have a whole that can be decomposed in many different ways.	4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.c, 4.NF.B.3.d	MP.1, MP.4, MP.7, MP.8
Unit 4 - Applying place value concepts in whole number addition and subtraction		
1. Digits in numbers represent ten times what they represent in the place to the right.	4.NBT.A.1	MP.8

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2. The same quantity can be named and represented in multiple ways, and changing representations or names does not change a number's value.	4.NBT.A.2+	MP.6, MP.8
3. We can use our understanding of place value to round numbers.	4.NBT.A.3	MP.6, MP.8
4. A real number is either equal to, less than, or greater than another real number. We can compare numbers using place value, and record comparisons using <, >, and =	4.NBT.A.2+	MP.2, MP.6
5. The meaning of addition does not change depending on how we perform it. The meaning of subtraction does not change depending on how we perform it.	4.NBT.B.4	MP.8
Unit 5 - Understanding fraction equivalence and comparison		
1. There are three possible relationships between two given numbers with the same unit of reference, a and b: a>b, a<b, or a=b	4.NF.A.1+, 4.NF.A.2	MP.3, MP.4, MP.5
2. a/b = (nxa)/(nxb) because we have n times as many pieces in the whole. Each piece is n times smaller, so we need n times as many of them to cover the same distance or the same area.	4.NF.A.1+, 4.NF.A.2+	MP.3, MP.4, MP.5
3. We can compare two numbers indirectly by comparing them both to a common benchmark.	4.NF.A.2+	MP.4, MP.5
4. Finding common denominators is helpful in comparing fractions because it enables us to compare same-sized pieces.	4.NF.A.2+	MP.4
Unit 6 - Introducing measurement conversions		
1. In a multi-digit whole number, a digit in one place represents ten times what it represents in the place to the right.	4.OA.A.1, 4.NBT.A.1, 4.MD.A.1+	MP.2, MP.4, MP.7, MP.8
2. Multiplication can be thought of as a comparison in contexts other than place value.	4.OA.A.1, 4.NBT.A.1, 4.MD.A.1+	MP.2, MP.4, MP.7, MP.8
3. Multiplicative comparison can be used to convert units of length, mass, volume, and time.	4.OA.A.1, 4.NBT.A.1, 4.MD.A.1+	MP.2, MP.4, MP.7, MP.8
4. Within one system of measurement, different units of measure can be used to represent the same quantity.	4.OA.A.1, 4.NBT.A.1, 4.MD.A.1+	MP.2, MP.4, MP.7, MP.8
Standards in Progress...	**Standards Finalized (in Maintenance)**	**Standards Not Yet Taught**
4.OA.A.1 & 4.OA.A.3 - Student should understand that multiplication equations (using in situations like converting to a different unit) gives a multiplicative, not additive, result (a foot is 12 times as big as an inch) within whole numbers for now. Student can solve multistep word problems where the remainder needs to be interpreted but not responsible for letter use for unknown yet. 4.OA.C.5 - Students can generate a pattern from a given rule and begin to make observation about the pattern beyond the rule 4.NBT.A.3 - Students round to various place values 4.NBT.B.4, 4.NBT.B.5, 4.NBT.B.6 -Students begin to formalize the standard algorithm by relating it to other models/strategies. Students leverage place value and operations as strategies for multiplication and division (using equations, rectangular arrays, and/or area models) then begin to use the inverse relationship of multiplication and division. 4.NF.B.3.a, 4.NF.B.3.b, 4.NF.B.3.c, 4.NF.B.3.d - Students can break apart a fraction in many ways, compose a whole with fractional parts, decompose mix numbers in many ways, and understand addition and subtraction can be applied to fractions.	4.OA.B.4 4.NBT.A.1, 4.NBT.A.2 4.NF.A.1, 4.NF.A.2 4.MD.A.1 4.MD.A.3	4.OA.A.2 4.NF.B.4 4.NF.C.5 4.NF.C.6 4.NF.C.7 4.MD.A.2 4.MD.B.4 4.MD.C.5 4.MD.C.6 4.MD.C.7

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Key Concepts (Term 2)	Content Standards	Practices Standards
Unit 7 - Solving problems using multiplicative comparison		
1. The meaning of multiplicative comparison does not change depending on the type of problem being solved or the units involved (in measurement problems).	4.OA.A.2	MP.1, MP.4, MP.7
2. When rounding to estimate solutions, we make choices about which place to round to depending units and quantities involved.	4.NBT.A.3	MP.2, MP.6
3. When solving measurement problems, it sometimes makes sense to express measurements given in a larger unit in terms of a smaller unit.	4.MD.A.2	MP.1, MP.5
Unit 8 - Solving measurement problems using the four operations		
1. We can represent problems using equations with letters standing for the unknown quantity.	4.OA.A.3, 4.MD.A.2	MP.2
2. In addition to rounding, we can use mental computation strategies to assess the reasonableness of responses.	4.OA.A.3, 4.NBT.B.4, 4.MD.A.2	MP.1, MP.2
3. We can use addition, subtraction, multiplication, and division to solve multi-step measurement problems.	4.OA.A.3, 4.NBT.B.4, 4.MD.A.2	MP.1, MP.2, MP.6
Unit 9 - Solving addition and subtraction word problems involving fractions and mixed numbers		
1. Replacing a mixed number with an equivalent fraction and using the relationship between addition and subtraction can make it easier to add and subtract fractions with like denominators.	4.NF.B.3.c 4.MD.B.4+	MP.2, MP.3, MP.4
2. We can use visual models and equations to represent situational problems involving addition and subtraction of fractions with the same whole and like denominators.	4.NF.B.3.c 4.NF.B.3.d	MP2, MP.4
Unit 10 - Angle measurement		
1. Points, lines, line segments, and rays have specific properties that are maintained when combined to make geometric figures. One of these new figures, an angle, is a geometric figure that is created wherever two rays share a common endpoint.	4.G.A.1	MP.3, MP.4, MP.7
2. An angle is measured in reference to two rays that intersect the center point of a circle. An angle that turns through 1/360th of a circle is called a one-degree angle.	4.MD.C.5.a, 4.G.A.1	MP.3, MP.4
3. An angle that turns through n one-degree angles is said to have a measure of 1 degrees.	4.MD.C.5.a, 4.MD.C.5.b, 4.MD.C.6, 4.G.A.1	MP.3, MP.5
Unit 11 - Multiplying fractions by whole numbers		
1. A fraction a/b is a multiple of 1/b.	4.OA.A.1, 4.NF.B.4.a, 4.NF.B.4.b, 4.NF.B.4.c	MP.1, MP.6
2. A multiple of a/b is a multiple of 1/b: (n x a/b) = (n x a)/b.	4.OA.A.1, 4.NF.B.4.a, 4.NF.B.4.b, 4.NF.B.4.c	MP.1, MP.6

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3. Because fractions are numbers, the meaning of multiplicative comparison does not change when fractions are involved.	4.OA.A.1, 4.NF.B.4.a, 4.NF.B.4.b, 4.NF.B.4.c	MP.1, MP.6
Unit 12 - Comparing decimal fractions and understanding notation		
1. Decimal notation is based on denominators that are powers of 10 (day 1 - tenths).	4.NF.C.5, 4.NF.C.6, 4.NF.C.7	MP.3, MP.4, MP.7
2. Because we can write fractions with a denominator of 10 as an equivalent fraction with a denominator of 100, we can also write these numbers in decimal notation.	4.NF.C.5, 4.NF.C.6, 4.NF.C.7	MP.3, MP.4, MP.7
3. We can use place value understanding to compare decimals that refer to the same whole.	4.NF.C.5, 4.NF.C.6, 4.NF.C.7	MP.3, MP.4, MP.7
Unit 13 - Recognizing and analysing attributes of 2-dimensional shapes		
1. Two lines are parallel if they are on the same plane and will never intersect, and perpendicular if they are on the same plane and intersect at a 90-degree angle.	4.G.A.1, 4.G.A.2	MP.4, MP.6
2. Angle measure is additive, and angle measures can therefore be added and subtracted.	4.OA.C.5, 4.MD.C.7	MP.1, MP.4, MP.6
3. Triangles can be categorized based on their angle types.	4.G.A.2, 4.G.A.3	MP.2, MP.6
4. Patterns may have features that are not explicit in the rule of the pattern.	4.OA.C.5	MP2, MP7
(optional) Unit 14 - Problem solving with whole numbers		
1. The standard algorithms for addition and subtraction are efficient ways to add and subtract that use place value concepts.	4.OA.A.3, 4.NBT.B.4	MP.1, MP.2, MP.3
2. We can multiply whole numbers of up to four digits using a variety of strategies; the choice of strategy does not change the quantities involved or the relationships between them.	4.OA.A.3, 4.NBT.B.5	MP.1, MP.8
3. We can find quotients of whole numbers of up to four digits using a variety of strategies; the choice of strategy does not change the quantities involved or the relationships between them.	4.OA.A.3, 4.NBT.B.5, 4.NBT.B.6	MP.1, MP.8
4. The relationship between multiplication and division holds even when the division results in a remainder. (100 / 40 = 2 R 20: therefore, 100 = 2 x 40 + 20).	4.OA.A.2, 4.OA.A.3, 4.NBT.B.6	MP.2, MP.8
5. We can represent problem situations with equations, understanding that the operations that the operations shown in the equation may not be the operation we use to solve the problem.	4.OA.A.2, 4.OA.A.3, 4.NBT.B.6	MP.2

* 4.NBT.B.4 - Add/subtract within 1,000,000: Focus on leveraging place value and strategy for efficiency and flexibility is key for this standard. The standard algorithm is one strategy to understand by the end of Grade 4.

KEY:

Color by Domain	NF	OA	CC	GEO	NBT	MD