# 4th Grade Core Essentials

## Number and Operations in Base Ten

I can use and explain place value concepts for multi-digit whole numbers.

- ☐ I can look at a multi-digit number and determine that the digit to the left is 10 times greater than a given digit.
- ☐ I can use place value to help multiply or divide numbers.
- ☐ I can read and write multi-digit whole numbers using base-ten numbers.
- ☐ I can read and write multi-digit whole numbers using number names.
- ☐ I can read and write multi-digit whole numbers using expanded form.
- ☐ I can compare the size of two multi-digit numbers using place value and record the results with <, >, =.
- ☐ I can use place value understanding to round multi-digit whole numbers to any place.

I can use and explain how to do arithmetic with multi-digit numbers.

- ☐ I can fluently add and subtract multi-digit whole numbers.
- ☐ I can multiply a whole number of up to four digits by a one-digit whole number.
- ☐ I can multiply a two-digit number by a two-digit number using strategies based on place value and/or operation properties.
- ☐ I can explain two-digit by two-digit multiplication by using equations, rectangular arrays, and/or area model.
- ☐ I can divide a single digit number into numbers up to 9,999 in a variety of ways.
- ☐ I can show and explain division problems by using equations, rectangular arrays, and/or area models.

## Operations and Algebraic Thinking

I can solve real world problems that require me to add, subtract, multiply, and divide whole numbers.

- ☐ I can explain why multiplying numbers in an equation in any order will get the same product.
- ☐ I can write verbal statements about multiplicative comparisons as equations.
- ☐ I can solve word problems involving multiplication and division using drawings.
- ☐ I can solve word problems involving multiplication and division by using equations and a symbol for an unknown.
- ☐ I can explain the difference between a multiplicative comparison and an additive comparison.
- ☐ I can solve multi-step word problems using addition, subtraction, multiplication and division with remainders.
- ☐ I can solve multi-step word problems using addition, subtraction, multiplication, and division using equations where a symbol is used for the unknown.
- ☐ I can determine if the answer makes sense by using mental math, estimation, and rounding.

I can explain how multiples and factors are related and used.

- I can find all factor pairs for a whole number between 1 and 100.
- I can show how a whole number is a multiple of each of its factors.
- I can determine if a whole number between 1 and 100 is a multiple of a one digit number.
- I can determine the numbers between 1 – 100 that are composite.
- I can determine the numbers between 1 – 100 that are prime.

I can create and explain various number and shape patterns.

- I can generate a number pattern that follows a given rule.
- I can generate a shape pattern that follows a given rule.
- I can look at a number pattern and determine additional pattern found within the sequence.
- I can look at a shape pattern and determine additional patterns found within the sequence.

## Numbers and Operations – Fractions

I can order fractions and explain when they are equivalent.

- I can create and explain equivalent fractions using visual models.
- I can create and explain equivalent fractions even though the number and size of the parts of the fraction may change.
- I can compare two fractions by creating common numerators or common denominators.
- I can compare two fractions using a benchmark fraction.
- I can explain why fraction comparisons are only valid when they refer to the same whole.
- I can correctly record the comparison of fractions using <, >, =, and I can defend my answers.
- I can explain the concepts of adding and subtracting fractions with like denominators.
- I can decompose (break down) a fraction into a sum of fractions with the same denominator in more than one way.
- I can decompose (break down) a fraction into a sum of fractions with the same denominator and justify my answer using a visual fraction model.
- I can add mixed numbers with like denominators using a variety of strategies.
- I can subtract mixed numbers with like denominators using a variety of strategies.

I can use and explain unit fractions and relate what I know about arithmetic of whole numbers to the arithmetic of unit fractions.

- I can solve real-world problems involving addition of fractions.
- I can solve real-world problems involving subtraction of fractions.
- I can explain how a fraction a/b is a multiple of 1/b.
- I can explain how multiplying a whole number times a fraction can be changed to a whole number times a unit fraction.
- I can use a visual fraction model to justify multiplying a fraction by a whole number.
- I can solve word problems involving multiplication of a fraction by a whole number using visual fraction models and equations.

I can change fractions with denominators of 10 or 100 to decimals and can explain how these decimals differ in size.

- I can write fractions with denominators of 10 to equal fractions with denominators of 100.
- I can add two fractions with the denominators of 10 and 100.
- I can write a fraction with denominators of 10 or 100 as decimals.
- I can locate a decimal on a number line.
- I can compare two decimals, explain my reasoning, and record the results using <, >, =.
- I can explain that comparisons between two decimals are only valid when they refer to the same whole.

## Measurement and Data

I can explain how unit size affects the measurement and can solve real world problems involving measurement, perimeter, and area.

- I can explain the relative sizes of units within the same system.
- I can translate the larger units into equivalent smaller units.
- I can record measurement equivalence in a two column table or as number parts.
- I can solve real-world problems that require arithmetic with distances, liquid volumes, masses, time, and money.
- I can use the four operations to solve word problems using simple fractions and decimals.
- I can use the four operations to solve word problems expressing measurements given in a larger unit in terms of a smaller unit.
- I can use number lines and diagrams to illustrate solutions.
- I can solve real-world problems involving the perimeter of rectangles.
- I can solve real-world problems involving the area of rectangles.
- I can make a line–plot to display a set of data in fractions measured to the nearest ½, ¼, or 1/8 units.
- I can use information from a line plot to solve problems involving addition and subtraction of fractions.

I can draw, measure, and explain different concepts of angles.

- I can explain how an angle is made of two rays with common endpoints.
- I can explain how an angle is measured by its reference to a circle.
- I can define and explain a “one-degree angle” and how it is used to measure angles.
- I can explain how the measure of an angle is a multiple of the “one-degree” angle.
- I can use a protractor to measure whole degree angles.
- I can draw and angle of specified size, using a protractor.
- I can explain how when angles are joined in non-overlapping parts, the total measure is the sum of the parts.
- I can solve real-world problems involving addition and/or subtraction to find unknown angles on a diagram.

## Geometry

I can draw and identify lines and angles and use these to classify shapes.

- I can draw and identify a point.
- I can draw and identify a line.
- I can draw and identify a line segment.
- I can draw and identify a ray.
- I can draw and identify a right angle.
- I can draw and identify an acute angle.
- I can draw and identify an obtuse angle.
- I can draw and identify perpendicular lines.
- I can draw and identify parallel lines.
- I can put 2-D figures in like groups based on whether certain sides are parallel or perpendicular.
- I can put 2-D figures in like groups based on whether certain angles are acute, obtuse, or right.
- I can identify right angles and can group right triangles from other triangles.
- I can identify line-symmetry.
- I can identify figures that have symmetry and can then draw the lines of symmetry.