

# K-12 Mathematics Number Sense

## Standards/Cluster

## Math

## Other Content Areas

Kindergarten

K.CC: Count and tell the number of objects, and compare numbers

- Say the number name in consecutive order
- Develop vocabulary of greater than, less than and same as to compare two sets of items
- Draw and/or circle a given number of items
- Compare two numbers when written as numerals

- Count objects
- Indicate by counting that the last number said tells the number of items
- Match a numeral card with the number of items in a set
- Identify how many more or how many fewer items

1st Grade

1.NBT.C: Use place value understanding and properties of operations to add and subtract

- Model addition examples with sums to 100 using both vertical and horizontal formats
- Be able to calculate both mentally and using written equations
- Look for and describe patterns

- Use a variety of materials and strategies to add or subtract 10 from a number
- Compare two-digit numbers by looking at the tens digit and ones digit

2nd Grade

2.NBT.B: Use place value understanding and properties of operations to add and subtract

- Model addition and subtraction problems
- Use estimation strategies and decide if answers make sense
- Explain and compare their thinking to classmates and the teacher

- Solve addition and subtraction problems using objects, pictures, words, and numbers within 1000
- Mentally calculate finding 10 or 100 more or less than a given number

3rd Grade

3.NBT.A: Use place value understanding and properties of operations to perform multi-digit arithmetic

- Make connections between conceptual understanding and procedures for adding and subtracting within 1000
- Model multiplication of a one-digit number by a multiple of 10
- Use place value understanding to round whole numbers to the nearest 10 or 100

- Order whole numbers and space them to scale
- Round to the nearest 10 or 100

4th Grade

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

- Develop an efficient algorithm to add and subtract multi-digit numbers
- Represent multiplication of multi-digit times a one-digit and two-digit factors
- Use models that make sense to represent division situations

- Add and subtract multi-digit whole numbers
- Multiply whole numbers where at least one of the numbers is greater than 10
- Divide whole numbers with remainders (sharing in groups and noticing "leftovers")

5th Grade

5.NBT: Understand the place value system and perform operations with whole numbers and decimals to hundredths.

- Read and write decimals using numerals, words, and expanded form.
- Compare decimal numbers
- Round decimal numbers to a given place
- Connect previous models such as area model to a standard algorithm for multiplication
- Solve problems that include various division situations
- Explore division of fractions through visual models & contexts

- Add, subtract, multiply and divide multi-digit decimals that appear in context
- Compare whole numbers as 10 times greater, etc using place value
- Compare decimals using place value



# K-12 Mathematics Number Sense

## Standards/Cluster

## Math

## Other Content Areas

6th Grade

6.NS.C: Apply and extend previous understandings of numbers to the system of rational numbers

- Understand that the meaning of zero is determined by the real-world context
- Understand the mean of opposite and reason about the opposite of the opposite of a number
- Understand absolute value and interpret it in real-world scenarios
- Understand that a line segment from one coordinate pair to another represents a distance

- Represent real-world scenarios such as bank account balances, temperature, and sea level with rational numbers
- Plot values on a number or time line, and coordinates on a graph
- Compare and order positive and negative numbers in context
- Use the coordinate plane to represent real-world scenarios, such as street maps

7th Grade

7.NS.A: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers

- Model positive and negative combining to make zero
- Discover and apply formal rules for adding & subtracting rational numbers
- Discover that subtraction and adding with an additive inverse provides the same results
- Discover the rules for multiplying and dividing rational numbers
- Use long division to convert rational numbers in fraction form to decimals

- Add, subtract, multiply and divide rational numbers (positive or negative whole numbers, decimals, & fractions)
- Operate with positive and negative numbers to recognize gain, loss or zero balance

8th Grade

8.NS.A: Know that there are numbers that are not rational, and approximate them by rational numbers

- Recognize and use the notation for decimal expansions of irrational numbers
- Convert decimal expansions into equivalent fractions using the algorithm
- Look for and express regularity in the repeated reasoning used in finding approximations of irrational numbers

- Understands that the real number system includes irrational numbers
- Compare irrational numbers and place them between whole numbers on a number line

High School

N.Q.A: Reason quantitatively and use units to solve problems

- Solve contextual problems and multi-step problems, and explain how units were used to understand the problems
- Select and properly use an existing quantity for a real-world context
- Apply their knowledge of different families of functions to build functions that describe contexts
- Recognize definitions of arithmetic or geometric sequences

- Use units to help interpret a problem
- Understanding of measurement error and measurement variation
- Connect measurement concepts to science and other contexts to show understanding of significant digits and scientific notation
- Create a role to represent the relationship between two variables

- The standards identified are representative of the focus at each grade level to demonstrate the developmental nature of our Learning Standards
- The math skills listed are applicable within the context of the identified standards but do not offer a comprehensive list of skills they describe
- The other content areas are examples to provide possible uses of the math skills within the listed standards

