

Tennessee Academic Standards — Math

Rising 1st



Counting and Cardinality

- K.CC.5: Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

Operations and Algebraic Thinking

- K.OA.1: Represent addition and subtraction with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.
- K.OA.2: Add and subtract within 10 to solve contextual problems using objects or drawings to represent the problem.

Number and Operations in Base Ten

- K.NBT.1: Compose and decompose numbers from 11 to 19 into ten ones and some more ones by using objects or drawings. Record the composition or decomposition using a drawing or by writing an equation.

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Rising 2nd



Operations and Algebraic Thinking

- 1.OA.1: Add and subtract within 20 to solve contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.
- 1.OA.5: Add and subtract within 20 using strategies such as counting on, counting back, making 10, using fact families and related known facts, and composing/ decomposing numbers with an emphasis on making ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$ or adding $6 + 7$ by creating the known equivalent $6 + 4 + 3 = 10 + 3 = 13$).

Number and Operations in Base Ten

- 1.NBT.4: Add a two-digit number to a one-digit number and a two-digit number to a multiple of ten (within 100). Use concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used.
- 1.NBT.6: Subtract multiples of 10 from multiples of 10 in the range 10-90 using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

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Rising 3rd



Operations and Algebraic Thinking

- 2.OA.1: Add and subtract within 100 to solve one- and two-step contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Number and Operations in Base Ten

- 2.NBT.5: Fluently add and subtract within 100 using properties of operations, strategies based on place value, and/or the relationship between addition and subtraction.
- 2.NBT.7: Add and subtract within 1000 using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used.
- 2.NBT.9: Explain why addition and subtraction strategies work using properties of operations and place value. (Explanations may include words, drawings, or objects.)

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Rising 4th



Operations and Algebraic Thinking

- 3.OA.3: Multiply and divide within 100 to solve contextual problems, with unknowns in all positions, in situations involving equal groups, arrays, and measurement quantities using strategies based on place value, the properties of operations, and the relationship between multiplication and division (e.g., contexts including computations such as $3 \times ? = 24$, $6 \times 16 = ?$, $? \div 8 = 3$, or $96 \div 6 = ?$) (See Table 2 - Multiplication and Division Situations).
- 3.OA.7: Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers and related division facts.
- 3.OA.8: Solve two-step contextual problems using the four operations. 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.

Number and Operations in Base Ten

- 3.NBT.2: Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

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Rising 5th



Operations and Algebraic Thinking

- 4.OA.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.

Number and Operations in Base Ten

- 4.NBT.4: Fluently add and subtract within 1,000,000 using appropriate strategies and algorithms.
- 4.NBT.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.
- 4.NBT.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.

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Rising 6th



Number and Operations in Base Ten

- 5.NBT.7: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between operations; assess the reasonableness of answers using estimation strategies (Limit division problems so that either the dividend or the divisor is a whole number).

Number and Operations — Fractions

- 5.NF.3: Interpret a fraction as division of the numerator by the denominator. For example, $\frac{3}{4} = 3 \div 4$ so when 3 wholes are shared equally among 4 people, each person has a share of size $\frac{3}{4}$. Solve contextual problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers by using visual fraction models or equations to represent the problem.”
- 5.NF.6: Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.7: Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

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Rising 7th



Ratios and Proportional Relationships

- 6.RP.2: Understand the concept of a unit rate a/b associated with a ratio $a : b$ with $b \neq 0$. Use rate language in the context of a ratio relationship.
- 6.RP.3b: Solve unit rate problems including those involving unit pricing and constant speed.
- 6.RP.3c: Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

The Number System

- 6.NS.1: Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., (e.g., using visual fraction models and equations to represent the problem is suggested).

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Rising 8th



Ratios and Proportional Relationships

- 7.RP.2: Recognize and represent proportional relationships between quantities.
- 7.RP.3: Use proportional relationships to solve multistep ratio and percent problems.
Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

The Number System

- 7.NS.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

Expressions, Equations, and Inequalities

- 7.EE.3: Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers presented in any form (whole numbers, fractions, and decimals).

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Rising 9th



Expressions, Equations, and Inequalities

- 8.EE.4: Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
- 8.EE.5: Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
- 8.EE.8: Analyze and solve systems of two linear equations.

Functions

- 8.F.4: Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.