Mathematics Calculator Guidance

Grade 4

TN Standard	Calculator Tested Subpart	Non-Calculator Tested Subpart	enVision Lesson(s)	Notes
Calculator Step Guide				
4.OA.A.1 Interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as much as 5). Represent verbal/written statements of multiplicative comparisons as multiplication equations	✓		Topic 6: Lessons 6-1 through 6-6	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. A calculator could be utilized to check answers on the Problem Set when representing verbal statements of multiplicative comparisons as equations.
4.OA.A.2 Multiply or divide to solve contextual problems involving multiplicative comparison and distinguish multiplicative comparison from additive comparison. *For example, school A has 300 students and school B has 600 students: to say that school B has two times as many students is an example of multiplicative comparison; to say that school B has 300 more*	✓		Topic 3: Lesson 3-2 Topic 6: Lesson 6-2	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. A calculator could be utilized to check answers on the Problem Set when representing verbal statements of multiplicative comparisons as equations and solving two-step problems.

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students is an example of additive comparison.				
4.OA.A.3 Solve multi-step contextual 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.	✓	✓	Topic 2: Lesson 2-2; 2-4; 2-6 through 2-8 Topic 3: Lessons 3-2 and 3-7 through 3-8 Topic 4: Lessons 4-2 through4-4; Lessons 4-6 through 4-7 Topic 5: Lessons 5-4; 5-6 through 5-7;5-9 Topic 6: Lessons 6-3 through 6-6	A calculator could be utilized to check computation when using the four operations to solve contextual problems. Instruction should prepare students to demonstrate mastery with and without the aid of the calculator.
4.OA.B.4 Find factor pairs for *whole numbers* in the range 1–100 using models. Recognize that a whole number is a multiple of each of its factors. *Determine whether a given whole number is prime or composite and whether the given number is a multiple of a given one-digit number*.	✓	✓	Topic 7: Lessons 7-1 through 7-5 Topic 14: Lessons 14-1 and 14-2	A calculator could be utilized to perform simple operations when to determine if a number is a factor/multiple of another number. Instruction should prepare students to demonstrate mastery with and without the aid of the calculator.
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. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear*	✓	✓	Topic 14: Lessons 14-1 through 14-4 Topic 16: Lesson 16-2	A calculator could be utilized to check addition. A calculator could be utilized to perform simple operations when to determine if a number is a factor/multiple of another number.

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to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.				
4.NBT.A.1 Recognize that in a multi-digit whole number (less than or equal to 1,000,000), a digit in one place represents 10 times what it represents in the place to its right. *(For example, recognize 7 in 700 is 10 times bigger than the 7 in 70 because 700 ÷ 70 = 10 and 70 x 10 = 700.*	✓	✓	Topic 1: Lessons 1-2 and 1-5	A calculator could be utilized to check multiplication to determine if the digit is 10 times what it represents in the place to its right. Instruction should prepare students to demonstrate mastery with and without the aid of the calculator.
4.NBT.A.2 Read and write multi-digit whole numbers (less than or equal to 1,000,000) using standard form, word form, and expanded notation (e.g. the expanded notation of 4256 is written as (4 x 1000) + (2 x 100) + (5 x 10) + (6 x 1)). Compare two multi-digit numbers based on meanings of the digits in each place and use the symbols >, =, and < to show the relationship.	✓	✓	Topic 1: Lessons 1-1; 1-3; 1-5	No calculator needed.
4.NBT.A.3 Round multi-digit whole numbers to any place (up to and including the hundred-thousand place) using understanding of place value and use a number line	✓		Topic 1: Lesson 1-4	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. No calculator needed.

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to explain how the number was rounded.				
4.NBT.B.4 Fluently add and subtract within 1,000,000 using efficient strategies and algorithms.		✓	Topic 2: Lessons 2-1 through 2-8 Topic 14: Lesson 14-1	Historically, this standard appeared on the non-calculator subpart of the TCAP assessment. A calculator could be utilized to check addition and subtraction.
4.NBT.B.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.	✓	✓	Topic 3: Lesson 3-1; Lesson 3-3 through 3-8 Topic 4: Lessons 4-1 through 4-7 Topic 6: Lessons 6-1 through 6-6 Topic 7: Lessons 7-1 through 7-5 Topic 8: Lessons 8-3 and 8-6 Topic 13: Lesson 13-2 Topic 14: Lesson 14-2 and 14-2	A calculator could be utilized to check multiplication. Instruction should prepare students to demonstrate mastery with and without the aid of the calculator.
4.NBT.B.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.		✓	Topic 5: Lessons 5-1 through 5-10 Topic 6: Lessons 6-3 through 6-6 Topic 8: Lesson 8-4 Topic 14: Lesson 14-2 and 14-3	Historically, this standard appeared on the non-calculator subpart of the TCAP practice assessment. A calculator could be utilized to check division. Teacher will need to provide guidance for students to understand when there is a remainder and how it appears in the calculator.
4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction (a x n)/(b x n) or (a ÷ n)/(b ÷ n) using visual fraction models, with attention to how the	✓	✓	Topic 8: Lessons 8-1 through 8-4; 8-6 and 8-7	No calculator is needed. (A calculator could be utilized to check multiplication when finding equivalent fractions, if needed.)

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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. For example, 3/4 = (3 x 2)/(4 x 2) = 6/8.				
4.NF.A.2 Compare two fractions with different numerators and different denominators by creating common denominators or common numerators or by comparing to a benchmark such as 0 or 1/2 or 1. Recognize that comparisons are valid only when the two fractions refer to the same whole. Use the symbols >, =, or < to show the relationship and justify the conclusions.		✓	Topic 8: Lessons 8 -5 and TN-1; 8-6 and 8-7	Historically, this standard appeared on the non-calculator subpart of the TCAP practice assessment No calculator needed. (A calculator could be used to check multiplication when creating equivalent fractions in order to compare them to each other.)
4.NF.B.3 Understand a fraction a/b with a > 1 as a sum of fractions 1/b. *For example 4/5 = 1/5 + 1/5 + 1/5 + 1/5.* a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more	✓	✓	a and b only Topic 9: Lessons 9-1 through 9-5 a) only- Lessons 9-6 through 9-10; Topic 11: Lesson 11-3 and 11-4 c) only Lessons 9-7 through 9-10; Topic 11: Lessons 11-1; 11-2 through 11-4; Topic 13: Lesson 13-1; 13-3; Topic 15: Lesson 15-6	Subpart A No calculator needed. (A calculator could be utilized to check simple addition and subtraction of numerators.) Subpart B No calculator needed. Subpart C No calculator needed.

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than one way, (e.g., *3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8),*recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. c. Add and subtract mixed numbers with like denominators by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction.				
4.NF.B.3 Understand a fraction a/b with a > 1 as a sum of fractions 1/b. *For example 4/5 = 1/5 + 1/5 + 1/5 + 1/5.* d. Solve contextual problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	✓		Topic 9: Lessons 9-1 through 9-10	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. No calculator needed.
4.NF.B.4 Apply and extend understanding of multiplication as repeated addition to multiply a whole number by a fraction. a.Understand a fraction a/b	✓		Topic 10: Lesson 10-1	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. No calculator needed.

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as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × 1/4, recording the conclusion by the equation 5/4 = 5 x1/4.				
4.NF.B.4 Apply and extend previous understandings of multiplication as repeated addition to multiply a whole number by a fraction. b. Understand a multiple of a/b as a multiple of 1/b and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)	✓		Topic 10: 10-2 and 10-3	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. No calculator needed.
4.NF.B.4 Apply and extend previous understandings of multiplication as repeated addition to multiply a whole number by a fraction. c. Solve contextual problems involving multiplication of a fraction by a whole number, (e.g., by using visual fraction models and equations to represent the problem). *For*	✓	✓	Topic 10: Lessons 10-2 through 10-5 Topic 13: Lessons 13-1; 13-3; 13-7	No calculator needed.

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example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?				
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.	✓	✓	Topic 12: Lesson 12-4	A calculator could be utilized to check simple addition when adding two fractions with respective denominators 10 and 100.
4.NF.C.6 Read and write decimal notation for fractions with denominators 10 or 100. Locate these decimals on a number line.	✓	✓	Topic 12: Lessons 12-1 and 12-2	A calculator could be utilized to check simple addition when adding two fractions with denominators 10 or 100.
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. Use the symbols >, =, or <, to show the relationship and justify the conclusions.	✓		Topic 12: Lessons 12-3 and 12-6	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. No calculator needed.
4.MD.A.1 Measure and estimate to determine the relative sizes of measurement units within a single system of measurement involving length,	–	–	Lesson TN-4 and TN-5 Topic 13: Lessons 13-1 through 13-5 Topic 15: Lesson 15-6	A calculator can be utilized to check answers when determining relative sizes of measurement units within a single system of measurement. This standard does not appear in the previous item releases or

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liquid volume, and mass/weight of objects using customary and metric units.				practice tests found in the Tennessee Department of Education Live Binder. However, this standard has been assessed on previous years TCAP assessments.
4.MD.A.2 Solve one- or two-step real-world problems involving whole number measurements (including length, liquid volume, mass/weight, time, and money) with all four operations within a single system of measurement. (Contexts need not include conversions.)	✓		Topic 13: Lessons 13-1 through 13-3; 13-4 through 13-5; TN-6; TN-7;13-7	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. A calculator can be utilized to check answers when solving one or two step real world problems involving whole number measurements with all four operations.
4.MD.A.3 Know and apply the area and perimeter formulas for rectangles in real- world and mathematical contexts. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.		✓	Topic 13: Lesson 13-6; Topic 16: Lesson 16-6	Historically, this standard appeared on the non-calculator subpart of the TCAP practice assessment. A calculator can be utilized to check answers when applying the area and perimeter formulas in real-world and mathematical problems.
4.MD.B.4 Make a line plot to display a data set of measurements in fractions of the same unit (1/2 or 1/4 or 1/8). Use operations on fractions for this grade to solve problems involving information presented in line	✓	✓	Topic 11: Lessons 11-1 through 11-4; TN-2	No calculator needed.

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plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.				
4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement. a. Understand that an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. b. Understand that an angle that turns through 1/360 of a circle is coaled a "one-degree angle", and can be used to measure angles. An angle that turns through n one-degree angles is said to have an angle measure of n degrees and represents a fractional portion of the circle.	✓		Topic 15: Lessons 15-2 and 15-3	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. No calculator needed.
4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	✓	✓	Topic 15: Lessons 15-4 and 15-6	No calculator needed.

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4.MD.C.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems, e.g., by using an equation with a letter for the unknown angle measure.	_	_	Topic 15: Lesson 15-5	This standard does not appear in the previous item releases or practice tests found in the Tennessee Department of Education Live Binder. However, this standard has been assessed on previous years TCAP practice assessments. A calculator could be utilized to check answers when solving addition and subtraction problems to find unknown angles on a diagram in real- world and mathematical problems.
4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.		✓	Topic 15: Lessons 15-1; TN 8 Topic 16: Lessons 16-1;16-3;16-6	Historically, this standard appeared on the non-calculator subpart of the TCAP practice assessment. No calculator needed.
4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Classify triangles based on the measure of the angles as right, acute, or obtuse.	✓		Topic 16: Lesson 16-2 and 16-3; 16-4 and 16-6	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. No calculator needed.
4.G.A.3 Recognize and draw lines of symmetry for two-dimensional figures.	✓		Topic 16: Lessons 16-4 and 16-5	Historically, this standard appeared on the calculator subpart of the TCAP practice assessment. No calculator needed.

(Note: Some standards may have been previously tested on the calculator and non-calculator subparts of the TCAP.)

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