Jefferson County Schools

Fourth Grade Math Curriculum

Fourth Grade Curriculum Guide
Tennessee State Standards

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Domain	Cluster	Topic 1 Content Standards Estimated _____ Days	Vocabulary	Focus
First Nine Weeks: **August 5, 2016 – October 7, 2016**				
4.NBT Number and Operations in Base Ten	**4.NBT.A** Generalize place value understanding for multi-digit whole numbers.	**1**. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division. **2**. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons **3**. Use place value understanding to round multi-digit whole numbers to any place.	**Place Value, Millions, Period, Expanded Form**	• **Numbers Through One Million** • **Place Value Relationships** • **Compare Whole Numbers** • **Round Whole Numbers** • **Construct Arguments**

Notes:

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Domain	Cluster	Topic 2 Content Standards Estimated _____ Days	Vocabulary	Focus
Number and Operations in Base Ten **Operations and Algebraic Thinking** 4.NBT 4.OA	**Use place value understanding and properties** **of operations to** **perform multi-digit arithmetic.** **Use the four operations with whole numbers to solve problems.** 4.NBT.B 4.OA.A	**4.** Fluently add and subtract multi-digit whole numbers using the standard algorithm. **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.	**Associative Property of Addition,** **Commutative Property of Addition,** **Identity Property of Addition,** **Counting On,** **Compensation,** **Variable,** **Algorithm,** **Inverse Operations**	• **Mental Math: Find Sums and Differences** • **Mental Math: Estimate Sums and Differences** • **Add Whole Numbers** • **Subtract Whole Numbers** • **Subtract Across Zeros** • **Reasoning**
Notes:				

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Domain	Cluster	Topic 3 Content Standards Estimated _____ Days	Vocabulary	Focus
4.NBT Number and Operations in Base Ten **4.OA Operations and Algebraic Thinking**	**4.NBT.B Use place value understanding and properties of operations to perform multi-digit arithmetic.** **4.OA.A Use the four operations with whole numbers to solve problems.**	**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. **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.	**Associative Property of Multiplication,** **Numerical Expression,** **Distributive Property,** **Compensation,** **Commutative Property of Multiplication,** **Partial Products**	• Mental Math: Multiply By Multiples of 10, 100, and 1000 • Mental Math: Round to Estimate Products • The Distributive Property • Mental Math Strategies for Multiplication • Arrays and Partial Products • Use Partial Products to Multiply by 1-Digit Numbers • Multiply 2- and 3-Digit Numbers by 1-Digit Numbers • Multiply 4-Digit by 1-Digit Numbers • Multiply by 1-Digit Numbers • Model with math

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Domain	Cluster	Topic 4 Content Standards Estimated _____ Days	Vocabulary	Focus
4.NBT Number and Operations in Base Ten **4.OA** Operations and Algebraic Thinking	**4.NBT.B** Use place value understanding and properties of operations to perform multi-digit arithmetic. **4.OA.A** Use the four operations with whole numbers to solve problems.	**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. **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. **Notes:** **Benchmark Testing First Nine Weeks**	**Compatible Numbers**	• **Mental Math: Multiply by Multiples of 10** • **Use Models to Multiply 2-Digit Numbers by Multiples of 10** • **Estimate: Use Rounding** • **Estimate: Use Compatible Numbers** • **Arrays and Partial Products** • **Multiply Using the Distributive Property** • **Use Partial Products to Multiply by 2-Digit Numbers** • **Multiply 2-Digit Numbers by Multiples of 10** • **Multiply 2-Digit by 2-Digit Numbers** • **Continue to Multiply by 2-Digit Numbers** • **Make Sense and Persevere**

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Domain	Cluster	Topic 5 Content Standards Estimated _____ Days	Vocabulary	Focus
		Second Nine Weeks: October 8, 2016 – December 16, 2016		
4.NBT Number and Operations in Base Ten **4.OA** Operations and Algebraic Thinking	**4.NBT.B** Use place value understanding and properties of operations to perform multi-digit arithmetic. **4.OA.A** Use the four operations with whole numbers to solve problems.	**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. **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. **Notes:**	**Remainder** **Partial Quotients**	• **Mental Math: Find Quotients** • **Mental Math: Estimate Quotients** • **Mental Math: Estimate Quotients for Greater Dividends** • **Interpret Remainders** • **Division as Sharing** • **Use Partial Quotients to Divide** • **Use Partial Quotients to Divide: Greater Dividends** • **Divide with 1-Digit Numbers** • **Continue to Divide with 1-Digit Numbers** • **Model with Math**

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Domain	Cluster	Topic 6 Content Standards Estimated _____ Days	Vocabulary	Focus
4.OA Operations and Algebraic Thinking **4.NBT** Number and Operations in Base Ten	**4.OA.A** Use the four operations with whole numbers to solve problems. **4.NBT.B** Use place value understanding and properties of operations to perform multi-digit arithmetic.	1. Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. 2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. 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. 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. 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.		• **Solve Comparison Situations** • **Continue to Solve Comparison Situations** • **Solve Multi-Step Problems** • **Solve More Multi-Step Problems** • **Make Sense and Persevere**
Notes:				

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Domain	Cluster	Topic 7 Content Standards Estimated _____ Days	Vocabulary	Focus
4.OA Operations and Algebraic Thinking **4.NBT** Number and Operations in Base Ten	**4.OA.B** Gain familiarity with factors and multiples. **4.NBT.B** Use place value understanding and properties of operations to perform multi-digit arithmetic.	**4.** Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. **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. **Notes:**	**Factor** **Factor Pairs** **Multiple** **Generalize** **Prime Number** **Composite Number**	• **Understand Factors** • **Factors** • **Repeated Reasoning** • **Prime and Composite Numbers** • **Multiples**

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Domain	Cluster	Topic 8 Content Standards Estimated _____ Days	Vocabulary	Focus
4.NF Number and Operations – Fractions	**4.NF.A Extend understanding of fraction equivalence and ordering.**	1. Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the 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. 2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or **Notes: Benchmark Testing Second Nine Weeks**	**Equivalent Fractions** **Fraction** **Numerator** **Denominator** **Common Factor** **Benchmark Fraction**	• **Equivalent Fractions: Area Models** • **Equivalent Fractions: Number Lines** • **Generate Equivalent Fractions: Multiplication** • **Generate Equivalent Fractions: Division** • **Use Benchmarks to Compare Fractions** • **Compare Fractions** • **Construct Arguments**

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Domain	Cluster	Topic 9 Content Standards Estimated _____ Days	Vocabulary	Focus
		Third Nine Weeks: January 5, 2017 – March 15, 2017		
4.NF Number and Operations – Fractions	**4.NF.B Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.**	**3**. Understand a fraction a/b with a > 1 as a sum of fractions 1/b. **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 than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 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. **c.** Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. **d.** Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. Notes:	**Decompose** **Compose** **Mixed Number**	• **Model Addition of Fractions** • **Decompose Fractions** • **Add Fractions with Like Denominators** • **Model Subtraction of Fractions** • **Subtract Fractions with Like Denominators** • **Add and Subtract Fractions with Like Denominators** • **Estimate Fraction Sums and Differences** • **Model Addition and Subtraction of Mixed Numbers** • **Add Mixed Numbers** • **Subtract Mixed Numbers** • **Model with Math**

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Domain	Cluster	Topic 10 Content Standards Estimated _____ Days	Vocabulary	Focus
4.NF Number and Operations – Fractions **4.MD** Measurement and Data	**4.NF.B** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. **4.MD.A** Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	**4**. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. **a.** Understand a fraction a/b 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 × (1/4). **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.) **c.** Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For 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? **3.** Understand a fraction a/b with a > 1 as a sum of fractions 1/b. **d.** Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. 2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	**Unit Fraction**	• **Fractions as Multiples of Unit Fractions: Use Models** • **Multiply A Fraction by A Whole Number: Use Models** • **Multiply A Fraction by A Whole Number: Use Symbols** • **Multiply A Whole Number and a Mixed Number** • **Solve Time Problems** • **Model with Math**
		Notes:		

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Domain	Cluster	Topic 11 Content Standards Estimated _____ Days	Vocabulary	Focus
4.MD Measurement and Data **4.NF** Number and Operations – Fractions	**4.MD.B** Represent and interpret data. **4.NF.A** Extend understanding of fraction equivalence and ordering. **4.NF.B** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	**4.** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. **3.** Understand a fraction a/b with a > 1 as a sum of fractions 1/b. **d.** Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. 1. Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the 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. **Notes:**	**Line Plot** **Outlier**	• **Read Line Plots** • **Make Line Plots** • **Use Line Plots to Solve Problems** • **Critique Reasoning**

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Domain	Cluster	Topic 12 Content Standards Estimated _____ Days	Vocabulary	Focus
4.NF Number and Operations – Fractions **4.MD** Measurement and Data	**4.NF.C** Understand decimal notation for fractions, and compare decimal fractions. **4.MD.A** Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	**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 100.4 For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100. (Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) **6.** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram. **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. Record the results of comparisons with the symbols >, =, or <, and Justify the conditions e.g., by using a visual model. **Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. **2.** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. **Notes: Benchmark Testing Third Nine Weeks**	**Tenth** **Hundredth** **Decimal** **Decimal Point**	• **Fractions and Decimals** • **Fractions and Decimals on the Number line** • **Compare Decimals** • **Add Fractions with Denominators of 10 and 100** • **Solve Word Problems Involving Money** • **Look for and Use Structure**

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Domain	Cluster	Topic 13 Content Standards Estimated _____ Days	Vocabulary	Focus
		Fourth Nine Weeks: March 16, 2017 – May 25, 2017		
4.MD Measurement and Data **4.NF** Number and Operations – Fractions **4.NBT** Number and Operations in Base Ten	**4.MD.A** Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. **4.NF.B** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. **4.NBT.B** Use place value understanding and properties of operations to perform multi-digit arithmetic.	**1.** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), … **2.** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. 3. Understand a fraction a/b with a > 1 as a sum of fractions 1/b d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. 4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For 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? 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. Fluently add and subtract multi-digit whole numbers using the standard algorithm.	**Capacity, Quart, Gallon, Cup, Pint, Fluid Ounce,** **Weight, Ounce, Pound, Ton,** **Millimeter, Centimeter, Meter, Kilometer,** **Mass, Milliliter, Liter, Gram, Milligram, Kilogram,** **Perimeter, Area, Formula**	• **Equivalence with Customary Units of Length** • **Equivalence with Customary Units of capacity** • **Equivalence with Customary Units of Weight** • **Equivalence with Metric Units of Length** • **Equivalence with Metric Units of Capacity and Mass** • **Solve Perimeter and Area Problems** • **Precision**

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Domain	Cluster	Topic 14 Content Standards Estimated _____ Days	Vocabulary	Focus
Operations and Algebraic Thinking **4.OA**	**Generate and analyze patterns.** **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 to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. **Notes:**	**Rule** **Repeating Pattern**	• **Number Sequences** • **Patterns: Number Rules** • **Pattern: Repeating Shapes** • **Look for and Use Structure**

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Domain	Cluster	Topic 15 Content Standards Estimated _____ Days	Vocabulary	Focus

4.MD   Measurement and Data
4.G   Geometry
	4.MD. C Geometric measurement: understand concepts of angle and measure angles.
	4.G.A Draw and identify lines and angles, and classify shapes by properties of their lines and angles.
		5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
		      a. 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. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.
		      b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.
		
		6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
		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 symbol for the unknown angle measure.
		
		Notes:
			**Point,
			Line,
			Line Segment,
			Ray,
			Right Angle,
			Acute Angle,
			Obtuse Angle,
			Straight Angle
			Degree
			Unit Angle,
			Angle Measure,
			Degree,
			Unit Angle,
			Angle Measure,
			Protractor,
			Vertex,**
				• **Lines, Rays, and Angles**
				• **Understand Angles and Unit Angles**
				• **Measure with Unit Angles**
				• **Measure and draw Angles**
				• **Add and subtract Angle Measures**
				• **Use Appropriate Tools**

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Domain	Cluster	Topic 16 Content Standards Estimated _____ Days	Vocabulary	Focus
4.G Geometry	4.G.A Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	**1.** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two dimensional figures. **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. Recognize right triangles as a category, and identify right triangles. **3.** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. **Notes:** **State Testing (TCAP)**	**Parallel Lines, Perpendicular Lines, Intersecting Lines, Right Triangle, Obtuse Triangle, Acute Triangle, Equilateral Triangle, Isosceles Triangle, Scalene Triangle, Parallelogram, Rectangle, Square, Rhombus, Trapezoid, Line Symmetric, Line of Symmetry,**	• **Lines** • **Classify Triangles** • **Classify Quadrilaterals** • **Line Symmetry** • **Draw Shapes with Line Symmetry** • **Critique Reasoning**