

BENCHMARK COMPLEXITY REPORT

MATHEMATICS GRADE 4



Key: **OCS Code** = The benchmark code. Consists of Grade (K-8), Domain (2-3 character alpha code), Strand (1-3 character alpha code), Standard (1-9), Benchmark Number (1 or 1-1 and up), and Complexity (a, b, c).
Benchmark = The wording of the benchmark.
CCSS Code = Common Core State Standards, developed by National Governors Association Center for Best Practices, Council of Chief State School Officers (www.corestandards.org).
CRS Strand = ACT College Readiness Standards developed by ACT, Inc. (www.act.org).
The CRS Strands are: BOA = Basic Operations & Applications, PSD = Probability/Statistics/Data, NCP = Numbers/Concepts/Properties, XEI = Expression/Equation & Inequality, GRE = Graphical Representations, PPF = Properties of Plane Figures, MEA = Measurement, FUN = Functions.

a. Low Complexity				b. Intermediate Complexity				c. High Complexity			
OCS Code	Benchmark	CCSS Code	CRS Strand	OCS Code	Benchmark	CCSS Code	CRS Strand	OCS Code	Benchmark	CCSS Code	CRS Strand
DOMAIN: Standards for Mathematical Content											
Operations and Algebraic Thinking											
4.SMC.OA.1.1-1.a	Interpret a multiplication equation as a comparison	4.OA.A.1	BOA	4.SMC.OA.1.2-1.b	Multiply or divide to solve word problems involving multiplicative comparison	4.OA.A.2	BOA	4.SMC.OA.1.3-1.c	Solve multistep word problems involving whole numbers and having whole-number answers	4.OA.A.3	BOA
4.SMC.OA.1.1-2.a	Represent verbal statements of multiplicative comparisons as multiplication equations	4.OA.A.1	BOA	4.SMC.OA.1.2-2.b	Distinguish multiplicative comparison from additive comparison	4.OA.A.2	BOA	4.SMC.OA.1.3-2.c	Use equations with a letter standing for the unknown quantity to represent multistep word problems involving whole numbers and having whole-number answers	4.OA.A.3	XEI
				4.SMC.OA.2.4-1.b	Find all factor pairs for a whole number in the range 1–100	4.OA.B.4	NCP	4.SMC.OA.1.3-3.c	Use mental computation and estimation strategies to assess the reasonableness of answers to multistep word problems involving whole numbers and having whole number answers	4.OA.A.3	BOA
				4.SMC.OA.2.4-2.b	Relate a whole number to a multiple of each of its factors	4.OA.B.4	NCP	4.SMC.OA.3.1-1.c	Generate a number or shape pattern that follows a given rule	4.OA.C.5	NCP
				4.SMC.OA.2.4-3.b	Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number	4.OA.B.4	NCP	4.SMC.OA.3.1-2.c	Identify features of a number or shape pattern that were not explicit in the rule itself	4.OA.C.5	NCP
				4.SMC.OA.2.4-4.b	Determine whether a given whole number in the range 1–100 is prime or composite	4.OA.B.4	NCP	4.SMC.OA.3.1-3.c	Explain why a number pattern alternates between odd and even numbers	4.OA.C.5	NCP
Number and Operations in Base Ten											
4.SMC.NBT.1.1.a	Define the concept of place value by representing that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right	4.NBT.A.1	NCP	4.SMC.NBT.1.2-3.b	Record the results of comparisons between multi-digit numbers using the symbols >, =, and <	4.NBT.A.2	NCP	4.SMC.NBT.2.2-3.c	Explain the calculation of multiplying a whole number of up to four digits by a one-digit whole number	4.NBT.B.5	NCP
4.SMC.NBT.1.2-1.a	Identify multi-digit whole numbers using base-ten numerals, number names and expanded form	4.NBT.A.2	NCP	4.SMC.NBT.1.3.b	Round multi-digit whole numbers to any place	4.NBT.A.3	NCP	4.SMC.NBT.2.2-4.c	Explain the calculation of multiplying two two-digit numbers	4.NBT.B.5	NCP
4.SMC.NBT.1.2-2.a	Write multi-digit whole numbers using base-ten numerals, number names and expanded form	4.NBT.A.2	NCP	4.SMC.NBT.2.2-1.b	Use strategies based on place value and the properties of operations to multiply a whole number of up to four digits by a one-digit whole number	4.NBT.B.5	BOA	4.SMC.NBT.2.3-2.c	Explain the calculation of whole-number quotients and remainders with up to four-digit dividends and one-digit divisors	4.NBT.B.6	NCP
4.SMC.NBT.2.1.a	Add and subtract multi-digit whole numbers fluently using the standard algorithm	4.NBT.B.4	BOA	4.SMC.NBT.2.2-2.b	Use strategies based on place value and the properties of operations to multiply two two-digit numbers	4.NBT.B.5	BOA				
				4.SMC.NBT.2.3-1.b	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors	4.NBT.B.6	BOA				
Number and Operations - Fractions											
4.SMC.NF.1.1-1.a	Describe the relationship between a fraction a/b and its equivalent fraction (n × a)/(n × b) by using visual fraction models	4.NF.A.1	NCP	4.SMC.NF.1.1-2.b	Generate equivalent fractions using the principle that a fraction a/b is equivalent to a fraction (n × a)/(n × b)	4.NF.A.1	NCP	4.SMC.NF.1.2-3.c	Record the results of comparisons of two fractions with different numerators and different denominators using symbols >, =, or <	4.NF.A.2	NCP
4.SMC.NF.2.1-1.a	Join parts referring to the same whole when adding fractions	4.NF.B.3a	NCP	4.SMC.NF.1.2-1.b	Compare two fractions with different numerators and different denominators	4.NF.A.2	NCP	4.SMC.NF.2.1-4.c	Justify the decomposition of a fraction into a sum of fractions with the same denominator	4.NF.B.3b	BOA
4.SMC.NF.2.1-2.a	Separate parts referring to the same whole when subtracting fractions	4.NF.B.3a	NCP	4.SMC.NF.1.2-2.b	Show that comparisons between two fractions with different numerators and denominators are valid only when the two fractions refer to the same whole	4.NF.A.2	NCP	4.SMC.NF.2.1-6.c	Solve word problems involving addition and subtraction of fractions having like denominators referring to the same whole	4.NF.B.3d	BOA
4.SMC.NF.2.2-1.a	Demonstrate that a fraction a/b is a multiple of 1/b	4.NF.B.4a	NCP	4.SMC.NF.2.1-3.b	Write an equation recording the decomposition of a fraction into a sum of fractions with the same denominator	4.NF.B.3b	BOA	4.SMC.NF.2.2-3.c	Solve word problems involving multiplication of a fraction by a whole number	4.NF.B.4c	BOA
				4.SMC.NF.2.1-5.b	Add and subtract mixed numbers with like denominators	4.NF.B.3c	BOA	4.SMC.NF.3.3-1.c	Compare two decimals to the hundredth place	4.NF.C.7	NCP



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				4.SMC.NF.2.2-2.b	Multiply a fraction by a whole number to show that a multiple of a/b is a multiple of $1/b$	4.NF.B.4b	BOA	4.SMC.NF.3.3-2.c	Show that comparisons between two decimals to the hundredth are valid only when the two decimals refer to the same whole	4.NF.C.7	NCP
				4.SMC.NF.3.1-1.b	Express a fraction with denominator 10 as an equivalent fraction with denominator 100	4.NF.C.5	NCP	4.SMC.NF.3.3-3.c	Record the results of comparisons of two decimals to hundredths with the symbols $>$, $=$, or $<$, and justify the conclusions	4.NF.C.7	NCP
				4.SMC.NF.3.1-2.b	Add two fractions with respective denominators 10 and 100 by using the technique of expressing a fraction with denominator 10 as an equivalent fraction with denominator 100	4.NF.C.5	BOA				
				4.SMC.NF.3.2.b	Translate fractions with denominators 10 or 100 into decimals	4.NF.C.6	NCP				
Measurement and Data											
4.SMC.MD.1.1-1.a	Name relative sizes of measurement units within one system of measurement	4.MD.A.1	MEA	4.SMC.MD.1.1-2.b	Express measurements in a larger unit in terms of a smaller unit within a single system of measurement	4.MD.A.1	BOA	4.SMC.MD.1.2-1.c	Use the four operations to solve word problems involving simple fractions	4.MD.A.2	BOA
4.SMC.MD.3.1-2.a	Show that an angle that turns through n one-degree angles has an angle measurement of n degrees	4.MD.C.5b	PPF	4.SMC.MD.1.1-3.b	Record measurement equivalents in a two column table within a single system of measurement	4.MD.A.1	BOA	4.SMC.MD.1.2-2.c	Use the four operations to solve word problems involving decimals	4.MD.A.2	BOA
				4.SMC.MD.3.1-1.b	Show that an angle is measured with reference to a circle with its center at the common endpoint of the rays	4.MD.C.5a	PPF	4.SMC.MD.1.2-3.c	Use the four operations to solve word problems that require expressing measurements given in a larger unit in terms of a smaller unit	4.MD.A.2	BOA
				4.SMC.MD.3.2-1.b	Measure angles in whole-number degrees using a protractor	4.MD.C.6	PPF	4.SMC.MD.1.2-4.c	Represent measurement quantities using diagrams to solve word problems	4.MD.A.2	MEA
				4.SMC.MD.3.2-2.b	Sketch angles of specified measure in whole-number degrees using a protractor	4.MD.C.6	PPF	4.SMC.MD.1.3-1.c	Apply the area formula for rectangles in real world and mathematical problems	4.MD.A.3	MEA
				4.SMC.MD.3.3-1.b	Show that angle measure is additive	4.MD.C.7	PPF	4.SMC.MD.1.3-2.c	Apply the perimeter formula for rectangles in real world and mathematical problems	4.MD.A.3	MEA
								4.SMC.MD.2.1-1.c	Make a line plot to display a data set of measurements in fractions of a unit	4.MD.B.4	PSD
								4.SMC.MD.2.1-2.c	Solve problems involving addition and subtraction of fractions by using information presented in line plots	4.MD.B.4	PSD
								4.SMC.MD.3.3-2.c	Use a diagram to find unknown angles in solving real world addition and subtraction problems	4.MD.C.7	PPF
Geometry											
4.SMC.G.1.1-1.a	Draw points, lines, line segments, rays, angles, perpendicular lines, and parallel lines	4.G.A.1	PPF	4.SMC.G.1.2-1.b	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines	4.G.A.2	PPF	4.SMC.G.1.3-2.c	Identify line-symmetric figures for a two-dimensional figure	4.G.A.3	MEA
4.SMC.G.1.1-2.a	Identify points, lines, line segments, rays, angles, perpendicular, and parallel lines in two-dimensional figures	4.G.A.1	PPF	4.SMC.G.1.2-2.b	Classify two-dimensional figures based on the presence or absence of angles of a specified size	4.G.A.2	PPF	4.SMC.G.1.3-3.c	Draw lines of symmetry for a two-dimensional figure	4.G.A.3	MEA
				4.SMC.G.1.2-3.b	Classify right triangles as a category of angles	4.G.A.2	PPF				
				4.SMC.G.1.2-4.b	Identify right triangles	4.G.A.2	PPF				
				4.SMC.G.1.3-1.b	Express a line of symmetry for a two-dimensional figure as a line across the figure	4.G.A.3	MEA				
DOMAIN: Standards for Mathematical Practices											
Solve Problems											
								4.SMP.1.c	Make sense of problems and persevere in solving them	MP1	
Reason											
								4.SMP.2.c	Reason abstractly and quantitatively	MP2	
Construct Arguments											
								4.SMP.3.c	Construct viable arguments and critique the reasoning of others	MP3	
Model											

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								4.SMP.4.c	Model with mathematics	MP4	
Use Tools											
								4.SMP.5.c	Use appropriate tools strategically	MP5	
Attend to Precision											
								4.SMP.6.c	Attend to precision	MP6	
Use Structure											
								4.SMP.7.c	Look for and make use of structure	MP7	
Express Regularity											
								4.SMP.8.c	Look for and express regularity in repeated reasoning	MP8	