

# BENCHMARK COMPLEXITY REPORT

## MATHEMATICS GRADE 3



**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 |
| <b>DOMAIN: Standards for Mathematical Content</b> |   |           |            |                            |  |           |            |                    |  |           |            |
| <b>Operations and Algebraic Thinking</b>          |   |           |            |                            |  |           |            |                    |  |           |            |
| 3.SMC.OA.1.1.a                                    | Interpret products of whole numbers   | 3.OA.A.1  | BOA        | 3.SMC.OA.1.3-1.b           | Use multiplication and division with numbers up to 100 to solve word problems in situations involving equal groups                             | 3.OA.A.3  | BOA        | 3.SMC.OA.2.1.c     | Multiply and divide using properties of operations   | 3.OA.B.5  | BOA        |
| 3.SMC.OA.1.2.a                                    | Interpret whole-number quotients of whole numbers   | 3.OA.A.2  | BOA        | 3.SMC.OA.1.3-2.b           | Use multiplication and division with numbers up to 100 to solve word problems in situations involving arrays                                   | 3.OA.A.3  | BOA        | 3.SMC.OA.4.1-1.c   | Solve two-step word problems using the four operations   | 3.OA.D.8  | BOA        |
|   |   |           |            | 3.SMC.OA.1.3-3.b           | Use multiplication and division with numbers up to 100 to solve word problems in situations involving measurement quantities                   | 3.OA.A.3  | BOA        | 3.SMC.OA.4.1-2.c   | Represent two-step word problems using equations with a letter standing for the unknown quantity                               | 3.OA.D.8  | XEI        |
|   |   |           |            | 3.SMC.OA.1.4.b             | Determine the unknown whole number in a multiplication or division equation relating three whole numbers                                       | 3.OA.A.4  | BOA        | 3.SMC.OA.4.1-3.c   | Assess the reasonableness of an answer after solving a two-step word problems using the four operations                        | 3.OA.D.8  | BOA        |
|   |   |           |            | 3.SMC.OA.2.2.b             | Show that division is the multiplication of the dividend and divisor of a number   | 3.OA.B.6  | BOA        | 3.SMC.OA.4.2-1.c   | Identify arithmetic patterns found in an addition or multiplication table  | 3.OA.D.9  | NCP        |
|   |   |           |            | 3.SMC.OA.3.1.b             | Multiply and divide numbers up to 100 fluently   | 3.OA.C.7  | BOA        | 3.SMC.OA.4.2-2.c   | Explain arithmetic patterns found in an addition or multiplication table by using properties of operations                     | 3.OA.D.9  | NCP        |
| <b>Number and Operations in Base Ten</b>          |   |           |            |                            |  |           |            |                    |  |           |            |
| 3.SMC.NBT.1.1.a                                   | Use place value understanding to round whole numbers to the nearest 10 or 100   | 3.NBT.A.1 | NCP        | 3.SMC.NBT.1.3.b            | Use strategies based on place value and properties of operations to multiply one-digit whole numbers by multiples of 10 in the range 10-90     | 3.NBT.A.3 | NCP        |                    |  |           |            |
| 3.SMC.NBT.1.2.a                                   | Use strategies and algorithms to fluently add and subtract numbers up to 1000   | 3.NBT.A.2 | BOA        |                            |  |           |            |                    |  |           |            |
| <b>Number and Operations - Fractions</b>          |   |           |            |                            |  |           |            |                    |  |           |            |
| 3.SMC.NF.1.1-1.a                                  | Show that a fraction $1/b$ is equal to the quantity formed by 1 part when a whole is partitioned into $b$ equal parts | 3.NF.A.1  | NCP        | 3.SMC.NF.1.2-1.b           | Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts | 3.NF.A.2a | GRE        | 3.SMC.NF.1.3-2.c   | Generate simple equivalent fractions   | 3.NF.A.3b | NCP        |
| 3.SMC.NF.1.1-2.a                                  | Show that a fraction $a/b$ is equal to the quantity formed by $a$ parts of size $1/b$                                 | 3.NF.A.1  | NCP        | 3.SMC.NF.1.2-2.b           | Demonstrate that each part on a number line diagram has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$       | 3.NF.A.2a | GRE        | 3.SMC.NF.1.3-3.c   | Use a fraction model to explain why fractions are equivalent   | 3.NF.A.3b | NCP        |
|   |   |           |            | 3.SMC.NF.1.2-3.b           | Represent a fraction $a/b$ on a number line diagram by marking off " $a$ " lengths $1/b$ from 0  | 3.NF.A.2b | GRE        | 3.SMC.NF.1.3-5.c   | Express whole numbers as fractions   | 3.NF.A.3c | NCP        |
|   |   |           |            | 3.SMC.NF.1.2-4.b           | Explain that an interval on a number line diagram has size $a/b$ and that its endpoint locates the number $a/b$ on the number line             | 3.NF.A.2b | GRE        | 3.SMC.NF.1.3-6.c   | Compare the size of two fractions with the same numerator or denominator   | 3.NF.A.3d | NCP        |
|   |   |           |            | 3.SMC.NF.1.3-1.b           | Identify two fractions as equivalent if they are the same size or the same point on a number line  | 3.NF.A.3a | GRE        | 3.SMC.NF.1.3-7.c   | Explain why comparisons are valid only when two fractions with the same numerator or denominator refer to the same whole       | 3.NF.A.3d | NCP        |
|   |   |           |            | 3.SMC.NF.1.3-4.b           | Relate fractions to whole numbers  | 3.NF.A.3c | NCP        | 3.SMC.NF.1.3-8.c   | Record the results of comparisons of two fractions with the same numerator or denominator with the symbols $>$ , $=$ , and $<$ | 3.NF.A.3d | NCP        |
|   |   |           |            |                            |  |           |            | 3.SMC.NF.1.3-9.c   | Use a fraction model to justify conclusions based on comparisons of fractions with the same numerator or denominator           | 3.NF.A.3d | NCP        |
| <b>Measurement and Data</b>                       |   |           |            |                            |  |           |            |                    |  |           |            |
| 3.SMC.MD.1.1-1.a                                  | Tell time to the nearest minute   | 3.MD.A.1  | MEA        | 3.SMC.MD.1.1-4.b           | Solve word problems involving addition and subtraction of time intervals in minutes  | 3.MD.A.1  | MEA        | 3.SMC.MD.1.2-3.c   | Solve one-step word problems involving masses or volumes that are given in the same units                                      | 3.MD.A.2  | MEA        |

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|---|--|-----------|------------|----------------------------|---|-----------|------------|--------------------|--|-----------|------------|
| OCS Code  | Benchmark  | CCSS Code | CRS Strand | OCS Code                   | Benchmark   | CCSS Code | CRS Strand | OCS Code           | Benchmark  | CCSS Code | CRS Strand |
| 3.SMC.MD.1.1-2.a                                    | Write time to the nearest minute                                       | 3.MD.A.1  | MEA        | 3.SMC.MD.1.2-1.b           | Measure liquid volumes and masses of objects using standard units   | 3.MD.A.2  | MEA        | 3.SMC.MD.2.1-1.c   | Draw a scaled picture graph to represent a data set with several categories  | 3.MD.B.3  | PSD        |
| 3.SMC.MD.1.1-3.a                                    | Measure time intervals in minutes                                      | 3.MD.A.1  | MEA        | 3.SMC.MD.1.2-2.b           | Estimate liquid volumes and masses of objects using standard units  | 3.MD.A.2  | MEA        | 3.SMC.MD.2.1-2.c   | Draw a scaled bar graph to represent a data set with several categories  | 3.MD.B.3  | PSD        |
| 3.SMC.MD.2.2-1.a                                    | Measure lengths using rulers marked with halves and fourths of an inch | 3.MD.B.4  | MEA        | 3.SMC.MD.3.3-2.b           | Compare methods of finding the area of a rectangle  | 3.MD.C.7a | MEA        | 3.SMC.MD.2.1-3.c   | Solve one and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs         | 3.MD.B.3  | PSD        |
| 3.SMC.MD.3.1-1.a                                    | Relate area to attributes of plane figures                             | 3.MD.C.5a | MEA        | 3.SMC.MD.3.3-3.b           | Solve real world and mathematical problems by multiplying side lengths to find areas of rectangles with whole number side lengths | 3.MD.C.7b | MEA        | 3.SMC.MD.2.2-2.c   | Make a line plot using lengths, measured by a ruler, where the horizontal scale is marked off in appropriate units           | 3.MD.B.4  | PSD        |
| 3.SMC.MD.3.1-2.a                                    | Identify concepts of area measurement                                  | 3.MD.C.5b | MEA        |                            |   |           |            | 3.SMC.MD.3.3-4.c   | Show that the area of a rectangle with whole-number side lengths $a$ and $b + c$ is the sum of $a \times b$ and $a \times c$ | 3.MD.C.7c | MEA        |
| 3.SMC.MD.3.2-a                                      | Measure areas by counting unit squares                                 | 3.MD.C.6  | MEA        |                            |   |           |            | 3.SMC.MD.3.3-5.c   | Use models to represent the distributive property in finding the area of a rectangle with whole-number side lengths          | 3.MD.C.7c | MEA        |
| 3.SMC.MD.3.3-1.a                                    | Find the area of a rectangle with whole-number side lengths            | 3.MD.C.7a | MEA        |                            |   |           |            | 3.SMC.MD.3.3-6.c   | Decompose the area of rectilinear figures into non-overlapping rectangles  | 3.MD.C.7d | MEA        |
|   |  |           |            |                            |   |           |            | 3.SMC.MD.3.3-7.c   | Show that the area of rectangles is additive   | 3.MD.C.7d | MEA        |
|   |  |           |            |                            |   |           |            | 3.SMC.MD.3.3-8.c   | Add the areas of non-overlapping rectangular parts   | 3.MD.C.7d | MEA        |
|   |  |           |            |                            |   |           |            | 3.SMC.MD.3.3-9.c   | Solve real world problems by adding the areas of non-overlapping rectangular parts   | 3.MD.C.7d | MEA        |
|   |  |           |            |                            |   |           |            | 3.SMC.MD.4.1-1.c   | Solve real world and mathematical problems calculating perimeters of polygons  | 3.MD.D.8  | MEA        |
|   |  |           |            |                            |   |           |            | 3.SMC.MD.4.1-2.c   | Solve real world and mathematical problems by exhibiting rectangles with the same perimeter and different areas              | 3.MD.D.8  | MEA        |
|   |  |           |            |                            |   |           |            | 3.SMC.MD.4.1-3.c   | Solve real world and mathematical problems by exhibiting rectangles with the same area and different perimeters              | 3.MD.D.8  | MEA        |
| <b>Geometry</b>                                     |  |           |            |                            |   |           |            |                    |  |           |            |
|   |  |           |            | 3.SMC.G.1.1-1.b            | Recognize that shapes in different categories may share attributes, and that the shared attributes can define a larger category   | 3.G.A.1   | MEA        | 3.SMC.G.1.2-1.c    | Partition shapes into parts with equal areas   | 3.G.A.2   | MEA        |
|   |  |           |            | 3.SMC.G.1.1-2.b            | Identify examples of quadrilaterals including rhombuses, rectangles, and squares  | 3.G.A.1   | MEA        | 3.SMC.G.1.2-2.c    | Express the area of equally partitioned parts as a unit fraction of the whole  | 3.G.A.2   | MEA        |
|   |  |           |            | 3.SMC.G.1.1-3.b            | Draw examples of quadrilaterals that are not rhombuses, rectangles, and squares   | 3.G.A.1   | MEA        |                    |  |           |            |
| <b>DOMAIN: Standards for Mathematical Practices</b> |  |           |            |                            |   |           |            |                    |  |           |            |
| <b>Solve Problems</b>                               |  |           |            |                            |   |           |            |                    |  |           |            |
|   |  |           |            |                            |   |           |            | 3.SMP.1.c          | Make sense of problems and persevere in solving them   | MP1       |            |
| <b>Reason</b>                                       |  |           |            |                            |   |           |            |                    |  |           |            |
|   |  |           |            |                            |   |           |            | 3.SMP.2.c          | Reason abstractly and quantitatively   | MP2       |            |
| <b>Construct Arguments</b>                          |  |           |            |                            |   |           |            |                    |  |           |            |
|   |  |           |            |                            |   |           |            | 3.SMP.3.c          | Construct viable arguments and critique the reasoning of others  | MP3       |            |
| <b>Model</b>  |  |           |            |                            |   |           |            |                    |  |           |            |
|   |  |           |            |                            |   |           |            | 3.SMP.4.c          | Model with mathematics   | MP4       |            |
| <b>Use Tools</b>                                    |  |           |            |                            |   |           |            |                    |  |           |            |
|   |  |           |            |                            |   |           |            | 3.SMP.5.c          | Use appropriate tools strategically  | MP5       |            |
| <b>Attend to Precision</b>                          |  |           |            |                            |   |           |            |                    |  |           |            |
|   |  |           |            |                            |   |           |            | 3.SMP.6.c          | Attend to precision  | MP6       |            |
| <b>Use Structure</b>                                |  |           |            |                            |   |           |            |                    |  |           |            |
|   |  |           |            |                            |   |           |            | 3.SMP.7.c          | Look for and make use of structure   | MP7       |            |
| <b>Express Regularity</b>                           |  |           |            |                            |   |           |            |                    |  |           |            |

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|-------------------|-----------|-----------|------------|----------------------------|-----------|-----------|------------|--------------------|---|-----------|------------|
| OCS Code          | Benchmark | CCSS Code | CRS Strand | OCS Code                   | Benchmark | CCSS Code | CRS Strand | OCS Code           | Benchmark   | CCSS Code | CRS Strand |
|                   |           |           |            |                            |           |           |            | 3.SMP.8.c          | Look for and express regularity in repeated reasoning | MP8       |            |