Introduction

The Math Test Specifications provide an overview of the structure and content of Ohio's State Test. This overview includes a description of the test design as well as information on the types of items that will appear on the test. Also included is a test blueprint, a document that identifies the range and distribution of points grouped into various reporting categories (e.g., Fractions, Ratios and Proportions, Functions, Probability). The specifications also provide specific guidelines for the development of all items used for Ohio's math tests.
This document is a resource not only for item writers and test designers, but also for Ohio educators and other stakeholders who are interested in a deeper understanding of the test.

Overview of Structure and Content

Ohio's Learning Standards

In 2017, Ohio adopted revisions to Ohio's Learning Standards for Mathematics which include standards for mathematical content and mathematical practice. Then, based on the 2017 Standards, Ohio adopted revisions to the Model Curriculum, a document that connects standards to instruction. The mathematics assessment items (test questions) align to the 2017 Standards.

Standards for Mathematical Practice

The Standards for Mathematical Practice (SMP) describe skills that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The design of each item on Ohio's state tests encourages students to use one or more Standards for Mathematical Practice. Below is a list of the mathematical practices.

Grade 3 Standards for Mathematical Practice
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Blueprint

Test blueprints serve as a guide for test construction and provide an outline of the content and skills to be measured on the test. They contain information about the number of points of opportunity students will encounter in each reporting category on the math test. The following test blueprint displays the distribution of the content standards and depth of knowledge across the entire test and categories for reporting test results for Grade 3.

Reporting Category	Standards				Approximate Portion of Test
Multiplication and Division	3.OA.1	3.OA.4	3.OA.7	3.NBT.3	23% – 33% 12 – 16 points
	3.OA.2	3.OA.5	3.OA.8		
	3.OA.3	3.OA.6	3.OA.9		
Number and Operations	3.NBT.1	3.MD.1			21% – 27% 11 – 13 points
	3.NBT.2	3.MD.2			
		3.MD.3			
Geometry	3.MD.5	3.MD.7	3.G.1		21% – 27% 11 – 13 points
	3.MD.6	3.MD.8	3.G.2		
Fractions	3.NF.1	3.NF.3	3.MD.4		21% – 27% 11 – 13 points
	3.NF.2				
				Total Test	49 – 51 points

Modeling and Reasoning*
(minimum 20%)

Depth of Knowledge (DOK) Level	Approximate Portion of Test
1	9 – 16 points
2	23 – 33 points
3	5 – 13 points

Modeling and Reasoning

Modeling and Reasoning are included in the eight Standards for Mathematical Practice within Ohio's Learning Standards. Each grade's blueprint identifies modeling and reasoning as an independent reporting category that will account for a minimum of 20 percent of the overall points on that grade's test.

Depth of Knowledge (DOK)

DOK refers to the complexity of thinking required to complete a task in a given item. Items with a DOK 1 designation focus on the recall of information, such as definitions and terms, and simple procedures. Items with a DOK 2 designation require students to make decisions, solve routine problems, perform calculations, or recognize patterns. Items with a DOK 3 designation feature higher-order cognitive tasks. These DOK 3 tasks include but are not limited to: critiquing a statement and forming a conclusion; explaining, justifying, or proving a statement; or approaching abstract, complex, open-ended, and non-routine problems. Each grade's blueprint contains information about the number of points of opportunity students will encounter at each DOK level.

Test Design

The assessment is a two-part test, developed in a computer-based format and a paper-based format. Its purpose is to measure student progress and provide information to parents, teachers, and building, district and state administrators. The test will contain technology-enhanced items that require the student to enter a response into the computer interface. The test will be administered near the end of the academic school year or the end of a semester (for high school). The test can be administered in one or two sessions. After the student has completed both parts of the test, his or her scores will be combined to yield a comprehensive test score. Test results are reported back to schools by June 30th.

Performance Level Descriptors (PLDs)

At each grade level/course, PLDs are general statements describing what students should know or be able to do at each performance level.

After the Ohio State Mathematics test is scored, each student's performance level is identified based on the combined scores (Part 1 and Part 2). Districts and schools are sent item level reports and the performance level for each student along with the performance level descriptors. Teachers and math coaches can use this information for their instructional design.

Calculator

Calculators are **not** permitted for use on either the paper-based or computer-based mathematics test for grades 3-5. Grades 6 and 7 have a non-calculator part and a calculator part for both the paper-based and the computer-based mathematics test. The calculator designation for items in grades 6 and 7 is decided during development on an item-by-item basis. A calculator may be used on the entire grade 8 and high school End of Course (EOC) paper-based or computer-based mathematics tests. Note that calculator usage may differ for those students with an Individualized Education Plan (IEP) or 504 plan that specifies a calculator accommodation.

- Guidance on Desmos Calculator for Grades 3-8
- Grades 3-8 Handheld Calculator Guidance

- Guidance on Desmos Calculator for High School
- High School Handheld Calculator Guidance

Interaction Types

Ohio's State Tests are composed of several interaction types. Currently, there are ten interaction types that may appear on a math computer-based assessment:

- Equation Item (EQ)
- Gap Match Item (GM)
- Grid Item (GI)
- Hot Text Item (HT)
- Inline Choice Item (IC)
- Matching Item (MI)
- Multiple Choice Item (MC)
- Multi Select Item (MS)
- Simulation Item (Sim)
- Table Item (TI)

For paper-based assessments (including those for students with an IEP or 504 plan that specifies a paper-based accommodation), the items may be modified so that they can be scanned and scored electronically or hand-scored.

Interaction Type	Description
Equation Item (EQ)	The student is presented with a keypad that includes a variety of mathematical symbols that can be used to create a response. Responses may be in the form of a number, variable, expression, or equation, as appropriate to the test item. The student enters their response in the response box which may be on a line by itself, or embedded in a sentence or phrase. For paper-based assessments, this interaction type may be replaced with a modified version of the item that can be scanned and scored electronically or the student may be given an answer box to write their answer.
Gap Match Item (GM)	Given a set of options (e.g., numbers, words, phrases, or sentences) the student hovers over the options which then highlight, indicating that the option is selectable. The student can then click on the object, hold down the mouse button, and drag it to an answer area, indicated by a dotted box, in a graphic, table, or paragraph. For paper-based assessments, the options are associated with a letter, and students write a letter for their response in each response area.

Interaction Type	Description
Grid Item (GI)	The student may select numbers, words, phrases, or images to display their response. The student may also use the drag-and-drop feature to place objects into a response area. This interaction type may also require the student to use the point, line, or arrow tools to create a response on a graph or gridded area. For paper-based assessments, the student may be given the response space to draw their answer, or this interaction type may be replaced with another interaction type that assesses the same standard at the same level of difficulty and can be scanned and scored electronically.
Hot Text Item (HT)	**Selectable Hot Text -** Given a set of options (e.g., phrases, sentences, or numbers) the student hovers over the options which then highlight, indicating that the text is selectable ("hot"). The student can then click on an option to select it as their response. For paper-based assessments, a "selectable" hot text item is modified so that it can be scanned and scored electronically. The student fills in a circle to indicate the correct response.
	Drag-and-Drop Hot Text - Given a set of options (e.g., numbers, words, phrases, or sentences) the student hovers over the options which then highlight, indicating that the option is selectable ("hot"). The student can then click on the object, hold down the mouse button, and drag it to a graphic, table, or paragraph. For paper-based assessments, the options are associated with a letter, and students write a letter for their response in each response area.
Inline Choice Item (IC)	Given a sentence, paragraph, or table, the student clicks a blank box embedded within a sentence or table which reveals a drop-down menu containing options for completing a sentence or table. The student then selects an option from the drop-down menu to respond. For paper-based assessments, the interaction is modified so that it can be scanned and scored electronically. The student fills in a circle to indicate the correct response.
Matching Item (MI)	Given column and row headers in a table format, the student checks a box to indicate if information from a column header matches information from a row header. For paper-based assessments, the interaction is modified so that it can be scanned and scored electronically. The student fills in a circle to indicate the correct response.
Multiple Choice Item (MC)	The student selects one correct answer from four options. For paper-based assessments, the student fills in a circle to indicate the correct response.

Interaction Type	Description
Multi Select Item (MS)	The student is directed to either select an indicated number of correct answers or to select all of the correct answers. Students in grades 3-5 always select an indicated number of correct answers; students in grades 6-8 select an indicated number of correct answers on 50% of the items and select all on 50% of the items; and students taking high school end-of-course tests are always directed to select all correct answers. These items are different from multiple choice items, and require the student to select 2 or more correct answers. For paper-based assessments, the student fills in circles to indicate the correct responses.
Simulation Item (Sim)	Given a set of instructions, the student may interact with any of the following controls to generate data: radio buttons, drop-down menus, slide bars, or selecting a number by clicking arrows. Once the student has set the parameters, they click the start button to begin the simulation and generate a data set. Once the student has enough data, they may answer questions about the data using a different interaction type. For paper-based assessments, this interaction will be replaced with another interaction type that assesses the same standard at the same level of difficulty and can be scanned and scored electronically.
Table Item (TI)	The student types numeric values into a given table. The student may complete the entire table or portions of the table depending on what is being asked. For paper-based assessments, the student writes their responses in the blank boxes of the table.

Specific Guidelines for Item Development

Standards are presented according to reporting categories as shown on grade level or course blueprints.

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Represent and solve problems involving multiplication and division.** ***3.OA.1*** Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. (Note: These standards are written with the convention that *a* x *b* means *a* groups of *b* objects each; however, because of the commutative property, students may also interpret 5 x 7 as the total number of objects in 7 groups of 5 objects each).
Content Limits	• All factors are whole numbers. • All products are within 100 (inclusive). • Multiplication situations may include equal groups, arrays, and/or area problems. [See Table 2]* • Excludes comparison problems involving notions of "times as many". [See Table 2]*
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

*Table 2 is located on pg. 96 of the Ohio Learning Standards for Mathematics

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Represent and solve problems involving multiplication and division.** ***3.OA.2*** Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*
Content Limits	• The dividend, divisor, and quotient are all whole numbers. • All dividends are within 100 (inclusive). • Division situations may include equal groups, arrays, and/or area problems. [See Table 2]* • Excludes comparison problems involving notions of "times as many". [See Table 2]* • Excludes division problems with remainders.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

*Table 2 is located on pg. 96 of the Ohio Learning Standards for Mathematics

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Represent and solve problems involving multiplication and division.** ***3.OA.3*** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. See Table 2, page 96. Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)
Content Limits	• All factors, dividends, divisors, and quotients must be whole numbers. • All products and dividends must be within 100 (inclusive). • Multiplication and division situations may include equal groups, arrays, and/or area problems. [See Table 2]* • Excludes comparison problems involving notions of "times as many". [See Table 2]* • Excludes unit conversions. • Excludes division problems with remainders.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Required

*Table 2 is located on pg. 96 of the Ohio Learning Standards for Mathematics

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Represent and solve problems involving multiplication and division.** ***3.OA.4*** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ☐ = 48; 5 = ☐ ÷ 3; 6 × 6 = ☐ .*
Content Limits	• All factors, dividends, divisors, and quotients must be whole numbers. • All products and dividends must be within 100 (inclusive). • Multiplication and division situations may include equal groups, arrays, and/or area problems. [See Table 2]* • An unknown can be in any position of a multiplication or division situation. • Excludes comparison problems involving notions of "times as many". [See Table 2]* • Excludes division problems with remainders.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

*Table 2 is located on pg. 96 of the Ohio Learning Standards for Mathematics

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Understand properties of multiplication and the relationship between multiplication and division.** ***3.OA.5*** Apply properties of operations as strategies to multiply and divide. *For example, if 6 × 4 = 24 is known, then 4 × 6 = 24 is also known (Commutative Property of Multiplication); 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30 (Associative Property of Multiplication); knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56 (Distributive Property).* Students need not use formal terms for these properties.
Content Limits	• All factors must be whole numbers. • Usage of the Associative and Distributive properties should allow students to compose and decompose numbers into familiar products using grade appropriate strategies and numbers. • Excludes requirement to know, recognize, or use the formal name of any property.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Understand properties of multiplication and the relationship between multiplication and division.** ***3.OA.6*** Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*
Content Limits	• All dividends, divisors, and quotients must be whole numbers. • All dividends are within 100 (inclusive). • Multiplication and division situations may include equal groups, arrays, and/or area problems. [See Table 2]* • Excludes comparison problems involving notions of "times as many". [See Table 2]* • Excludes division problems with remainders.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

*Table 2 is located on pg. 96 of the Ohio Learning Standards for Mathematics

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Multiply and divide within 100.** ***3.OA.7*** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division, e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8, or properties of operations. Limit to division without remainders. By the end of Grade 3, know from memory all products of two one-digit numbers.
Content Limits	• All factors, dividends, divisors, and quotients must be whole numbers. • All products and dividends must be within 100 (inclusive). • Multiplication and division situations may include equal groups, arrays, and/or area problems. [See Table 2]* • Excludes comparison problems involving notions of "times as many". [See Table 2]*
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

*Table 2 is located on pg. 96 of the Ohio Learning Standards for Mathematics

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Solve problems involving the four operations, and identify and explain patterns in arithmetic.** ***3.OA.8*** Solve two-step word problems using the four operations. Represent these problems using equations with a letter or a symbol, which stands for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers. Students may use parentheses for clarification since algebraic order of operations is not expected.
Content Limits	• Addition and subtraction are limited to whole numbers within 1000 (inclusive). • Addition and subtraction situations may include add to, take from, pull together, take apart, and comparison (e.g., having more or fewer). [See Table 1]* • All factors, dividends, divisors, and quotients must be whole numbers. • All products and dividends must be within 100 (inclusive). • Multiplication and division situations may include equal groups, arrays, and/or area problems. [See Table 2]* • Excludes comparison problems involving notions of "times as many". [See Table 2]* • Excludes formal usage of the algebraic order of operations. • Excludes division problems with remainders.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Required

*Table 1 is located on pg. 95 of the Ohio Learning Standards for Mathematics

*Table 2 is located on pg. 96 of the Ohio Learning Standards for Mathematics

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.OA OPERATIONS AND ALGEBRAIC THINKING*** **Solve problems involving the four operations, and identify and explain patterns in arithmetic.** ***3.OA.9*** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*
Content Limits	• Patterns involve one operation. • Addition and subtraction are limited to whole numbers within 1000 (inclusive). • Addition and subtraction situations may include add to, take from, pull together, take apart, and comparison (e.g., having more or fewer). [See Table 1]* • Multiplication tables may be used to identify additive reasoning. • Excludes geometric patterns. • Excludes requirement to know, recognize, or use the formal name of any property.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

*Table 1 is located on pg. 95 of the Ohio Learning Standards for Mathematics

Reporting Category	**MULTIPLICATION AND DIVISION**
Content Standard	***3.NBT NUMBERS AND OPERATIONS IN BASE TEN*** **Use place value understanding and properties of operations to perform multi-digit arithmetic. A range of strategies and algorithms may be used.** ***3.NBT.3*** Multiply one-digit whole numbers by multiples of 10 in the range 10-90, e.g., 9 × 80, 5 × 60 using strategies based on place value and properties of operations.
Content Limits	• Products may be greater than 100. • Excludes requirement to know, recognize, or use the formal name of any property.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**NUMBERS AND OPERATIONS**
Content Standard	***3.NBT NUMBERS AND OPERATIONS IN BASE TEN*** **Use place value understanding and properties of operations to perform multi-digit arithmetic. A range of strategies and algorithms may be used.** ***3.NBT.1*** Use place value understanding to round whole numbers to the nearest 10 or 100.
Content Limits	• Limited to whole numbers up to 1000 (inclusive). • Problems may include length models (e.g., number lines) or place value charts.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**NUMBERS AND OPERATIONS**
Content Standard	***3.NBT NUMBERS AND OPERATIONS IN BASE TEN*** **Use place value understanding and properties of operations to perform multi-digit arithmetic. A range of strategies and algorithms may be used.** ***3.NBT.2*** Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
Content Limits	• Addition and subtraction are limited to whole numbers within 1000 (inclusive). • Excludes requirement to know, recognize, or use the formal name of any property.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**NUMBERS AND OPERATIONS**
Content Standard	***3.MD MEASUREMENT AND DATA*** **Solve problems involving money, measurement, and estimation of intervals of time, liquid volumes, and masses of objects.** ***3.MD.1*** Work with time and money. ***3.MD.1a*** Tell and write time to the nearest minute. Measure time intervals in minutes (within 90 minutes). Solve real-world problems involving addition and subtraction of time intervals (elapsed time) in minutes, e.g., by representing the problem on a number line diagram or clock. ***3.MD.1b*** Solve word problems by adding and subtracting within 1,000, dollars with dollars and cents with cents (not using dollars and cents simultaneously) using the $ and ¢ symbol appropriately (not including decimal notation).
Content Limits	For time: • Elapsed time is limited to 90 minutes (inclusive). • Time intervals are given in whole minutes or a combination of an hour and whole minutes. For money: • Addition and subtraction are limited to whole numbers involving dollars or cents within 1000 (inclusive). • Addition and subtraction situations may include add to, take from, pull together, take apart, and comparison (e.g., having more or fewer). [See Table 1]* • Problems involve dollar amounts only or cent amounts only. • Excludes converting between dollar amounts and cent amounts.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

*Table 1 is located on pg. 95 of the Ohio Learning Standards for Mathematics

Reporting Category	**NUMBERS AND OPERATIONS**
Content Standard	***3.MD MEASUREMENT AND DATA*** **Solve problems involving money, measurement, and estimation of intervals of time, liquid volumes, and masses of objects.** ***3.MD.2*** Measure and estimate liquid volumes and masses of objects using standard units of grams, kilograms, and liters. Add, subtract, multiply, or divide whole numbers to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. Excludes multiplicative comparison problems involving notions of "times as much"; see Table 2, page 96.
Content Limits	• Only the metric units of grams, kilograms, and/or liters may be used. • Addition and subtraction are limited to whole numbers within 1000 (inclusive). • Addition and subtraction situations may include add to, take from, pull together, take apart, and comparison (e.g., having more or fewer). [See Table 1]* • All factors, dividends, divisors, and quotients must be whole numbers. • All products and dividends must be within 100 (inclusive). • Multiplication and division situations may include equal groups, arrays, and/or area problems. [See Table 2]* • Excludes comparison problems involving notions of “times as many”. [See Table 2]* • Excludes formal usage of the algebraic order of operations. • Excludes unit conversions.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

*Table 1 is located on pg. 95 of the Ohio Learning Standards for Mathematics

*Table 2 is located on pg. 96 of the Ohio Learning Standards for Mathematics

Reporting Category	**NUMBERS AND OPERATIONS**
Content Standard	***3.MD MEASUREMENT AND DATA*** **Represent and interpret data.** ***3.MD.3*** Create scaled picture graphs to represent a data set with several categories. Create scaled bar graphs to represent a data set with several categories. Solve two-step "how many more" and "how many less" problems using information presented in the scaled graphs. *For example, create a bar graph in which each square in the bar graph might represent 5 pets, then determine how many more/less in two given categories.*
Content Limits	• Graphs contain five or fewer categories. • Intervals for graphs should relate to grade level multiplication and division. • Addition and subtraction are limited to whole numbers within 1000 (inclusive).
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Required

Reporting Category	**GEOMETRY**
Content Standard	***3.MD MEASUREMENT AND DATA*** **Geometric measurement: understand concepts of area and relate area to multiplication and to addition.** ***3.MD.5*** Recognize area as an attribute of plane figures and understand concepts of area measurement. ***3.MD.5a*** A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. ***3.MD.5b*** A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.
Content Limits	• Plane figures must be able to be completely covered by whole unit squares. • Side lengths are limited to whole numbers. • Excludes use of exponential notation for units.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**GEOMETRY**
Content Standard	***3.MD MEASUREMENT AND DATA*** **Geometric measurement: understand concepts of area and relate area to multiplication and to addition.** ***3.MD.6*** Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
Content Limits	• Plane figures must be able to be completely covered by whole unit squares. • Area of a single unit square must be provided. • Side lengths are limited to whole numbers. • Area of all figures must be within 100 (inclusive). • Excludes use of exponential notation for units.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**GEOMETRY**
Content Standard	***3.MD MEASUREMENT AND DATA*** **Geometric measurement: understand concepts of area and relate area to multiplication and to addition.** ***3.MD.7*** Relate area to the operations of multiplication and addition. ***3.MD.7a*** Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. ***3.MD.7b*** Multiply side lengths to find areas of rectangles with whole- number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. ***3.MD.7c*** Use tiling to show in a concrete case that the area of a rectangle with whole number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$ (represent the distributive property with visual models including an area model). ***3.MD.7d*** Recognize area as additive. Find the area of figures composed of rectangles by decomposing into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.
Content Limits	• Plane figures must be able to be completely covered by whole unit squares. • Area of a single unit square must be provided. • Side lengths are limited to whole numbers. • All side lengths must be given anytime a composite shape is shown. • When decomposing a composite shape into smaller rectangles to find the area of the composite shape, the sum of the areas of the smaller rectangles must be within 1000 (inclusive). • Excludes use of exponential notation for units.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**GEOMETRY**
Content Standard	***3.MD MEASUREMENT AND DATA*** **Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.** ***3.MD.8*** Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
Content Limits	General: • Side lengths are limited to whole numbers. • Excludes use of exponential notation for units. For perimeter: • Side lengths can be added within 1000 (inclusive) to find a perimeter. • Perimeter is limited to polygons of up to 8 sides. • Quadrilaterals are limited to rhombuses, rectangles, and squares. For area: • Plane figures in area problems must be able to be completely covered by whole unit squares. • Plane figures limited to rectangles and squares. • Area of a single unit square must be provided. • All products are within 100 (inclusive).
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**GEOMETRY**
Content Standard	***3.G GEOMETRY*** **Reason with shapes and their attributes.** ***3.G.1*** Draw and describe triangles, quadrilaterals (rhombuses, rectangles, and squares), and polygons (up to 8 sides) based on the number of sides and the presence or absence of square corners (right angles).
Content Limits	• Polygons with up to 8 sides may be used. • Quadrilaterals are limited to rhombuses, rectangles, and squares.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**GEOMETRY**
Content Standard	***3.G GEOMETRY*** **Reason with shapes and their attributes.** ***3.G.2*** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as $^{1}/_{4}$ of the area of the shape.*
Content Limits	• Only denominators of 2, 3, 4, 6, or 8 may be used. • Polygons with 3, 4, 6, or 8 sides and circles may be used as models. • Quadrilaterals used as models are limited to rhombuses, rectangles, and squares.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**FRACTIONS**
Content Standard	***3.NF NUMBERS AND OPERATIONS–FRACTIONS*** **Develop understanding of fractions as numbers. Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.** ***3.NF.1*** Understand a fraction $^1/_b$ as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction $^a/_b$ as the quantity formed by *a* parts of size $^1/_b$.

Content Limits	• Only denominators of 2, 3, 4, 6, or 8 may be used.
	• Fractions may be greater than 1 whole.
	• Area models (e.g., circles, triangles, rectangles, squares, etc.) and length models (e.g., fraction strips or bars, number lines, etc.) may be used to represent fractions.
	  ○ Polygons with 3, 4, 6, and 8 sides and circles may be used as models.
	  ○ Quadrilaterals used as models are limited to rhombuses, rectangles, and squares.
	• Excludes set models.

DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**FRACTIONS**
Content Standard	***3.NF NUMBERS AND OPERATIONS–FRACTIONS*** **Develop understanding of fractions as numbers. Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.** ***3.NF.2*** Understand a fraction as a number on the number line; represent fractions on a number line diagram. ***3.NF.2a*** 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. Recognize that each part has size $^{1}/_{b}$ and that the endpoint of the part based at 0 locates the number $^{1}/_{b}$ on the number line. ***3.NF.2b*** Represent a fraction $^{a}/_{b}$ (which may be greater than 1) on a number line diagram by marking off *a* lengths $^{1}/_{b}$ from 0. Recognize that the resulting interval has size $^{a}/_{b}$ and that its endpoint locates the number $^{a}/_{b}$ on the number line.

Content Limits	• Only denominators of 2, 3, 4, 6, or 8 may be used.
	• Fractions may be greater than 1 whole.
	• Length models must contain at least one number line.
	  ○ Number lines must start at 0.
	  ○ Number lines may extend beyond 1 whole.
	• Excludes set models.

DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**FRACTIONS**
Content Standard	***3.NF NUMBERS AND OPERATIONS–FRACTIONS*** **Develop understanding of fractions as numbers. Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.** ***3.NF.3*** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. ***3.NF.3a*** Understand two fractions as equivalent (equal) if they are the same size or the same point on a number line. ***3.NF.3b*** Recognize and generate simple equivalent fractions, e.g., $^1/_2 = {}^2/_4$, $^4/_6 = {}^2/_3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model. ***3.NF.3c*** Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form* $3 = {}^3/_1$*; recognize that* $^6/_1 = 6$*; locate* $^4/_4$ *and 1 at the same point of a number line diagram.* ***3.NF.3d*** Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Content Limits	• Only denominators of 2, 3, 4, 6, or 8 may be used.
	• Fractions may be greater than 1 whole.
	• Area models (e.g., circles, triangles, rectangles, squares, etc.) and length models (e.g., fraction strips or bars, number lines, etc.) may be used to represent fractions.
	  ○ Polygons with 3, 4, 6, and 8 sides and circles may be used as models.
	  ○ Quadrilaterals used as models are limited to rhombuses, rectangles, and squares.
	  ○ Number lines must start at 0.
	  ○ Number lines may extend beyond 1 whole.
	• Only the symbols <, =, or > may be used to compare fractions.
	• When comparing two fractions, the two fractions must either have the same numerator or the same denominator.
	• Excludes set models.

DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Optional

Reporting Category	**NUMBERS AND OPERATIONS**
Content Standard	***3.MD MEASUREMENT AND DATA*** **Represent and interpret data.** ***3.MD.4*** *Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by creating a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.*
Content Limits	• The horizontal scale can be labeled in whole number, half, or quarter inches only. • Online and paper problems will provide rulers anytime a measurement is required. • Only the rulers provided in an online or paper problem should be used when measuring given objects.
DOK	1, 2, and/or 3 are eligible. DOK levels are designated on an item-by-item basis.
Context	Context Required