DRAFT

Grade 5 Mathematics Item Specifications

Florida Standards Assessments

The draft Florida Standards Assessments (FSA) *Test Item Specifications* (*Specifications)* are based upon the Florida Standards and the Florida Course Descriptions as provided in CPALMs. The *Specifications* are a resource that defines the content and format of the test and test items for item writers and reviewers. Each grade-level and course *Specifications* document indicates the alignment of items with the Florida Standards. It also serves to provide all stakeholders with information about the scope and function of the FSA.

Item Specifications Definitions

Also assesses refers to standard(s) closely related to the primary standard statement.

Clarification statements explain what students are expected to do when responding to the question.

Assessment limits define the range of content knowledge and degree of difficulty that should be assessed in the assessment items for the standard.

Item types describe the characteristics of the question.

Context defines types of stimulus materials that can be used in the assessment items.

- **Context - Allowable** refers to items that may but are not required to have context.
- **Context - No context** refers to items that should not have context.
- **Context - Required** refers to items that must have context.

Item Descriptions:

The Florida Standards Assessments (FSA) are composed of test items that include traditional multiple-choice items and other item types that may be scanned and scored electronically.

Currently, there are six types of items that may appear on paper-based assessments for FSA Mathematics.

Any of the item types may be combined into a single item with multiple parts called a multi-interaction item. For paper-based assessments, the following selectable-response item types may be combined into a single item: multiple choice, multi-select, editing task choice, selectable hot text, and matching.

For samples of each of the item types described below, see the FSA Practice Tests.

Paper-Based Item Types – Mathematics

1. **Multiple Choice –** The student is directed to select the one correct response from among four options.
2. **Multiselect –** The student is directed to select all of the correct answers from among a number of options. These items are different from Multiple Choice items, which prompt the student to select only one correct answer.
3. **Editing Task Choice –** The student fills in a bubble to indicate the correct number, word, or phrase that should replace a blank.
4. **Selectable Hot Text –** Excerpted sentences from the text are presented in this item type. The student fills in bubbles to indicate which sentences are correct.
5. **Equation Editor/Gridded-Response –** The student fills in bubbles indicating numbers and mathematical symbols to create a response. Students respond in response grids in which they write their answer in the boxes at the top of the grid, then fill in the corresponding bubble underneath each box.
6. **Matching Item –** This item type presents options in columns and rows. The student is directed to fill in a bubble that matches a correct option from a column with a correct option from a row. Typically, there is only one correct option per row or column, though the number of correct answers may vary.

Mathematical Practices:

The Mathematical Practices are a part of each course description for Grades 3-8, Algebra 1, and Geometry. These practices are an important part of the curriculum. The Mathematical Practices will be assessed throughout.

MAFS.K12.MP.1.1:	**Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.
MAFS.K12.MP.2.1:	**Reason abstractly and quantitatively**. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

MAFS.K12.MP.3.1:	**Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
MAFS.K12.MP.4.1:	**Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MAFS.K12.MP.5.1:	**Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.
MAFS.K12.MP.6.1:	**Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

MAFS.K12.MP.7.1:	**Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.
MAFS.K12.MP.8.1:	**Look for and express regularity in repeated reasoning.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Reference Sheets:

- Reference sheets will be available as online references (in a pop-up window). A paper version will be available for paper-based tests.
- Reference sheets with conversions will be provided for FSA Mathematics assessments in Grades 4–8 and EOC Mathematics assessments.
- There is no reference sheet for Grade 3.
- For Grades 4, 6, 7, and Geometry, some formulas will be provided on the reference sheet.
- For Grade 5 and Algebra 1, some formulas may be included with the test item if needed to meet the intent of the standard being assessed.
- For Grade 8, no formulas will be provided; however, conversions will be available on a reference sheet.

Grade	Conversions	Some Formulas
3	No	No
4	On Reference Sheet	On Reference Sheet
5	On Reference Sheet	With Item
6	On Reference Sheet	On Reference Sheet
7	On Reference Sheet	On Reference Sheet
8	On Reference Sheet	No
Algebra 1	On Reference Sheet	With Item
Geometry	On Reference Sheet	On Reference Sheet

Content Standard	***MAFS.5.OA*** *Operations and Algebraic Thinking* ***MAFS.5.OA.1*** *Write and interpret numerical expressions.* **MAFS.5.OA.1.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	
Assessment Limits	Expressions may contain whole numbers and up to one fraction with a denominator of 10 or less. Items may not require division with fractions. Items may not contain nested grouping symbols.	
Calculator	No	
Context	No context	
Sample Item		Item Type
What is the value of the expression $\frac{1}{2}$ x (4 + 6) + 9?		Equation Editor
A numerical expression is evaluated as shown. $\frac{1}{2}$ x (6 x 1 + 7) + 11 Step 1: $\frac{1}{2}$ x (6 x 8) + 11 Step 2: $\frac{1}{2}$ x 48 + 11 Step 3: 24 + 11 Step 4: 35 In which step does a mistake first appear? A. Step 1 B. Step 2 C. Step 3 D. Step 4		Multiple Choice
See Appendix A for the Practice Test item aligned to this standard.		

Content Standard	***MAFS.5.OA*** *Operations and Algebraic Thinking* ***MAFS.5.OA.1*** *Write and interpret numerical expressions.* **MAFS.5.OA.1.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.
Assessment Limits	Expressions may contain whole numbers or fractions with a denominator of 10 or less. Expressions may not include nested parentheses. Multiplication cross symbol is the only acceptable symbol for multiplication. The multiplication dot (•) may not be used. When grouping symbols are part of the expression, the associative property or distributive property must be found in the expression.
Calculator	No
Context	No context

Sample Item	Item Type
Which expression could represent the following phrase? Divide 10 by 2, then subtract 3. A. 2 ÷ 10 – 3 B. 2 ÷ (10 – 3) C. 10 ÷ 2 – 3 D. 10 ÷ (2 – 3)	Multiple Choice
Which statement describes the expression $18 + \frac{1}{2} \times (9 - 4)$? A. Half the difference of 4 from 9 added to 18 B. Subtract half the quantity of 9 and 4 from 18 C. The sum of 18 and half the product of 9 and 4 D. Half of 9 added to 18 minus 4	Multiple Choice

See Appendix A for the Practice Test item aligned to this standard.

Content Standard	***MAFS.5.OA*** *Operations and Algebraic Thinking* ***MAFS.5.OA.2*** *Analyze patterns and relationships.* **MAFS.5.OA.2.3** Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so*.	
Assessment Limits	Expressions may contain whole numbers or fractions with a denominator of 10 or less. Ordered pairs many only be located within Quadrant I of the coordinate plane. Operations in rules limited to: addition, subtraction, multiplication, and division. Patterns that require division may not lead to fractional terms. Items may not contain rules that exceed two procedural operations. Items must provide the rule. Expressions may not include nested parentheses.	
Calculator	No	
Context	Allowable	
Sample Item		Item Type
Michael and John are creating patterns. • Michael uses the rule "multiply by 2" and starts at 5. • John uses the rule "add 8" and starts at 16. What is the first number in Michael's pattern that also appears in John's pattern?		Equation Editor
See Appendix A for the Practice Test item aligned to this standard.		

Content Standard	***MAFS.5.NBT*** *Number and Operations in Base Ten* ***MAFS.5.NBT.1*** *Understand the place value system.* **MAFS.5.NBT.1.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.
Assessment Limit	Items may require a comparison of the values of digits across multiple place values, including whole numbers and decimals from millions to thousandths.
Calculator	No
Context	Allowable

Sample Item	Item Type
What is the missing value in the equation shown? $\square \times \frac{1}{10} = 0.034$	Equation Editor
What is the value of the missing number in the following equation? $0.34 \times \square = 3.4$ A. 10 B. 100 C. $\frac{1}{10}$ D. $\frac{1}{100}$	Multiple Choice
How many times the value of 0.034 is the value of 0.34?	Equation Editor
See Appendix A for the Practice Test item aligned to this standard.	

Content Standard	***MAFS.5.NBT*** *Number and Operations in Base Ten* ***MAFS.5.NBT.1*** *Understand the place value system.* **MAFS.5.NBT.1.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
Assessment Limits	Items may contain whole number and decimal place values from millions to thousandths. Items may contain whole number exponents with bases of 10.
Calculator	No
Context	No context

Sample Item	Item Type
What is 0.523×10^2?	Equation Editor
What is the value of the missing exponent in the equation $523 \div 10^{\square} = 523$?	Equation Editor
Which statement is equivalent to multiplying a number by 10^3? A. adding 10 three times B. adding 3 ten times C. multiplying by 10 three times D. multiplying by 3 ten times	Multiple Choice

See Appendix A for the Practice Test item aligned to this standard.

Content Standard	***MAFS.5.NBT*** *Number and Operations in Base Ten* ***MAFS.5.NBT.1*** *Understand the place value system.* **MAFS.5.NBT.1.3** Read, write, and compare decimals to thousandths. **MAFS.5.NBT.1.3a** Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × $\left(\frac{1}{10}\right)$ + 9 × $\left(\frac{1}{100}\right)$ + 2 × $\left(\frac{1}{1{,}000}\right)$. **MAFS.5.NBT.1.3b** Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
Assessment Limit	Items may contain decimals to the thousandths with the greatest place value to the millions.
Calculator	No
Context	Allowable

Sample Item	Item Type
What is "two hundred sixty-five thousandths" in decimal form? A. 260.005 B. 265.0 C. 0.265 D. 2.65	Multiple Choice
Fill in circles to select the decimal form for each number name. **0.650** / **0.605** / **0.065** / **6.050** ***Sixty-five thousandths*** — Ⓐ Ⓑ Ⓒ Ⓓ ***Six hundred five thousandths*** — Ⓔ Ⓕ Ⓖ Ⓗ	Matching Item
A number in expanded form is shown. 3 x 1 + 2 x $\left(\frac{1}{10}\right)$ + 6 x $\left(\frac{1}{100}\right)$ + 5 x $\left(\frac{1}{1{,}000}\right)$ What is the number in decimal form?	Equation Editor

Sample Item	Item Type
Select all the expressions that show 2.059 written in expanded form. A. $2 \times 1 + 0 \times \left(\frac{1}{10}\right) + 5 \times \left(\frac{1}{100}\right) + 9 \times \left(\frac{1}{1{,}000}\right)$ B. $2 \times 1 + 5 \times \left(\frac{1}{10}\right) + 9 \times \left(\frac{1}{100}\right)$ C. $2 \times 1 + 0 \times \left(\frac{1}{10}\right) + 59 \times \left(\frac{1}{1{,}000}\right)$ D. $20 \times \left(\frac{1}{10}\right) + 59 \times \left(\frac{1}{100}\right)$ E. $20 \times \left(\frac{1}{10}\right) + 5 \times \left(\frac{1}{100}\right) + 9 \times \left(\frac{1}{1{,}000}\right)$	Multiselect
See Appendix A for the Practice Test item aligned to a standard in this group.	

Content Standard	***MAFS.5.NBT*** *Number and Operations in Base Ten* ***MAFS.5.NBT.1*** *Understand the place value system.* **MAFS.5.NBT.1.4** Use place value understanding to round decimals to any place.
Assessment Limits	Items may contain decimals to the thousandths with the greatest place value to the millions. The least place value a decimal may be rounded to is the hundredths place.
Calculator	No
Context	Allowable

Sample Item	Item Type
Select all the numbers that round to 4.3 when rounded to the nearest tenth. A. 4.25 B. 4.24 C. 4.31 D. 4.352 E. 4.219 F. 4.305	Multiselect
What is 3.149 rounded to the nearest hundredth?	Equation Editor
See Appendix A for the Practice Test item aligned to this standard.	

Content Standard	***MAFS.5.NBT*** *Number and Operations in Base Ten* ***MAFS.5.NBT.2*** *Perform operations with multi-digit whole numbers and with decimals to hundredths.* **MAFS.5.NBT.2.5** Fluently multiply multi-digit whole numbers using the standard algorithm.	
Assessment Limit	Multiplication may not exceed five digits by two digits.	
Calculator	No	
Context	Allowable	
Sample Item		Item Type
Multiply: 423 x 79		Equation Editor
See Appendix A for the Practice Test item aligned to this standard.		

Content Standard	***MAFS.5.NBT*** *Number and Operations in Base Ten* ***MAFS.5.NBT.2*** *Perform operations with multi-digit whole numbers and with decimals to hundredths.* **MAFS.5.NBT.2.6** Find whole-number quotients of whole numbers with up to four-digit dividends and two-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.
Assessment Limit	Division may not exceed four digits by two digits.
Calculator	No
Context	Allowable

Sample Item	Item Type
Select all the expressions that have a value of 34. A. 340 ÷ 16 B. 380 ÷ 13 C. 408 ÷ 12 D. 510 ÷ 15 E. 680 ÷ 24	Multiselect

See Appendix A for the Practice Test item aligned to this standard.

Content Standard	***MAFS.5.NBT*** *Number and Operations in Base Ten* ***MAFS.5.NBT.2*** *Perform operations with multi-digit whole numbers and with decimals to hundredths.* **MAFS.5.NBT.2.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
Assessment Limits	Items may only use factors that result in decimal solutions to the thousandths place (e.g., multiplying tenths by hundredths). Items may not include multiple different operations within the same expression (e.g., 21 + 0.34 x 8.55). Expressions may have up to two procedural steps of the same operation.
Calculator	No
Context	Allowable

Sample Item	Item Type
What is the value of the expression? 0.2 x 0.3	Equation Editor
An expression is shown. 12.25 + 3.05 + 0.50 What is the value of the expression?	Equation Editor

See Appendix A for the Practice Test item aligned to this standard.

Content Standard	***MAFS.5.NF*** *Numbers and Operations – Fractions* ***MAFS.5.NF.1*** *Use equivalent fractions as a strategy to add and subtract fractions.* **MAFS.5.NF.1.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example,* $\frac{2}{3}+\frac{5}{4}=\frac{8}{12}+\frac{15}{12}=\frac{23}{12}$. *(In general,* $\frac{a}{b}+\frac{c}{d}=\frac{(ad+bc)}{bd}$.*)*
Assessment Limits	Fractions greater than 1 and mixed numbers may be included. Expressions may have up to three terms. Least common denominator is not necessary to calculate sums or differences of fractions. Items may not use the terms "simplify" or "lowest terms." For given fractions in items, denominators are limited to 1-20. Items may require the use of equivalent fractions to find a missing term or part of a term.
Calculator	No
Context	No context

Sample Item	Item Type
What is the value of the expression? $\frac{5}{6}+\frac{8}{12}$ A. $\frac{9}{12}$ B. $\frac{13}{18}$ C. $\frac{18}{12}$ D. $\frac{13}{24}$	Multiple Choice

Sample Item	Item Type
What is the value of the expression $6\frac{1}{3} - 4\frac{3}{4}$? A. $2\frac{5}{12}$ B. $2\frac{2}{12}$ C. $1\frac{7}{12}$ D. $1\frac{5}{12}$	Multiple Choice
See Appendix A for the Practice Test item aligned to this standard.	

Content Standard	***MAFS.5.NF*** *Number and Operations - Fractions* ***MAFS.5.NF.1*** *Use equivalent fractions as a strategy to add and subtract fractions.* **MAFS.5.NF.1.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result* $\frac{2}{5}+\frac{1}{2}=\frac{3}{7}$*, by observing that* $\frac{3}{7}<\frac{1}{2}$*.*
Assessment Limits	Fractions greater than 1 and mixed numbers may be included. Expressions may have up to three terms. Least common denominator is not necessary to calculate sums or differences of fractions. Items may not use the terms "simplify" or "lowest terms." For given fractions in items, denominators are limited to 1-20. Items may require the use of equivalent fractions to find a missing term or part of a term.
Calculator	No
Context	Required

Sample Item	Item Type
John and Sue are baking cookies. The recipe lists $\frac{3}{4}$ cup of flour. They only have $\frac{3}{8}$ cup of flour left. How many more cups of flour do they need to bake the cookies?	Equation Editor
Javon, Sam, and Antoine are baking cookies. Javon has $\frac{1}{2}$ cup of flour, Sam has $1\frac{1}{6}$ cups of flour, and Antoine has $1\frac{3}{4}$ cups of flour. How many cups of flour do they have altogether? A. $2\frac{5}{12}$ B. $2\frac{7}{12}$ C. $3\frac{5}{12}$ D. $4\frac{1}{12}$	Multiple Choice

Sample Item	Item Type
Richard and Gianni each bought a pizza. The pizzas are the same size. • Richard cut his pizza into 12 slices. • Gianni cut his pizza into 6 slices, and ate 2 slices. • Together, Richard and Gianni ate $\frac{9}{12}$ of one pizza. How many slices of his pizza did Richard eat? A. 3 B. 5 C. 6 D. 7	Multiple Choice
See Appendix A for the Practice Test item aligned to this standard.	

Content Standard	***MAFS.5.NF*** *Numbers and Operations – Fractions* ***MAFS.5.NF.2*** *Apply and extend previous understandings of multiplication and division to multiply and divide fractions.* **MAFS.5.NF.2.3** Interpret a fraction as division of the numerator by the denominator $\left(\frac{a}{b} = a \div b\right)$. Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
Assessment Limits	Quotients in division items may not be equivalent to a whole number. Items may contain fractions greater than 1. Items may not use the terms "simplify" or "lowest terms." Only use whole numbers for the divisor and dividend of a fraction. For given fractions in items, denominators are limited to 1-20.
Calculator	No
Context	Allowable

Sample Item	Item Type
Which expression is equivalent to $\frac{8}{15}$? A. 8 – 15 B. 15 – 8 C. 8 ÷ 15 D. 15 ÷ 8	Multiple Choice
Joe has a board that is 6 feet long. He needs to cut the board into 15 equal-length pieces. How many feet long should each piece of the board be?	Equation Editor

See Appendix A for the Practice Test item aligned to this standard.

Content Standard	***MAFS.5.NF*** *Number and Operations – Fractions* ***MAFS.5.NF.2*** *Apply and extend previous understanding of multiplication and division to multiply and divide fractions.* **MAFS.5.NF.2.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. **MAFS.5.NF.2.4a** Interpret the product $\left(\frac{a}{b}\right) \times q$ as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show* $\left(\frac{2}{3}\right) \times 4 = \frac{8}{3}$*, and create a story context for this equation. Do the same with* $\left(\frac{2}{3}\right) \times \left(\frac{4}{5}\right) = \frac{8}{15}$*. (In general,* $\left(\frac{a}{b}\right) \times \left(\frac{c}{d}\right) = \frac{ac}{bd}$*).* **MAFS.5.NF.2.4b** Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. Also Assesses: **MAFS.5.NF.2.6** Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
Assessment Limits	Visual models may include: • Any appropriate fraction model (e.g., circles, tape diagrams, polygons, etc.) • Rectangle models tiled with unit squares For tiling, the dimensions of the tile must be unit fractions with the same denominator as the given rectangular shape. Items may not use the terms “simplify” or “lowest terms.” Items may require students to interpret the context to determine operations. Fractions may be greater than 1. For given fractions in items, denominators are limited to 1-20.
Calculator	No
Context	Allowable for MAFS.5.NF.2.4; Required for MAFS.5.NF.2.6

Sample Item	Item Type
Which expression is equivalent to $\frac{3}{8} \times \frac{4}{9}$? A. $\frac{12}{72}$ B. $\frac{7}{17}$ C. $\frac{12}{17}$ D. $\frac{7}{72}$	Multiple Choice
Roger has $2\frac{3}{4}$ gallons of water in a jug. He pours $\frac{5}{8}$ of the water into a new container. How many gallons of water does Roger have remaining in the jug? A. $1\frac{23}{32}$ B. $2\frac{1}{8}$ C. $2\frac{8}{12}$ D. $3\frac{3}{8}$	Multiple Choice
See Appendix A for the Practice Test item aligned to a standard in this group.	

Content Standard	***MAFS.5.NF*** *Number and Operations — Fractions* ***MAFS.5.NF.2*** *Apply and extend previous understandings of multiplication and division to multiply and divide fractions.* **MAFS.5.NF.2.5** Interpret multiplication as scaling (resizing), by: **MAFS.5.NF.2.5a** Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. **MAFS.5.NF.2.5b** Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $\frac{a}{b} = \frac{(n \times a)}{(n \times b)}$ to the effect of multiplying $\frac{a}{b}$ by 1.
Assessment Limits	For given fractions in items, denominators are limited to 1-20. Non-fraction factors in items must be greater than 1,000. Scaling geometric figures may not be assessed. Scaling quantities of any kind in two dimensions is beyond the scope of this standard.
Calculator	No
Context	Allowable

Sample Item	Item Type
Two newspapers are comparing sales from last year. • The Post sold 34,859 copies. • The Tribune sold fewer copies than the Post. Which expression could describe the number of newspapers the Tribune sold? A. $34{,}859 \times \frac{4}{2}$ B. $34{,}859 \times \frac{3}{2}$ C. $34{,}859 \times \frac{2}{2}$ D. $34{,}859 \times \frac{1}{2}$	Multiple Choice

Sample Item	Item Type
Select all the expressions that have a value greater than 1,653. A. $1{,}653 \times \frac{1}{4}$ B. $1{,}653 \times 4$ C. $1{,}653 \times 12$ D. $1{,}653 \times \frac{1}{4}$ E. $1{,}653 \times 1\frac{1}{2}$	Multiselect
See Appendix A for the Practice Test item aligned to a standard in this group.	

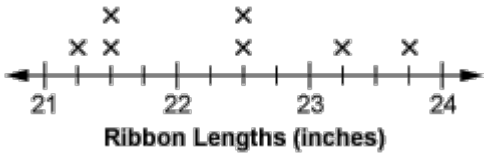
Content Standard	***MAFS.5.NF*** *Number and Operations – Fractions* ***MAFS.5.NF.2*** *Apply and extend previous understandings of multiplication and division to multiply and divide fractions.* **MAFS.5.NF.2.7** *Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.* **MAFS.5.NF.2.7a** Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for* $\left(\frac{1}{3}\right) \div 4$*, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that* $\left(\frac{1}{3}\right) \div 4 = \frac{1}{12}$ *because* $\left(\frac{1}{12}\right) \times 4 = \frac{1}{3}$. **MAFS.5.NF.2.7b** Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for* $4 \div \left(\frac{1}{5}\right)$*, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that* $4 \div \left(\frac{1}{5}\right) = 20$ *because* $20 \times \left(\frac{1}{5}\right) = 4$. **MAFS.5.NF.2.7c** Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share* $\frac{1}{2}$ *lb. of chocolate equally? How many* $\frac{1}{3}$ *cup servings are in 2 cups of raisins?*
Assessment Limit	For given fractions in items, denominators are limited to 1-20.
Calculator	No
Context	Allowable

Sample Item	Item Type
An expression is shown. $\frac{1}{7} \div 12$ What is the value of the expression?	Equation Editor

Sample Item	Item Type
Julio has 8 pounds of candy. He wants to put the candy into bags so that each bag has $\frac{1}{2}$ pound. Which equation shows how to calculate the number of bags of candy Julio can make? A. $16 \times \frac{1}{2} = 8$ B. $16 \times 2 = 32$ C. $16 \times 8 = \frac{1}{2}$ D. $16 \times 8 = 128$	Multiple Choice
Julio has 12 pounds of candy. He wants to put the candy into bags so that each bag has $\frac{1}{6}$ pound of candy. How many total bags of candy can Julio make?	Equation Editor
See Appendix A for the Practice Test item aligned to a standard in this group.	

Content Standard	***MAFS.5.MD*** *Measurement and Data* ***MAFS.5.MD.1*** *Convert like measurement units within a given measurement system.* **MAFS.5.MD.1.1** Convert among different-sized standard measurement units (i.e., km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec) within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems.	
Assessment Limits	Measurement values may be whole, decimal, or fractional values. Conversions must be within the same system.	
Calculator	No	
Context	Allowable	
Sample Item		Item Type
Michael is measuring fabric for the costumes of a school play. He needs 11.5 meters of fabric. He has 280 centimeters of fabric. How many more centimeters of fabric does he need?		Equation Editor
See Appendix A for the Practice Test item aligned to this standard.		

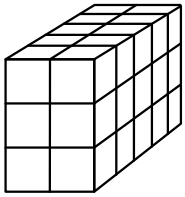
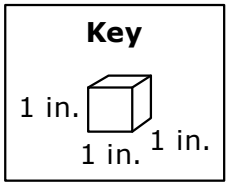
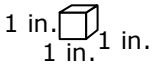
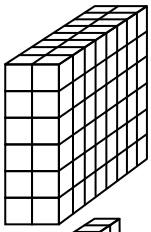
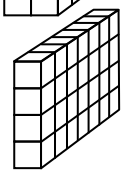
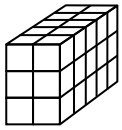
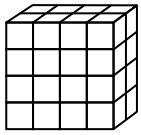
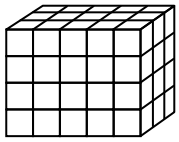
Content Standard	***MAFS.5.MD*** *Measurement and Data* ***MAFS.5.MD.2*** *Represent and interpret data.* **MAFS.5.MD.2.2** Make a line plot to display a data set of measurements in fractions of a unit $\left(\frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right)$. Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*.
Assessment Limit	Items requiring operations on fractions must adhere to the Assessment Limits for that operation's corresponding standard.
Calculator	No
Context	Allowable

Sample Item	Item Type
A line plot with Kelly's ribbon lengths is shown.  What is the total length, in inches, of the three shortest ribbons? A. $63\frac{1}{2}$ B. $63\frac{1}{4}$ C. $64\frac{1}{12}$ D. $64\frac{1}{4}$	Multiple Choice

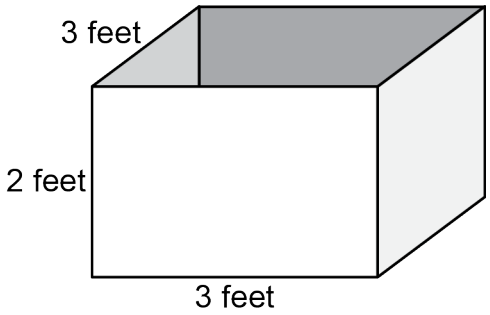
See Appendix A for the Practice Test item aligned to this standard.

Content Standard	***MAFS.5.MD*** *Measurement and Data* ***MAFS.5.MD.3*** *Geometric measurement: understand concepts of volume and relate volume to multiplication and division.* **MAFS.5.MD.3.3** Recognize volume as an attribute of solid figures and understand concepts of volume measurement. **MAFS.5.MD.3.3a** A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. **MAFS.5.MD.3.3b** A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units. Also Assesses: **MAFS.5.MD.3.4** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
Assessment Limits	Items may contain right rectangular prisms with whole-number side lengths. Figures may only be shown with unit cubes. Labels may include cubic units (i.e. cubic centimeters, cubic feet, etc.) or exponential units (i.e., cm^3, ft^3, etc.). Items requiring measurement of volume by counting unit cubes must provide a key of the cubic unit.
Calculator	No
Context	Allowable

Sample Item	Item Type
Ellen is shopping for boxes. Which measurement should she use to determine the amount the box will hold? A. area B. length C. perimeter D. volume	Multiple Choice

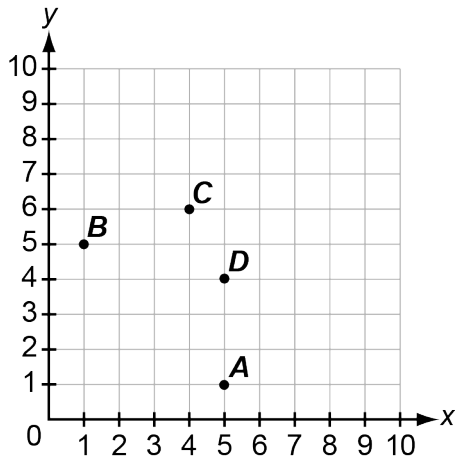
Sample Item	Item Type
A rectangular prism is shown.   What is the volume, in cubic inches (in.), of the rectangular prism?	Equation Editor
Select all the prisms that have a volume between 20 and 40 cubic units.  A.  B.  C.  D.  E. 	Multiselect
See Appendix A for the Practice Test item aligned to a standard in this group.	

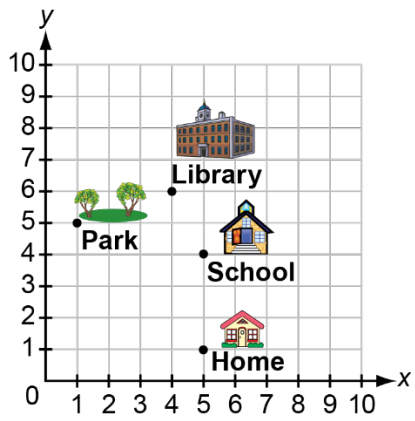
Content Standard	***MAFS.5.MD:*** *Measurement and Data* ***MAFS.5.MD.3*** *Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.* **MAFS.5.MD.3.5** Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. **MAFS.5.MD.3.5a** Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. **MAFS.5.MD.3.5b** Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. **MAFS.5.MD.3.5c** Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
Assessment Limits	Items may not contain fraction or decimal dimensions or volumes. Items may contain no more than two non-overlapping prisms – non-overlapping means that two prisms may share a face, but they do not share the same volume. Items assessing MAFS.5.MD.3.5b may not contain the use or graphic of unit cubes. Items assessing MAFS.5.MD.3.5c must contain a graphic of the figures.
Calculator	No
Context	Allowable

Sample Item	Item Type
A shipping box in the shape of a rectangular prism has the dimensions shown.  $V = l \times w \times h$ What is the volume, in cubic feet, of the box?	Equation Editor
Select all the options that could be the dimensions of a rectangular prism with a volume of 384 cubic feet (ft). A. length: 6 ft, width: 8 ft, height: 8 ft B. length: 4 ft, width: 12 ft, height: 24 ft C. length: 4 ft, width: 6 ft, height: 16 ft D. length: 4 ft, width: 8 ft, height: 12 ft E. length: 3 ft, width: 10 ft, height: 20 ft	Multiselect
See Appendix A for the Practice Test item aligned to a standard in this group.	

Content Standard	***MAFS.5.G*** *Geometry* ***MAFS.5.G.1*** *Graph points on the coordinate plane to solve real-world and mathematical problems.* **MAFS.5.G.1.1** Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate). Also Assesses: **MAFS.5.G.1.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
Assessment Limits	Items assessing MAFS.5.G.1.1 may not require directions between two given points. Points must rely on the origin. Items assessing MAFS.5.G.1.1 may require identifying the point (e.g., *Point A*) on a coordinate grid that represents a given ordered pair. Items assessing MAFS.5.G.1.1 may require determining the ordered pair that represents a given point on the coordinate plane. Items assessing MAFS.5.G.1.1 may not require graphing/plotting a point given an ordered pair. Points may only contain positive, whole number ordered pairs. Mathematical and real-world problems must have axes scaled to whole numbers (not letters).
Calculator	No
Context	No context for MAFS 5.G.1.1; Allowable for MAFS.5.G.1.2

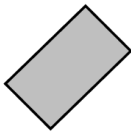
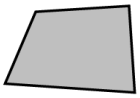
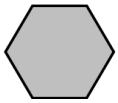
Sample Item	Item Type
Point *Z* is 3 units away from the origin on the *x*-axis. What could be the coordinates of point *Z*? A. (0, 3) B. (3, 0) C. (3, 3) D. (3, 6)	Multiple Choice

Sample Item	Item Type
Which point is located at (5, 1) on the coordinate grid?  A. Point *A* B. Point *B* C. Point *C* D. Point *D*	Multiple Choice

Sample Item	Item Type
Some locations in Lamar's town are shown in the coordinate plane.  Lamar moved from one location to another by traveling 1 unit left and 5 units up. Which ways could he have traveled? A. from home to the park B. from the park to the library C. from home to the library D. from school to the park	Multiple Choice
See Appendix A for the Practice Test items aligned to these standards.	

Content Standard	***MAFS.5.G*** *Geometry* ***MAFS.5.G.2*** *Classify two-dimensional figures into categories based on their properties.* **MAFS.5.G.2.3** Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.* Also Assesses: **MAFS.5.G.2.4** Classify and organize two-dimensional figures into Venn diagrams based on the attributes of the figures.
Assessment Limit	Attributes of figures may be given or presented within given graphics. Items that include trapezoids must consider both the inclusive and exclusive definitions. Items may not use the term "kite" but may include the figure.
Calculator	No
Context	No context

Sample Item	Item Type
Select all the properties that both rectangles and parallelograms always share. A. 4 right angles B. 4 sides of equal length C. 2 pairs of parallel sides D. 2 pairs of sides with equal length E. 2 acute angles and 2 obtuse angles	Multiselect
Which kinds of shapes are always rectangles? A. Parallelograms B. Quadrilaterals C. Rhombuses D. Squares	Multiple Choice

Sample Item	Item Type
Select all the shapes that are also always parallelograms. A.  B.  C.  D.  E. 	Multiselect
Select all the names of figures that could also be classified as a rhombus. A. Parallelogram B. Square C. Rectangle D. Quadrilateral E. Triangle	Multiselect
See Appendix A for the Practice Test item aligned to a standard in this group.	

Appendix A

The chart below contains information about the standard alignment for the items in the Grade 5 Mathematics FSA Paper-Based Practice Test at https://fsassessments.org/students-and-families/practice-tests.

Content Standard	Item Type	Paper-Based Practice Test Item Number
MAFS.5.OA.1.1	Equation Editor	10
MAFS.5.OA.1.2	Multiple Choice	12
MAFS.5.OA.2.3	Editing Task Choice	5
MAFS.5.NBT.1.1	Multiselect	4
MAFS.5.NBT.1.2	Selectable Hot Text	13
MAFS.5.NBT.1.3	Multiselect	21
MAFS.5.NBT.1.4	Equation Editor	7
MAFS.5.NBT.2.5	Multiple Choice	1
MAFS.5.NBT.2.6	Multiple Choice	17
MAFS.5.NBT.2.7	Equation Editor	23
MAFS.5.NF.1.1	Equation Editor	14
MAFS.5.NF.1.2	Multiple Choice	11
MAFS.5.NF.2.3	Equation Editor	22
MAFS.5.NF.2.4b	Equation Editor	20
MAFS.5.NF.2.5a	Multi-Interaction: Multiple Choice and Matching Item	9
MAFS.5.NF.2.7b	Multiple Choice	2
MAFS.5.MD.1.1	Equation Editor	3
MAFS.5.MD.2.2	Multiple Choice	16
MAFS.5.MD.3.3	Multiple Choice	6
MAFS.5.MD.3.5b	Equation Editor	18
MAFS.5.G.1.1	Editing Task Choice	19
MAFS.5.G.1.2	Multiple Choice	8
MAFS.5.G.2.3	Matching Item	15

Appendix B: Revisions

Page(s)	Revision	Date
3	Revisions for paper-based testing (PBT) grades.	January 2020
13	Sample item deleted.	January 2020
14	Sample item revised.	January 2020
19	Sample item revised.	January 2020
21	Sample item revised.	January 2020
22	One sample item revised, one sample item deleted.	January 2020
26	One sample item revised, one sample item deleted.	January 2020
27	Sample item revised.	January 2020
31	Sample item revised.	January 2020
32	Sample item revised, two sample items deleted.	January 2020
33	Sample item revised.	January 2020
34	Sample items revised.	January 2020
42	Appendix A updated to show January 2020 Practice Test information.	January 2020

Grade 5 FSA Mathematics Reference Sheet

Customary Conversions

1 foot = 12 inches
1 yard = 3 feet
1 mile = 5,280 feet
1 mile = 1,760 yards

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts

1 pound = 16 ounces
1 ton = 2,000 pounds

Metric Conversions

1 meter = 100 centimeters
1 meter = 1000 millimeters
1 kilometer = 1000 meters

1 liter = 1000 milliliters

1 gram = 1000 milligrams
1 kilogram = 1000 grams

Time Conversions

1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours
1 year = 365 days
1 year = 52 weeks