

# Mapping Cambridge Lower Secondary Mathematics 0862 (Stages 7 to 9) to Florida's B.E.S.T. Standards for Mathematics (Grades 6 to 8)

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## Introduction

We have mapped Cambridge Lower Secondary Mathematics (0862) to Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8. This mapping document shows where Cambridge Lower Secondary Mathematics (0862) is covered in Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8.

The *Cambridge Lower Secondary Mathematics Curriculum Framework* provides a comprehensive set of progressive learning objectives for mathematics. The learning objectives detail what learners should know or what they should be able to do in mathematics in each of Stages 7 to 9 of lower secondary education. They provide a structure for teaching and learning and a reference against which learners' understanding can be checked. Each learning objective from the *Cambridge Lower Secondary Mathematics Curriculum Framework* has a unique code, e.g. **7Np.01**. These codes appear in the Cambridge *Teacher Guide*, *Schemes of Work* and other published resources which can be found at <https://lowersecondary.cambridgeinternational.org>. Ask the Cambridge coordinator or exams officer in your school if you do not already have a log-in for this support site.

## Summary

### Overview

#### Cambridge Lower Secondary Mathematics curriculum

Cambridge Lower Secondary Mathematics is taught over three years (Stages 7 to 9) and is designed for ages 11 to 14. Each stage in the Cambridge Lower Secondary Mathematics curriculum is designed to support a clear progression of mathematics knowledge and skills within and across the lower secondary stages. Over time, learners will develop their mathematical skills in Number, Algebra, Geometry and Measure, and Statistics and Probability while thinking and working mathematically.

We have introduced Thinking and Working Mathematically as a key part of the Cambridge mathematics curriculum to assist learners in considering the processes that are involved when solving problems. Thinking and Working Mathematically connects all the strands and learning objectives of the mathematics curriculum to support learners in developing a collection of mathematical strategies.

Thinking and Working Mathematically is described within the following characteristics:

- Specialising and Generalising
- Conjecturing and Convincing
- Characterising and Classifying
- Critiquing and Improving.

#### Florida's B.E.S.T. Standards for Mathematics curriculum for Grades 6 to 8

Florida's B.E.S.T. Standards for Mathematics are designed for the US grade system. At middle school level, it is designed to be taught over three years (Grades 6 to 8) for learners aged 11 to 14.

The curriculum standards are separated by year and into the following strands: Number Sense and Operations; Algebraic Reasoning; Functions (only in Grade 8); Geometric Reasoning; Data Analysis and Probability.

Learners in Florida engage with mathematics through the Mathematical Thinking and Reasoning Standards, which promote deeper understanding of mathematics. The Mathematical Thinking and Reasoning standards are:

1. Actively participate in effortful learning both individually and collectively.
2. Demonstrate understanding by representing problems in multiple ways.
3. Complete tasks with mathematical fluency.
4. Engage in discussions that reflect on the mathematical thinking of self and others.
5. Use patterns and structure to help understand and connect mathematical concepts.
6. Assess the reasonableness of solutions.
7. Apply mathematics to real-world contexts.

Cambridge Lower Secondary Mathematics and Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8 cover the same expected learner ages. However, there is an offset of one year between the two curricula. Florida's Grade 6 is not equivalent to Cambridge Stage 6 but to Cambridge Stage 7.

Age	Florida	Cambridge
11 to 12	Grade 6	Stage 7
12 to 13	Grade 7	Stage 8
13 to 14	Grade 8	Stage 9

Similarities	Differences											
<p><b>Aspects of the two curricula that overlap:</b></p> <ul style="list-style-type: none"> <li>There are significant similarities between the two curricula. The majority of Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8 are covered by the Cambridge Lower Secondary Mathematics curriculum.</li> <li>Both curricula are well structured, so that learning in areas of mathematics is timely and encourages learners to recognise the inter-related nature of mathematics.</li> <li>Both curricula show appropriate progression, with skills, knowledge and understanding, building on prior learning.</li> <li>Strand organisation of the curricula is comparable.</li> </ul> <table border="1"> <thead> <tr> <th>Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8</th><th>Cambridge Lower Secondary Mathematics</th></tr> </thead> <tbody> <tr> <td>Number Sense and Operations</td><td>Number</td></tr> <tr> <td>Algebraic Reasoning</td><td rowspan="2">Algebra</td></tr> <tr> <td>Functions (only Grade 8)</td></tr> <tr> <td>Geometric Reasoning</td><td>Geometry and Measure</td></tr> <tr> <td>Data Analysis and Probability</td><td>Statistics and Probability</td></tr> </tbody> </table> <p><b>Other similarities to note:</b></p> <ul style="list-style-type: none"> <li>The Cambridge Thinking and Working Mathematically characteristics ensure that problem solving is embedded and enhanced throughout the Cambridge Lower Secondary Mathematics curriculum, with specific tools to engage in thinking mathematically. Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8 include problem solving explicitly in some standards and have standards for Mathematical Thinking and Reasoning that guide the engagement of learners through the mathematics curriculum.</li> <li>The Cambridge Lower Secondary Mathematics curriculum places an emphasis on estimating in calculations and measurements throughout the lower secondary curriculum. Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8 also emphasise the importance of estimation through standard 6. Assess <i>the reasonableness of solutions</i> in the Mathematical Thinking and Reasoning standards.</li> <li>Cambridge learners are expected to work mentally in all aspects of their mathematics to develop conceptual understanding. They are encouraged to build a personal collection of helpful mental strategies by critiquing and improving, such as estimating before formally calculating answers. Florida's</li> </ul>	Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8	Cambridge Lower Secondary Mathematics	Number Sense and Operations	Number	Algebraic Reasoning	Algebra	Functions (only Grade 8)	Geometric Reasoning	Geometry and Measure	Data Analysis and Probability	Statistics and Probability	<p><b>Aspects of the Cambridge Lower Secondary Mathematics curriculum that are not covered by Florida's B.E.S.T. Standards for Mathematics curriculum for Grades 6 to 8:</b></p> <ul style="list-style-type: none"> <li>Number: compound percentage; round numbers to a given number of decimal places, to a given number of significant figures; upper and lower limits of rounded numbers.</li> <li>Algebra: term-to-term rules; generate sequences from numerical and spatial patterns; generate linear and quadratic sequences from numerical patterns; understand and describe <math>n</math>th rules algebraically.</li> <li>Geometry and Measure: hierarchy of quadrilaterals; congruency in 2D shapes; properties of 3D shapes; Euler's formula; reflective symmetry in 3D shapes; rotational symmetry and order of rotation of 2D shapes; rotating 2D shapes; volume of a triangular prism; construct triangles, midpoint and perpendicular bisector of a line segment; bisector of an angle; bearing; translate points and 2D shapes using vectors; exterior angles of a polygon; construct regular polygons.</li> <li>Statistics and Probability: range of data representation; investigative nature of statistics; complementary events have a total probability of 1; probability of multiple mutually exclusive events; identify independent events.</li> <li>Thinking and Working Mathematically: eight characteristics (see Overview).</li> </ul> <p><b>Aspects of Florida's B.E.S.T. Standards for Mathematics curriculum for Grades 6 to 8 that are not covered by the Cambridge Lower Secondary Mathematics curriculum:</b></p> <ul style="list-style-type: none"> <li>Number Sense and Operations: absolute value; adding, subtracting, multiplying and dividing numbers expressed in scientific form.</li> <li>Algebraic Reasoning: unit rate; solve inequalities graphically; determine proportional relationship by examining a table or a graph.</li> <li>Geometric Reasoning: Triangle Inequality Theorem; converse of Pythagorean Theorem.</li> <li>Data Analysis and Probability: box plot.</li> <li>Standards for Mathematical Practice.</li> <li>Mathematical Thinking and Reasoning Standards.</li> </ul> <p><b>Other differences to note:</b></p> <ul style="list-style-type: none"> <li>Cambridge learners are encouraged to use any written method that suits their understanding of mathematics and their context. In Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8, there is reference to particular methods.</li> </ul>
Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8	Cambridge Lower Secondary Mathematics											
Number Sense and Operations	Number											
Algebraic Reasoning	Algebra											
Functions (only Grade 8)												
Geometric Reasoning	Geometry and Measure											
Data Analysis and Probability	Statistics and Probability											

<p>B.E.S.T. Standards for Mathematics for Grades 6 to 8 also emphasise the importance of mental calculation through standard 3. <i>Complete tasks with mathematical fluency</i> in the Mathematical Thinking and Reasoning standards.</p> <ul style="list-style-type: none"> <li>• The Cambridge Lower Secondary Mathematics curriculum recommends calculators to be used with mental and written strategies. Florida's B.E.S.T. Standards for Mathematics describe the use of calculators in the examples which exemplify the standards.</li> </ul>	<ul style="list-style-type: none"> <li>• The Cambridge Lower Secondary Mathematics curriculum encourages the use of technology as a valuable resource for teaching and learning, especially when covering statistics. How and when it should be used is left to the discretion of the school to ensure that there is added value for learners. Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8 do not include the use of technology.</li> <li>• Some aspects of Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8 are covered by the Cambridge Primary Mathematics curriculum. These include: negative numbers; calculating the area of a right angled triangle; converting units (mass, length and capacity); direct proportion; sum of angles in a triangle.</li> </ul>
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## Conclusion

<b>Cambridge Lower Secondary Mathematics is compatible with use of support materials recommended</b>	<b>Cambridge Lower Secondary Mathematics is compatible with additional support required</b>
<p>Schools and teachers: you can add or integrate the Cambridge Lower Secondary Mathematics curriculum yourselves and will benefit from:</p> <ul style="list-style-type: none"> <li>• using the materials on the support sites</li> <li>• attending Cambridge International training (face-to-face or online)</li> <li>• using the wider guidance available, such as <i>Implementing the Curriculum with Cambridge</i></li> <li>• discussing with your regional Cambridge International contact the specific needs of your school and identifying what available support from Cambridge International best meets your needs.</li> </ul>	<p>Schools and teachers: you may need assistance to add or integrate the Cambridge Lower Secondary Mathematics curriculum and will benefit from:</p> <ul style="list-style-type: none"> <li>• discussing with your regional Cambridge International contact the specific needs of your school and identifying what available support from Cambridge International best meets your needs</li> <li>• discussing the compatibility of the Cambridge curriculum with your subject specialist(s). This conversation may include analysing the specific issues with using the Cambridge curriculum in your school and jointly agreeing solutions.</li> </ul>

It is possible to integrate the Cambridge Lower Secondary Mathematics curriculum with Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8 as there is an overlap of content and the pedagogical approaches of both curricula are similar. However, there are a significant number of Cambridge Lower Secondary Mathematics learning objectives that do not align to Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8, particularly those from the Geometry and Measure strand.

Some aspects of Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8 identified as not covered by Cambridge Lower Secondary Mathematics are covered in Cambridge Primary Mathematics, including negative numbers, calculating the area of a right angled triangle and sum of angles in a triangle.

In addition, some aspects of Florida's B.E.S.T. for Mathematics for Grades 6 to 8 may be covered within IGCSE™ Mathematics. This mapping document does not include a review of relevant Cambridge IGCSEs.

To support the integration of the two curricula, you will need to consider the amount of time you have available to teach mathematics and if more time can be provided.

- If more time is provided, it may be possible to cover the overlapping content and the unique content of both curricula.
- Additional planning and teaching time would also need to be considered in order to integrate Cambridge's Thinking and Working Mathematically.
- If more time is not available, you will need to make decisions about which unique parts of both curricula you will prioritise and which learning objectives can be blended to minimise the time requirements. These decisions may be affected by what other subjects you teach.

If you teach in a school across the primary and lower secondary age-range then there is greater alignment of curriculum content by the end of lower secondary (Stage 9 / Grade 8).

We recommend that you read and consider the guidance document *Implementing the Curriculum with Cambridge* and at least one member of staff attends the Introductory training for Cambridge Lower Secondary Mathematics before discussing your needs further with your regional Cambridge International contact.

In addition, we provide a progression grid that is useful for identifying progression of all content across all stages. This will support you to ensure that progression of the Cambridge curriculum can be maintained when moving content between stages/grades.

## Colour coding key:

Colour	Statement affected	Meaning
Turquoise	Florida B.E.S.T. standard	This part of the Florida B.E.S.T. standard has no matching Cambridge learning objective
Grey	Cambridge learning objective	This part of the Cambridge learning objective matches the relevant Florida B.E.S.T. standard, but is not at the same age expectation (either below or above the expected age of the Florida B.E.S.T. standard)
Green	Cambridge learning objective	This part of the Cambridge learning objective does not match the Florida B.E.S.T. standard
No colour	Cambridge learning objective	This part of the Cambridge learning objective matches the Florida B.E.S.T. standard at the same age expectation
No colour	Florida B.E.S.T. standard	This part of the Florida's B.E.S.T. standard matches at least one Cambridge learning objective

## Mapping for Florida's B.E.S.T. Standards: Grade 6

Florida's B.E.S.T. Standards for Mathematics: Grade 6	Cambridge Lower Secondary Mathematics learning objectives	Notes
<b>Strand: Number Sense and Operations</b>		
<b>MA.6.NSO.1 Extend knowledge of numbers to negative numbers and develop an understanding of absolute value.</b>		
MA.6.NSO.1.1 Extend previous understanding of numbers to define rational numbers. Plot, order and compare rational numbers.	<b>7Nf.06</b> Understand the relative size of quantities to compare and order decimals and fractions, using the symbols =, $\neq$ , $>$ and $<$ . <b>8Nf.06</b> Understand the relative size of quantities to compare and order decimals and fractions (positive and negative), using the symbols =, $\neq$ , $>$ , $<$ , $\leq$ and $\geq$ . <b>8Ni.04</b> Understand the hierarchy of natural numbers, integers and rational numbers.	Comparing and ordering numbers with one or two decimal places, proper fractions with different denominators and percentages are introduced in Cambridge Primary Mathematics.
MA.6.NSO.1.2 Given a mathematical or real-world context, represent quantities that have opposite direction using rational numbers. Compare them on a number line and explain the meaning of zero within its context.		Comparing and ordering positive and negative numbers are introduced in Cambridge Primary Mathematics.
MA.6.NSO.1.3 Given a mathematical or real-world context, interpret the absolute value of a number as the distance from zero on a number line. Find the absolute value of rational numbers.		
MA.6.NSO.1.4 Solve mathematical and real-world problems involving absolute value, including the comparison of absolute value.		
<b>MA.6.NSO.2 Add, subtract, multiply and divide positive rational numbers.</b>		
MA.6.NSO.2.1 Multiply and divide positive multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency.	<b>7Nf.08</b> Estimate, multiply and divide decimals by whole numbers. <b>7Np.01</b> Use knowledge of place value to multiply and divide whole numbers and decimals by any positive power of 10. <b>8Np.01</b> Use knowledge of place value to multiply and divide integers and decimals by 0.1 and 0.01.	Cambridge learners are encouraged to use any written method that suits their understanding of

Florida's B.E.S.T. Standards for Mathematics: Grade 6	Cambridge Lower Secondary Mathematics learning objectives	Notes
		mathematics and their context.
MA.6.NSO.2.2 Extend previous understanding of multiplication and division to compute products and quotients of positive fractions by positive fractions, including mixed numbers, with procedural fluency.	<b>7Nf.03</b> Estimate, multiply and divide proper fractions. <b>8Nf.03</b> Estimate and multiply an integer by a mixed number, and divide an integer by a proper fraction. <b>9Nf.03</b> Estimate, multiply and divide fractions, interpret division as a multiplicative inverse, and cancel common factors before multiplying or dividing.	
MA.6.NSO.2.3 Solve multi-step real-world problems involving any of the four operations with positive multi-digit decimals or positive fractions, including mixed numbers.	<b>7Nf.02</b> Estimate and add mixed numbers, and write the answer as a mixed number in its simplest form. <b>7Nf.03</b> Estimate, multiply and divide proper fractions. <b>7Nf.08</b> Estimate, multiply and divide decimals by whole numbers. <b>7Np.01</b> Use knowledge of place value to multiply and divide whole numbers and decimals by any positive power of 10. <b>8Nf.07</b> Estimate and multiply decimals by integers and decimals. <b>8Np.01</b> Use knowledge of place value to multiply and divide integers and decimals by 0.1 and 0.01. <b>9Nf.06</b> Estimate, multiply and divide decimals by integers and decimals.	<p>Solving real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.</p> <p>Adding and subtracting fractions with different denominators are introduced in Cambridge Primary Mathematics.</p> <p>Adding and subtracting decimals are introduced in Cambridge Primary Mathematics.</p>
<b>MA.6.NSO.3 Apply properties of operations to rewrite numbers in equivalent forms.</b>		
MA.6.NSO.3.1 Given a mathematical or real-world context, find the greatest common factor and least common multiple of two whole numbers.	<b>7Ni.05</b> Use knowledge of tests of divisibility to find factors of numbers greater than 100. <b>7Ni.04</b> Understand lowest common multiple and highest common factor (numbers less than 100).	
MA.6.NSO.3.2 Rewrite the sum of two composite whole numbers having a common factor, as a common factor multiplied by the sum of two whole numbers.		

Florida's B.E.S.T. Standards for Mathematics: Grade 6	Cambridge Lower Secondary Mathematics learning objectives	Notes
MA.6.NSO.3.3 Evaluate positive rational numbers and integers with natural number exponents.	<b>8Ni.05</b> Use positive and zero indices, and the index laws for multiplication and division.	
MA.6.NSO.3.4 Express composite whole numbers as a product of prime factors with natural number exponents.	<b>8Ni.03</b> Understand factors, multiples, prime factors, highest common factors and lowest common multiples.	
MA.6.NSO.3.5 Rewrite positive rational numbers in different but equivalent forms including fractions, terminating decimals and percentages.	<b>7Nf.01</b> Recognise that fractions, terminating decimals and percentages have equivalent values.	
<b>MA.6.NSO.4 Extend understanding of operations with integers.</b>		
MA.6.NSO.4.1 Apply and extend previous understandings of operations with whole numbers to add and subtract integers with procedural fluency.	<b>7Ni.01</b> Estimate, add and subtract integers, recognising generalisations.	
MA.6.NSO.4.2 Apply and extend previous understandings of operations with whole numbers to multiply and divide integers with procedural fluency.	<b>7Ni.03</b> Estimate, multiply and divide integers including where one integer is negative.	
<b>Strand: Algebraic Reasoning</b>		
<b>MA.6.AR.1 Apply previous understanding of arithmetic expressions to algebraic expressions.</b>		
MA.6.AR.1.1 Given a mathematical or real-world context, translate written descriptions into algebraic expressions and translate algebraic expressions into written descriptions.	<b>7Ae.01</b> Understand that letters can be used to represent unknown numbers, variables or constants. <b>7Ae.04</b> Understand that a situation can be represented either in words or as an algebraic expression, and move between the two representations (linear with integer coefficients). <b>8Ae.04</b> Understand that a situation can be represented either in words or as an algebraic expression, and move between the two representations (linear with integer or fractional coefficients).	
MA.6.AR.1.2 Translate a real-world written description into an algebraic inequality in the form of $x > a$ , $x < a$ , $x \geq a$ or $x \leq a$ . Represent the inequality on a number line.	<b>7Ae.07</b> Understand that letters can represent an open interval (one term). <b>8Ae.07</b> Understand that letters can represent open and closed intervals (two terms). <b>9Ae.07</b> Understand that a situation can be represented either in words or as an inequality. Move between the two representations and solve linear inequalities.	

Florida's B.E.S.T. Standards for Mathematics: Grade 6	Cambridge Lower Secondary Mathematics learning objectives	Notes
MA.6.AR.1.3 Evaluate algebraic expressions using substitution and order of operations.	<b>7Ae.03</b> Understand how to manipulate algebraic expressions including: - collecting like terms - applying the distributive law with a constant.	
MA.6.AR.1.4 Apply the properties of operations to generate equivalent algebraic expressions with integer coefficients.	<b>7Ae.02</b> Understand that the laws of arithmetic and order of operations apply to algebraic terms and expressions (four operations).	
<b>MA.6.AR.2 Develop an understanding for solving equations and inequalities. Write and solve one-step equations in one variable.</b>		
MA.6.AR.2.1 Given an equation or inequality and a specified set of integer values, determine which values make the equation or inequality true or false.	<b>7Ae.06</b> Understand that a situation can be represented either in words or as an equation. Move between the two representations and solve the equation (integer coefficients, unknown on one side). <b>9Ae.07</b> Understand that a situation can be represented either in words or as an inequality. Move between the two representations and solve linear inequalities.	
MA.6.AR.2.2 Write and solve one-step equations in one variable within a mathematical or real-world context using addition and subtraction, where all terms and solutions are integers.	<b>7Ae.06</b> Understand that a situation can be represented either in words or as an equation. Move between the two representations and solve the equation (integer coefficients, unknown on one side). <b>9Ae.07</b> Understand that a situation can be represented either in words or as an inequality. Move between the two representations and solve linear inequalities.	
MA.6.AR.2.3 Write and solve one-step equations in one variable within a mathematical or real-world context using multiplication and division, where all terms and solutions are integers.	<b>7Ae.06</b> Understand that a situation can be represented either in words or as an equation. Move between the two representations and solve the equation (integer coefficients, unknown on one side). <b>9Ae.07</b> Understand that a situation can be represented either in words or as an inequality. Move between the two representations and solve linear inequalities.	
MA.6.AR.2.4 Determine the unknown decimal or fraction in an equation involving any of the four operations, relating three numbers, with the unknown in any position.	<b>9Ae.05</b> Understand that a situation can be represented either in words or as an equation. Move between the two representations and solve the equation (including those with an unknown in the denominator).	
<b>MA.6.AR.3 Understand ratio and unit rate concepts and use them to solve problems.</b>		
MA.6.AR.3.1 Given a real-world context, write and interpret ratios to show the relative sizes of two quantities using appropriate notation: $\frac{a}{b}$ , $a$ to $b$ , or $a : b$ where $b \neq 0$ .	<b>7Nf.10</b> Use knowledge of equivalence to simplify and compare ratios (same units).	Equivalent ratios are introduced in Cambridge Primary Mathematics.

Florida's B.E.S.T. Standards for Mathematics: Grade 6	Cambridge Lower Secondary Mathematics learning objectives	Notes
MA.6.AR.3.2 Given a real-world context, determine a rate for a ratio of quantities with different units. Calculate and interpret the corresponding unit rate.	<b>8Nf.10</b> Use knowledge of equivalence to simplify and compare ratios (different units).	
MA.6.AR.3.3 Extend previous understanding of fractions and numerical patterns to generate or complete a two- or three-column table to display equivalent part-to-part ratios and part-to-part-to-whole ratios.	<b>7Nf.11</b> Understand how ratios are used to compare quantities to divide an amount into a given ratio with two parts. <b>8Nf.11</b> Understand how ratios are used to compare quantities to divide an amount into a given ratio with two or more parts.	
MA.6.AR.3.4 Apply ratio relationships to solve mathematical and real-world problems involving percentages using the relationship between two quantities.	<b>7Nf.01</b> Recognise that fractions, terminating decimals and percentages have equivalent values. <b>7Nf.09</b> Understand and use the unitary method to solve problems involving ratio and direct proportion in a range of contexts.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.6.AR.3.5 Solve mathematical and real-world problems involving ratios, rates and unit rates, including comparisons, mixtures, ratios of lengths and conversions within the same measurement system.	<b>7Nf.11</b> Understand how ratios are used to compare quantities to divide an amount into a given ratio with two parts. <b>8Nf.10</b> Use knowledge of equivalence to simplify and compare ratios (different units). <b>8Nf.11</b> Understand how ratios are used to compare quantities to divide an amount into a given ratio with two or more parts.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
<b>Strand: Geometric Reasoning</b>		
<b>MA.6.GR.1 Apply previous understanding of the coordinate plane to solve problems.</b>		
MA.6.GR.1.1 Extend previous understanding of the coordinate plane to plot rational number ordered pairs in all four quadrants and on both axes. Identify the $x$ - or $y$ -axis as the line of reflection when two ordered pairs have an opposite $x$ - or $y$ -coordinate.	<b>7Gp.04</b> Reflect 2D shapes on coordinate grids, in a given mirror line ( $x$ - or $y$ -axis), recognising that the image is congruent to the object after a reflection.	Reading and plotting coordinates in all four quadrants are introduced in Cambridge Primary Mathematics.  Plotting a 2D shape in all four quadrants is introduced in Cambridge Primary Mathematics.



Florida's B.E.S.T. Standards for Mathematics: Grade 6	Cambridge Lower Secondary Mathematics learning objectives	Notes
MA.6.GR.1.2 Find distances between ordered pairs, limited to the same $x$ -coordinate or the same $y$ -coordinate, represented on the coordinate plane.	<b>7Gp.02</b> Use knowledge of 2D shapes and coordinates to find the distance between two coordinates that have the same $x$ or $y$ coordinate (without the aid of a grid).	
MA.6.GR.1.3 <b>Solve mathematical and real-world problems</b> by plotting points on a coordinate plane, including finding the perimeter or area of a rectangle.	<b>7Gp.02</b> Use knowledge of 2D shapes and coordinates to find the distance between two coordinates that have the same $x$ or $y$ coordinate (without the aid of a grid). <b>8Gp.02</b> Use knowledge of coordinates to find the midpoint of a line segment.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
<b>MA.6.GR.2 Model and solve problems involving two-dimensional figures and three-dimensional figures.</b>		
MA.6.GR.2.1 Derive a formula for the area of a right triangle using a rectangle. Apply a formula to find the area of a triangle.	<b>7Gg.05</b> Derive and know the formula for the area of a triangle. <b>Use the formula to calculate the area of triangles and compound shapes made from rectangles and triangles.</b>	Calculating the area of a right-angled triangle is introduced in Cambridge Primary Mathematics.
MA.6.GR.2.2 <b>Solve mathematical and real-world problems</b> involving the area of quadrilaterals and composite figures by decomposing them into triangles or rectangles.	<b>7Gg.05</b> Derive and know the formula for the area of a triangle. Use the formula to calculate the area of triangles and compound shapes made from rectangles and triangles. <b>8Gg.04</b> Use knowledge of rectangles, squares and triangles to derive the formulae for the area of parallelograms and trapezia. Use the formulae to calculate the area of parallelograms and trapezia.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.6.GR.2.3 <b>Solve mathematical and real-world problems</b> involving the volume of right rectangular prisms with positive rational number edge lengths using a visual model and a formula.	<b>7Gg.07</b> Derive and use a formula for the volume of a cube or cuboid. Use the formula to calculate the volume of compound shapes made from cuboids, in cubic metres ( $\text{m}^3$ ), cubic centimetres ( $\text{cm}^3$ ) and cubic millimetres ( $\text{mm}^3$ ).	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.6.GR.2.4 Given a mathematical or real-world context, find the surface area of right rectangular prisms and right rectangular pyramids using the figure's net.	<b>7Gg.09</b> Use knowledge of area, and properties of cubes and cuboids to calculate their surface area. <b>8Gg.08</b> Use knowledge of area, and properties of cubes, cuboids, <b>triangular prisms</b> and pyramids to calculate their surface area.	
<b>Strand: Data Analysis and Probability</b>		

Florida's B.E.S.T. Standards for Mathematics: Grade 6	Cambridge Lower Secondary Mathematics learning objectives	Notes
<b>MA.6.DP.1 Develop an understanding of statistics and determine measures of center and measures of variability. Summarize statistical distributions graphically and numerically.</b>		
MA.6.DP.1.1 Recognize and formulate a statistical question that would generate numerical data.	<b>7Ss.01</b> Select and trial data collection and sampling methods to investigate predictions for a set of related statistical questions, considering what data to collect (categorical, discrete and continuous data).	
MA.6.DP.1.2 Given a numerical data set within a real-world context, find and interpret mean, median, mode and range.	<b>7Ss.04</b> Use knowledge of mode, median, mean and range to describe and summarise large data sets. Choose and explain which one is the most appropriate for the context.	
MA.6.DP.1.3 Given a box plot within a real-world context, determine the minimum, the lower quartile, the median, the upper quartile and the maximum. Use this summary of the data to describe the spread and distribution of the data.		
MA.6.DP.1.4 Given a histogram or line plot within a real-world context, qualitatively describe and interpret the spread and distribution of the data, including any symmetry, skewness, gaps, clusters, outliers and the range.	<b>7Ss.03</b> Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation: <ul style="list-style-type: none"> <li>- Venn and Carroll diagrams</li> <li>- tally charts, frequency tables and two-way tables</li> <li>- dual and compound bar charts</li> <li>- waffle diagrams and pie charts</li> <li>- frequency diagrams for continuous data</li> <li>- line graphs</li> <li>- scatter graphs</li> <li>- infographics.</li> </ul> <b>7Ss.05</b> Interpret data, identifying patterns, within and between data sets, to answer statistical questions. Discuss conclusions, considering the sources of variation, including sampling, and check predictions.	
MA.6.DP.1.5 Create box plots and histograms to represent sets of numerical data within real-world contexts.	<b>7Ss.03</b> Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation: <ul style="list-style-type: none"> <li>- Venn and Carroll diagrams</li> <li>- tally charts, frequency tables and two-way tables</li> <li>- dual and compound bar charts</li> <li>- waffle diagrams and pie charts</li> <li>- frequency diagrams for continuous data</li> <li>- line graphs</li> </ul>	

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	<ul style="list-style-type: none"> <li>- scatter graphs</li> <li>- infographics.</li> </ul>	
MA.6.DP.1.6 Given a real-world scenario, determine and describe how changes in data values impact measures of center and variation.	<b>8Ss.04</b> Use knowledge of mode, median, mean and range to compare two distributions, considering the interrelationship between centrality and spread.	

## Mapping for Florida's B.E.S.T. Standards: Grade 7

Florida's B.E.S.T. Standards for Mathematics: Grade 7	Cambridge Lower Secondary Mathematics learning objectives	Notes
<b>Strand: Number Sense and Operations</b>		
<b>MA.7.NSO.1 Rewrite numbers in equivalent forms.</b>		
MA.7.NSO.1.1 Know and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to whole-number exponents and rational number bases.	<b>8Ni.05</b> Use positive and zero indices, and the index laws for multiplication and division.	
MA.7.NSO.1.2 Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to <b>solve mathematical and real-world problems.</b>	<b>7Nf.01</b> Recognise that fractions, terminating decimals and percentages have equivalent values. <b>8Nf.01</b> Recognise fractions that are equivalent to recurring decimals. <b>9Nf.01</b> Deduce whether fractions will have recurring or terminating decimal equivalents.	Equivalent values of fractions, decimals and percentages are introduced in Cambridge Primary Mathematics.  Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
<b>MA.7.NSO.2 Add, subtract, multiply and divide rational numbers.</b>		
MA.7.NSO.2.1 <b>Solve mathematical problems</b> using multi-step order of operations with rational numbers including grouping symbols, whole-number exponents and <b>absolute value.</b>	<b>8Ni.01</b> Understand that brackets, indices (square and cube roots) and operations follow a particular order. <b>8Ni.05</b> Use positive and zero indices, and the index laws for multiplication and division.	Solving mathematical problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.7.NSO.2.2 Add, subtract, multiply and divide rational numbers with procedural fluency.	<b>7Nf.07</b> Estimate, add and subtract positive and negative numbers with the same or different number of decimal places. <b>7Ni.01</b> Estimate, add and subtract integers, recognising generalisations.	

Florida's B.E.S.T. Standards for Mathematics: Grade 7	Cambridge Lower Secondary Mathematics learning objectives	Notes
	<b>7Nf.04</b> Use knowledge of common factors, laws of arithmetic and order of operations to simplify calculations containing decimals or fractions. <b>8Nf.04</b> Use knowledge of the laws of arithmetic and order of operations (including brackets) to simplify calculations containing decimals or fractions. <b>8Nf.07</b> Estimate and multiply decimals by integers and decimals. <b>8Ni.02</b> Estimate, multiply and divide integers, recognising generalisations. <b>9Nf.02</b> Estimate, add and subtract proper and improper fractions, and mixed numbers, using the order of operations. <b>9Np.01</b> Multiply and divide integers and decimals by 10 to the power of any positive or negative number.	
MA.7.NSO.2.3 Solve real-world problems involving any of the four operations with rational numbers.	<b>7Nf.04</b> Use knowledge of common factors, laws of arithmetic and order of operations to simplify calculations containing decimals or fractions. <b>7Ni.01</b> Estimate, add and subtract integers, recognising generalisations. <b>8Nf.04</b> Use knowledge of the laws of arithmetic and order of operations (including brackets) to simplify calculations containing decimals or fractions. <b>8Ni.02</b> Estimate, multiply and divide integers, recognising generalisations. <b>9Nf.02</b> Estimate, add and subtract proper and improper fractions, and mixed numbers, using the order of operations. <b>9Np.01</b> Multiply and divide integers and decimals by 10 to the power of any positive or negative number	Solving real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
<b>Strand: Algebraic Reasoning</b>		
<b>MA.7.AR.1 Rewrite algebraic expressions in equivalent forms.</b>		
MA.7.AR.1.1 Apply properties of operations to add and subtract linear expressions with rational coefficients.	<b>8Ae.02</b> Understand that the laws of arithmetic and order of operations apply to algebraic terms and expressions (four operations, squares and cubes).	
MA.7.AR.1.2 Determine whether two linear expressions are equivalent.	<b>8Ae.03</b> Understand how to manipulate algebraic expressions including: - applying the distributive law with a single term (squares and cubes) - identifying the highest common factor to factorise.	
<b>MA.7.AR.2 Write and solve equations and inequalities in one variable.</b>		
MA.7.AR.2.1 Write and solve one-step inequalities in one variable within a mathematical context and represent solutions algebraically or graphically.	<b>9Ae.07</b> Understand that a situation can be represented either in words or as an inequality. Move between the two representations and solve linear inequalities.	

Florida's B.E.S.T. Standards for Mathematics: Grade 7	Cambridge Lower Secondary Mathematics learning objectives	Notes
MA.7.AR.2.2 Write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers.	<b>8Ae.06</b> Understand that a situation can be represented either in words or as an equation. Move between the two representations and solve the equation (integer or fractional coefficients, unknown on either or both sides).	
<b>MA.7.AR.3 Use percentages and proportional reasoning to solve problems.</b>		
MA.7.AR.3.1 Apply previous understanding of percentages and ratios to solve multi-step <b>real-world</b> percent <b>problems</b> .	<b>7Nf.05</b> Recognise percentages of shapes and whole numbers, including percentages less than 1 or greater than 100. <b>8Nf.05</b> Understand percentage increase and decrease, and absolute change. <b>8Nf.10</b> Use knowledge of equivalence to simplify and compare ratios (different units). <b>8Nf.11</b> Understand how ratios are used to compare quantities to divide an amount into a given ratio with two or more parts.	Solving real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.7.AR.3.2 Apply previous understanding of ratios to <b>solve real-world problems</b> involving proportions.	<b>7Nf.09</b> Understand and use the unitary method to solve problems involving ratio and direct proportion in a range of contexts. <b>8Nf.09</b> Understand and use the relationship between ratio and direct proportion.	Solving real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.7.AR.3.3 <b>Solve mathematical and real-world problems</b> involving the conversion of units across different measurement systems.	<b>7Gg.04</b> Understand the relationships and convert between metric units of area, including hectares (ha), square metres (m <sup>2</sup> ), square centimetres (cm <sup>2</sup> ) and square millimetres (mm <sup>2</sup> ). <b>8Gg.03</b> Know that distances can be measured in miles or kilometres, and that a kilometre is approximately $\frac{5}{8}$ of a mile or a mile is 1.6 kilometres.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.  Converting units (mass, length and capacity) are introduced in Cambridge Primary Mathematics.
<b>MA.7.AR.4 Analyze and represent two-variable proportional relationships.</b>		
MA.7.AR.4.1 Determine whether two quantities have a <b>proportional relationship by examining a table, graph or written description</b> .		Understanding the relationship between two quantities when they are in direct proportion is

Florida's B.E.S.T. Standards for Mathematics: Grade 7	Cambridge Lower Secondary Mathematics learning objectives	Notes
		introduced in Cambridge Primary Mathematics, but not through examining a table or a graph.
MA.7.AR.4.2 Determine the constant of proportionality within a mathematical or real-world context given a table, graph or written description of a proportional relationship.	<b>8Nf.09</b> Understand and use the relationship between ratio and direct proportion.	
MA.7.AR.4.3 Given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description.		
MA.7.AR.4.4 Given any representation of a proportional relationship, translate the representation to a written description, table or equation.		
MA.7.AR.4.5 Solve real-world problems involving proportional relationships.	<b>7Nf.09</b> Understand and use the unitary method to solve problems involving ratio and direct proportion in a range of contexts.	Solving real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
<b>Strand: Geometric Reasoning</b>		
<b>MA.7.GR.1 Solve problems involving two-dimensional figures, including circles.</b>		
MA.7.GR.1.1 Apply formulas to find the areas of trapezoids, parallelograms and rhombi.	<b>8Gg.04</b> Use knowledge of rectangles, squares and triangles to derive the formulae for the area of parallelograms and trapezia. Use the formulae to calculate the area of parallelograms and trapezia.	
MA.7.GR.1.2 Solve mathematical or real-world problems involving the area of polygons or composite figures by decomposing them into triangles or quadrilaterals.	<b>9Gg.03</b> Estimate and calculate areas of compound 2D shapes made from rectangles, triangles and circles.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.7.GR.1.3 Explore the proportional relationship between circumferences and diameters of circles. Apply a	<b>7Gg.03</b> Know the parts of a circle: - centre	Solving mathematical and real-world problems are

Florida's B.E.S.T. Standards for Mathematics: Grade 7	Cambridge Lower Secondary Mathematics learning objectives	Notes
formula for the circumference of a circle to solve mathematical and real-world problems.	<ul style="list-style-type: none"> <li>- radius</li> <li>- diameter</li> <li>- circumference</li> <li>- chord</li> <li>- tangent.</li> </ul> <b>8Gg.02</b> Understand $\pi$ as the ratio between a circumference and a diameter. Know and use the formula for the circumference of a circle.	covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.7.GR.1.4 Explore and apply a formula to find the area of a circle to solve mathematical and real-world problems.	<b>8Ae.05</b> Understand that a situation can be represented either in words or as a formula (mixed operations), and manipulate using knowledge of inverse operations to change the subject of a formula. <b>9Gg.01</b> Know and use the formulae for the area and circumference of a circle.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.7.GR.1.5 Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors.	<b>7Gp.01</b> Use knowledge of scaling to interpret maps and plans. <b>7Gp.06</b> Understand that the image is mathematically similar to the object after enlargement. Use positive integer scale factors to perform and identify enlargements. <b>9Gg.03</b> Estimate and calculate areas of compound 2D shapes made from rectangles, triangles and circles.	
<b>MA.7.GR.2 Solve problems involving three-dimensional figures, including right circular cylinders.</b>		
MA.7.GR.2.1 Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure's net.	<b>9Gg.05</b> Use knowledge of area, and properties of cubes, cuboids, triangular prisms, pyramids and cylinders to calculate their surface area.	
MA.7.GR.2.2 Solve real-world problems involving surface area of right circular cylinders.	<b>9Gg.05</b> Use knowledge of area, and properties of cubes, cuboids, triangular prisms, pyramids and cylinders to calculate their surface area.	Solving real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.7.GR.2.3 Solve mathematical and real-world problems involving volume of right circular cylinders.	<b>9Gg.04</b> Use knowledge of area and volume to derive the formula for the volume of prisms and cylinders. Use the formula to calculate the volume of prisms and cylinders.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically



Florida's B.E.S.T. Standards for Mathematics: Grade 7	Cambridge Lower Secondary Mathematics learning objectives	Notes
		characteristics, not by learning objectives.
<b>Strand: Data Analysis and Probability</b>		
<b>MA.7.DP.1 Represent and interpret numerical and categorical data.</b>		
MA.7.DP.1.1 Determine an appropriate measure of center or measure of variation to summarize numerical data, represented numerically or graphically, taking into consideration the context and any outliers.	<b>8Ss.04</b> Use knowledge of mode, median, mean and range to compare two distributions, considering the interrelationship between centrality and spread.	
MA.7.DP.1.2 Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results and draw conclusions about the two populations.	<b>8Ss.04</b> Use knowledge of mode, median, mean and range to compare two distributions, considering the interrelationship between centrality and spread. <b>9Ss.04</b> Use mode, median, mean and range to compare two distributions, including grouped data.	
MA.7.DP.1.3 Given categorical data from a random sample, use proportional relationships to make predictions about a population.	<b>7Ss.05</b> Interpret data, identifying patterns, within and between data sets, to answer statistical questions. Discuss conclusions, considering the sources of variation, including sampling, and check predictions. <b>7Sp.01</b> Use the language associated with probability and proportion to describe, compare, order and interpret the likelihood of outcomes. <b>8Ss.05</b> Interpret data, identifying patterns, trends and relationships, within and between data sets, to answer statistical questions. Discuss conclusions, considering the sources of variation, including sampling, and check predictions. <b>9Ss.05</b> Interpret data, identifying patterns, trends and relationships, within and between data sets, to answer statistical questions. Make informal inferences and generalisations, identifying wrong or misleading information.	
MA.7.DP.1.4 Use proportional reasoning to construct, display and interpret data in circle graphs.	<b>7Ss.03</b> Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation: - Venn and Carroll diagrams - tally charts, frequency tables and two-way tables - dual and compound bar charts - waffle diagrams and pie charts - frequency diagrams for continuous data - line graphs	

Florida's B.E.S.T. Standards for Mathematics: Grade 7	Cambridge Lower Secondary Mathematics learning objectives	Notes
	<ul style="list-style-type: none"> <li>- scatter graphs</li> <li>- infographics.</li> </ul> <p><b>8Ss.03</b> Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation:</p> <ul style="list-style-type: none"> <li>- Venn and Carroll diagrams</li> <li>- tally charts, frequency tables and two-way tables</li> <li>- dual and compound bar charts</li> <li>- pie charts</li> <li>- line graphs and time series graphs</li> <li>- scatter graphs</li> <li>- stem-and-leaf diagrams</li> <li>- infographics.</li> </ul>	
MA.7.DP.1.5 Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation.	<p><b>8Ss.03</b> Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation:</p> <ul style="list-style-type: none"> <li>- Venn and Carroll diagrams</li> <li>- tally charts, frequency tables and two-way tables</li> <li>- dual and compound bar charts</li> <li>- pie charts</li> <li>- line graphs and time series graphs</li> <li>- scatter graphs</li> <li>- stem-and-leaf diagrams</li> <li>- infographics.</li> </ul>	
<b>MA.7.DP.2 Develop an understanding of probability. Find and compare experimental and theoretical probabilities.</b>		
MA.7.DP.2.1 Determine the sample space for a simple experiment.	<b>7Sp.05</b> Design and conduct chance experiments or simulations, using small and large numbers of trials. Analyse the frequency of outcomes to calculate experimental probabilities.	The Florida Standard is a part of <b>7Sp.05</b> .
MA.7.DP.2.2 Given the probability of a chance event, interpret the likelihood of it occurring. Compare the probabilities of chance events.	<p><b>7Sp.02</b> Understand and explain that probabilities range from 0 to 1, and can be represented as proper fractions, decimals and percentages.</p> <p><b>7Sp.04</b> Understand how to find the theoretical probabilities of equally likely outcomes.</p> <p><b>7Sp.05</b> Design and conduct chance experiments or simulations, using small and large numbers of trials. Analyse the frequency of outcomes to calculate experimental probabilities.</p>	

Florida's B.E.S.T. Standards for Mathematics: Grade 7	Cambridge Lower Secondary Mathematics learning objectives	Notes
MA.7.DP.2.3 Find the theoretical probability of an event related to a simple experiment.	<b>7Sp.04</b> Understand how to find the theoretical probabilities of equally likely outcomes. <b>7Sp.05</b> Design and conduct chance experiments or simulations, using small and large numbers of trials. Analyse the frequency of outcomes to calculate experimental probabilities.	
MA.7.DP.2.4 Use a simulation of a simple experiment to find experimental probabilities and compare them to theoretical probabilities.	<b>8Sp.04</b> Design and conduct chance experiments or simulations, using small and large numbers of trials. Compare the experimental probabilities with theoretical outcomes.	

## Mapping for Florida's B.E.S.T. Standards: Grade 8

Florida's B.E.S.T. Standards for Mathematics: Grade 8	Cambridge Lower Secondary Mathematics learning objectives	Notes
<b>Strand: Number Sense and Operations</b>		
<b>MA.8.NSO.1 Solve problems involving rational numbers, including numbers in scientific notation, and extend the understanding of rational numbers to irrational numbers.</b>		
MA.8.NSO.1.1 Extend previous understanding of rational numbers to define irrational numbers within the real number system. <b>Locate an approximate value of a numerical expression involving irrational numbers on a number line.</b>	<b>9Ni.01</b> Understand the difference between rational and irrational numbers.	
MA.8.NSO.1.2 Plot, order and compare rational and irrational numbers, represented in various forms.	<b>7Nf.01</b> Recognise that fractions, terminating decimals and percentages have equivalent values. <b>8Nf.01</b> Recognise fractions that are equivalent to recurring decimals. <b>8Nf.06</b> Understand the relative size of quantities to compare and order decimals and fractions (positive and negative), using the symbols =, ≠, >, <, ≤ and ≥. <b>9Ni.01</b> Understand the difference between rational and irrational numbers. <b>9Nf.01</b> Deduce whether fractions will have recurring or terminating decimal equivalents.	
MA.8.NSO.1.3 Extend previous understanding of the Laws of Exponents to include integer exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency.	<b>9Ni.02</b> Use positive, negative and zero indices, and the index laws for multiplication and division.	
MA.8.NSO.1.4 Express numbers in scientific notation to represent and approximate very large or very small quantities. Determine how many times larger or smaller one number is compared to a second number.	<b>9Ni.03</b> Understand the standard form for representing large and small numbers.	
<b>MA.8.NSO.1.5 Add, subtract, multiply and divide numbers expressed in scientific notation with procedural fluency.</b>		

Florida's B.E.S.T. Standards for Mathematics: Grade 8	Cambridge Lower Secondary Mathematics learning objectives	Notes
MA.8.NSO.1.6 Solve real-world problems involving operations with numbers expressed in scientific notation.		
MA.8.NSO.1.7 Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers including exponents and radicals.	<p><b>7Nf.04</b> Use knowledge of common factors, laws of arithmetic and order of operations to simplify calculations containing decimals or fractions.</p> <p><b>8Nf.04</b> Use knowledge of the laws of arithmetic and order of operations (including brackets) to simplify calculations containing decimals or fractions.</p> <p><b>9Ni.02</b> Use positive, negative and zero indices, and the index laws for multiplication and division</p> <p><b>9Nf.04</b> Use knowledge of the laws of arithmetic, inverse operations, equivalence and order of operations (brackets and indices) to simplify calculations containing decimals and fractions.</p> <p><b>9Nf.06</b> Estimate, multiply and divide decimals by integers and decimals.</p>	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
<b>Strand: Algebraic Reasoning</b>		
<b>MA.8.AR.1 Generate equivalent algebraic expressions.</b>		
MA.8.AR.1.1 Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases.	<p><b>9Ae.03</b> Understand that a situation can be represented either in words or as an algebraic expression, and move between the two representations (including squares, cubes and roots).</p> <p><b>9Ae.02</b> Understand how to manipulate algebraic expressions including:</p> <ul style="list-style-type: none"> <li>- expanding the product of two algebraic expressions</li> <li>- applying the laws of indices</li> <li>- simplifying algebraic fractions.</li> </ul>	
MA.8.AR.1.2 Apply properties of operations to multiply two linear expressions with rational coefficients.	<p><b>9Ae.01</b> Understand that the laws of arithmetic and order of operations apply to algebraic terms and expressions (four operations and integer powers).</p> <p><b>9Ae.02</b> Understand how to manipulate algebraic expressions including:</p> <ul style="list-style-type: none"> <li>- expanding the product of two algebraic expressions</li> <li>- applying the laws of indices</li> <li>- simplifying algebraic fractions.</li> </ul>	
MA.8.AR.1.3 Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions.	<p><b>9Ae.02</b> Understand how to manipulate algebraic expressions including:</p> <ul style="list-style-type: none"> <li>- expanding the product of two algebraic expressions</li> <li>- applying the laws of indices</li> <li>- simplifying algebraic fractions.</li> </ul>	

Florida's B.E.S.T. Standards for Mathematics: Grade 8	Cambridge Lower Secondary Mathematics learning objectives	Notes
<b>MA.8.AR.2 Solve multi-step one-variable equations and inequalities.</b>		
MA.8.AR.2.1 Solve multi-step linear equations in one variable, with rational number coefficients. Include equations with variables on both sides.	<b>9Ae.05</b> Understand that a situation can be represented either in words or as an equation. Move between the two representations and solve the equation (including those with an unknown in the denominator).	
MA.8.AR.2.2 Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically.	<b>9Ae.07</b> Understand that a situation can be represented either in words or as an inequality. Move between the two representations and solve linear inequalities.	
MA.8.AR.2.3 Given an equation in the form $x^2 = p$ and $x^3 = q$ , where $p$ is a whole number and $q$ is an integer, determine the real solutions.	<b>8Ni.06</b> Recognise squares of negative and positive numbers, and corresponding square roots. <b>8Ni.07</b> Recognise positive and negative cube numbers, and the corresponding cube roots. <b>9Ni.04</b> Use knowledge of square and cube roots to estimate surds. <b>9Ae.05</b> Understand that a situation can be represented either in words or as an equation. Move between the two representations and solve the equation (including those with an unknown in the denominator).	
<b>MA.8.AR.3 Extend understanding of proportional relationships to two-variable linear equations.</b>		
MA.8.AR.3.1 Determine if a linear relationship is also a proportional relationship.	<b>9Nf.07</b> Understand the relationship between two quantities when they are in direct or inverse proportion. <b>9Nf.08</b> Use knowledge of ratios and equivalence for a range of contexts.	
MA.8.AR.3.2 Given a table, graph or written description of a linear relationship, determine the slope.	<b>8As.06</b> Recognise that equations of the form $y = mx + c$ correspond to straight-line graphs, where $m$ is the gradient and $c$ is the $y$ -intercept (integer values of $m$ ).	
MA.8.AR.3.3 Given a table, graph or written description of a linear relationship, write an equation in slope-intercept form.	<b>9As.06</b> Understand that straight-line graphs can be represented by equations. Find the equation in the form $y = mx + c$ or where $y$ is given implicitly in terms of $x$ (fractional, positive and negative gradients).	
MA.8.AR.3.4 Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table or an equation in slope-intercept form.	<b>7As.05</b> Use knowledge of coordinate pairs to construct tables of values and plot the graphs of linear functions, where $y$ is given explicitly in terms of $x$ ( $y = x + c$ or $y = mx$ ). <b>8As.05</b> Use knowledge of coordinate pairs to construct tables of values and plot the graphs of linear functions, where $y$ is given explicitly in terms of $x$ ( $y = mx + c$ ).	

Florida's B.E.S.T. Standards for Mathematics: Grade 8	Cambridge Lower Secondary Mathematics learning objectives	Notes
	<p><b>9As.05</b> Use knowledge of coordinate pairs to construct tables of values and plot the graphs of linear functions, including where <math>y</math> is given implicitly in terms of <math>x</math> (<math>ax + by = c</math>), and quadratic functions of the form <math>y = x^2 \pm a</math>.</p> <p><b>9As.06</b> Understand that straight-line graphs can be represented by equations. Find the equation in the form <math>y = mx + c</math> or where <math>y</math> is given implicitly in terms of <math>x</math> (fractional, positive and negative gradients).</p> <p><b>9As.07</b> Read, draw and interpret graphs and use compound measures to compare graphs.</p>	
MA.8.AR.3.5 Given a real-world context, determine and interpret the slope and $y$ -intercept of a two-variable linear equation from a written description, a table, a graph or an equation in slope-intercept form.	<b>8As.07</b> Read and interpret graphs with more than one component. Explain why they have a specific shape and the significance of intersections of the graphs.	
<b>MA.8.AR.4 Develop an understanding of two-variable systems of equations.</b>		
MA.8.AR.4.1 Given a system of two linear equations and a specified set of possible solutions, determine which ordered pairs satisfy the system of linear equations.	<p><b>9Ae.06</b> Understand that the solution of simultaneous linear equations:</p> <ul style="list-style-type: none"> <li>- is the pair of values that satisfy both equations</li> <li>- can be found algebraically (eliminating one variable)</li> <li>- can be found graphically (point of intersection).</li> </ul>	
MA.8.AR.4.2 Given a system of two linear equations represented graphically on the same coordinate plane, determine whether there is one solution, no solution or infinitely many solutions.	<p><b>9Ae.06</b> Understand that the solution of simultaneous linear equations:</p> <ul style="list-style-type: none"> <li>- is the pair of values that satisfy both equations</li> <li>- can be found algebraically (eliminating one variable)</li> <li>- can be found graphically (point of intersection).</li> </ul>	
MA.8.AR.4.3 Given a mathematical or real-world context, solve systems of two linear equations by graphing.	<p><b>9Ae.06</b> Understand that the solution of simultaneous linear equations:</p> <ul style="list-style-type: none"> <li>- is the pair of values that satisfy both equations</li> <li>- can be found algebraically (eliminating one variable)</li> <li>- can be found graphically (point of intersection).</li> </ul>	
<b>Strand: Functions</b>		
<b>MA.8.F.1 Define, evaluate and compare functions.</b>		
MA.8.F.1.1 Given a set of ordered pairs, a table, a graph or mapping diagram, determine whether the relationship is a function. Identify the domain and range of the relation.	<b>7As.03</b> Understand that a function is a relationship where each input has a single output. Generate outputs from a given function and identify inputs from a given output by considering inverse operations (linear and integers).	

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	<b>8As.03</b> Understand that a function is a relationship where each input has a single output. Generate outputs from a given function and identify inputs from a given output by considering inverse operations (including fractions).	
MA.8.F.1.2 Given a function defined by a graph or an equation, determine whether the function is a linear function. Given an input-output table, determine whether it could represent a linear function.	<b>9As.03</b> Understand that a function is a relationship where each input has a single output. Generate outputs from a given function and identify inputs from a given output by considering inverse operations (including indices).	
MA.8.F.1.3 Analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing or constant.	<b>7As.04</b> Understand that a situation can be represented either in words or as a linear function in two variables (of the form $y = x + c$ or $y = mx$ ), and move between the two representations. <b>8As.04</b> Understand that a situation can be represented either in words or as a linear function in two variables (of the form $y = mx + c$ ), and move between the two representations. <b>9As.03</b> Understand that a function is a relationship where each input has a single output. Generate outputs from a given function and identify inputs from a given output by considering inverse operations (including indices). <b>9As.04</b> Understand that a situation can be represented either in words or as a linear function in two variables (of the form $y = mx + c$ or $ax + by = c$ ), and move between the two representations.	
<b>Strand: Geometric Reasoning</b>		
<b>MA.8.GR.1 Develop an understanding of the Pythagorean Theorem and angle relationships involving triangles.</b>		
MA.8.GR.1.1 Apply the Pythagorean Theorem to <b>solve mathematical and real-world problems</b> involving unknown side lengths in right triangles.	<b>9Gg.10</b> Know and use Pythagoras' theorem.	Solving mathematical and real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.8.GR.1.2 Apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane.	<b>9Gg.10</b> Know and use Pythagoras' theorem.	
MA.8.GR.1.3 <b>Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of</b>		



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sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.		
MA.8.GR.1.4 Solve mathematical problems involving the relationships between supplementary, complementary, vertical or adjacent angles.	<p><b>7Gg.13</b> Recognise the properties of angles on:</p> <ul style="list-style-type: none"> <li>- parallel lines and transversals</li> <li>- perpendicular lines</li> <li>- intersecting lines.</li> </ul> <p><b>8Gg.11</b> Recognise and describe the properties of angles on parallel and intersecting lines, using geometric vocabulary such as alternate, corresponding and vertically opposite.</p> <p><b>9Gg.09</b> Use properties of angles, parallel and intersecting lines, triangles and quadrilaterals to calculate missing angles.</p>	Solving mathematical are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.
MA.8.GR.1.5 Solve problems involving the relationships of interior and exterior angles of a triangle.	<b>8Gg.10</b> Derive and use the fact that the exterior angle of a triangle is equal to the sum of the two interior opposite angles.	Sum of the angles in a triangle is introduced in Cambridge Primary Mathematics.
MA.8.GR.1.6 Develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles.	<p><b>7Gg.11</b> Derive the property that the sum of the angles in a quadrilateral is <math>360^\circ</math>, and use this to calculate missing angles.</p> <p><b>7Gg.12</b> Know that the sum of the angles around a point is <math>360^\circ</math>, and use this to calculate missing angles.</p> <p><b>9Gg.07</b> Derive and use the formula for the sum of the interior angles of any polygon.</p>	
<b>MA.8.GR.2 Understand similarity and congruence using models and transformations.</b>		
MA.8.GR.2.1 Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship.	<p><b>7Gp.03</b> Use knowledge of translation of 2D shapes to identify the corresponding points between the original and the translated image, without the use of a grid.</p> <p><b>9Gp.04</b> Identify and describe a transformation (reflections, translations, rotations and combinations of these) given an object and its image.</p>	
MA.8.GR.2.2 Given a preimage and image generated by a single dilation, identify the scale factor that describes the relationship.	<b>7Gp.06</b> Understand that the image is mathematically similar to the object after enlargement. Use positive integer scale factors to perform and identify enlargements.	

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	<p><b>8Gp.06</b> Enlarge 2D shapes, from a centre of enlargement (outside or on the shape) with a positive integer scale factor. Identify an enlargement and scale factor.</p> <p><b>9Gp.06</b> Enlarge 2D shapes, from a centre of enlargement (outside, on or inside the shape) with a positive integer scale factor. Identify an enlargement, centre of enlargement and scale factor.</p>	
MA.8.GR.2.3 Describe and apply the effect of a single transformation on two-dimensional figures using coordinates and the coordinate plane.	<p><b>6Gp.03</b> Translate 2D shapes, identifying the corresponding points between the original and the translated image, on coordinate grids.</p> <p><b>7Gp.03</b> Use knowledge of translation of 2D shapes to identify the corresponding points between the original and the translated image, without the use of a grid.</p> <p><b>8Gp.04</b> Reflect 2D shapes and points in a given mirror line on or parallel to the x- or y-axis, or <math>y = \pm x</math> on coordinate grids. Identify a reflection and its mirror line.</p> <p><b>9Gp.03</b> Transform points and 2D shapes by combinations of reflections, translations and rotations.</p>	
MA.8.GR.2.4 Solve mathematical and real-world problems involving proportional relationships between similar triangles.	<p><b>7Gp.06</b> Understand that the image is mathematically similar to the object after enlargement. Use positive integer scale factors to perform and identify enlargements.</p> <p><b>9Gp.07</b> Analyse and describe changes in perimeter and area of squares and rectangles when side lengths are enlarged by a positive integer scale factor.</p>	<b>9Gp.07</b> is for rectangles, but can be extended for triangles.
<b>Strand: Data Analysis and Probability</b>		
<b>MA.8.DP.1 Represent and investigate numerical bivariate data.</b>		
MA.8.DP.1.1 Given a set of real-world bivariate numerical data, construct a scatter plot or a line graph as appropriate for the context.	<p><b>9Ss.03</b> Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation:</p> <ul style="list-style-type: none"> <li>- Venn and Carroll diagrams</li> <li>- tally charts, frequency tables and two-way tables</li> <li>- dual and compound bar charts</li> <li>- pie charts</li> <li>- line graphs, time series graphs and frequency polygons</li> <li>- scatter graphs</li> <li>- stem-and-leaf and back-to-back stem-and-leaf diagrams</li> <li>- infographics.</li> </ul>	

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MA.8.DP.1.2 Given a scatter plot within a real-world context, describe patterns of association.	<p><b>9Ss.03</b> Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation:</p> <ul style="list-style-type: none"> <li>- Venn and Carroll diagrams</li> <li>- tally charts, frequency tables and two-way tables</li> <li>- dual and compound bar charts</li> <li>- pie charts</li> <li>- line graphs, time series graphs and frequency polygons</li> <li>- scatter graphs</li> <li>- stem-and-leaf and back-to-back stem-and-leaf diagrams</li> <li>- infographics.</li> </ul> <p><b>9Ss.05</b> Interpret data, identifying patterns, trends and relationships, within and between data sets, to answer statistical questions. Make informal inferences and generalisations, identifying wrong or misleading information.</p>	
MA.8.DP.1.3 Given a scatter plot with a linear association, informally fit a straight line.	<p><b>9Ss.03</b> Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation:</p> <ul style="list-style-type: none"> <li>- Venn and Carroll diagrams</li> <li>- tally charts, frequency tables and two-way tables</li> <li>- dual and compound bar charts</li> <li>- pie charts</li> <li>- line graphs, time series graphs and frequency polygons</li> <li>- scatter graphs</li> <li>- stem-and-leaf and back-to-back stem-and-leaf diagrams</li> <li>- infographics.</li> </ul>	
<b>MA.8.DP.2 Represent and find probabilities of repeated experiments.</b>		
MA.8.DP.2.1 Determine the sample space for a repeated experiment.	<p><b>7Sp.03</b> Identify all the possible mutually exclusive outcomes of a single event, and recognise when they are equally likely to happen.</p> <p><b>9Ss.01</b> Select, trial and justify data collection and sampling methods to investigate predictions for a set of related statistical questions, considering what data to collect, and the appropriateness of each type (qualitative or quantitative; categorical, discrete or continuous).</p>	
MA.8.DP.2.2 Find the theoretical probability of an event related to a repeated experiment.	<p><b>7Sp.03</b> Identify all the possible mutually exclusive outcomes of a single event, and recognise when they are equally likely to happen.</p> <p><b>9Sp.03</b> Understand how to find the theoretical probabilities of combined events.</p>	

Florida's B.E.S.T. Standards for Mathematics: Grade 8	Cambridge Lower Secondary Mathematics learning objectives	Notes
MA.8.DP.2.3 <b>Solve real-world problems</b> involving probabilities related to single or repeated experiments, including making predictions based on theoretical probability.	<b>8Sp.03</b> Understand how to find the theoretical probabilities of equally likely combined events. <b>9Sp.04</b> Design and conduct chance experiments or simulations, using small and large numbers of trials. Calculate the expected frequency of occurrences and compare with observed outcomes.	Solving real-world problems are covered by the Thinking and Working Mathematically characteristics, not by learning objectives.

## Cambridge Lower Secondary Mathematics learning objectives that do not align with Florida's B.E.S.T. Standards for Mathematics for Grades 6 to 8

### Number

**7Ni.06** Understand the relationship between squares and corresponding square roots, and cubes and corresponding cube roots.

**7Np.02** Round numbers to a given number of decimal places.

**8Np.02** Round numbers to a given number of significant figures.

**9Np.02** Understand that when a number is rounded there are upper and lower limits for the original number.

**9Nf.05** Understand compound percentages.

### Algebra

**7As.01** Understand term-to-term rules, and generate sequences from numerical and spatial patterns (linear and integers).

**7As.02** Understand and describe  $n$ th term rules algebraically (in the form  $n \pm a$ ,  $a \times n$  where  $a$  is a whole number).

**7As.06** Recognise straight-line graphs parallel to the  $x$ - or  $y$ -axis.

**7As.07** Read and interpret graphs related to rates of change. Explain why they have a specific shape.

**8Ae.01** Understand that letters have different meanings in expressions, formulae and equations.

**8As.01** Understand term-to-term rules, and generate sequences from numerical and spatial patterns (including fractions).

**8As.02** Understand and describe  $n$ th term rules algebraically (in the form  $n \pm a$ ,  $a \times n$ , or  $an \pm b$ , where  $a$  and  $b$  are positive or negative integers or fractions).

**9As.01** Generate linear and quadratic sequences from numerical patterns and from a given term-to-term rule (any indices).

**9As.02** Understand and describe  $n$ th term rules algebraically (in the form  $an \pm b$ , where  $a$  and  $b$  are positive or negative integers or fractions, and in the form  $n/a$ ,  $n^2$ ,  $n^3$  or  $n^2 \pm a$ , where  $a$  is a whole number).

### Geometry and Measure

**7Gg.01** Identify, describe and sketch regular polygons, including reference to sides, angles and symmetrical properties.

**7Gg.02** Understand that if two 2D shapes are congruent, corresponding sides and angles are equal.

**7Gg.06** Identify and describe the combination of properties that determine a specific 3D shape.

**7Gg.08** Visualise and represent front, side and top view of 3D shapes.

**7Gg.10** Identify reflective symmetry and order of rotational symmetry of 2D shapes and patterns.

**7Gp.05** Rotate shapes  $90^\circ$  and  $180^\circ$  around a centre of rotation, recognising that the image is congruent to the object after a rotation.

**8Gg.01** Identify and describe the hierarchy of quadrilaterals.

**8Gg.05** Understand and use Euler's formula to connect number of vertices, faces and edges of 3D shapes.

**8Gg.06** Use knowledge of area and volume to derive the formula for the volume of a triangular prism. Use the formula to calculate the volume of triangular prisms.

**8Gg.07** Represent front, side and top view of 3D shapes to scale.

**8Gg.09** Understand that the number of sides of a regular polygon is equal to the number of lines of symmetry and the order of rotation.

**8Gg.12** Construct triangles, midpoint and perpendicular bisector of a line segment, and the bisector of an angle.

**8Gp.01** Understand and use bearings as a measure of direction.

**8Gp.03** Translate points and 2D shapes using vectors, recognising that the image is congruent to the object after a translation.

**8Gp.05** Understand that the centre of rotation, direction of rotation and angle are needed to identify and perform rotations.

**9Gg.02** Know and recognise very small or very large units of length, capacity and mass.

**9Gg.06** Identify reflective symmetry in 3D shapes.

**9Gg.08** Know that the sum of the exterior angles of any polygon is  $360^\circ$ .

**9Gg.11** Construct  $60^\circ$ ,  $45^\circ$  and  $30^\circ$  angles and regular polygons.

**9Gp.01** Use knowledge of bearings and scaling to interpret position on maps and plans.

**9Gp.02** Use knowledge of coordinates to find points on a line segment.

**9Gp.05** Recognise and explain that after any combination of reflections, translations and rotations the image is congruent to the object.

### Statistics and Probability

**8Sp.01** Understand that complementary events are two events that have a total probability of 1.

**8Sp.02** Understand that tables, diagrams and lists can be used to identify all mutually exclusive outcomes of combined events (independent events only).

**9Ss.02** Explain potential issues and sources of bias with data collection and sampling methods, identifying further questions to ask.

**9Sp.01** Understand that the probability of multiple mutually exclusive events can be found by summation and all mutually exclusive events have a total probability of 1.

**9Sp.02** Identify when successive and combined events are independent and when they are not.

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