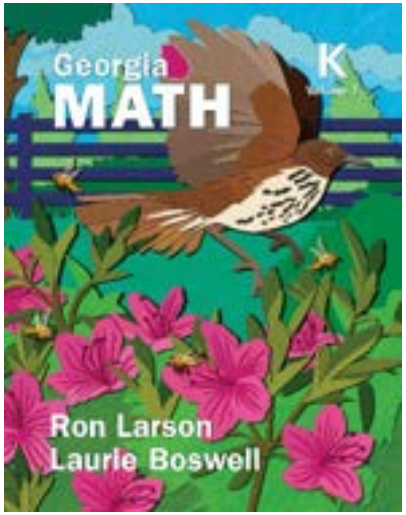
Georgia Math Grade K

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade K
Kindergarten	
NUMERICAL REASONING *– counting, money, place value, numbers to 20, addition, subtraction and fluency*	
K.NR.1: Demonstrate and explain the relationship between numbers and quantities up to 20; connect counting to cardinality (the last number counted represents the total quantity in a set).	
Expectations	
K.NR.1.1 Count up to 20 objects in avariety of structured arrangements and up to 10objects in a scattered arrangement.	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 4.2, 4.3, 4.5, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 7.1, 7.2, 7.3, 7.5
K.NR.1.2 When counting objects, explain that the last number counted represents the total quantity in a set (cardinality),regardless of the arrangement and order.	1.1, 1.3, 1.5, 3.1, 3.3, 3.5, 3.7, 3.9, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 7.3
K.NR.1.3 Given a number from 1-20, identify the number that isone more or one less.	1.8, 3.11, 7.3, 10.5
K.NR.1.4 Identify pennies, nickels, anddimes and know their name and value.	8.1
K.NR.2: Use count sequences within 100 to count forward and backward in sequence.	
Expectations	
K.NR.2.1 Count forward to 100 by tensand ones and backward from 20 by ones.	3.11, 7.4, 13.1, 13.2, 13.3, 13.4, 13.5, 13.6
K.NR.2.2 Count forward beginning from any number within 100and count backward from any number within 20.	3.11, 7.4, 7.5, 13.1, 13.2, 13.3, 13.6
K.NR.3: Use place value understanding to compose and decompose numbers from 11–19.	
Expectations	
K.NR.3.1 Describe numbers from 11 to19 by composing (putting together) and decomposing (breaking apart) the numbersinto ten ones and some moreones.	6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 12.1, 12.2, 12.3, 12.4, 12.5

Standard	Georgia Math Grade K
K.NR.4: Identify, write, represent, and compare numbers up to 20.	
Expectations	
K.NR.4.1 Identify written numerals 0-20 and represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	1.2, 1.4, 1.6, 1.7, 1.8, 3.2, 3.4, 3.6, 3.8, 3.10, 3.11, 6.2, 6.3, 6.4, 6.5, 6.6, 7.2, 7.5, 7.6, 12.1, 12.2, 12.3, 12.4, 12.5
K.NR.4.2 Compare two sets of up to 10 objects and identify whether the number of objects in one group is moreor less than the other group,using the words “greater than,” “less than,” or “the same as”.	2.1, 2.2, 2.3, 2.4, 2.5, 4.1, 4.2, 4.3, 4.5, 7.6
K.NR.5: Explain the concepts of addition, subtraction, and equality and use these concepts to solve real-life problems within 10.	
Expectations	
K.NR.5.1 Compose (put together) anddecompose (break apart) numbers up to 10 using objects and drawings.	9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 10.4, 10.8
K.NR.5.2 Represent addition and subtraction within 10 from agiven authentic situation using a variety of representations and strategies.	9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7
K.NR.5.3 Use a variety of strategies tosolve addition and subtraction problems within10.	10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7
K.NR.5.4 Fluently add and subtract within 5 using a variety of strategies to solve practical,mathematical problems.	10.5, 10.6, 11.4, 11.5, 11.7
PATTERNING & ALGEBRAIC REASONING *– repeating patterns and time*	
K.PAR.6: Explain, extend, and create repeating patterns with a repetition, not exceeding 4 and describe patterns involving the passage of time.	
Expectations	
K.PAR.6.1 Create, extend, and describe repeating patternswith numbers and shapes, and explain the rationale for the pattern.	5.6
K.PAR.6.2 Describe patterns involving the passage of time using words and phrases related to actual events.	8.2, 8.3

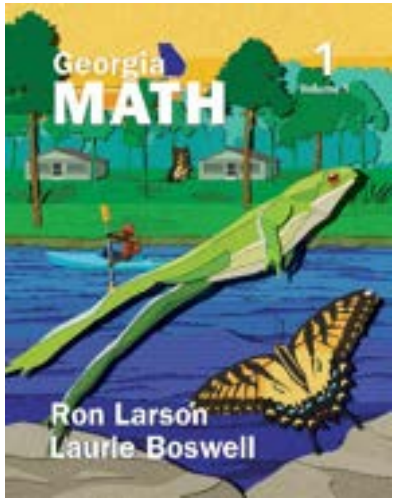
Standard	Georgia Math Grade K
MEASUREMENT & DATA REASONING *– attributes of objects, classifying objects*	
K.MDR.7: Observe, describe, and compare the physical and measurable attributes of objects and analyze graphical displays of data.	
Expectations	
K.MDR.7.1 Directly compare, describe, and order common objects,using measurable attributes(length, height, width, or weight) and describe the difference.	15.1, 15.2, 15.3, 15.4, 15.5, 15.6, 15.7, 15.8
K.MDR.7.2 Classify and sort up to ten objects into categories by an attribute; count the number ofobjects in each category and sort the categories by count.	4.4, 4.5
K.MDR.7.3 Ask questions and answer them based on gathered information, observations, andappropriate graphical displays to solve problems relevant to everyday life.	3.4, 3.8, 4.4, 4.5
GEOMETRIC & SPATIAL REASONING *– 2D and 3D shapes, relative locations, attributes*	
K.GSR.8: Identify, describe, and compare basic shapes encountered in the environment, and form two-dimensional shapes and three-dimensional figures.	
Expectations	
K.GSR.8.1 Identify, sort, classify, analyze, and compare two- dimensional shapes and three-dimensional figures, indifferent sizes and orientations, using informal language to describe their similarities, differences, number of sides and vertices, and other attributes.	5.1, 5.2, 5.3, 5.4, 5.5, 14.1, 14.2, 14.3, 14.4, 14.6
K.GSR.8.2 Describe the relative location of an object usingpositional words.	14.6
K.GSR.8.3 Use basic shapes to represent specific shapes found in the environment bycreating models and drawings.	5.2, 5.3, 5.4, 5.5, 5.8, 14.3, 14.4, 14.5
K.GSR.8.4 Use two or more basicshapes to form larger shapes.	5.7, 14.5

Georgia Math Grade 1

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade 1
1st Grade	
NUMERICAL REASONING *– counting, numbers, equality, place value, addition, subtraction*	
1.NR.1: Extend the count sequence to 120. Read, write, and represent numerical values to 120 and compare numerical values to 100.	
Expectations	
1.NR.1.1 Count within 120, forward and backward, starting at any number. Inthis range, read and writenumerals and represent a number of objects with a written numeral.	1.1, 1.2, 1.9, 9.2
1.NR.1.2 Explain that the two digitsof a 2-digit number represent the amounts of tens and ones.	1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.1, 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8, 14.1, 14.2, 14.3, 14.4, 14.9, 14.10
1.NR.1.3 Compare and order whole numbers up to 100using concrete models, drawings, and the symbols >, =, and <.	2.1, 2.2, 2.3, 2.4, 2.5, 2.6
1.2: Explain the relationship between addition and subtraction and apply the properties of operations to solve real-life addition and subtraction problems within 20.	
Expectations	
1.NR.2.1 Use a variety of strategiesto solve addition and subtraction problems within 20.	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 11.5, 15.5
1.NR.2.2 Use pictures, drawings, and equations to developstrategies for addition and subtraction within 20 by exploring strings of related problems.	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 11.5, 15.5
1.NR.2.3 Recognize the inverse relationship between subtraction and addition within 20 and use this inverse relationship to solve authentic problems.	4.9, 5.5, 7.2, 13.7
1.NR.2.4 Fluently add and subtractwithin 10 using a variety of strategies.	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8
1.NR.2.5 Use the meaning of theequal sign to determinewhether equations involving addition and subtraction are true or false.	3.2, 4.6, 5.6, 7.5, 7.6

Standard	Georgia Math Grade 1
1.NR.2.6 Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers.	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 6.1, 6.2, 6.3, 6.6, 6.7, 7.1, 7.2, 7.3, 7.4
1.NR.2.7 Apply properties of operations as strategiesto solve addition and subtraction problemsituations within 20.	4.1, 4.2, 4.6, 6.4, 6.5, 6.6, 6.7, 6.8, 7.3, 7.4
PATTERNING & ALGEBRAIC REASONING *– repeating patterns, growing, patterns, and shrinking patterns*	
1.PAR.3: Identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns found in real-life situations.	
Expectations	
1.PAR.3.1 Investigate, create, and make predictions about repeating patterns with a core of up to 3elements resulting from repeating an operation, as a series of shapes, or a number string.	9.1, 9.2, 9.3
1.PAR.3.2 Identify, describe, and creategrowing, shrinking, and repeating patterns based on the repeated addition or subtraction of 1s, 2s, 5s, and 10s.	9.1, 9.2, 9.3
GEOMETRIC & SPATIAL REASONING *– shapes, attributes, partitions of circles and rectangles*	
1.GSR.4: Compose shapes, analyze the attributes of shapes, and relate their parts to the whole.	
Expectations	
1.GSR.4.1 Identify common two- dimensional shapes and three-dimensional figures, sort and classify them by their attributes and build and draw shapes that possess defining attributes.	8.1, 8.2, 8.6, 8.7
1.GSR.4.2 Compose two-dimensional shapes (rectangles, squares, triangles, half-circles, and quarter-circles) and three- dimensional figures (cubes, rectangular prisms, cones, andcylinders) to create a shape formed of two or more common shapes and compose new shapes from thecomposite shape.	8.3, 8.4, 8.5, 8.8, 8.9
1.GSR.4.3 Partition circles and rectangles into two and four equal shares.	10.1, 10.2, 10.3

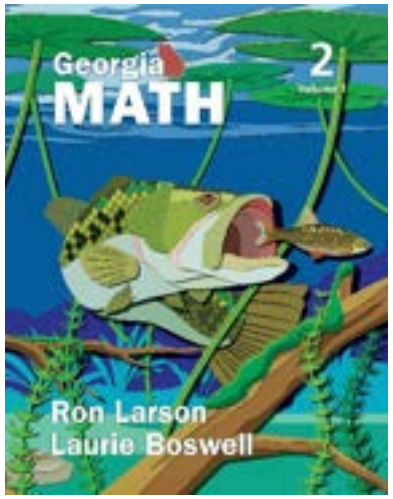
Standard	Georgia Math Grade 1
NUMERICAL REASONING *– base ten structure, addition and subtraction within 100*	
1.NR.5: Use concrete models, the base ten structure, and properties of operations to add and subtract within 100.	
Expectations	
1.NR.5.1 Use a variety of strategies tosolve applicable, mathematical addition and subtraction problems with one- and two-digit wholenumbers.	13.1, 13.3, 13.4, 13.7, 13.8, 14.1, 14.2, 14.3, 14.4, 14.5, 14.6, 14.7, 14.8, 14.9, 14.10
1.NR.5.2 Given a two-digit number, mentally find 10 more or 10 less than the number, withouthaving to count; explain the reasoning used.	13.1, 13.2
1.NR.5.3 Add and subtract multiples of10 within 100.	13.3, 13.4, 13.5, 13.6, 13.7, 13.8
MEASUREMENT & DATA REASONING *– length, time, money*	
1.MDR.6: Use appropriate tools to measure, order, and compare intervals of length and time, as well as denominations of money to solve real-life, mathematical problems and answer relevant questions.	
Expectations	
1.MDR.6.1 Estimate, measure, and record lengths of objects using non-standard units,and compare and order up to three objects using the recorded measurements. Describe the objects compared.	11.1, 11.2, 11.3, 11.4, 11.5
1.MDR.6.2 Tell and write time in hours and half-hours using analog and digital clocks, and measure elapsed time to the houron the hour using a predetermined number line.	12.3, 12.4, 12.5, 12.6, 12.7, 12.8
1.MDR.6.3 Identify the value of quarters and compare thevalues of pennies, nickels, dimes, and quarters.	12.1, 12.2
1.MDR.6.4 Ask questions and answerthem based on gathered information, observations, and appropriate graphical displays to compare and order whole numbers.	15.1, 15.2, 15.3, 15.4, 15.5

Georgia Math Grade 2

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade 2
2nd Grade	
NUMERICAL REASONING *– counting within 1000, place value, addition and subtraction, fluency to 20, developing multiplication through arrays*	
2.NR.1: Using the place value structure, explore the count sequences to represent, read, write, and compare numerical values to 1000 and describe basic place-value relationships and structures.	
Expectations	
2.NR.1.1 Explain the value of a three- digit number using hundreds,tens, and ones in a variety of ways.	9.1, 9.2, 9.3, 9.4, 9.5
2.NR.1.2 Count forward and backward by ones from any number within 1000. Count forward by fives from multiples of 5 within 1000. Count forward and backward by 10s and 100s fromany number within 1000. Count forward by 25s from 0.	10.1, 10.2, 10.3, 10.5, 14.1, 14.2, 14.3, 14.4, 14.5, 14.6
2.NR.1.3 Represent, compare, and orderwhole numbers to 1000 with an emphasis on place value and equality. Use >, =, and < symbols to record the results of comparisons.	10.7, 10.8
2.NR.2: Apply multiple part-whole strategies, properties of operations and place value understanding to solve real-life, mathematical problems involving addition and subtraction within 1,000.	
Expectations	
2.NR.2.1 Fluently add and subtract within 20 using a variety of mental, part-whole strategies.	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 13.6, 15.2, 15.3, 15.4, 15.5
2.NR.2.2 Find 10 more or 10 less than agiven three-digit number and find 100 more or 100 less than a given three-digit number.	10.5, 10.6, 11.1, 12.1
2.NR.2.3 Solve problems involving the addition and subtraction of two-digit numbers using part-whole strategies.	4.6, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8, 12.9
2.NR.2.4 Fluently add and subtract within 100 using strategiesbased on place value, properties of operations, and/or the relationship between addition and subtraction.	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 14.4, 14.5, 14.7

Standard	Georgia Math Grade 2
2.NR.3: Work with equal groups to gain foundations for multiplication through real-life, mathematical problems.	
Expectations	
2.NR.3.1 Determine whether a group (up to 20) has an odd or even number of objects. Write an equation to express an even number as a sum of two equal addends.	15.1, 15.2
2.NR.3.2 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	13.6, 15.3, 15.4, 15.5
PATTERNING & ALGEBRAIC REASONING *– patterns up to 20 and addition and subtraction within 1,000*	
2.PAR.4: Identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns.	
Expectations	
2.PAR.4.1 Identify, describe, and create a numerical pattern resulting from repeating an operation such as addition and subtraction.	10.4
2.PAR.4.2 Identify, describe, and create growing patterns and shrinkingpatterns involving addition andsubtraction up to 20.	10.4, 13.2
MEASUREMENT & DATA REASONING *– length, distance, time, and money*	
2.MDR.5: Estimate and measure the lengths of objects and distance to solve problems found in real-life using standard units of measurement, including inches, feet, and yards.	
Expectations	
2.MDR.5.1 Construct simple measuring instrumentsusing unit models. Compare unit models to rulers.	7.1
2.MDR.5.2 Estimate and measure the length of an object or distance to the nearest whole unit using appropriate units and standard measuring tools.	7.1, 7.2, 7.3, 7.4
2.MDR.5.3 Measure to determine how much longerone object is than another and express the length difference in terms of a standard-length unit.	7.4

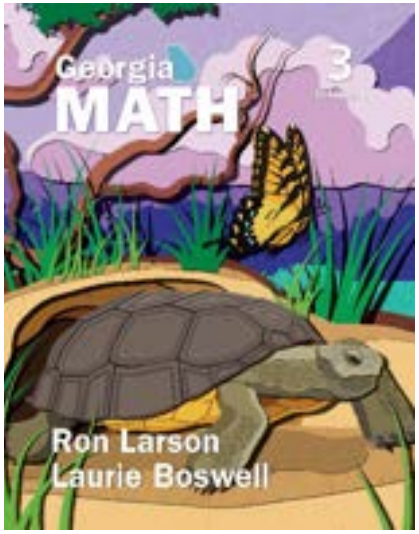
Standard	Georgia Math Grade 2
2.MDR.5.4 Ask questions and answer them based ongathered information, observations, and appropriate graphical displays to solve problems relevant to everyday life.	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7
2.MDR.5.5 Represent whole-number sums and differences within a standard unit of measurement on a number line diagram.	8.1, 8.2, 8.3, 8.4
2.MDR.6: Solve real-life problems involving time and money.	
Expectations	
2.MDR.6.1 Tell and write time from analog and digital clocks to the nearest five minutes,and estimate and measure elapsed time using a timeline, to the hour or half houron the hour or half hour.	14.8, 14.9, 14.10
2.MDR.6.2 Find the value of a group of coins and determine combinations of coins that equal a given amount that is less than onehundred cents, and solve problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.	14.1, 14.2, 14.3, 14.4, 14.5, 14.6, 14.7
GEOMETRIC & SPATIAL REASONING *– sorting shapes, lines of symmetry, partitioning circles and rectangles*	
2.GSR.7: Draw and partition shapes and other objects with specific attributes and conduct observations of everyday items and structures to identify how shapes exist in the world.	
Expectations	
2.GSR.7.1 Describe, compare and sort 2-Dshapes including polygons, triangles, quadrilaterals, pentagons, hexagons, and 3-D shapes including rectangular prisms and cones, given a set ofattributes.	13.1, 13.3, 13.4, 13.5
2.GSR.7.2 Identify at least one line of symmetry in everyday objects todescribe each object as a whole.	13.10
2.GSR.7.3 Partition circles and rectangles into two, three, or four equal shares. Identify and describe equal-sized parts of the whole using fractional names (“halves,”“thirds,” “fourths”, “half of,” “third of,” “quarter of,” etc.).	13.7, 13.8, 13.9
2.GSR.7.4 Recognize that equal shares of identical wholes may be different shapes within the same whole.	13.7, 13.8, 13.9

Georgia Math Grade 3

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade 3
3rd Grade	
NUMERICAL REASONING *– base ten numerals and place value up to 10,000, and rounding up to 1,000*	
3.NR.1: Use place value reasoning to represent, read, write, and compare numerical values up to 10,000 and round whole numbers up to 1,000.	
Expectations	
3.NR.1.1 Read and write multi-digit whole numbers up to 10,000using base-ten numerals andexpanded form.	1.2, 10.2, 10.3, 10.4
3.NR.1.2 Use place value reasoning to compare multi-digit numbers upto 10,000, using >, =, and < symbols to record the results of comparisons.	1.3, 1.4, 10.5
3.NR.1.3 Use place value understandingto round whole numbers up to1000 to the nearest 10 or 100.	10.6, 10.7
PATTERNING & ALGEBRAIC REASONING *– fluency, addition and subtraction within 10,000, multiplication and division within 100, equality, properties of operations*	
3.PAR.2: Use part-whole strategies to represent and solve real-life problems involving addition and subtraction with whole numbers within 10,000.	
Expectations	
3.PAR.2.1 Fluently add and subtract within 1000 to solve problems.	1.5, 1.6, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11
3.PAR.2.2 Apply part-whole strategies, properties of operations and place value understanding, to solve problems involving addition and subtraction within10,000. Represent these problems using equations with a letter standing for the unknown quantity. Justifysolutions.	11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11
3.PAR.3: Use part-whole strategies to solve real-life, mathematical problems involving multiplication and division with whole numbers within 100.	
Expectations	
3.PAR.3.1 Describe, extend, and createnumeric patterns related to multiplication. Make predictions related to the patterns.	4.2, 4.3, 4.4, 4.5, 8.2, 8.3

Standard	Georgia Math Grade 3
3.PAR.3.2 Represent single digit multiplication and division facts using a variety of strategies. Explain the relationship between multiplication and division.	3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.5, 4.6, 5.7, 5.8, 5.9, 7.2, 7.3, 7.8
3.PAR.3.3 Apply properties of operations (i.e., commutativeproperty, associative property, distributive property) to multiply and divide within 100.	3.5, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.11, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 8.2, 8.3, 8.4, 8.5, 9.4
3.PAR.3.4 Use the meaning of the equalsign to determine whether expressions involving addition, subtraction, and multiplication are equivalent.	3.2, 5.10
3.PAR.3.5 Use place value reasoning andproperties of operations to multiply one-digit whole numbers by multiples of 10, inthe range 10-90.	9.2, 9.3, 9.4
3.PAR.3.6 Solve practical, relevant problems involving multiplication and division within 100 using part-wholestrategies, visual representations, and/or concrete models.	3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.11, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 8.3, 8.4, 8.5
3.PAR.3.7 Use multiplication and division to solve problems involving whole numbers to 100. Represent these problems using equations with a letter standing for theunknown quantity. Justify solutions.	9.5, 11.12
NUMERICAL REASONING *– unit fractions, equivalent fractions, fractions greater than 1*	
3.NR.4: Represent fractions with denominators of 2, 3, 4, 6 and 8 in multiple ways within a framework using visual models.	
Expectations	
3.NR.4.1 Describe a unit fraction and explain how multiple copies ofa unit fraction form a non-unitfraction. Use parts of a whole,parts of a set, points on a number line, distances on a number line and area models.	13.1, 13.2, 13.3, 13.4, 13.5
3.NR.4.2 Compare two unit fractions byflexibly using a variety of toolsand strategies.	14.5
3.NR.4.3 Represent fractions, includingfractions greater than one, in multiple ways.	14.2, 14.3, 14.4
3.NR.4.4 Recognize and generate simple equivalent fractions.	14.2, 14.3, 14.4

Standard	Georgia Math Grade 3
MEASUREMENT & DATA REASONING *– elapsed time, liquid volume, mass, lengths in half and fourth of an inch, data*	
3.MDR.5: Solve real-life, mathematical problems involving length, liquid volume, mass, and time.	
Expectations	
3.MDR.5.1 Ask questions and answer them based on gathered information, observations, and appropriate graphical displays to solve problems relevant to everyday life.	6.2, 6.3, 6.4, 6.5, 6.6, 16.2, 16.3
3.MDR.5.2 Tell and write time to the nearest minute and estimate time to the nearest fifteen minutes (quarter hour) from the analysis of an analog clock.	12.2, 12.3
3.MDR.5.3 Solve meaningful problems involving elapsed time, including intervals of time to the hour, half hour, and quarter hour where thetimes presented are only on the hour, half hour, or quarter hour within a.m. or p.m. only.	12.4, 12.5
3.MDR.5.4 Use rulers to measure lengths in halves and fourths (quarters) of an inch and a whole inch.	2.2, 2.3, 6.6, 16.2, 16.3
3.MDR.5.5 Estimate and measure liquid volumes, lengths and masses of objects using customary units. Solve problems involving mass, length, and volume given in the same unit, and reason about the relative sizes of measurement unitswithin the customary system.	2.2, 2.3, 2.4, 2.5, 2.6, 2.7
GEOMETRIC & SPATIAL REASONING *– polygons, parallel line segments, perpendicular line segments, right angles, lines of symmetry, area, perimeter*	
3.GSR.6: Identify the attributes of polygons, including parallel segments, perpendicular segments, right angles, and symmetry.	
Expectations	
3.GSR.6.1 Identify perpendicular line segments, parallel line segments,and right angles, identify these inpolygons, and solve problems involving parallel line segments, perpendicular line segments, and right angles.	17.2, 17.3, 17.4, 17.6
3.GSR.6.2 Classify, compare, and contrastpolygons, with a focus on quadrilaterals, based on properties. Analyze specific 3- dimensional figures to identify and describe quadrilaterals as faces of these figures.	17.6, 17.7, 17.8

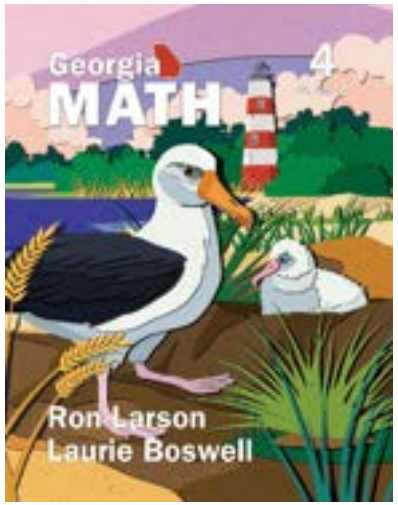
Standard	Georgia Math Grade 3
3.GSR.6.3 Identify lines of symmetry inpolygons.	17.5
3.GSR.7: Identify area as a measurable attribute of rectangles and determine the area of a rectangle presented in real-life, mathematical problems.	
Expectations	
3.GSR.7.1 Investigate area by covering the space of rectangles presented in realistic situations using multiplecopies of the same unit, with no gaps or overlaps, and determinethe total area (total number of units that covered the space).	15.2, 15.3, 15.4, 16.7, 16.8
3.GSR.7.2 Determine the area of rectangles(or shapes composed of rectangles) presented in relevantproblems by tiling and counting.	15.2, 15.3, 15.4, 16.7, 16.8
3.GSR.7.3 Discover and explain how area can be found by multiplying the dimensions of a rectangle.	15.2, 15.3, 15.4, 15.5, 15.6, 16.7, 16.8
3.GSR.8: Determine the perimeter of a polygon presented in real-life, mathematical problems.	
Expectations	
3.GSR.8.1 Determine the perimeterof a polygon and explain that the perimeter represents the distance around a polygon. Solve problems involving perimeters of polygons.	16.4, 16.5, 16.6, 16.7, 16.8
3.GSR.8.2 Investigate and describe how rectangles with the same perimeter can havedifferent areas or how rectangles with the same area can have different perimeters.	16.7, 16.8

Georgia Math Grade 4

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade 4
4th Grade	
NUMERICAL REASONING *– place value, rounding, comparisons with multi-digit numbers, addition and subtraction, multiplicative comparisons, multiplication, and division involving whole numbers*	
4.NR.1: Recognize patterns within the base ten place value system with quantities presented in real-life situations to compare and round multi-digit whole numbers through the hundred-thousands place.	
Expectations	
4.NR.1.1 Read and write multi-digit whole numbers to the hundred-thousands placeusing base-ten numerals and expanded form.	1.1, 1.2
4.NR.1.2 Recognize and show that adigit in one place has a value ten times greater than what it represents in the place to its right and extend this understandingto determine the value of a digit when it is shifted tothe left or right, based on the relationship between multiplication and division.	1.1, 4.2, 6.1
4.NR.1.3 Use place value reasoningto represent, compare, and order multi-digit numbers, using >, =, and <symbols to record the results of comparisons.	1.3
4.NR.1.4 Use place value understanding to round multi-digit whole numbers.	1.4, 2.1, 4.3, 5.2
4.NR.2: Using part-whole strategies, solve problems involving addition and subtraction through the hundred-thousands place, as well as multiplication and division of multi-digit whole numbers presented in real-life, mathematical situations.	
Expectations	
4.NR.2.1 Fluently add and subtract multi-digit numbers to solve practical, mathematicalproblems using place value understanding, properties of operations, and relationships between operations.	2.1, 2.2, 2.3, 2.4, 2.5
4.NR.2.2 Interpret, model, and solve problems involving multiplicative comparison.	4.1, 4.10

Standard	Georgia Math Grade 4
4.NR.2.3 Solve relevant problemsinvolving multiplication of a number with up to four digits by a 1-digit whole number or involving multiplication of two two-digit numbers using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangulararrays, and/or area models.	4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8
4.NR.2.4 Solve authentic division problems involving up to4-digit dividends and 1-digit divisors (including whole number quotientswith remainders) using strategies based on place-value understanding, properties of operations, and the relationships between operations.	6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9
4.NR.2.5 Solve multi-step problems using addition,subtraction, multiplication, and division involving whole numbers. Use mental computation and estimation strategies to justify the reasonableness of solutions.	2.5, 4.10, 5.8, 6.8, 6.9, 13.5
PATTERNING & ALGEBRAIC REASONING *– patterns, input-output tables, factors, multiples, composite numbers, prime numbers*	
4.PAR.3: Generate and analyze patterns, including those involving shapes, input/output diagrams, factors, multiples, prime numbers, and composite numbers.	
Expectations	
4.PAR.3.1 Generate both number andshape patterns that follow a provided rule.	3.5, 3.6
4.PAR.3.2 Use input-output rules, tables, and charts to represent and describe patterns, find relationships,and solve problems.	3.7
4.PAR.3.3 Find factor pairs in the range 1–100 and find multiples of single-digit numbers up to 100.	3.1, 3.2, 3.3
4.PAR.3.4 Identify composite numbersand prime numbers and explain the relationship with the factor pairs.	3.4

Standard	Georgia Math Grade 4
NUMERICAL REASONING *– fraction equivalence, comparison of fractions, and addition and subtraction of fractions with like denominators*	
4.NR.4: Solve real-life problems involving addition, subtraction, equivalence, and comparison of fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100 using part-whole strategies and visual models.	
Expectations	
4.NR.4.1 Using concrete materials, drawings, and number lines, demonstrate and explain therelationship between equivalent fractions, including fractions greater than one, and explain the identity property of multiplication as it relates to equivalent fractions. Generate equivalent fractions using these relationships.	7.1, 7.2, 7.3
4.NR.4.2 Compare two fractions with the same numerator or the same denominator by reasoning about their size and recognize that comparisons are valid only when the two fractions refer to the same whole.	7.4, 7.5
4.NR.4.3 Compare two fractions with different numerators and/ordifferent denominators by flexibly using a variety of tools and strategies and recognize that comparisons are valid only when the two fractions refer to the same whole.	7.6, 7.7
4.NR.4.4 Represent whole numbers and fractions as the sum of unit fractions.	8.2
4.NR.4.5 Represent a fraction as a sum of fractions with the same denominator in morethan one way, recording with an equation.	8.2, 8.6
4.NR.4.6 Add and subtract fractions and mixed numbers with like denominators using a varietyof tools.	8.1, 8.3, 8.4, 8.5, 8.7, 8.8, 8.9
4.NR.5: Solve real-life problems involving addition, equivalence, comparison of fractions with denominators of 10 and 100, and comparison of decimal numbers as tenths and hundredths using part-whole strategies and visual models.	
Expectations	
4.NR.5.1 Demonstrate and explain the conceptof equivalent fractions with denominators of 10 and 100, using concrete materials and visual models. Add two fractions with denominators of 10 and 100.	9.3, 9.5

Standard	Georgia Math Grade 4
4.NR.5.2 Represent, read, andwrite fractions with denominators of 10 or 100 using decimalnotation, and decimal numbers to the hundredths place as fractions, using concrete materials and drawings.	9.1, 9.2, 9.3, 9.5, 9.6
4.NR.5.3 Compare two decimal numbers tothe hundredths place by reasoning about their size. Record the results ofcomparisons with the symbols >, =, or <, and justify the conclusions.	9.4
MEASUREMENT & DATA REASONING *– time, metric measurements, distance, elapsed time, liquid volume, mass, and length*	
4.MDR.6: Measure time and objects that exist in the world to solve real-life, mathematical problems and analyze graphical displays of data to answer relevant questions.	
Expectations	
4.MDR.6.1 Use the four operations to solve problems involving elapsed time to the nearest minute, intervals of time, metric measurementsof liquid volumes, lengths, distances, and masses of objects, including problems involving fractions with like denominators, and also problems that require expressing measurements given in a larger unit in terms of a smaller unit, and expressing asmaller unit in terms of a larger unit based on the idea of equivalence.	10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, 10.11, 10.12
4.MDR.6.2 Ask questions and answer them based on gathered information, observations, and appropriate graphicaldisplays to solve problems relevant to everyday life.	10.10
4.MDR.6.3 Create dot plots to display a distributionof numerical (quantitative) measurement data.	10.10
GEOMETRIC & SPATIAL REASONING *– polygons, points, lines, line segments, rays, angles, perpendicular lines, area, perimeter*	
4.GSR.7: Investigate the concepts of angles and angle measurement to estimate and measure angles.	
Expectations	
4.GSR.7.1 Recognize angles as geometric shapes formed when two raysshare a common endpoint. Draw right, acute, and obtuse angles based on the relationship of the angle measure to 90 degrees.	11.4, 11.5, 11.6

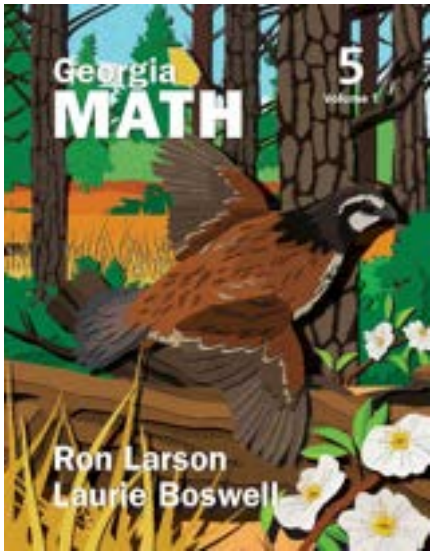
Standard	Georgia Math Grade 4
4.GSR.7.2 Measure angles in reference to a circle with the center at thecommon endpoint of two rays. Determine an angle's measure in relation to the 360 degrees in a circle through division or asa missing factor problem.	11.4, 11.5, 11.6
4.GSR.8: Identify and draw geometric objects, classify polygons based on properties, and solve problems involving area and perimeter of rectangular figures.	
Expectations	
4.GSR.8.1 Explore, investigate, and draw points, lines, line segments, rays, angles (right, acute, obtuse), perpendicular lines, parallel lines, and lines of symmetry. Identify these in two-dimensional figures.	11.1, 11.2, 11.3, 11.6, 12.1, 12.2
4.GSR.8.2 Classify, compare, and contrast polygons based on lines of symmetry, the presence or absence of parallel orperpendicular line segments, or the presence or absence of angles of a specified size and based on side lengths.	12.1, 12.2, 12.3, 12.4, 12.5
4.GSR.8.3 Solve problems involving area and perimeter of composite rectangles involving whole numbers with known side lengths.	13.1, 13.2, 13.3, 13.4, 13.5

Georgia Math Grade 5

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade 5
5th Grade	
NUMERICAL REASONING *– place value, multiplying by powers of 10, multiplication and division of multi-digit numbers, fractions, decimal numbers, numerical expressions*	
5.NR.1: Use place value understanding to solve real-life, mathematical problems.	
Expectations	
5.NR.1.1 Explain 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 $\frac{1}{10}$ and of what it represents in the place to its left.	11.1, 11.2, 11.4, 11.5
5.NR.1.2 Explain patterns in the placement ofdigits when multiplied or divided bya power of 10. Use whole-number exponents to denote powers of 10, up to 10^3.	11.3, 11.6
5.NR.2: Multiply and divide multi-digit whole numbers to solve relevant, mathematical problems.	
Expectations	
5.NR.2.1 Fluently multiply multi-digit (up to 3-digit by 2-digit) whole numbers to solve authentic problems.	5.1, 5.2, 5.3, 5.4
5.NR.2.2 Fluently divide multi-digit whole numbers (up to 4-digit dividends and 2-digit divisors no greater than 25) to solve practical problems.	6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9
5.NR.3: Describe fractions and perform operations with fractions to solve relevant, mathematical problems using part-whole strategies and visual models.	
Expectations	
5.NR.3.1 Explain the meaning of a fraction asdivision of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	4.1, 4.2, 6.9
5.NR.3.2 Compare and order up to three fractions with different numeratorsand/or different denominators by flexibly using a variety of tools and strategies.	10.1, 10.2, 10.3, 10.4, 10.5

Standard	Georgia Math Grade 5
5.NR.3.3 Model and solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators.	9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7
5.NR.3.4 Model and solve problems involving multiplication of a fraction and a whole number.	3.1, 3.2, 3.3, 3.4, 3.5
5.NR.3.5 Explain why multiplying a whole number by a fraction greater than one results in a product greater than the whole number, and why multiplying a whole number by a fraction less than one results in a product less than the whole number and multiplying a whole number by a fraction equal to one results in a product equal to the whole number.	3.2, 3.3, 3.4, 3.5
5.NR.3.6 Model and solve problems involving division of a unit fraction by a whole number and a whole number by a unit fraction.	4.3, 4.4, 4.5
5.NR.4: Read, write, and compare decimal numbers to the thousandths place, and round and perform operations with decimal numbers to the hundredths place to solve relevant, mathematical problems.	
Expectations	
5.NR.4.1 Read and write decimal numbers to the thousandths place using base-ten numerals written in standard form and expanded form.	11.4, 11.5
5.NR.4.2 Represent, compare, and order decimal numbers to the thousandths place based on the meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	11.7
5.NR.4.3 Use place value understanding to round decimal numbers to the hundredths place.	11.8, 12.1
5.NR.4.4 Solve problems involving addition and subtraction of decimal numbers to the hundredths place using a variety of strategies.	12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7
5.NR.5: Write, interpret, and evaluate numerical expressions within authentic problems.	
Expectations	
5.NR.5.1 Write, interpret, and evaluate simple numerical expressions involving whole numbers with or without grouping symbols to represent actual situations.	1.1, 1.2, 1.3, 1.4

Standard	Georgia Math Grade 5
PATTERNING & ALGEBRAIC REASONING *– generating patterns, plotting ordered pairs in the first quadrant*	
5.PAR.6: Solve relevant problems by creating and analyzing numerical patterns using the given rule(s).	
Expectations	
5.PAR.6.1 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms by completing a table.	7.6, 7.7
5.PAR.6.2 Represent problems by plotting ordered pairs and explain coordinate values of points in the first quadrant of the coordinate plane.	7.1, 7.2, 7.3, 7.4, 7.5, 7.7
MEASUREMENT & DATA REASONING *– measurements within the metric system, measurement conversions and time as a unit of measurement*	
5.MDR.7: Solve problems involving customary measurements, metric measurements, and time and analyze graphical displays of data to answer relevant questions.	
Expectations	
5.MDR.7.1 Explore realistic problems involving different units of measurement, including distance, mass, weight, volume, and time.	13.1, 13.2, 13.3, 13.4, 13.5, 13.7, 13.8
5.MDR.7.2 Ask questions and answer them based on gathered information, observations, and appropriate graphical displays to solve problems relevant to everyday life.	13.6
5.MDR.7.3 Convert among units within the metric system and then apply these conversions to solve multi-step, practical problems.	13.1, 13.2, 13.8
5.MDR.7.4 Convert among units within relative sizes of measurement units within the customary measurement system.	13.3, 13.4, 13.5, 13.8

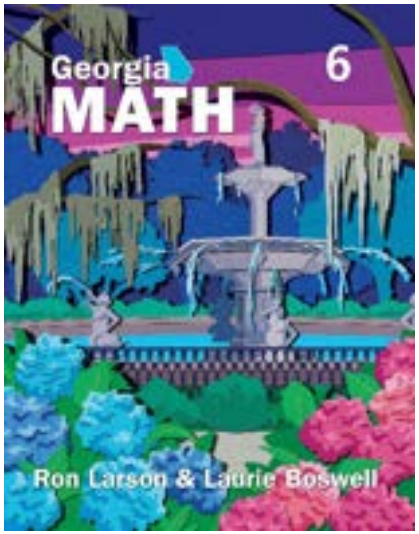
Standard	Georgia Math Grade 5
GEOMETRIC & SPATIAL REASONING *– Properties of polygons and rectangular prisms, classify polygons*	
5.GSR.8: Examine properties of polygons and rectangular prisms, classify polygons by their properties, and discover volume of right rectangular prisms.	
Expectations	
5.GSR.8.1 Classify, compare, and contrastpolygons based on properties.	8.1, 8.2, 8.3
5.GSR.8.2 Determine, through exploration and investigation, that attributes belonging to a category of two- dimensional figures also belong toall subcategories of that category.	8.2, 8.3
5.GSR.8.3 Investigate volume of right rectangular prisms by packing them with unit cubes without gapsor overlaps. Then, determine the total volume to solve problems.	2.1, 2.2
5.GSR.8.4 Discover and explain how the volume of a right rectangular prism can be found by multiplyingthe area of the base times the height to solve authentic, mathematical problems.	2.2, 2.3

Georgia Math Grade 6

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade 6
6th Grade	
NUMERICAL REASONING *– multiplication and division of whole numbers and fractions, and all four operations with decimal numbers*	
6.NR.1: Solve relevant, mathematical problems involving operations with whole numbers, fractions, and decimal numbers.	
Expectations	
6.NR.1.1 Fluently add and subtract any combination of fractionsto solve problems.	3.1
6.NR.1.2 Multiply and divide any combination of whole numbers, fractions, and mixed numbers using a student-selected strategy. Interpret products and quotients of fractions and solve word problems.	3.2, 3.3, 3.4, 3.8
6.NR.1.3 Perform operations with multi-digit decimal numbersfluently using models and student-selected strategies.	3.5, 3.6, 3.7, 3.9, 3.10
6.NR.2: Apply operations with whole numbers, fractions and decimals within relevant applications.	
Expectations	
6.NR.2.1 Describe and interpret the center of the distribution bythe equal share value (mean).	1.2
6.NR.2.2 Summarize categorical and quantitative (numerical) datasets in relation to the context: display the distributions of quantitative (numerical) data in plots on anumber line, including dot plots, histograms, and box plots and display the distribution of categorical data using bar graphs.	1.1, 2.2, 2.3, 2.4, 2.5
6.NR.2.3 Interpret numerical data to answer a statistical investigative question created. Describe the distribution of a quantitative(numerical) variable collected, including its center, variability, and overall shape.	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.3, 2.4, 2.5
6.NR.2.4 Design simple experiments and collect data. Use data gathered from realistic scenarios and simulations todetermine quantitative measures of center (medianand/or mean) and variability(interquartile range and range). Use these quantitiesto draw conclusions about the data, compare different numerical data sets, and make predictions.	1.2, 1.3, 1.4, 2.5

Standard	Georgia Math Grade 6
6.NR.2.5 Relate the choice of measures of center and variability to the shape of thedata distribution and the context in which the data were gathered.	1.2, 1.3, 1.4, 2.4
6.NR.2.6 Describe the impact that inserting or deleting a data point has on the mean and the median of a data set. Create data displays using a dot plot or box plot to examine this impact.	1.2, 1.3
6.NR.3: Solve a variety of problems involving whole numbers and their opposites; model rational numbers on a number line to describe problems presented in relevant, mathematical situations.	
Expectations	
6.NR.3.1 Identify and compare integers and explain the meaning of zero based onmultiple authentic situations.	10.1
6.NR.3.2 Order and plot integers on a number line and usedistance from zero to discover the connection between integers and their opposites.	10.1, 10.2
6.NR.3.3 Recognize and explain that opposite signs of integers indicate locations on opposite sides of zero on the number line; recognize and explain that the opposite of the opposite of a number is the number itself.	10.1
6.NR.3.4 Write, interpret, and explain statements of order for rational numbers in authentic, mathematical situations. Compare rational numbers, including integers, using equalityand inequality symbols.	5.1, 5.2, 5.3, 10.2, 10.3
6.NR.3.5 Explain the absolute valueof a rational number as itsdistance from zero on thenumber line; interpret absolute value as distancefor a positive or negative quantity in a relevant situation.	10.4
6.NR.3.6 Distinguish comparisonsof absolute value from statements about order.	10.4
6.NR.4: Solve a variety of contextual problems involving ratios, unit rates, equivalent ratios, percentages, and conversions within measurement systems using proportional reasoning.	
Expectations	
6.NR.4.1 Explain the concept of a ratio, represent ratios, and use ratio language to describe arelationship between two quantities.	4.1, 4.2, 4.3, 4.4

Standard	Georgia Math Grade 6
6.NR.4.2 Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in thetables, and plot the pairs of values on thecoordinate plane. Use tables to compare ratios.	4.3, 4.4, 4.5, 4.6, 5.4
6.NR.4.3 Solve problems involving proportions using avariety of student-selected strategies.	4.2, 4.3, 4.4, 4.5, 4.6
6.NR.4.4 Describe the concept of rates and unit ratein the context of a ratio relationship.	4.5, 8.4
6.NR.4.5 Solve unit rate problems including those involving unit pricing and constant speed.	4.5, 4.6
6.NR.4.6 Calculate a percent of a quantity as a rate per 100 and solve everyday problems given a percent.	5.1, 5.2, 5.3, 5.4
6.NR.4.7 Use ratios to convert within measurementsystems (customary and metric) to solve authentic problems that exist in everyday life.	4.6
GEOMETRIC & SPATIAL REASONING – area of polygons, volume of right rectangular prisms, surface area of 3-D figures	
6.GSR.5: Solve relevant problems involving area, surface area, and volume.	
Expectations	
6.GSR.5.1 Explore area as a measurable attribute of triangles, quadrilaterals, and other polygonsconceptually by composing or decomposinginto rectangles, triangles, and other shapes.Find the area of these geometric figures to solve problems.	9.1, 9.2, 9.3
6.GSR.5.2 Given the net of three-dimensional figures withrectangular and triangular faces, determine thesurface area of these figures.	9.4, 9.5, 9.6
6.GSR.5.3 Calculate the volume of right rectangular prisms with fractional edge lengths by applyingthe formula, $V = (\text{area of base}) \times (\text{height})$.	9.7

Standard	Georgia Math Grade 6
PATTERNING & ALGEBRAIC REASONING *– numerical and algebraic expressions, factors, multiples, algebraic expressions, plotting points in all four quadrants, rational numbers on a number line, polygons in the coordinate plane*	
6.PAR.6: Identify, write, evaluate, and interpret numerical and algebraic expressions as mathematical models to explain authentic situations.	
Expectations	
6.PAR.6.1 Write and evaluate numerical expressions involving rational bases and whole-number exponents.	6.1, 6.2
6.PAR.6.2 Determine greatest common factors and least common multiples using a variety ofstrategies to make sense of applicable problems.	6.3, 6.4, 6.5, 7.5
6.PAR.6.3 Write and read expressions that representoperations with numbers and variables in realistic situations.	7.1, 7.2, 7.4, 7.5
6.PAR.6.4 Evaluate expressions when given values for the variables, including expressions that arisein everyday situations.	7.1, 9.1, 9.2, 9.3
6.PAR.6.5 Apply the properties of operations to identifyand generate equivalent expressions.	7.3, 7.4, 7.5
6.PAR.7: Write and solve one-step equations and inequalities as mathematical models to explain authentic, realistic situations.	
Expectations	
6.PAR.7.1 Solve one-step equations and inequalities involving variables when values for the variables are given. Determine whether an equation and inequality involving a variable istrue or false for a given value of the variable.	8.2, 8.3, 8.5, 8.6
6.PAR.7.2 Write one-step equations and inequalities torepresent and solve problems; explain that avariable can represent an unknown number or any number in a specified set.	8.1, 8.2, 8.3, 8.4, 8.5, 8.6
6.PAR.7.3 Solve problems by writing and solving equations of the form $x + p = q$, $px = q$ and $\frac{x}{p} = q$ for cases in which p, q and x are allnonnegative rational numbers.	8.1, 8.2, 8.3

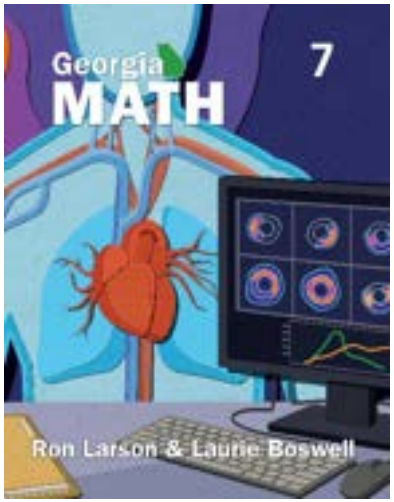
Standard	Georgia Math Grade 6
6.PAR.7.4 Recognize and generate inequalities of the form $x > c$, $x > c$, $x < c$, or $x < c$ to explain situations that have infinitely many solutions;represent solutions of such inequalities on a number line.	8.5, 8.6
6.PAR.8: Graph rational numbers as points on the coordinate plane to represent and solve contextual, mathematical problems; draw polygons using the coordinates for their vertices and find the length of a side of a polygon.	
Expectations	
6.PAR.8.1 Locate and position rational numbers on a horizontal or vertical number line; find andposition pairs of integers and other rationalnumbers on a coordinate plane.	10.1, 10.2, 10.3, 10.5
6.PAR.8.2 Show and explain that signs of numbers in ordered pairs indicate locations in quadrantsof the coordinate plane and determine how two ordered pairs may differ based only on the signs.	10.5
6.PAR.8.3 Solve problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to finddistances between points with the same *x*-coordinate or the same *y*-coordinate.	10.5, 10.6
6.PAR.8.4 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points withthe same x-coordinate or the same *y*-coordinate.	10.6

Georgia Math Grade 7

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade 7
7TH Grade	
NUMERICAL REASONING *– integers, percentages, fractions, decimal numbers*	
7.NR.1: Solve relevant, mathematical problems, including multi-step problems, involving the four operations with rational numbers and quantities in any form (integers, percentages, fractions, and decimal numbers).	
Expectations	
7.NR.1.1 Show that a number and its opposite have a sum of 0 (are additive inverses). Describe situations in which opposite quantities combine to make 0.	1.1, 1.2, 1.3
7.NR.1.2 Show and explain $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction, depending on whether q is positive or negative. Interpret sums of rational numbers by describing applicable situations.	1.2, 1.3
7.NR.1.3 Represent addition and subtraction with rational numbers on a horizontal or a vertical number line diagram to solve authentic problems.	1.1, 1.2, 1.3, 1.4, 1.5
7.NR.1.4 Show and explain subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference and apply this principle in contextual situations.	1.4, 1.5
7.NR.1.5 Apply properties of operations, including part-whole reasoning, as strategies to add and subtract rational numbers.	1.2, 1.3, 1.4, 1.5
7.NR.1.6 Make sense of multiplication of rational numbers using realistic applications.	2.1, 2.4
7.NR.1.7 Show and explain that integers can be divided, assuming the divisor is not zero, and every quotient of integers is a rational number.	2.2, 2.3
7.NR.1.8 Represent the multiplication and division of integers using a variety of strategies and interpret products and quotients of rational numbers by describing them based on the relevant situation.	2.1, 2.2, 2.4, 2.5

Standard	Georgia Math Grade 7
7.NR.1.9 Apply properties of operations as strategiesto solve multiplication and division problems involving rational numbers represented in an applicable scenario.	2.1, 2.2, 2.4
7.NR.1.10 Convert rational numbers between forms toinclude fractions, decimal numbers and percentages, using understanding of the part divided by the whole. Know that the decimal form of a rational number terminates in 0s or eventually repeats.	2.3, 2.6
7.NR.1.11 Solve multi-step, contextual problems involving rational numbers, converting between forms as appropriate, and assessing the reasonableness of answers using mental computation and estimation strategies.	2.6, 6.1, 6.2, 6.3, 6.4, 6.5
PATTERNING & ALGEBRAIC REASONING *– linear expressions with rational coefficients, complex unit rates, proportional relationships*	
7.PAR.2: Use properties of operations, generate equivalent expressions and interpret the expressions to explain relevant situations.	
Expectations	
7.PAR.2.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions withrational coefficients.	3.1, 3.2, 3.3, 3.4
7.PAR.2.2 Rewrite an expression in different forms from a contextual problem to clarify the problem and show how the quantities in it are related.	3.1, 3.2, 3.3, 3.4
7.PAR.3: Represent authentic situations using equations and inequalities with variables; solve equations and inequalities symbolically, using the properties of equality.	
Expectations	
7.PAR.3.1 Construct algebraic equations to solve practical problems leading to equations of the form $px + q = r$ and$p(x + q) = r$, where p, q, and r are specific rational numbers. Interpretthe solution based on the situation.	4.1, 4.2, 4.3
7.PAR.3.2 Construct algebraic inequalities to solve problems, leading to inequalities of the form $px + q > r$, $px + q < r$, $px + q \leq r$, or $px + q \geq r$, where p, q, and r are specific rational numbers. Graph and interpret the solution based on therealistic situation that the inequalities represent.	4.4, 4.5, 6.6, 4.7

Standard	Georgia Math Grade 7
7.PAR.4: Recognize proportional relationships in relevant, mathematical problems; represent, solve, and explain these relationships with tables, graphs, and equations.	
Expectations	
7.PAR.4.1 Compute unit rates associated withratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units presented in realistic problems.	5.1, 5.2
7.PAR.4.2 Determine the unit rate (constantof proportionality) in tables, graphs (1, *r*), equations, diagrams,and verbal descriptions of proportional relationships to solve realistic problems.	5.2, 5.3, 5.6
7.PAR.4.3 Determine whether two quantitiespresented in authentic problems are in a proportional relationship.	5.3, 5.6
7.PAR.4.4 Identify, represent, and useproportional relationships.	5.3, 5.4, 5.6
7.PAR.4.5 Use context to explain what a point(*x*, *y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where ris the unit rate.	5.6
7.PAR.4.6 Solve everyday problems involvingscale drawings of geometric figures, including computing actuallengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	5.7
7.PAR.4.7 Use similar triangles to explain whythe slope, *m*, is the same between any two distinct points on a non- vertical line in the coordinate plane.	5.5, 5.6
7.PAR.4.8 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationshipsrepresented in different ways.	5.5, 5.6
7.PAR.4.9 Use proportional relationships to solve multi-step ratio and percent problems presented in applicable situations.	5.1, 5.2, 5.4, 6.1, 6.2, 6.3, 6.4, 6.5
7.PAR.4.10 Predict characteristics of a population by examining the characteristics of a representative sample. Recognize the potential limitations and scope of the sampleto the population.	7.1

Standard	Georgia Math Grade 7
7.PAR.4.11 Analyze sampling methods and conclude that random sampling produces and supports valid inferences.	7.1
7.PAR.4.12 Use data from repeated random samples to evaluate how much a sample mean is expected to vary from a population mean. Simulatemultiple samples of the same size.	7.1, 7.2, 7.4
GEOMETRIC & SPATIAL REASONING *– vertical, adjacent, complementary, and supplementary angles, circumference and area of circles, area and surface area, volume of cubes, right prisms, and cylinders*	
7.GSR.5: Solve practical problems involving angle measurement, circles, area of circles, surface area of prisms and cylinders, and volume of cylinders and prisms composed of cubes and right prisms.	
Expectations	
7.GSR.5.1 Measure angles in whole non-standard units.	8.4
7.GSR.5.2 Measure angles in whole numberdegrees using a protractor.	8.4
7.GSR.5.3 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve equations for an unknown angle ina figure.	8.5
7.GSR.5.4 Explore and describe the relationship between pi, radius, diameter, circumference, and area of a circle to derive the formulas for the circumference and area of acircle.	8.1, 8.2
7.GSR.5.5 Given the formula for the area andcircumference of a circle, solve problems that exist in everyday life.	8.1, 8.2, 8.3
7.GSR.5.6 Solve realistic problems involvingsurface area of right prisms and cylinders.	9.1, 9.2
7.GSR.5.7 Describe the two-dimensional figures (cross sections) that resultfrom slicing three-dimensional figures, as in the plane sections ofright rectangular prisms, right rectangular pyramids, cones, cylinders, and spheres.	9.5
7.GSR.5.8 Explore volume as a measurableattribute of cylinders and right prisms. Find the volume of thesegeometric figures using concrete problems.	9.3, 9.4

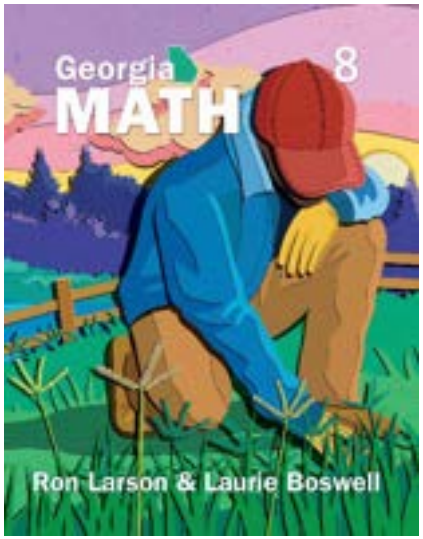
Standard	Georgia Math Grade 7
PROBABILITY REASONING *– likelihood, theoretical and experimental probability*	
7.PR.6: Using mathematical reasoning, investigate chance processes and develop, evaluate, and use probability models to find probabilities of simple events presented in authentic situations.	
Expectations	
7.PR.6.1 Represent the probability of a chance event as a number between 0 and 1 that expresses the likelihood of the event occurring. Describe thata probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	10.1, 10.2
7.PR.6.2 Approximate the probability of a chance eventby collecting data on an event and observing its long-run relative frequency will approach the theoretical probability.	10.1, 10.2
7.PR.6.3 Develop a probability model and use it to findprobabilities of simple events. Compare experimental and theoretical probabilities of events. If the probabilities are not close, explain possible sources of the discrepancy.	10.1, 10.2
7.PR.6.4 Develop a uniform probability model by assigning equal probability to all outcomes anduse the model to determine probabilities of events.	10.2
7.PR.6.5 Develop a probability model (which may notbe uniform) by observing frequencies in datagenerated from a chance process.	10.1, 10.2
7.PR.6.6 Use appropriate graphical displays and numerical summaries from data distributionswith categorical or quantitative (numerical) variables as probability models to draw informal inferences about two samples orpopulations.	7.3, 7.4, 10.3

Georgia Math Grade 8

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Math Grade 8
8TH Grade	
NUMERICAL REASONING *– rational and irrational numbers, decimal expansion, integer exponents, square and cube roots, scientific notation*	
8.NR.1: Solve problems involving irrational numbers and rational approximations of irrational numbers to explain realistic applications.	
Expectations	
8.NR.1.1 Distinguish between rational and irrational numbers using decimal expansion. Convert a decimal expansion which repeats eventuallyinto a rational number.	7.4, 7.5
8.NR.1.2 Approximate irrational numbers to compare the size of irrational numbers, locate them approximatelyon a number line, and estimate the value of expressions.	7.5
8.NR.2: Solve problems involving radicals and integer exponents including relevant application situations; apply place value understanding with scientific notation and use scientific notation to explain real phenomena.	
Expectations	
8.NR.2.1 Apply the properties of integer exponents to generate equivalent numerical expressions.	6.1, 6.2, 6.3, 6.4
8.NR.2.2 Use square root and cube root symbols to represent solutions to equations. Recognize that $x^2 = p$ (where p is a positive rational numberand $\|x\| \leq 25$) has two solutions and $x^3 = p$ (where p is a negative or positive rational number and $\|x\| \leq 10$) has one solution. Evaluate square roots of perfect squares ≤ 625 and cube rootsof perfect cubes ≥ -1000 and ≤ 1000.	7.1, 7.2, 7.3
8.NR.2.3 Use numbers expressed in scientific notation to estimate very large or verysmall quantities, and to express how many times as much one is than the other.	6.5, 6.6
8.NR.2.4 Add, subtract, multiply and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology(e.g., calculators or online technology tools).	6.6, 6.7

Standard	Georgia Math Grade 8
PATTERNING & ALGEBRAIC REASONING *– expressions, linear equations, and inequalities*	
8.PAR.3: Create and interpret expressions within relevant situations. Create, interpret, and solve linear equations and linear inequalities in one variable to model and explain real phenomena.	
Expectations	
8.PAR.3.1 Interpret expressions and parts of an expression, in context, by utilizing formulasor expressions with multiple terms and/or factors.	1.1, 1.3, 2.3, 2.4, 2.5, 2.6, 2.7, 3.3, 5.1, 5.2, 5.3, 5.4
8.PAR.3.2 Describe and solve linear equations in one variable with one solution ($x = a$), infinitely many solutions ($a = a$), or no solutions ($a = b$). Show which of these possibilities is the case by successively transforming the givenequation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$,or $a = b$ results (where a and b are different numbers).	1.1, 1.2, 1.3
8.PAR.3.3 Create and solve linear equations and inequalities in one variable within a relevant application.	1.1, 1.2, 1.3, 1.5, 1.6, 1.7
8.PAR.3.4 Using algebraic properties and the properties of real numbers, justify the stepsof a one-solution equation or inequality.	1.1, 1.2, 1.3, 1.5, 1.6
8.PAR.3.5 Solve linear equations and inequalities in one variable with coefficients represented by letters and explain the solution based onthe contextual, mathematical situation.	1.2, 1.6, 1.7
8.PAR.3.6 Use algebraic reasoning to fluently manipulate linear and literal equations expressed in various forms to solve relevant,mathematical problems.	1.4, 2.5, 2.7
8.PAR.4: Show and explain the connections between proportional and non-proportional relationships, lines, and linear equations; create and interpret graphical mathematical models and use the graphical, mathematical model to explain real phenomena represented in the graph.	
Expectations	
8.PAR.4.1 Use the equation $y = mx$ (proportional) for aline through the origin to derive the equation $y = mx + b$ (non-proportional) for aline intersecting the vertical axis at b.	2.2, 2.4

Standard	Georgia Math Grade 8
8.PAR.4.2 Show and explain that the graph of an equation representing an applicable situation in two variables is the set of all itssolutions plotted in the coordinate plane.	2.1
FUNCTIONAL & GRAPHICAL REASONING *–relate domain to linear functions, rate of change, linear vs. nonlinear relationships, graphing linear functions, systems of linear equations, parallel and perpendicular lines*	
8.FGR.5: Describe the properties of functions to define, evaluate, and compare relationships, and use functions and graphs of functions to model and explain real phenomena.	
Expectations	
8.FGR.5.1 Show and explain that a function is a rulethat assigns to each input exactly one output.	3.1, 3.2
8.FGR.5.2 Within realistic situations, identify and describe examples of functions that are linear or nonlinear. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	3.4, 3.5
8.FGR.5.3 Relate the domain of a linear function to its graph and where applicable to the quantitative relationship it describes.	3.3
8.FGR.5.4 Compare properties (rate of change and initial value) of two functions used to modelan authentic situation each represented in adifferent way (algebraically, graphically, numerically in tables, or by verbal descriptions).	3.3
8.FGR.5.5 Write and explain the equations $y = mx + b$ (slope-intercept form), $Ax + By = C$ (standardform), and $(y - y_1) = m(x - x_1)$ (point-slope form) as defining a linear function whose graph is a straight line to reveal and explain different properties of the function.	2.5, 2.6, 2.7, 3.3
8.FGR.5.6 Write a linear function defined by an expression in different but equivalent formsto reveal and explain different properties ofthe function.	2.5, 2.7
8.FGR.5.7 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of arelationship or from two (*x*,*y*) values, including reading these from a table or from a graph.	2.6, 2.7, 3.2, 3.3

Standard	Georgia Math Grade 8
8.FGR.5.8 Explain the meaning of the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	2.6, 2.7, 3.3
8.FGR.5.9 Graph and analyze linear functions expressed in various algebraic forms and show key characteristics of the graph to describe applicable situations.	2.1, 2.3, 2.4, 2.5, 3.3, 3.4
8.FGR.6: Solve practical, linear problems involving situations using bivariate quantitative data.	
Expectations	
8.FGR.6.1 Show that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, visually fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line of best fit.	4.1, 4.2
8.FGR.6.2 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercepts.	4.2
8.FGR.6.3 Explain the meaning of the predicted slope (rate of change) and the predicted intercept (constant term) of a linear model in the context of the data.	4.2
8.FGR.6.4 Use appropriate graphical displays from data distributions involving lines of best fit to draw informal inferences and answer the statistical investigative question posed in an unbiased statistical study.	4.2, 4.3
8.FGR.7: Justify and use various strategies to solve systems of linear equations to model and explain realistic phenomena.	
Expectations	
8.FGR.7.1 Interpret and solve relevant mathematical problems leading to two linear equations in two variables.	5.1, 5.2, 5.3, 5.4
8.FGR.7.2 Show and explain that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because the points of intersection satisfy both equations simultaneously.	5.1, 5.4
8.FGR.7.3 Approximate solutions of two linear equations in two variables by graphing the equations and solving simple cases by inspection.	5.1, 5.4

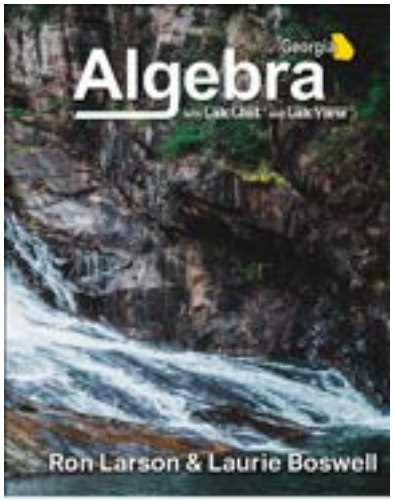
Standard	Georgia Math Grade 8
8.FGR.7.4 Analyze and solve systems of twolinear equations in two variables algebraically to find exact solutions.	5.2, 5.3, 5.4
8.FGR.7.5 Create and compare the equations of two lines that are either parallel to each other, perpendicular to each other, or neither parallel nor perpendicular.	2.7, 5.4
GEOMETRIC & SPATIAL REASONING *– Pythagorean theorem and volume of triangles, rectangles, cones, cylinders, and spheres*	
8.GSR.8: Solve geometric problems involving the Pythagorean Theorem and the volume of geometric figures to explain real phenomena.	
Expectations	
8.GSR.8.1 Explain a proof of the Pythagorean Theorem and its converse using visual models.	7.2, 7.6
8.GSR.8.2 Apply the Pythagorean Theorem todetermine unknown side lengths in right triangles within authentic, mathematical problems in two and three dimensions.	7.2
8.GSR.8.3 Apply the Pythagorean Theorem to find the distance between two pointsin a coordinate system in practical, mathematical problems.	7.2
8.GSR.8.4 Apply the formulas for the volume of cones, cylinders, and spheres and usethem to solve in relevant problems.	8.1, 8.2, 8.3

Georgia Algebra with CalcChat® and CalcView®

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Big Ideas Learning

Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Algebra with CalcChat® and CalcView®
Algebra	
MATHEMATICAL MODELING	
A.MM.1: Apply mathematics to real-life situations; model real-life phenomena using mathematics.	
Expectations	
A.MM.1.1 Explain applicable, mathematical problems using a mathematical model.	This standard is addressed throughout. For example, see: Sections 1.3, 2.2, 4.3, 6.2, 6.3, and 6.5
A.MM.1.2 Create mathematical models to explain phenomena that exist in the natural sciences, social sciences, liberal arts, fine andperforming arts, and/or humanities domains.	This standard is addressed throughout. For example, see: Sections 2.3, 3.3, 3.5, 4.4, 6.2, and 6.5
A.MM.1.3 Use units of measure (linear, area, capacity, rates, and time) as a way to make sense of conceptual problems; identify, use,and record appropriate units of measure within the given framework, within data displays, and on graphs; convert units and rates using proportional reasoning given a conversion factor; use units within multi-step problems and formulas;interpret units of input and resulting units of output.	This standard is addressed throughout. For example, see: Sections 1.3, 1.5, 1.7, 2.1, 2.2, 3.2, 3.4, 3.6, 3.7, 3.8, 4.2, 5.3, 6.1, 6.2, 6.3, 7.4, and 7.5
A.MM.1.4 Use various mathematical representations and structures with this information to represent and solve real-life problems.	This standard is addressed throughout. For example, see: Sections 1.5, 3.3, 4.4, 5.2, and 6.4
A.MM.1.5 Define appropriate quantities for the purpose of descriptive modeling.	This standard is addressed throughout. For example, see: Section 7.5

Standard	Georgia Algebra with CalcChat® and CalcView®
FUNCTIONAL & GRAPHICAL REASONING *– function notation, modeling linear functions, linear vs. nonlinear comparisons*	
A.FGR.2: Construct and interpret arithmetic sequences as functions, algebraically and graphically, to model and explain real-life phenomena. Use formal notation to represent linear functions and the key characteristics of graphs of linear functions, and informally compare linear and non-linear functions using parent graphs.	
Expectations	
A.FGR.2.1 Use mathematically applicable situations algebraically and graphically to build and interpret arithmetic sequences as functionswhose domain is a subset of the integers.	2.3
A.FGR.2.2 Construct and interpret the graph of a linearfunction that models real-life phenomena and represent key characteristics of the graph using formal notation.	1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2
A.FGR.2.3 Relate the domain and range of a linear function to its graph and, where applicable,to the quantitative relationship it describes.Use formal interval and set notation to describe the domain and range of linear functions.	1.1, 1.2, 1.4, 1.7
A.FGR.2.4 Use function notation to build and evaluatelinear functions for inputs in their domains and interpret statements that use function notation in terms of a mathematical framework.	1.5, 1.7, 2.1, 2.2
A.FGR.2.5 Analyze the difference between linear functions and nonlinear functions by informally analyzing the graphs of variousparent functions (linear, quadratic, exponential, absolute value, square root, and cube root parent curves).	1.3, 1.4, 1.8
GEOMETRIC & SPATIAL REASONING *– distance, midpoint, slope, area, and perimeter*	
A.GSR.3: Solve problems involving distance, midpoint, slope, area, and perimeter to model and explain real-life phenomena.	
Expectations	
A.GSR.3.1 Solve real-life problems involving slope,parallel lines, perpendicular lines, area,and perimeter.	8.1, 8.2

Standard	Georgia Algebra with CalcChat® and CalcView®
A. GSR.3.2 Apply the distance formula, midpoint formula, and slope of line segments tosolve real-world problems.	8.3
PATTERNING & ALGEBRAIC REASONING *– linear inequalities and systems of linear inequalities*	
A.PAR.4: Create, analyze, and solve linear inequalities in two variables and systems of linear inequalities to model real-lifephenomena.	
Expectations	
A.PAR.4.1 Create and solve linear inequalities in two variables to represent relationships betweenquantities including mathematically applicable situations; graph inequalities on coordinate axes with labels and scales.	2.4
A.PAR.4.2 Represent constraints of linear inequalitiesand interpret data points as possible or not possible.	2.4
A.PAR.4.3 Solve systems of linear inequalities by graphing, including systems representing amathematically applicable situation.	2.5
NUMERICAL REASONING *- rational and irrational numbers, square roots and cube roots*	
A.NR.5: Investigate rational and irrational numbers and rewrite expressions involving square roots and cube roots.	
Expectations	
A.NR.5.1 Rewrite algebraic and numeric expressionsinvolving radicals.	3.1
A.NR.5.2 Using numerical reasoning, show and explain that the sum or product of rational numbers is rational, the sum of a rational number and an irrational number is irrational, and the product of a nonzero rational number and an irrational number is irrational.	3.1

Standard	Georgia Algebra with CalcChat® and CalcView®
PATTERNING & ALGEBRAIC REASONING *– quadratic expressions & equations*	
A.PAR.6: Build quadratic expressions and equations to represent and model real-life phenomena; solve quadratic equations in mathematically applicable situations.	
Expectations	
A.PAR.6.1 Interpret quadratic expressions and parts ofa quadratic expression that represent a quantity in terms of its context.	3.2, 3.4, 3.6, 3.7, 3.8
A.PAR.6.2 Fluently choose and produce an equivalent form of a quadratic expression to reveal andexplain properties of the quantity represented by the expression.	3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 4.5
A.PAR.6.3 Create and solve quadratic equations in one variable and explain the solution in theframework of applicable phenomena.	3.5, 3.6, 3.7, 3.8, 4.5, 5.2, 5.3, 5.4
A.PAR.6.4 Represent constraints by quadratic equations and interpret data points aspossible or not possible in a modeling framework.	3.6, 3.7, 3.8, 5.3, 5.4
FUNCTIONAL & GRAPHICAL REASONING *– quadratic functions*	
A.FGR.7: Construct and interpret quadratic functions from data points to model and explain real-life phenomena; describe key characteristics of the graph of a quadratic function to explain a mathematically applicable situation for which the graph serves as a model.	
Expectations	
A.FGR.7.1 Use function notation to build and evaluatequadratic functions for inputs in their domains and interpret statements that usefunction notation in terms of a given framework.	4.1, 4.2, 4.3, 4.4, 4.5, 6.6
A.FGR.7.2 Identify the effect on the graph generated bya quadratic function when replacing $f(x)$ with$f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs.	4.1, 4.2, 4.4
A.FGR.7.3 Graph and analyze the key characteristics ofquadratic functions.	4.1, 4.3, 4.4, 4.5

Standard	Georgia Algebra with CalcChat® and CalcView®
A.FGR.7.4 Relate the domain and range of a quadraticfunction to its graph and, where applicable,to the quantitative relationship it describes.	4.1, 4.3
A.FGR.7.5 Rewrite a quadratic function representing a mathematically applicable situation to revealthe maximum or minimum value of the function it defines. Explain what the value describes in context.	5.3
A.FGR.7.6 Create quadratic functions in two variablesto represent relationships between quantities; graph quadratic functions on thecoordinate axes with labels and scales.	4.1, 4.2, 4.3, 4.4, 4.5
A.FGR.7.7 Estimate, calculate, and interpret the average rate of change of a quadratic function and make comparisons to the average rate of change of linear functions.	6.6
A.FGR.7.8 Write a function defined by a quadratic expression in different but equivalent formsto reveal and explain different properties of the function.	4.3, 4.4, 4.5, 5.1, 5.3
A.FGR.7.9 Compare characteristics of two function seach represented in a different way.	6.6
PATTERNING & ALGEBRAIC REASONING *– exponential expressions and equations*	
A.PAR.8: Create and analyze exponential expressions and equations to represent and model real-life phenomena; solve exponentialequations in mathematically applicable situations.	
Expectations	
A.PAR.8.1 Interpret exponential expressions and partsof an exponential expression that representa quantity in terms of its framework.	6.1, 6.2, 6.3
A.PAR.8.2 Create exponential equations in one variable and use them to solve problems, includingmathematically applicable situations.	6.4
A.PAR.8.3 Create exponential equations in two variables to represent relationships betweenquantities, including in mathematically applicable situations; graph equations on coordinate axes with labels and scales.	6.2, 6.3
A.PAR.8.4 Represent constraints by exponentialequations and interpret data points as possible or not possible in a modeling environment.	6.3

Standard	Georgia Algebra with CalcChat® and CalcView®
FUNCTIONAL & GRAPHICAL REASONING *– exponential functions*	
A.FGR.9: Construct and analyze the graph of an exponential function to explain a mathematically applicable situation for which thegraph serves as a model; compare exponential with linear and quadratic functions.	
Expectations	
A.FGR.9.1 Use function notation to build and evaluateexponential functions for inputs in their domains and interpret statements that usefunction notation in terms of a context.	6.2, 6.3
A.FGR.9.2 Graph and analyze the key characteristics ofsimple exponential functions based on mathematically applicable situations.	6.2, 6.6
A.FGR.9.3 Identify the effect on the graph generated byan exponential function when replacing $f(x)$ with $f(x) + k$, and $k\,f(x)$, for specific values of k (both positive and negative); find the valueof k given the graphs.	6.2
A.FGR.9.4 Use mathematically applicable situations algebraically and graphically to build and interpret geometric sequences as functionswhose domain is a subset of the integers.	6.5
A.FGR.9.5 Compare characteristics of two functions eachrepresented in a different way.	6.6
DATA & STATISTICAL REASONING *– univariate data and single quantitative variables; bivariate data*	
A.DSR.10: Collect, analyze, and interpret univariate quantitative data to answer statistical investigative questions that compare groups to solve real-life problems; Represent bivariate data on a scatter plot and fit a function to the data to answer statistical questions andsolve real-life problems.	
Expectations	
A.DSR.10.1 Use statistics appropriate to the shape ofthe data distribution to compare and represent center (median and mean) andvariability (interquartile range, standard deviation) of two or more distributions by hand and using technology.	7.1, 7.3

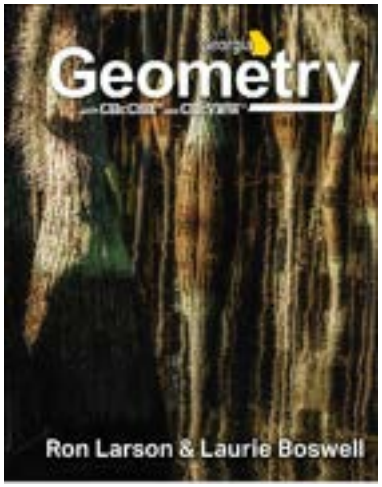
Standard	Georgia Algebra with CalcChat® and CalcView®
A.DSR.10.2 Interpret differences in shape, center, and variability of the distributions based on the investigation, accounting for possible effectsof extreme data points (outliers).	7.1, 7.2, 7.3
A.DSR.10.3 Represent data on two quantitative variables on a scatter plot and describe how the variables are related.	7.4, 7.5
A.DSR.10.4 Interpret the slope (predicted rate of change) and the intercept (constant term) ofa linear model based on the investigation of the data.	7.4, 7.5
A.DSR.10.5 Calculate the line of best fit and interpret thecorrelation coefficient, r, of a linear fit using technology. Use r to describe the strength of the goodness of fit of the regression. Usethe linear function to make predictions and assess how reasonable the prediction is incontext.	7.5
A.DSR.10.6 Decide which type of function is most appropriate by observing graphed data.	5.1, 7.5
A.DSR.10.7 Distinguish between correlation and causation.	7.5

Georgia Geometry with CalcChat® and CalcView®

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Erie, Pennsylvania
www.bigideaslearning.com

Standard	Georgia Geometry with CalcChat® and CalcView®
Geometry	
MATHEMATICAL MODELING	
G.MM.1: Apply mathematics to real-life situations; model real-life phenomena using mathematics.	
Expectations	
G.MM.1.1 Explain mathematically applicable problemsusing a mathematical model.	This standard is addressed throughout. For example, see: Sections 3.1, 3.2, 4.1, 6.8, 7.1, 9.2, 9.4, 11.2, and 13.2
G.MM.1.2 Create mathematical models to explain phenomena that exist in the natural sciences,social sciences, liberal arts, fine and performing arts, and/or humanities contexts.	This standard is addressed throughout. For example, see: Sections 2.3, 5.4, 6.2, 7.4, 8.1, 8.2, 8.3, 9.5, 10.6, 11.5, and 14.7
G.MM.1.3 Using abstract and quantitative reasoning, make decisions about information and datafrom a mathematically applicable situation.	This standard is addressed throughout. For example, see: Sections 2.5, 3.4, 5.1, 6.5, 6.8, 7.5, 10.4, 10.5, 13.9, and 14.3
G.MM.1.4 Use various mathematical representations and structures with this information to represent and solve real-life problems.	This standard is addressed throughout. For example, see: Sections 4.4, 6.3, 6.7, 6.8, 8.1, 9.5, 11.1, 12.1, 13.8, and 14.2
PATTERNING & ALGEBRAIC REASONING *– polynomial expressions*	
G.PAR.2: Interpret the structure of and perform operations with polynomials within a geometric framework.	
Expectations	
G.PAR.2.1 Interpret polynomial expressions of varying degrees that represent a quantity in terms of its given geometric framework.	1.1, 1.2, 1.3, 13.8
G.PAR.2.2 Perform operations with polynomials and prove that polynomials form a system analogous to the integers in that they areclosed under these operations.	1.1, 1.2, 1.3, 13.8
G.PAR.2.3 Using algebraic reasoning, add, subtract,and multiply single variable polynomials.	1.1, 1.2, 1.3, 13.8

Standard	Georgia Geometry with CalcChat® and CalcView®
GEOMETRIC & SPATIAL REASONING *– congruence*	
G.GSR.3: Experiment with transformations in the plane to develop precise definitions for translations, rotations, and reflectionsand use these to describe symmetries and congruence to model and explain real-life phenomena.	
Expectations	
G.GSR.3.1 Use geometric reasoning and symmetries of regular polygons to develop definitions of rotations, reflections, and translations.	5.1, 5.2, 5.3
G.GSR.3.2 Verify experimentally the congruence properties of rotations, reflections, and translations: lines are taken to lines and linesegments to line segments of the same length; angles are taken to angles of the same measure; parallel lines are taken to parallel lines.	5.1, 5.2, 5.3
G.GSR.3.3 Use geometric descriptions of rigid motions to draw the transformed figures and to predict the effect on a given figure. Describe a sequence of transformations from one figure to another and use transformation properties to determine congruence.	5.1, 5.2, 5.3, 5.4
G.GSR.3.4 Explain how the criteria for triangle congruence follow from the definition of congruence in terms of rigid motions. Usecongruency criteria for triangles to solve problems and to prove relationships in geometric figures.	2.4, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 8.2, 8.3, 8.4, 8.5
GEOMETRIC & SPATIAL REASONING *– geometric foundations, constructions, and proof*	
G.GSR.4: Establish facts between angle relations and generate valid arguments to defend facts established. Prove theorems andsolve geometric problems involving lines and angles to model and explain real-life phenomena.	
Expectations	
G.GSR.4.1 Use the undefined notions of point, line, line segment, plane, distance along a line segment, and distance around a circular arc to develop and use precise definitions and symbolic notations to prove theorems and solve geometric problems.	2.1, 2.2, 2.5, 2.6, 3.1, 4.1, 11.1, 12.1

Standard	Georgia Geometry with CalcChat® and CalcView®
G.GSR.4.2 Classify quadrilaterals in the coordinate planeby proving simple geometric theorems algebraically.	8.2, 8.3, 8.4, 8.5
G.GSR.4.3 Make formal geometric constructions with avariety of tools and methods.	2.2, 2.3, 2.5, 4.3, 4.4, 11.4
G.GSR.4.4 Prove and apply theorems about lines and angles to solve problems.	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.2, 4.3, 4.4, 4.5, 7.1
G.GSR.4.5 Use geometric reasoning to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	4.2, 4.3, 4.4, 6.1, 8.1, 9.4
GEOMETRIC & SPATIAL REASONING *– similarity*	
G.GSR.5: Describe dilations in terms of center and scale factor and use these terms to describe properties of dilations; use theprecise definition of a dilation to describe similarity and establish the criterion for triangles to be similar; use these terms, definitions, and criterion to prove similarity, model, and explain real-life phenomena.	
Expectations	
G.GSR.5.1 Verify experimentally the properties of dilations.	9.1
G.GSR.5.2 Given two figures, use and apply the definition of similarity in terms of similarity transformations.	9.2, 9.3
G.GSR.5.3 Use the properties of similarity transformations to establish criterion for twotriangles to be similar. Use similarity criteria for triangles to solve problems and to proverelationships in geometric figures.	9.4, 9.5, 9.6, 10.3
G.GSR.5.4 Construct formal proofs to justify and apply theorems about triangles.	3.1, 3.2, 3.3, 3.4, 9.6, 10.1, 10.2

Standard	Georgia Geometry with CalcChat® and CalcView®
GEOMETRIC & SPATIAL REASONING *– right triangle trigonometry*	
G.GSR.6: Examine side ratios of similar triangles; use the relationship between right triangles to develop an understanding of sine, cosine, and tangent to solve mathematically applicable geometric problems and to model and explain real-life phenomena.	
Expectations	
G.GSR.6.1 Explain that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	10.4, 10.5
G.GSR.6.2 Explain and use the relationship between the sine and cosine of complementary angles.	10.5
G.GSR.6.3 Use trigonometric ratios and the Pythagorean Theorem to solve for sides and angles of right triangles in applied problems.	10.1, 10.4, 10.5, 10.6
GEOMETRIC & SPATIAL REASONING *– Trigonometry and the Unit Circle*	
G.GSR.7: Explore the concept of a radian measure and special right triangles.	
Expectations	
G.GSR.7.1 Explore and interpret a radian as the ratio of the arc length to the radius of a circle.	12.3
G.GSR.7.2 Explore and explain the relationship between radian measures and degree measures and convert fluently between degree and radian measures.	12.3
G.GSR.7.3 Use special right triangles on the unit circle to determine the values of sine, cosine, and tangent for 30° ($\frac{\pi}{6}$), 45° ($\frac{\pi}{4}$) and 60° ($\frac{\pi}{8}$) angle measures. Use reflections of triangles to determine reference angles and identify coordinate values in all four quadrants of the coordinate plane.	12.4

Standard	Georgia Geometry with CalcChat® and CalcView®
GEOMETRIC & SPATIAL REASONING *– circles*	
G.GSR.8: Examine and apply theorems involving circles; describe and derive arc length and area of a sector; and model andexplain real-life frameworks involving circles.	
Expectations	
G.GSR.8.1 Identify and apply angle relationships formed by chords, tangents, secants and radii with circles.	11.1, 11.2, 11.3, 11.4, 11.5, 11.6
G.GSR.8.2 Using similarity, derive the fact that the length of the arc (arc length) intercepted by an angle is proportional to the radius; derive the formula for the area of a sector. Solve mathematically applicable problems involving applications of arc length and area of sector.	12.1, 12.2
G.GSR.8.3 Write and graph the equation of circles in standard form.	11.7
GEOMETRIC & SPATIAL REASONING *– equations and measurement*	
G.GSR.9: Develop informal arguments for geometric formulas using dissection arguments, limit arguments, and Cavalieri's principle; solve mathematically applicable problems involving volume; explore and visualize relationships between two-dimensional and three-dimensional objects to model and explain real-life phenomena.	
Expectations	
G.GSR.9.1 Use volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems including right and oblique solids.	13.1, 13.3, 13.4, 13.5, 13.6, 13.7, 13.9
G.GSR.9.2 Use geometric shapes, their measures, and their properties to describe objects and approximate volumes.	13.2, 13.8
G.GSR.9.3 Apply concepts of density based on area and volume in modeling situations	13.2, 13.8

Standard	Georgia Geometry with CalcChat® and CalcView®
PROBABILISTIC REASONING *– compound events and expected values*	
G.PR.10: Solve problems involving the probability of compound events to make informed decisions; interpret expected value andmeasures of variability to analyze probability distributions.	
Expectations	
G.PR.10.1 Describe categories of events as subsets of a sample space using unions, intersections, or complements of other events. Apply the Addition Rule conceptually, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answers in context.	14.1, 14.5
G.PR.10.2 Apply and interpret the general Multiplication Rule conceptually to independent events of a sample space, $P(A \text{ or } B) = [P(A)] * [P(B\|A)] = [P(B)] * [P(A\|B)]$ using contingency tables or tree diagrams.	14.4
G.PR.10.3 Use conditional probability to interpret risk in terms of decision-making and investigate questions such as those involving false positives or false negatives from screening tests.	14.4
G.PR.10.4 Define permutations and combinations and apply this understanding to compute probabilities of compound events and solve meaningful problems.	14.3, 14.4
G.PR.10.5 Interpret the probability distribution for a given random variable and interpret the expected value.	14.6, 14.7
G.PR.10.6 Develop a probability distribution for variables of interest using theoretical and empirical (observed) probabilities and calculate and interpret the expected value.	14.7
G.PR.10.7 Calculate the expected value of a random variable and interpret it as the mean of a given probability distribution.	14.7
G.PR.10.8 Compare the payoff values associated with the probability distribution for a random variable and make informed decisions based on expected value and measures of variability.	14.7

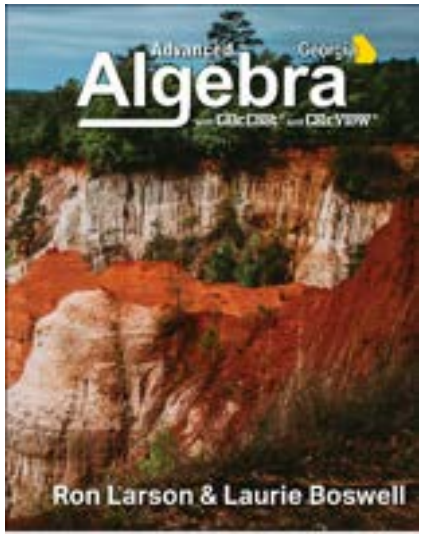
Standard	Georgia Geometry with CalcChat® and CalcView®
DATA & STATISTICAL REASONING; PROBABLISTIC REASONING – *categorical data in two-way frequency tables; conditionalprobability*	
G.DSR.11: Examine real-life situations presented in a two-way frequency table to calculate probabilities, to model categorical data,and to explain real-life phenomena.	
Expectations	
G.DSR.11.1 Construct and summarize categorical data for two categories in two-way frequency tables.	14.2
G.DSR.11.2 Use categorical data in two-way frequency tables to calculate and interpret probabilities based on the investigation.	14.2, 14.3, 14.4

Georgia Advanced Algebra with CalcChat® and CalcView®

©2024

By Ron Larson and Laurie Boswell

Correlated to the Georgia Mathematics Standards



Erie, Pennsylvania
www.bigideaslearning.com

Standard	Algebra 2 with CalcChat® and CalcView®
Advanced Algebra (Algebra II)	
MATHEMATICAL MODELING	
AA.MM.1: Apply mathematics to real-life situations; model real-life phenomena using mathematics.	
Expectations	
AA.MM.1.1 Explain applicable, mathematicalproblems using a mathematical model.	This standard is addressed throughout. For example, see : Sections 1.1, 2.3, 3.3, 4.1, 4.2, 5.3, and 6.1
AA.MM.1.2 Create mathematical models to explain phenomena that exist in thenatural sciences, social sciences, liberal arts, fine and performing arts, and/or humanities contexts.	This standard is addressed throughout. For example, see : Sections 1.1, 2.5, 2.6, 3.3, 5.6, 6.1, 7.3, 9.1, and 9.5
AA.MM.1.3 Using abstract and quantitative reasoning, make decisions about information and data from a mathematical, applicable situation.	This standard is addressed throughout. For example, see : Sections 2.3, 2.5, 4.2, 4.3, 5.1, 5.3, 5.5, 7.2. and 9.2
AA.MM.1.4 Use various mathematical representations and structures torepresent and solve real-life problems.	This standard is addressed throughout. For example, see : Sections 1.2, 2.3, 3.2, 4.3, and 5.3
DATA & STATISTICAL REASONING *– descriptive and inferential statistics*	
AA.DSR.2: Communicate descriptive and inferential statistics by collecting, critiquing, analyzing, and interpreting real-world data.	
Expectations	
AA.DSR.2.1 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. Distinguish between primary and secondary data and howit affects the types of conclusions thatcan be drawn.	1.3, 1.4
AA.DSR.2.2 When collecting and considering data,critically evaluate ethics, privacy, potential bias, and confounding variables along with their implications for interpretation in answering a statistical investigative question. Implement strategies for organizingand preparing big data sets.	1.3, 1.4

Standard	Algebra 2 with CalcChat® and CalcView®
AA.DSR.2.3 Distinguish between population distributions, sample data distributions, and sampling distributions. Use sample statistics tomake inferences about population parameters based on a random sample from that population and to communicate conclusions using appropriate statistical language.	1.2, 1.3, 1.4, 1.5, 1.6
AA.DSR.2.4 Calculate and interpret z-scores as a measure of relative standing and as amethod of standardizing units.	1.1
AA.DSR.2.5 Given a normally distributed population, estimate percentages using the Empirical Rule, z-scores,and technology.	1.1
AA.DSR.2.6 Model sample-to-sample variability insampling distributions of a statistic using simulations taken from a given population.	1.6
AA.DSR.2.7 Given a margin of error, develop andcompare confidence intervals of different models to make conclusionsabout reliability.	1.5
AA.DSR.2.8 Summarize and evaluate reports based on data for appropriateness ofstudy design, analysis methods, andstatistical measures used.	1.4
FUNCTIONAL & GRAPHICAL REASONING *– exponential and logarithmic functions*	
AA.FGR.3: Explore and analyze structures and patterns for exponential and logarithmic functions and use exponential andlogarithmic expressions, equations, and functions to model real-life phenomena.	
Expectations	
AA.FGR.3.1 Find the inverse of exponential and logarithmic functions using equations, tables, and graphs, limiting the domainof inverses where necessary to maintain functionality, and prove by composition or verify by inspection thatone function is the inverse of another.	2.3
AA.FGR.3.2 Analyze, graph, and compare exponential and logarithmic functions.	2.1, 2.2, 2.3, 2.4
AA.FGR.3.3 Use the definition of a logarithm, logarithmic properties, and the inverserelationship between exponential and logarithmic functions to solve problems in context.	2.3, 2.5

Standard	Algebra 2 with CalcChat® and CalcView®
AA.FGR.3.4 Create exponential equations and use logarithms to solve mathematical, applicable problems for which only onevariable is unknown.	2.6
AA.FGR.3.5 Create and interpret logarithmic equations in one variable and use them to solve problems.	2.6
AA.FGR.3.6 Create, interpret, and solve exponential equations to represent relationships between quantities andanalyze the relationships numericallywith tables, algebraically, and graphically.	2.6, 2.7
AA.FGR.3.7 Create, interpret, and solve logarithmicequations in two or more variables to represent relationships between quantities.	2.7
FUNCTIONAL & GRAPHICAL REASONING *– radical functions*	
AA.FGR.4: Explore and analyze structures and patterns for radical functions and use radical expressions, equations, andfunctions to model real-life phenomena.	
Expectations	
AA.FGR.4.1 Rewrite radical expressions as expressions with rational exponents. Extend the properties of integer exponents to rational exponents.	3.1, 3.2
AA.FGR.4.2 Solve radical equations in one variable, and give examples showing how extraneous solutions may arise.	3.4
AA.FGR.4.3 Analyze and graph radical functions.	3.3
AA.FGR.4.4 Create, interpret and solve radical equations with one unknown value and use them to solve problems that model real-world situations.	3.4
AA.FGR.4.5 Create, interpret, and solve radical equations in two or more variables to represent relationships between quantities.	3.3, 3.4

Standard	Algebra 2 with CalcChat® and CalcView®
FUNCTIONAL & GRAPHICAL REASONING *– polynomial functions*	
AA.FGR.5: Extend exploration of quadratic solutions to include real and non-real numbers and explore how thesenumbers behave under familiar operations and within real-world situations; create polynomial expressions, solve polynomial equations, graph polynomial functions, and model real-world phenomena.	
Expectations	
AA.FGR.5.1 Graph and analyze quadratic functionsin contextual situations and include analysis of data sets with regressions.	4.1, 4.2, 4.3
AA.FGR.5.2 Define complex numbers i such that $i^2 = -1$ and show that every complex number has the form $a + bi$ where ***a*** and b are real numbers and that thecomplex conjugate is $a - bi$.	5.2
AA.FGR.5.3 Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract,and multiply complex numbers.	5.2
AA.FGR.5.4 Use the structure of an expression tofactor quadratics.	5.1, 5.3
AA.FGR.5.5 Write and solve quadratic equations and inequalities with real coefficientsand use the solution to explain a mathematical, applicable situation.	5.1, 5.2, 5.3, 5.4, 5.6
AA.FGR.5.6 Solve systems of quadratic and linearfunctions to determine points of intersection.	5.5
AA.FGR.5.7 Create and analyze quadratic equationsto represent relationships between quantities as a model for contextual situations.	4.3
AA.FGR.5.8 Identify the number of zeros that existfor any polynomial based upon the greatest degree of the polynomial andthe end behavior of the polynomial by observing the sign of the leading coefficient.	6.1, 6.3
AA.FGR.5.9 Identify zeros of polynomial functionsusing technology or pre-factored polynomials and use the zeros to construct a graph of the function defined by the polynomial function. Analyze identify key features of these polynomial functions.	6.1, 6.3

Standard	Algebra 2 with CalcChat® and CalcView®
AA.FGR.5.10 Use the structure of an expression to factor polynomials, including the sum ofcubes, the difference of cubes, and higher-order polynomials that may be expressed as a quadratic within a quadratic.	6.2, 6.3
AA.FGR.5.11 Using all the zeros of a polynomial function, list all the factors and multiplyto write a multiple of the polynomial function in standard form.	6.3, 6.4
PATTERNING & ALGEBRAIC REASONING *– linear algebra and matrices*	
AA.PAR.6: Represent data with matrices, perform mathematical operations, and solve systems of linear equations leadingto real-world linear programming applications.	
Expectations	
AA.PAR.6.1 Use matrices to represent data, and perform mathematical operations withmatrices and scalars, demonstrating that some properties of real numbers hold for matrices, but that others do not.	7.1, 7.2, 7.3, 7.4
AA.PAR.6.2 Rewrite a system of linear equationsusing a matrix representation.	7.3, 7.4
AA.PAR.6.3 Use the inverse of an invertible matrixto solve systems of linear equations.	7.4
AA.PAR.6.4 Utilize linear programming to representconstraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret data points as solutions or non-solutions under the establishedconstraints in real-world problems.	7.5
GEOMETRIC & SPATIAL REASONING *– Trigonometry and the Unit Circle*	
AA.GSR.7: Develop an introductory understanding of the unit circle; solve trigonometric equations using the unit circle.	
Expectations	
AA.GSR.7.1 Define the three basic trigonometric ratios in terms of x, y, and r using theunit circle centered at the origin of thecoordinate plane.	8.1, 8.2
AA.GSR.7.2 Apply understanding of the angle measures and coordinates of the unitcircle to solve practical, real-life problems involving trigonometric equations.	8.1, 8.3

Standard	Algebra 2 with CalcChat® and CalcView®
FUNCTIONAL & GRAPHICAL REASONING *– rational functions*	
AA.FGR.8: Analyze the behaviors of rational functions to model applicable, mathematical problems.	
Expectations	
AA.FGR.8.1 Rewrite simple rational expressions in equivalent forms.	9.1, 9.2, 9.3, 9.4
AA.FGR.8.2 Add, subtract, multiply and divide rational expressions, including problems in contextand express rational expressions in irreducible form.	9.3, 9.4
AA.FGR.8.3 Graph rational functions, identifying key characteristics.	9.2
AA.FGR.8.4 Solve simple rational equations in one variable, and give examples showing how extraneous solutions may arise.	9.1, 9.5