CTA-Goodman

Math Overview

Chandler Traditional Academies (CTA) utilize the Saxon Math program as the basis for instruction. Saxon Math is a well-articulated curriculum that challenges students to learn increasingly more sophisticated mathematical ideas as they progress through their studies.

Saxon Math is designed to break down complex concepts into related increments because smaller pieces of information are easier to teach and easier to learn. Saxon systematically distributes the instruction, practice and assessment across each grade level. Practice is continual and assessment is cumulative. The Saxon approach differs from most in that it distributes instruction, practice, and assessment of each skill or concept throughout the year rather than massing these elements (e.g. single chapter on measurement, geometry).

In grades 1—6, students use materials one grade ahead of the regular level. Approximately 70% of the math curriculum is at this advanced level. The remainder of instruction is devoted to securing understanding of problem solving, algorithms, and vocabulary at the grade level as preparation for state AIMS testing. At the Kindergarten level, early math skills and concepts are developed and reinforced throughout the first semester. The students then move to the advanced level for the remainder of the school year.

Kindergarten Math Overview

Kindergarten Concepts	**Description/Activity**	**Mastery Level** **Skills are to be mastered unless otherwise noted**
Number Sense and Operations	Count aloud forward to 20 and/or backward to 10 in order	Master
	Construct equivalent forms of whole numbers using manipulatives through 10	Master
	Order 3 or more numbers through 20	Master
	Solve oral word problems using + and – with numbers to 10	Master
Geometry and Measurement	Identify common shapes in the environment	Master
	Communicate orally how attributes of an object can be measured	Master
Structure and Logic	Sort objects according to attributes	Master
First Grade **Concept**		
Number Sense and Operations	Make a model representing a whole number 0--100	
	Count forward, backward to 100	Introduce
	Identify, write, read number words 0—100 in and out of order	
	Identify place value of whole numbers to 99 (9 tens & 9 ones)	Introduce
	Construct models and apply expanded notation through 99	Introduce
	Identify odd and even to 100	
	Use ordinals through 10^{th}	
	Order 3 or more numbers to 100	
	Make models, identify in words representations of fractions and fractional parts (halves)	
	Identify money by name and value (penny, nickel, dime, quarter, dollar)	
	Count money and identify value of a collection of coins to $1.00 using various signs $ and cent sign	Introduce
	Add and subtract through 20 with manipulatives	
	State addition facts through 18 and subtraction through 9 or less,	

	Identify commutative and identity properties of addition	Introduce
	Demonstrate families of equations for + and – through 18	Introduce
	Identify + and – as inverse operations	Introduce
	Demonstrate addition and subtraction of fractions using denominators (halves)	Introduce
	Use grade level math vocabulary appropriately and apply the symbols +, -- and =	
	Select the correct operation to solve a word problem	
	Solve problems using mental math and estimation	
	Estimate the measurement of objects using customary and non-standard units	Introduce
Data Analysis, Probability	Formulate questions to collect data in contextual situations	
Discrete Math	Make pictographs and tally charts with labels	
	Interpret pictographs using terms, most, least, greatest, least, more than, less than	
	Formulate questions using graphs, charts and tables	
	Solve problems using graphs, charts and tables	
	Make arrangements representing number of combinations possible pairing items from 2 sets	
Patterns, Algebra, Functions	Communicate, extend, and create an appropriate, repetitive pattern (e.g. ✧ ♡ ♡ ✧	
	Find the missing sum/difference through 9 in a number sentence (5+2=)	
	Identify the change in a variable over time	Introduce
	Make simple predictions based on a variable	Introduce
Geometry and Measurement	Use the terms vertex and side describing 2-dimensional shapes	Introduce
	Identify 2-dimensional shapes by attributes of size, shape, sides and vertices	
	Name and draw common 2-D shapes (square, rectangle, triangle, circle)	
	Use concepts and positional terms and size in context (inside/outside, left/right, above/below/between, smaller/larger, longer/shorter)	
	Recognize a line of symmetry and mirror images	Introduce
	Compare measurable characteristics of 2 objects (length, weight, size)	
	Recognize a slide or translation (same shape-different position)	Introduce
	Tell time to the hour using digital and analog clocks	
	Name the days of the week and month s of the year in order	
Structure and Logic	Create word problems based on contextual situations for addition facts to 18 and subtraction to 9	
	List the quantitative components found in word problems	Introduce
	Provide rationale for classifying objects by observable attributes (color, size)	

Fact Mastery Expectations
Grades 1—6

CTA schools utilize a basic math facts program taught to the mastery level using drill, repetition and memorization to achieve accuracy and speed. The **end-of-year goals/expectations** are listed below. The same format is used throughout the year.

Grade 1	**+ and --**	**30 in 1 ½ minutes**	***Grade 2***	**+, --, X**	**100 in 4 minutes**
Grade 3	**+, --, X, ÷**	**100 in 3 1/2 minutes**	***Grade 4***	**+, --, X, ÷**	**100 in 3 minutes**
Grade 5	**+, --, X, ÷**	**100 in 2 ½ minutes**	***Grade 6***	**+, --, X, ÷**	**100 in 2 minutes**

First Grade Math Overview

See the Kindergarten overview for additional First Grade skills taught and mastered in Kindergarten. Those skills are reinforced throughout the first grade year as district expectations for the grade.

First Grade Concepts	**Description/Activity**	**Mastery Level** **Skills are to be mastered unless otherwise noted**
Number Sense, Operations and Estimation	Read, write, identify and use models to represent numbers 0--100	
	Count forward, backward 0—100 and identify odd/even	
	Construct equivalent forms of whole numbers using manipulatives and symbols through 99 (e.g. 15 + 5 = 10 + 5)	
	Identify place and value of a numeral (143= 1 hundred, 4 tens, 3 ones) and expanded notation through 99 (3 tens and 7 ones = 37)	
	Construct models to represent place value for ones and tens	
	Compare and order 3 or more whole numbers to 100	
	Count money through $1.00 using coins and the symbols cent and $	
	Demonstrate the process of addition and subtraction facts using manipulatives and traditional algorithms	
	Add/Subtract 2-digit numbers with/without regrouping	
	Demonstrate + and – families of equations to 18	
	Identify commutative and identity properties for +, -- and inverse operations	
	+, -- money without regrouping using manipulatives and traditional algorithms	
Geometry and Measurement	Estimate measuremnt of an object with standard and non-standard units	
	Select the appropriate measure of accuracy for length, capacity/volume and mass	
Structure and Logic	Read, write, solve and list the quantitative components in word problems	
Second Grade Concepts		
Number Sense, Operations, Estimation	Make models, identify, read, write representations of whole numbers 0-999 and identify odds/evens	Introduce
	State verbally numbers through 999 using place value	Introduce
	Construct models to represent place value concepts for 1's, 10's and 100's	
	Apply expanded notation to model place value through 100's	
	Compare and order whole numbers through 999	
	Use any ordinal number	
	Make models representing fractions halves and fourths	
	Identify a model divided into equal fractional parts halves/fourths	
	Count money and identify the value of a collection of money through $1.00 using coins and bills and cent sign and $	
	Use and compare decimals through hundredths in contextual situations with money	

	Identify equivalent relationships—100 pennies=1 dollar, 10 dimes=1 dollar, 4 quarters=1 dollar	
	Distinguish equivalency of decimals, fractions, and percents (half dollar=.50=50%)	Introduce
	Add 2 and 3 digit numbers with/without manipulatives	
	Subtract 2-digit numbers using manipulatives	
	Select the correct operation to solve word problems	
	Accurately and efficiently use + and – facts to 18	
	+ and – one and2-digit numbers with regrouping	
	Add 3 one or two digit addends	
	Solve word problems using +, -- , w/ regrouping and 3-digit numbers without regrouping	
	Count in multiples of 3	Introduce
	Accurately and efficiently use multiplication facts 2's, 5's, 10's	
	Apply appropriate properties to assist in computation	
	Apply the symbols +, --, X, =, <, >	
	Use grade level mathematical vocabulary	
	Demonstrate +, -- of fractions (halves, fourths)	Introduce
	Estimate measurement using customary units and Compare estimate to actual measure	
	Evaluate the reasonableness of an estimate	Introduce
Data, Probability, Discrete Math	Formulate questions to collect data	
	Make simple pictographs and tally charts from data	
	Interpret and ask questions using pictographs using terms like less, more, equal to, etc.	
	Formulate questions based on a table, chart or graph	
	Solve problems using tables, charts and graphs	
	Name and predict possible outcomes for a probability experiment	
	Predict most likely, least likely outcome and compare results after an experiment	
	Record data from a probability experiment	
	Make arrangements representing the combinations possible from pairing items from 2 sets using manipulatives	
Algebra, Patterns, Functions	Develop, extend and create a simple grade level pattern	
	Describe the rule for a simple function (e.g. T-chart, input/output, frames/arrows)	Introduce
	Use variables in contextual situations	
	Identify the missing element in + and – for sums through 18 and differences to 9	
Geometry and Measurement	Compare attributes of 2-D shapes	
	Recognize congruent shapes	
	Identify the lines of symmetry	
	Identify same shape-different position (flip/refelection)	
	Tell time to half and quarter hour on digital and analog clocks	
	Determine passage of time using a calendar (days, months and weeks)	
	Select appropriate tool to measure an object	
	Identify equivalent relationships (inches/foot, minutes/hour, hours/day, days/week, months/year	

Structure and Logic	Create contextual problems requiring + or – with one and two digit numbers	
	Identify concepts of some, every, many, all and none within the context of logical reasoning	

Second Grade Math Overview

See the First Grade overview for additional Second Grade skills taught and mastered in First Grade. Those skills are reinforced throughout the second grade year as district expectations for the grade.

Second Grade Concepts	Descriptor/Activity	Mastery Level
Number Sense, Operations	Make models and identify whole numbers with words, models and symbols 0-999	
	Count forward/backward in order 0-999	
	Write all numbers in/out of order 0-999	
	State equivalent forms of whole numbers using multiples of 10 through 1,000 (430 + 200 = 600 + 30)	
	Identify the place value of a number through 999	
	Count money through $5.00 using bills and coins	
	Identify value of money using $, cent sign through $5.00	
	Distinguish equivalency among decimals, fractions and percents using money	
Third Grade Concepts		
Number Sense, Operations, Estimation	Identify and write 6-digit whole numbers in/out of order	
	State a number through 6-digits with place value, by models, symbols or expanded notation	
	Apply expanded notation through 9,999	
	Sort numbers into sets of odd or even	
	Compare and order numbers through 6 places	
	Make models and identify symbols, words or models of fractions (halves, fourths, thirds, eighths, tenths)	
	Compare and order fractions with like denominators	
	Count money through $20.00 using coins and bills	Introduce
	Use and compare decimals through 100ths in contextual situations	
	Order decimals through 100ths w/ models, illustrations	Introduce
	Determine equivalency of decimals, percent, fractions	Introduce
	Determine multiples of a number with products to 24	
	Accurately and efficiently compute +, ---facts to 18	
	Demonstrate +, -- of numbers using manipulatives	
	Compute +, -- through 100's with/without regrouping	
	Add a column of numbers	
	Select the operation and solve word problems	
	Demonstrate the process of multiplication as repeated adding, counting by multiples, combining = sets, and making arrays	
	Accurately and efficiently state X and division facts to 9	Introduce
	Apply properties to assist in computation	
	Apply symbols and vocabulary in mathematical problem solving	
	Estimate length and width in US customary units	
	Solve problems using estimation	
	Record and compare estimated measurements for objects and evaluate the reasonableness of estimates	

Data, Probability, Discrete Math	Construct bar graphs, pictographs, tally charts with labels and titles from organized data	
	Interpret data from line plots, pictographs and single line graphs	
	Solve problems and formulate questions from graphs, tables and charts	
	Predict and name possible outcomes for a probability experiment (more likely, less likely, equally likely, unlikely)	
	Predict the outcome of a probability experiment and record the data	
	Compare outcomes to predictions of an experiment	
	Compare results of repeated experiments	
	Make a diagram to represent the combinations available when an item is selected from each of 3 sets of 2 items	
Patterns, Algebra, Functions	Communicate an iterative pattern using symbols or numbers	
	Extend and/or solve a repetitive pattern	
	Describe the rule used in a function	
	Use variables in contextual situations	
	Solve equations with 1 variable using missing addends or minuends	
	Make simple predictions based on variables	
Geometry, Measurement	Construct geometric figures w/ other common shapes	
	Identify concrete objects and pictures of 3-dimensional solids (cone, sphere, cube)	
	Describe relationship between 2 and 3-dimensional shapes	
	Recognize similar shapes	
	Identify symmetry in 2-dimensional shapes	
	Identify flip, turn and slides	
	Identify points in the 1st quadrant using ordered pairs	
	Select appropriate measures for length, capacity and mass	
	Tell time to the minute (analog)	
	Determine the passage of time across months on a calendar	
	Record temperatures, both Fahrenheit and Celsius to nearest degree	
	Compare units of measure to determine relationships for length, time, and money	
	Determine the perimeter using a rectangular array	
	Represent area using a rectangular array	
Structure, Logic	Discriminate necessary from unnecessary information in a word problem	
	Draw conclusions based on existing information	

Third Grade Math Overview

See the Second Grade overview for additional Third Grade skills taught and mastered in Second Grade. Those skills are reinforced throughout the third grade year as district expectations for the grade and for AIMS testing.

Third Grade Concepts	**Activities/Descriptors**	**Mastery Level**
Number Sense, Operations, Estimation	Count money through $20.00 with bills and coins	
	Order decimals through hundredths with models, illustrations and/or symbols	
	Determine equivalency among decimals, percents and fractions	
	Identify whole number factors and/or pairs of factors for any number through 24	

	Apply + and – in contextual situations and with money to $20	
	Accurately and efficiently identify X and ÷ facts through 9	
Fourth Grade Concepts		
Number Sense, Operations, Estimation	Construct models, read, identify, state place value, state expanded notation and write a whole number through hundred thousands	
	Compare and order any whole numbers	
	Make models representing mixed numbers	
	Identify symbols, words and models for mixed numbers	
	Use mixed numbers in contextual situatiosn	
	Compare and order unit fractions (1/2, 3//4)	
	Compare and order mixed numbers with like denominators	
	+ and – fractions w/ like denominators(no regrouping)	
	Use and compare decimals in contextual situations	
	Determine equivalency of decimals, fractions, and percents	
	Identify factors and pairs of factors for number through 144	Introduce
	Determine multiples of a number through 144	
	Add and subtract whole numbers with/without regrouping	
	Multiply multi-digit numbers by 2-digits	Introduce
	Divide with one-digit divisors	
	Accurately and efficiently compute X and ÷ facts to 12's	
	Apply properties to assist in computation including associative property of X	
	Simplify expressions using the order of operations	
	Solve word problems using the 4 basic operations	
	Solve word problems using estimation	
	Use estimation to verify reasonableness of an answer	
	Estimate and measure for distance	
Data, Probability and Discrete Math	Formulate questions to collect data	
	Construct single bar graphs, line graphs and 2-set Venn diagrams with labels and titles	
	Interpret graphical representations and data displays	Introduce
	Answer questions based on graphs, charts, tables and diagrams	
	Form predictions based on data	
	Name and predict possible outcomes for a probability experiment	
	Record data from probability experiments	
	Generate experiments in probability and make predictions on outcomes	
	Find possible combinations when 1 item is selected from each of 2 sets with 3 objects	Introduce
Patterns, Algebra, Functions	Communicate, extend, and create iterative and repetitive patterns with symbols, numbers	Introduce
	Describe the rule employed in a simple function	
	Evaluate expressions for the 4 basic operations by substituting a whole number for a variable	
	Solve 1-step equations for 1 variable using a letter or symbol using multiplication (12 = n X 4)	
Geometry, Measurment	Identify properties of 2-dimensional figures with correct vocabulary	
	Identify prisms, pyramids, cones, cylinders and spheres	
	Draw and identify points, lines, line segments, rays and angles	
	Classify angles as acute, right, obtuse, straight	
	Classify triangles as right, acute, obtuse	
	Identify similar and congruent shapes	
	Demonstrate translation with geometric figures	Introduce

	Identify tessellation	Introduce
	Identify measure of accuracy for area	
	Compute elapsed time using a clock or calendar	Introduce
	Select correct tool for measuring an object	
	Compare unit of measure to determine more/less relationships (yards/miles, kilometers/meter, pounds/tons, grams/kilograms)	
	Use equivalent measures (3 teaspoons=1 1 tablespoon, 16 cups = gallon)	
	Compare weight using US and metric measures	
	Determine perimeter of a polygon	
	Determine the area of squares and rectangles	
	Differentiate between perimeter and area of quadrilaterals	
Structure and Logic	Determine necessary and unnecessary information in a word problem	
	Develop an algorithm to calculate perimeter of polygons	
	Draw a conclusion from a Venn diagram	Introduce
	Identify if…then statements based on graphic organizers	Introduce