

## Grade 4 Benchmark Proficiencies

### I. NUMBER SENSE

*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students      B=about half      C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STI.1	read and write whole numbers through one million				
STI.2	name, write, count, order and compare number words through one million				
STI.3	count on by ten from any given number up to one million				
STI.4	draw multi-digit numbers on a place value chart				
STI.5	write multi-digit numbers in expanded notation from a place value chart				
STI.6	rewrite 3- and 4-digit numbers in standard, expanded, or word form when given one of the forms				
STI.7	show a 4-digit number as hundreds ex. 2,500 = 25 hundreds				
STI.8	round to the nearer 10th, 100th, 1,000th, 10th's, and 100th's				
STI.9	identify the identity element for multiplication				
STI.10	identify prime and composite numbers to 100 using an array and/or factor tree				
STI.11	explore the factors of two given numbers using an array or factor tree (12=4x3 = 2x6 = 2x2x3)				
STI.12	explore common multiples of two numbers by using the 100's chart				
STI.13	explore the meaning of LCM and GCF				
STI.14	know and use the divisibility rules for 2, 5,10				
STI.15	read and use Roman numeral mathematical notation I through XII				
STI.16	understand and use standard algorithms to divide a multi-digit number by a one-digit number				
STI.17	Understand and use standard algorithms to multiply a multi-digit number by a 2-digit number				
STI.18	solve problems involving multiplication of a multi-digit number by a 2-digit number and division of a multi-digit number by a 1-digit number				
STI.19	commit to memory all multiplication/division tables 2 through 10				
STI.20	estimate sums, differences, products, or quotients by rounding to a specified value (to the nearer unit, ten, and hundred, thousand, ten thousand or hundred thousand				
STI.21	explain why a rounded solution may be needed (how many 10 person vans are needed to transport 43 people)				
STI.22	add and subtract multi-digit numbers with zeros and with regrouping				
STI.23	understand and use standard algorithms for addition and subtraction of multi-digit numbers (723,502 – 16, 276 = ?)				
STI.24	multiply a 2- and 3-digit number by a 1- and 2-digit number				
STI.25	multiply and divide multiples of 10				
STI.26	find the quotient of a 2- and 3-digit number by a 2-digit number				

## Grade 4 Benchmark Proficiencies

### I. NUMBER SENSE (Continued)

*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students    B=about half    C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STI.27	add and subtract whole numbers, and 2-digit decimals				
STI.28	estimate the sum of the difference of a whole number and a positive decimal (up to 2 decimal places)				
STI.29	use standard algorithms multiplying a multi-digit number by a 2-digit number				
STI.30	use knowledge of family of facts for finding missing addends, minuends, subtrahends, factors, and divisors, or dividends				
STI.31	interpret the remainder in a problem solving situation and write the remainder as a decimal or a fraction				
STI.32	from a list of numbers identify common multiples of two given numbers				
STI.33	from a list of numbers identify common factors of two given numbers				
STI.34	select the most appropriate computation method: paper/pen, mental math, calculator, and give reason for method				
STI.35	use a four function calculator to verify estimates and solutions				
STI.36	use concepts of negative numbers on a number line, owing money, reading temperatures				
STI.37	divide a whole or a group into a given set of parts				
STI.38	explain equivalences of fractions ex: $1/2=2/4$ etc.				
STI.39	explain fractions as parts of a set, parts of a whole, a whole number by a whole number				
STI.40	represent a fraction by drawings				
STI.41	write a fraction represented by a drawing				
STI.42	use $1/4$ , $1/2$ , and $3/4$ as benchmarks to estimate length area, amount, etc				
STI.43	order and compare fractions with like denominators, using the symbols $<$ , $>$ , $=$				
STI.44	compare fractions with unlike denominators using concrete materials				
STI.45	round fractions and mixed numbers to the nearer whole number				
STI.46	write a mixed number as a whole number and a fraction				
STI.47	add and subtract fractions with like denominators and record in simplest terms				
STI.48	compare and order whole numbers and decimals (up to two decimal places)				
STI.49	know decimal equivalents for halves and fourths				

## Grade 4 Benchmark Proficiencies

### I. NUMBER SENSE (Continued)

*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students    B=about half    C=fewer than 25%	Q	Q	Q	Q
		1	2	3	4
STI.50	write fractions and decimal notations in tenths and hundredths				
STI.51	add and subtract decimals up to two decimal places				
STI.52	relate fractions and decimals on a number line				
STI.53	identify and compare on a number line the positions of positive fractions, mixed numbers, and decimals (up to two places)				
STI.54	round 2-place decimals to 1-place decimal or whole number, and explain the reasonableness of the answer				
STI.55	explore situations for which an estimate is appropriate				
STI.56	explore strategies to estimate large quantities into the millions. ex: population, participants in a sports event, etc.				
STI.57	estimate the difference when subtracting 2- and 3-digit numbers				
STI.58	estimate the product of 2- and 3-digit factors by a 1-digit factor				
STI.59	estimate the product of any given number up to 1000 and 10				
STI.60	estimate the product and the quotient when multiplying or dividing a multiple of 10 and 100 by multiples of 10				
STI.61	estimate the quotient of 2- and 3-digit dividends by a 1-digit divisor (no remainder)				
STI.62	read and write money amounts up to \$1,000				
STI.63	determine the coins and bills which represent a given amount of money (to \$25)				
STI.64	assemble coins and bills to represent a given amount up to \$100				
STI.65	make change for purchases for less than \$10				
STI.66	given quarters, nickels, dimes, and pennies, make all possible combinations to reach a given amount of money				

## Grade 4 Benchmark Proficiencies

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### II. ALGEBRA and FUNCTIONS

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*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students      B=about half      C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STII.1	identify missing elements of a repeating patterns or a puzzle				
STII.2	determine the rule and identify missing numbers in a sequence of numbers or a table of number pairs related by combinations of addition, subtraction, multiplication, or division				
STII.3	use and understand formulas for use in real life situations area=length x width or $a = lw$ , using this formula, find area of a yard 20 ft. long and 10 ft. wide				
STII.4	show that an equation remains the same as long as the same changes were made on both sides the equation (equals added to equals are equal)				
STII.5	use letters or boxes to stand for a given number or amount in expressions and equations				
STII.6	use the concept of variables. e.g. understand the use of letters in statements such as $ab = 10$ and find a if b is given or $3c=d$ and find c if d is given				
STII.7	understand that an equation such as $y = 2 \times 3$ denotes a rule for determining a second number, given the first number				
STII.8	evaluate mathematical expressions using parentheses $(52 - 3) - 6 = 43$				
STII.9	use parentheses to indicate order of operations $3 - 7 \times 3 + 2 = 3 - (7 \times 3) + 2$				
STII.10	solve simple expressions that contain parentheses $(3 \times 4) - (10/2 + 3) =$				

## Grade 4 Benchmark Proficiencies

### III. MEASUREMENT and GEOMETRY

*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students      B=about half      C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STIII.1	estimate and find elapsed time				
STIII.2	determine the passage of time to the second				
STIII.3	find time equivalencies: year, month, week, hour, quarter hour, half hour, minute, second				
STIII.4	read and write time to the minute on a digital and an analog time device				
STIII.5	use am and pm correctly and explain midnight				
STIII.6	tell the number of days per month, using rhyme or alternate strategies				
STIII.7	determine the number of minutes between two given times, and record findings				
STIII.8	draw the hands on a clock to show time to the 5 minute interval				
STIII.9	estimate and measure length using non-standard and the standard units of kilometer, meter, centimeters, mile, yard, feet, inches				
STIII.10	read and use a table of equivalent customary and metric measures for length, weight, and capacity (e.g. 12 inches=1 foot, 2 cups=1 pint, 1000grams=1 kilogram, etc.)				
STIII.11	use measurement abbreviations				
STIII.12	know the plausible range of Fahrenheit temperatures for the various seasons of the year				
STIII.13	estimate the reasonable amount of time needed to complete an activity to the nearest 1/4 hour				
STIII.14	estimate and find elapsed time to include days, hours, and minutes, and seconds				
STIII.15	estimate , using the Fahrenheit scale, the seasonal temperatures, and the temperature of real life objects				
STIII.16	identify and describe a circle, a square, a rhombus, a diamond, a rectangle, a triangle, an oval, and a diamond				
STIII.17	discover properties or geometric figures and relationships by measuring, coloring, folding, cutting, making models, and using tiles and geoboards				
STIII.18	classify triangles, squares, rectangles, and other regular polygons by specified attributes				
STIII.19	know the definitions of a triangle by the definition of the characteristics of their sides (isosceles, scalene, and equilateral) and angles (right, acute, and obtuse)				
STIII.20	know the definition of right, acute, and obtuse angle				
STIII.21	know the definitions of quadrilaterals (rhombus, rectangle, square, parallelogram, and trapezoid)				

## Grade 4 Benchmark Proficiencies

### III. MEASUREMENT and GEOMETRY (Continued)

*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students      B=about half      C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STIII.22	identify everyday 3-dimensional objects and name as cube, rectangular prism, pyramid, a cylinder, a cone, and a sphere				
STIII.23	count the faces, edges, and corners of a cube, rectangular prism a cylinder, or a pyramid, and name each face as a 2-dimensional figure				
STIII.24	visualize and describe 3-dimensional objects (ex. Prism, pyramid, cone)				
STIII.25	explore the perimeter of a polygon using non-standard or standard units of measurement				
STIII.26	name the radius and diameter of a circle				
STIII.27	create a shape of a given perimeter				
STIII.28	measure the area of a square or rectangle using non-standard or standard units for measurement, and record findings in square units				
STIII.29	explore rectangles with same areas but different perimeters				
STIII.30	explore rectangles with same perimeters but different areas				
STIII.31	use formulas to solve perimeter problems of a square and rectangle				
STIII.32	use formulas to solve area problems of a square and rectangle				
STIII.33	use formulas to find area and perimeter of complex shapes by dividing into smaller shapes				
STIII.34	explore the volume of a rectangular prism, using concrete materials, and record findings in cubic units				
STIII.35	identify lines of symmetry				
STIII.36	identify figures that have lines of symmetry or rotational symmetry				
STIII.37	construct parallel and perpendicular lines				
STIII.38	identify congruency in triangles, squares, rectangles, and octagons				
STIII.39	identify, match, and create congruent figures, using materials such as graph paper, patterns, and geoboards				
STIII.40	find and name points, lines, and line segments in real life situations				
STIII.41	identify parallel, intersecting, and perpendicular lines in everyday life and on a coordinate grid				
STIII.42	find the attributes of right angles and find right, obtuse, and acute angled objects in real life				
STIII.43	identify 2- and 3-dimensional figures that have the same shape and same size, and that have the same shape but are a different size				
STIII.44	recognize 2-dimensional representations of 3-dimensional objects				
STIII.45	draw 2-dimensional patterns that can be folded to form 3-dimensional objects				
STIII.46	attempt constructing a circle using a compass, and discuss the center of a circle				

## Grade 4 Benchmark Proficiencies

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### III. MEASUREMENT and GEOMETRY (Continued)

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*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students      B=about half      C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STIII.47					
STIII.48	relate $90^\circ$ , $189^\circ$ , $270^\circ$ , $360^\circ$ angle measures to rotations e.g. $90^\circ$ is related to $1/4$ turn				
STIII.49	given the location on a rectangular grid, find the coordinates				
STIII.50	name the coordinates for a given location on a grid which represents a real life situation				
STIII.51	given the coordinates, identify locations on a rectangular grid				
STIII.52	plot points on a graph given a linear equation e.g. . plot points of the graph $y = x + 2$				
STIII.53	given two sets of coordinates, understand that the difference of the x coordinates equals the length of a horizontal line				
STIII.54	given two sets of coordinates, understand that the difference of the y coordinates equals the length of a vertical line				
STIII.55	identify geometric patterns involving turns, slides, or flips				
STIII.56	identify position of objects involving turns, slides, or flips				

## Grade 4 Benchmark Proficiencies

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### IV. STATISTICS, DATA ANALYSIS, and PROBABILITY

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*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students      B=about half      C=fewer than 25%	Q	Q	Q	Q
		1	2	3	4
STIV.1	read and interpret a scale and a legend on a map				
STIV.2	organize and interpret data shown on a chart, table, diagram, grid				
STIV.3	make predictions from samplings				
STIV.4	represent numerical data in charts, tables, diagrams				
STIV.5	investigate, display, and record all possible arrangements of given data or a give set of events				
STIV.6	use tables and charts interchangeably e.g. describe a bar chart as a table				
STIV.7	identify mode, median, and outliers for numerical data sets				
STIV.8	interpret one and two variable graphs for real life situation				
STIV.9	design and take a single survey, record findings, and represent the data on graphs, tables, charts, number line and coordinate graphs				
STIV.10	identify the mode of grouped data				
STIV.11	predict what will come or happen next or what will be the most/least likely draw or outcome				
STIV.12	represent possible outcomes of a probability problem in a table, tree diagram, grid				
STIV.13	verbalize outcomes of experimental probability problems e.g.. 1 out of 6 =1/6				

## Grade 4 Benchmark Proficiencies

### V. MATHEMATICAL REASONING

*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students    B=about half    C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STV.1	<b>understand and use a problem solving process with the following elements</b>				
	understanding the problem situation or question				
	dealing with the data				
	planning for a solution				
	solving the problem				
	analyzing and evaluating the solution				
STV.2	<b>select and use an appropriate problem solving strategy or skill from the list below:</b>				
	use manipulatives or other concrete materials to sort information, predict or calculate solutions				
	make a list, a graph or a table to sort information and solve problems				
	act the problem out or role play to find a solution				
	extend guess and check solutions to help make logical guesses until the solution is reached				
	look for a pattern of numbers or symbols to predict a solution				
	draw a picture to clarify relationships and to illustrate the problem				
	break a problem into smaller parts				
	create original problems from real life experiences, share and solve				
	use daily experiences to apply problem solving skills				
	work backwards to find a solution				
STV.3	identify and prioritize needed information, and check for too little or too much information, relevant or irrelevant				
STV.4	use a number sentence to represent the solution				
STV.5	choose the correct operation to find a solution				
STV.6	explore choosing more than one strategy to solve a given problem				
STV.7	determine whether an exact or estimated answer is required				
STV.8	estimate, test, and explain the reasonableness of the answer				
STV.9	explore using strategies and results from simpler problems				
STV.10	verify estimates by using the most appropriate method for computing, mental computation, paper and pencil, calculator				
STV.11	after calculating, check the validity of an answer				
STV.12	develop generalizations of results and apply them to other problems				
STV.13	give answers to a specified degree of accuracy e.g. round to the nearest ten				
STV.14	use the same method of deriving a solution to solve similar problems				

## Grade 4 Benchmark Proficiencies

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### VI. NCTM STANDARD MATHEMATICAL CONNECTIONS

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*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students    B=about half    C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STVI.1.	write and spell correctly all vocabulary and expressions learned in math classes				
STVI.2.	to write and spell correctly numbers to 10,000 in order				
STVI.3.	listen for mathematical ideas and words in literature				
STVI.4.	explore and describe in words simple and complex patterns in nature, music, art, and poetry				
	<b>use a fraction calculator to:</b>				
STVI.5.	find the cost of selected items. (in dollars and cents)				
STVI.6.	explore counting by a fraction e.g. counting by eighth's				
STVI.7.	explore changing fractions to decimals and vice versa				
	<b>use a computer and software programs to:</b>				
STVI.8.	draw shapes, patterns, pictures				
STVI.9.	explore drawing congruent 2-dimensional figures, using the copy and paste function of a computer drawing program.				
STVI.10.	explore copying and flipping a figure to create a design that has a line of symmetry				
STVI.11.	run trials on a computer program to test predictions				

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### VII . NCTM STANDARD MATHEMATICS AS COMMUNICATION

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*By the end of the Grade 4, students will be able to...*

	Degree of mastery: A= 75% or more of the students    B=about half    C=fewer than 25%	Q 1	Q 2	Q 3	Q 4
STVII.1	understand oral and written directions for appropriate mathematical activities				
STVII.2	use correctly all of the grade level math terms and expressions previously learned				
STVII.3	think and talk about math using verbs such as: analyze solve, decide, classify, predict, estimate, compare, plan, organize, collect, record, represent, interpret, investigate, construct, explore, etc.				
STVII.4	explain in own words the meaning of addition, subtraction, multiplication, and division				
STVII.5	explain in words and in writing mathematical thinking, activities, and strategies				
STVII.6	explain ideas or solutions not only to teachers, but also to peers and younger students				
STVII.7	show ideas or solutions in a variety of ways, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams, and by building with a variety of concrete materials				
STVII.8	work cooperatively in groups or with a partner to solve problems				
STVII.9	be able to set goals and plan to reach them				