BOLINAS-STINSON UNION SCHOOL DISTRICT

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INTERMEDIATE GRADES MATHEMATICS
STANDARDS FOR MATHEMATICAL PRACTICE, ESSENTIAL STANDARDS, STUDENT WORK HABITS, AND VOCABULARY
JUNE 2010

Bolinas-Stinson Union School District teachers seek to produce proficient math students as part of our balanced and enriched full academic program. Proficient students expect mathematics to make sense. They take an active stance in solving mathematical problems. When faced with a non-routine problem, they have the courage to plunge in and try something, and they have the procedural and conceptual tools to carry through. They are experimenters and inventors, and can adapt known strategies to new problems. They think strategically.

Students who engage in these practices discover ideas and gain insights that spur them to pursue mathematics beyond the classroom walls. They learn that effort counts in mathematical achievement. These are practices that expert mathematical thinkers encourage in apprentices. Encouraging these practices in our students is as much a goal of the mathematics curriculum as is teaching specific content topics and procedures. Taken together with the standards for mathematical content, they support eventual productive entry into high school and college courses or career pathways.[1]

The following list of essential standards in mathematics is comprised of content topics and procedures that the Bolinas-Stinson Union School District faculty judge to be guaranteed essential learnings at each grade level. The standards are taken from the California Department of Education Content Standards and Framework in Mathematics. The skills, knowledge, and Student Work Habits identified in this document do not comprise the whole of mathematics instruction at each grade level, but identify only the *essential* learnings students need in order to be successful in a Kindergarten through grade 12 sequence of instruction in mathematics. In practice, Bolinas-Stinson School teachers offer a broader mathematics curriculum that includes standards not detailed in this document. However, teachers are expected carefully to assess student mastery of these essential learnings and offer additional instruction to students who have not learned them.

The essential standards are listed for the following strands of mathematics instruction: Number, Algebra and Functions, Geometry, and Data Analysis, Statistics, and Probability. In addition, students are expected to learn and practice the listed "Student Work Habits". Also listed here are essential mathematics vocabulary to be learned and practiced. However, these elements by themselves fall short of a high-quality mathematics program. In addition to the content standards, vocabulary, and work habits, teachers will guide students to engage in the Standards for Mathematical Practice.

The Standards for Mathematical Practice form the background of all mathematics instruction. They are explained in the Common Core State Standards in Mathematics developed in 2010 and adopted by the California Department of Education. The Common Core State Standards Initiative is a state-led effort

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1 From the Common Core Standards Initiative: http://www.corestandards.org/

coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO).

These are the Standards for Mathematical Practice Bolinas-Stinson School teachers will cultivate in K-8 students:[2]

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education, including the processes of problem solving, reasoning and proof, communication, representation, making connections, and proficiencies including adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy). Bolinas-Stinson School teachers engage with students in a variety of ways at their appropriate developmental levels in order to develop, over a 9-year progression, these mathematical practices.

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the

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workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models and objects, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use a variety of tools to explore and deepen their understanding of concepts.

6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through $(1, 2)$ with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the essential content standards

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in

mathematical maturity and expertise throughout the elementary, middle and high school years.

Mathematics Content Standards should be a balanced combination of procedure and understanding. The simple expectation of students that they "understand" in addition to merely performing procedures presents especially good opportunities to connect the 8 practices outlined above to the essential content standards outlined below. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use a variety of tools mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

Intermediate Grades Mathematics: Essential Standards Map (June 2010)

Bolinas-Stinson Union School District faculty may reexamine and revise this document as necessary.

Grade 3 prerequisites:
Number Sense
- Demonstrate understanding of place value to one thousands place
- Skip count by 2's, 5's, 10's, and 100's.
- Write and read the numbers 0-1000 in standard numerical form
- Spell and read numbers from zero to twenty
- Demonstrate understanding of the following math vocabulary: expanded form, standard form, and written form; ones place, tens place, hundreds place, thousands place
- Add and subtract numbers 0-999 using a variety of strategies
- Demonstrate understanding of common fractions as part of a whole and part of a set (halves, fourths, eighths, thirds, sixths, tenths)

Geometry and Measurement
- Identify and recognize: triangles, circle, vertices, faces, and quadrilaterals. Connect common language to mathematical terms (e.g.: "point" = vertex)
- Distinguish among lines, open shapes, and closed shapes

Algebra and Functions
- Patterns: extend, generate, and find missing numbers in repeating and growth patterns

Statistics, Data Analysis, and Probability
- Organize, display, and interpret pictographs, bar graphs, Venn-diagrams

Grade 3 Essentials:

Number Sense
- Demonstrate understanding of place value to hundred thousands place, and tenths and hundredths places
- Write numbers in word form, expanded form, and standard numerical form to 10,000
- Add and subtract numbers using up to ten thousand using at least two strategies, including the standard North American subtraction algorithm ("carrying" and "borrowing").
- Skip count by 2's, 3's, 4's, 5's, 10's, 100's, and 1000's
- Know multiplication combinations to automaticity: 0, 1, 2, 3, 4, 5, 6, and 10
- Multiply and Divide multi-digit numbers by single digit numbers.
- Add and subtract fraction with common denominators.
- Demonstrate understanding of fractions as part of a whole, part of a set
- Find equivalent fractions for common fractions (¼, ½, 1/8, 1/16, 1/3, 1/6, 1/12)
- Investigate fractions and decimals through money (1/4 = .25 = 25¢)
- Add, subtract, multiply, and divide money amounts in decimal notation (with whole number divisors and multipliers)

Geometry and Measurement
- Identify and classify polygons by mathematical attributes: angles, sides, vertices
- Recognize polygons: octagon, hexagon, pentagon,
- Recognize triangles: scalene, isosceles, equilateral, and right
- Recognize angles compared to right angles: obtuse angle, right angle, acute angle
- Understand concept of perimeter; measure perimeters of polygons.

Algebra and Functions
- Patterns:
  - Find the iterative growth relationship in simple increasing and decreasing patterns, both repeating and growing (3,6,9,12,…; 1,2,4,8,16,…)
  - Find missing operational sign in equations
    (32 = 4 __ 8)
- Read and understand relational signs: greater than, less than, and equal to; >, <, =

Statistics, Data Analysis, and Probability
- Organize, display, and interpret data on bar graphs, pictographs, Venn-diagrams
- Understand "probability", "likely", and express results of simple experiments

Student work habits
- Use and organize a math journal
- Be on task and productive
- Use multiple problem solving strategies
- Work independently on investigation/practices
- Persevere through a task
- Articulate math thinking orally.
- Complete class work and homework in a timely fashion
- Produce math papers that are legible and well-organized

- Show thinking and work on written papers (with numbers, pictures, words)
- Organize materials during class (manipulatives, paper, books)
- Listen attentively during demonstration
- Copy accurately off of board or text

Grade 4 Essentials:

Number Sense
- Master multiplication facts 0-11
- Read and write numbers through millions
- Add and subtract positive whole numbers to millions
- Multiply multi-digit numbers by two digit numbers accurately and efficiently
- Divide multi-digit dividends by one-digit divisors
- Add and subtract related fractions (3/4 + 5/16)
- Compare and order fractions, mixed numbers, and decimals to hundredths place, use relational signs to write equalities and inequalities (4.5 > 4 ½; .25 = ¼)
- Reduce fractions to equivalent fractions in lowest terms
- Generate equivalent fractions and decimals
- Add, subtract decimals

Geometry and Measurement
- polygons: octagon, hexagon, pentagon,
- triangles: scalene, obtuse, acute, isosceles, equilateral, and right
- angles: greater than, less than, and right angle
- Define and calculate perimeter
- Define and calculate area
- Use two-dimensional coordinate grids to demonstrate points and graph lines

Algebra and Functions
- Patterns:
  - Find the relationship in simple, increasing/decreasing patterns, both in repeating and growing patterns.
  - Identify patterns in word problems
- Demonstrate understanding and use of relational signs: $=, <, >, \leq, \geq$
- Solve and write equations with a variety of operational signs, including use of more than one operation per equation and parentheses to indicate which operation to perform first.
- Find missing numbers in equations; $12 \div \_\_ = 2\ R2$

Statistics, Data Analysis, and Probability
- Organize, display, and interpret data on bar graphs, Venn-diagrams
- Understand "probability", "likely", and express results of simple experiments
- Make predictions, organize, collect, and represent data, and interpret data
- Identify mode and median

Student work habits
- Use and organize a math journal

- Be on task and productive
- use multiple problem solving strategies
- work independently on investigation/practices
- Work constructively in small cooperative groups
- persevere through a task
- Articulate math thinking orally and in writing.
- Complete class work and homework in a timely fashion
- Produce math papers that are legible and well-organized
- Show thinking and work on written papers (with numbers, pictures, words)
- organize materials during class (manipulatives, paper, books)
- listen attentively during demonstration
- copy accurately off of board or text

Grade 5 Essentials:

Number Sense
- Understand place value to one billions and to one-hundred thousandths
- Add, subtract:
  - fractions and mixed numbers with unlike denominators
  - decimals
  - integers (positive and negative)
- Multiply and divide:
  - Simple related fractions $(1/2 \div \frac{1}{4}; \frac{1}{2} \times 2/3)$
  - Decimals
  - Large whole numbers
- Interpret percents as *x/100*, calculate percentages of whole numbers, generate equivalent decimals and percentages.
- Compare and order common fractions, decimals, and percents
- Division with multi-digit divisors (with and without decimals): Write remainders as whole numbers and express remainder amounts as fractions or decimals that are part of the quotient. $(13/4 = 3\ R1 = 3\ \frac{1}{4} = 3.25)$
- Generate prime factors of numbers 1-100, and use exponents to show multiples of a factor

Geometry and Measurement
- Know and use formulas for perimeter, area, volume (cubic vs. squared units, concrete and representational), and circumference
- Area: lxw, sq.units, triangles
- Volume: Cubic vs. squared unit; concrete and representational
- Measure, identify, and draw common geometric shapes
- Perimeter: Area of polygons: concrete representational
- Apply knowledge that interior angles of a triangle add to 180° and interior angles of a quadrilateral add to 360° in order to solve problems.

Algebra and Functions
- Interpret simple algebraic expressions, variables

- Identify and graph ordered pairs in the four quadrants of the coordinate plane
- Use function tables (T- table, 3-table) to identify and continue patterns, graph constant growth patterns
- Fluency with equivalence signs: =, <, >,…..
- Fill in the blank, symbol, or letter with operational sign or number
- Solve equations with variables
- Compute with positive and negative integers

Statistics, Data Analysis, and Probability
- Understand the concepts of mean, median, and mode
- Organize, display, and interpret data on line and circle graphs
- Use fractions and percentages to compare data sets

Student work habits
- Use and organize a math journal
- Be on task and productive
- use multiple problem solving strategies
- work independently on investigation/practices
- Work constructively in small cooperative groups
- persevere through a task
- Articulate math thinking orally and in writing.
- Complete class work and homework in a timely fashion
- Produce math papers that are annotated correctly, legible, and well-organized
- Show thinking and work on written papers (with numbers, pictures, words)
- organize materials during class (manipulatives, paper, books)
- listen attentively during demonstration
- copy accurately off of board or text

Mathematics Vocabulary

Language is a very powerful tool and should be used to foster the learning of mathematics. Communicating about mathematical ideas is a way for students to articulate, clarify, organize, and consolidate their thinking. Communication makes mathematical thinking observable and thereforefacilitates further development of that thought. It encourages students to reflect on their own knowledge and their own ways of solving problems. Communication can consist not only of conversations between student and teacher or one student and another student but also of students listening to a number of peers and joining group discussions in order to clarify, question, and extend conjectures. The discourse should not be a goal in itself but rather should be focused on making sense of mathematical ideas and using them effectively in modeling solving problems.

From Principles and Standards for School Mathematics, **NCTM**

 Each grade level vocabulary list is inclusive of all previous grade levels and should be utilized in context. This is not a finite vocabulary list but rather an ongoing, expanding file.

<u>Third Grade Math Vocabulary</u>

<u>NUMBER & OPERATION for 3rd Grade</u>

addend	first	place value
addition	five	quantities
amount	forty	quantity
cent	four	quarter
coin	fourteen	same as
decimal	fourths	second
difference	greater than	seven
digit	fourth	seventeen
dime	**half**	seventh
divide	half dollar	seventy
division	halves	share equally
doubles	**hundred**	six
eight	**less than**	sixteen
eighteen	minus	sixty
eighth	more than	sixth
eighty	multiplication	subtraction
eleven	nickel	sum
equal groups	nine	ten
equivalent	nineteen	tens
fact family	ninety	tenth
fewer	ninth	third
fifteen	one	thirds
fifth	ones	thirteen
fifty	penny	thirty

three	column	**factor**
total	**compatible numbers**	**multiplication**
twelve	**friendly numbers**	numerator
twenty	denominator	ordinal
two	dividend	number
whole	**division**	**product**
zero	divisor	quotient
	estimate	**row**
*New for this grade level	expanded	**sum**
	form	**standard form (notation)**
cardinal number	fact family	

GEOMETRY for 3rd Grade

above	middle	three-dimensional
angle	outside	two-dimensional
attribute	oval	straight
below	over	top
between	parallelogram	trapezoid
bottom	pentagon	two dimensional figure
circle	polygon	triangle
cone	prism	under
curved	pyramid	vertices
cylinder	rectangle	
edge	rhombus	*****New for this grade level**
face	side	congruent
hexagon	sphere	line of symmetry
inside	square	symmetry

MEASUREMENT for 3rd Grade

a.m.	gram	longer
approximately	greater than	longest
area	heavier	mass
calendar	heaviest	meter
capacity	height	metric system
centimeter	hotter	minute
clock	hottest	month
colder	hour	more than
coldest	inch	ounce
customary system	kilogram	p.m.
day	length	pound
equal	less than	same
fewer	lighter	second
foot	lightest	shorter

shortest
standard unit
taller
tallest
temperature
thermometer
value
week

weight
yard
year

**New for this grade level

area
cubic units

digital clock
length
linear
perimeter
volume
width

PROCESSESS AND TOOLS for 3rd Grade

answer
apply
collect
combine
compare
conclusion
connect
construct
contrast
count
create
describe
determine
develop
estimate
evaluate
extend
generate
identify

joining
locate
logical thinking
model
name
observation
order
organize
place
predict
reasonable
recall
recognize
relate
represent
select
solve
strategy
represent

separating
solve
strategy
symbol
systematic
understand
use

***New for this grade level

classify
display
examples
express
generalization
interpret
non-examples
solution process

PROBABILITY & STATISTICS for 3rd Grade

bar graph
certain
data
graph
impossible
less likely
more likely

picture graph
survey
table
tally mark

**New for this grade level
bar graph

collect
equally likely
interpret
organize
pictograph
scale

ALGEBRAIC THINKING for 3rd Grade

additive pattern	number sentence	
after	odd number	****New for this grade level**
before	pattern	
even number	prediction	extend
extend	repeating pattern	generate
fact families	sets	number pairs
generate	sequence	paired numbers
group	skip count	
next	sort	

Fourth Grade Math Vocabulary

NUMBER & OPERATION for 4th Grade

addend	forty	seventy
addition	four	share equally
amount	fourteen	six
cardinal number	fourths	sixteen
cent	greater than fourth	sixty
coin	half	sixth
column	half dollar	standard form (notation)
compatible numbers	halves	subtraction
decimal	hundred	sum
denominator	less than	ten
difference	minus	tens
digit	more than	tenth
dime	multiplication	third
divide	nickel	thirds
dividend	nine	thirteen
division	nineteen	thirty
divisor	ninety	total
doubles	ninth	twelve
eight	numerator	twenty
eighteen	one	three
eighth	ones	two
eighty	ordinal number	whole
eleven	penny	zero
equal groups	place value	
equivalent	product	***New for this grade level**
estimate	quantities	array
expanded form	quantity	decimal number
factor	quarter	decimal point
fact family	quotient	equation
fewer	row	equivalent fractions
fifteen	same as	**million**
fifth	second	**multiple**
fifty	seven	number line
first	seventeen	remainder
five	seventh	

GEOMETRY for 4th Grade

above	between	congruent
angle	bottom	curved
attribute	circle	cylinder
below	cone	edge

face	side	angle
hexagon	sphere	dimension
inside	square	intersecting lines
line of symmetry	straight	obtuse angle
middle	symmetry	ordered pairs
outside	three-dimensional	parallel
oval	top	perpendicular
over	trapezoid	point
parallelogram	two dimensional figure	quadrilateral
pentagon	triangle	ray
polygon	under	reflection
prism	vertices	right angle
pyramid		rotation
rectangle	***New for this grade level**	translation
rhombus	acute angle	

MEASUREMENT for 4th Grade

a.m.	length	volume
approximately	less than	value
area	lighter	week
calendar	lightest	weight
capacity	linear	width
centimeter	longer	yard
clock	longest	year
colder	mass	
coldest	meter	***New for this**
customary system	metric system	**grade level**
cubic units	minute	analog clock
day	month	**Celsius**
digital clock	more than	**conversion**
equal	ounce	cup
fewer	p.m.	**elapsed time**
foot	perimeter	gallon
gram	pound	grams
greater than	same	kilogram
heavier	second	liter
heaviest	shorter	millimeter
height	shortest	ounce
hotter	standard unit	pint
hottest	taller	pound
hour	tallest	quart
inch	temperature	
kilogram	thermometer	

PROCESSESS AND TOOLS for 4th Grade

answer	express	recognize
apply	extend	relate
classify	generalization	represent
collect	generate	select
combine	identify	solve
compare	interpret	strategy
conclusion	joining	separating
connect	locate	solution process
construct	logical thinking	solve
contrast	model	strategy
count	name	symbol
create	non-examples	systematic
describe	observation	understand
determine	order	use
develop	organize	
display	place	
estimate	predict	*****New for this grade level**
evaluate	reasonable	**convert**
examples	recall	**generalize**

PROBABILITY & STATISTICS for 4th Grade

bar graph	more likely	*****New for this grade level**
certain	organize	event
collect	pictograph	fairness
data	picture graph	favorable outcomes
equally likely	scale	interval
graph	survey	possible outcome
impossible	table	probability experiment
interpret	tally mark	Venn diagram
less likely		

ALGEBRAIC THINKING for 4th Grade

additive pattern	next	sets
after	number pairs	sequence
before	number sentence	skip count
even number	odd number	sort
extend	paired numbers	
fact families	pattern	*****New for this grade level**
group	prediction	**data**
generate	repeating pattern	**generalization**

Fifth Grade Math Vocabulary

NUMBER & OPERATION for 5th Grade

addend	first	seven
addition	five	seventeen
amount	forty	seventh
array	four	seventy
cardinal number	fourteen	share equally
cent	fourths	six
coin	greater than	sixteen
column	fourth	sixty
compatible numbers	half	sixth
decimal	half dollar	standard form (notation)
decimal number	halves	subtraction
decimal point	hundred	sum
denominator	less than	ten
difference	million	tens
digit	minus	tenth
dime	more than	third
divide	multiple	thirds
dividend	multiplication	thirteen
division	nickel	thirty
divisor	nine	total
doubles	nineteen	twelve
eight	ninety	twenty
eighteen	ninth	three
eighth	number line	two
eighty	numerator	whole
eleven	one	zero
equal groups	ones	
equation	ordinal number	****New for this grade level**
equivalent	penny	**billion**
equivalent fractions	place value	common factors
estimate	product	composite number
expanded form	quantities	equation
factor	quantity	factor pairs
fact family	quarter	**improper fraction**
fewer	quotient	**mixed number**
fifteen	remainder	prime factors
fifth	row	prime number
fifty	same as	
	second	

GEOMETRY for 5th Grade

above	obtuse angle	side
acute angle	ordered pairs	sphere
angle	outside	square
attribute	oval	straight
below	over	symmetry
between	parallel	three-dimensional
bottom	parallelogram	top
circle	perpendicular	translation
cone	pentagon	trapezoid
congruent	point	triangle
curved	polygon	two dimensional figure
cylinder	prism	under
dimension	pyramid	vertices
edge	quadrilateral	
face	ray	
hexagon	reflection	***New for this grade level**
inside	rectangle	coordinate grid
intersecting lines	rhombus	transformation
line of symmetry	right angle	
middle	rotation	

MEASUREMENT for 5th Grade

a.m.	greater than	ounce
analog clock	heavier	p.m.
approximately	heaviest	perimeter
area	height	pint
calendar	hotter	pound
capacity	hottest	quart
Celsius	hour	same
centimeter	inch	second
clock	kilogram	shorter
colder	length	shortest
coldest	less than	standard unit
conversion	lighter	taller
customary system	lightest	tallest
cubic units	linear	temperature
cup	liter	thermometer
day	longer	volume
elapsed time	longest	value
digital clock	mass	week
equal	meter	weight
fewer	metric system	width
foot	millimeter	yard
gallon	minute	year
gram	month	***New for this grade level**
grams	more than	

PROCESSESS AND TOOLS for 5th Grade

answer	examples	reasonable
apply	express	recall
classify	extend	recognize
collect	generalize	relate
combine	generalization	represent
compare	generate	select
conclusion	identify	solve
connect	interpret	strategy
construct	joining	separating
contrast	locate	solution process
convert	logical thinking	solve
count	model	strategy
create	name	symbol
describe	non-examples	systematic
determine	observation	understand
develop	order	use
display	organize	
estimate	place	***New for this grade level**
evaluate	predict	

PROBABILITY & STATISTICS for 5th Grade

bar graph	interpret	survey
certain	interval	table
collect	less likely	tally mark
data	more likely	Venn diagram
equally likely	organize	
event	pictograph	***New for this grade level**
fairness	picture graph	line graph
favorable outcomes	possible outcome	median
graph	probability experiment	**mode**
impossible	scale	range

ALGEBRAIC THINKING for 5th Grade

additive pattern	group	sets
after	next	sequence
before	number pairs	skip count
data	number sentence	sort
even number	odd number	
extend	paired numbers	***New for this grade level**
fact families	pattern	**generate**
generate	prediction	
generalization	repeating pattern	