Blaine County School District No. 61

Mathematics

2005 Curriculum Information Packet

QUALITY SCHOOLS

for information call Blaine County School District No. 61
Curriculum Director at (208) 578-5000
or www.blaineschools.org

Board Approved 06/14/05

Table of Contents

MATHEMATICS CURRICULUM 2005
FOREWORD

During the 2004-2005 school year, a very dedicated 24 member curriculum committee edited and revised the Blaine County School District Mathematics curriculum. Their mission was to not only ensure our curriculum was aligned with the Idaho State Standards, but to craft a curriculum that represented the best thinking on what mathematics education should incorporate.

We designed the new curriculum to meet the following criteria:

- Better address number sense
- Strengthen our students' sense of operations
- Use mathematic vocabulary language throughout: ISAT, curriculum, instructional materials, and the language used by the teachers and students in the classroom
- Problem solving vocabulary needs to be more heuristic
- Match curriculum to the courses our students can take online
- Ensure mastery of basic facts
- Include more than a minimum curriculum
- Existing curriculum was too general, i.e. place value to 1000's
- Clarity where we introduce, master and where students are expected to be proficient
- Align with state assessments: Direct Math, new IMI, ISAT's
- Remedial materials need to be available
- Align with the ISAT continuum
- Support acceleration of students K-12

Definitions for how we organize the curriculum:

- **Expected** – these skills and concepts should be tested on in-class assessments and will become mastered within the next year or two
- **Mastered** – Skill and concepts to be mastered: may be tested on ISAT, district or milepost
- **Review** – previously mastered skills and concepts that should be reviewed systematically.

Blaine County School district requires teachers to use the curriculum guide as a framework to plan their units and lessons. The strategies and methods for accomplishing these curriculum goals are building responsibilities. It is each building's responsibility to ensure that their program of instruction follows the framework to teach the critical concepts.

I commend each person on the team for the hours of time spent in preparing this framework. This document, when implemented by quality teachers, utilizing effective instructional practices, assures that students of Blaine County Schools will be provided a quality technology education programs.

Dr. Mary Gervase
Assistant Superintendent
& Curriculum Director

MATHEMATICS CURRICULUM COMMITTEE MEMBERS

Lois Standley, Bellevue	Laurie Roark, Hailey	Dan Gralenski, WRMS
LuAnn Metzel, Bellevue	Mary Gin Barron, Hailey	Jenica Alexander, WRMS
Dianne Parke, Carey	Nancy Resko, Hailey	Rudy Boesch, WRMS
Liz Young, Carey	Gina Cey, Hemingway	Suzi Byng, WRMS
Susan Coon, Carey	Marilyn Martin, Hemingway	Tryntje Van Slyke, WRMS
Cindy Aschliman, Hailey	Sandy Scott, Hemingway	Doug Stouffer, WRHS
Carla Scanlon, Hailey	Brian Sturges, WRMS	Jaymie Stimac, WRHS
Donnette Thaemert, Hailey	Bridget Kapala, WRMS	Rick Ambrosi, WRHS

Blaine County School District
Belief Statement

WE BELIEVE THAT . . . .

1. **All students are able to learn when given sufficient time and appropriate support.**
2. **All students are able to acquire both critical learning and higher thinking skills.**
3. **Self-esteem and success are interrelated.**
4. **Our role is that of student advocate.**
5. **Opportunities for learning should be kept open.**
6. **An individual's unique skills and talents need to be nurtured.**
7. **Students will learn best that which is relevant and meaningful to them.**
8. **Schools can manage the variables within the school setting that influence student success.**
9. **Desired student outcomes can best be achieved through supportive interaction among home, school and community.**
10. **Clearly defined expectations, set on high but achievable levels, foster student success.**
11. **An individual's worth is separate from his or her performance.**
12. **Professional behaviors and classroom practices should be based on what we want for students, these belief statements, and best knowledge.**

Blaine County School District
Educational Philosophy

The philosophy of the Blaine County School District Board of Trustees is one of total commitment to educational excellence. The board continually seeks curriculum and staff improvement based on reliable research, sound principles of child development and proven teaching practices. The Board believes that it is the duty of the school organization to serve the community by providing a comprehensive educational program, and it pledges that each school will offer students the opportunity for maximum growth potential in a climate of mutual trust and respect. The Board also recognizes that home and community have tremendous influence, and the development of students' moral conduct, self esteem and academic achievement is a shared responsibility. With parental support, a positive school experience should guarantee that each student receives a quality education and is prepared to meet the future as a well-adjusted, productive member of society. The Board has defined its vision of what a quality education should encompass by adopting a set of goals established by a committee of school personnel and community members. By constantly working toward these goals, it will be ensured that each student has every opportunity to acquire academic knowledge, life skills, principles of good citizenship and democratic ideals. The Board of Trustees dedicates the efforts and resources of the Blaine County School District to fulfilling these commitments to its students and community.

KINDERGARTEN - STANDARDS 257 THROUGH 263.

257. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	a. **Demonstrate knowledge of our numeration system by counting in a variety of ways.**	• Complete one to one correspondence to 20 **M** • Rote count 0-50 **E** • Order numbers 0-10 **M** • Introduce ordinal numbers 1-10 **E** • Introduce rote counting 50-100 **E**
	b. **Demonstrate an understanding of the verbal, symbolic, and physical representations of a number.**	• Recognize and name numbers 0-20 **M** • Write numbers 0-9 **E** • Match concrete sets 0-10 with symbol **M**
	c. Identify a penny as a value of money	• Identify and state the value of a penny **M**
2. Perform computations accurately.	a. **Explore the concepts of addition and subtraction using concrete objects.**	• Using manipulatives, join and separate sets up to 10 **E**
	b. Use appropriate vocabulary.	• Number, how many, counting, next, estimate, addition, subtraction, more, greater, less, least, most, equals, same as, cent, and, and between **E** • See ISAT Vocabulary Page 75 and teachers manual
	c. *Introduce appropriate symbols*	• +, -, = **E**
3. Estimate and judge reasonableness of results.	a. Use estimation to identify a number of objects.	• Develop thinking guess-estimation **E** • Estimate and check **E**
	b. Evaluate the reasonableness of an answer.	**E**
	c. Use appropriate vocabulary.	• Predict, estimate, record, think, guess **E** • See ISAT Vocabulary Page 75 and teachers manual

258. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use a variety of problem-solving skills.	a. Select strategies appropriate to solve a problem.	• Act out a situation **E** • Use objects to solve a problem **E** • Draw a picture to solve a problem **E** • Look for a pattern within the problem **E**
2. Use reasoning skills to recognize problems and express them mathematically.	a. **Use concrete objects to identify and show solutions to problems.**	• Given a picture or story use manipulatives to make a number story and solution **E**

3. Apply appropriate technology and models to find solutions to problems.	a. Select appropriate models to represent mathematical ideas.	**E**
4. Communicate results using appropriate terminology and methods.	a. Use appropriate vocabulary to communicate mathematical information.	• More, less, same, number **E** • See ISAT Vocabulary Page 75 and teachers manual

259. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use U.S. customary and metric measurements.	a. Explore the use of standard and non-standard tools for measuring time, length, volume, weight, and temperature.	Systems of measurement 1) Time and money • Recognize coins and dollar bills as means of exchange **E** • Identify and state the value of a penny **M** • Introduce day, month and year **E** • Introduce clock as a means of telling time **E** 2) Temperature • Range of hot and cold **E** 3) Standards of measurement • Introduce length, width, volume and weight using non-standard units of measurement **E**
	b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	**E**
	c. Use appropriate vocabulary.	• Penny, nickel, dime, tall, taller, tallest, short, shorter, shortest, long, longer, longest, time, temperature **E** • See ISAT Vocabulary Page 75 and teachers manual

260. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Use algebraic symbolism as a tool to represent mathematical relationships.	a. **Compare sets of objects using vocabulary (less than, greater than, same as).**	• Compare and create sets of more, less, and same **E** • See ISAT Vocabulary Page 75 and teachers manual
	b. Explore the relationship between addition and subtraction.	• Use manipulatives to represent and solve problems **E**

261. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Apply concepts of size, shape, and spatial relationships.	a. **Recognize, name, build, draw, compare, and sort two- and three-dimensional shapes.**	• Recognize and name 4 basic plane figures (square, rectangle, circle, and triangle) **E** • Recognize and name solid figures (cube, sphere, cylinder, cone) **E** • Introduce the attributes of the 4 basic plane figures **E** • Construct 4 basic plane figures **E**
	b. Recognize and create shapes that have symmetry.	• Develop a sense of line symmetry **E**
	c. Explore slides, flips, and turns.	**E**
	d. **Understand and apply appropriate vocabulary for position and size.**	• Use spatial and directional terms (over, under, around, through, in, out, up, down, on, top, middle, bottom, left, right, above, below) **E** • Two and three dimensional shapes (square, rectangle, circle, and triangle, cube, sphere, cylinder, cone) **E** • Corners and shapes **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Apply graphing in two dimensions.	a. Apply ideas about direction and distance.	**E**

262. DATA ANALYSIS, PROBABILITY, AND STATISTICS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand data analysis.	a. **Interpret information from real objects and simple pictographs.**	• Provide a simple graph and determine most, least, and same **E**
	b. Understand and use appropriate vocabulary.	• Graph, more, less, same, different, least, most, sort, predict, and tally **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Collect, organize, and display data.	a. Create a graph using real objects or pictorial representations.	**E**
3. Understand basic concepts of probability.	a. Predict and perform results of simple probability experiments.	**E**
4. Make predictions or decisions based on data.	a. Make predictions or decisions based on probable results or past experiences.	**E**

263. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand the concept of functions.	a. **Replicate and extend patterns and identify the rule (function) that creates the pattern.**	• Copy, build, and extend patterns **E**
	b. **Sort and classify objects by attributes.**	• Sort and classify to a single attribute **E** • Compare and create sets of more, less, and same **E**
	c. Understand and use appropriate vocabulary.	• Pattern, sort, and count **E** • See ISAT Vocabulary Page 75 and teachers manual

GRADE 1 - STANDARDS 267 THROUGH 273.

267. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	a. **Demonstrate knowledge of our numeration system by counting in a variety of ways.**	• Recognize and use ordinal numbers (1st-10th) **E** • Rote count by 1s, 5s, 10s to 100 **M** • Rote count by 2s to 30 **E** • Count up from a random number between 0-100 **E** • Count backwards from a random number between 100-0 **E**
	b. **Read, write, order, and compare whole numbers to 100.**	• Write numbers by 1s, 5s, and 10s to 100 in order **M** • Identify a missing number in a series through 100 **M** • Identify and write numbers to 100 out of order **M** • Compare numbers 0-100 (more than, less than, and equals) **M** • Order sets of numbers (0-100) from least to greatest **M** • Distinguish between odd and even numbers **E**
	c. **Demonstrate the knowledge of place value through 99.**	• Identify and understand the value of each digit using tens and ones **E** • Construct a two-digit number using manipulatives **M** • Identify, name and write a two digit number **M**
	d. **Identify and state the value of pennies, nickels, and dimes.**	• Use pennies, nickels, dimes and a quarter **M** • Count sets of like coins (pennies, nickels, & dimes) **M** • Practice counting amounts of money to 25¢ **E**
	e. *Recognize and represent commonly used fractions.*	Use concrete materials to: • Introduce the concept of fractions as parts of a whole **E** • Identify fractions (1/2,1/3,1/4) **M**

2. Perform computations accurately.	**a. Demonstrate proficiency of addition up to 10 and an understanding of subtraction from 9.**	• Understand concept of addition and subtraction and the relation between the two operations **E** • Use manipulatives to add and subtract **M** • Connect concrete format of addition and subtraction to symbolic form (single digit) **M** • Compose and decompose numbers to 10 in a variety of ways **E** • Add and subtract using vertical and horizontal algorithms **E** • Develop and use different strategies to solve problems (counting on, 1,2; counting back, doubles, doubles + or –1 or 2) **E** • Facts 0-10 fluently (Fluency means that students are able to compute efficiently and accurately with single digit numbers). **E** • Introduce and practice double-digit addition and subtraction without regrouping **E** • Introduce and practice math facts to18 **E**
	b. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
	c. *Computational tools*	• Explore basic calculator **E**
3. Estimate and judge reasonableness of results.	a. Use estimation to identify a number of objects.	• Identify the reasonableness of the number of objects **E**
	b. Use estimation to predict computation results.	• Estimate sums and differences **E**
	c. Evaluate the reasonableness of an answer.	• Evaluate sums and differences **E**
	d. Use appropriate vocabulary.	• Numeral, number, digit, even, odd, next, matches, ones, tens **E** • See ISAT Vocabulary Page 75 and teachers manual

268. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand and use a variety of problem-solving skills.	a. **Select strategies appropriate to solve a problem.**	• Apply a wide variety of strategies to solve problems: **E** Act out a situation Use objects Draw a picture Look for a pattern Tell or write a story Make a list
	b. Select and use appropriate operations.	• Determine whether to add or subtract when given a word problem **E**

2. Use reasoning skills to recognize problems and express them mathematically.	a. Draw a picture and generate a number sentence from a problem-solving situation.	**E**
3. Apply appropriate technology and models to find solutions to problems.	a. Select appropriate models to represent mathematical ideas.	Use: • Manipulatives **M** • Calculators **E** • Paper-pencil **E**
4. Communicate results using appropriate terminology and methods.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information.**	• Use words, numbers, symbols, charts, graphs, tables, diagrams, and models **E**
	b. Use appropriate vocabulary to communicate mathematical information.	Know: • +, -, =, ≠, and the vocabulary **M** • >, <, and the vocabulary **E** • Understand math vocabulary is expressed in various ways: • add, plus, more • subtract, minus, less • equals, is the same as • does not equal, is not the same as, greater than, more, less than, least) **E** • Use sum and difference to refer to answers for addition and subtraction **E** • See ISAT Vocabulary Page 75 and teachers manual

269. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use U.S. customary and metric measurements.	**a. Explore the use of standard and non-standard tools for measuring time, length, volume, weight, and temperature.**	Time • Show and tell time to hour and half hour using analog and digital clocks **M** Temperature • Explore reading a thermometer **E** Standards of measurement • Estimate and measure length, width, height, and weight using nonstandard units **M** • Explore volume measurement **E** • Explore standard and metric units of measurement (inch and centimeter) **E**

	b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	• Identify and state the value of pennies, nickels, dimes, and a quarter **M** • Count sets of like coins (pennies, nickels, & dimes) **M** • Practice counting amounts of money to 25¢ **E**
	c. Use a calendar to explore measurement of time.	• Use a calendar to identify month, week, and day **E**
	d. Use appropriate vocabulary.	• Measure, ruler, inches, centimeters, meter, longest, shortest, same as, thermometer, temperature, days, month, weeks, set, length, width, height, and weight **E** • See ISAT Vocabulary Page 75 and teachers manual

270. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Use algebraic symbolism as a tool to represent mathematical relationships.	a. Represent vertical notation in horizontal form.	• Rewrite vertical equation as horizontal **E**
	b. **Write a number sentence given an addition or subtraction problem.**	• Determine the correct number sentence or story problem **E** (identify necessary vs. unnecessary information)
	c. **Compare numbers using vocabulary (less than, greater than, equal to, more, less, same, fewer, bigger, smaller).**	• Compare numbers using (less than, greater than, equal to, more, less, same, fewer, bigger, smaller) **E** • See ISAT Vocabulary Page 75 and teachers manual
	d. Explore the relationship between addition and subtraction and demonstrate reversal of operations.	• Build fact families to 10 using manipulatives **E** • Create fact families to 10 using paper-pencil **E**
2. Evaluate algebraic expressions.	a. Explore and use the commutative and associative property of addition.	Explore: • Missing addends **E** • Missing subtrahends **E**

271. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Apply concepts of size, shape, and spatial relationships.	a. **Recognize, name, build, draw, compare, and sort two- and three-dimensional shapes.**	• Describe and draw attributes of 4 basic plane shapes (circle, square, rectangle, and triangle) **E** • Compare sides & corners of basic plane figures **E** • Identify and sort solid figures (cube, sphere, rectangular prism, cylinder, and cone) **E**

	b. Recognize and create shapes that have symmetry.	Explore: • Line symmetry **E** • Rotational symmetry **E**
	c. Explore slides, flips, and turns.	• Manipulate objects to produce slides, flips, and turns **E**
	d. Understand appropriate vocabulary.	• Reinforce spatial and directional terms before, after, between, left and right **E** • Reinforce geometric figures spheres, cube, cone, rectangular prism, and cylinder **E** • Introduce corners, sides, faces **E** • See ISAT Vocabulary Page 75 and teachers manual

272. DATA ANALYSIS, PROBABILITY, AND STATISTICS.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand data analysis.	a. **Interpret information found in simple graphs to answer questions.**	• Identify and compare more, less, and same after reading a graph **M**
	b. Understand and use appropriate vocabulary.	• Tally, graph, predict, more, less, same **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Collect, organize, and display data.	a. **Gather and display data in graphs in order to answer a question.**	Use: • Tally marks **M** • Venn diagrams **E** • Vertical & horizontal bar graphs **E** • Pictographs
3. Understand basic concepts of probability.	a. Predict, perform, and record results of simple probability experiments.	• Explore concepts of chance such as certain, impossible, more likely, and less likely **E**
4. Make predictions or decisions based on data.	a. Make predictions or decisions based on probable results or past experiences.	• Graph, predict, more, less, same, most, fewest, tally **E**

273. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand the concept of functions.	a. **Extend patterns and identify the rule (function) that creates the pattern.**	• Recognize, extend, and generate different patterns using models **M** • Recognize number pattern **E**
	b. Sort and classify objects by more than one attribute.	• Sort collections by more than one attribute **M** • Sort the same objects again by other attributes **E**
	c. Understand and use appropriate vocabulary.	• Pattern, manipulatives, sort, resort, name, next **E** • See ISAT Vocabulary Page 75 and teachers manual

GRADE 2 - STANDARDS 276 THROUGH 283.

276. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	**a. Demonstrate knowledge of our numeration system by counting a variety of ways.**	• Know and write the sequence of numbers to 1,000 **M** • Recognize and use the ordinal numbers and number words1st-100th **E** • Identify the value of Roman Numerals: I, V, X **M** • Count and write by: 1s, 2s, 5s, 10s to 100**M**
	b. Read, write, order, and compare whole numbers to 1,000.	• Compare and order numbers to 1,000 (more than, less than, equals**) M** • Identify the concept of greater than, less than, and equal to up to three digit numbers to 1,000 **E** • Compare and order numbers 0-100 (more than, less than, equals) **R** • Compare and order numbers 0-1,000 **E** • Order sets of numbers from least to greatest 0-100 **R** • Instantly recall odd and even numbers to 1,000 **M**
	c. Demonstrate the knowledge of place value through 999.	• Understand "10" as a special "unit of units" (recognize the word ten as 1 ten and at the same time 10 ones) **M** • Model, understand, name and write numbers in the ones, tens, and hundreds place **M** • Understand that each place (hundreds, tens, ones) can be any numeral (0 to 9) **M** • Identify, name, write, a three digit number **M** • Round 2 and 3 digit numbers to the nearest 10 and 100 **E** • Write numbers to 1,000 in both standard and expanded form **M**
	d. Determine, by counting, the value of a collection of pennies, nickels, dimes, quarters and half-dollar, up to $1.00.	• Master coin recognition and value of coins to 50¢ **M** • Count and show amounts to $4.99 **E** • Make change to $1.00 by counting on or subtraction **E**

	e. Explore decimals using money through hundredths.	• Read, write and compare decimals as notated in money **E** • Understand fractions as equal parts of a whole **M** • Identify and construct models of proper fractions: halves, thirds, fourths **R** • Identify and construct models of proper fractions 0 – 12/12 **E**
	f. Understand and apply appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Perform computations accurately.	**a. Demonstrate proficiency with addition and subtraction facts through 18.**	• Work number sentences vertically and horizontally **M** • Understand different meanings of addition and subtraction of whole numbers and the relation between the two operations **M** • Develop and use strategies and algorithms to solve simple equations to and from 18 (counting on/back 1s, 2s, 3s, doubles, doubles plus 1, fast nines, building tens, counting up to subtract) **E** • Develop fluency with fact families **M** • Instantly recall basic addition and subtraction facts through 18 **E** • Reinforce moving from the manipulative to the symbolic level of addition and subtraction with and without regrouping **M** • Use a variety of strategies: mental computation, pencil and paper, and calculators where appropriate **E**
	b. **Add whole numbers with and without regrouping through 99.**	• Develop fluency with double-digit addition and subtraction with and without regrouping **E**
	c. Add a series of one-digit addends.	**E**
	d. Explore double-digit subtraction of whole numbers with regrouping through 99.	**E**
	e. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
	f. Demonstrate knowledge of multiplication and division	• Use repeated addition, arrays, concrete and pictorial models **E** • Instantly recall multiplication/division facts; 0, 1 **E** • Demonstrate the knowledge of multiplication/division facts 2, 5, 10 **E**
3. Estimate and judge	a. Use estimation to predict computation results.	• Evaluate the reasonableness of sums and differences to 100 **E**

reasonableness of results.	b. Evaluate the reasonableness of an answer.	• Estimate sums and differences to the 100's place **E**
	c. Use appropriate vocabulary.	• Place value, ones, tens, hundreds, penny, nickel, dime, quarter, half dollar, dollar, cent, coin, change, fraction, decimal point, dollar sign, half, quarter, etc. through hundredth, thousands, sum, difference, factor, product, estimate, round, standard form, expanded form, set, closed set, open set **E** • Symbols: ÷,<,=,>,X,{ },+,-,≠, ( ) **E** • See ISAT Vocabulary Page 75 and teachers manual

277. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand and use a variety of problem-solving skills.	a. **Select strategies appropriate to solve a problem.**	• Draw a picture, make a list **E** • Find a pattern **E** • Tell or write a story using number operation: + **E** • Act it out **E** • Guess and check **E** • Build a model **E** • Determine reasonable answers **E**
	b. Select and use appropriate operations.	• Determine appropriate operation for single step word problem: addition and subtraction **M** • Multiple step word problem: addition and subtraction **E**
2. Use reasoning skills to recognize problems and express them mathematically.	**a. Generate a number sentence from a problem-solving situation.**	• Restate a single step word problem with numeric representation (+,-) both orally and in writing **M** • Restate a multiple step word problem with numeric representation (+,-,x,÷) both orally and in writing **E**
3. Apply appropriate technology and models to find solutions to problems.	a. Select appropriate models to represent mathematical ideas.	Use: • manipulatives **M** • calculator **E** • paper pencil **E**
4. Communicate results using appropriate terminology and methods.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.**	• Use words, numbers, symbols, charts, graphs, charts, graphs, tables, diagrams and models **E**

	b. Use appropriate vocabulary to communicate mathematical information.	• Name and understand symbols:<,=,>, +,-,≠ **M** • ( ) { }÷ x **E** • Number sentence, equation, problem, information, add, plus, more, subtract, minus, less, equals, is the same as, how many more, more than, how many are left **E** • See ISAT Vocabulary Page 75 and teachers manual

278. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand and use U.S. customary and metric measurements.	a. **Explore the use of standard and non-standard tools for measuring time, length, volume, weight, and temperature.**	Use nonstandard, standard and metric units: • Linear: inch, foot, yard, centimeter, meter, kilometer, mile **E** • Weight: ounces, pounds, grams, kilograms, ton **E** • Volume: ounce, cup, pint, quart, gallon, liter **E** • Temperature: Read a thermometer **E** • Use both Celsius and Fahrenheit to represent temperature **E** • Find perimeter and area **E**
	b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	**E**
	c. **Tell time using both digital and analog clocks to the quarter hour.**	• Tell time to the hour and half hour **R** • Tell time to the quarter hour **E** • Tell time to five minutes **E** • Develop a sense of elapsed time and estimation of time **E** • Identify and understand time relationships: seconds in a minute, minutes in an hour, hours in a day, AM, PM, quarter hour, half -hour **E**
	d. Explore the relationship among units of time.	Calendar: • Read, understand and interpret information from a calendar **M** • Recite days, months in order **M** • Determine yesterday, today, tomorrow when given a specific day or date **M** • Compute simple conversions among units of time: seconds, minutes, hours, days, weeks, months, years, elapsed time **E**

		Calendar: • Identify time relationships: minutes in an hour, hours in a day, days in a week, weeks in a year, days in a year **E**
	e. Use appropriate vocabulary.	• Standard and nonstandard, measurement, volume, capacity, ounce (oz), cup (C), pint (pt), quart (qt), gallon (gal), liter (l), inch (in), foot (ft), yard (yd), centimeter (cm), meter (m), kilometer, mile, weight, pounds (lb), ton, grams, kilograms, thermometer, Celsius, Fahrenheit, degree, scale, perimeter, area, distance, unit, dozen **E** • See ISAT Vocabulary Page 75 and teachers manual

279. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Use algebraic symbolism as a tool to represent mathematical relationships.	a. Represent vertical notation in horizontal form.	• Understand/Solve problems with missing addends and subtrahends **E** • Evaluate a numerical equation involving more than one operation with and without parentheses **E**
	b. **Write a number sentence given an addition or subtraction problem.**	• Write equations to represent information and solve for an unknown variable **E**
	c. Compare numbers using vocabulary (less than, greater than, equal to) and symbols (<, >, =).	• Generate statements comparing numbers using appropriate symbols to 1,000 **E** • See ISAT Vocabulary Page 75 and teachers manual
	d. **Understand the relationship between addition and subtraction and demonstrate reversal of operations.**	• Identify missing elements in equations **E** • Understand and create fact families using addition and subtraction **M** • Understand and create fact families using multiplication and division with products 0, 1, 2, 5, 10 **E**
2. Evaluate algebraic expressions.	a. **Explore and use the commutative property of addition.**	• Example: 6+4=4+6 **E**
	b. *Use appropriate vocabulary*	• Sum, difference, addend, subtrahend, factor, product, symbols of inequality (≠,<, >) multiples, closest, fewest, divisible, set, open set, closed set, parentheses, brackets, equation **E** • See ISAT Vocabulary Page 75 and teachers manual

280. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Apply concepts of size, shape, and spatial relationships.	a. **Recognize, name, build, draw, compare, and sort two- and three-dimensional shapes.**	• Identify, construct and draw plane (2-D) figures **M** • Solid (3-D) figures **E** • Compare sides and corners of basic plane figures **M** • Introduce five and six sided plane figures (pentagon, hexagon) **E** • Identify basic solid figures (cube, sphere, pyramid, rectangular prism, triangular prism, cylinder, cone) **M**
	b. **Recognize and create shapes that have symmetry.**	• Recognize symmetrical figures **M** • Find lines of symmetry **M** • Identify congruent figures **M**
	c. Explore slides, flips, and turns.	• Show and identify position after sliding, flipping or rotating **E**
	d. Understand appropriate vocabulary.	• Shape, figure, solid, dimension, plane, cube, cone, sphere, pyramid, cylinder, rectangular prism, triangular prism, sides, faces, corners, angles, points, line, line segment, intersecting, straight, curved, closed, open, outside, pentagon, hexagon, octagon, rhombus, parallelogram, trapezoid, slide, flip, rotation, turn, symmetry, symmetrical, congruent, congruency, parallel, vertical, horizontal, plotting, table, row, column **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Apply graphing in two dimensions.	a. Apply ideas about direction and distance.	• Representational systems **E** • Introduce and use coordinate geometry (plotting on a grid) **E**

281. DATA ANALYSIS, PROBABILITY, AND STATISTICS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand data analysis.	**a. Interpret information found in simple tables, charts, and graphs.**	• Construct and interpret a variety of different types of graphs, charts, and tables using a key or legend to determine if the symbol means 1 or more than 1 **E** • Identify and compare more, less, and equal after viewing a table, graph, or chart **R**

	b. Understand and use appropriate vocabulary.	• Tally, graph, pictograph, bar graph, line graph, chart, table, row, column, quantity, outcome, represent, compare, data, interpret, predict, prediction, record, probability, certain, possible, impossible, likely, unlikely, less likely, more likely, chance, most often, true, not true, false **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Collect, organize, and display data.	**a. Gather and display data in tables, charts, and graphs in order to answer a question.**	Use: • Tally marks **R** • Venn diagrams **E** • Vertical and horizontal bar graphs **E** • Pictographs **E** • Legends or keys **E**
3. Understand basic concepts of probability.	a. **Predict, perform, and record results of simple probability experiments.**	• Make inferences and predictions based on data or past experiences **E** • Become familiar with terms certain, possible, more likely, less likely **E**
4. Make predictions or decisions based on data.	a. Make predictions or decisions based on probable results or past experiences.	• Make inferences and predictions based on data or past experiences **E**

282. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand the concept of functions.	a. **Extend patterns and identify the rule (function) that creates the pattern.**	• Recognize, extend and generate number patterns **E** • Count and write by 3s, 4s, 6s, 7s, 8s, 9s, 11s, 12s **E** • Recognize, extend and generate different patterns using models **R**
	b. Sort and classify objects by more than one attribute.	• Reinforce sorting, resorting, and classifying using multiple properties and attributes **M**
	c. Understand and use appropriate vocabulary.	• Odd, even, skip count, pattern, attribute, relationship, proportion, corresponding, pieces, between **E** • See ISAT Vocabulary Page 75 and teachers manual

GRADE 3 - STANDARDS 287 THROUGH 293.

287. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	a. **Read, write, order, and compare whole numbers to one million.**	• Recognize and use ordinal numbers 1-100 **M** • Identify odd and even numbers to 100 **M** • Identify numbers as prime or composite **E** • Identify Roman Numerals I, V, X **M** • Write numbers to 1,000 in word form **E** • Compare numbers 0 - 1,000,000 (<,>,=) **M** • Find the missing number in an order of numbers. 42, 44, 46, ___, 50 **M** • Use a number line to identify positive and negative numbers **E** • Count by ones, twos, threes, fives, tens, hundreds **M**
	b. **Demonstrate knowledge of place value through 9,999.**	• Understand and identify place value of each digit to 1,000,000 **E** • Use place value to estimate (front-end and rounding) to the nearest ten, hundred, thousand, ten thousand, and hundred thousand **E** • Identify and understand place value for decimals (tenths, hundredths) **M** • Write and understand expanded notation to 1,000,000 **E** • Introduce percents as part of a whole – relate to grades (90%) **E**
	c. **Determine, by counting, the value of a collection of bills and coins up to $10.00.**	• Combine and identify the value of a collection of coins and bills up to and including $100 **M** • Add and subtract decimal notated money**M** • Add and subtract decimals to hundredths not related to money **E**
	d. **Use concrete materials to recognize and represent commonly used fractions.**	• Through tenths **E** • Understand whole numbers, fractions, and mixed numbers **M** • Explore equivalent fractions **E** • Identify improper fractions **M** • Understand fractions equivalent to 1 (4/4 3/3) **E** • Know position and meaning of numerator and denominator **M** • Read, write and compare a decimal for a shaded region (to the tenths and hundredths place) **E**

		• Read, write and illustrate fractions ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$) **M** • Add and subtract simple fractions with common denominators **E** • Reduce simple fractions **E** • Solve problems such as ½ of 6 = 3 **E**
	e. Explore decimals using money through hundredths.	**E**
	f. Understand and apply appropriate vocabulary.	• Power of 10, thirds, fourths, round, estimate, exact, thousands, millions, decimal, exponential form, mixed number, improper fraction, lowest common denominator, numerator, denominator, percent, standard and expanded form, prime, average, ordinal numbers through 100, value, terms **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Perform computations accurately.	a. **Add and subtract whole numbers with and without regrouping through 999.**	• Add and subtract 6-digit whole numbers with multiple regroupings **M** • Subtract with multiple regroupings and a medial zero **E**
	b. **Instantly recall basic addition and subtraction facts through 18.**	• Utilize time-tests similar to 50 in 1 minute **M**
	c. **Add three addends with 1 and 2 digits.**	• Add three addends with 1, 2 and 3 digits **E**
	d. **Multiply whole numbers through 10 x 10.**	• Identify the least common multiple of two whole numbers **E** • Instant recall on timed tests **E** • Multiply mentally by 10, 100 **E** • Multiply a 3 digit number by a 1 digit factor **E** • Use multiplication to check division **E**
	e. **Explore the relationship between multiplication and division.**	• Apply rules of divisibility by 2's **M** • Explore division through 12 with and without remainders **E** • Explore long division with and without remainders **E**
	f. Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.	**M**

	g. Use appropriate vocabulary.	• Computation, operation, addition, addend, sum, subtraction, subtrahend, difference, multiplication, factor, product, multiples, multiply, division, divide, divisible, valid **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Estimate and judge reasonableness of results.	a. **Use estimation to predict computation results.**	• Use and understand front-end estimation and rounding **M**
	b. Evaluate the reasonableness of an answer.	**E**
	c. Use appropriate vocabulary.	• Estimate, round, about, exact, probable, valid **E** • See ISAT Vocabulary Page 75 and teachers manual

288. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use a variety of problem-solving skills.	a. **Select strategies appropriate to solve a problem.**	• Solve word problems involving any combination of basic operations on whole numbers (one and two-step problems) **E** • Count and write by 3s, 4s, 6s, 7s, 8s, 9s, 11s, 12s **E** • Instantly recall odd and even numbers to 1,000 **E** • Locate facts **E** • Identify question **E** • Select operations **E** • Solve and label solution **E** • Use logical reasoning **E** • Make a chart, table or list **E** • Draw a picture or diagram **E** • Guess and check **E** • Work backwards **E** • Identify missing or extra information **E**
	b. Select and use appropriate operations.	• Use missing addends or factors as a strategy **E**
	c. Make predictions and decisions based on information.	**E**
2. Use reasoning skills to recognize problems and express them mathematically.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.**	• Use bar graphs, line graphs, pictographs, and pie charts **E**

3. Apply appropriate technology and models to find solutions to problems.	a. Appropriately use a 4-function calculator to solve complex grade-level problems.	• Add and subtract multi-digit numbers using a calculator **E**
	b. Select appropriate models to represent mathematical ideas.	**E**
4. Communicate results using appropriate terminology and methods.	a. Use a variety of methods, such as words, numbers, symbols charts, graphs, tables, diagrams, and models, to communicate mathematical information.	**E**
	b. Use appropriate vocabulary to communicate mathematical information.	• Bar graph, line graph, pictograph, pie chart, logic, modeling, reasoning, valid, invalid, trial and error, strategy, method, solve, data, solution, operation, table, elimination, number sentence (equation), label, information **E** • See ISAT Vocabulary Page 75 and teachers manual

289. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use U.S. customary and metric measurements.	a. **Select and use appropriate units and tools to make formal measurements in both systems (time, length, temperature, perimeter).**	• Read, interpret and write temperature from thermometer (Fahrenheit and Celsius) **E** • Find area and volume using a picture **M**
	b. **Apply estimation of measurement to real-world and content problems using actual measuring devices.**	**E**
	c. Explore relationships within the U.S. customary system.	• English measurements (inch, foot, yard, cup, pint, quart, gallon and pounds) **E** • Given lengths - calculate perimeter of square or rectangle to the nearest inch, foot and yard **E**
	d. Explore relationships within the metric system.	• Metric measurements (centimeter, meter and kilometer) **E**
	e. **Tell time using both digital and analog clocks, using 5-minute intervals.**	• Days of week, months of year **M** • Interpret, write and read time to 5-minute intervals (AM and PM) **M** • Use analog and digital clocks **M** • Tell time to the half and quarter hour **E**
	f. **Explore the relationship among units of time.**	• Distinguish between seconds, minutes, hours, days, weeks, months, years **E** • Develop a sense of elapsed time and estimation of time **E**

	g. Use appropriate vocabulary.	• Year, ton, seconds, kilogram, square inches, distance, miles, liter, feet, yards, unit of measurement, length, area, perimeter, volume, temperature, weight, standard and non standard, abbreviations: (oz.) (c), (pt), (qt), (lb) (gal), (in), (ft), (yd), (cm), (mm), (ml) **E** • See ISAT Vocabulary Page 75 and teachers manual

290. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Use algebraic symbolism as a tool to represent mathematical relationships.	a. **Represent vertical notation in horizontal form.**	**E**
	b. Write a number sentence using symbols (boxes or letters) to represent an unknown number.	• Solve for n using various operations • If 6Xn= 12 then n = 2 **E** • Solve equations using missing addends **M** • Solve equations with various order of operations 16 = 9 + 7 **E**
	c. **Use symbols (<, >, =) to express relationships.**	• Use identity and zero property of multiplication **M** • Using Parenthesis ( ) **E**
	d. Explore inverse (reversal) of operations with multiplication and division.	• 4 times 3 equals 12, 12 divided by 3 equals 4 **E**
2. Evaluate algebraic expressions.	a. **Explore and use the commutative properties of addition and multiplication**.	• Explore associative property of addition and multiplication **E**
3. Solve algebraic equations and inequalities.	a. Solve missing addends and missing factor problems using inverse operations.	• Use appropriate vocabulary: vertical, horizontal, symbols, unknown, missing, relationships **E** • See ISAT Vocabulary Page 75 and teachers manual

291. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Apply concepts of size, shape, and spatial relationships.	a. **Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes.**	• Identify faces, edges, and vertices on solid figures **E** • Identify polygons: triangle, pentagon, quadrilateral, hexagon, and octagon **E** • Identify right, acute, obtuse angles **E** • Explore intersecting and parallel lines **E** • Identify lines, rays, points, line segments **E** • See ISAT Vocabulary Page 75 and teachers manual

		• Identify name and analyze solid figures: cube, cylinder, and triangular pyramid square pyramid (faces, edges, and vertices) **M**
	b. **Explore congruence, similarity, and symmetry.**	**E**
	c. Investigate perimeters in real-world situations.	**E**
	d. Predict and describe the results of sliding, flipping, and turning two-dimensional shapes.	**E**
	e. Use appropriate vocabulary.	• Symmetrical, parallel, intersecting, diagonal, pair, angle, cylinder, sphere, parallelogram, square, rectangle, triangle, outside, inside, faces, corresponding, point, axis of symmetry, pentagon **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Apply graphing in two dimensions.	a. Apply ideas about direction and distance.	• Identify, name and plot coordinates on a graph **E**

292. DATA ANALYSIS, PROBABILITY, AND STATISTICS.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand data analysis.	a. **Interpret information found in tables, charts, and graphs.**	• Collect, categorize, and tally data. **E** • Create bar and pictographs **E**
	b. Explain and justify conclusions drawn from tables, charts, and graphs.	• Interpret trends (more and less) **E** • Make predictions **E** • Explore chance within given probabilities **E** • Determine fairness of chance **E**
	c. Understand and use appropriate vocabulary.	• Chance, predict, prediction, tally, graph, table, chart, certain, possible, impossible **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Collect, organize, and display data.	a. **Collect, organize, and display data in tables, charts, or graphs in order to answer a question and/or test a hypothesis.**	**E**
3. Understand basic concepts of probability.	a. **Predict, perform, and record results of simple probability experiments.**	• Record probability or chance as a fraction **E**
4. Make predictions or decisions based on data.	a. Make predictions or decisions based on probable results or past experiences.	**E**

	b. Understand and use appropriate vocabulary.	• Tally, graph, pictograph, bar graph, line graph, chart, table, row, column, quantity, outcome, represent, compare, data, interpret, predict, prediction, record, probability, certain, possible, impossible, likely, unlikely, chance, most often, valid, invalid **E** • See ISAT Vocabulary Page 75 and teachers manual

293. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand the concept of functions.	a. **Extend patterns and identify the rule (function) that creates the pattern.**	**M**
	b. Discover, describe, and extend patterns by using manipulatives and pictorial representations.	**E**
	c. Understand and use appropriate vocabulary.	• Corresponding, pattern, extend, continue, skip count, attribute, between **E** • See ISAT Vocabulary Page 75 and teachers manual

GRADE 4 - STANDARDS 297 THROUGH 303

297. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	a. **Read, write, order, and compare whole numbers to 1,000,000, commonly used fractions, and decimals through hundredths.**	• Read, write and order numbers through the billions period **E** • Compare whole numbers to billions **E** • Compare decimals to hundredths place **M** • Introduce integers on a number line and thermometer **E** • Compare commonly used fractions **E** • Write Roman Numerals to 100 (C) **E** • Ordinal numbers through hundredths **M** • Use a number line to identify a fraction **E** • Use a number line to identify a decimal **E** • Identify numbers as prime and composite **E**
	b. **Demonstrate and apply the knowledge of whole numbers, decimal place value, and patterns of periods (hundredths to millions).**	• Round whole numbers to the nearest hundred thousands **M** • Write the word name of decimals through hundredths **M** • Write a decimal for a shaded region to the hundredths **M** • Write a decimal as a fraction or mixed number **E** • Identify prime and composite numbers less than 50 **E** • Write whole numbers in expanded notation to 100,000 **E** • Introduce percents as part of a whole **E**
	c. Determine by counting the value of a collection of bills and coins up to $100.00.	**E**
	d. **Use concrete materials to recognize, represent, and compare commonly used fractions.**	• Read and write fractions with and without pictures **E** • Compare and order fractions **E** • Understand fractions equivalent to 1 **M**
	e. Understand decimals with money through hundredths.	**E**

	f. Understand and apply appropriate vocabulary.	• Power of ten, thirds, fourths, round, estimate, exact, even, odd, number line, thousands, millions period, billions period, decimal, tenths, hundredths, exponential form, mixed number, improper fraction, lowest common denominator, numerator, denominator, reduce, simplify, lowest term, compare, order, numeral, percent, standard and expanded form or notation, prime and composite numbers, average, ordinal numbers, integer **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Perform computations accurately.	a. Consistently and accurately add and subtract whole numbers.	• Addition with regrouping to hundred thousands **M** • Subtraction with multiple regroupings and medial 0 through thousands **M** • Instant recall of facts to 18 **M**
	b. **Multiply and divide whole numbers.**	• 100 facts in 3 minutes- Timed tests **M** • Multiply a 4 digit number by a 1 digit factor **M** • Multiply 3 digit multiple of 10 **M** • Multiply by multiple of 10 (mental math) **M** • Multiply a 3 digit by a 2 digit **E** • Multiply mentally by multiples of 10, 100, 1000 **E** • Use multiplication to check division **M** • Divide a 3 digit number by multiple of 10 **E** • Divide a 3 digit by a 1 digit with remainders **E** • Averaging numbers **E** • Complete a factor tree (prime factorization) **E** • Apply rules of divisibility (is 345 divisible by 2 or 5) **E** • Identify the GCF of two whole numbers less than 100 **E**
	c. **Add and subtract fractions with like denominators (without requiring simplification).**	• Add and subtract fractions with like denominators **E** • Add mixed numbers with like denominators **E** • Simplify, reduce, lowest terms **E** • Subtract mixed numbers with like denominators **E** • Convert proper and improper fractions **E**

	d. **Add and subtract decimals using money.** *Multiply money*	• Use vertical and horizontal format to add and subtract decimals **E** • Compute change up to and including $100.00 **M** • Add and subtract decimal notated money to $100 **M** • Multiply monetary amounts by a 1 or 2 digit factor **E** • Add and subtract decimals not related to money **E** • Determine missing numerator or denominator in equivalent fractions **E** • Count back change from $1.00 **E**
	e. **Instant recall multiplication facts through 10s.**	• Instant recall of addition, subtraction, multiplication, division facts through ten **M** • 100 problems in 3 minutes **E**
	f. Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.	**E**
	g. Use appropriate vocabulary.	• Regroup, medial zero, digit, decimal notated money, vertical format, horizontal format, prime factorization, remainder, rules of divisibility, GCF, simplify, reduce, lowest terms **E** • See ISAT Vocabulary Page 75 and teachers manual
3. Estimate and judge reasonableness of results.	a. **Use estimation to predict computation results.**	• Estimate whole number products **E** • Estimate whole number sums **M** • Estimate decimal sums related to money **M** • Estimate whole number differences **M** • Estimate whole number quotients **E** • Estimate time **E** • Use rounding and front-end estimation **E** • Estimate measurements **E**
	b. **Evaluate the reasonableness of an answer.**	• Use strategies to check **E**
	c. Use appropriate vocabulary.	• Estimate, sum, difference, product, quotient, front-end estimation, rounding, strategies **E** • See ISAT Vocabulary Page 75 and teachers manual

298. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use a variety of problem-solving skills.	a. **Select strategies appropriate to solve a problem.**	• Work backwards **E** • Draw a picture and an array **E** • Guess and check **E** • Act it out **E** • Solve a simpler problem **E** • Make a chart, list, or table **E** • Build a model **E**
	b. Select and use appropriate operations.	**E**
	c. Make predictions and decisions based on information.	**E**
2. Use reasoning skills to recognize problems and express them mathematically.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.**	**E**
3. Apply appropriate technology and models to find solutions to problems.	a. Appropriately use a 4-function calculator to solve complex grade-level problems.	**E**
	b. Select appropriate models to represent mathematical ideas.	**E**
4. Communicate results using appropriate terminology and methods.	a. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.	**E**
	b. Use appropriate vocabulary to communicate mathematical information.	• Models, symbols, charts, graphs, tables, diagrams, notation, prediction, operation, strategy **E** • See ISAT Vocabulary Page 75 and teachers manual
	c. Use appropriate notation.	• $<, >, =, \leq, \geq$ **E**

299. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use U.S. customary and metric measurements.	a. **Select and use appropriate units and tools to make formal measurements in both systems (time, length, temperature, perimeter, area).**	Measure with appropriate tools: • Length: quarter of an inch, inch, foot, yard, mile **E** • Length: mm, cm, m, km **E** • Weight: oz, lb, ton **E** • Weight: g, kg **E** • Capacity: cup, pint, quart, gallon **E** • Capacity: ml, l **E** • Temperature: Fahrenheit and Celsius (positive and negative) **E** • Temperature: Read, interpret, and write temperature from a thermometer **E**
	b. **Apply estimation of measurement to real-world and content problems using actual measuring devices.**	**E**
	c. **Apply understanding of relationships within the U.S. customary system.**	• Length: measure and convert inches, feet, and yards **E** • Weight: recognize ounces, and pounds **E** • Volume: recognize cups, pints, quarts, and gallons **E**
	d. **Apply understanding of relationships within the metric system.**	• Recognize millimeter, centimeter, meter, and kilometer **E**
	e. **Tell time using both digital and analog clocks, to the nearest minute.**	• Tell time to the quarter and half hour **R** • Use analog and digital clocks to tell time to the minute mark **M** • Know am and pm **M**
	f. **Apply understanding of relationships to solve real-world problems related to time.**	• Develop a sense of elapsed time and estimation of time **E** • Know the days of the week and months of the year. **M** • Identify and count paper and coin money to $20.00 **E** • Count change back to $100.00 **E**

	g. Use appropriate vocabulary.	• Length, width, perimeter, area, measure and convert, inches, feet, yards, weight, ounces, pounds, cups, pints, quarts, gallons, volume, capacity, milliliter, liter, millimeter, centimeter, gram, kilogram, meter, kilometer, quarter hour, half hour, am, pm, analog, digital, elapsed time, count change, standard, nonstandard, metric, Fahrenheit, Celsius, positive and negative temperature, abbreviations: oz, lb, c, pt, qt, gal, ml, l, mm, cm, g, kg, m, km, in, ft, yd **E** • See ISAT Vocabulary Page 75 and teachers manual

300. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Use algebraic symbolism as a tool to represent mathematical relationships.	a. **Represent vertical notation in horizontal form.**	**E**
	b. **Write a number sentence using symbols (boxes or letters) to represent an unknown number.**	• Solve for n with varied operations **E**
	c. **Read and use symbols (<, >, =) to express relationships.**	**E** Using parenthesis ( )
2. Evaluate algebraic expressions.	a. **Explore and use the commutative properties of addition and multiplication.**	• Use associative and commutative properties of addition and multiplication **E**
3. Solve algebraic equations and inequalities.	a. **Solve missing addends and missing factor problems using inverse operations.**	• Introduce if a+b=c then c-b=a **E**
	b. Use appropriate vocabulary.	• Unknown number, vertical notation, horizontal form, varied operations, unknown number, symbols, relationships, associative and commutative properties of addition and multiplication, missing addends, missing factors, and inverse operations **E** • See ISAT Vocabulary Page 75 and teachers manual

301. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Apply concepts of size, shape, and spatial relationships.	a. **Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes.**	• Identify faces, edges, and vertices on solid figures **M** • Identify polygons: triangle, quadrilateral, pentagon, hexagon, and octagon **M** • Identify, name and analyze solid figures: cube, cylinder, triangular pyramid and rectangular pyramid (faces, edges, and vertices.) **R** • Identify acute, obtuse, and right angles, parallel, perpendicular and intersecting lines **E** • Identify lines, rays, points and line segments **E** • Label angles like ∠ABC **E** • See ISAT Vocabulary Page 75 and teachers manual
	b. **Explore relationships among and properties of shapes (congruence, similarity, symmetry).**	**E**
	c. **Use concrete objects to determine perimeters of triangles, and areas and perimeters of rectangles/ squares.**	• Find perimeter, area, and volume of rectangles and rectangular prisms **E**
	d. **Predict and describe the results of sliding, flipping, and turning two-dimensional shapes.**	**E**
	e. Use appropriate vocabulary.	• Faces, edges, vertex, vertices, solid figures, polygons, triangle, quadrilateral, pentagon, hexagon, octagon, square, rectangle, parallelogram, cube, cylinder, triangular pyramid, rectangular pyramid, rectangular prism, acute, obtuse, right angles, parallel, perpendicular and intersecting lines, lines, rays, points and line segments, properties of shapes (congruent, similar, symmetrical), sliding, flipping, turning, perimeter, area, volume, and coordinates **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Apply graphing in two dimensions.	a. Apply ideas about direction and distance.	• Use name and plot coordinates to interpret information on a graph **M**

302. DATA ANALYSIS, PROBABILITY, AND STATISTICS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand data analysis.	a. Read and interpret tables, charts, and graphs.	• Interpret trends (more and less) make predictions **E**
	b. **Explain and justify conclusions drawn from tables, charts, and graphs.**	**E**
	c. Understand and use vocabulary.	• Chance, predict, prediction, tally, graph, table, chart, certain, possible, impossible, justify conclusions, interpret trends **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Collect, organize, and display data.	a. **Collect, order, and display data in appropriate notation in tables, charts, and graphs (bar graphs, tally charts, pictographs), in order to answer a question and/or test a hypothesis.**	• Interpret data given in percent form on a circle graph and broken line graph **E**
3. Apply simple statistical measurements.	a. **Determine an average (mean) of a set of whole numbers.**	• Determine an average using a one- digit divisor **M**
4. Understand basic concepts of probability.	a. Predict, perform, and record results of simple probability experiments.	• Interpret trends **E** • Make predictions **E** • Explore chance within given probabilities **E** • Determine fairness of chance **E**
5. Make predictions or decisions based on data.	a. **Make predictions based on simple experimental probabilities.**	
	b. Understand and use appropriate vocabulary.	• Trends, predict, predictions, data analysis, interpret, interpret trends, percent form, circle graph, broken-line graph, hypothesis, average, mean, perform, record, tally chart, bar graph, pictograph, statistical measurement, probability, data, decision based, tally, graph, pictograph, bar graph, line graph, chart, table, row, column, quantity, outcome, represent, compare, data, record, probability, certain, possible, impossible, likely, unlikely, chance, most often, valid, and invalid **E** • See ISAT Vocabulary Page 75 and teachers manual

303. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand the concept of functions.	a. **Extend patterns and identify a rule (function) that creates the pattern.**	• Skip Count by 2, 3, 5, 10, and 100 **M**
	b. Discover, describe, and extend patterns by using manipulative and pictorial representations.	**E**
	c. Understand and use vocabulary.	• Corresponding, pattern, extend, continue, skip count, attribute, between, rule, and function **E** • See ISAT Vocabulary Page 75 and teachers manual

GRADE 5 - STANDARDS 307 THROUGH 313.

307. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	a. **Read, write, order, and compare whole numbers through billions, commonly used fractions, and decimals through thousandths.**	• Read and write numbers through billions period **M** • Read and write decimals through thousandths **E** • Order and compare whole numbers through billions **M** • Order and compare decimals through thousandths **M** • Compare and order fractions with same and different denominators **E** • Compare and order fractions and mixed numbers **E** • Identify and order fractions and decimals on a number line **M** • Read and write Roman Numerals through 2000 **E** • Identify integers on a number line and thermometer **E** • Add integers with like signs **E** • Add integers with unlike signs **E** • Add multiple integers **E** • Identify the greater or lesser of two integers **E** • Review ordinal numbers **R**
	b. Demonstrate and apply the knowledge of whole numbers, decimal place value, and patterns of periods (thousandths to billions).	• Write numerals in expanded notation to hundred thousands **M** • Round whole numbers to billions **M** • Round decimals to the nearest whole, tenths, hundredths, thousandths **E** • Introduce percents as part of a whole **E**
	c. **Explore the relationship between equivalent fractions.**	• Write proper and improper fractions from a picture **M** • Write proper to improper fractions without picture **M** • Determine missing numerator or denominator in equivalent fractions **M** • Understand 2/2= 3/3=4/4=1 **M**
	d. Explore the relationship between decimals and simple fractions through thousandths. *Relationship of ratio and percents*	• Write a fraction as a decimal and a percent and visa versa **E** • Introduce the relationship between ratios/fractions/ percents **E**

	e. Show a sense of magnitudes and relative magnitudes of whole numbers, decimals, and simple fractions.	• Identify the base number and the exponent **M** • Convert base ten exponents into standard form (10^5 = 100,000) **E** • Convert common exponents into standard form 4^3 = 64 **E** • Compare and order exponents **E** • Write a number in scientific notation **E** • Write a number expressed in scientific notation in standard form **E** • Introduce the concept of square root **E**
	f. **Explore and apply number theory concepts (prime, composite, multiples, factors).**	• Recognize prime and composite numbers through 100 **E** • Create factor trees **E** • Find greatest common factors GCF **E** • Find least common multiple LCM **E** • Find the LCD **E**
2. Perform computations accurately.	a. **Multiply and divide whole numbers.** *Multiply and divide decimals*	• Multiply whole numbers and decimals by multiples of 10,100, 1000 with emphasis on mental math **M** • Multiply 4 digit whole numbers by 2 factor **M** • Multiply 3 digit whole numbers by 3 digit factor **M** • Multiply a decimal by a whole number **E** • Multiply a decimal by a decimal with factors to the thousandths place **E** • Use multiplication as a check for division **R** • Divide whole numbers by multiples of 10, 100, 1000 **E** • Divide decimals by multiples of 10, 100, 1000 **E** • Divide 4 digit dividend by a 1 digit divisor using remainders **M** • Divide 4 digit dividend by a 1 digit divisor using terminating decimals **E** • Interpret remainders of whole number division as fractions and decimals **E** • Divide 3 digit and 4 digit numbers by a 2 digit divisor with remainders **E** • Divide a decimal by a whole number and vice versa **E** • Determine the average (mean) of a set of numbers **E** • Calculate the square of any number less than 100 **E** • Understand rules of divisibility for 2,3,4,5,10 **E**

	b. **Add and subtract fractions with like denominators (do not require simplification).** *Add and subtract fractions with unlike denominators. Multiply and divide fractions*	• Write fractions in lowest terms **E** • Identify and write equivalent fractions **E** • Add and subtract fractions with like denominators **M** • Add and subtract fractions with unlike denominators and simplify **E** • Add and subtract mixed numbers with like denominators **M** • Add and subtract mixed numbers with unlike denominators and simplify **E** • Convert proper and improper fractions **M** • Identify and write equivalent fractions **E** • Use LCM and GCF **E** • Multiply and divide a whole number by a fraction **E** • Multiply and divide a fraction by a fraction **E**
	c. **Add and subtract decimals through thousandths.**	• Add and subtract decimals through thousandths from horizontal and vertical format **E** • Add and subtract decimals with varying place value from horizontal and vertical format **E** • Compute basic operations with money **M** • Compute change up to $1,000 **M** • Count change back from $20.00 **E**
	d. **Instantly recall basic multiplication and division facts up to 10s.**	• Instant recall of basic multiplication and division facts (100 facts in less than 3 minutes) **R**
	e. Evaluate numerical expressions that include parentheses.	• Understand order of operations in expressions using parenthesis **E**
	f. **Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.**	• Multiply and divide multi-digit numbers using a calculator **E** • Use mental math **E**
	g. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
3. Estimate and judge reasonableness of results.	a. **Use estimation to predict computation results.**	• Use the math strategies of rounding, front-end, and compatible numbers in estimating all four operations **E** • Estimate whole numbers and decimals **E**
	b. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer.	**E**

	c. Determine whether a given estimate is an overestimate or underestimate.	**E**
	d. Use appropriate vocabulary.	See ISAT Vocabulary Page 75 and teachers manual **E**

308. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use a variety of problem-solving skills.	a. **Use a variety of strategies to compute problems drawn from real-world situations.**	• Guess and check **E** • Act it out **E** • Work backwards **E** • Solve a simpler problem **E** • Draw a picture **E** • Build a model **E** • Make a chart, table, list, or graph **E**
	b. Solve problems using the 4-step process of problem solving (explore, plan, solve, examine).	**E**
	c. Make predictions and decisions based on information.	• Use estimation to determine if solutions to word problems are reasonable **E**
2. Use reasoning skills to recognize problems and express them mathematically.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.**	**E**
	b. Apply solutions and strategies to new problem situations.	• Calculate the unit cost of a real world item **E**
	c. Formulate conjectures and discuss why they must be or seem to be true.	• Estimate the answers to word problems and evaluate reasonableness **E**
3. Apply appropriate technology and models to find solutions to problems.	a. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.	Use a calculator to: • Explore repeating decimals **E** • To find averages (means) **E** • Solve grade level appropriate computations **E**
	b. Use computer applications to display and manipulate data.	**E**
	c. Select appropriate models to represent mathematical ideas.	• Create: lists, charts, graphs, and tables **E**

4. Communicate results using appropriate terminology and methods.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.**	**E**
	b. Use appropriate vocabulary to communicate mathematical information.	• See ISAT Vocabulary Page 75 and teachers manual **E**
	c. Use appropriate notation.	• $<, >, =, \pi, \neq, \leq, \geq, \approx, \sqrt{}$ **E**

309. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use U.S. customary and metric measurements.	a. **Select and use appropriate units and tools to make formal measurements in both systems.**	• Select appropriate unit of measurement for length, weight and volume for both metric and customary systems **E** • Measure with appropriate tool: • Length: inch, feet, yards, **M** • Eighth inch **E** • Length: mm, cm, dm, m, km **E** • Weight: ounce, pound **E** • Weight: g, kg **E** • Capacity: cup, pint, quart, gallon **E** • Capacity: ml, l **E** • Temperature: Fahrenheit and Celsius (positive and negative) **M**
	b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	• Select an appropriate unit of measure for length and area. (Would you use a cm or km?) **E**
	c. **Explore the differences and relationships between perimeter and area in both systems.**	**E**
	d. **Solve problems involving length, perimeter, area, weight, mass, and temperature.**	• Find the perimeter of squares, rectangles, and triangles **M** • Find the perimeter and area of regular and irregular shaped polygons **E** • Find the area of regular shapes using a grid **R** • Find the area of rectangles using a formula **E** • Find the area of irregular shapes using a grid **E** • Find the area of triangles **E**

	e. **Convert unit of measurement within each system.**	• Convert inches to feet, yard, miles (visa versa) **M** • Convert cups to pints, quarts, gallons (visa versa) **M** • Convert ounces to pounds (visa versa) **M** • Convert minutes to hours (visa versa) **M** • Convert days to weeks (visa versa) **M** • Convert weeks to months (visa versa) **M** • Metric conversions **E**
	f. **Apply understanding of relationships to solve real-world problems related to time.**	• Calculate elapsed time **E** • Read digital and analog clocks **R** • Time Zones: Read and calculate accordingly **E**
	g. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual **E**
2. Apply dimensional analysis.	a. Understand units and their relationship to one another and to real-world applications.	**E**

310. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Use algebraic symbolism as a tool to represent mathematical relationships.	a. **Explore the meaning and use of variables in simple expressions and equations.**	• Solve for n with varied operations **E** • Use a function machine to determine input/ output **E**
	b. Translate simple word statements and story problems into algebraic equations.	**E**
	c. **Read and use symbols (<, >, =) to express relationships.**	• Use <,>,=,π,$\neq$,$\leq$,$\geq$,$\approx$,$\sqrt{}$, 10^7 **E**
2. Evaluate algebraic expressions.	a. **Explore and use the following properties as they relate to addition and multiplication: commutative, associative, identity, zero, and inverse.**	• a + b = b + a **E** • (a x b) x c = a x(b x c) **E** • a(b + c) = a x b + a x c **E** • n x 1 = n **E** • n x 0 = 0 **E**
	b. **Investigate the order of operations (parentheses only) .**	• Evaluate expressions using the order of operations (may include parentheses or exponents) example: $4(5+2)^2$ = **E**
3. Solve algebraic equations and inequalities.	a. **Solve missing addends and missing factor problems using inverse operations.**	• Introduce: if a + b = c then c-b = a **E**

311. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Apply concepts of size, shape, and spatial relationships.	a. **Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes.** *Types of lines, classification of triangles measuring angles*	• Classify polygons by sides and vertices **E** • Contrast between open and closed figures**M** • Identify solid figures: cube, rectangular prism, cone, cylinder, triangular pyramid, square pyramid **R** • Identify: parallel, perpendicular, and intersecting lines **E** • Classify triangles by sides and angles **E** • Measure angles with a protractor **E** • Introduce classification of supplementary and complementary angles **E** • See ISAT Vocabulary Page 75 and teachers manual
	b. **Explore the fundamental concepts, properties, and relationships among points, lines, rays, angles, and shapes.**	• Identify: point, line, line segments, ray, plane, angles **E** • Classify angles: right, obtuse, acute **E** • Identify center point, radius, and diameter of a circle **E**
	c. Explore congruence, similarities, and symmetry of shapes.	**E**
	d. **Determine perimeters of polygons and area of rectangles/squares in real-world situations.** *Circles*	• Introduce use of pi **E** • Introduce circumference of a circle **E**
	e. Predict and describe the results of sliding, flipping, and turning two-dimensional shapes.	
	f. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Apply graphing in two dimensions.	a. **Identify and plot points on a coordinate plane.**	• Identify x axis and y axis **E** • Plot coordinates **E**

312. DATA ANALYSIS, PROBABILITY AND STATISTICS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand data analysis.	a. Read and interpret tables, charts, and graphs.	Read and interpret: • Double bar graph (horizontal and vertical)**M** • Line graph **E** • Pie graph **E** • Venn diagram **E**
	b. **Explain and justify conclusions drawn from tables, charts, and graphs.**	**E**

	c. Understand and use vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual **E**
2. Collect, organize, and display data.	a. **Collect, organize, and display data with appropriate notation in tables, charts, and graphs.**	Collect information and make: • Double bar graph (horizontal and vertical) **E** • Line graph **E** • Pie graph **E** • Venn diagram **E**
3. Apply simple statistical measurements.	a. **Find measures of central tendency mean, median, and mode - with simple sets of data.**	• Calculate the mean, median and mode from a set of data. **E** • Note any trends or tendencies **E**
	b. **Determine the range of a set of data.**	• Find the range of a set of numbers **E**
4. Understand basic concepts of probability.	a. Predict, perform, and record results of simple probability experiments. *Introduce ratio*	• Investigate experimental probability of an event using a coin or spinner **E** • Introduce ratios **E**
	b. Understand and use the language of probability.	• Understand the terms chance, outcome, likelihood **E**
5. Make predictions or decisions based on data.	a. **Make predictions based on simple experimental probabilities.**	• Predict and then determine the probability of selecting a given color from a given set **E** • Make predictions on a graph **E**
	b. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual

313. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand the concept of functions.	a. **Extend patterns and identify a rule (function) that generates the pattern using whole numbers and decimals.**	• Solve patterns using whole numbers, decimals, and fractions **E**
	b. Discover, describe, and extend patterns by using manipulatives and pictorial representations.	**E**
	c. Use mathematical models to show change in real context.	**E**
	d. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual **E**
2. Apply functions to a variety of problems.	a. **Use patterns to represent and solve simple problems.**	**E**

GRADE 6 - STANDARDS 317 THROUGH 323.

317. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	a. **Read, write, order, and compare whole numbers, fractions, and decimals.**	• Understand and identify place value and value in digits through billions **M** • Match word names to numerals to hundred thousandths **M** • Order decimals to thousandths **R** • Compare and order fractions with same and different denominators **M** • Order fractions, decimals and whole numbers on a number line **R**
	b. **Understand the use of fractions and decimals and their interrelationship.**	• Round decimal to nearest whole number, tenth, hundredth or thousandth **M** • Convert decimals to fractions and fractions to decimals **M** • Interpret remainders of whole number division as fractions and decimals **M** • Identify halves, thirds, fourths, fifths and tenths as decimals, fractions and percents **E**
	c. **Expand the use of decimals and fractions to explore the use of percents and ratios.**	• Express a fraction as a decimal and as a percent **M** • Write a ratio (fraction) as a percent and a percent as a ratio (fraction) **E** • Find the percent one number is of another (20 is what % of 90) **E** • Find a number from a percent (4 is 9% of what number) **E** • Solve simple interest problems (amount x rate x time) **E** • Determine discount price and sale price **E**
	d. Show a sense of magnitudes and relative magnitudes of real numbers (whole numbers, fractions, decimals).	• Write whole number or decimal in scientific notation **E** • Write a number expressed in scientific notation in standard form **E**
	e. **Develop and apply number theory concepts (prime, composite, Greatest Common Factor (GCF), Lowest Common Multiple (LCM), prime factorization).**	• Identify GCF and LCM of 2 whole numbers **M** • Identify and list factors, multiples, prime factorization (trees), and prime numbers **M** • Identify prime and composite numbers **M** • Identify LCD of 3 or more fractions **M**

	f. Explore the use of integers in real-world situations.	• Understand the meaning of integers **E** • Add and subtract integers **E** • Multiply integers with unlike signs **E** • Divide integers with like\unlike signs **E** • Definition and application of absolute value **E** • Identify how negative numbers occur in real life **E** • Order integers **E**
2. Perform computations accurately.	a. **Add, subtract, multiple and divide whole numbers and decimals.**	• Understand and use divisibility rules for 2, 3, 4, 5, 6, 9, and 10 **M** • Divide a 4-digit number by a 1-digit number **R** • Divide a 3-digit number by a 2-digit number with a remainder **M** • Multiply a 4-digit number by a 3 digit number **R** • Use and understand correct symbols for multiplication **E** Examples: •, and parenthesis and no other symbol: 4(5) = 20 • Write the decimal equivalent of fraction and label as repeating or terminating **E**
	b. **Add, subtract, multiply, and divide decimals.**	• Add and subtract decimals to the thousandths place **M** • Add and subtract decimals with varying place value from horizontal and vertical format **M** • Multiply a decimal by multiples of 10, 100 or 1000 **R** • Multiply decimal by a whole number **M** • Multiply a decimal by a decimal with factors to thousandths place **M** • Use multiplication as a check for division **R** • Divide decimals by multiples of 10, 100 and 1000 **M** • Divide decimal by whole number and vice versa **M** • Complete basic operations with monetary amount up to and including $20 **R** • Divide decimal by a decimal to thousandths **E**

	c. **Add and subtract fractions with unlike denominators and simplify as necessary.**	• Add and subtract fractions with like denominators **R** • Add and subtract fractions with unlike denominators **M** • Add and subtract mixed numbers with like denominators **E** • Add and subtract mixed numbers with unlike denominators **E** • Change improper fractions to mixed numbers and mixed numbers to improper fractions **R** • Write fractions in lowest terms (simplify) **E** • Identify and write equivalent fractions **E**
	d. **Instantly recall basic multiplication and division facts from a 12 x 12 times table.**	• Master basic multiplication and division facts through 12's **R**
	e. Evaluate numerical expressions using the order of operations.	• Evaluate expressions using order of operations-parenthesis, exponents, multiplication, division, addition, and subtractions **E**
	f. Explore the use of exponents.	• Evaluate expressions with exponents: example- (4^3=64) **E** • Identify base number and exponent **R** • Convert base 10 exponents into standard form (10^5 =100,000) **M** • Evaluate expression using square roots **E** • Calculate the square of any number less than 100 **E** • Compare and order exponents **E**
	g. **Explore multiplication and division of fractions.**	• Multiply and divide whole numbers by a fraction **M** • Multiply and divide fractions by fraction **M** • Multiply and divide by a mixed number **E**
	h. Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.	• Multiply and divide multi-digit numbers using calculator **M** • Explore scientific calculator functions for: Square root key **E** Squaring key **E** Pi key **E** • Multiply by multiples of 10 and 100 with emphasis on mental math **M**
	i. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual

3. Estimate and judge reasonableness of results.	a. **Use estimation to predict computation results.**	• Estimate whole numbers and decimals **M** • Estimate fractions **E** • Use math strategy of compatible numbers in estimating all four operations **E** • Use estimation to solve problems involving mixed numbers **E**
	b. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer.	• Determine why or when exact answers might be necessary **E**
	c. Determine whether a given estimate is an overestimate or underestimate.	• Determine if estimate is greater or lesser than actual answer **E**
	d. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual

318. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use a variety of problem-solving skills.	a. **Use a variety of strategies to compute problems drawn from real-world situations.**	• Choose and use an appropriate problem solving strategy: draw a picture, make a model, guess and test, make a list, make a table, find a pattern, work backwards, draw a diagram or write an equation **E**
	b. Solve problems using the 4-step process of problem solving (explore, plan, solve, examine).	• Solve problems using 4-step process: explore, plan, solve, examine **E** • Solve one and two-step word problems involving any combination of basic operations on whole numbers, decimals, and fractions **E**
	c. Make predictions and decisions based on information.	• Use estimation to determine if solutions to word problems are reasonable **E**
2. Use reasoning skills to recognize problems and express them mathematically.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts and to communicate mathematical information.**	• Use logic to solve problems **E**
	b. Apply solutions and strategies to new problem situations.	• Solve a problem using ratios given a word problem (i.e. gas mileage) **E** • Calculate the cost of one item or the unit cost using proportion **E**

	c. Formulate conjectures and discuss why they must be or seem to be true.	• Estimate the answers to word problems and evaluate reasonableness **E**
3. Apply appropriate technology and models to find solutions to problems.	a. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.	• Use computer to create graphs and spreadsheets **E** • Use calculator for computation **E**
	b. Use computer applications to display and manipulate data.	• Use computerized spreadsheet, and generate line, bar and pie graphs **E**
	c. Select appropriate models to represent mathematical ideas.	• Make a model to illustrate that a fraction is equal to a percent **E** • Write improper fractions from picture presentations **E** • Model and write numerical fractions **E** • Understand concept of ratio using concrete pictorial models **E**
4. Communicate results using appropriate terminology and methods.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.**	• Use models (charts, objects, symbols, drawings and graphs) to interpret mathematical ideas **E**
	b. Use appropriate vocabulary to communicate mathematical information.	• Math journaling **E** • Essay responses **E** • See ISAT Vocabulary Page 75 and teachers manual
	c. Use appropriate notation.	• Convert a 2-step story problem to an equation using appropriate notations **E**

319. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use U.S. customary and metric measurements.	a. **Select and use appropriate units and tools to make formal measurements in both systems.**	• Select appropriate unit of measurement for length, weight and volume for both metric and customary systems **E** Measure with appropriate tool: • Customary length: - inch, feet, yards, mile **R** - 1/8 inch **M** - 1/16 inch **E** • Metric length: mm, cm, dm, km **M** • Mass weight: g, kg **E** • Customary capacity: oz., cup, pint, quart, gallon **M** • Metric capacity: ml, l **M** • Temperature: Fahrenheit, Celsius-Positive and negative) **M**

	b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	• Apply measurement techniques in both systems **E**
	c. Recognize the differences and relationships between perimeter and area in both systems.	• Calculate the perimeter and area of a model using units from both systems **M**
	d. **Solve problems involving length, perimeter, area, weight, mass, and temperature.**	• Solve problem to determine temperature in both Celsius and Fahrenheit **R** • Solve practical word problems involving perimeter and area of a square, rectangle, and triangle **R** • Solve problems involving mass **E**
	e. **Convert unit of measurement within each system.**	• Convert measurements in customary system **R** • Convert measurements in metric system **E**
	f. **Apply understanding of relationships to solve real-world problems related to time.**	• Calculate elapsed time to half hour **E** • Time zones: read and calculate **M**
	g. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Apply concepts of rates and other derived or indirect measurements.	a. Explore the use of rates to make indirect measurements.	• Solve problems using rate of change (speed = distance /time) **E**
3. Apply the concepts of ratios and proportions.	a. Explore the use of proportions, ratios, and scales.	• Determine if a pair of ratios is equal or not using equivalent fractions method **E** • Write the missing number in 2 equivalent ratios **E** • Solve proportions using cross-product method **E** • Use ratio and proportion to create scale drawings **E**
4. Apply dimensional analysis.	a. **Understand units and their relationship to one another and to real-world applications.**	• Refer to area as carpet or rug **M** • Refer to perimeter as fencing **R**

320. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Use algebraic symbolism as a tool to represent mathematical relationships.	**a. Explore the meaning and use of variables in simple expressions and equations.**	• Write and solve an equation for a word problem **E** • Solve whole number equations with one variable (multiplication and division.) **E** • Solve for missing addends in an addition or subtraction progression **E** • Use boxes or symbols to stand for any number in expressions or equations **E**
	b. Translate simple word statements and story problems into algebraic equations.	• Write an equation to match a story problem **E**
	c. Read and use symbols (<, >, =) to express relationships.	• Use symbols to express inequalities (<,>,≤, ≥, and =) **E**
2. Evaluate algebraic expressions.	a. **Explore and use the following properties in evaluating mathematical and algebraic expressions: commutative, associative, identity, zero, inverse, and distributive. .**	• Understand and use: - a + b = b + a **R** - (a x b) x c = a x (b x c) **E** - a(b + c) = a x b + a x c **E** - n x 1 = n **R** - n x 0 = 0 **R** • Solve decimal equations (one step) addition and subtraction **E** • Solve integer equation (one step) multiplication and division **E**
	• Explore the order of operations.	• Evaluate expressions using order of operations (may include parentheses or exponents). • i.e.: $4(5 + 2)^2$ **E**
3. Solve algebraic equations and inequalities.	a. Solve one-step equations using inverse operations with whole numbers.	• Solve integer equations (one step with all four operations) **E** i.e.: x + 5 = 10 x – 5 = 10 2x = 10 x/2 =10 • Solve equations involving more than one operation example **E** 2x + 4 =10 -4 -4 2x = 6 x =3

321. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Apply concepts of size, shape, and spatial relationships.	a. **Precisely describe, classify, and understand relationships among types of one-, two-, and three-dimensional objects using their defining properties.**	• Analyze solid figures: rectangular prism, triangular prism, triangular pyramid, square, pyramid (faces, edges, and vertices **E** • Identify faces, edges, and corners vertices on solid figures **R** • Identify and classify triangles by sides and angles **E** • Identify and classify quadrilaterals **E** • Identify polygons: triangle, quadrilateral, pentagon, hexagon, and octagon **R**
	b. Construct and measure various angles and shapes using appropriate tools.	• Measure angles using protractor **E** • Estimate the measure of angles in degrees **E**
	c. Apply fundamental concepts, properties, and relationships among points, lines, angles, and shapes.	• Classify angles: right, obtuse, and acute and perpendicular **M** • Classify angles: supplementary and complementary **E** • Identify points, lines, line segments, rays, angles and planes **M** • Identify parallel, perpendicular and intersecting lines **M** • Use geometric symbols **R** Example: perpendicular: parallel: right angle
	d. Recognize and apply congruence, similarities, and symmetry of shapes.	• Identify similar figures (same shape, may or may not be the same size) **E** • Identify congruent polygons and corresponding sides and angles **E** • Determine lines of symmetry of a polygon **M**
	e. **Develop and apply formulas for perimeter, circumference, and area to triangles, quadrilaterals, and circles.**	• Calculate the area and perimeter of irregular shapes **E** • Find the perimeter of squares, rectangles and triangles **R** • Find the area of rectangles **M** • Find the area of triangles and parallelograms **E** • Analyze circles: center, chord, diameter, radius, arc, semicircle, circumference **E** • Identify Pi as an irrational number to solve problems **E**
	f. Explore the relationship between two- and three-dimensional objects.	• Identify 2 and 3-dimensional models **E**

	g. Explore reflections, translations, and rotations on various shapes.	• Relate sliding, flipping and turning to translations, reflections and rotations **E**
	h. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Apply graphing in two dimensions.	a. **Identify and plot points on a coordinate plane.**	• Graph ordered pairs in all four quadrants (coordinate geometry) **E** • Identify x and y axis **E**

322. DATA ANALYSIS, PROBABILITY AND STATISTICS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand data analysis.	a. **Read and interpret tables, charts, and graphs (line graphs, bar graphs, frequency lines or line plots, and circle graphs).**	• Read and interpret graphs: Double bar graphs **R** Venn diagrams **E** Line graph **M** Pie graph **E** Tables and charts **E**
	b. **Explain and justify conclusions drawn from tables, charts, and graphs.**	• Compare, contrast and make predictions from a graph **E**
	c. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Collect, organize, and display data.	a. **Collect, organize, and display data with appropriate notation in tables, charts, and graphs (line graphs, bar graphs, frequency lines or line plots, and circle graphs).**	• Collect and organize different types of data in graphs **E**
3. Apply simple statistical measurements.	a. **Find measures of central tendency mean, median, and mode - with simple sets of data.**	• Know the concepts of mean, median and mode **E** • Solve practical problems involving mean (average) of a set of numbers **E**. • Compute and compare mean, median and mode in simple examples to demonstrate that these measures of central tendency may differ from a given set of data **E**
	b. **Determine the range of a set of data.**	• Find the range of a set of data **E**
4. Understand basic concepts of probability.	a. **Predict, perform, and record results of simple probability experiments.**	• Investigate experimental probability of an event using a coin or spinner **E** • Use a tree diagram to determine the number of possible outcomes of an event **E**
	b. Understand and use the language of probability.	• See ISAT Vocabulary Page 75 and teachers manual
5. Make predictions or decisions based on data.	a. Make predictions based on simple experimental probabilities.	• Predict outcomes using probability **E**

	b. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual

323. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand the concept of functions.	a. **Extend <u>simple</u> patterns and identify a rule (function) that generates the pattern using whole numbers, decimals, and fractions <u>as inputs</u>.**	• Investigate geometric patterns and relationships and describe them algebraically **E** • Complete a function table according to a rule **E** • Use patterns to solve problems **E** • Write a rule to explain a number pattern **E**
	b. Discover, describe, and extend patterns by using manipulatives and pictorial representations.	• Use manipulatives to illustrate patterns **E**
	c. Use mathematical models to show change in real context.	• Use models (objects, drawings, charts, graphs, and symbols) to interpret mathematical ideas **E**
	d. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Apply functions to a variety of problems.	a. **Use patterns and functions to represent and solve simple problems.**	• Use number patterns **E**

GRADE 7 - STANDARDS 327 THROUGH 333.

327. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	a. **Read, write, order, and compare real numbers (integers, fractions, decimals) and absolute values.**	• Match word names to numerals to hundred thousandths in decimals **R** • Compare, order and write integers, fractions and decimals **E** • Write a decimal to a fraction and vice versa **R** • Convert improper fraction to mixed fractions interchangeably **R** • Define and apply absolute value **E** • Identify halves, thirds, fourths, fifths and tenths as decimals, fractions and percents **M**
	b. **Expand the use of percents and ratios to solve problems.**	• Write a ratio (fraction) as a percent and a percent as a ratio **M** • Evaluate % of change: - find the % one # is of another **E** - find a # from a % **E** • Use ratios to find unit rates **M** • Find simple interest earned **E**
	c. **Show a sense of magnitudes and relative magnitudes of real numbers (integers, fractions, decimals).**	• Write decimal notation value into scientific notation using positive and negative exponents and zero exponents interchangeably **E** • Understand properties of positive and negative exponents **E**
	d. **Develop and apply number theory concepts.**	• Identify GCF and LCM of 2 whole numbers **R** • Identify and list factors, multiples, prime factorization (trees), and prime numbers **R** • Identify prime and composite numbers **R** • Identify LCD of 3 or more fractions **R** • Write prime factorization of a number using exponents **E** • Use prime factorization of numbers to find GCF and LCM **E**
	e. Understand the position of rational numbers on a number line.	• Plot rational # ‘s on a number line **R** • Order positive and negative integers on a number line **M**

2. Perform computations accurately.	a. **Add, subtract, multiply, and divide fractions and decimals.**	• Add and subtract fractions with like denominators **R** • Add and subtract fractions with unlike denominators **R** • Add and subtract mixed numbers with like denominators **M** • Add and subtract mixed numbers with unlike denominators **E** • Write improper fractions and mixed numbers in lowest terms (simplify) **M** • Identify and write equivalent fractions **M** • Multiply and divide a whole number by a fraction **R** • Add, subtract, multiply and divide decimals to thousandths place with same and varying place values **M** • Multiply and divide a mixed number by a whole number or a fraction **E** • Multiply and divide a fraction by a fraction **R** • Multiply and divide mixed numbers by mixed numbers **E** • Multiply 3 factors using fractions, mixed numbers and whole numbers in any combination (answers in lowest terms) **E** • Write a decimal or mixed decimal for a fraction **E** • Divide a decimal by a decimal to thousandths **E** • Add whole numbers and decimals to thousandths place (same # of digits) **R** • Subtract decimals to the thousandths place (not same # of digits) **R** • Divide a decimal by a whole number & vice versa **R** • Compute & count change greater than $20 **M**
	b. **Evaluate numerical expressions using the order of operations.**	• Evaluate expressions using 4-step order of operations **E** • Solve number sentences with positive and negative rational numbers **E**
	c. **Explore the use of exponents.**	• Evaluate exponential values **E** • Apply order of operations to include simplifying exponents **M** • Apply exponent rules of multiplication and division with like bases **E** • Understand exponent properties including negative exponents **E**

	d. **Explore basic operations with integers.**	• Understand the meaning of integers **M** • Add and subtract integers **E** • Divide/multiply integers with unlike signs **E** • Divide integers with like\unlike signs **E** • Definition and application of absolute value **E** • Identify how negative numbers occur in real life **E** • Order integers **E**
	e. Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.	• Explore scientific calculator functions for - square root key **M** - squaring key **M** - Pi key **M** - fractions key **E** - inverse key **E** - integer key **E**
	f. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
3. Estimate and judge reasonableness of results.	a. Use estimation to predict computation results.	• Estimate whole numbers and decimals **R** • Estimate fractions **M** • Use math strategy of compatible numbers in estimating all four operations **M** • Use estimation to solve problems involving mixed numbers **M**
	b. **Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer.**	• Differentiate between why or when exact answers might be necessary **M**
	c. Determine whether a given estimate is an overestimate or underestimate.	• Estimate cost to actual cost **M** • Estimate driving time to actual driving time **M**
	d. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual

328. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use a variety of problem-solving skills.	a. **Use a variety of strategies including common mathematical formulas to compute problems drawn from real-world situations.**	• Make a sketch **E** • Solve a simpler problem **E** • Use a diagram **E** • Use an equation **E** • Use a formula **E** • Use a graph **E** • Work backward **E**

	b. Recognize pertinent information for problem solving.	• Break problem into parts **E** • Guess and check **E** • Identify a pattern **E**
	c. Make predictions and decisions based on information.	• Use estimation to determine if solutions to word problems are reasonable **M**
2. Use reasoning skills to recognize problems and express them mathematically.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.**	• Apply use of tables, graphs, and verbal rules **E**
	b. **Apply solutions and strategies to new problem situations.**	• Select and use logic, inductive and deductive reasoning **E** • Solve multi-step problems involving computations **E**
	c. Formulate conjectures and discuss why they must be or seem to be true.	• Make and investigate mathematical conjectures **E** • Develop and evaluate mathematical arguments and proofs **E**
3. Apply appropriate technology and models to find solutions to problems.	a. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.	• Use computer to create graphs and spreadsheets **M** • Use calculator for computations **M**
	b. Use computer applications to display and manipulate data.	• Create a spreadsheet, data base, graphical displays using the computer **E**
	c. Select appropriate models to represent mathematical ideas.	• Formulate expressions and equations to model problem-solving situation **E** • Make a model to illustrate that a fraction is equal to a percent **M** • Write improper fractions from picture presentations **M** • Model and write numerical fractions **M** • Understand concept of ratio using concrete pictorial models **M**
4. Communicate results using appropriate terminology and methods.	a. **Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.**	• Use boxes or other symbols to stand for any number in expressions and equations **E** • Apply use of tables and graphs **E** • Apply use of models (objects, drawings, charts, and symbols) to interpret mathematical ideas **E** • Apply techniques for computerized spreadsheet, and generate line, bar, and pie (circle graphs) **E**
	b. Use appropriate vocabulary to communicate mathematical information.	• Math journaling and essay responses **E** • See ISAT Vocabulary Page 75 and teachers manual

	c. Use appropriate notations.	**E**

329. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use U.S. customary and metric measurements.	a. **Select and use appropriate units and tools to make formal measurements in both systems.**	• Select appropriate unit of measurement for length, weight and volume for both metric and customary systems **M** • Measure with appropriate tool: - Customary length: inch, feet, yards, mile **R** - 1/8 inch **R** - 1/16 inch **E** - Metric length: mm, cm, dm, km **R** - Weight: g, kg **E** - Customary capacity: oz., cup, pint, quart, gallon **R** - Metric capacity: ml, l **R** - Temperature: Fahrenheit, Celsius (Positive and negative) **R**
	b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	• Apply measurement techniques in both systems **M**
	c. Recognize the differences and relationships among measures of perimeter, area, and volume (capacity) in both systems.	• Apply both systems of measurement to geometric figures **M**
	d. **Solve problems involving length, perimeter, area, volume (capacity), weight, mass, and temperature in both systems.**	**E**
	e. Convert unit of measurement within each system.	• Use dimensional analysis **E**
	f. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Apply concepts of rates and other derived or indirect measurements.	a. **Develop the use of rates to make indirect measurements.**	• Use proportions to establish similarity **E**

3. Apply the concepts of ratios and proportions.	a. **Develop the use of proportions, ratios, and scales.**	• Understand the concept of ratio using concrete and pictorial models **E** • Determine if a pair of ratios is equal or not equal using the equivalent fractions method **E** • Write the missing # in 2 equivalent ratios **E** • Solve proportions using the cross product method **E** • Use ratio and proportion in determining scale **E** • Write and solve an equation using ratios, given a word problem **E**
4. Apply dimensional analysis.	a. **Understand units and their relationship to one another and to real-world applications.**	**E**

330. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Use algebraic symbolism as a tool to represent mathematical relationships.	**a. Develop the use of variables in simple expressions and equations.**	• Understand variables **R** • Solve 1 step equations with 1 variable **E** • Solve 2 step equations with 1 variable **E** • Write and solve an equation for word problems **E**
	b. Translate simple word statements and story problems into algebraic expressions and equations.	• Generate equivalent algebraic expressions **E** • Understand an equation **M** • Write algebraic equations from words **E** • Write algebraic equations to words **E**
	c. Use symbols (<, >, =, ≤, ≥, ≠) to express relationships.	• Develop an understanding of inequalities in equations **E** • Graph inequalities on a number line **E** • Solve (1 and 2 step) inequalities **E**
2. Evaluate algebraic expressions.	**a. Develop an understanding of using the following properties in evaluating mathematical and algebraic expressions: commutative, associative, identity, zero, inverse, and substitution.**	• Solve equations with addition, subtraction, multiplication, division **M** • Evaluate equations using square roots **E** • Simplify algebraic expressions: commutative, associative, identity, zero, inverse, and substitution **E**
	b. Understand and use the order of operations in evaluating basic algebraic expressions.	• Parenthesis exponents, multiply, divide, add, subtract **E**
3. Solve algebraic equations and	a. **Solve one-step equations using inverse operations.**	• Introduce inverse relationships using all four operations **E**

inequalities.	b. Explore solutions of simple one-step equations using negative numbers.	• Simplify expressions using like terms **E**
	c. Explore graphical representation to show simple linear equations.	• Graph linear equations using slope intercept form and with tables **E**

331. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Apply concepts of size, shape, and spatial relationships.	**a. Precisely describe, classify, and understand relationships among types of one-, two-, and three-dimensional objects using their defining properties.**	• Be fluent with 2 and 3 dimensional models **E** • Understand solid figures **E** • Compose and compare polygons and polyhedra **E** • Analyze solid figures: rectangular prisms, triangular prisms, triangular pyramids, square, pyramid, (faces, edges, vertices) **E** • Classify polygons by sides and angles **E** • Identify and analyze the center, radius, diameter, chord, arc, semicircle, and circumference of a circle **E**
	b. **Make and measure various angles and shapes using appropriate tools.**	• Use of ruler, protractor and compass **E**
	c. **Apply fundamental concepts, properties, and relationships among points, lines, planes, angles, and shapes.**	• Classify angles: supplementary and complementary, adjacent, vertical, corresponding **E** • Find the missing angle measurement in a given triangle when two angles are given **E** • Construct and identify perpendicular bisectors + angle bisectors **E** • Identify angles and measures when traversals intersect vertical lines **E** • Identify vertical angles **E** • Identify corresponding angles **E**
	d. Recognize and apply congruence, similarities, and symmetry of shapes.	• Identify congruent triangles according to corresponding parts (SSS, SAS, ASA) **E** • Introduce line and rotational symmetry **E** • Classify polygons and prisms **E**
	e. **Apply formulas for perimeter, circumference, and area to triangles, quadrilaterals, and circles.**	• Use formulas to determine perimeter, circumference, and area of 2 and 3 dimensional figures **E** • Estimate and measure angles, perimeter, area, surface area, and volume **E**

	f. **Explore the concept of surface area and volume (capacity).**	• Evaluate volume and surface area of 3 dimensional figures using a net for prisms **E**
	g. **Explore and model the effects of reflections, translations, and rotations on various shapes.**	• Explore composition of transformations **E** • Explore and model the effects of reflections, translations, and rotations on various shapes **E** • Recognize a translation and transformation **M** • Describe using coordinates, the effects of translations and transformations **E**
	h. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Apply the geometry of right triangles.	a. Explore right triangle geometry.	• Identify square root, perfect squares, and estimate square roots **E** • Euclidian geometry (e.g. introduction of Pythagorean, right triangles) **E** • Identify parts of right triangles **E**
3. Apply graphing in two dimensions.	a. **Identify and plot points on a coordinate plane.**	• Graph ordered pairs in all four quadrants (coordinate geometry) **E** • Identify quadrants **E**

332. DATA ANALYSIS, PROBABILITY AND STATISTICS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand data analysis.	a. **Read and interpret tables, charts, and graphs (scatter plots, line graphs, bar graphs, circle graphs and stem-and-leaf plots).**	• Read and interpret tables, charts, and graphs (scatter plots, line graphs, bar graphs, circle graphs and stem-and-leaf plots) **E** • Interpret and analyze box and whisker plots **E**
	b. **Explain and justify conclusions drawn from tables, charts, and graphs.**	• Be able to interpret and predict information from data in various forms **E**
	c. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Collect, organize, and display data.	a. **Collect, organize, and display data with appropriate notation in tables, charts, and graphs (scatter plots, line graphs, bar graphs, circle graphs and stem-and-leaf plots).**	• Scatter plots **E** • Line graphs **M** • Bar graphs **M** • Circle graphs **E** • Stem-and-leaf plots **E** • Histograms **E** • Frequency tables **E**
3. Apply simple statistical measurements.	a. **Understand and use the measures of central tendency mean, median, and mode - with simple sets of data.**	• Central tendency (e.g. mean, median, mode) **M**

	b. **Explore the significance of range, frequency, and informal distribution.**	• Determine range **E**
4. Understand basic concepts of probability.	a. Predict, perform, and record results of simple probability experiments.	• Understand and apply chance and probability **E** • Investigate experimental probability of an event using a coin or spinner **E** • Predict outcomes using probability **E** • Use a tree diagram to determine the number of possible outcomes of an event **E**
	b. Understand and use the language of probability.	• Use ratios to describe probability **E** • Understand (P) for problem **E**
	c. Recognize equally likely outcomes.	• Analyze chance **E**
5. Make predictions or decisions based on data.	a. **Make predictions based on simple experimental and theoretical probabilities.**	• Understand higher ratios mean higher probability and discuss differences between experimental and theoretical probability **E**
	b. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual

333. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand the concept of functions.	a. **Extend patterns and identify a rule (function) that generates the pattern using real numbers.**	• Analyze, create, and generalize numeric and visual patterns **E** • Geometric and arithmetic sequences **E**
	b. **Use functional relationships to explain how a change in one quantity results in a change in another.**	• Understand functions have 1 output for each input **E** • Graph functions **E** • Complete a function table based on a given rule **E** • Find the nth terms of a sequence by writing equations **E** • Make predictions on functional graphs **E** • Find slope using rise/run **E**
	c. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Represent equations, inequalities, and functions in a variety of formats.	a. Represent a simple set of data in a table, as a graph, and as a mathematical relationship.	**E**
3. Apply functions to a variety of problems.	a. **Use patterns and functions to represent and solve problems.**	• Use patterns and relationships to solve problems **E**

GRADE 8 - STANDARDS 337 THROUGH 343.

337. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use numbers.	a. **Read, write, order, and compare real numbers (integers, fractions, decimals, percents, ratios) and absolute values.**	• Understand meaning of an integer, fraction, decimal, percent, ratio and absolute value **R** • Order and compare integers, fractions, and decimals **R** • Understand the above are real numbers and rational numbers **M** • Convert improper fractions to mixed fractions interchangeably **R** • Convert fractions (ratios) to decimal to percent interchangeably **R** • Define and apply absolute value **M**
	b. **Understand and use real numbers, both rational and irrational. Understand and use percents and ratios.**	• Identify differences between rational and irrational numbers **M** • Identify perfect squares in a list of numbers **R** • Calculate the positive and negative square root of a perfect square **M** • Evaluate expressions and equations using square roots **E**
	c. **Show a sense of magnitudes and relative magnitudes of real numbers (integers, fractions, decimals) using scientific notation and exponential numbers.**	• Write decimal notation value into scientific notation using positive and negative exponents and zero exponents interchangeably **M** • Understand properties of positive and negative exponents **M**
	d. Develop and apply number theory concepts.	• Identify prime and composite numbers **R** • Write prime factorization of a number **M** • Use prime factorization of two or more numbers to find GCF and LCM **R** • Write prime factorization of a number using exponents **M**
	e. **Understand the position of real numbers on a number line.**	• Place whole #, fractional, decimal, and integer values in correct order on number line **R**

2. Perform computations accurately.	a. **Consistently and accurately add, subtract, multiply, and divide rational numbers.**	• Add, subtract, multiply, divide decimals to the thousandth place with same and varying number of digits **E** • Divide a decimal by a whole number and vice versa **R** • Compute and count change **R** • Fractions: - Add and subtract fractions having like/unlike denominators with answers in lowest terms **R** - Multiply and divide fraction by a fraction **R** - Multiply and divide mixed numbers by mixed **M** - Multiply and divide a mixed number by a whole number or a fraction **M** - Multiply 3 factors using fractions, mixed number and whole numbers in any combination; answers in lowest terms **M** - Reduce fractions to lowest terms **R** • Identify and write equivalent fractions **R** • Percent: - Find the percent one number is of another **M** - Find a number from the percent **M** - Apply percent applications **E** - Calculate % using a proportion, equation and % triangle **M** - Calculate % of change (increase, decrease) **M** - Calculate sales tax, commission, tips, simple interest **E** • Integers: - Add integers with unlike signs **M** - Add several integers with unlike signs **M** - Multiply integers with like signs & unlike signs **M** - Divide integers with like and unlike signs **M** - Subtract integers – subtracting a negative number **M**
	b. **Instantly recall common equivalent fractions, decimals, and percents (halves, thirds, fourths, fifths).**	• Write halves, thirds, fourths, fifths and tenths as fractions, decimals and percents **R**
	c. **Evaluate numerical expressions using the order of operations.**	• Use order of operations to simplify numerical expressions and solve number sentences with positive & negative rational numbers **M**

	d. **Understand and use exponents.**	• Evaluate exponential values **M** • Apply order of operations to include simplifying exponents **R** • Apply exponent rules of multiplication and division with like bases **E** • Understand exponent properties including negative exponents **E**
	e. Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.	• Explore scientific calculator functions for - square root key **R** - squaring key **R** - pi key **R** - fractions key **E** - inverse key **E** - integer key **E**
	f. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
3. Estimate and judge reasonableness of results.	a. **Use estimation to predict computation results.**	• Apply estimation to check reasonableness of a result **R**
	b. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer.	• Estimate the population of people at the mall on any given day **R** • Differentiate between why or when exact answers might be necessary **R**
	c. Determine whether a given estimate is an overestimate or underestimate.	• Estimate cost to actual cost **R** • Estimate driving time to actual driving time **R**
	d. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual

338. MATHEMATICAL REASONING AND PROBLEM SOLVING.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand and use a variety of problem-solving skills.	**a. Use a variety of strategies, including common mathematical formulas to compute problems drawn from real-world situations.**	• Know common formulas to aid in real world problem solving (See ISAT Vocabulary Page 75 and teachers manual) **M** • Calculate simple interest **M** • Calculate distance, area, volume and surface area using known formulas **M** • Calculate commission and total pay **M** • Write and solve an equation using ratios, given a word problem **M** • Write and solve an equation for a word problem **M** • Solve multi-step problems involving computations **M**

		• Solve complex word problems involving ratio, percent, discount, sale price, rounding and estimation, averaging, length, volume, rate, calendars, probability, money and time **E**
	b. Recognize pertinent information for problem solving.	• Break the problem into parts **R** • Guess and check **R** • Identify a pattern **R** • Make a sketch **R** • Solve a simpler problem **R** • Use a diagram **R** • Use an equation **M** • Use a formula **M** • Use a graph **M** • Work backward **R**
	c. Make predictions and decisions based on information.	• Use logic to predict outcomes **E** • Solve if-then logic problems **E** • Use inductive and deductive reasoning **E**
2. Use reasoning skills to recognize problems and express them mathematically.	**a. Use a variety of methods, such as words, numbers, symbols charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.**	• Given the answer to a problem determine the question **M**
	b. Apply solutions and strategies to new problem situations.	• Utilize multi-step problem solving involving computation **M**
	c. Formulate conjectures and justify (short of formal proof) why they must be or seem to be true.	• Make and investigate mathematical conjectures **E** • Develop and evaluate mathematical arguments and proofs **E**
3. Apply appropriate technology and models to find solutions to problems.	a. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.	• Use a calculator for square roots, pi, squaring, etc. **E** • Use a ruler, compass and /or protractor to solve measurement problems **M**
	b. Use computer applications to display and manipulate data.	• Create spreadsheets, databases and graphical displays using the computer **E**
	c. Select appropriate models to represent mathematical ideas.	• Formulate expression and equations to model problem solving situations **M** • Understand concept of ratio using concrete pictorial models **R**
4. Communicate results using appropriate terminology and methods.	**a. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.**	• Apply use of models (charts, objects, symbols, drawings and graphs) to interpret mathematical ideas **E**

	b. Use appropriate vocabulary to communicate mathematical information.	• Math journaling **E** • Essay responses **E** • See ISAT Vocabulary Page 75 and teachers manual
	c. Use appropriate units.	**R**

339. CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand and use U.S. customary and metric measurements.	**a. Select and use appropriate units and tools to make formal measurements using both systems.**	• Select appropriate units of measure (length, capacity, mass) using the metric and customary systems **R**
	b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	• Apply measurement techniques in both systems **R**
	c. Recognize the differences and relationships among measures of perimeter, area, and volume (capacity) in both systems.	• Apply measurement technique in both systems to geometric figures **R**
	d. Solve problems involving length, perimeter, area, <u>surface area,</u> volume (capacity), weight, mass, and temperature.	• Convert Celsius to Fahrenheit **M** • Subtract Fahrenheit temperatures **M** • See Standard 338, 01.a for specific formulas **M**
	e. Convert unit of measurement within each system.	• Understand metric system for conversion application **R** • Understand customary system for conversion application **R**
	f. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Apply concepts of rates and other derived or indirect measurements.	**a. Use rates to make indirect measurements.**	• Determine unit rate i.e. find better buy **R** • Determine rate i.e. d = rt **M**
3. Apply the concepts of ratios and proportions.	**a. Understand and use proportions, ratios, and scales.**	• Write and solve proportions **M** • Solve proportions using cross products **M** • Find unknown side length of similar figure **M** • Use proportions to find the height of a flag pole **E** • Use a proportion in a capture/recapture simulation to find a number in a population **E** • Use map scale to determine distance **M** • Apply and use scale factor **M**

4. Apply dimensional analysis.	a. **Understand units and their relationship to one another and to real-world applications.**	• Understand dimensional analysis as a method of conversion **E** • Understand how one unit relates to another **E**

340. CONCEPTS AND LANGUAGE OF ALGEBRA.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Use algebraic symbolism as a tool to represent mathematical relationships.	a. **Understand and use variables in expressions, equations, and inequalities.**	• Write and evaluate variable expressions, equations and inequalities, that include positive and negative integer components **M** • Explore equivalent ratios involving missing variables **M** • Simplify polynomials by combining like terms **M** • Use the rules of exponents to multiply and divide monomials **M**
	b. **Translate simple word statements and story problems into algebraic expressions and equations.**	• Understand vocabulary related to translation of words into expression using correct symbols, variables and numbers **E**
	c. **Use symbols (<, >, =, ≤, ≥, ≠) to express relationships.**	• Identify <, >, =, ≤, ≥, ≠ **R** • Graph an inequality on a number line **E**
2. Evaluate algebraic expressions.	a. **Understand and use the following properties in evaluating algebraic expressions: commutative, associative, identity, zero, inverse, distributive, and substitution.**	• Commutative property **R** • Associative property **R** • Identity property **R** • Zero property **R** • Inverse property **M** • Distributive property **M** • Substitution property **E**
	b. **Understand and use the order of operations in evaluating basic algebraic expressions.**	• Apply order of operations to expressions and equations **E**
	c. Simplify algebraic expressions.	• Identify and combine like terms **M**
3. Solve algebraic equations and inequalities.	a. **Solve one- and two-step equations and inequalities using inverse operations.**	• Solve equations and inequalities involving absolute value **E** • Solve integer equations: one & two step, all four operations **M**
	b. **Explore graphical representation to show simple linear equations.**	• Solve one-step linear equations with one variable using all four operations with integer solutions **M** • Solve simple linear equations and inequalities over rational numbers **M** • Create a table of (X,Y) values for the given linear equation and graph the function **M**

341. CONCEPTS AND PRINCIPLES OF GEOMETRY.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Apply concepts of size, shape, and spatial relationships.	a. **Precisely describe, classify, and understand, relationships among types of one-, two-, and three-dimensional objects using their defining properties.**	• Classify two-dimensional regular and irregular polygons **R** • Circle - Identify parts **R** - Analyze circle, center, chord, arc, diameter, radius, areas, semicircle and circumference **R** • One dimensional objects - point, segment, line, vertex , plane, angle, ray, and symbology for each **R** • Two dimensional objects - polygons, triangle through dodecagon, classify polygons by sides and angles **R** • Three dimensional objects - Classify solids and polyhedrons, cone, prisms, sphere, cylinders pyramid **M**
	b. **Construct and measure various angles and shapes using appropriate tools.**	• Classify angle measurements **R** • Use protractor, ruler, compass **M** • Use formula 180 (n-2) to find the sum of the measure of interior angles of regular polygon **E**
	c. **Understand and apply fundamental concepts, properties, and relationships among points, lines, planes, angles, and shapes.**	• Application of properties, i.e. compare measurements of opposite angles and alternate angles in a parallelogram **E** • Classify special pairs of angles - Complementary angles **M** - Supplementary angles **M** - Vertical angles **M** • Construct and identify - Perpendicular bisectors **E** - Angle bisector **E** • Identify angles when a transversal intersects parallel lines **E** • Identify interior and exterior angles when a transversal intersects parallel lines **E** • Identify opposite and adjacent angles when a transversal intersects parallel lines **E**
	d. **Recognize and apply congruence, similarities, and symmetry of shapes.**	• Identify congruent triangles according to corresponding parts (SSS)(SAS)(ASA) **M** • Identify similar and congruent figures **M**
	e. **Apply formulas for perimeter, circumference, and area to polygons and circles.**	• Find perimeter and area of a square, rectangle, parallelogram, trapezoid, triangle, rhombus using formulas **R** • Find circumference and area of circle using formulas **M**

	f. Understand the concept of surface area and volume (capacity).	• Use a net to find surface area of the following solids: prisms, pyramids, cylinders and cones **E** • Using formulas find the volume for prisms, pyramids, cylinders and cones **E**
	g. Explore and model the effects of reflections, translations, and rotations on various shapes.	• Use coordinate plane to explore a model **M** • Translate figures in a coordinate plane, i.e. slide **M** • Rotate figures and identify rotational symmetry & degree **M** • Reflect figures and identify lines of symmetry i.e. flip **M**
	h. Use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Apply the geometry of right triangles.	a. **Investigate right triangle geometry using the Pythagorean Theorem.**	• Identify properties of right triangle **M** • Apply Pythagorean theorem to solve problems **E**
3. Apply graphing in two dimensions.	a. Use the coordinate plane as it relates to real-world applications.	• Graph ordered pairs in all four quadrants **M** • Identify points on a graph **R** • Locate points on maps, (city, state, world) by coordinates **E** • Longitude and latitude **E**

342. DATA ANALYSIS, PROBABILITY AND STATISTICS.

Standard – The student will:	**Content Knowledge and Skills:**	**Blaine County School District**
1. Understand data analysis.	a. **Analyze and interpret tables, charts, and graphs (scatter plots, line graphs, bar graphs, circle graphs, stem-and-leaf plots, and box-and-whisker plots).**	• Interpret data given in horizontal and vertical bar graphs to solve problems **M** • Use graph to predict some future point in time **E**
	b. **Explain and justify conclusions drawn from tables, charts, and graphs.**	• Compare, contrast and make predictions **M**
	c. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
2. Collect, organize, and display data.	**a. Collect, organize, and display data with appropriate notation in tables, charts, and graphs (scatter plots, line graphs, bar graphs, <u>circle graphs</u>, <u>stem-and-leaf plots</u>, and <u>box-and-whisker plots).</u>**	• Collect, organize and construct data: -Scatter plots-fitted line **M** -Line graphs **R** -Bar graphs **R** -Venn diagrams **R** -Frequency table **E** -Histogram **E** -Stem and leaf plots **M** -Box and whisker plots **E**

3. Apply simple statistical measurements.	a. **Choose and calculate the appropriate measure of central tendency – mean, median, and mode.**	• Calculate central tendency by -Mean **R** -Median **R** -Mode **R** -Include range and outliers **E**
	b. **Explore the significance of range, frequency, and informal distribution.**	• Application aspects, calculate from a set of data, draw conclusions **E**
4. Understand basic concepts of probability.	a. **Model situations of probability using simulations.**	• Understand theoretical probability concept **M** • Predict outcomes using probability **M** • Use tree diagram to determine number of outcomes of an event **M** • Understand experimental probability concepts **R** • Use spinners, dice, (fair die), marble for simulations **M** • Find probability of dependent and independent events **E**
	b. Understand and use the language of probability.	• Ratio aspect of labeling probability **M** • Understand symbol (P) for probability of an event **M** • Understand vocabulary of probability, chance, possible outcomes, events, independent event, dependent event **M**
	c. **Recognize equally likely outcomes.**	• Understand equal ratios for equally likely outcomes **M** • Solve problems involving combinations and permutations **E**
5. Make predictions or decisions based on data.	a. **Make predictions based on experimental and theoretical probabilities.**	• Determine theoretical and experimental probability of an event **M**
	b. Understand and use appropriate vocabulary.	• See ISAT Vocabulary Page 75 and teachers manual
	c. Conduct statistical experiments and interpret results using tables, charts, or graphs.	• Display results of an event **M**

343. FUNCTIONS AND MATHEMATICAL MODELS.

Standard – The student will:	Content Knowledge and Skills:	Blaine County School District
1. Understand the concept of functions.	a. Extend patterns and identify a rule (function) that generates the pattern using real numbers.	• Understand functions as a rule when one set of data controls the other set (dependent) **E** • Complete a function table based on given rule **M** • Identify rule of a given table **M** • Identify patterns and sequence of a data set **R**
	b. **Use functional relationships to explain how a change in one quantity results in a change in another.**	• Graphing linear functions noting that the vertical change and horizontal change is constant **M** • Understand slope formula **E** • Understand slope intercept formula **E** • Write an equation of given line **E** • Find slope of given line **M**
	c. Understand and use appropriate vocabulary.	• Dependent/control variables **E** • See ISAT Vocabulary Page 75 and teachers manual
2. Represent equations, inequalities, and functions in a variety of formats.	a. **Represent a set of data in a table, as a graph, and as a mathematical relationship.**	• Use equations of functions and patterns to represent data in forms of graphs, tables to aid in solving word problems **E**
3. Apply functions to a variety of problems.	a. **Use patterns and functions to represent and solve problems.**	**M**

PRE-ALGEBRA

EXPECTED	MASTERY	REVIEW
• Properties of algebra • Solve multi-step equations/inequalities (distributive/variable on both sides) • Factor out GCF • Graph linear functions using slope-intercept • Write equations of linear functions using slope-intercept • Square roots of non-perfect squares • Volume/surface area • Pythagorean theorem	• Integers- 4 operations • Order of operations • Absolute value • Graphing points on a plane • Simplify algebraic expressions (like terms/distributive property) • Writing algebraic expressions and equations • Solve 2-step equations • Positive exponents • Fractions and fractional equations • Solve simple probabilities • Ratio/proportions (similar figures) • Percents/decimals/fractions (applications of each) • Graph inequalities • Identify slope and y-intercept from a graph • Area/perimeter • Mean, median, and mode • Data displays and interpretations	• Estimation • Dimensional analysis: metric/English/measurement • Scientific notation • Triangle identification • Identify polygons

ALGEBRA I

EXPECTED	MASTERY	REVIEW
• Transformations • Fit line to data • Graph/solve absolute value equations • Simplify solve rational equations • Inverse variation • **Quadratic formula • **Radical properties/operations • **Negative exponents	• Algebraic properties • Simple probability • Solve linear equations and inequalities • Graph linear equations and inequalities • Direct variation • Forms of linear equations • Data displays/interpretations • Solve linear systems • Properties of exponents • Graph quadratics • Quadratic (polynomials): simplify, multiply, factor, solve • Rates/ratios/percents	• Estimation • Order of operations • Area/perimeter • Dimensional analysis and measurement: English/metric • Scientific notation

** Time permitting

GEOMETRY

EXPECTED	MASTERY	REVIEW
• ** Triangle inequalities • Simplify radicals • Constructions (technology/straight-edge and compass/paper folding-teacher choice) • Transformations • Vectors • Geometric probability • Indirect proofs	• ** Geometric definitions • Reasoning and proof • Parallel/perpendicular lines (properties/proofs) • ** Properties of triangles • Triangle proofs • Quadrilateral family • Similarity • Right triangle trigonometry • ** Terminology, properties and equations of circles • ** Circle angle and segment theorems • Area/perimeter of polygons • Regular polygons • Volumes of solids • Surface area	• Estimation • Algebraic rates, ratios, proportions • Solve linear equations and systems

** Time permitting

ALGEBRA II

EXPECTED	MASTERY	REVIEW
• Synthetic division/rational roots • Functional notation • Composite function • Conics • Unit circles • Radians • Law of sines/cosines • Parametric equations • Graphs of trigonometric functions • Trigonometric functions • Problem solving	• Solving absolute value equations and inequalities • Methods of solving systems of equations • Basic matrix operations • Use matrices to organize data • Use matrices to solve linear systems/linear programming • Quadratic formula • Complex numbers – 4 operations and powers • Solve polynomials using factoring and graphing • Properties of exponents • Roots as inverse of a power • Radical operations • Inverse functions • Properties and equations of logarithms • Exponential growth and decay • Direct/inverse variation • Simplify rational expressions • Solve rational equations • Sequences and series • Probability using permutations and combinations • Standard deviation • Analyze statistical data • Distributions • Linear and quadratic regressions • Right triangle trigonometry • Graphing/transformations of linear, absolute value, inequalities, systems, polynomials, piece-wise, exponential, logarithmic	• Estimation • Algebraic rates/ratios/proportions • Graphical representation of data: scatter plots, histograms, circle, quartile/box and whisker plots

PRE-CALCULUS

EXPECTED	MASTERY	REVIEW
• Define parametric equations and graph curves parametrically • Solve application problems using parametric equations • Find polar coordinates of points and graph functions using polar graphing techniques • Use a simulation • Organize and consolidate their mathematical thinking to communicate with others • Express mathematical ideas coherently and clearly to peers, teachers, and others • Extend their mathematical knowledge by considering the thinking and strategies of others • Use the language of mathematics as a precise means of mathematical expression • Recognize and use connections among different mathematical ideas • Understand how mathematical ideas build on one another to produce a coherent whole • Recognize, use, and learn about mathematics in contexts outside of mathematics • Create and use representations to organize, record, and communicate mathematical ideas • Develop a repertoire of mathematical representations that can be used purposefully, flexibly, and appropriately • Use representations to model and interpret physical, social, and mathematical phenomena	• Find composite functions • Find and recognize inverse functions • Find zeros for any functions • Identify whether a relation/function is symmetric with respect to the x-axis, y-axis, y = x and origin • Sketch the graphs of basic functions and their inverses • Perform transformations on graphs of basic functions • Determine the horizontal, vertical, slant, asymptotes of rational functions • Identify the end behavior of graphs • From a graph of a function identify maximum and minimum values and where they occur • Determine where a function increases and decreases • Determine continuity and discontinuity of a function • Find the factors of polynomials using the remainder and factor theorems • Identify all possible rational roots of a polynomial function by using the rational root theorem • Approximate the real zeros of a polynomial function • Solve rational equations and inequalities • Solve radical equations and inequalities • Find the values of the six trigonometric functions of an angle in standard position given a point on its terminal side • Find the exact values for the six trigonometric functions of special angles	• Basic functions: polynomial, rational, radical, exponential, logarithmic, trigonometric and piecewise • Determine whether a given relation is a function • Identify domain and range of any relation or function • Perform operations with functions (+,-,*,/) • Break the problem into parts • Make a systematic list • Use logical reasoning • Use a diagram • Use an equation • Use a formula • Use a graph • Use a proportion • Use a system of equations • Use a table • Write if-then statements in other ways and draw simple conclusions from them • Learn that inductive reasoning does not always lead to a good conclusion • Derive trigonometric identities • Derive logarithm properties

	• Find the decimal approximation for the values of the six trigonometric functions of any angle • Find the amplitude, period and phase shift for trigonometric functions • Write equations of trigonometric functions given the amplitude, period, and phase shift • Evaluate inverse trigonometric functions • Identify and use trigonometric identities • Solve trigonometric equations and inverse trigonometric equations • Evaluate expressions involving logarithms • Solve logarithmic and exponential equations • Know and apply properties of logarithms • Use change of base formula to graph logarithmic functions on the calculator • Find angles that are coterminal with a given angle • Find a reference for a given angle • Find the length of an arc given the measure of the central angle • Solve right triangles using trigonometry • Solve triangles by using the law of sines and cosines • Change from radian to degree measure and vice versa	

AP CALCULUS & AP STATISTICS

All Advanced Placement courses utilize the mandated curriculum developed by the College Board Advanced Placement Program

ISAT Math Vocabulary

RIT Scores < 150
and

RIT Scores 151 – 160
equals
facts
how many
shape
circle
same as
longest
shortest
how tall
kilometer
meter
time

RIT Scores 161 – 170
ones
tens
hundreds
thousands
numeral
ordinal numbers through eleventh
counting
matches
triangle
square
corners
cone
closed
inside
how long
names of days of week
next
names of months
pennies
centimeter
inches
probability

RIT Scores 171 – 180
closest
how many
even numbers
same as
fewest
congruent
figure
line segment
area
square units
perimeter
days
week
set
coins
thermometer
temperature
pounds
ounces
pints
quarts
chance
product
number sentence
problem
how many more
multiples
greater than
left
how much
money
answer
about
outside
inside
shape
calendar
picture

RIT Scores 181 – 190
Spring proficiency Grade 2 –185
ordinal numbers (first, second,
third, etc)
odd
one-fourth
one-half
reduce
fractions
order
divisible
round
smallest
largest
lowest terms
greatest common factor
least common multiple
closest
units
set
digit
greater than
greatest
symmetry
point
sides
rectangle
cube
straight
line segment
shortest
about
length
estimate
perimeter
change
quarter
dollars
dozen
feet
yard
grams
meters
cups
gallons
nickel
pennies
dime
tablespoon
hours
minutes
degree
most often
sign
add
subtract
multiply
divide
rate
kilometers

between
equals
cost
time
less than
closest to
equation
weigh
pieces
inches
pounds
miles
sum
quarter

RIT Scores 191 – 200

Spring proficiency
Grade 3 –196

difference
not true
power of 10
thirds
fourths
rounded
thousands
exponential form
mixed number
improper fraction
lowest common denominator
percent
expanded form
prime
factor
proportion
symmetrical
parallel
intersecting
diagonal
pair
angle
cylinder
outside
inside
sphere
faces
corresponding
point
intersect
axis of symmetry
line segment
pentagon
height
width
parallelogram
square
rectangle
triangle
year
ton
seconds
kilogram
distance
miles
liter
average
bar graph
percentage
if-then
product
sum
terms
meter
millimeters
feet
yards
unit of measurement
hundreds
tens
table
graph
length
rectangular
area
square inches
exactly
coins
numeral
even
change
opposite
subtrahend
addend
formula
circle
diameter
operation
total
fact
fraction
surfaces
cube
temperature
ordinal numbers (first – fifth)
equivalent

RIT Scores 201 – 210

Spring proficiency
Grade 4 –205

estimate
round
closest to
sum
of (1/2 of 36)
missing number
pentagon
simplest fraction
biggest
hundredths
one less
decimal numeral
squared
divisible
inequality
expanded numeral
equivalent
point
standard numeral
sequence
intersection
quadrilaterals
octagon
parallelogram
pyramid
isosceles
diameter
geometric
perpendicular
plane
circumference
minutes
decades
milligrams
gram
cubic feet
volume
liters
length
weight
kilometers
millimeters
mass
least often
how many ways

ordered pairs
coordinates
distance formula
input
output
table
associative
equation
product
increased
number line
information not needed
division
odd
prime
cube
pattern
geometric patterns
extra information

RIT Scores 211 – 220

Spring proficiency
Grade 5 –213
Grade 6 - 219

smallest
tenth
counting number
portion
fractional part
lowest terms
reciprocal
order
scientific notation
prime factorization
not prime
factor tree
common multiples
greatest common
denominator
equivalent
nearest dollar
symmetrical
perpendicular
ray
vertex
rotation
triangular prism
corresponding parts
supplementary
acute angle
transformation
yards
measure of angle
degrees
protractor
centuries
below zero
Celsius
rectangular solid
rectangular prism
decades
ounces
dice
arranged
highest mean
commutative
solve
square numbers
input
output
number sequence
decimals
fractions
what shape
hour
minutes
gallons
average
probability
graph
squares

RIT Scores 221 – 230

Spring proficiency
Grade 7 –225

product
divide
most
if – then
compute
lowest terms
always true
proportion
multiply
between
tens digit
standard numeral
ratio
polygon
circumference
trapezoid
equilateral
similar
obtuse angle
straight angle
slide
reasonable
formula
segment BC
pi
radius squared
metric units
quarts
gallons
rectangular box
base
rate
even numbers
mean
median
integer
intersection
table
frequency
origin
quadrant
absolute value
evaluate
quotient
mortality
odometer
magic square
deducted
less than twice
addends
less than sum
rectangle
diameter
radius
label (units)
area
perimeter

RIT Scores 231 – 240

Spring proficiency
Grade 8 - 233
Grade 9 - 240

solve for n
transformation
hypotenuse
edge
isosceles
scalene triangle

similar trapezoids
alternate interior angles
sum of angles in triangle
rectangular house
height
base
algebraic expression
rows
columns
checking account
car purchase
commission
simple interest
vertex
fractional part
amount of sales
translation
matrix
possibility
mean salary
coordinates of points
inequality
if-then statement
term in sequence
square numbers
negative coefficient
regression equation

RIT Scores 241 – 250

Spring proficiency
Grade 10 – 236 – Year 2006
Grade 10 – 239 – Year 2007
Grade 10 – 242 – Year 2008
decimal
fractions
opposite
base ten
prime factors
symmetrical halves
diameter
radius
angle bisector
tangent
corresponding parts of congruent triangles
Pythagorean theorem
corresponding angles
complementary angles
construction
doubled
tripled
rectangular solid
cylindrical tank
algebra tiles
inscribed
time-and-a-half
sales tax
discount
coordinate
Venn diagram
greatest decrease
endpoints
midpoint
regression equation
varies inversely as the square
slope of parallel lines
solution to system
factor (used with equations)
matrix

RIT Scores 251 – 260

sum of opposites
slope
non-vertical
non-horizontal
midpoint
endpoint
rotational symmetry
reflected
perpendicular bisector
similar triangles
similar trapezoids
similar cylinders
conditional
conclusion of if-then statement
interior of angles
equals 180 degrees
congruent angles
adjacent angles
vertical angles
circumscribed
distance formula
parabola
intercepts
number of solutions
simultaneous equations
counterexample
solution set
sin A
cosine
tangent
discriminant
imaginary solutions
difference of two squares
read solution set from graph
factor completely

RIT Scores 261 – 270

infinite non-repeating decimal
postulate

RIT Scores > 270

HL
rate of interest
successive discount

Wood River Middle School Math Options Fall 2005

Considerations:
(**)Pre-requisite courses met
Previous class cumulative grade
Teacher recommendation (mandatory)
ISAT score (spring)
Study skills (organization skills, homework habits academic skills, work ethic)
**(***)For Pre-Algebra and Algebra
(*) (a diagnostic placement test with a score of at least 85%)

Possible Sequences:

Options	6th Grade	7th Grade	8th Grade
One	**Basic Math 6**	**Basic Math 7**	**Basic Math 8**
Two	**Basic Math 6**	**Basic Math 7**	**Math 8**
Three	**Basic Math 6**	**Math 7**	**Math 8**
Four	**Math 6**	**Math 7**	**Math 8**
Five	**Math 6**	**Math 7**	***Pre-Algebra**
Six	** **Math 7**	**Math 8**	**Pre-Algebra**
Seven	** **Math 7**	***Pre-Algebra**	**Algebra 1**

Options	6th Grade	7th Grade	8th Grade
One	**Basic Math 6**	**Basic Math 7**	**Basic Math 8**
ISAT	<211	<216	<222
Percentile Range	<36%	<36%	<36%
Work Habits	weak	weak	weak
Two	**Basic Math 6**	**Basic Math 7**	**Math 8**
ISAT	<211	<216	222 - 237
Percentile Range	<36%	<36%	36% - 70%
Work Habits	weak	weak	average
Three	**Basic Math 6**	**Math 7**	**Math 8**
ISAT	<211	216 – 231	222 - 237
Percentile Range <	<36%	36% - 70 %	36% - 70%
Work Habits	weak	average	average
Four	**Math 6**	**Math 7**	**Math 8**
ISAT	211 – 226	216 – 231	222 - 237
Percentile Range	36% - 75%	36% - 70%	36% - 70%
Work Habits	average	average	average
Five	**Math 6**	**Math 7**	***Pre-Algebra**
ISAT	211 – 226	216 – 231	>240
Percentile Range	36% - 75%	36% - 70%	75% - 100%
Work Habits	average	average	strong
Six	****Math 7**	**Math 8**	**Pre-Algebra**
ISAT	>232	236 – 243	> 240
Percentile Range	85% - 100%	80% - 89%	75% - 100%
Work Habits	high/average	high/average	high/average
Seven	****Math 7**	***Pre-Algebra**	**Algebra 1**
ISAT	>232	>244	>247
Percentile Range	85% - 100%	90% - 100%	85% - 100%
Work Habits	high average	very strong	very strong

Bold - Power Standards *Italics – Blaine County*
Key: E-Expect, M-Master, R-Review

9th GRADE MATH OPTIONS

1	**ISAT**	**ISAT**	**ISAT**
	For the student with: **AN 8TH GRADE TEACHER RECOMMENDATION and the lowest ISAT scores: 225 and below (scores above 225 cannot take this class!)** poor attendance for any reason (illness) little or no English, severe behavior, etc. very low math skills. The Class Includes: Individualized work on Accelerated Math. No set Curriculum. No Homework. No Calculators! Small class size. Organizational skill work. A lot of emphasis on note taking. Most students will work on basic math not pre algebra unless taking for reasons other than low skills. Remember*:* Students with IEP and LEP will get up to two high school math credits for ISAT Math. Others will get elective credits.		
2	**ISAT**	**PRE ALG A**	**PRE ALG B**
	For the student with: **AN 8TH GRADE TEACHER RECOMMENDATION** and low ISAT scores (below 230) but may have other skills such as better attendance, or better organization**.** May need to work a little on basic math skills before starting Pre Algebra.		
3	**PRE ALG A**	**PRE ALG B**	**ALG I A**
	For the student with: **AN 8TH GRADE TEACHER RECOMMENDATION** May have low ISAT scores (even if below 230) if has other skills such as better attendance, better math skills, better organization**.** A student with basic math skills, who is willing to work in class, and is not chronically absent, can pass this class. The Class Includes: A set traditional Pre Algebra curriculum. Little or no homework is assigned but class assignments are turned in each day**. Note: 25-30% of this class fails because those students are not willing to do the work!**		
4	**ALG I A**	**ALG I B**	**ALG I C**
	For the student with*:* **AN 8TH GRADE TEACHER RECOMMENDATION AND** an ISAT score in the 240's and very strong academic skills! Very strong basic math skills! Very strong organizational habits! Very strong homework habits! The Class Includes: A set traditional Algebra I curriculum. Homework every night. Closed book, no note tests worth at least 60% of the grade. Comprehensive finals (the Algebra I C final will be over the entire book.)		
5	**GEOM A**	**GEOM B**	
	For the student with: **AN 8TH GRADE TEACHER RECOMMENDATION AND** A strong "C" in Integrated I in the 8th grade, **AND** a "C" on the district Integrated I Final. The Class Includes: A set traditional Geometry curriculum. Homework every night. Closed book, no note tests worth at least 70% of the grade. Comprehensive finals (the Geometry B final will be over the entire book) Keep in mind that at this point 6 math credits are needed to graduate. A student starting high school in Geometry will need to finish Pre Calculus A to graduate.		
6	**ALG II A**	**ALG II B**	**ALG II C**
	For the student with: **AN 8TH GRADE TEACHER RECOMMENDATION AND** A strong "C" in Integrated II in the 8th grade, **AND** a "C" on the district Integrated II Final. Keep in mind that at this point, 6 math credits are needed to graduate. A student starting high school in Algebra II will need to finish Calculus A to graduate.		