Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 1. Number Sense, Properties, and Operations** **Grade Level Expectation: Seventh - M15** **Concepts and skills students master:** 1. Proportional reasoning involves comparisons and multiplicative relationships among ratios **Evidence Outcomes**	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:** *Connected Math*	 *Prentice Hall*
a. Analyze proportional relationships and use them to solve real-world and mathematical problems.(CCSS: 7.RP)				
b. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.[1] (CCSS: 7.RP.1)	7	[1] For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour. (CCSS: 7.RP.1)	Comparing and Scaling Stretching and Shrinking	Course 2chpt 5 (esp. 5.4 and after)
c. Identify and represent proportional relationships between quantities. (CCSS: 7.RP.2)				
i. Determine whether two quantities are in a proportional relationship. (CCSS: 7.RP.2a)	7		Stretching and Shrinking, Inv 4 (particularly 4.1)	Course 2, chpt 5
ii. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. [2](CCSS: 7.RP.2b)	7	[2] e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. (CCSS: 7.RP.2a)	Variables and Patterns, Moving Straight Ahead,	Course 3, chpt 5
iii. Represent proportional relationships by equations.[3] (CCSS: 7.RP.2c)	7	[3] For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn. (CCSS: 7.RP.2c)	Variables and Patterns, Moving Straight Ahead,	Course 3, chpt 5
iv. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate. (CCSS: 7.RP.2d)	7		Variables and Patterns, Moving Straight Ahead,	course 2, 10-2; course 3 10.2
d. Use proportional relationships to solve multistep ratio and percent problems.[4] (CCSS: 7.RP.3)		[4] Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. (CCSS: 7.RP.3)		
i. Estimate and compute unit cost of consumables (to include unit conversions if necessary) sold in quantity to make purchase decisions based on cost and practicality (PFL)	7		comparing and scaling	Course 2, 5-2
ii. Solve problems involving percent of a number, discounts, taxes, simple interest, percent increase, and percent decrease (PFL)	7	NOTE: percents are briefly introduced in grade 5	need to supplement. Some % applications in S & S. % increase and decrease introduced in S &S, inv 4	Course 2, chapter 6; course 3, chapter 6; % change: Course 2, 6-8; Course 3, 6-5 & 6-6

Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 1. Number Sense, Properties, and Operations** **Grade Level Expectation: Seventh - M15** **Concepts and skills students master:** 2. Formulate, represent, and use algorithms with rational numbers flexibly, accurately, and efficiently **Evidence Outcomes**	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:** *Connected Math*	 *Prentice Hall*
a. Apply understandings of addition and subtraction to add and subtract rational numbers including integers. (CCSS: 7.NS.1)				
i. Represent addition and subtraction on a horizontal or vertical number line diagram. (CCSS: 7.NS.1)	7		Accentuate the Negative	course 2, 1-7, supplement w/ +/- fractions
ii. Describe situations in which opposite quantities combine to make 0.[5] (CCSS: 7.NS.1a)	7	[5] For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged. (CCSS: 7.NS.1a)	Accentuate the Negative	course 2, 1-6, supplement w/ +/- fractions
iii. Demonstrate p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. (CCSS: 7.NS.1b)	7		Accentuate the Negative	course 2, 1-6, supplement w/ +/- fractions
iv. Show that a number and its opposite have a sum of 0 (are additive inverses). (CCSS: 7.NS.1b)	7		Accentuate the Negative	course 2, 1-6, supplement w/ +/- fractions
v. Interpret sums of rational numbers by describing real-world contexts. (CCSS: 7.NS.1c)	7		Accentuate the Negative	course 2, 1-7, supplement w/ +/- fractions
vi. Demonstrate subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). (CCSS: 7.NS.1c)	7		Accentuate the Negative	course 2, 1-7; course 3, 4-4
vii. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. (CCSS: 7.NS.1c)	7		Accentuate the Negative	course 2, 1-6, supplement w/ +/- fractions
viii. Apply properties of operations as strategies to add and subtract rational numbers. (CCSS: 7.NS.1d)	7	use the names of the properties being applied	Accentuate the Negative - will need to supplement for property titles	course 2, 1-7 (properties are in Course 2, 1-2); course 3, 4-4
b. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers including integers. (CCSS: 7.NS.2)				
i. Apply properties of operations to multiplication of rational numbers.[6] (CCSS: 7.NS.2a)	7	[6] Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. (CCSS: 7.NS.2a)	Accentuate the Negative	course 2, 1-8; course, 3 4-5
ii. Interpret products of rational numbers by describing real-world contexts. (CCSS: 7.NS.2a)	7		Accentuate the Negative	course 2, 1-8; course, 3 4-5

Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 1. Number Sense, Properties, and Operations** **Grade Level Expectation: Seventh - M15** **Concepts and skills students master:** 2. Formulate, represent, and use algorithms with rational numbers flexibly, accurately, and efficiently **Evidence Outcomes**	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:** *Connected Math*	 *Prentice Hall*
iii. Apply properties of operations to divide integers.[7] (CCSS: 7.NS.2b)	7	[7] Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). (CCSS: 7.NS.2b) Interpret quotients of rational numbers by describing real-world contexts. (CCSS: 7.NS.2b)	Accentuate the Negative	course 2, 1-8; course, 3 4-5
iv. Apply properties of operations as strategies to multiply and divide rational numbers. (CCSS: 7.NS.2c)	7		Accentuate the Negative	course 2, 1-8; course, 3 4-5
v. Convert a rational number to a decimal using long division. (CCSS: 7.NS.2d)	7		supplement	course 2, 3-9
vi.Show that the decimal form of a rational number terminates in 0s or eventually repeats. (CCSS: 7.NS.2d)	7		supplement (CMP Ed 1, Moving Straight Ahead Inv 5 had a great investigation on this)	course 2, 3-9
c. Solve real-world and mathematical problems involving the four operations with rational numbers.[8] (CCSS: 7.NS.3)	7	[8] Computations with rational numbers extend the rules for manipulating fractions to complex fractions. (CCSS: 7.NS.3)	Accentuate the Negative	course 2, Chapter 1; Course 3, chapter 4

Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 2: Patterns, Functions, and Algebraic Structures** **Grade Level Expectation: Seventh - M15** **Concepts and skills students master:** 1. Properties of arithmetic can be used to generate equivalent expressions **Evidence Outcomes**	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:** *Connected Math*	 *Prentice Hall*
a. Use properties of operations to generate equivalent expressions. (CCSS: 7.EE)				
i. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. (CCSS: 7.EE.1)	7		Accentuate the Negative (4.2) and Say it With Symbols, Inv 1 - need to supplement for Commutative, Associative Properties	course 2, 2-1 & 2.2 & 2.3
ii. Demonstrate that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.[1] (CCSS: 7.EE.2)	7	[1] For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05." (CCSS: 7.EE.2)	Say it With Symbols, Inv 1	course 2, 2-1 & 2.2 & 2.3

Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 2: Patterns, Functions, and Algebraic Structures** **Grade Level Expectation: Seventh - M15** **Concepts and skills students master:** 2. Equations and expressions model quantitative relationships and phenomena **Evidence Outcomes**	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:**	
			Connected Math	*Prentice Hall*
a. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form,[2] using tools strategically. (CCSS: 7.EE.3)	7	[2] whole numbers, fractions, and decimals (CCSS: 7.EE.3)	throughout	throughout
b. Apply properties of operations to calculate with numbers in any form, convert between forms as appropriate, and assess the reasonableness of answers using mental computation and estimation strategies.[3] (CCSS: 7.EE.3)	7	[3] For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation. (CCSS: 7.EE.3)	throughout	throughout
c. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (CCSS: 7.EE.4)	7/8	This is solving one and two step equations.	Variables and Patterns, Moving Straight Ahead, inequalities- need to supplement (see Shapes of Algebra, Inv 2)	course 2, chapter 2; course 3, chapter 2 (includes inequalities)
i. Fluently solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. (CCSS: 7.EE.4a)	8		Shapes of Algebra	
ii. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.[4] (CCSS: 7.EE.4a)	8	[4] For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? (CCSS: 7.EE.4a)		
iii. Solve word problems[5] leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. (CCSS: 7.EE.4b)	Algebra 1	[5] For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions. (CCSS: 7.EE.4b)	supplement (Algebra I book?)	
iv. Graph the solution set of the inequality and interpret it in the context of the problem. (CCSS: 7.EE.4b)	Algebra 1		supplement (Algebra I book?)	

Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 3: Data Analysis, Statistics, and Probability** **Grade Level Expectation Seventh - M15** **Concepts and skills students master:** 1. Statistics can be used to gain information about populations by examining samples **Evidence Outcomes**	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:** *Connected Math*	 *Prentice Hall*
a. Use random sampling to draw inferences about a population. (CCSS: 7.SP)				
i. Explain that generalizations about a population from a sample are valid only if the sample is representative of that population.[1] (CCSS: 7.SP.1)	High School	[1] For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be. (CCSS: 7.SP.2)	How Likely is It Inv 3,4 (introductory) and Samples and Populations	course 3, 11-5 & 11-6, supplement
ii. Explain that random sampling tends to produce representative samples and support valid inferences. (CCSS: 7.SP.1)	High School		How Likely is It Inv 3,4 (introductory) and Samples and Populations	course 3, 11-5 & 11-6, supplement
iii. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. (CCSS: 7.SP.2)	High School		Samples and Populations	course 3, 11-5 & 11-6, supplement
iv. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. (CCSS: 7.SP.2)	High School		Samples and Populations	supplement
b. Draw informal comparative inferences about two populations. (CCSS: 7.SP)				
i. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.[2] (CCSS: 7.SP.3)	High School	[2] For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable. (CCSS: 7.SP.3)	Data Distributions & supplement?	supplement
ii. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.[3] (CCSS: 7.SP.4)	High School	[3] For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book. (CCSS: 7.SP.4)		

Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 3: Data Analysis, Statistics, and Probability** **Grade Level Expectation Seventh - M15** **Concepts and skills students master:** 2. Mathematical models are used to determine probability **Evidence Outcomes**	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:**	
			Connected Math	*Prentice Hall*
a. Explain that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.[4] (CCSS: 7.SP.5)	7	[4] Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. (CCSS: 7.SP.5)	prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1	chapter 12
b. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.[5] (CCSS: 7.SP.6)	8 (not with this terminology)	[5] For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. (CCSS: 7.SP.6)	prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1,2, 3, 4	chapter 12
c. Develop a probability model and use it to find probabilities of events. (CCSS: 7.SP.7)				
i. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. (CCSS: 7.SP.7)	High School		prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1,2, 3, 4	chapter 12
ii. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.[6] (CCSS: 7.SP.7a)	8	[6] For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. (CCSS: 7.SP.7a)	prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1,2, 3, 4	chapter 12
iii. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.[7] (CCSS: 7.SP.7b)	8	[7] For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies? (CCSS: 7.SP.7b)	prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1,2, 3, 4	chapter 12

d. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. (CCSS: 7.SP.8)				
i. Explain that the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. (CCSS: 7.SP.8a)	High School		prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1,2, 3, 4	chapter 12
ii. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. (CCSS: 7.SP.8b)	High School		prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1,2, 3, 4	chapter 12
iii. For an event[8] described in everyday language identify the outcomes in the sample space which compose the event. (CCSS: 7.SP.8b)	High School	[8] e.g., "rolling double sixes" (CCSS: 7.SP.8b)	prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1,2, 3, 4	chapter 12
iv. Design and use a simulation to generate frequencies for compound events.[9] (CCSS: 7.SP.8c)	High School	[9] For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood? (CCSS: 7.SP.8c)	prepare: How Likely Is It? Inv 1, 2 & What Do You Expect Inv 1,2, 3, 4	chapter 12

Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 4: Shape, Dimension, and Geometric Relationships** **Grade Level Expectation: Seventh - M15** **Concepts and skills students master:** 1. Modeling geometric figures and relationships leads to informal spatial reasoning and proof Evidence Outcomes	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:** *Connected Math*	 *Prentice Hall*
a. Draw construct, and describe geometrical figures and describe the relationships between them. (CCSS: 7.G)				
i. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (CCSS: 7.G.1)	7		Stretching and Shrinking	course 3, 5-6
ii. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. (CCSS: 7.G.2)	Geometry		supplement	supplement
iii. Construct triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. (CCSS: 7.G.2)	Geometry		supplement	supplement
iv. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and rectangular pyramids. (CCSS: 7.G.3)	Geometry			

Colorado Academic Standards December 2010 **Content Area: Mathematics** **Standard: 4: Shape, Dimension, and Geometric Relationships** **Grade Level Expectation: Seventh - M15** **Concepts and skills students master:** 2. Linear measure, angle measure, area, and volume are fundamentally different and require different units of measure **Evidence Outcomes**	**Previously taught in 2009 BVSD CED Grade Level/ Course**	**Notes**	**Transition Materials** **Found in current BVSD materials:** *Connected Math*	 *Prentice Hall*
a. State the formulas for the area and circumference of a circle and use them to solve problems. (CCSS: 7.G.4)	7		Covering and Surrounding	course 2, 8-4
b. Give an informal derivation of the relationship between the circumference and area of a circle. (CCSS: 7.G.4)	Geometry		supplement	supplement
c. Use properties of supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (CCSS: 7.G.5)	Geometry		supplement (see Stretching and Shrinking Inv 3, ACE 22-24)	course 3, 8-1 & 8-2
d. Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (CCSS: 7.G.6)	7		Covering and Surrounding & Filling and Wrapping - inv 1, 2 & Stretching and Shrinking Inv 2 and 3	course 2, chapter 8