Spearfish School District Curriculum/ Pacing Guide 2022-23
6th Grade/Mathematics

Instructional Focus	Focus Summary
1 **Positive Rational Numbers** **Suggested Time Frame: 23 days**	Add, subtract, multiply, and divide decimals. Estimate with decimals. Multiply and Divide fractions and mixed numbers using models and estimation. Solve multistep problems with rational numbers.
2 **Integers and Rational Numbers** **Suggested Time Frame: 18 days**	Use integers and other rational numbers to solve problems. Describe quantities with opposite directions or values. Compare and order rational numbers both with and without number lines. Position integers and rational numbers on the coordinate plane. Graph shapes on coordinate plane and use absolute value to determine distances and perimeters.
3 **Numeric and Algebraic Expressions** **Suggested Time Frame: 20 days**	Identify prime and composite numbers. Use factors, prime factorization, and multiples to read, write, and evaluate expressions. Use order of operations and properties when evaluating expressions. Use variables to represent numbers and write expressions, some with exponents, to solve real-world and mathematical problems.
4 **Represent and Solve Equations and Inequalities** **Suggested Time Frame: 26 days**	Write and solve algebraic equations involving addition, subtraction, multiplication, and division. Write and solve one-step inequalities. Use variables to represent numbers when solving real-world and mathematical problems. Learn properties of equality and use them to solve equations. Use variables to represent related quantities in real-world situations. Look for and use patterns to write rule and equations to describe and extend patterns. Represent patterns using math models such as tables and graphs on the coordinate plane.
5 **Understand and Use Ratio and Rate** **Suggested Time Frame: 26 days**	Use ratio language to describe relationships between two quantities. Solve real-world problems by making tables of equivalent ratios, find missing values in tables, and plot pairs of values on the coordinate plane. Use ratio and rate reasoning to solve real-world and mathematical problems. Solve unit rate problems involving unit pricing and constant speed. Use ratio reasoning to convert customary and metric units of measurement.
6 **Understand and Use Percent**	Use models such as hundreds grids, number lines, and circle graphs to learn about percents. Develop an understanding of percents as parts of 100, find percents of a number, and find the whole given a part and the percent.

Instructional Focus	Focus Summary
Suggested Time Frame: 18 days	
7 **Solve Area, Surface Area, and Volume Problems** **Suggested Time Frame: 22 days**	Find the areas of triangles, quadrilaterals, and polygons. Compose or decompose shapes into familiar shapes. Find areas in real-world application problems. Represent 3D figures like prisms and pyramids as nets to determine surface area. Find volume of rectangular prisms with fractional edge lengths. Apply surface area and volume to solve real-world and mathematical problems.
8 **Display, Describe, and Summarize Data** **Suggested Time Frame: 20 days**	Learn how to identify and ask statistical questions that result in a good representation of data. Find mean, median, mode, range, and other measures of variability such as interquartile range and the mean absolute deviation of a value set. Display and summarize statistical data using frequency tables, histograms, and box plots. Interpret data and give reasons for conclusions.

Mathematical Practices: All the Standards for Mathematical Practice are addressed in each Instructional Focus.
1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.

Highlighted as follows:

Major
Supporting
Additional

Spearfish School District Curriculum/ Pacing Guide 2019-20
6th Grade/Mathematics

Instructional Focus 1	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
enVision Topic 1: Use Positive Rational Numbers **Suggested Time Frame: 23 days**	**Expressions & Equations**		• Add, subtract, multiply, and divide decimals fluently. • Use visual models to multiply and divide fractions. • Use models to represent real world situations. • Solve multistep problems using fraction and decimal operations.	•Numerator • Denominator • Reciprocal • Quotient • Multiplicative Inverse • Division • Dividend • Divisor • Quotient • Algorithm • Estimate • Multi-digit Decimals	*enVision Topic 1*
	Number System	6.NS.1: Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions. 6.NS.2 Fluently divide multi-digit numbers using an algorithm including but not limited to the standard algorithm. 6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using an algorithm including but not limited to the standard algorithm for each operation. 6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.			

Instructional Focus 1	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
	Ratios & Proportional Relationship				
	Statistics & Probability				
	Geometry				

Assessments: How do my students demonstrate their understanding and how do I measure their learning?

Formative:

Teacher adapted lesson quizzes and classroom discussion/observations will be used for formative assessment.

Summative:

A teacher adapted topic assessment from *enVision*.

Instructional Focus 2	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
enVision Topic 2: Integers and Rational Numbers **Suggested Time Frame: 18 days**	**Expressions and Equations**		• Identify, compare, order, and use integers to represent real-world quantities. • Plot rational numbers on the number line. • Interpret and use absolute value to represent a number's distance from zero. • Identify, graph, and reflect points on the coordinate plane. • Use absolute distance to determine the distance between vertical or horizontal points on a coordinate plane.	• Rational Numbers • Opposites • Origin • Quadrants • Coordinate Plane • Ordered Pairs • X-Axis • Y-Axis • Coordinates • Inequalities • Value • Greater Than • Less Than	☐ *enVision Topic 2*
	Number System	6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.			

Instructional Focus 2	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
		6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. 6.NS.7 Understand ordering and absolute value of rational numbers. 6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	● Find side lengths and perimeters of polygons on the coordinate plane.	● Greater Than or Equal To ● Less Than or Equal □ Integer □	
	Ratios & Proportional Relationship				
	Statistics & Probability				
	Geometry	6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.			

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Instructional Focus 3	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
enVision Topic 3: Numeric and Algebraic Expressions **Suggested Time Frame: 20 days**	**Expressions & Equations**	6.EE.1 Write and evaluate numerical expressions involving whole number exponents (e.g. parentheses, brackets, or braces). 6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as 5-y. b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 +7) as both a single entity and a sum of two terms. c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real - world problems. d. Perform arithmetic operations following the order of operations with and without parentheses, including those involving whole - number exponents. 6.EE.3 Apply the properties of operations to generate equivalent expressions with an emphasis on the distributive property. 6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).	• Write and evaluate expressions using whole number exponents. • Write expressions to represent real world and mathematical problems. • Find prime factorization of a whole number. • Find greatest common factor (GCF) and least common multiple (LCM) of two whole numbers. • Use GCF and the distributive property to add. • Use GCF and LCM to solve problems. • Evaluate expressions using order of operations. • Insert grouping symbols to affect the value of numeric expressions. • Write algebraic expressions to model a pattern. • Write an algebraic expression from a word phrase. • Use precise mathematical language to identify parts of an expression. • Evaluate algebraic expressions including whole numbers, fractions, and decimals. • Identify and write equivalent algebraic expressions. • Justify why algebraic expressions are equivalent. • Use properties of operations to simplify algebraic expression by combining like terms.	• Exponent • Base • Numerical Expressions • Quantity • Quotient • Algebraic Expressions • Properties • Multiplicative Identity • Distributive Property • Greatest Common Factor • Least Common Multiple • Multiple • Prime Factorization • Factor Trees	☐ *enVision Topic 3*
	Number System	6.NS.4 Find the greatest common factor of two whole numbers less than			

Instructional Focus 3	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
		or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.			
	Ratios & Proportional Relationship				
	Statistics & Probability				
	Geometry				

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Instructional Focus 4	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
enVision Topic 4:	**Expressions & Equations**	6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number	• Identify equations and variables.	• Equation •Inequality • Expressions	*enVision Topic 4*

Instructional Focus 4	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
Represent and Solve Equations and Inequalities **Suggested Time Frame: 26 days**		regardless of which value is substituted into them). 6.EE.5 Understand solving an equation or inequality is a process in which you determine values from a set that make an equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true. 6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. 6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q and x are all nonnegative rational numbers. 6.EE.8 Write an inequality of the form x > c, x ≥ c, x < c or x ≤ c which represents a condition or constraint in a real-world or mathematical problem. Recognize that inequalities have infinitely many solutions; represent solutions of inequalities on number line diagrams. 6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	• Use substitution to find solutions to equations. • Use properties of equality to keep both sides of an equation equal. • Identify properties of equality. • Write one-variable addition and subtraction equations. • Use inverse relationships and properties of equality to solve one-step equations. • Write and solve equations that involve fractions, decimals, and mixed numbers. • Understand symbols required to write an inequality. • Write inequalities to describe mathematical or real-world situations. • Describe solutions to an inequality. • Represent solutions to an inequality on a number line. • Use mathematical modeling to represent a problem situation and propose a solution. • Identify dependent and independent variables. • Analyze relationships between variables. • Write equations to represent the relationships between variables. • Analyze the relationship between dependent and dependent variables using tables, graphs, and equations.	• Variables • Nonnegative Rational Numbers • Solution • Solution Set • Substitution • Equal • Solve • Evaluate Independent Variable • Dependent Variable • Line graph • Constant • Inverse relationship	
	Number Systems				

Instructional Focus 4	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
	Ratios & Proportional Relationship				
	Statistics & Probability				
	Geometry				

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Instructional Focus 5	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
enVision Topic 5: Understand and Use Ratio and Rate	**Expressions & Equations**		• Use ratios to describe the relationship between two quantities. • Use bar diagrams and double number lines to model ratio relationships. • Use multiplication and division to find equivalent ration. • Solve problems by finding equivalent ratios.	• Ratio • Compare • Simplify • Rates • Unit Rates • Unit Price • Equivalent Ratios • Percents • Ratio Tables	*enVision Topic 5*
	Number Systems				

Instructional Focus 5	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
Suggested Time Frame: 26 days	**Ratios & Proportional Relationship**	6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. 6.RP.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b not equal to 0, and use rate language in the context of a ratio relationship. 6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. b. Solve unit rate problems including those involving unit pricing and constant speed. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities	• Use ratio tables to compare ratios and compare ratios to solve problems. • Represent equivalent ratios on graphs. • Use ratio tables and graphs to solve problems. • Use rates to describe ratios in which terms have different units. • Use rates and unit rates to solve problems. • Use ratio reasoning to compare rates and solve problems. • Use unit rates to solve problems involving constant speed. • Use unit rates to solve problems involving unit price. • Solve unit rate problems using an equation. • Use ratio reasoning and conversion factors to convert customary units of measure. • Use ratio reasoning and conversion factors to convert metric units of measure. • Use ratio reasoning and conversion factors to convert between customary and metric units of measure.	• Tape Diagrams •Conversion factor •Pi •circumference of a circle	
	Statistics & Probability				
	Geometry				

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Summative: A teacher adapted topic assessment from *enVision*.					

Instructional Focus 6	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
enVision Topic 6: Understand and Use Percent **Suggested Time Frame: 18 days**	**Expressions & Equations**		● Represent the percent of a whole. ● Find the percent of a whole. ● Write equivalent values as fractions, decimals, and percents. ● Write fractions as decimals and percents when the denominator of the fraction is not 100. ● Write percents that are greater than 100. ● Write percents that are less than 1. ● Estimate the percent of a number. ● Use the decimal form of a percent to find percent of a number. ● Write an equation to solve a percent problem. ● Find the whole amount when given a part and the percent.	● Percent	☐ *enVision Topic 6*
	Number Systems				
	Ratios & Proportional Relationship	6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. 6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.			
	Statistics & Probability				

	Geometry				

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Instructional Focus	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
7 **enVision Topic 7:** Solve area, surface are, and volume problems **Suggested Time Frame: 22 days**	**Expressions and Equations**	6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real - world problems.	• Use a formula to find the areas of parallelograms and rhombuses. • Find the base or height of a parallelogram when given the area and one dimension. • Find the areas of triangles. • Find the corresponding base or height of a triangle. • Find the areas of trapezoids. • Find the areas of kites. • Find the areas of polygons by composing and decomposing shapes. • Classify solid figures. • Identify figures from nets. • Draw nets of solid figures. • Find the surface area of rectangular prisms and triangular prisms. • Find the surface areas of square and triangular pyramids.	• Base • Edge • Face • Kites • Net • Polyhedron • Vertex • Area • Volume • Parallel lines	☐ *enVision Topic 7*
	Number Systems	6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. 6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane.			

Instructional Focus 7	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
		Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.			
	Ratios & Proportional Relationship				
	Statistics & Probability				
	Geometry	6.G.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. 6.G.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = lwh and V = Bh where B is the area of the base to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. 6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second			

Instructional Focus 7	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
		coordinate. Apply these techniques in the context of solving real-world and mathematical problems. 6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.			

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Instructional Focus 8	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
enVision Topic 8: Display, Describe, and Summarize Data	**Expressions and Equations** **Number Systems** **Ratios & Proportional Relationship**		• Identify and write statistical questions. • Display collected data. • Determine mean, median, mode, and range of a data set. • Display data in a box plot. • Interpret and analyze a box plot. • Organize data into equal intervals and display data in a frequency table or histogram. • Calculate mean absolute deviation and interquartile range of a data set.	• Box Plot • Categorical Data • Data • Dot Plot • Histogram • Interquartile Range • Mean • Mean Absolute Deviation • Measures of Center • Median	☐ *enVision Topic 8*

Instructional Focus 8	Strand	Targeted Standards-based Essential Skills & Concepts	Learning Goals / Essential Questions For Instructional Focus	Essential Vocabulary	Resources
Suggested Time Frame: 20 days	**Statistics & Probability**	6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. 6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. 6.SP.3 Recognize that a measure of center (mean and/or median) for a numerical data set summarizes all of its values with a single number, while a measure of variation (such as mean absolute deviation and/or range) summarizes data points' distances from the mean or each other	• Summarize data using measures of variability. • Select the most appropriate measure of center and variability then use measures to describe data sets. • Describe the center, spread, and overall shape of a data set.	• Mode • Range • Sample • Sample Space • Statistics • Statistical Question • Variability	
	Geometry				

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