SPS Math 6 Scope and Sequence - Year at a Glance

Math 6 Course Overview:

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratios to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

(1) Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus, students expand the scope of problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.	(2) Students use the meaning of fractions, the meaning of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.	(3) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = 15$) to describe relationships between quantities.	(4) Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.

Students in Grade 6 also build on their work with are in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism with fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.

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	Instructional Event	Length of Unit	Time Frame
Semester 1	**Topic 0: Build the Math Community**	3	Quarter 1
	Topic 2: Integers and Rational Numbers	16	Quarter 1
	Topic 1: Use Positive Rational Numbers	18	Quarter 1
	Topic 3: Numeric and Algebraic Expressions	18	Quarter 1 – Quarter 2
	Topic 4: Represent and Solve Equations and Inequalities	24	Quarter 2
Semester 2	**Topic 5: Understand and Use Ratio and Rate**	24	Quarter 3
	Topic 6: Understand and Use Percent	16	Quarter 3
	Topic 7: Solve Area, Surface Area, and Volume Problems	21	Quarter 4
	Topic 8: Display, Describe, and Summarize Data	18	Quarter 4
	Total number of days	**158**	

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Content Standards and Math Practices	Topic 0	Topic 2	Topic 1	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8
	Build the Math Community	**Integers and Rational Numbers**	**Use Positive Rational Numbers**	**Numeric and Algebraic Expressions**	**Represent and Solve Equations and Inequalities**	**Understand and Use Ratio and Rate**	**Understand and Use Percent**	**Solve Area, Surface Area, and Volume Problems**	**Display, Describe, and Summarize Data**
	3 days	**16 days**	**18 days**	**18 days**	**24 days**	**24 days**	**16 days**	**21 days**	**18 Days**
	Build community	6.NS.5	6.NS.1	6.NS.4	6.EE.1	6. RP.1	6.RP.1	6.NS.6c	6.SP.1
		6.NS.6a	6.NS.2	6.EE.1	6.EE.2a	6.RP.2	6.RP.3c	6.NS.8	6.SP.2
	Establish classrooms norms	6.NS.6b	6.NS.3	6.EE.2	6.EE.2b	6.RP.3		6.EE.2a	6.SP.3
		6.NS.6c		6.EE.2a	6.EE.2c	6.RP.3a	SMP 2	6.EE.2c	6.SP.4
	Practice math discourse	6.NS.7a	SMP 2	6.EE.2b	6.EE.3	6.RP.3b	SMP 4	6.EE.6	6.SP.5a
		6.NS.7b	SMP 4	6.EE.2c	6.EE.4	6.RP.3d	SMP 7	6.G.1	6.SP.5b
		6.NS.7c	SMP 7	6.EE.3	6.EE.6			6.G.2	6.SP.5c
		6.NS.7d		6.EE.4		SMP 2		6.G.3	6.SP.5d
		6.NS.8		6.EE.6	SMP 2	SMP 3		6.G.4	
		6.G.3			SMP 4	SMP 4			SMP 1
				SMP 4	SMP 7			SMP 3	SMP 2
		SMP 3		SMP 7	SMP 8			SMP 6	SMP 4
		SMP 7						SMP 7	SMP 7
		SMP 8							

Major Standards

Supporting Standards

Additional Standards

Some clusters require greater emphasis than the others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics. Note, however, that a standard can be individually important even though the indicated mathematics may require relatively little teaching time. Some clusters that are not major emphases in themselves are designed to support and strengthen areas of major emphasis, while other clusters that may not connect tightly or explicitly to the major work of the grade would fairly be called additional.

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